
SCHELKOVO
AGROHIM
CATALOG
2026


SCHELKOVO
AGROHIM
BRIDGING
SCIENCE AND
PRACTICE

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SCHELKOVO AGROHIM—Leader in the Agrochemical and Seed Markets

Company History

150 Years of History and Tradition

The roots of Schelkovo Agrohim trace back to 1876, when Ludwig Rabenek, a prominent industrialist and head of the «Manufacturing Partnership», established a small chemical plant producing basic reagents for local textile mills. This plant laid the groundwork for the multi-profile city-forming chemical plant, Schelkovo Agrohim Enterprise, which today manufactures products for a variety of industries and agricultural sectors.

In 1963, the Schelkovo branch of the All-Russian Research Institute of Chemical Products for Plant Protection (VNIHSZR) was established on the basis of the original plant. It quickly became one of the industry's leading research institutes, known for developing effective and safe plant protection products backed by strong scientific expertise. The branch included a pilot production unit dedicated to refining new pesticide manufacturing technologies.

In 1998, the Schelkovo Agrohim was founded on the basis of the Schelkovo Agrohim Enterprise chemical plant and the Schelkovo branch of the VNIHSZR. The new company inherited several core pesticide production workshops and a number of warehouses. But its true asset was its intellectual capital and personnel with extensive hands-on experience, who formed the core of the new company's team.

Starting with just a few formulations totaling one thousand liters, Schelkovo Agrohim has grown into a market leader in plant protection chemicals.

Company Today

25+ Years in Agricultural Market

Schelkovo Agrohim leverages its strong scientific capabilities, advanced production facilities, and robust R&D infrastructure to bring modern, innovative plant protection solutions to market. The company's annual production capacity now is about 110 thousand metric tons. The company supplies products to all agricultural regions of Russia, as well as to neighboring and distant international markets. Official representative offices in 78 cities throughout Russia and abroad provide prompt supply of plant protection products and consulting services.

Advanced Production Capabilities

Chemical crop protection agents are the company's core business. The company's portfolio includes over 180 products that offer comprehensive protection and nutrition for agricultural crops. These include modern, highly effective formulations such as herbicides, insecticides, fungicides, seed treatments, fumigants, rodenticides, desiccants, pheromones, microbiological products, amino acid-based biostimulants, microfertilizers for foliar dressings, plant growth regulators, etc. The company has production facilities in Russia, Kazakhstan, and Uzbekistan.

The main production facility is located in the city of Schelkovo, Moscow Region, spanning more than 40 thousand square meters across five independent, powerful workshops. This is a cutting-edge production with state-of-the-art technology that is continuously upgraded, expanded, and modernized.

Production is fully automated and equipped with robotic systems, reactor units, multifunctional installations, and process automation technologies. A dedicated polymer container workshop produces polyethylene canisters—including multilayer COEX containers with protective barrier layers designed specifically for aggressive pesticides. Annual container output reaches 9 million units.

Raw materials and finished goods are stored in warehouse complexes covering more than 12 thousand square meters, outfitted with high-rise racking systems and modern specialized equipment from leading European manufacturers. From these hubs, products are distributed nationwide through an extensive network of regional representative offices.

Customers can always rely on the consistent high quality of Schelkovo Agrohim products. The company has implemented a quality management system in accordance with the requirements of ISO 9001:2015. Advanced manufacturing processes and a multi-stage analytical control system—from product development through industrial-scale production to final product acceptance—ensure top-tier quality and eliminate defects at every stage.

The company uses the latest DataMatrix code marking system, which protects against counterfeiting, contains more product information, and ensures data saving and reading even from a damaged label.

All Schelkovo Agrohim products undergo state registration and receive official approval for use in Russia, CIS countries, and global markets. This is preceded by years of extensive research and testing to evaluate pesticide biological efficacy, environmental safety, toxicological and hygienic properties, and other characteristics.

Research and Development Center

In terms of scientific potential, Shchelkovo Agrohim is a leader among Russian producers. The company's scientific core originated from the team of the All-Russian Research Institute of Chemical Plant Protection Products. Over time, the team has expanded and been strengthened by talented young researchers.

Today, the company's R&D center stands alongside Russia's leading scientific institutes. Headed by a full member of the Russian Academy of Sciences, the center employs over 130 researchers, including a corresponding member of the Russian Academy of Sciences, Doctors of Science, and Candidates of Chemical, Biological, and Technical Sciences.

Modern agriculture is unthinkable without innovation and advanced technologies that deliver maximum, sustainable crop yields while minimizing environmental impact. Because of the center's exceptional scientific capabilities and state-of-the-art equipment, Schelkovo Agrohim can bring to market innovative pesticide solutions that align with global trends—and often set new benchmarks.

The company's R&D specialists have developed and commercialized unique formulations, including NANOformulations and oil-based formulations, as well as original product recipes, novel synthesis methods, and production technologies for active ingredients. Many of these innovations are unprecedented. Schelkovo Agrohim holds more than 120 invention patents. The company has received international recognition on multiple occasions, including prestigious independent awards in crop production such as the Agrow Awards and Crop Science Awards, in the categories of Best Innovative Formulation, Best Product, etc.

Chemical research at the center focuses on developing production technologies for active substances, pheromones, and pharmaceutical ingredients, creating new formulations, identifying effective combinations of active ingredients and their formulations, and conducting chemical and analytical testing.

A Biological Laboratory was established at the Schelkovo Agrohim Research Center to perform comparative trials of various formulations and identify the most promising candidates, as well as to carry out off-season biological studies assessing product efficacy and biological activity. The Laboratory performs pipeline product screening tests as well as PCR and ELISA analyses. The Laboratory's capabilities include controlled artificial climate and lighting systems.

Breeding and Seed production. Seed Production

In terms of seed breeding and production, Schelkovo Agrohim focuses on building an integrated, industrial-scale seed production cycle for major crops.

In the course of the project implementation, the company has launched breeding and seed multiplication centers and commissioned industrial-scale seed processing facilities for sowing preparation.

As a result, Schelkovo Agrohim enables agricultural producers to access high-quality seeds of high-yielding Russian-bred varieties and hybrids of key crops, including winter and spring wheat, soybeans, peas, buckwheat, sugar beet, sunflower, and corn.

Business Segments

SCHELKOVO AGROHIM
production of crop protection chemicals, agrochemicals, and seeds for large-scale farms, smallholdings, and household plots

DUBOVITSKOE EXPERIMENTAL FARM
test site and seed production center

BETAGRAN SEEDS
Breeding and seed production center for winter wheat, soybeans, and sunflower
Seed processing plant

SOYUZ SEMSVEKLA
breeding and genetics center for next-generation sugar beet hybrids

BETAGRAN RAMON
production of pelleted sugar beet seeds and seed treatment for sunflower and other crops

HELIANTA
hybrid sunflower seed production and seed center

BETAGRAN LIPETSK
breeding center for bovine semen and embryo production

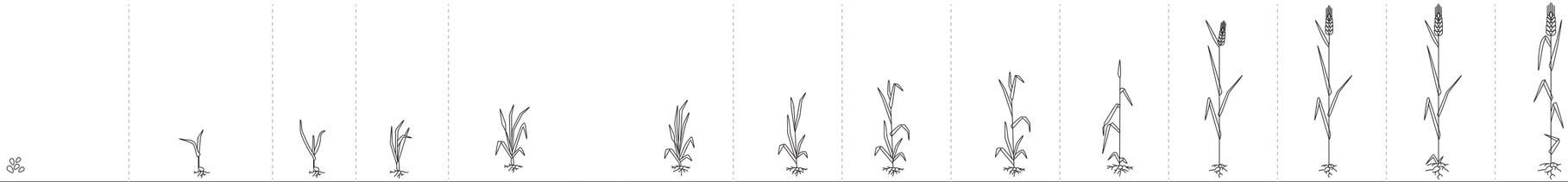
BETANET
production of hail and bird protecting nets for intensive-type orchards

BETAGRAN KUBAN
intensive horticulture

Comprehensive crop protection systems

- **Comprehensive protection of cereal crops**
- **Comprehensive protection of sugar beet**
- **Comprehensive protection of soybean**
- **Comprehensive protection of peas**
- **Comprehensive protection of sunflower**
- **Comprehensive protection of maize**
- **Comprehensive protection of fibre flax and oilseed flax**
- **Comprehensive protection of rapeseed**
- **Comprehensive protection of potato**
- **Comprehensive protection of apple trees**
- **Comprehensive protection of grapes**

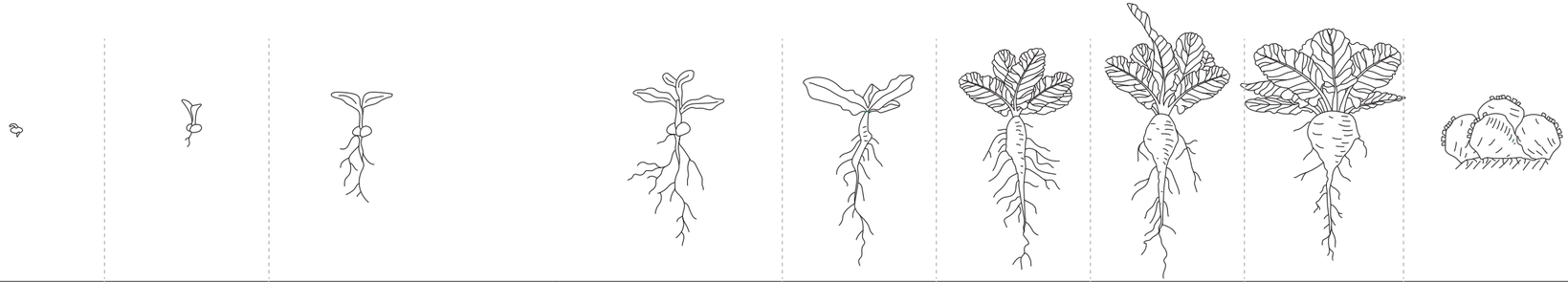
Comprehensive protection of cereal crops



Harmful object	seeds; before sowing	first/second leaf stage	third leaf stage	beginning of tillering	middle of tillering	end of tillering	elongation stem	first joint stage	second joint stage	flag leaf	earing	flowering	yellow ripeness	ripeness
	00	11	12	21	25	29	30	31	32	39	51-59	61-69	83-87	90
DISEASES: Loose smut, stinking smut, Fusarium root rot, Helminthosporium root rot, powdery mildew, seed molding, Fusarium mold	**Benefis, ME** 0,6-0,8 l/t **Benefis Supreme, ME** 0,6-0,8 l/t **Heraklion, SC** 1,0-1,2 l/t **Polaris, ME** 1,0-1,5 l/t **Polaris Quatro, SME** 1,2-1,5 l/t **Protego Max, ME** 0,8-1,0 l/t **Scarlet, ME** 0,3-0,4 l/t **Tebu 60, ME** 0,4-0,5 l/t **Tuareg, SME** 1,0-1,4 l/t													
DISEASES: Fusarium root rot, Fusarium mold, Cercosporella spot, Helminthosporium blight, powdery mildew		**Benazol, WP** 0,3-0,6 kg/ha	**ZIM 500, SC** 0,3-0,6 l/ha											
DISEASES: Powdery mildew, rust, Helminthosporium blight, Septoria blight, Fusarium head blight, tan spot, Rhynchosporium leaf spot					**Azorro, SC** 0,8-1,0 l/ha									
						Titul DUO, CSC 0,25-0,32 l/ha **Titul Trio, CSC** 0,4-0,6 l/ha	**Titul 390, CSC** 0,26 l/ha **Capella, ME** 0,8-1,0 l/ha		**Daizy, SE** 0,6-0,8 l/ha **Ace, CSC** 0,6-1,0 l/ha	**Triada, CSC** 0,5-0,6 l/ha				
PESTS: Seedling pests: aphids, ground beetle, flea beetles, corn flies	**Bombarda, SC** 0,8-1,2 l/t **Imidor PRO, SC** 0,75-1,25 l/t **Polaris Quatro, SME** 1,2-1,5 l/t **Tuareg, SME** 1,0-1,4 l/t **Harita, SC** 0,3-0,6 l/t	**Beretta, OD** 0,4 l/ha **Faskord, EC** 0,1-0,15 l/ha **Sparring, OD** 0,1-0,3 l/ha	**Kinfos, EC** 0,5 l/ha **Espero, SC** 0,1-0,25 l/ha											
PESTS: Aphids, Trigonotylus ruficomis, Lema beetles, flea beetles, thrips, Eurygaster integriceps, sawflies, stem flies, leafhoppers, corn flies, cereal chafers			**Imidor, SL** 0,06-0,07 l/ha **Meadows, OD** 0,05-0,075 l/ha			**Kinfos, EC** 0,15-0,25 l/ha **Sparring, OD** 0,1-0,2 l/ha	**Tagor, EC** 1,0-1,5 l/ha **Faskord, EC** 0,1-0,15 l/ha		**Beretta, OD** 0,3 l/ha **Espero, SC** 0,1 l/ha		**Imidor Extra, SC** 0,1-0,15 l/ha			
WEEDS: Annual and perennial dicotyledonous and grass weeds	**Sprut Extra, SL** 1,4-4,0 l/ha													
WEEDS: Annual and perennial dicotyledonous weeds, including those resistant to 2,4-D and MCPA				**Uniko, CSC** 1,0-1,5 l/ha										
WEEDS: Annual and perennial dicotyledonous weeds, including thistle species				**Pixel, OD** 0,25-0,3 l/ha **Pinta, OD** 0,1-0,15 l/ha		**Fortissimo, OD** 0,4-0,7 l/ha **Fenizan, SL** 0,14-0,2 l/ha **Glok, WG** 0,03-0,04 kg/ha	**Primadonna, SE** 0,6-0,9 l/ha **Primadonna Super, CSC** 0,4-0,75 l/ha							
WEEDS: Annual dicotyledonous weeds				**Lintaplant, SL** 0,7-1,5 l/ha **Kronverk, SL** 0,7-1,5 l/ha										
WEEDS: Thistle, chamomile, and lettuce species				**Lornet, SL** 0,16-0,66 l/ha										
WEEDS: Annual dicotyledonous and grass weeds				**Zontran, CSC*** 0,3-0,5 l/ha										
			Ballista, OD 0,3-0,5 l/ha											
WEEDS: Annual grass weeds (bristle grass species, millet species, wild oat, etc.)				**Ovsugen Super, EC** 0,4-0,6 l/ha		**Ovsugen Express, EC** 0,4-0,6 l/ha		**Argo, ME** 0,7-1,0 l/ha		**Argo Prime, ME** 0,4-0,55 l/ha				
WEEDS: Annual dicotyledonous weeds, including those resistant to 2,4-D and MCPA			**Zinger, WP** 0,008-0,01 kg/ha **Granat, WG** 0,015-0,025 kg/ha											
WEEDS: Annual dicotyledonous weeds, including those resistant to 2,4-D and MCPA, and perennial weeds, including thistle species				**Drotik, CSC** 0,4-0,9 l/ha **Damba, SL** 0,15-0,3 l/ha		**Femida, OD** 0,7-0,9 l/ha								
Dessication and growth regulators	**Emistim** 1 ml/t						**Hefk, SL** 0,5-1,0 l/ha						**Tongara, SL** 1,5-2,0 l/ha	
				Costando, EC 0,2-0,4 l/ha										
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings	**Potassium Humate Sufler** **Biostim Start**	**Ultramag Molybdenum*** **Biostim Growth**		**Biostim Cereals** **Biostim Universal**		**Ultramag Combi for cereals** **Ultramag Super Zinc-700/ Sulfur-900**		**Ultramag Phosphorus Active/ Super** **Ultramag Chelate Cu-15/ Zn-15/ Mn-13/ Fe-13**		**Ultramag Potassium** **Potassium Humate Sufler**				
Microbiological fertilizers	**Biocomposite Correct** **Biocomposite Destruct** **Azafok**	**Biocomposite Correct**	**Azafok**											

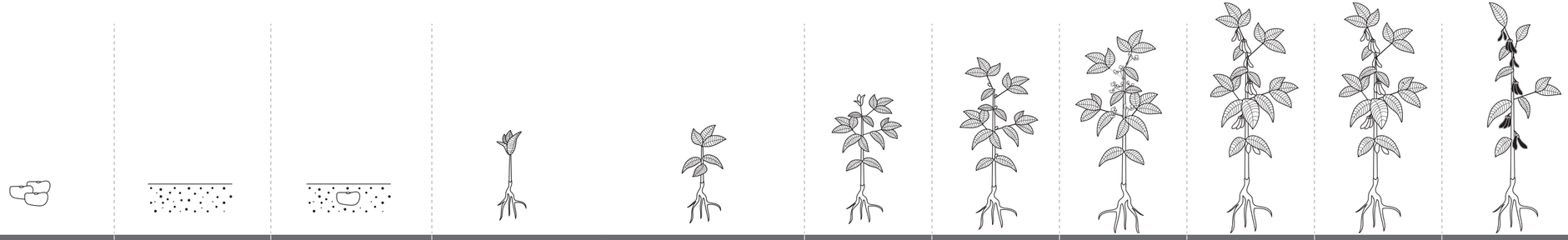
** Only used on winter crops in autumn*

Comprehensive protection of sugar beet



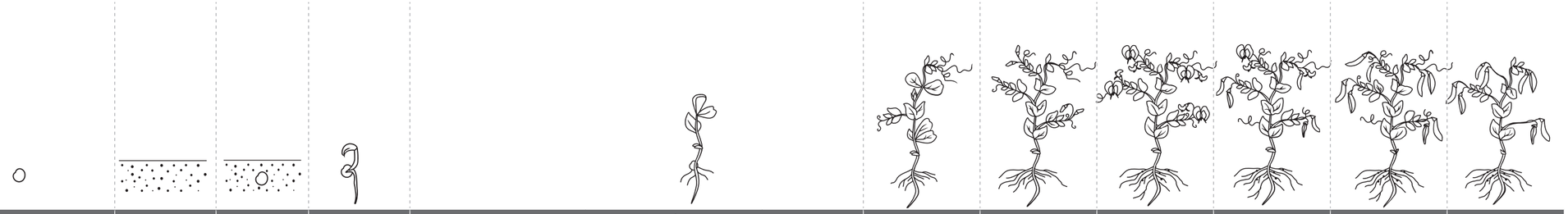
Harmful object		before sowing, before sprouting	sowing seedlings	cotyledons	2-true leaves	4-true leaves	6-true leaves	8-true leaves	50% closing of the rows	30-60 days before harvesting	before piling for storage
		00	01-07	10	12	14	16	18	35		
WEEDS	Annual grass and dicotyledonous weeds	**Sprut Extra, SL** 1,4-2,5 l/ha **Acetal PRO, EC** 2,0-3,0 l/ha **Gals, EC** 0,2 l/ha				**Acetal PRO, EC** 2,5-3,0 l/ha					
WEEDS	Perennial grass and dicotyledonous weeds	**Sprut Extra, SL** 2,5-4,0 l/ha									
WEEDS	Annual dicotyledonous weeds, including amaranth, and some grass weeds		**Betaren Super MD, OEC** 0,9-3,6 l/ha **Betaren Express AM, EC** 2,0-4,0 l/ha			**Betaren 22, OEC** 1,0-3,0 l/ha **Betaren Max, OD** 1,0-1,5 l/ha	**Action, SC** 1,0-2,0 l/ha **Betaren 320, OD** 1,0-1,5 l/ha				
WEEDS	Annual dicotyledonous weeds, including goosefoot and prostrate amaranth		**Mitron, SC** 1,5-2,0 l/ha			**Kondor Forte, OD** 0,125 l/ha	**Kondor, WG** 30 r/ra **+ Satellite** 0,2 l/ha				
WEEDS	Thistle, chamomile, knotweed, and lettuce species			**Lornet, SL** 0,3-0,5 l/ha		**Lornet, SL** 0,1 + 0,2 l/ha (twice, during the first and second waves of weeds)					
WEEDS	Annual grass weeds		**Healer, OEC** 0,75-1,0 l/ha **Forward, OEC** 0,9-1,2 l/ha			**Censor Max, OEC** 0,6-0,7 l/ha **Censor, EC** 0,2-0,4 l/ha + Mikado					
WEEDS	Perennial grass weeds		**Healer, OEC** 1,0-1,5 l/ha **Forward, OEC** 1,2-2,0 l/ha			**Censor Max, OEC** 1,4-1,6 l/ha **Censor, EC** 0,7-1,0 l/ha + Mikado					
DISEASES	Powdery mildew, Cercospora spot, Phoma rot		**Benazol, WP** 0,6-0,8 kg/ha **ZIM 500, SC** 0,6-0,8 l/ha **Azorro, SC** 0,6-1,0 l/ha			**Titul 390, CSC** 0,26 l/ha **Titul DUO, CSC** 0,3-0,4 l/ha **Vintage, ME** 0,6-0,8 l/ha	**Mysteria, ME** 1,0-1,25 l/ha **Titul Trio, CSC** 0,4-0,6 l/ha **Daizy, SE** 0,6-0,8 l/ha	**Dzhotto, SC** 0,2-0,3 l/ha			
DISEASES	Root and storage rots									**Kagatnik, SL** 2,0 l/ha	**Kagatnik, SL** 0,06 l/t
PESTS	Beet flea beetles, weevils, aphids, sod webworms, Pegomya betae, sugar beet weevil, cutworms			**Imidor, SL** 0,1-0,4 l/ha **Imidor Extra, SC** 0,1-0,4 l/ha **Pirelli, EC** 0,5-1,0 l/ha		**Faskord, EC** 0,1 l/ha **Espero Euro, OD** 0,2-0,5 l/ha	**Kinfos, EC** 0,25-0,4 l/ha **Beretta, OD** 0,3-0,4 l/ha		**Mekar, ME** 0,4-0,6 l/ha **Espero, SC** 0,1-0,2 l/ha **Yunona, ME** 0,2-0,4 l/ha		
Micro- and organo-mineral fertilizers for foliar dressings						**Ultramag Combi for beet** **Ultramag Boron** **Potassium Humate Sufler**	**Ultramag Potassium** **Ultramag Calcium** **Ultramag Phosphorus Active** **Ultramag Phosphorus Super** **Ultramag Super Sulfur-900**		**Biostim Beet** **Biostim Universal** **Biostim Growth**		
Microbiological fertilizers		**Biocomposite Destruct** **Biocomposite Correct** **Azafok**				**Biocomposite Correct**	**Azafok**				

Comprehensive protection of soybean



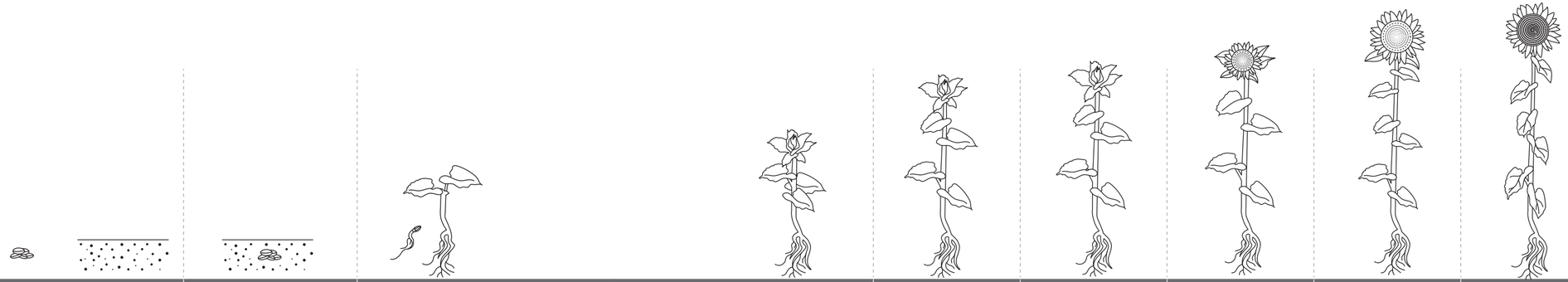
Harmful object	seeds	before sowing	sowing – before sprouting	leaf development	development of shoots	branching	budding	flowering	pod and seed development	seed filling	ripening
	00	00	08	10	12-13	21-49	51-59	60-70	71-77		82-85
WEEDS: Annual and perennial grass and dicotyledonous weeds		**Sprut Extra, SL** 1,4-2,5 l/ha									
WEEDS: Annual grass and dicotyledonous weeds		**Versia, OD** 3,0-4,0 l/ha	**Brig, SC** 2,5-3,5 l/ha **Zontran,** CSC 0,6-1,2 l/ha **Gals, EC** 0,7-1,0 l/ha								
WEEDS: Annual grass weeds and some dicotyledonous weeds			**Acetal PRO, EC** 2,0-3,0 l/ha		**Gals, EC** 0,7-1,0 l/ha						
WEEDS: Annual and some perennial dicotyledonous and grass weeds				**Hermes, OD**	0,7-1,0 l/ha						
WEEDS: Annual and some perennial dicotyledonous weeds, annual grass weeds				**Concept, OD**	0,6-1,0 l/ha						
WEEDS: Annual dicotyledonous weeds				**Tanto, CSC** **Kupazh, WG**	0,75-1,0 l/ha 0,006-0,008 kg/ha						
WEEDS: Annual dicotyledonous weeds, including common cocklebur				**Benito, CSC**	2,0-3,0 l/ha						
WEEDS: Annual dicotyledonous weeds, annual and perennial grass weeds				**Geizer, CSC**	2,0-3,0 l/ha						
WEEDS: Annual and perennial grass weeds				**Forward, OEC** **Healer, OEC**	0,9-2,0 l/ha 0,75-1,5 l/ha	**Censor Max, OEC** 0,6-1,6 l/ha **Censor, EC** 0,2-1,0 l/ha + Mikado					
DISEASES: Fusarium root rot, Ascochyta blight, Fusarium blight, seed mold	**Benefis Supreme, ME/ Benefis, ME** 0,6-0,8 l/t **Scarlet, ME** 0,4 l/t **Depozit Supreme, ME/ Depozit, ME** 1,0-1,2 l/t **Heraklion, SC** 1,0-1,2 l/t **Puaro, SC** 1,0-1,25 l/t										
DISEASES: Ascochyta blight, canker, Septoria blight, Fusarium blight, Cercospora spot, downy mildew				**Vintage, ME** 0,6-0,8 l/ha	**Daizy, SE** 0,6-0,8 l/ha	**Mysteria, ME** 1,0-1,2 l/ha		**Azorro, SC** 0,6-1,0 l/ha			
PESTS: Seedling pests	**Imidor PRO, SC** 2,0-2,5 l/t										
PESTS: Sod webworms, soybean pod borer, cotton budworm, lima bean pod borer				**Kinfos, EC** 0,3-0,5 l/ha **Yunona, ME** 0,2-0,4 l/ha	**Pirelli, EC** 0,8-1,0 l/ha	**Macleod, SC** 1,0-1,3 l/ha	**Espero, SC** 0,15-0,2 l/ha				
PESTS: Spider mite				**Akardo, CSC** 0,4-0,5 l/ha **Kinfos, EC** 0,3-0,5 l/ha	**Mekar, ME** 0,4-0,6 l/ha **Pirelli, EC** 0,8-1,0 l/ha	**Diflomite, SC** 0,3 l/ha	**Karachar, EC** 0,4 l/ha				
Dessication and prevention of pod shatter											**Tongara, SL** 1,5-2,0 l/ha **Selfi** 1,0 l/ha
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings	**Biostim Start** **Potassium Humate Sufler**			**Biostim Oilseed** **Biostim Growth** **Biostim Universal**	**Ultramag Combi for legumes, Ultramag Molybdenum** **Ultramag Boron, Ultramag Phosphorus Active/Super** **Ultramag Super Sulfur-900 / Цинк-700**		**SC2020**		**Ultramag Potassium**		
Microbiological fertilizers	**Biocomposite Correct** **Azafok**	**Biocomposite Correct** **Biocomposite Destruct** **Azafok**		**Biocomposite Correct**	**Azafok**						
Inoculant	**Rizoform Soybean**										

Comprehensive protection of peas



Harmful object	seed	before sowing	sowing – before sprouting	seedlings	shooting			stem branching	budding	flowering	pod formation	seed filling	seed ripening
					1-3 leaves	3-5 leaves	5-6 leaves						
	00	00	01-05	07-09	10-12	13-15	16	31-39	51-55	61-67	71-79		81
WEEDS – Annual grass and dicotyledonous weeds		**Sprut Extra, SL** 1,4-2,5 l/ha											
WEEDS – Perennial grass and dicotyledonous weeds		**Sprut Extra, SL** 2,5 - 4,0 l/ha											
WEEDS – Annual and some perennial dicotyledonous and grass weeds					**Hermes, OD** 0,7-0,9 l/ha		**Geizer, CSC** 2,0-3,0 l/ha						
WEEDS – Annual dicotyledonous weeds, including those resistant to MCPA							**Benito, CSC** 1,5-3,0 l/ha						
WEEDS – Annual dicotyledonous weeds						**Lintaplant, SL / Kronverk, SL** 0,5-0,8 l/ha							
WEEDS – Annual grass weeds					**Forward, OEC** 0,9-1,2 l/ha								
WEEDS – Perennial grass weeds					**Forward, OEC** 1,2-2,0 l/ha								
DISEASES – Fusarium root rot, Ascochyta blight, Fusarium blight, seed mold	**Scarlet, ME** 0,3-0,4 l/t **Depozit, ME** 1,0-1,2 l/t **Depozit Supreme, ME** 1,0-1,2 l/t **Heraklion, SC** 1,0-1,2 l/t **Puaro, SC** 1,0-1,25 l/t												
DISEASES – Ascochyta blight, canker, rust, powdery mildew				**Vintage, ME** 0,8-1,0 l/ha		**Titul DUO, CSC** 0,32-0,4 l/ha		**Daizy, SE** 0,6-0,8 l/ha					
PESTS – Sod webworms, pea moth, spider mite, pea weevil, pea aphid				**Kinfos, EC** 0,25-0,4 l/ha		**Faskord, EC** 0,1 l/ha		**Espero, SC** 0,1-0,2 l/ha					
PESTS – Seedling pests	**Imidor PRO, SC** 0,75- 1,25 l/t												
Plant growth regulator	**Imidor PRO, SC** 0,75- 1,25 l/t												
Dessication													**Tongara, SL** 1,5-2,0 l/ha
Prevention of pod shatter													**Selfi** 1,0 l/ha
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings	**Potassium Humate Sufler Biostim Start Ultramag Molybdenum**				**Ultramag Combi for legumes Ultramag Boron**	**Ultramag Molybdenum Ultramag Phosphorus Active/ Super**	**Ultramag Super Sulfur-900**	**Biostim Universal Biostim Oilseed**		**SC2020**		**Ultramag Potassium**	
Microbiological fertilizers	**Biocomposite Correct Azafok**	**Biocomposite Destruct**			**Biocomposite Correct**	**Azafok**							
Inoculant	**Rizoform Peas**												

Comprehensive protection of sunflower



	Harmful object	seed; before sowing	sowing – before sprouting	seedlings	2-4 true leaves	6-8 true leaves	budding	head formation	seed ripening	ripeness
		00	01-03	05-10	12-14	15-18	51-59	71-79	85-89	92
DISEASES	Stem blight, white mold (foot form), grey mold (seed infection), Fusarium root rot, seed mold	**Scarlet, ME** 0,4 l/t **Heraklion, SC** 1,6-2,0 l/t **Messer, ME** 5 l/t **Depozit Supreme, ME** 1,0-1,2 l/t								
DISEASES	Phoma rot, dry rot of heads, Alternaria blight, white and grey mold, rust			**Titul DUO, CSC** 0,4-0,5 l/ha	**Mysteria, ME** 1,0-1,25 l/ha **Daizy, SE** 0,6-0,8 l/ha	**Titul Trio, CSC** 0,4-0,6 l/ha				
PESTS	Wireworms, Opatnim sabulosum, etc.	**Imidor PRO, SC** 15 l/t **Harita, SC** 4,7-5,8 l/t								
PESTS	Cut worms, cabbage moth, cotton budworm, sod webworms			**Kinfos, EC** 0,25-0,4 l/ha **Macleod, SC** 1,0-1,3 l/ha	**Espero, SC** 0,15-0,2 l/ha **Scuter, ME** 0,3-0,4 l/ha	**Yunona, ME** 0,2-0,4 l/ha **Porfir, SC** 0,1-0,15 l/ha	**Sparring, OD** 0,1-0,3 l/ha			
WEEDS	Annual grass and dicotyledonous weeds	**Versia, OD** 3,0-4,0 l/ha								
WEEDS	Annual grass and dicotyledonous weeds	**Sprut Extra, SL** 1,4-2,5 l/ha	**Acetal PRO, EC** 2,0-3,0 l/ha **Brig, SC** 2,0-3,5 l/ha **Estamp, EC** 3,0-6,0 l/ha		**Acetal PRO, EC** 3,0 l/ha **Bravura, SC** 2,0-2,5 l/ha					
WEEDS	Annual grass and dicotyledonous weeds	**Sprut Extra, SL** 2,5-4,0 l/ha								
WEEDS	Annual and some perennial dicotyledonous weeds				**Sanflo, WG**** 0,025-0,05 kg/ha **Flamenco, WG** 0,02-0,025 kg/ha					
WEEDS	Annual and some perennial dicotyledonous and grass weeds				**Hermes, OD*** 0,9-1,0 l/ha **Hermes Forte, OD*** 1,0-1,5 l/ha					
WEEDS	Annual and perennial grass weeds			**Forward, OEC** 0,9-2,0 l/ha	**Healer, OEC** 0,75-1,5 l/ha	**Censor, EC** 0,2-1,0 l/ha + Mikado				
Dessication									**Tongara, SL** 1,5-2,0 l/ha	
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings		**Potassium Humate Sufler** **Biostim Start**			**Ultramag Phosphorus Active/ Super**					
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings					**Ultramag Combi for oilseeds** **Ultramag Super Zinc-700** **Ultramag Super Sulfur-900**	**Ultramag Chelate Zn-15** **Biostim Universal** **Biostim Oilseed**	**Ultramag Boron** **Potassium Humate Sufler**			
Microbiological fertilizers		**Biocomposite Correct** **Biocomposite Destruct** **Azafok**		**Biocomposite Correct** **Azafok**						

** Hermes, OD, Hermes Forte, OD: for imidazolinone-resistant sunflower varieties and hybrids*
*** Sanflo, WG: for tribenuron-methyl resistant sunflower varieties and hybrids*

Comprehensive protection of maize

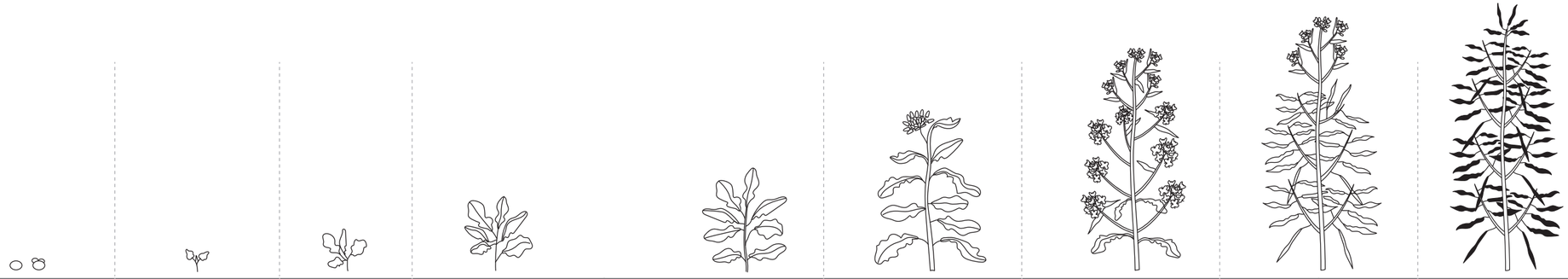
Harmful object	seed; before sprouting	seedlings	3-5 leaves	5-7 leaves	stem elongation	tasselling - flowering	harvest formation - ripening
	00	10	13-15	17	31-39	51-65	85-89
DISEASES — Boil smut, head smut, Fusarium root and foot rots, Fusarium blight, seed and ear mold	**Scarlet, ME** 0,4 l/t **Depozit Supreme, ME** 1,0-1,2 l/t			**Titul Trio, CSC** 0,4-0,6 l/ha	**Daizy, SE** 0,6-0,8 l/ha	**Mysteria, ME** 1,0-1,25 l/ha	
PESTS — Wireworms, cut worms	**Imidor PRO, SC** 12,5-15 l/t						
PESTS — European corn borer, sod webworms, cotton budworm, polyphagous pests, aphids, leafhoppers, etc.		**Kinfos, EC** 0,25-0,4 l/ha	**Faskord, EC** 0,15-0,25 l/ha	**Espero, SC** 0,15-0,2 l/ha **Macleod, SC** 1,0-1,3 l/ha	**Yunona, ME** 0,2-0,4 l/ha **Scuter, ME** 0,3-0,4 l/ha	**Porfir, SC** 0,1-0,15 l/ha	
WEEDS — European corn borer, sod webworms, cotton budworm, polyphagous pests, aphids, leafhoppers, etc.	**Sprut Extra, SL** 1,4-4,0 l/ha		**Октава, МД** 0,8-1,0 l/ha **Kassius, SP** 0,03+ 0,02 kg/ha (twice) 0,05 kg/ha (once)	**Deprimo, OD** 0,8-1,0 l/ha (to 8 leaves)			
WEEDS — Annual grass and dicotyledonous weeds	**Versia, OD** 3,0-4,0 l/ha **Acetal PRO, EC** 2,0-3,0 l/ha **Brig, SC** 2,0-3,5 l/ha		**Kassius, SP** 0,04 kg/ha + **Satellite, Ж** 0,2 l/ha				
WEEDS — Annual dicotyledonous weeds, including those resistant to 2,4-D and triazines			**Kupazh, WG** 0,015 kg/ha				
WEEDS — Annual dicotyledonous, annual and perennial grass weeds			**Cornegi, SE** 1,75-2,0 l/ha **Cornegi Plus, OD** 1,5-2,0 l/ha				
WEEDS — Annual and perennial dicotyledonous weeds			**Drotik, CSC** 0,75-1,2 l/ha **Damba, SL** 0,4-0,8 l/ha				
WEEDS — Annual dicotyledonous weeds, including those resistant to 2,4-D and MCPA, some perennial dicotyledonous weeds			**Primadonna, SE** 0,6-0,9 l/ha **Primadonna Super, CSC** 0,4-0,75 l/ha				
WEEDS — Thistle, chamomile, and lettuce species			**Lornet, SL** 1,0 l/ha				
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings	**Biostim Start**		**Ultramag Chelate Zn-15**	**Ultramag Super Zinc-700**			
			Ultramag Combi for corn	**Ultramag Phosphorus Active**	**Ultramag Phosphorus Super**	**Ultramag Super Sulfur-900**	
		Potassium Humate Sufler			**Ultramag Boron**	**Ultramag Potassium**	
			Biostim Growth		**Biostim Universal**	**Biostim Maize**	
Microbiological fertilizers	**Biocomposite Destruct** **Biocomposite Correct** **Azafok**		**Biocomposite Correct** **Azafok**				

Comprehensive protection of fibre flax and oilseed flax

Harmful object		seed	before sowing	sowing - seedlings sprouting	seedlings	‘herringbone’ phase	budding	flowering	ripening
		00	00	00	10	14-16	55	65	83-85
DISEASES	Canker, mottle disease	**Tebu 60, ME** 0,4-0,5 l/t			**Vintage, ME** 0,6-1,0 l/ha				
PESTS	Large flax flea beetles: Aphthona euphorbiae, Aphthona flaviceps, etc.	**Imidor PRO, SC** 2,0-2,5 l/t							
PESTS	Flea beetles, Laspeyresia, thrips, silver moth			**Karachar, EC** 0,1-0,15 l/ha	**Faskord, EC*** 0,1-0,15 l/ha				
WEEDS	Annual grass and dicotyledonous weeds		**Sprut Extra, SL*** 1,4-2,5 l/ha						
WEEDS	Perennial grass and dicotyledonous weeds		**Sprut Extra, SL*** 2,5-4,0 l/ha						
WEEDS	Annual grass weeds			**Forward, OEC*** 0,9-1,2 l/ha	**Healer, OEC** 0,75-1,0 l/ha	**Censor Max, OEC*** 0,6-0,7 l/ha			
WEEDS	Perennial grass weeds (couch grass)			**Forward, OEC*** 1,2-2,0 l/ha	**Healer, OEC** 1,0-1,5 l/ha	**Censor Max, OEC*** 1,4-1,6 l/ha			
WEEDS	Annual dicotyledonous weeds, including those resistant to 2,4-D and MCPA, and some perennial dicotyledonous weeds					**Zinger, WP** 0,007-0,01 kg/ha **Zinger, WP** 0,005-0,007 kg/ha+ **Lintaplant, SL** 0,3 l/ha **Kupazh, WG*** 0,025 kg/ha **Lornet, SL*** 0,1-0,3 l/ha **Fenizan, SL*** 0,14-0,2 l/ha			
WEEDS	Annual dicotyledonous weeds					**Lintaplant, SL** 0,8-1,0 l/ha **Kronverk, SL*** 0,8-1,0 l/ha			
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings		**Biostim Start**			**Biostim Oilseed** **Biostim Universal** **Ultramag Boron**	**Ultramag Super Sulfur-900** **Ultramag Combi for oilseeds** **Ultramag Phosphorus Active**	**Ultramag Potassium** **Potassium Humate Sufler** **Ultramag Phosphorus Super**		
Microbiological fertilizers		**Biocomposite Correct** **Azafok**	**Biocomposite Correct** **Biocomposite Destruct** **Azafok**	**Biocomposite Correct** **Azafok**					

** The product is registered for fibre flax and oilseed flax*

Comprehensive protection of rapeseed



Harmful object		seeds; before sowing; before sprouting	seedlings	frondescence	rosette formation	stem formation	budding	flowering	pod formation	seed ripening
		00	07-10	11-19	21-29	31-39	50	61-65	71	81
DISEASES	Root rots, downy mildew, seed molding, Alternaria blight	**Scarlet, ME** 0,4 l/t								
DISEASES	Alternaria blight, Phoma rot, powdery mildew			**Titul 390, CSC** 0,26-0,32 l/ha		**Titul DUO, CSC** 0,4-0,5 l/ha	**Titul Trio, CSC** 0,4-0,6 l/ha	**Daizy, SE** 0,6-0,8 l/ha **Mysteria, ME** 1,0-1,25 l/ha		
PESTS	Crucifer flea beetles	**Imidor PRO, SC** 15-20 l/t **Harita, SC** 4,7-5,8 l/t	**Imidor, SL** 0,15 l/ha **Beretta, OD** 0,3-0,4 l/ha **Sparring, OD** 0,1-0,2 l/ha **Meadows, OD** 0,075-0,15 l/ha **Lokustin, SC** 0,2 l/ha **Pirelli, EC** 0,5 l/ha **Imidor Extra, SC** 0,15 l/ha							
PESTS	Common pollen beetle, crucifer flea beetles, diamond back moth, etc.			**Kinfos Neo, EC** 0,2-0,4 l/ha **Lokustin, SC** 0,2-0,4 l/ha **Pirelli, EC** 0,5-1,0 l/ha **Apex, OEC** 0,2-0,5 l/ha		**Espero, SC** 0,15-0,2 l/ha **Imidor, SL** 0,15-0,25 l/ha **Imidor Extra, SC** 0,15-0,2 l/ha **Karachar, EC** 0,1-0,15 l/ha	**Faskord, EC** 0,1-0,15 l/ha **Beretta, OD** 0,3-0,4 l/ha **Sparring, OD** 0,1-0,3 l/ha **Meadows, OD** 0,075-0,25 l/ha			
WEEDS	Annual and perennial dicotyledonous and grass weeds	**Sprut Extra, SL** 1,4-4,0 l/ha								
WEEDS	Annual grass and dicotyledonous weeds	**Gals, EC** 0,2 l/ha								
WEEDS	Annual and perennial dicotyledonous weeds			**Flamenco, WG** 0,015-0,025 kg/ha						
WEEDS	Annual and perennial dicotyledonous weeds			**Reper, CSC** 0,8-1,0 l/ha		**Reper Trio, OD** 0,2-0,3 l/ha				
WEEDS	Annual grass weeds, annual and perennial dicotyledon ous weeds (for imidazolinone-resistant rapeseed varieties and hybrids)			**Ilion, OD*** 0,8-1,2 l/ha						
WEEDS	Thistle, chamomile, knotweed, and lettuce species			**Lornet, SL** 0,3-0,4 l/ha						
WEEDS	Annual grass weeds			**Forward, OEC** 0,9-1,2 l/ha		**Healer, OEC** 0,75-1,0 l/ha				
WEEDS	Perennial grass weeds			**Forward, OEC** 1,2-2,0 l/ha		**Healer, OEC** 1,0-1,5 l/ha				
Dessication										**Tongara, SL** 1,5-2,0 l/ha
Prevention of pod shatter										**Selfi** 1,0 l/ha
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings		**Potassium Humate Sufler Biostim Start**		**Ultramag Molybdenum** **Biostim Growth**						
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings						**Ultramag Phosphorus Active**	**Ultramag Phosphorus Super**	**Ultramag Super Sulfur-900**		
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings				**Ultramag Combi for oilseeds**		**Ultramag Boron**	**Biostim Oilseed**	**Biostim Universal**		
Microbiological fertilizers		**Biocomposite Correct Biocomposite Destruct Azafok**								

** Ilion, OD: for imidazolinone-resistant spring rapeseed*

Comprehensive protection of potato

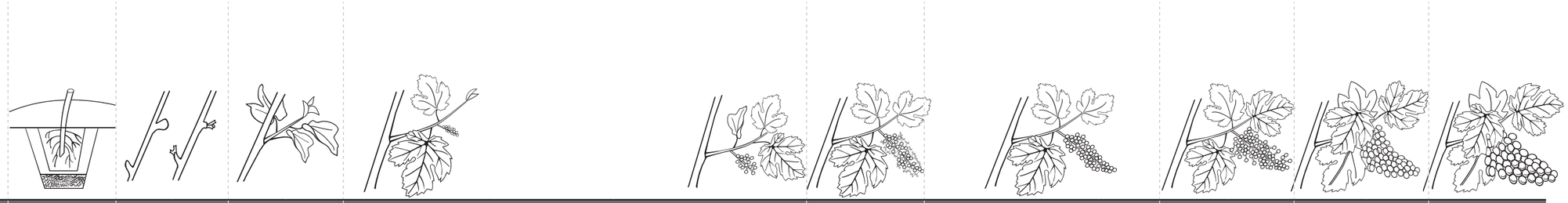
Harmful object		tubers; before planting	before sprouting	sprouting	frondescence (height <5 cm)	frondescence (height <15 cm)	budding	flowering and tuber formation	tuber ripening	top wilting	placement in storage
		00	03	09	11	19	51	61	69-89	91	
DISEASES	Rhizoctonia blight, Fusarium blight	**Kagatnik, SL** 0,5-0,8 l/t **Depozit, ME** 0,25-0,4 l/t **Depozit Supreme, ME** 0,25-0,4 l/t **Puaro, SC** 0,25-0,4 l/t									
	Late blight and Alternaria blight			**Metamil MC, WG** 2,0-2,5 kg/ha		**Beludzhi, SC** 2,0-2,3 l/ha	**Stakkato, L** 3,0-5,0 l/ha		**Indigo, SC** 4,0-5,0 l/ha		
	Late blight			**Shirma, SC** 0,3-0,4 l/ha							
	Various tuber rots										**Kagatnik, SL** 0,25-0,4 l/t **Stakkato, L** 1,0-3,0 l/t
PESTS	Wireworms, Colorado beetle, aphids	**Imidor PRO, SC** 0,2-0,25 l/t **Bombarda, SC** 0,5-0,7 l/t									
	Colorado beetle, potato tuber moth, ladybirds, aphids			**Imidor, SL** 0,1 l/ha	**Faskord, EC** 0,07-0,1 l/ha	**Kinfos, EC** 0,15-0,2 l/ha **Imidor Extra, SC** 0,1 l/ha	**Beretta, OD** 0,4 l/ha **Porfir, SC** 0,04-0,05 l/ha	**Sparring, OD** 0,15-0,2 l/ha			
WEEDS	Annual and perennial dicotyledonous and grass weeds		**Sprut Extra, SL** 1,4-4,0 l/ha								
	Annual grass and dicotyledonous weeds		**Brig, SC** 2,0-3,5 l/ha								
	Annual dicotyledonous and grass weeds				**Zontran, CSC** 1,1-1,4 l/ha (once)						
			Zontran, CSC 1 l/ha (first treatment)		**Zontran, CSC** 0,4-0,6 l/ha (second treatment)						
	Perennial grass weeds (couch grass), annual grass weeds, and some dicotyledonous weed			**Kassius, SP** 0,05 kg/ha + **Satellite, L** 0,2 l/ha							
	Annual dicotyledonous weeds		**Lintaplant, SL** 1,2 l/ha			**Lintaplant, SL** 1,2 l/ha					
Micro- and organo-mineral fertilizers for pre-sowing seed treatments, root top and foliar dressings		**Potassium Humate Sufler** **Biostim Start**			**Ultramag Potassium** **Ultramag Calcium**	**Ultramag Combi for potato** **Ultramag Chelate Zn-15/ Mn-13/ Fe-13/ Cu-15**	**Biostim Universal** **Ultramag Boron** **Potassium Humate Sufler**		**Ultramag Phosphorus Active/Cynep** **Ultramag Super Sulfur-900**		
Microbiological fertilizers		**Biocomposite Correct** **Biocomposite Destruct** **Azafok**				**Biocomposite Correct** **Azafok**					

Comprehensive protection of gardens (apple trees)

Harmful object	during orchard set-up	'green cone'	budding	advancing - detachment of buds	'pink bud'	flowering	end of flowering	start of fruit setting	'hazel' fruit	'walnut' fruit	fruit growth	fruit ripening	after harvest
DISEASES													
Scab, blossom wilt		**Indigo, SC** 3,0-5,0 l/ha		**Katrex, SC** 4,0-6,0 l/ha	**Kaperang, SC** 2,5-3,0 l/ha			**Katrex, SC** 4,0-6,0 l/ha					**Indigo, SC** 3,0-5,0 l/ha
Alternaria blight, fruit rot, storage rot, powdery mildew			**Kantor, CSC** 0,65-0,75 l/ha									**Insignia, OD** 0,8-1,0 l/ha	
Scab			**Granny, SC** 1,0-1,4 l/ha			**Dzhotto, SC** 0,2-0,3 l/ha			**Shirma, SC** 0,5-0,75 l/ha				
Scab, powdery mildew, Phyllosticta leaf spot, fruit rot, fruit rot during storage		**Sulphur 400, SC** 6-16 l/ha	**Medeya, ME** 0,8-1,2 l/ha	**Riviera, ME** 0,8-1,0 l/ha		**Stakkato, L** 5,0-8,0 l/ha		**Capella, ME** 0,8-1,0 l/ha			**Biocomposite PRO, L** 1,0-3,0 l/ha		
PESTS													
Apple blossom weevil, thrips				**Theja, SC** 0,18-0,3 l/ha **Meadows, OD** 0,18-0,24 l/ha									
Mites				**Akardo, CSC** 0,4-0,6 l/ha		**Mekar, ME** 0,75-1,0 l/ha		**Diflomite, SC** 0,24-0,45 l/ha					
Leafroller moths, aphids		**Meadows, OD** 0,18-0,36 l/ha **Karachar, EC** 0,4 l/ha		**Kinfos, EC** 0,4-0,5 l/ha			**Meadows, OD** 0,18-0,36 l/ha	**Theja, SC** 0,3-0,45 l/ha		**Porfir, SC** 0,15-0,3 l/ha			
Apple blossom worm					**Twingo Euro, OD** 0,75-1,2 l/ha **Theja, SC** 0,3-0,45 l/ha **Meadows, OD** 0,18-0,36 l/ha **Porfir, SC** 0,15-0,3 l/ha			**Theja, SC** 0,3-0,45 l/ha **Porfir, SC** 0,15-0,3 l/ha **Batardo, OD** 0,4-0,6 l/ha **Macleod, SC** 1,0-1,3 l/ha	**Twingo, SC** 0,75-1,2 l/ha **Twingo Euro, OD** 0,75-1,2 l/ha **Meadows, OD** 0,18-0,36 l/ha			**Theja, SC** 0,3-0,45 l/ha **Yunona, ME** 0,4-0,5 l/ha	
Armored scales				**Apex, OEC** 0,5-0,8 l/ha				**Akardo, CSC** 0,4-0,6 l/ha					
Improved survival of nursery plants, root development	**Mikoryze Korennik**												
Growth regulator to stimulate fruit formation						**Gibbera, SL**							
Fruit thinning								**Saldo, SL**					
Protection from sunburns										**Furshet**			
FOLIAR DRESSINGS													
Increased productivity and resistance to stress			**Biostim Universal**			**Ultramag Phosphorus Active**		**Ultramag Phosphorus Super**		**Ultramag Super Sulfur-900**			
Improved balance of Fe, Cu, Mn, and Zn			**Ultramag Chelate Fe-13**			**Ultramag Chelate Cu-15** **Ultramag Super Zinc-700**		**Ultramag Chelate Mn-13**		**Ultramag Chelate Zn-15**			**Ultramag Super Zinc-700** **Ultramag Chelate Zn-15**
Improved fruit setting and growth				**Ultramag Boron**	**Ultramix Growth**			**Ultramag Boron**			**Ultramix Development**		**Ultramag Boron**
Improved quality and sugar content of fruit										**Ultramag Potassium**			
Improved quality of fruit and resistance to physiological spot during storage					**Ultramag Calcium / Calcium Active**						**SC2020**		
Microbiological preparation for accelerating decomposition leaf litte													**Biocomposite Destruct**

To protect gardens from hail and birds, Schelkovo Agrohim suggests using the net produced by Betanet LLC

Comprehensive protection of grapes



Harmful object		establishing a vineyard	gemmation and budding	3-5 leaves	formation of inflorescences: advancing of inflorescences	formation of inflorescences: loosening of inflorescences	flowering	formation and growth of berries: 'rice' berry	formation and growth of berries: 'pea' berry	prior to berry bounding in bunches	beginning of berry colouring	ripeness
DISEASES	Mildew, black spot			**Kaperang, SC** 2,5-3,0 l/ha **Granny, SC** 1,0-1,4 l/ha		**Shirma, SC** 0,5-0,75 l/ha **Metamil MC, WG** 2,5 kg/ha	**Kaperang, SC** 2,5-3,0 l/ha **Granny, SC** 1,0-1,4 l/ha	**Shirma, SC** 0,5-0,75 l/ha **Metamil MC, WG** 2,5 kg/ha				
DISEASES	Mildew, black spot, grey mold		**Indigo, SC** 4,0-6,0 l/ha							**Indigo, SC** 4,0-6,0 l/ha		
DISEASES	Powdery mildew, grey mold		**Sulphur 400, SC** 10-16 l/ha	**Titul 390, CSC** 0,15-0,25 l/ha		**Dzhotto, SC** 0,2-0,3 l/ha		**Titul 390, CSC** 0,15-0,25 l/ha	**Sulphur 400, SC** 10-16 l/ha	**Dzhotto, SC** 0,2-0,3 l/ha		
DISEASES	Powdery mildew, grey mold, black rot, black spot, Alternaria blight			**Medeya, ME** 0,8-1,2 l/ha **Capella, ME** 0,8-1,0 l/ha		**Riviera, ME** 0,6-0,7 l/ha		**Medeya, ME** 0,8-1,2 l/ha	**Capella, ME** 0,8-1,0 l/ha	**Riviera, ME** 0,6-0,7 l/ha		
DISEASES	Grey mold, black rot, berry rots			**Kantor, CSC** 1,7-2,6 l/ha			**Kantor, CSC** 1,7-2,6 l/ha last treatment: at least 10 days before harvesting					
DISEASES	Mildew, powdery mildew, grey mold			**Stakkato, L** 5,0-8,0 l/ha			**Biocomposite PRO, L** 1,0-3,0 l/ha					
PESTS	Spider mite, grape erineum mite			**Akardo, CSC** 0,4 l/ha **Mekar, ME** 0,75-1,0 l/ha **Diflomite, SC** 0,2-0,4 l/ha				**Akardo, CSC** 0,4 l/ha **Mekar, ME** 0,75-1,0 l/ha	**Diflomite, SC** 0,2-0,4 l/ha			
PESTS	European grapevine moth			**Tagor, EC** 1,2-3,0 l/ha **Karachar, EC** 0,32-0,48 l/ha **Twingo, SC** 0,75-1,2 l/ha **Theja, SC** 0,2-0,3 l/ha		**Batardo, OD** 0,3-0,4 l/ha **Macleod, SC** 0,8-1,0 l/ha **Kinfos, EC** 0,4-0,5 l/ha **Porfir, SC** 0,15-0,25 l/ha		**Tagor, EC** 1,2-3,0 l/ha **Kinfos, EC** 0,4-0,5 l/ha **Karachar, EC** 0,32-0,48 l/ha **Twingo, SC** 1,2 l/ha	**Theja, SC** 0,2-0,3 l/ha **Batardo, OD** 0,3-0,4 l/ha **Macleod, SC** 0,8-1,0 l/ha	**Yunona, ME** 0,3-0,4 l/ha	
PESTS								**Porfir, SC** 0,15-0,25 l/ha				
PESTS	Citrus flatid planthopper, leafhoppers			**Meadows, OD** 0,15-0,3 l/ha **Akardo, CSC** 0,4 l/ha				**Akardo, CSC** 0,4 l/ha	**Meadows, OD** 0,15-0,3 l/ha			
PESTS	Brown marmorated stinkbug									**Twingo, SC** 1,2 l/ha **Karachar, EC** 0,32-0,48 l/ha		
Improved survival during planting, growth, and nutrition		**Mikoryze Korennik**										
Protection from sunburns										**Furshet**		
FOLIAR DRESSINGS	Increased productivity and resistance to stress			**Biostim Universal**		**Ultramag Phosphorus Active**	**Ultramag Phosphorus Super**		**Ultramag Super Sulfur-900**			
FOLIAR DRESSINGS	Prevention and management of mineral deficiency			**Ultramag Super Zinc-700**		**Ultramag Chelate Cu-15**	**Ultramag Chelate Mn-13**	**Ultramag Chelate Zn-15**	**Ultramag Chelate Fe-13**			
FOLIAR DRESSINGS				**Ultramix Growth**				**Ultramix Development**				
FOLIAR DRESSINGS	Management of potassium and boron deficiency, improved blossoming and setting, enhanced accumulation of sugars in crops					**Ultramag Boron**		**Ultramag Boron**		**Ultramag Potassium**		
FOLIAR DRESSINGS	Improved quality of berries and resistance to rots					**SC2020**		**Ultramag Calcium**	**SC2020**			

To protect gardens from hail and birds, Schelkovo Agrohim suggests using the net produced by Betanet LLC

Fungicidal seed treatments

Insecticidal seed treatments

Insecto-fungicidal seed treatments

imazalil 50 g/L + metalaxyl 40 g/L + tebuconazole 30 g/L

Fungicidal seed treatment intended for pre-planting treatment of cereal and soybean seeds

ADVANTAGES

- **Exceptional action against root rot of various etiologies in conditions of increased infectious background**
- **Wide spectrum of action and increased fungicidal activity due to the synergy of the three components**
- **Maximum seed protection from outside and inside due to innovative microemulsion mold**
- **Prolonged protection of the seedling**
- **Stimulating growth and forming a well-developed root system that is resistant to stress factors**

Mode of action

The preparation contains three active ingredients - imazalil, metalaxyl, and tebuconazole that supplement each other and demonstrate pronounced synergy by ensuring high efficiency against seed infections affecting cereal crops at earlier development stages.

Metalaxyl has a systemic action and protect seeds against surface infection from the inside. It inhibits biosynthesis of nucleic acids in fungi.

Imazalil has a local systemic action and protects roots. Imazalil inhibits synthesis of ergosterol that has effect on permeability of pathogen cell membranes.

Tebuconazole has a systemic translocating action and protects the plantlet. Tebuconazole inhibits biosynthesis of sterol in pathogenic organisms, which results in changes in the membrane (its permeability), reduced reproduction and, eventually, death of the pathogenic cell.

imidazoles, phenylamides, triazoles	**5 years**
microemulsion	**- 10°C to + 30°C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective period

Bio-effect lasts from seed sprouting stage to tubing stage and until appearance of a flag of cereal crops. Due to its systemic effect, the preparation is efficient against surface and internal seed infection, and a number of disease excitants affecting the plant during a later vegetation period.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds of cereal crops and soybeans.

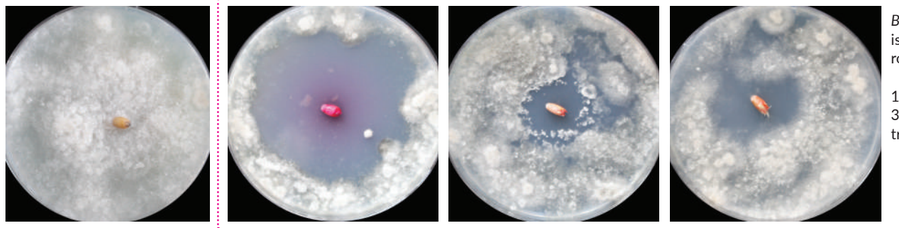
Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Dust-brand, stinking smut, Fusarium root rot, Helminthosporium root rot, seed molding, including Alternaria seed infection, powdery mildew (at earlier stages of development)	0,6-0,8	10	Treatment of seeds beforehand or immediately before sowing
Winter wheat	Snow mold, Rhizoctonia root rot	0,6-0,8	10	
Spring barley, including brewing barley	Dust-brand, false dust-brand, stone smut, Fusarium root rot, Helminthosporium root rot, Pythium rot, seed molding, netted spotting, including Alternaria seed infection	0,6-0,8	10	
Soybeans	Fusarium root rot, Fusarium withering, Ascochyta blight, seed molding	0,6-0,8	10	

Application efficacy

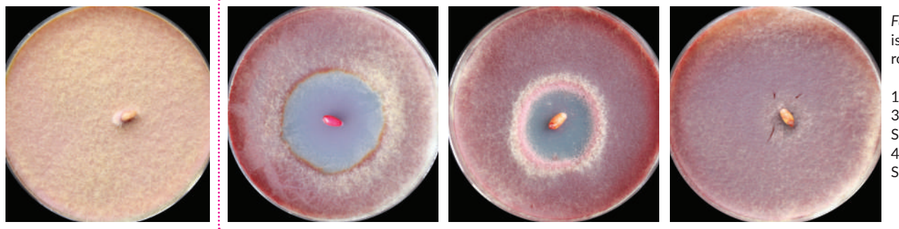
Fungicidal activity of seed treatments against root rot pathogens



1. 2. 3. 4.

Bipolaris sorokiniana – is the causal agent of common root rot (helminthosporiosis)

1. Control; 2. Benefis, ME; 3-4. 2- and 4-component seed treatments, SC



1. 2. 3. 4.

Fusarium culmorum – is the causal agent of Fusarium root rot

1. Control; 2. Benefis, ME; 3. 4-component seed treatment, SC; 4. 2-component seed treatment, SC

imazalil 50 g/L + tebuconazole 30 g/L + mefenoxam 20 g/L

Fungicidal seed treatment for cereal and soybean seeds in the NANOformulation

ADVANTAGES

- **Unique effect against root rots of various aetiologies with a lower active substance concentration**
- **Wide spectrum of action and high efficacy under conditions of high infection load**
- **The best protection of seeds from both inside and outside ensured by the NANOformulation**
- **Extended protection of seedlings**
- **Promotion of growth and formation of a well-developed root system resistant to stress factors**
- **Reduced toxic load on the agrocenosis**

imidazoles, phenylamides, triazoles	**5 years**
microemulsion	**- 10°C to + 30°C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

The preparation contains three active ingredients (imazalil, tebuconazole and mefenoxam) that supplement each other and demonstrate pronounced synergy by ensuring high efficiency against seed-borne infections affecting crops at earlier development stages.

Imazalil belongs to imidazoles. It has a local systemic action and protects roots. It is highly effective against pathogens that cause root rots as well as pathogens that are resistant to benzimidazoles. It has a long-term effect against air-borne infections, such as powdery mildew (at early stages) and Pyrenophora. The effect of imazalil is based on inhibiting the synthesis of ergosterol which affects the permeability of pathogen cell membranes.

Tebuconazole is a third-generation triazole. It has a systemic translocating action. It has the broadest spectrum of action against phytopathogens, with protective, eradicating and curative properties. It is effective against surface and intraseed infections. It primarily accumulates in the rhizosphere, where it protects seedlings from pathogens transmitted through seeds and prevents air-borne infections. It ensures a quick effect.

Tebuconazole inhibits the biosynthesis of ergosterol in pathogen cell membranes by suppressing C14 demethylation. The synthesis of D5-sterols also has an effect on metabolism, which distinguishes the active substance from other triazoles.

Mefenoxam, a phenylamide, has a systemic effect and spreads quickly in plants during growth. It protects roots and seedlings. It is effective against seed-borne and air-borne infections. It is extremely effective against pathogens that cause root rots.

Mefenoxam is an optically pure isomer of metalaxyl. The concentration of mefenoxam in the product is two times lower than in the reference seed treatment, while the biological efficacy remains high. It ensures that the toxic load on the agrocenosis is reduced.

Mefenoxam inhibits protein synthesis in fungi by suppressing ribosomal RNA synthesis.

Protective effect period

The biological effect lasts during the whole period from seed sprouting to tillering of cereal crops.

Rate of exposure

Rapid initial activity: the effect begins immediately upon seed treatment. The product penetrates the seedlings and spreads evenly throughout the plant during growth, protecting it from diseases later in the growth season.

Compatibility with other pesticide

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds of cereal crops and soybeans.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Dust-brand, stinking smut, Fusarium root rot, Helminthosporium root rot, seed molding, including Alternaria seed infection, powdery mildew (at earlier stages of development)	0,6-0,8	10	Treatment of seeds beforehand or immediately before sowing
Winter wheat	Snow mold, Rhizoctonia root rot	0,6-0,8	10	
Spring barley, including brewing barley	Dust-brand, false dust-brand, stone smut, Fusarium root rot, Helminthosporium root rot, Pythium rot, seed molding, netted spotting, including Alternaria seed infection	0,6-0,8	10	
Soybeans	Fusarium root rot, Fusarium withering, Ascochyta blight, seed molding	0,6-0,8	10	

Efficacy of seed treatments against *Fusarium culmorum*, the causal agent of Fusarium root rot *in planta* experiments

Suppression of root rot development shown in the group treated with Benefis Supreme, ME

Germinated seeds in the control group showing root rot symptoms

thiamethoxam 130 g/L + imidacloprid 90 g/L + fipronil 60 g/L

The first on the market three-component insecticidal seed protectant for cereal crops and potato tubers for the best protection of seedlings from soil-inhabiting and surface pests and long-term protection of crops during vegetation without additional spraying

ADVANTAGES

- **A new level of insecticidal protection of seeds and seedlings: a strong knockdown effect combined with long-term protection of the rhizosphere and the aerial part of plants**
- **Effective impact on larvae of all ages and imagos of soil-inhabiting and surface pests**
- **Triple toxic effect for the elimination of resistant populations and in case of high pest population numbers**
- **Growth-regulating effect**
- **Improved crop protection method by cancelling or reducing the number of insecticidal treatments in the growing period**
- **Highest efficacy irrespective of soil and climatic conditions**

neonicotinoids, phenylpyrazoles	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Contains two active ingredients of neonicotinoids class (imidacloprid and thiamethoxam) and one active ingredient of phenylpyrazoles class (fipronil).

Imidacloprid and *thiamethoxam* have an acute contact enteric action and strong systemic activity. They enter sprouts and young plants through the roots and protect them during the period of greatest vulnerability. Then they move acropetally to the aerial part of the plant and protect the new growth. Both neonicotinoids have a similar mode of action but differ by mobility in a plant. Thiamethoxam distributes quicker in a plant and has a higher systemic activity, thus protecting the green matter and the roots along the whole length, while imidacloprid circulates in the plant for a longer period, thus supporting the effect of thiamethoxam.

Fipronil is a broad-spectrum contact enteric insecticide with a moderate systemic activity. It affects the nervous system of insects by blocking gamma-aminobutyric acid receptors. This active ingredient has a high and long-term insecticide toxicity. It protects the seed area from pests. Can be consumed by plants from soil and seed tubers. Ensures reliable control of imagos of soil-inhabiting pests and their larvae of all ages.

Protective effect period

The biological effect lasts during the whole period from seed sprouting to tillering of cereal crops.

Rate of exposure

Quickly enters the seeds (tubers) and distributes in a plant as it grows. The death of pests occurs within several hours after contacting with seeds (tubers) or feeding on sprouts and plants.

Compatibility with other pesticides

Compatible with fungicidal seed treatments and other agrochemicals manufactured by Schelkovo Agrohim that are used for treating seeds of cereals and potatos .

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Bmb.
BOMBARDA SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Cereal flies, cereal leaf beetles	0,8-1,2	10	Treatment of seeds
Spring wheat	Wireworms	0,8-1,2		
Winter wheat	Ground beetle	0,8-1,2		
Spring and winter barley	Cereal flies, cereal leaf beetles	0,8-1,2		
Potato	Colorado beetle, wireworms	0,5-0,7		Presowing tuber treatment

thiram 400 g/L + tebuconazole 25 g/L + azoxystrobin 15 g/L

A three-component contact systemic fungicidal protectant with a partial bactericide effect for treatment of seeds of cereal crops, soybeans, peas and sunflower

ADVANTAGES

- **The most effective seed protectant in its class due to the emergence of 3 components: an antibacterial effect in combination with fungicidal protection**
- **A wider spectrum of effect on pathogens, including oomycetes**
- **Soil disinfection around the seed bed**
- **Active impact on biological and physiological processes in plants: strong stimulating effect**
- **Cost-effectiveness and highly effective protection**

Mode of action

Thiram is a basic contact fungicide with protective action of dithiocarbamates class. Thiram has a contact action, so it is efficient against oomycetes, pathogens causing root rot (helminthosporioses, fusarial rot), and seed molding both on the surface and in soil. Ensures soil disinfection around the seedbed and is retained in the soil up to 6 weeks.

Azoxystrobin is a strong fungicide with contact systemic action of strobilurins class. It inhibits the growth of conidia and initial growth of mycelium, prevents spore formation. It is highly effective against a wide spectrum of pests, including oomycetes.

Moreover, it has a pronounced physiological action: greening effect, prolongation of the life of leaves, increased resistance of plants to adverse conditions, such as frost, drought, etc.

Tebuconazole is in one of the first places among the components because of a broad spectrum of action and systemic properties ensuring protection of a seedling during the initial growth period.

dithiocarbamates, strobilurins, triazoles	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective effect period

The product is effective against superficial and internal seed infections as well as a number of pathogens that affect plants in a later period of vegetation.

Rate of exposure

The protective effect of the product starts from the time of seed treatment and protects the plant in the most defenseless period, from the seedling stage.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and other agrochemicals manufactured by Schelkovo Agrohim that are used for treating seeds of cereals, pulses, and oilseed crops.

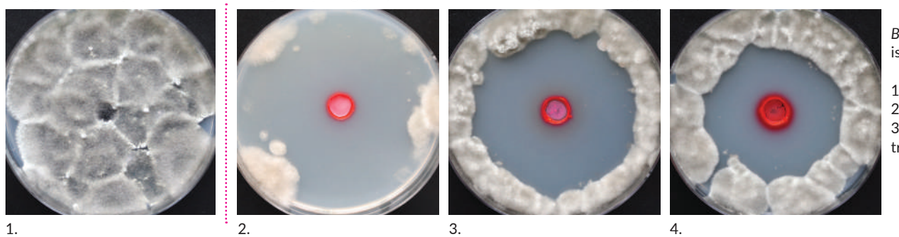
Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Stinking smut, loose smut, Helminthosporium and Fusarium root rots, seed molding, Septoria spot, alternaria seed infection	1,0-1,2	10	Pre-sowing seed treatment
Winter wheat	Fusarium mold	1,2	10	Pre-sowing seed treatment
Spring and winter barley	Covered smut, loose smut, Helminthosporium and Fusarium root rots, barley net blotch and stripe, seed molding, alternaria seed infection	1,0-1,2	10	Pre-sowing seed treatment
Soybean	Fusarium root rot, fusarium wilt, Ascochyta spot, seed molding, alternaria and bacterial seed infection	1,0-1,2	6-8	Pre-sowing seed treatment
Pea	Fusarium root rot, fusarium wilt, Ascochyta spot, seed molding, alternaria and bacterial seed infection	1,0-1,2	6-8	Pre-sowing seed treatment
Sunflower	False powdery mildew, white mold, grey mold, Fusarium root rot, seed molding, alternaria seed infection	1,6-2,0	10	Pre-sowing seed treatment

Application efficacy

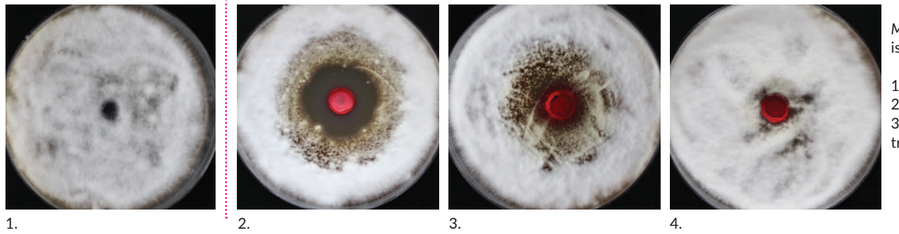
Fungicidal activity of seed treatments against pathogens (Well diffusion method, Biolaboratory, 2020)



1. 2. 3. 4.

Bipolaris sorokiniana - is a root rot pathogen

1. Control
2. Heraklion, SC
3-4. 2-, 4-component seed treatments



1. 2. 3. 4.

Microdochium nivale – is the causal agent of snow mold

1. Control
2. Heraklion, SC
3-4. 2-, 4-component seed treatments

fludioxonil 40 g/L + imazalil 40 g/L + metalaxyl 30 g/L

Fungicidal seed treatments intended for preseeding processing of soya, pea, chick pea seeds, and potato tubers during or before planting

ADVANTAGES

- **The best protection of seeds from both inside and outside ensured by the NANOformulation**
- **Control of the broadest range of seed-borne and soil infections**
- **The best efficacy against Fusarium pathogens**
- **Reliable control of root rots, including Pythium root rots**
- **Complete absence of retardant effect**
- **Protection and formation of strong roots**
- **Active promotion of green matter formation, starting from the early development phases of the crop**

phenylpyrroles, imidazoles, phenylamides	**5 years**
microemulsion	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Fludioxonil is a broad-spectrum contact fungicide with a long protective period. The mode of action of fludioxonil differs fundamentally from the substances of other chemical groups and is associated with the processes in the pathogen cells at the membrane transfer stage.

Imazalil has a local and systemic effect, protects the roots. The effect of imazalil is based on inhibiting the synthesis of ergosterol that affects the permeability of the pathogen cell membranes.

Metalaxyl has a systemic effect, protects seeds from surface and intraseed infections. It is well absorbed by the roots and moves to the stems and leaves. It inhibits the synthesis of the pathogen»s RNA, which leads to a slowdown and disruption of mitosis.

Protective effect period

The product is effective against superficial and internal seed infections as well as a number of pathogens that damage plants in a later period of vegetation.

Rate of exposure

The fungicidal effect occurs from the time of treatment and protects the plant in the most defenseless period.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds of legumes and oilseeds.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Pea	Root rots, Ascochyta spot, molding of seeds	1,0-1,2	6-8	Seed pretreatment in advance or before sowing
Soybean	Ascochyta spot, fusarium root rot, fusariosis, Cercospora spot, seed molding	1,0-1,2	6-8	Presowing seed treatment
Chickpea	Ascochyta spot, fusarium root rot, fusariosis, seed molding	1,0-1,2	6-8	Presowing seed treatment
Potato	Rhizoctonia root rot, fusariosis	0,25-0,4	10	Treatment of tubers before or during planting

Application efficacy

1. 2. 3. 4.

Effect of seed treatments on root and shoot growth and development of soybean:
1. Untreated control
2. Depozit, ME at 1.2 L/t
3-4. Other seed treatments

1. 2. 3. 4. 5. 6.

Effect of seed treatments on root and shoot growth and development of soybean:
1. Untreated control
2. Depozit, ME at 1.2 L/t
3-4. Other seed treatments

fludioxonil 40 g/L + imazalil 40 g/L + mefenoxam 15 g/L

A special-purpose fungicidal seed treatment for grain legume, industrial crop, etc.

ADVANTAGES

- **The best protection of seeds from both inside and outside ensured by the NANOformulation**
- **Control of the broadest range of seed-borne and soil infections with a lower active substance concentration**
- **The best efficacy against Fusarium pathogens**
- **Reliable control of root rots, including Pythium root rots**
- **Complete absence of retardant effect**
- **Protection and formation of strong roots**
- **Active promotion of green matter formation, starting from the early development phases of the crop**
- **Reduced toxic load**

phenylpyrroles, imidazoles, phenylamides	**5 years**
microemulsion	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Depozit Supreme, ME, seed treatment contains three active substances (fludioxonil, imazalil and mefenoxam) that supplement each other and demonstrate pronounced synergy. Because of this composition in the NANOformulation, the product works in four directions:

1. Reliably protects the seed from surface and intraseed infections, including deep tissue infections.

2. Decontaminates the soil around the seedbed, preventing soil infections of seeds and seedlings.

3. Prevents early-season air-borne diseases affecting the crops at early development phases.

4. Promotes the formation of strong and healthy roots and green matter, thus increasing crop resistance to adverse environmental factors.

Fludioxonil, a phenylpyrrole, has a contact action with long-term residual activity. It is highly effective against surface seed-borne and soil infections. It protects the seedbed from a wide range of phytopathogens, particularly Fusarium fungi. The mode of action of fludioxonil involves the inhibition of glucose phosphorylation during cellular respiration, which disrupts the functioning of fungal cell membranes and slows mycelium growth.

Fludioxonil is low-toxic for warm-blooded animals and humans. It has a sparing effect on soil microbiota.

Imazalil belongs to imidazoles. It has a local systemic action and protects roots. It is highly effective against pathogens that cause root rots as well as air-borne infections. The effect of imazalil is based on inhibiting the synthesis of ergosterol that affects the permeability of pathogen cell membranes.

Mefenoxam, a phenylamide, has a systemic effect and spreads quickly in plants during growth. It protects roots and seedlings. It is effective against seed-borne and air-borne infections. It is extremely effective against pathogens that cause root rots.

Mefenoxam is an optically pure isomer of metalaxyl. The concentration of mefenoxam in the product is two times lower than in the reference seed treatment, while the biological efficacy remains high. It ensures that the toxic load on the agrocenosis is reduced.

Mefenoxam inhibits protein synthesis in fungi by suppressing ribosomal RNA synthesis.

Protective effect period

The product is effective against superficial and internal seed infections as well as several pathogens that affect plants in a later period of vegetation.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds of legumes and oilseeds.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Soybean	Fusarium root rot, Ascochyta blight, Fusarium blight, seed mould	1,0-1,2	6-8	Seed treatment immediately before sowing or in advance
Peas	Root rots, Ascochyta blight, seed mould		6-8	
Chickpeas	Fusarium root rot, Ascochyta blight, Fusarium blight, seed mould		6-8	
Lupine	Fusarium root rot, Fusarium wilt, seed mould, including Alternaria seed infection		8-10	
Potato	Rhizoctonia root rot, Fusarium blight	0,25-0,4	10	Pre-planting treatment of tubers
Maize	Bubble bunt, fusarium root and stem rots, cob mold, seed mold	1,0-1,2	10	Seed treatment immediately before sowing or in advance
Sunflower	Fusarium root rot, gray rot, white rot (root form), false powdery mildew, fomopsis, alternaria, seed molds	1,0-1,2		

imidacloprid 200 g/L

Insecticidal seed treatment of systemic action for pre=planting treatment of cereal and sugar beet seeds, potatoes, maize, rape, sunflower, common flax, soybean and other agricultural crops seeds against a wide range of pests.

ADVANTAGES

- **Crop protection at most vulnerable sprouting stage**
- **Control of pests in soil and on sprouts**
- **Prolonged protective period**
- **Systemic action**
- **Savings due to omission of several insecticidal treatments during vegetation**
- **Efficient regardless of ambient conditions**

Mode of action

The preparation has a high systemic activity, penetrates sprouts and young plants through their leaves and roots. Pests die in several hours after contact with seeds and eating the plant. The formulation actively affect the nervous system of harmful insect by blocking nicotine receptors of the postjunctional nerve.

neonicotinoids	**3 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Protective effect period

Bo-effect lasts from seed sprouting until crop tillering.

Rate of exposure

High speed of toxic effect.

Compatibility with other pesticides

Compatible with fungicidal seed treatments and other agrochemicals manufactured by Schelkovo Agrohim that are used for treating seeds of cereals and other crops.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Wheat	Zabrus tenebrioides, striped cereal flea beetle, corn flies, greenflies	0.75-1.25	10	Treatment of seeds.
Barley	Striped cereal flea beetle, corn flies, greenflies	0.75-1.25	10	Treatment of seeds.
Sugar beet	Beet flea beetles, beet weevils, wireworms	25	up to 35	Seed treatment immediately before sowing or in advance (up to 1 year before) for 4.5-5.5 mm sizes.
		25-30	up to 40	Seed treatment immediately before sowing or in advance (up to 1 year before) for 3.5-4.5 mm sizes.
Rape	Cruciferous flea beetles	15-20	up to 30	Seed treatment immediately before sowing or in advance
Maize	Sprout pests: wireworms, cut worms	12.5-15	up to 25	Seed treatment immediately before sowing or in advance
Sunflower	Wireworms, weevils, leaf beetle, greenflies, sand Opatnim, etc.	15	up to 25	Seed treatment immediately before sowing or in advance
Common flax	Flax flea beetles: blue, brown, etc.	2-2.5	up to 12.5	Seed treatment immediately before sowing or in advance
Potato	Wireworms, potato beetle, greenflies	0.2-0.25	10	Tuber treatment before planting
			up to 25	Tuber treatment during planting
Soybean	Wireworms	2.0-2.5	up to 12.5	Seed treatment
Pea	Registered as growth regulator. It has an insecticidal effect. Enhancing growth and morphogenetic processes, improvement of immunity to unfavorable environmental conditions, enhancing yields, improvement of product quality	0.75–1.25	10	Presowing seed treatment
Chickpea		0.6–1.0		

mefenoxam 210 g/L + fludioxonil 25 g/L

A special-purpose fungicidal seed treatment for sunflower seeds in the NANOformulation

ADVANTAGES

- **A perfect combination of active substances with the maximum spectrum of action**
- **Full control of soil and seed-borne infections**
- **The best efficacy against downy mildew, Fusarium blight and other diseases of sunflower**
- **The most efficient formulation (microemulsion)**
- **Is intended for both industrial use at seed production companies and agricultural use**

phenylpyrroles, phenylamides	**5 years**
microemulsion	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Mode of action

Mefenoxam is a phenylamide. It has a high systemic activity and shows protective and curative properties. It is effective against the surface and intraseed infections, is rapidly absorbed by seeds and is evenly distributed throughout the plant after sprouting, protecting seedlings and roots from both seed-borne and air-borne diseases. Mefenoxam is particularly effective against Oomycetes causing false powdery mildew (Plasmopara helianthi), as well as against several rots (Pythium spp., Fusarium spp., Rhizoctonia spp., etc.). The mode of action involves inhibition of protein synthesis in fungi by suppressing ribosomal RNA synthesis.

Fludioxonil is a phenylpyrrole. It has a contact action with long-term residual activity. It has a broad spectrum of action and is effective against Ascomycetes (particularly Fusarium), Basidiomycetes and imperfect fungi that enter the soil through seeds. It has no negative effect on beneficial microorganisms. The mode of action of fludioxonil involves the inhibition of glucose phosphorylation during cellular respiration, which disrupts the functioning of fungal cell membranes and slows mycelium growth.

Protective effect period

Messer, ME, ensures protection for up to 12 weeks.

Rate of exposure

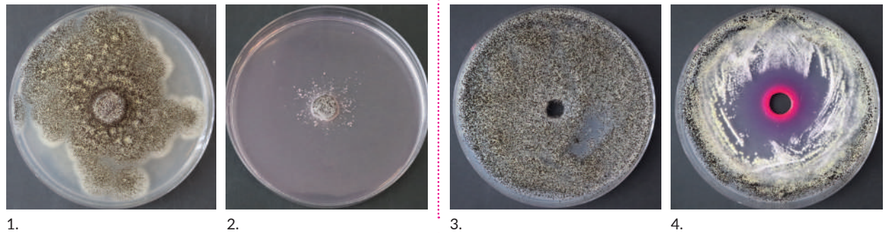
The fungicidal effect occurs immediately after the treatment of seeds. It promotes even and healthy sunflower sprouts and protects against primary and secondary infections during the early stages of growth and development.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Sunflower	False powdery mildew (downy mildew), stem blight, white mould (foot sclerotinia), Fusarium root rot, Alternaria blight, seed mould, grey mould (seed infection)	5,0	10-15	Seed treatment immediately before sowing or in advance (up to 1 year)

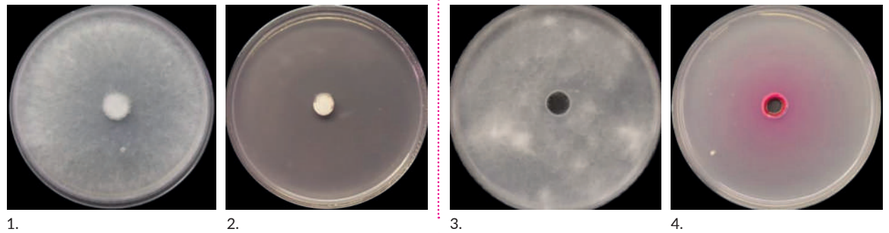
Application of Messer, ME efficacy

Fungicidal activity of seed treatments against pathogens (Biolaboratory of Schelkovo Agrohim)



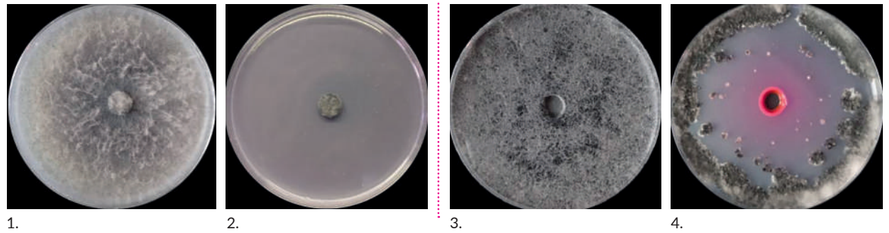
1. 2. 3. 4.

Aspergillus niger is the causal agent of seed mold
Pathogen culture isolation by streak plate method:
1. Control
2. Messer, ME (100 % effective)
Well diffusion method:
3. Control
4. Messer, ME



1. 2. 3. 4.

Sclerotinia sclerotiorum is the causal agent of white rot in sunflower
Pathogen culture isolation by streak plate method:
1. Control
2. Messer, ME (100 % effective)
Well diffusion method:
3. Control
4. Messer, ME (100 % effective)



1. 2. 3. 4.

Macrophomina phaseolina is the causal agent of charcoal rot in sunflower
Pathogen culture isolation by streak plate method:
1. Control
2. Messer, ME (100 % effective)
Well diffusion method:
3. Control
4. Messer, ME

prochloraz 100 g/L + imazalil 25 g/L + tebuconazole 15 g/L

Fungicidal seed treatment intended for pre-planting treatment of cereal seeds.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation ME**
- **Formulation as microemulsion ensures maximum penetration of active ingredients into the seed, and powerful and prolonged protection during vegetation period**
- **Wider spectrum of action than that of most seed disinfectants due to combination of three active ingredients**
- **Highly efficient for pre-planting treatment of seeds and local soil disinfection**
- **Stronger effect against snow mold**
- **Bio-activator contained in the preparation has a growth-stimulating action: promotes coleoptiles development and formation of a robust root system**
- **Higher resistance to drought and frost**

imidazoles, triazoles	**5 years**
microemulsion	**-10˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

The preparation contains three active ingredients - prochloraz, imazalil and tebuconazole supplementing each other and demonstrating pronounce synergy. It is highly efficient both against seed and soil infections affecting cereal crops at earlier stages of development.

Prochloraz is referred to the group of imidazols and has a local systemic action. It is apt for shallow penetration into a seed to disinfect it against fungi that intrude seed covers and aleurone layer.

Imazalil has a local systemic action and protects roots. Imazalil inhibits synthesis of ergosterol that has effect on permeability of pathogen cell membranes.

Tebuconazole has a systemic translocating action and protects the plantlet. Tebuconazole inhibits biosynthesis of sterol in pathogenic organisms, which results in changes in the membrane (its permeability), reduced reproduction and, eventually, death of the pathogenic cell.

Protective effect period

Bio-effect lasts from seed sprouting stage to tubing stage and until appearance of a flag of cereal crops. Due to its systemic effect, the preparation is efficient against surface and internal seed infection, and a number of disease excitants affecting the plant during a later vegetation period.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds of cereal crops.

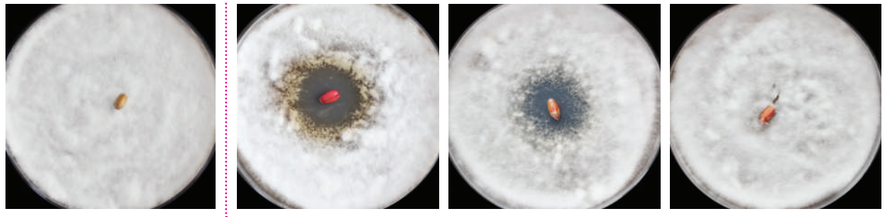
Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Dust-brand, Fusarium root rot, Helminthosporium root rot, powdery mildew (at earlier stages), seed molding, including Alternaria seed infection	1,2-1,5	10	Treatment of seeds beforehand or immediately before sowing.
	Stinking smut	1,0-1,2	10	
Winter wheat	Snow mold, Rhizoctonia root rot	1,2-1,5	10	
Spring barley, including brewing barley	Dust-brand, false dust-brand, Fusarium root rot, Helminthosporium root rot, netted spotting, seed molding, including Alternaria seed infection	1,2-1,5	10	
	Stone smut	1,0-1,2	10	

Application efficacy

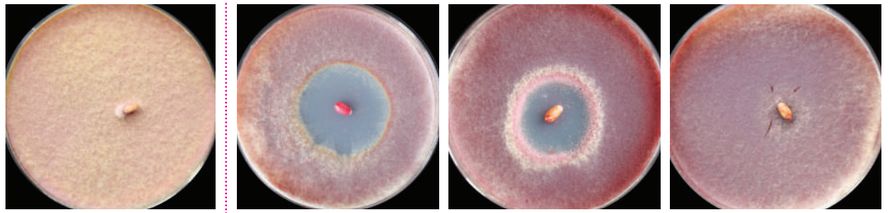
Fungicidal activity of seed treatments against pathogens



1. 2. 3. 4.

Microdochium nivale is the causal agent of snow mold

1. Control; 2. Polaris, ME; 3-4. 2-, 4-component seed treatments, SC



1. 2. 3. 4.

Fusarium culmorum is the causal agent of Fusarium root rot

1. Control; 2. Polaris, ME; 3-4. 2-, 4-component seed treatments, SC

acetamiprid 150 g/L + prochloraz 100 g/L + tebuconazole 20 g/L + pyraclostrobin 15 g/L

A combination insectofungicidal seed treatment for cereal crop seeds in the innovative formulation

ADVANTAGES

- **Three-in-one: a complex-action product (protection from diseases + protection from pests + physiological effect for the crop)**
- **Is effective against the pathogens of snow mould, root rot of various aetiologies, Fusarium blight, Septoria blight**
- **Provides effective control of surface and soil-dwelling pests**
- **Promotes growth and development of strong and healthy roots**
- **Enhances productive tillering and green leaf effect**
- **Increases resistance to adverse soil and climatic conditions, including drought**
- **Is suitable for all sowing times, including late sowing**

Mode of action

Acetamiprid is a neonicotinoid with a contact enteric action and systemic activity. It effectively protects seeds, roots, rhizosphere and seedlings against soil-dwelling and surface pests by means of a rapid toxic effect. It ensures long-term protection by penetrating plant tissues as it grows.

Acetamiprid blocks nicotinic acetylcholine receptors in the nervous system, thus interfering with the synaptic nerve impulse transmission, and the insect dies due to surexcitation.

Prochloraz is an imidazole. It has a pronounced contact and local systemic action. It eliminates fungal infection on the surface of seeds, which affects the seed cover and aleurone layer. It decontaminates the soil around the seedbed by means of long-term fungicidal activity. Prochloraz is a substance most effective against soil infections, including Fusarium spp. and Microdochium nivale. The mode of action involves inhibition of sterol biosynthesis in fungal cell membranes.

Tebuconazole is a third-generation triazole with the broadest spectrum of action against phytopathogens. It has a systemic translocating action, with protective, eradicating and curative properties. It is effective against surface and intraseed infections. It penetrates roots and seedlings as they grow and protects them from air-borne infections. It shows high mobility in plants and provides a quick onset of action.

neonicotinoids, imidazoles, triazoles, strobilurins	**2 years**
Suspension microemulsion	**-10˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Tebuconazole inhibits the biosynthesis of ergosterol in pathogen cell membranes by suppressing C14 demethylation. The synthesis of D5-sterols also has an effect on metabolism, which distinguishes the active substance from other triazoles.

Pyraclostrobin is a strobilurin. It has a contact and in-depth action. It is securely attached to the treated surface and reliably protects the space around the seed. Some molecules get inside quickly, while others are released gradually and provide long-term protection. It is a potent antisporulant that blocks the growth of mycelium. It inhibits mitochondrial respiration of fungal pathogens. As a result, it significantly reduces the cellular energy (ATP) required to maintain pathogen vital functions, ultimately leading to their death.

It works best as a preventive measure.

It actively influences the biological and physiological reactions of cereal crops, resulting in the green leaf effect, increased mass and improved grain quality.

Protective effect period

As a fungicide: from sprouting till stem elongation

As an insecticide: from seed sprouting till tillering

Rate of exposure

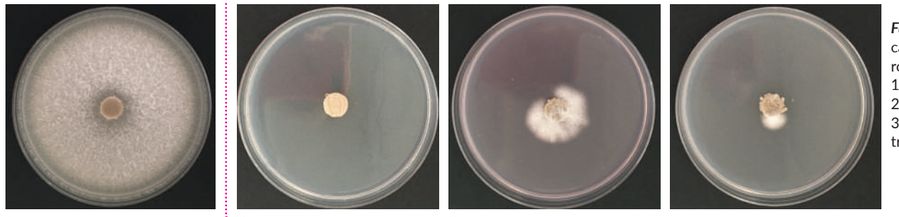
Quick initial activity: the effect starts immediately after the treatment of seeds. The product penetrates the seedlings and spreads evenly throughout plants during their growth and development, immediately blocking the disease. The death of pests occurs after contact with seeds or feeding on seedlings and plants.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Stinking smut, dust-brand, Fusarium root rot, Helminthosporium root rot, Septoria blight, seed mould, powdery mildew	1,2-1,5	10	Seed treatment immediately before sowing or in advance
	Corn flies, wireworms, flea beetles, aphids, leafhoppers			
Winter wheat	Snow mould, Cercosporella crown rot			
	Ground beetle			
Spring and winter barley	Dust-brand, head smut, Helminthosporium root rot, Fusarium root rot, net blotch, seed mould, powdery mildew			
	Corn flies, wireworms, flea beetles, aphids, leafhoppers			
Winter barley	Snow mould			
	Ground beetle			

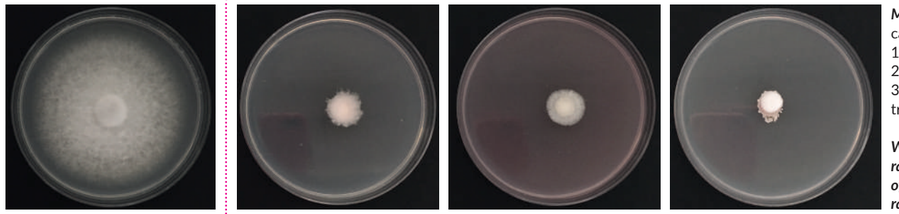
Application efficacy

Fungicidal activity of seed treatments against pathogens (pathogen culture isolation by streak plate method, Biolaboratory of Schelkovo Agrohim)



1. 2. 3. 4.

Fusarium oxysporum is the causal agent of Fusarium root rot
1. Control;
2. Polaris Quatro, SME;
3-4. Insecto-fungicidal seed treatments, SC



1. 2. 3. 4.

Microdochium nivale is the causal agent of snow mold
1. Control;
2. Polaris Quatro, SME;
3-4. Insecto-fungicidal seed treatments, SC

Working solution application rates for the seed treatments: 5 % of the maximum recommended rate

prothioconazole 75 g/L + pyraclostrobin 25 g/L + tebuconazole 25 g/L

A three-component fungicidal seed protectant in an innovative formulation for protection of cereal crops and getting high yields under conditions of increased risk of diseases

ADVANTAGES

- **Premium class protection ensured by the new, most effective combination of the 3 most active ingredients and innovative formulation**
- **Maximum efficacy under conditions of high infection load and long-term protection against pathogens**
- **Improved action against pathogens causing Fusarium blight, Septoria spot and diseases of rhizosphere**
- **Immunostimulatory effect**
- **A pronounced physiological effect: strong sprouts and root system, high tillering index, improved photosynthetic activity**
- **High winter hardness and resistance to drought and temperature extremes**
- **Maximum yield and high-quality grain**

triazoles, strobilurins	**3 years**
microemulsion	**-15˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Tebuconazole is effective against superficial and internal seed infection and protects sprouts against a wide range of pathogens on the surface and inside a seed.

Prothioconazole is a systemic fungicide with a protective, eliminating and curative effect.

It is effective against superficial and internal seed infection and protects sprouts against molding, soil pathogens and aerogenic infections.

Prothioconazole affects physiological processes in a plant and ensures development of a strong root system, strong sprouts, increased tilling capacity and drought resistance. Moreover, it has a specific impact on winter hardness of plants.

Pyraclostrobin mostly has contact action. It is fixed perfectly on the treated grain surface and shows maximum fungicidal activity in the seed area.

It inhibits mitochondrial respiration of fungal pathogens.

It actively impacts biological and physiological reactions in plants starting from sprouting and ensures development of the root system resistant to drought and other abiotic stress factors.

A strong synergism and mutually reinforcing effects of three active ingredients of two different chemical classes ensure high-quality and long-term protection of roots and sprouts of cereal crops against numerous phytopathogens. Two active ingredients with additional physiological impact on plant growth and development contribute to increased yields and better quality of grain.

Protective effect period

The product is effective against superficial and internal seed infections as well as a number of pathogens that affect plants in a later period of vegetation.

Rate of exposure

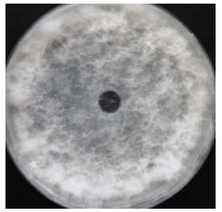
The fast initial effect after treatment, with penetration into the plant starting from sprouting and subsequent even distribution in the plant as it grows and develops.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Stinking smut, loose smut, Helminthosporium and Fusarium root rots, Septoria spot, seed molding, Alternaria seed infection	0,8-1,0	to 10	Seed treatment immediately before sowing or in advance
Winter wheat	Fusarium snow mold, Cercosporella crown rot	1,0		Seed treatment immediately before sowing or in advance
Spring and winter barley	Covered smut, loose smut, Helminthosporium and Fusarium root rots, barley net blotch and stripe, seed molding, Alternaria seed infection	0,8-1,0		Seed treatment immediately before sowing or in advance

Application efficacy

Fungicidal activity of seed treatments against pathogens (Well diffusion method, Biolaboratory of Schelkovo Agrohim)



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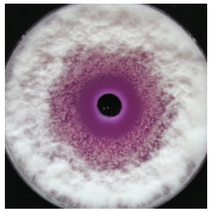

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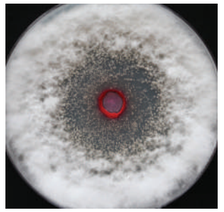

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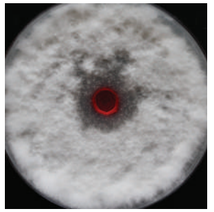

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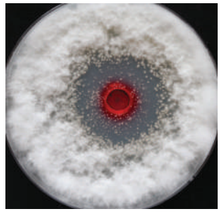


5.

Fusarium oxysporum is the causal agent of root rot

1. Control;
2. Protego Max, ME;
3-5. 2-, 4-component seed treatments, SC

Pu. PUARO NEW SC

pyraclostrobin 40 g/L + fludioxonil 40 g/L

Two-component fungicide protectant for seeds of grain legume crops and potato tubers

ADVANTAGES

- **Effective control of fusarium and other disease**
- **Compatible with inoculants and has no negative effect on rhizobia bacteria**
- **Growth-stimulating effect and protection against stress at early stages of vegetation**

strobilurins, phenylpyrroles

2 years

suspension concentrate

-15°C to +30°C

Hazard Class 3, moderately hazardous substance

canister of 5 L

No phytotoxicity at recommended rates

Mode of action

Pyraclostrobin is a strobilurin. It has a contact and in-depth action. It is securely attached to the treated surface and reliably protects the space around the seed. It is a potent antisporulant that blocks the growth of mycelium. Pyraclostrobin disrupts energy metabolism in the fungal cell, causing death of conidia during germination, and inhibits the development of fungal mycelium (mainly protective effect and partially curative effect). Pyraclostrobin effectively inhibits infection on the surface of the seed.

Fludioxonil is a broad-spectrum contact fungicide with prolonged residual activity. Highly efficient against Ascomycetes (especially against Fusarium spp.), Basidiomycetes and imperfect fungi, which are transmitted with seeds and through the soil, while not adversely affecting beneficial soil microorganisms. The mode of action of fludioxonil involves the inhibition of glucose phosphorylation during cellular respiration, which disrupts the functioning of fungal cell membranes and slows mycelium growth.

Fludioxonil is low-toxic for warm-blooded animals and humans. It has a sparing effect on soil microbiota.

Rate of exposure

Fungicidal activity begins immediately upon treatment protecting the plant during its most vulnerable stage.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and agrochemicals produced by Schelkovo Agrohim used for treating seeds ofleguminous crops and potato tubers.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Pu. PUARO NEW SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Soybean	Fusarium root rot, pythium, Ascochyta blight, seed molds	1,0-1,25	4-8	Seed pretreatment in advance or before sowing
Peas	Fusarium root rot, Ascochyta blight, seed mould	1,0-1,25	4-8	
Chickpeas	Fusarium root rot, Fusarium wilt, Ascochyta blight, seed mould	1,0-1,25	4-8	
Potatoes	Rhizoctonia blight	0,25-0,4	10	Preplanting treatment of tubers

Compatibility with inoculants

Effect of combined application of Puaro, SC seed treatment and Rizoform Soybean inoculant on nodule formation in soybean roots (vegetation experiment according to Barton's method, biolaboratory of Schelkovo Agrohim)

Group	Product application rate, L/t	Working solution application rate, L/t	Tank mixture exposure	Average number of nodules, pcs./plant	
				In active root zone	Overall
Untreated control	-	-	-	2,5	17,6
Rizoform Soybean + Statik	1,8 + 1,8	8	0 min	22,8	26,9
			2 hours	28,7	30,8
Puaro, SC + Rizoform Soybean + Statik	1,25 + 1,8 + 1,8	8	0 min	24,9	27,6
			2 hours	24,2	26,5

Proven! PUARO, SC has no adverse effect on rhizobia bacteria

imazalil 100 g/L + tebuconazole 60 g/L

Fungicidal seed treatment intended for preplanting treatment of cereal, maize, rape, soybean, and sunflower seeds against a wide range of diseases.

ADVANTAGES

- **High biological activity against a wide range of pathogens due to an innovative formulation**
- **Optimal level of protection under moderate disease pressure**
- **Long-lasting protection of the root system and seedlings throughout the growing season**
- **Promotes robust root development and stimulates vegetative growth**
- **Practical solution for farms growing a wide range of crops**

Mode of action

The preparation contains two active ingredients - imazalil and tebuconazole.

Imazalil has a local systemic action and protects roots. Imazalil inhibits synthesis of ergosterol that has effect on permeability of pathogen cell membranes.

Tebuconazole has a systemic translocating action and protects the plantlet. Tebuconazole inhibits biosynthesis of sterol in pathogenic organisms, which results in changes in the membrane (its permeability), reduced reproduction and, eventually, death of the pathogenic cell.

imidazoles, triazoles	**5 years**
microemulsion	**-10˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective effect period

Bio-effect lasts from seed sprouting stage to tubing stage and until appearance of a flag. Due to its systemic effect, the preparation is efficient against surface and internal seed infection, and a number of disease excitants affecting the plant during a later vegetation period.

Compatibility with other pesticides

Compatible with insecticidal seed treatments and other agrochemicals manufactured by Schelkovo Agrohim that are used for treating seeds of cereals and other crops.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Winter wheat	Dust-brand, stinking smut, Fusarium root rot, Helminthosporium root rot, rhizoctonia radical rot, seed molding	0.3-0.4	10	Treatment of seeds beforehand or immediately before sowing.
	Fusarium snow mold (in areas of moderately depressive disease development)	0.4	10	
Spring wheat	Dust-brand, stinking smut, Fusarium root rot, Helminthosporium root rot, seed molding	0.3-0.4	10	Treatment of seeds beforehand or immediately before sowing.
Oats	Covered smut, Helminthosporium root rot, Fusarium root rot, Helminthosporium blotch, seed molding	0.3-0.4	10	Treatment of seeds beforehand or immediately before sowing.
Spring and winter barley	Dust-brand, false dust-brand, stone smut, Fusarium root rot, Helminthosporium root rot, Pythium rot, seed molding, netted spotting	0.3-0.4	10	Treatment of seeds beforehand or immediately before sowing.
Winter rye	Pediculate smut, Helminthosporium root rot, Fusarium root rot, brown rust, oidium, seed molding	0.3-0.4	10	Treatment of seeds beforehand or immediately before sowing.
	Fusarium snow mold	0.4	10	
Maize (for grain)	Utricular smut, dust-brand, Fusarium root and radical rots, Fusarium blight, seed and corncob molding	0.4	5-10	Treatment of seeds beforehand or immediately before sowing.
Sunflower	Phomopsis blight, white rot (radical), gray rot (seed infection), Fusarium root rot, seed molding	0.4	10	Treatment of seeds beforehand or immediately before sowing.
Soybeans	Fusarium root rot, Ascochyta blight, Fusarium blight, seed molding	0.4	10	Treatment of seeds beforehand or immediately before sowing.
Pea	Fusarium root rot, Ascochyta blight, Fusarium withering, seed molding	0.3-0.4	up to 10	Treatment of seeds beforehand or immediately before sowing.
Rape	Root rots, downy mildew, seed molding, Alternaria blight	0.4	10	Treatment of seeds beforehand or immediately before sowing.

tebuconazole 60 g/L

Fungicidal seed treatment intended for pre-planting treatment of seeds of spring and winter wheat, spring and winter barley, winter rye, and common flax against a wide range of diseases.

ADVANTAGES

- **Basic seed protection with minimum costs**
- **Innovative formulation that fully unlocks the targeted properties of tebuconazole, providing internal seed protection**
- **Ideal for situations where bunt infection is prevalent in seeds**
- **No negative effect on seed germination**
- **Extended protection from seed germination to tillering**
- **Practical choice for farms targeting yields up to 25 dt/ha**

Mode of action

The preparation has a systemic effect. Unlike conventional suspension concentrates enveloping the seed by sticking to its surface, microemulsion penetrates into the internal structure via microcapillaries. The mode of action consists in inhibition of ergosterol biosynthesis in cell membranes of phytopathogens and impairment of metabolism, thus causing death of pathogens. Tebuconazole effect on the entire macro- and microstructure ensures protection against both external and internal infections.

Protective effect period

Bo-effect lasts from seed sprouting until crop tillering.

triazoles

5 years

microemulsion

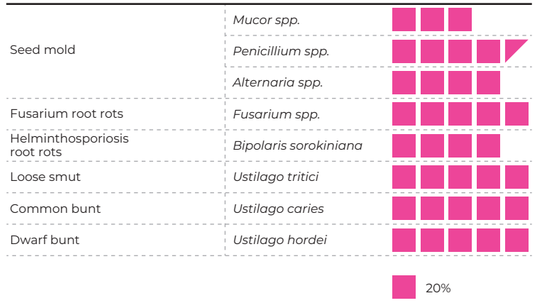
-10˚C to +30˚C

Hazard Class 2, highly hazardous substance

canister of 5 L

No phytotoxicity at recommended rates

Biological efficacy



Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Spring and winter wheat	Dust-brand, Fusarium root rot, Helminthosporium root rot, Septoria blight, seed molding	0,4-0,5	10	Treatment of seeds beforehand or immediately before sowing
	Stinking smut	0,4	10	
Winter wheat	Fusarium snow mold	0,5	10	
Spring and winter barley	Helminthosporium root rot, Fusarium root rot, seed molding	0,4-0,5	10	Treatment of seeds beforehand or immediately before sowing
	stone smut	0,4	10	
	Dust-brand, netted spotting	0,5	10	
Winter rye	Helminthosporium root rot, Fusarium root rot	0,4	10	Treatment of seeds beforehand or immediately before sowing
	Fusarium snow mold	0,5	10	
Common flax	Anthracnose, blotch	0,4-0,5	3-5	Treatment of seeds beforehand or immediately before sowing

imidacloprid 280 g/L + imazalil 34 g/L + tebuconazole 20 g/L

Insect-fungicide treatment for cereal crop seeds treatment. Efficient control over the distribution of seed and soil infection and protection of sprouts against pests.

ADVANTAGES

- **A ready-made solution to two problems**
- **Enhanced insecticidal activity for reliable crop protection under high pressure from soil- and ground-dwelling pests**
- **Long-term disease control under moderate disease pressure**
- **Healthy and vigorous crop development across diverse climatic conditions**
- **Proven effectiveness in all cereal-growing regions**
- **Highly homogeneous working solution with excellent application properties**
- **Deep seed penetration, preventing component loss during transport and sowing**

Mode of action

The product contains three active ingredientsimidacloprid, imazalil and tebuconazolethat act in synergy to deliver high efficacy against a complex of seedlings diseases and pests.

Imazalil provides local-systemic protection of the root system. The effect of imazalil is based on inhibiting ergosterol synthesis, thereby disrupting pathogen cell membrane integrity.

Tebuconazole has a systemic translocating action, protecting the seedling. The action of tebuconazole is based on inhibiting sterol biosynthesis in pathogenic organisms, which leads to altered membrane permeability, reduced reproduction, and pathogen cell death.

Imidacloprid has a systemic action, actively affects the nervous system of pests by blocking nicotinic acetylcholine receptors of the postsynaptic nerve. Pests perish within hours of contacting the seeds or consuming the plant.

neonicotinoids, imidazoles, triazoles	**2 years**
suspension microemulsion	**-10˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective period

Optimum combination of active ingredients ensures prolonged protection of plants against diseases for up to 8 weeks and against pests for up to 4 weeks (depending on the crop and the harmful object).

Rate of exposure

Effective as a standalone treatment. Can be applied together with amino acid biostimulant Biostim Start. When combined with other products, compatibility testing is recommended.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Wheat, barley, including brewer»s barley	Ground beetles, flea beetles, corn flies, greenflies, frog-flies	1,0-1,4	10	Preliminary seed treatment (up to 1 year) or immediately before sowing.
Spring and winter wheat	Dust-brand, fusarium root rot, Helminthosporium root blight, seed mold, including Alternaria seed infection. Powdery mildew, brown rust (at early development stages)	1,2-1,4	10	Preliminary seed treatment (up to 1 year) or immediately before sowing.
	Covered smut	1,0-1,4	10	
Winter wheat	Snow mold	1,4	10	
Spring and winter barley, including brewer»s barley	Dust-brand, black smut, Helminthosporium root blight, fusarium root rot, seed mold, including Alternaria seed infection	1,2-1,4	10	Preliminary seed treatment (up to 1 year) or immediately before sowing.
	Covered (stone) smut	1,0-1,4	10	

Application efficacy

Fungicidal activity of seed treatments against pathogens

1.

2.

Bipolaris sorokiniana is the causal agent of common root rot

1. Tuareg, SME;

2. 3-component insecto-fungicidal seed treatment, SC

1.

2.

Fusarium culmorum is the causal agent of Fusarium root rot

1. Tuareg, SME;

2. 3-component insecto-fungicidal seed treatment, SC

Hr. HARITA SC

thiamethoxam 600 g/L

Systemic insecticidal for the presowing treatments seeds of cereal seeds and other crops against a complex of soil and surface seedling pests

ADVANTAGES

- Reliable protection of seedlings against a complex of soil and surface pests
- High systemic activity of the product and rapid action
- Long-term protective effect
- Stable protective effect regardless of external conditions

neonicotinoids	2 years
suspension concentrate	-10˚C to +30˚C
Hazard Class 3, moderately hazardous substance	canister of 5 L
No phytotoxicity at recommended rates	

Mode of action

The product has a high systemic, contact enteric, and translaminar activity. The active ingredient is rapidly absorbed by the plant and moves along the xylem to the untreated parts of plants affecting the nicotinic acetylcholine receptors of the nervous system of insects.

Protective effect period

It provides reliable protection at the initial stages of crop growth and development and a long-term protective period.

Compatibility with other pesticides

Compatible with fungicidal seed treatments (Benefis Supreme, Polaris, Scarlet and others) and amino acid biostimulant Biostim Start.

Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features
		preparation, l/t	working liquid, l/t	
Winter wheat, winter barley	Ground beetle	0,3-0,6	10	Treatment of seeds
Spring and winter wheat, spring and winter barley	Cereal Flies, Cereal Leaf Beetles	0,3-0,6	10	Treatment of seeds
Sugar beet	Beet flea beetle, sugar-beet weevils, wireworms	10-56	20-60	Treatment (coating) of seeds is carried out immediately before sowing or in advance (up to a year) in settings of seed producers
Spring and winter rapeseed	Cruciferous fleas	4,7-5,8	15-16	Seed treatment should be performed at centralized seed treatment facilities or seed processing plants
Sunflower	Wireworm			

Ems. EMISTIM

Metabolic products of the symbiotic fungus Acremonium lichenicola

A next-generation plant growth regulator (elicitor) that acts during the growing season to induce broad-spectrum, non-specific resistance to drought, diseases, and other stress factors.

ADVANTAGES

- Improves field emergence
- Promotes strong root system development
- Increases resistance to adverse weather conditions
- Boosts crop immunity
- Increases yield and improves crop quality

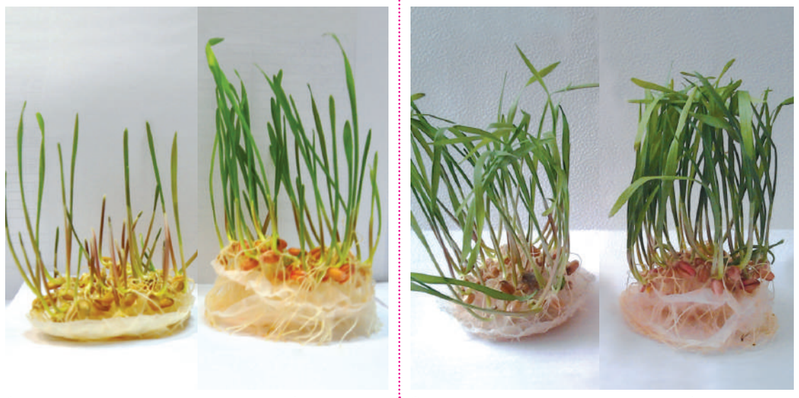
cytokinin- and gibberellin-like substances	5 years
solution	-15˚C to +35˚C
Hazard Class 4	8 mL and 15 mL vials
No phytotoxicity at recommended rates	

Application specifics

Emistim is intended for pre-sowing seed treatment and is supplied as a co-pack with seed treatment products: Polaris, ME, Benefis, ME, Scarlet, ME, Tuareg, SME, Protego Max, ME, Polaris Quatro, SME, Benefis Supreme, ME.

Application rate 1 mL/t of seed

Laboratory trials



1. a b 2. a b

Effect of combined application of fungicidal seed treatment Scarlet and growth regulator Emistim on seedling and root development in cereals.

1. Day 10 of germination

a - control, b - Scarlet, ME 0.4 L/t + Emistim 1 mL/t

2. Day 14 of germination

a - control, b - Scarlet, ME 0.4 L/t + Emistim 1 mL/t

Schelkovo Agrohim JSC is the exclusive supplier of the growth regulator Emistim.

Herbicides / Desiccant

ethofumesate 500 g/L

Herbicide for controlling annual dicotyledonous and grass weeds on sugar beet plantings and white lupine

ADVANTAGES

- **High biological effect to control weeds having a strong wax protective layer (for example, Chenopodium album)**
- **Reliable control of annual dicotyledonous weeds, including green amaranth and some grass weeds**
- **Weed penetration both through leaves and roots**

benzofurans

3 years

suspension concentrate

-10˚C to +35˚C

Hazard Class 3, moderately hazardous substance

canister of 10 l

Phytotoxicity may occur on white lupine

Mode of action

Ethofumesate impairs mitosis in weed cells. It penetrates plants predominantly via their root systems and then translates through the stalk to their leaves. It inhibits the Hill reaction during photosynthesis. The action is function of soil humidity and organic contents in soil. Adequate soil humidity and low organic content are positive factors.

Protective effect period

Until the next wave of weeds, which is dependent on weather conditions in the year of application. The preparation affects weeds present in the plantings during spraying.

Rate of exposure

The preparation has a systemic effect. Visible signs of herbicide action appear depending on weather conditions on 4th to 8th day after application.

Action spectrum

The herbicide preparation for beet plantings is intended to control annual dicotyledonous weeds, including amaranth and some species of annual grass weeds.

Compatibility with other preparations

The preparation has a good compatibility with most herbicides: Healer, OEC; Censor, EC; Forward, OEC; Mitron, SC; Lornet, SL; Betaren 22, OEC; Betaren Super MD, OEC; Betaren Express AM, EC. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Product application features

The product is not phytotoxic when applied at the recommended rates for sugar beets.

On white lupine, under unfavorable conditions, growth suspension and «curling» of apical leaves at the time of treatment may occur; later, marginal leaf scorch and

reduced plant height may be observed. However, after some time, the growth of white lupine is restored, new leaves emerge, and the lack of competition from weeds can help boost yields.

Do not apply the product during stress situations (frost, hail damage, insect damage, etc.), or when temperatures exceed 25 °C.

Akt.
ACTION SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous (including amaranth species) and some annual grass weeds	1,0-2,0	100-200	Successive spraying of plantings upon sprouting of 1st, 2nd and 3rd wave weeds (at seed leaf stage for dicotyledonous weeds and at one leaf stage for grass weeds) from the fork phase to closing of beet rigs.	60(2)
White lupine	Annual dicotyledonous (including amaranth species) and some annual grass weeds	1,5-2,0	200-300	Spraying of plants in phase 1-4 leaf stage and earlier stages of weed growth	-(1)

Effectiveness of ACTION, SC application


1.


2.


3.


4.

Herbicidal effect on some types of weeds in sugar beet crops after application of herbicide Action, SC

fenoxaprop-P-ethyl 80 g/L + mefenpyr-diethyl 30 g/L + clodinafop-propargyl 30 g/L

Systemic herbicide in the innovative formulation to protect crops of spring and winter wheat against grass weeds.

ADVANTAGES

- **Maximum herbicide effect attained by the combination of two active synergetic ingredients**
- **High rate of weed penetration and high initial activity due to microemulsion formulation**
- **High selectivity for the crop without phytotoxic effect due to antidote action**
- **A wide application window regardless of the crop development phase**
- **Good compatibility in tank mixtures with anti-dicotyledon preparations**

Mode of action

Fenoxaprop-P-ethyl is effective against grass weeds. Quickly absorbed by leaves, fenoxaprop-P-ethyl moves in the basipetal and acropetal directions to various plant organs. In growth zones of grass weeds, the synthesis of cell membranes ceases. A day after the treatment, the preparation weakens weeds. Clodinafop-propargyl inhibits lipid biosynthesis. Mefenpyr-diethyl is not only an antidote for cultivated crops, but acts also as a synergist in combination with fenoxaprop-P-ethyl. Mefenpyr-diethyl eliminates the phytotoxic effect of fenoxaprop-P-ethyl on some crops, and in addition to crop protection it increases the level of weed suppression (in particular, black foxtail).

Protective effect period

Throughout the growing period. The product is effective against the weeds present in the crops at the time of treatment for 3–4 weeks. Thus, the second wave of weeds cannot seriously compete with the crop.

Rate of exposure

The product quickly penetrates the leaves of weedy plants, and the weed-crops competition can be significantly reduced almost in 24 hours. However, weed grass plants completely die in 10–15 days or later depending on the weather conditions. The fastest herbicidal action is achieved when treating weed grass plants at the early stages of development (at the growth stage of 2–3 leaves) and under favorable growth conditions (at optimum humidity and temperature).

aryloxyphenoxy-propionates + antidot	**3 years**
microemulsion	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Action spectrum

Annual grass weeds, such as wild oat (species), ryegrass (species), barnyard grass, witchgrass, panicum ruderale, corn grass, wind grass, black foxtail, meadow grass (species), bristle grass (species), hairy crab grass, ribbon grass (species), etc.

Compatibility with other pesticides

The product is compatible with most phenoxy acid-based herbicides, sulfonylureas, clopyralid, and others, as well as with insecticides and fungicides. In each case, a preliminary verification of the physical and chemical compatibility of the components to be mixed is required.

Product application features

The best result and the fastest herbicidal action of the product are achieved:

• with the treatment at the early stages of development of grass weeds (starting from the stage of 2 leaves);

• with an optimal choice of treatment time (when most annual grass weeds emerge);

• under weather conditions favourable for the growth and development of plants.

No cases of delayed timing of development of cultivated plants have been reported if used according to the recommendations for time limits and rates of the product application. It is not recommended to treat with the product the crops weakened by frosts, hail, and pests.

It is not recommended to treat the crops at the flowering stage.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Annual grass weeds (including bristle grass species, barnyard grass, panicum ruderale, wild oat, corn grass)	0,7-1,0	200-300	Crop spraying against vegetative grass weeds (from 2-3 leaves to the end of tillering) regardless of the crop development phase. Winter wheat must be treated in spring.	60(1)

Effectiveness of Argo,ME application

Herbicidal effect on grass weeds in spring wheat crops after application of herbicide Argo, ME (1 L/ha)

fenoxaprop-P-ethyl 90 g/L + clodinafop-propargyl 45 g/L + cloquintocet-mexyl (antidote) 40 g/L

Graminicide in the NANOformulation to protect wheat crops against a wide range of annual grass weeds

ADVANTAGES

- **Good effect against a wide range of grass weeds with an optimal concentration of active substances**
- **The most efficient NANOformulation, compared to conventional analogues**
- **High rate of penetration and resistance to precipitation washout**
- **No phytotoxic effect on the crops**
- **A wide application window regardless of the crop development phase**
- **Good compatibility in tank mixtures with anti-dicotyledon preparations**

aryloxyphenoxypropionates + antidot	**2 years**
microemulsion	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Mode of action

Argo Prime, ME, is a systemic herbicide. It is effective against a wide range of annual grass weeds because of a good synergism of active ingredients. Fenoxaprop-P-ethyl and clodinafop-propargyl are quickly absorbed by leaves and move in the basipetal and acropetal directions to various plant organs. Fenoxaprop-P-ethyl is a fatty acid synthesis inhibitor. Clodinafop-propargyl inhibits lipid biosynthesis. The synthesis of cell membranes stops in growth zones of grass weeds. Cloquintocet-mexyl is an antidote that completely prevents the phytotoxic effect on crops.

The innovative NANOformulation, microemulsion, ensures the best possible effect of active ingredients. In comparison to analogues, nanoparticles of the active substance (less than 100 nm) ensure faster penetration of the product into plant tissues via microcapillaries and immediate effect. This feature ensures that the herbicide remains effective even in adverse weather conditions: Argo Prime, ME, is highly resistant to rain and works well even in hot, dry conditions.

Protective effect period

Throughout the growth period. The product is effective against the weeds present in the crops at the time of treatment for 3-4 weeks. Thus, the second wave of weeds cannot seriously compete with the crop.

Rate of exposure

The herbicide is absorbed for 1-3 hours after application; active growth ceases within 24 hours, and complete elimination of grass weeds is achieved in 1.5-2 weeks.

Action spectrum

Annual grass weeds, such as wild oat (species), ryegrass (species), barnyard grass, witchgrass, panicum ruderale, corn grass, wind grass, black foxtail, meadow grass (species), bristle grass (species), hairy crab grass, ribbon grass (species), etc.

Compatibility with other preparations

The product is compatible with most phenoxy acid-based herbicides, sulfonylureas, clopyralid, and others, as well as with insecticides and fungicides. In each case, a preliminary check for the physical and chemical compatibility of the components to be mixed is required.

Argp.
ARGO PRIME ME

Product application features

The best result and the fastest herbicidal action of the product are achieved:

• with the treatment at the early stages of development of grass weeds (starting from the stage of 2 leaves);

• with an optimal choice of treatment time (when most annual grass weeds emerge);

• under weather conditions favourable for the growth and development of plants.

No cases of delayed timing of development of cultivated plants have been reported if used according to the recommendations for time limits and rates of the product application. It is not recommended to treat with the product the crops weakened by frosts, hail, and pests.

It is not recommended to treat the crops at the flowering stage.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Annual grass weeds (bristle grass (species), barnyard grass, common millet, wild oat, corn grass, etc.)	0,4-0,55	200-300	Spraying of crops with vegetative grass weeds (from 2-3 leaves till the end of tillering) regardless of the crop development phase. Winter wheat should be treated in spring.	60(1)

Effectiveness of Argo Prime, ME application

1.

2.

Spring wheat crops

1. Treated with Argo Prime, ME
2. Control without gerbicides

propisochlor 720 g/L

Selective herbicide for control of annual grasses and some dicotyledonous weeds in crops of sunflower, maize, soybean, sugar beet.

ADVANTAGES

- **It is used both as a soil herbicide and post-emergence herbicide with a long protective period**
- **It ensures the purity of seedlings at the early stages of crop growth and development, thus controlling a wide range of weeds**
- **High selectivity excludes the risk of phytotoxic effect even under conditions of abundant rainfall and low temperature**
- **It ensures the purity of seedlings throughout the growing period**
- **It has no restrictions for crop rotation**

Mode of action

Propisochlor is an herbicide with systemic effect, it is absorbed by shoots and roots destroying weeds within a short period of time. It inhibits the synthesis of proteins and nucleic acids, its active ingredient suppresses the growth of roots. A decrease in osmotic potential leads to the death of weed plants. Propisochlor creates an herbicidal screen in the surface layers of the soil, which allows controlling newly germinating weeds after treatment with an herbicide.

Protective effect period

The product application ensures the purity of seeds for 60–80 days (mainly throughout the growing period).

Rate of exposure

It acts on germinating weeds quickly enough, 3–5 days after spraying.

chloroacetanilides

3 years

emulsion concentrate

-15˚C to +35˚C

Hazard class 2, highly hazardous substance

canister of 10 l

No phytotoxicity at recommended rates

Action spectrum

Annual grass weeds and some dicotyledonous weeds.

Susceptible species: cockspur, rough bristle grass, large crabgrass, annual meadow grass, panicum miliaceum subsp.ruderale, witchgrass, Aleppo grass, Cuba grass, black foxtail, amaranth (spp.), etc.

Moderately susceptible species: lamb's quarters, black nightshade, lady's thumb, shepherd's purse, chamomile (spp.), cleavers, etc.

Low susceptible species: charlock mustard, wild radish, pale persicaria, knotweed, thorn apple (spp.), buttonweed, Xanthium riparium, common cocklebur, annual mercury, trailing hollyhock, corn buttercup, common ragweed, dead-nettle (spp.), common arache, chickweed, self-seeding poppy, etc.

Compatibility with other preparations

Effective when used alone. If there is a need to use the product in tank mixtures with other pesticides, the components to be mixed should be checked for physical and chemical compatibility.

Azt.
ACETAL PRO EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize, sunflower, soybean, sugar beet	Annual grass and dicotyledonous weeds	2,0-3,0	200-300	Soil spraying before crop sprouting	60(1)
Sugar beet	Annual grass and dicotyledonous weeds	2,5-3,0	200-300	Spraying of vegetating plants in the phase 2 to 4 true leaves of culture and early stages of weed growth	60(1)
Soybeans, sunflowers	Annual grass and dicotyledonous weeds	3,0	200-300	Spraying of vegetating plants in the phase 2 to 4 true leaves of culture and early stages of weed growth in irrigation conditions or in the presence of adequate moisture	60(1)

Effectiveness of ACETAL PRO, EC application

1a. 1б.

2a. 2б.

Maize crops

1a, 2a. Control (without soil treatment)

1b, 2b. Pre-emergence application of Acetal PRO, EC 3 L/ha

mesosulfuron methyl 30 g/L + flumetsulam 17 g/L + florasulam 12 g/L + mefenpyr-diethyl (antidote) 90 g/L

Cross-spectrum herbicide for cereal crop protection

ADVANTAGES

- **A unique product in terms of combination of active ingredients and formulation**
- **Control of mixed weed infestation without the need for preparing tank mixtures**
- **Control oftough weeds: cheat grass, jointed goat grass, etc.**
- **A wide application window in spring and autumn**
- **No phytotoxicity**
- **Without restrictions for crop rotation**

Mode of action

Ballista, OD is a systemic herbicide. Effective against a wide range of dicotyledonous and grass weeds because of mutually reinforcing effects of three active ingredients.

Florasulam and flumetsulam inhibit acetolactate synthase (ALS inhibitors), an enzyme involved in biosynthesis of essential amino acids in meristematic tissues of weeds. They are mainly absorbed by the leaves of weeds and quickly move to the root system and stems, where they accumulate in growth points and exert an herbicidal effect. Both substances suppress the growth of dicotyledonous weeds.

Mesosulfuron methyl is an ALS inhibitor that suppresses the growth of both dicotyledonous and grass weeds. Its mode of action is different from that of graminicides (acetyl-CoA carboxylase inhibitors); thus, it is effective against tough grass weeds: cheat grass, jointed goat grass, etc.

Mefenpyr-diethyl (antidote) ensures rapid degradation of sulfonylurea in crops, preventing their phytotoxic damage

Ballista, OD herbicide has an innovative oil formulation: oil dispersion, that provides maximum effect of active ingredients regardless of weather conditions.

Sulfonylureas, triazolopyrimidine	**2 years**
Oil dispersion	**-15°C to +30°C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Action spectrum

Annual and perennial dicotyledonous weeds, annual grass weeds

Sensitive species: thistle species, catchweed, chickweed, black bindweed, chamomile (sp.), cruciferous weeds, lamb's quarters, field poppy, cheat grass, jointed goat grass, wild oat, bent grass, foxtail grass, couch grass (partially), etc.

Protective effect period

The herbicide controls weeds present in the crop at the time of application but provides no residual control against later-emerging weeds.

Rate of exposure

Growth of sensitive weeds stops one day after the product enters the plant. First visible signs of weed suppression appear 1–2 days after application.

The most rapid herbicidal effect can be achieved by spraying weeds during early growth phases, as well as under favorable growth conditions (optimal humidity and temperature).

Compatibility with other preparations

Use in tank mixtures with other pesticides and agrochemicals is not recommended to avoid phytotoxicity.

Blls.
BALLISTA OD

Product application features

After treatment, a temporary reduction in the green color intensity of cultivated plant leaves may occur, appearing as spots or localized near the leaf margin. The color may range from light green to whitish to yellowish. These symptoms are rare and are typically linked to extreme weather conditions (low/high temperatures, insufficient/excess moisture) occurring right at, before, or immediately after herbicide application. The physiological color change typically recovers within 10–14 days after treatment, provided that temperature and humidity conditions return to the region's average seasonal values.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat	Annual and perennial dicotyledonous weeds, including thistle species; annual grass weeds, including cheat grass and jointed goat grass; perennial grass weeds, including couch grass	0,3-0,5	200-300	Spraying of crops from tillering till the second internode formation in early weed growth phases	60(1)
Winter wheat				Spraying of crops in spring, from tillering till the second internode formation in early weed growth phases	
				Spraying of crops in autumn during the three-leaf–tillering stage and early weed growth phases	

Attention!
Following spring application, winter cereals, winter rapeseed and grass crops may be sown in the autumn of the same year. There are no restrictions for spring sowing the following year.
If reseeding is necessary on the same field, spring cereals, maize, or sorghum may be sown.
Do not apply the product to cereal crops undersown with clover, alfalfa, or other leguminous species.
Following autumn application, there are no spring reseeding restrictions the following year.

Effectiveness of Ballista, OD application

1.

2.

3.

Herbicidal effect of Ballista, OD 0.5 L/ha on cheat grass during autumn applications

1. Ballista, OD compared to control (in the center);
2. Ballista, OD 0.5 L/ha;
3. Untreated control

phenmedipham 110 g/L + desmedipham 110 g/L

Postemergence herbicide for controlling annual dicotyledonous weeds, including amaranth, on sugar beet plantings.

ADVANTAGES

- **Herbicide of the EcoPlus series with increased biological efficiency at a reduced concentration of active ingredients**
- **Mild effect on crops**
- **Rapid destruction of weeds because of high penetration power due to oil formulation**
- **Highly effective control of annual dicotyledonous weeds, including goosefoot, amaranth species, and others**
- **Excellent compatibility with other herbicides in tank mixtures to expand the action spectrum**

Mode of action

Active ingredients inhibit photosynthesis, carbon dioxide digestion by plants, and phosphorylation process, thus causing disturbance of the energy balance and basic metabolic reactions. Phenmedipham and desmedipham penetrate through leaves and have a translaminar effect.

Oil emulsion concentrate improves significantly herbicide absorption. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. When applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions

Protective effect period

The preparation affects weeds present in the plantings during spraying, and its action time depends on time before the next wave of weeds, which is function of weather conditions during application. If the second wave appears with a delay, the action time will amount to 3 or 4 weeks or more, i.e. beet plants will demonstrate normal growth at their earlier stages, when the crop is most sensible to weeds.

carbamates	**3 years**
oil emulsion concentrate	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Rate of exposure

Visible signs of exposure appear in 4 to 8 days after treatment.

Action spectrum

Annual dicotyledonous weeds, including field mustard, wild radish, common hemp-nettle, amaranth species, cleavers, chickweed, field pennycress, lamb's quarters, knotweed species, common groundsel, common goose-foot, purple dead-nettle.

Compatibility with other preparations

Compatible with a number of herbicides used at beet plantings (Healer, Forward, Mitron, Lornet, Kondor, etc.). Before use, check for physical and chemical compatibility.

Product application features

The best result and the fastest herbicidal effect of the drug

is achieved due to:

• treatment of crops in the early stages of weed development;

• crop treatment in the most favorable weather conditions. The optimum

ambient temperature is from 10 to max. 25 ° C. Do not apply to beet crops weakened by frost, heat and pests.

Btr.
BETAREN 22 OEC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet, fodder beet	Annual dicotyledonous weeds (including amaranth species)	3,0	100-200	Planting spraying at 4 true leaves stage and earlier stages of weed growth	60(1)
		1,5	100-200	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	60(2)
		1,0	100-200	spraying of plantings at seed leaf stage of weed growth (1st, 2nd and 3rd waves)	60(3)

Effectiveness of BETAREN 22, OEC application

1.

2.

Sugar beet

1. Treated with Betaren 22, OEC

2. Treated with 2-component herbicide

phenmedipham 160 g/L + desmedipham 160 g/L

Postemergence herbicide for controlling annual dicotyledonous weeds, including amaranth, on sugar beet plantings

ADVANTAGES

- **Rapid destruction of weeds because of high penetration power due to oil formulation**
- **Highly effective control of annual dicotyledonous weeds, including goosefoot, amaranth species, and others**
- **Excellent compatibility with other herbicides in tank mixtures to expand the action spectrum**

carbamates	**3 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Active ingredients inhibit photosynthesis, carbon dioxide digestion by plants, and phosphorylation process, thus causing disturbance of the energy balance and basic metabolic reactions. Phenmedipham and desmedipham penetrate through leaves and have a translaminar effect.

Oil emulsion concentrate improves significantly herbicide absorption. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. When applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions.

Protective effect period

The preparation affects weeds present in the plantings during spraying, and its action time depends on time before the next wave of weeds, which is function of weather conditions during application. If the second wave appears with a delay, the action time will amount to 3 or 4 weeks or more, i.e. beet plants will demonstrate normal growth at their earlier stages, when the crop is most sensible to weeds.

Rate of exposure

Visible signs of exposure appear in 4 to 8 days after treatment.

Action spectrum

Annual dicotyledonous weeds, including field mustard, wild radish, common hemp-nettle, amaranth species, cleavers, chickweed, field pennycress, lamb's quarters, knotweed species, common groundsel, common goose-foot, purple dead-nettle.

Compatibility with other preparations

Compatible with a number of herbicides used at beet plantings (Healer, Forward, Mitron, Lornet, Kondor, etc.). Before use, check for physical and chemical compatibility.

Not compatible with products that have an alkaline reaction. Before mixing, check the physical and chemical compatibility of the products. When preparing tank mixtures, do not mix the products directly without first diluting (dispersing) in water.

Pesticide selectivity

Desmedifam suppresses annual dicotyledonous weeds and is most effective against field mustard, lamb's quarters, wild radish, field pennycress, chickweed, black bindweed, and common fumitory. Resistant species: ragweed, pigweed species.

Fenmedifam is effective against shepherd's purse, poppy, common crucifer, mustard, toadflax, white pigweed, and certain species of buckwheat and bindweed (excluding knotweed).

Btr. NEW
BETAREN 320 OD

Product application features

The best result and the fastest herbicidal effect of the drug is achieved due to:

- treatment of crops in the early stages of weed development;
- crop treatment in the most favorable weather conditions. The optimum ambient temperature is from 10 to max. 25 ° C. Do not apply to beet crops weakened by frost, heat and pests.

It is not recommended to spray beet crops weakened by frost, heat, pests, or if there is a possibility of rain or heavy dew.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous weeds (including amaranth species)	1,5	200-300	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	60(2)
		1,0		Spraying of plantings at seed leaf stage of weed growth (1st, 2nd and 3rd waves)	60(3)
Fodder beet	Annual dicotyledonous weeds (including amaranth species)	1,5	200-300	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	-(2)
		1,0		spraying of plantings at seed leaf stage of weed growth (1st, 2nd and 3rd waves)	-(3)

Application is possible with a working solution consumption rate of 100 l/ha.

ethofumesate 126 g/L + phenmedipham 64 g/L + desmedipham 80 g/L

Postemergence herbicide to control annual dicotyledonous weeds, including amaranth, catch weed bedstraw, common chickweed, dish mustard, much weed, knotweed as well as some annual grass - barnyard grass and green foxtail on the beet crops.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OEC**
- **Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation**
- **Does not have phytotoxic action on the crop that raises the level of crop yield**
- **Highly effective against annual dicotyledonous and some grass weeds at their early stages of development**
- **Highly compatible as part of prepared mixtures with other herbicides to enhance the spectrum of action**
- **Presence of ethofumesate penetrating through leaves and roots ensures a long-term beet protection from weeds**

Mode of action

Due to its weed penetration features, oil emulsion concentrate provides significant improvement in herbicide absorption. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation; when applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions.

The preparation impairs photosynthesis and protein metabolism in weeds. Phenmedipham and desmediphan penetrate through leaves and have a translaminar effect affecting photosynthesis. Ethofumesate penetrates roots and leaves and has a systemic effect impairing mitosis in cells of weeds.

Rate of exposure

Visible signs of herbicide action appear depending on weather conditions on 4th to 8th day after application.

benzofurans, carbamates	**2 years**
Oil dispersion	**-15°C to + 35°C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

Protective period is determined by appearance of the second and third waves of weeds, which is dependent on weather conditions. The preparation affects weeds present in the plantings during spraying.

Phytotoxicity

The preparation is selective enough to avoid exposure to sugar, table and fodder beet when used in line with the proposed regulations.

Phytotoxicity effect on beet plants may appear when applied at high ambient temperatures (above 25°C) and if the crop plants are under stress (frost, drought, etc.). Safe application hours for the herbicide are morning or evening.

Action spectrum

Annual dicotyledonous and some grass weeds.

Sensitive species: ragweed, speedwell (species), pepper plant (species), charlock, black bindweed, sheep bur, common fumitory, bur grass (species), satin flower, spring groundsel, common orach, pigweed (species), milkweed (species), rough-stalked bluegrass, field scorpion grass, houndsberry, caseweed, hemp nettle (species), catch weed, portulaca, wild radish, bladder campion, sandweed, field pansy, amaranth (species), dish mustard, day-nettle.

Moderately sensitive species: bluebottle, vetch, Aleppo grass, tansy mustard, velvetleaf, copper rose, loose silky bent, oat grass, sow thistle (species), green ginger, millet (species), crabgrass, foxtail (species).

Feebly sensitive species: Canadian thistle, sheepbine, foxtail, dandelion (species), ryegrass (species), field chamomile, quack grass, mayweed, quitch.

Btr. NEW
BETAREN MAX OD

Product application features

The best result and the fastest herbicidal effect of the drug is achieved due to:

- treatment of crops in the early stages of weed development;
- crop treatment in the most favorable weather conditions. The optimum ambient temperature is from 10 to max. 25 ° C. Do not apply to beet crops weakened by frost, heat and pests.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous (including amaranth species) and some grass weeds	1,5	200-300	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	60(2)
		1,0	200-300	Successive spraying of plantings at seed leaf stage of weed development (1st, 2nd and 3rd waves)	60(3)
Fodder beet	Annual dicotyledonous (including amaranth species) and some grass weeds	1,5	200-300	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	-(2)
		1,0	200-300	Successive spraying of plantings at seed leaf stage of weed development (1st, 2nd and 3rd waves)	-(3)

Application is possible with a working solution consumption rate of 100 l/ha.

ethofumesate 126 g/L + phenmedipham 63 g/L + desmedipham 21 g/L

Postemergence herbicide to control annual dicotyledonous weeds, including amaranth, catch weed bedstraw, common chickweed, dish mustard, much weed, knotweed as well as some annual grass - barnyard grass and green foxtail on the beet crops.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OEC**
- **Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation**
- **Does not have phytotoxic action on the crop that raises the level of crop yield**
- **Highly effective against annual dicotyledonous and some grass weeds at their early stages of development**
- **Highly compatible as part of prepared mixtures with other herbicides to enhance the spectrum of action**
- **Presence of ethofumesate penetrating through leaves and roots ensures a long-term beet protection from weeds**

Mode of action

Due to its weed penetration features, oil emulsion concentrate provides significant improvement in herbicide absorption. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation; when applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions.

The preparation impairs photosynthesis and protein metabolism in weeds. Phenmedipham and desmediphan penetrate through leaves and have a translaminar effect affecting photosynthesis. Ethofumesate penetrates roots and leaves and has a systemic effect impairing mitosis in cells of weeds.

Protective effect period

Protective period is determined by appearance of the second and third waves of weeds, which is dependent on weather conditions. The preparation affects weeds present in the plantings during spraying.

benzofurans, carbamates

3 years

oil emulsion concentrate

-10˚C to +35˚C

Hazard class 2, highly hazardous substance

canister of 5 l

No phytotoxicity at recommended rates

Rate of exposure

Visible signs of herbicide action appear depending on weather conditions on 4th to 8th day after application.

Action spectrum

Annual dicotyledonous and some grass weeds.

Sensitive species: ragweed, speedwell (species), pepper plant (species), charlock, black bindweed, sheep bur, common fumitory, bur grass (species), satin flower, spring groundsel, common orach, pigweed (species), milkweed (species), rough-stalked bluegrass, field scorpion grass, houndsberry, caseweed, hemp nettle (species), catch weed, portulaca, wild radish, bladder campion, sandweed, field pansy, amaranth (species), dish mustard, day-nettle.

Moderately sensitive species: bluebottle, vetch, Aleppo grass, tansy mustard, velvetleaf, copper rose, loose silky bent, oat grass, sow thistle (species), green ginger, millet (species), crabgrass, foxtail (species).

Feebly sensitive species: Canadian thistle, sheepbine, foxtail, dandelion (species), ryegrass (species), field chamomile, quack grass, mayweed, quitch.

Compatibility with other preparations

Compatible with a number of herbicides used at beet plantings (Healer, Forward, Mitron, Lornet, Kondor, etc.). Before use, check for physical and chemical compatibility.

Btrs.
BETAREN SUPER MD OEC

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- crop treatment at earlier stages of weed development;
- crop treatment in the most favorable weather conditions. Optimal ambient temperature – max. 25°C. Do not apply on beet plantings weakened by frosts, heat, and pests.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet, fodder beet	Annual dicotyledonous (including amaranth species) and some grass weeds	2,7-3,6	100-200	Spraying of plantings at 4 true leaves stage	53(1)
		1,35-1,8	100-200	Successive spraying at 2-4 leaves stage of weed development (1st and 2nd waves)	53(2)
		0,9-1,2	100-200	Successive spraying of plantings at seed leaf stage of weed development (1st, 2nd and 3rd waves)	53(3)

Effectiveness of BETAREN SUPER MD, OEC application

1.

2.

Sugar beet

1. After 2-fold treatment with Betaren Super MD, OEC 1.2 L/ha in a mixture with herbicides against dicotyledonous weeds

2. Untreated control

phenmedipham 60 g/L + desmedipham 60 g/L + ethofumesate 60 g/L

Postemergence herbicide to control annual dicotyledonous weeds as well as some annual grass on sugar and fodder beet plantings.

ADVANTAGES

- **Highly effective against annual dicotyledonous and some grass weeds at their early stages of development**
- **Highly compatible as part of prepared mixtures with other herbicides to enhance the spectrum of action**
- **Fast herbicide action**

Mode of action

The preparation impairs photosynthesis and protein metabolism in weeds. Phenmedipham and desmediphan penetrate through leaves and have a translaminar effect, thereby preventing photosynthesis. Ethofumesate penetrates roots and leaves and has a systemic effect impairing mitosis in cells of weeds.

Protective effect period

Protective period is determined by appearance of the second and third waves of weeds, which is dependent on weather conditions. The preparation affects weeds present in the plantings during spraying.

Rate of exposure

Weeds stop growing during the first day after treatment. Visible signs of herbicide effect on weeds appear in 3 or 4 days after treatment.

carbamates, benzofurans	**3 years**
emulsion concentrate	**-10˚C to +25˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
Phytotoxicity may occur	**Stock solution preparation is required**

Action spectrum

Annual dicotyledonous and some grass weeds.

Sensitive species: ragweed, speedwell (species), pepper plant (species), charlock, knotweed, sheep bur, common fumitory, bur grass (species), satin, spring groundsel, common orach, pigweed (species), rough-stalked bluegrass, field scorpion grass, houndsberry, caseweed, hemp nettle (species), catch weed, wild radish, bladder campion, sandweed, field pansy, amaranth (species), dish mustard, day-nettle.

Moderately sensitive species: bluebottle, vetch, Aleppo grass, tansy mustard, velvetleaf, copper rose, loose silky bent, oat grass, green ginger, millet (species), crabgrass, foxtail (species).

Feebly sensitive species: Canadian thistle, sheepbine, foxtail, sow thistle (species), dandelion (species), ryegrass (species), field chamomile, quack grass, mayweed, quitch.

Compatibility with other preparations

Use as part of prepared mixes to enhance the spectrum of action. Compatible with a wide number of herbicides, such as Lornet, Healer, Forward, Mitron, Kondor and others used on beet plantings. Before use, check for physical and chemical compatibility.

Btre.
BETAREN EXPRESS AM EC

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- crop treatment at earlier stages of weed development;
- crop treatment in the most favorable weather conditions. Optimal ambient temperature – max. 25°C. Do not apply on beet plantings weakened by frosts, heat, and pests.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar and fodder beet	Annual dicotyledonous, including amaranth, and some species of grass weeds	4,0	200-300	Planting spraying at 2-4 true leaves stage and earlier stages of weed growth (2-4 leaves)	60(1)
		2,0	200-300	Planting spraying at seed leaf stage of weed growth (during 1st and 2nd wave every 7 to 15 days)	60(2)

Effectiveness of BETAREN EXPRESS AM, EC application

1.

2.

3.

Herbicidal effect on some types of weeds in sugar beet crops after application of herbicide Betaren Express AM, EC

bentazone 300 g/L

Postemergence herbicide to control annual dicotyledonous weeds in soybean and pea crops.

ADVANTAGES

Innovative formulation and enhanced formulation of bentazone provide for:

- **Increased herbicidal activity compared with conventional preparations based on bentazone salt**
- **High penetration rate and rapidity of action**
- **Reduction in the amount of active ingredient per hectare without loss of efficiency**

Flexible application times allowing for integration into any soybean protection schemes

It has no restrictions for crop rotation.

Mode of action

Bentazone has a pronounced contact action and is absorbed mainly by the green parts of plants. The active substance interferes with the process of photosynthesis, which leads to the death of annual dicotyledonous weeds.

Protective effect period

The product is effective against the weeds present in the crops at the time of treatment. The period of protective effect: until the emergence of the second wave of weeds.

Rate of exposure

Depending on weather conditions, visible signs of oppression of weed plants appear on days 3-7 after treatment with a herbicide. The complete death of weed plants occurs in about two weeks.

thiadiazines	**2 years**
colloidal solution concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
Phytotoxicity may occur	**Stock solution preparation is required**
Aerial spraying is allowed	

Action spectrum

Annual dicotyledonous weeds, including those resistant to MCPA.

Susceptible species: cornflower, hedge mustard, field mustard, common fumitory, chickweed, common arache, shepherd's purse, corn chamomile, thorn apple, red-root amaranth, common cocklebur, etc.

Moderately sensitive species: common ragweed, black bindweed, little-flower quickweed, lamb's quarters.

Low susceptible species: creeping thistle, field poppy, field pansy, speedwell (species), purple dead-nettle.

Compatibility with other preparations

The product is compatible with insecticides, fungicides, and herbicides. Before use, a preliminary verification of the physical and chemical compatibility of the components to be mixed is required.

Product application features

• The best results and the fastest herbicidal action of the product are achieved with:

- Optimal choice of treatment time: in the early stages of development of annual dicotyledonous weeds (2-6 leaves) and with their outbreak, but not later than the time when the growing crop closes the weeds from contact with the herbicide solution.

- Favorable weather conditions: spraying is carried out at optimum humidity and air temperature at 15 °C to 25 °C, in windless clear weather in the morning or evening hours.

• When spraying, ensure that the weeds are completely wetted with a working solution of the herbicide.

The treatment of the most sensitive cultivated plants is recommended to take place in cloudy weather at temperatures below 20 °C (late in the evening or early in the morning).

• It should be taken into account the various varietal sensitivity of peas to bentazone-based preparations.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Soybean	Annual dicotyledons weeds, including Xanthium strumarium	2,0-3,0 2,0-3,0(A)	200-300 25-50(A)	Spraying of crops starting from the 1st true leaf stage and in the early phases of weed growth (2-6 leaves)	60(1)
Pea	Annual dicotyledonous weeds, including those resistant to MCPA	1,5-3,0 1,5-3,0(A)	200-300 25-50(A)	Spraying the crops at the stage of 5-6 leaves in the crop and early growth stages of weeds. Take into account varietal sensitivity.	60(1)

(A) - aerial treatment

Effectiveness of BENITO, CSC application

1.

2.

3.

Soybean

1. Treated with Benito, CSC 2.0 L/ha

2. Untreated control

Aclonifene 600 g/L

Herbicide for sunflower protection during the growing season

ADVANTAGES

- **New mode of action against resistant weeds**
- **Safe protection of classical sunflower during the growing season without after-effects**
- **Features a soil screen**
- **Effectively controls major dicotyledonous weeds**

diphenyl ethers

3 years

suspension concentrate

-15 to +35 °C

Hazard Class 3, moderately hazardous substance

canister of 10 l

Phytotoxicity may occur

Mode of action

Aklonifene is an active ingredient from the chemical class of diphenyl ethers with a novel mode of action. Aklonifene is an inhibitor of solanesyl diphosphate synthase (SDS), which is involved in pigment biosynthesis.

This systemic active ingredient is absorbed by green organs of weeds (not absorbed by root system).

The visual effect is bleaching of young weed plants.

Rate of exposure

When applied to vegetative weeds, the effect of the product can be seen within the first days after treatment, weed die-off is observed in 2 or 3 weeks.

Protective effect period

The herbicide provides long-term protection of crops from weeds during the whole vegetation period under favorable weather conditions and appropriate spectrum of weeds.

Product application features

It is not recommended to treat crops under stress from weather conditions, nutrient deficiencies, diseases, or pests. Not recommended for tank mixtures with other pesticides and agrochemicals to avoid potential phytotoxicity.

Action spectrum

Highly sensitive species

Common ragweed, redroot pigweed, mayweed, catchweed, field mustard, galeopsis (species), littleflower quickweed, rape (fallen seed), capsella, common mallow, chamomile (species), common poppy, chickweed, field pennycress, black bindweed, lamb's-quarters, Russian knapweed (species), black grass, common wild oat, annual meadow grass, loose silky bent, darnel ryegrass, bristle grass (species), cockspur, crabgrass

Moderately sensitive species: field brome, witchgrass

Phytotoxicity

Application of the herbicide may cause temporary discoloration, leaf scorch, and crinkling in sunflower plants. These symptoms typically disappear within two weeks and do not negatively affect sunflower growth and development.

When tank-mixed with other agrochemicals, there is a potential for increased phytotoxic effects.

Brv. NEW BRAVURA SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sunflower	Annual dicotyledons and some grass weeds	2-2,5	200-300	Spraying of crops in the 2 to 4 true leaves of the crop and in the early stages of weed growth	60(1)

Effectiveness of BRAVURA, SC application

1.

2.

3.

4.

Classical sunflower crops
1. Treated with Bravura, SC, compared to control
2. Control

Sunflower crop condition after treatment with Bravura, SC
2.5 L/ha
3. After 9 days
4. After 2 months

prometryn 500 g/L

Soil herbicide for major crop protection programs

ADVANTAGES

- **Strategic approach: weed control at all stages of competition with the crop, starting from the earliest ones**
- **The destruction of a wide range of annual weeds, including a number of tough species**
- **Long protective period**
- **No residual effect on subsequent crops in the crop rotationVia-ble option: one herbicide for use on many crops cultivated on farm**

triazines	**3 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Mode of action

Prometryn inhibits the Hill reaction and suppresses photosynthesis in sensitive weeds, which leads to their death. With the preemergent application, the herbicide destroys the weeds at the time of their germination by absorbing from the soil by roots and sprouts. The product acts on the sprouted weeds through the leaves.

Protective effect period

30 to 80 days. The duration of the product action depends on soil moisture, weather conditions, and the species composition of weeds.

Rate of exposure

The product effect starts 2-4 days after the emergence of weeds, with their complete death seen in 7 to 12 days.

Action spectrum

Annual dicotyledonous and grass weeds

Susceptible species: little-flower quickweed, hedge mustard, common fumitory, chickweed, common arache, field poppy, lamb's quarters, horseweed, shepherd's purse, field pansy, cornflower, large crabgrass, speedwell (species), field mustard, small nettle, thorn apple, common cocklebur, yellow foxtail and green foxtail, red-root amaranth, corn spurry, common groundsel, field milk thistle, pimpernel (species).

Moderately susceptible species: ragweed, black bindweed, treacle mustard, stinging nettle, black nightshade, hemp-nettle (species), wild radish, knotweed, pale persicaria, barnyard grass, wild oat, common purslane, chamomile and scentless mayweed, field pennycress, cleavers, black grass.

Low susceptible species: annual bluegrass, corn chamomile, purple dead-nettle, creeping thistle, field vetch.

Compatibility with other preparations

Effective when used alone. If there is a need to use the product in tank mixtures with other pesticides, the components to be mixed should be checked for physical and chemical compatibility.

Brg.
BRIG SC

Product application features

• The maximum herbicidal effect is achieved with sufficient availability of soil moisture and optimum air temperature-that is, 15 °C to 20 °C. Under low humidity (in arid soil conditions), surface working-in of the preparation to a depth of 2-3 cm is recommended.

• The soil of the arable layer should have a finely waxy structure, the surface of the field being treated should be well leveled.

• The consumption rate of the product must be selected depending on the mechanical composition of the soil and its potential contamination.

On light soils, the minimum recommended limits are applied, on heavy (hyperhumus) soils, rates of application increase up to the highest level.

• The herbicide is active against both germinating weeds and those already grown up to 2 true leaves at the time of treatment.

After applying the herbicide, do not conduct inter-row cultivations in order not to disturb the «herbicidal screen.»

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Potatoes (except early ripe varieties)	Annual dicotyledons and grass weeds	2,0-3,5	200-300	Spraying the soil before the crop sprouting	60(1)
Carrots (except bunchings)	Annual dicotyledons and grass weeds	1,5-3,0	200-300	Spraying the soil before sowing, before crop sprouting or sowing at the stage of 1-2 true leaves	60(1)
Chickpea	Annual dicotyledons and grass weeds	2,0-3,0	200-300	Spraying the soil before the crop sprouting	60(1)
Beans	Annual dicotyledons and grass weeds	2,0-3,0	200-300	Spraying the soil 2-3 days before the emergence of the crop	60(1)
Sunflower	Annual dicotyledons and grass weeds	2,0-3,5	200-300	Spraying the soil before sowing, concurrent with sowing or before the emergence of the crop	60(1)
Soybean	Annual dicotyledons and grass weeds	2,5-3,5	200-300	Spraying the soil before the crop sprouting	60(1)
Maize	Annual dicotyledons and grass weeds	2,0-3,5	200-300	Spraying the soil before sowing, concurrent with sowing or before the emergence of the crop	60(1)

propisochlor 370 g/L + terbuthylazine 185 g/L

Pre-emergence herbicide in the oil formulation for the protection of broad-leaved crops

ADVANTAGES

- **Expanded spectrum of action against dicotyledonous and grass weeds**
- **Eradication of weeds from sprouting to early development phases**
- **Long-term protection from repeated crop infestation**
- **No phytotoxic effect on crops or restrictions on crop rotation**
- **Working-in is not required**

chloroacetanilides, triazine	**2 years**
Oil dispersion	**-15 to +35°C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Propisochlor is mainly absorbed by the roots of seedlings. Effective against weeds during sprouting; has a weak effect on growing weeds. Inhibits meristematic cell division and protein and nucleic acid synthesis, which suppresses root growth, decreases osmotic potential and results in death of sprouts. Propisochlor effectively eradicates annual grass weeds as well as some broad-leaved weeds.

Terbuthylazine has a systemic action. It is absorbed by the roots and leaves of weeds and moves acropetally via the xylem. The substance inhibits electron transport during photosynthesis, which leads to death of weeds. The herbicidal effect is observed for both germinating seeds and sprouts. Main spectrum of action: annual dicotyledonous weeds as well as some grass weeds

VERSIA, OD, combines two mechanisms of action and exhibits a synergistic effect of active ingredients, significantly broadening the spectrum of weeds eradicated (dicotyledonous and grass weeds), as well as the range of herbicidal effect (is effective against both germinating seeds and sprouts).

Protective effect period

A single application ensures the purity of seeds for 60–80 days (mainly throughout the growing period).

Rate of exposure

Weeds die several days after sprouting.

Action spectrum

Annual grass and dicotyledonous weeds

Highly susceptible species (95–100% eradication): barnyard grass, yellow foxtail, green foxtail, rough bristle grass, large crabgrass, annual meadow grass, etc.

Susceptible species (85–95% eradication): common millet, witchgrass, Aleppo grass, Cuba grass (from seeds), black grass, amaranth (species), goosefoot, black nightshade, chamomile (species), little-flower quickweed, shepherd's purse, red dead-nettle, chickweed, common purslane, drug fumitory, potentilla (species), etc.

Moderately susceptible species (75–85% eradication): trailing hollyhock, duck wheat, black bindweed

Low susceptible species (60–75% eradication): common ragweed, lady's thumb, field mustard, butterweed

Compatibility with other preparations

Effective when used alone. If there is a need to use the product in tank mixtures, the components to be mixed should be checked for physical and chemical compatibility.

Product application features

In soils with high organic matter content, the maximum recommended dose of the product should be applied. After treatment, inter-row cultivation should be avoided for 2–3 weeks to prevent disruption of the herbicide's protective layer.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize, sunflower, soybean	Annual dicotyledonous and grass weeds	3,0-4,0	200-300	Spraying the soil before sowing, after sowing or before crop sprouting	-(1)

Effectiveness of VERSIA, OD application

Treated with VERSIA, OD

clomazone 480 g/L

A pre-emergence herbicide with long-term effect in the soil against annual grass weeds and dicotyledonous weeds in rapeseed, sugar beet and soybean crops

ADVANTAGES

- **Controls a wide range of mixed-type annual weeds**
- **A perfect solution against goosefoot, bedstraw, buttonweed and sunflower drop**
- **Is efficient in all soil types**
- **Requires no mechanical working-in**
- **Can be used on soybean seedlings**

Mode of action

Clomazone has a systemic effect in soil application; it penetrates roots and hypocotyl of weeds and moves along the xylem. It also has a contact effect when applied on vegetative weeds.

Clomazone inhibits the synthesis of pigments necessary for photosynthesis, primarily carotenoids and chlorophylls. As a result, susceptible plants show discolouration, necrosis of green tissues, dwarfing and eventually death.

Protective effect period

Clomazone has a long-term effect in the soil. As a result, it provides protection against weeds for 1-3 months (depending on the soil and climatic conditions).

Rate of exposure

A visible effect is observed within 1-2 days after application. Complete elimination of weeds occurs within a week with pre-emergence application and within 10-14 days when applied on vegetative weeds.

isoxazolidinone	**3 years**
emulsion concentrate	**-15˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
Phytotoxicity may occur	

Action spectrum

Annual dicotyledonous and grass weeds:

Goosefoot, barnyard grass, garden thistle, knotweed, field mustard, chickweed, shepherd's purse, black nightshade, catchweed bedstraw, thorn apple, ragweed, mayweed, rough meadow grass, motherwort, field pennycress, buttonweed, crabgrass, sunflower drop, common purslane, cobblers pegs, common hemp-nettle, common henbit, field horsetail, etc.

Compatibility with other preparations

For a broader spectrum of control, Gals, EC, is compatible with herbicides based on prometryn (Brig, SC), metribuzin (Zontran, CSC), pendimethalin (Estamp, EC), metamitron (Mitron, SC), propisochlor (Acetal PRO, EC), and others.

However, the physical and chemical compatibility of the tank mix components should be tested in each case.

Gls.
GALS EC

Product application features

Pre-emergence soil treatment

Pre-emergence treatment should be done immediately after sowing or within 30 hours of sowing.

Working-in is not necessary. In case of insufficient soil moisture after the herbicide application, soil packing with rollers is recommended.

Under certain conditions, the herbicide may cause a temporary lightening of leaf color and a short-term delay in the growth of the crops, with no long-term negative effects on growth, development, or yield.

If application instructions are followed, no reduction in crop yield has been observed with the recommended use of the product. Care should be taken to avoid herbicide drift when spraying sensitive crops.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter rapeseed, sugar beet	Annual grass weeds and annual dicotyledonous weeds	0,2	200-300	Spraying the soil before crop sprouting	60(1)
Soybean	Annual grass weeds and annual dicotyledonous weeds	0,7-1,0		Spraying the soil before crop sprouting or sowing at the stage of 3 true leaves	

Warning! ***Crop rotation restrictions when using Gals, EC at a rate of 0.7–1.0 l/ha: It is not recommended to sow barley, rye, wheat, oats, alfalfa, millet, beets, cabbage, or sunflowers the year after application.***

bentazone 300 g/L + quizalofop-P-ethyl 45 g/L

Selective systemic contact post-emergence herbicide to combat annual dicotyledons and annual and perennial grass weeds in soybean and pea crops.

ADVANTAGES

- **The ingredient of bentazone as an acid enhances the herbicidal effect versus the traditional bentazone salt-based products.**
- **Has a high penetration rate and speed of response due to the innovative formulation**
- **Exhibits high biological efficiency with a reduced amount of active ingredients.**
- **Has a wide application window regardless of the crop development phase.**
- **A tank mixture with anti-cereal herbicides is not required.**

Mode of action

Bentazone has a pronounced contact action and is absorbed by the green parts of plants mainly. The active ingredient violates the process of photosynthesis.

Quizalofop-P-ethyl is rapidly absorbed and easily moves in the plant, is accumulated in the nodes and underground rhizomes of perennial grass weeds, destroys the rhizome meristem tissue completely.

Protective effect period

The product is effective against the weeds present in the crops at the time of treatment. The period of protective effect: until the emergence of the second wave of weeds.

Rate of exposure

Weed dying is manifested after 3-5 days.

benzothiadiazines, aryloxyphenoxypropionates	**2 years**
colloidal solution concentrate	**-15˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Action spectrum

Annual dicotyledons, annual and perennial grass weeds

Susceptible species: common ragweed, cornflower, guasca, black bindweed, lady»s thumb, charlock mustard, common cocklebur, common fumitory, chickweed, buttonweed, goose-foot (sp.), lamb»s quarters, black nightshade, shepherd»s purse, hempnettle (sp.), cleavers, common purslane, corn chamomile, wild radish, chamomile (sp.), corn spurry, amaranth (sp.), field pennycress, cockspur, yellow foxtail, green foxtail, couch grass, wild oat, etc.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Soybean	Annual dicotyledons, including common cocklebur, and annual and perennial grass weeds	2,0-3,0	200-300	Spraying seeding starting from the crop 1st leaf (epicotyl) phase and in the early phases of weed growth (2-6 leaves)	60(1)
Pea	Annual dicotyledons, annual and perennial grass weeds	2,0-2,5	200-300	Spraying seeding starting from the crop 5th-6th leaf phase and in the early phases of weed growth (2-6 leaves)	21(1)

Effectiveness of Geizer, CSC application

1.

2.

Soybean

1. Treated with Geizer, CSC 3.0 L/ha at the 1 ternate leave stage.

2. Untreated control

quizalofop-P-ethyl 50 g/L + imazamox 38 g/L

Postemergence selective herbicide of systemic effect intended to control annual dicotyledonous weeds, and annual and perennial grass weeds on sunflower, pea and soybean plantings.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OD**
- **Highly efficient combination of two active ingredients from various classes**
- **Reliable protection of annual dicotyledonous weeds, and annual and perennial grass weeds**
- **Resistance to washing-off by precipitation**
- **Efficient against all agrotypes of broomrape**

aryloxyphenoxypropionates, imidazolinones	**3 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
Phytotoxicity may occur	**Aerial spraying is allowed**
Stock solution preparation is required	

Mode of action

Imazamox is absorbed by leaves and root system of weeds and inhibits synthesis of series of amino acids. Quizalofop-P-ethyl is absorbed by leaves and other aboveground parts of weeds, transferred to sprout and rootstock growing points, and inhibits synthesis of lipids, which caused weed death.

Protective effect period

The preparation penetrates plants via their aboveground organs and moves to the root system. Thus, the preparation affects weeds present among plantings during preparation application. The herbicide does not penetrate through soil and affect weeds that appear after treatment. Preparation efficiency is generally maintained throughout the entire vegetation period.

Rate of exposure

Weed growth is halted within one hour after treatment. Visible signs of damage appear 5–7 days later, manifesting as discoloration and browning of the growth points, followed by chlorosis and complete weed death.

Full weed die-off is observed 2–3 weeks after treatment. The time to growth retardation depends on weather conditions during treatment (humidity, temperature), weed species, and development phase. Young weeds are more sensitive to the herbicide.

Action spectrum

Annual and some perennial dicotyledonous and grass weeds

Susceptible species: common stork's-bill, bird's-eye speedwell, corn speedwell, lady's thumb, knotweed, black mustard, Aleppo grass, drug fumitory, chickweed, common arache, foxtail grass, field poppy, goosefoot (species), bent grass, sun spurge, annual bluegrass, field scorpion grass, wild oat, field milk thistle, scarlet pimpernel, black nightshade, shepherd's purse, hemp-nettle (species), Swiss ryegrass, forked panic grass, switchgrass, barnyard grass, couch grass, broomcorn millet, wild radish, chamomile (species), large crabgrass, dogtooth grass, sorghum, field pansy, foxtail (species), Henbit dead-nettle, field pennycress, amaranth (species), etc.

Moderately susceptible species: ragweed, creeping thistle, cornflower, flixweed, common cocklebur, buttonweed, blue lettuce, cleavers, common purslane, corn pansy, black bindweed, common dandelion, etc.

Product application features

Comply with crop rotation limitations. All crops may be sowed the next year, except beet (safe interval between herbicide application and beet sowing – 16 months).

The product is nonphytotoxic to peas, soybeans, and sunflowers resistant to imidazolinones when application guidelines are followed. However, in some cases, the maximum herbicide dose may cause short-term discoloration of pea and soybean leaves, which does not negatively affect yield.

It is not recommended to treat crops under stress from weather conditions, nutrient deficiencies, diseases, or pests.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sunflower (sorts and hybrids resistant to imidazolines)	Annual dicotyledonous weeds, and annual and perennial grass weeds	0,9-1,0 0,9-1,0(A)	200-300 25-50	Planting spraying at earlier stages of weed growth (2-4 leaves) and at 4-5 true crop leaves stage. Comply with crop rotation limitations.	52(1)
Pea	Annual dicotyledonous weeds, and annual and perennial grass weeds	0,7-0,9 0,7-0,9(A)	200-300 25-50	Planting spraying at earlier stages of weed growth (1-3 true leaves) and at 1-3 true crop leaves stage	60(1)
Soybean	Annual dicotyledonous weeds, and annual and perennial grass weeds	0,7-1,0 0,7-1,0(A)	200-300 25-50	Planting spraying at earlier stages of weed growth (1-4 leaves) and at 1-3 true crop leaves stage. Comply with crop rotation limitations.	60(1)

(A) - aerial treatment

Effectiveness of Hermes, OD application

Action of herbicide Hermes, OD 1.0 L/ha on certain weed species

(7 days after treatment)

imazamox 30 g/L + quizalofop-P-ethyl 20 g/L + imazapyr 12 g/L

Post-emergence herbicide with improved soil screen for the protection of sunflower IMI and IMI+ hybrids

ADVANTAGES

- **Maximum herbicidal effect after a single application provided by a combination of active ingredients and oil formulation**
- **Increased activity against dicotyledonous and grass weeds, as well as all broomrape races**
- **Long-term control of repeated weed infestations**
- **Maximum yield**

aryloxyphenoxypropionates, imidazolinones	**2 years**
Oil dispersion	**-15˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
Phytotoxicity may occur	**Stock solution preparation is required**

Mode of action

Hermes Forte, OD is a systemic herbicide with flexible application periods that offers a unique opportunity to eliminate a wide range of weeds in imidazolinone-resistant sunflower crops by post-emergence application.

Imazamox and *imazapyr* are from the chemical class of imidazolinones. They are absorbed by leaves and roots of dicotyledonous and grass weeds, move through the xylem and phloem, and accumulate in meristematic tissues.

The mode of action of imazamox is based on acetohydroxyacidsynthase synthesis inhibition. Acetohydroxy acid synthase is an enzyme involved in the biosynthesis of branched-chain amino acids (valine, leucine, and isoleucine), resulting in impaired protein and nucleic acid synthesis, which halts the growth and development of weeds.

Imazapyr disrupts the synthesis of aliphatic amino acids, reducing the synthesis of DNA, RNA, and soluble protein, which arrests cell division and growth of weeds.

Quizalofop-P-ethyl is from the chemical class of aryloxyphenoxypropionates. It is active against annual and perennial grass weeds and increases the effect against grass weeds. It is rapidly absorbed and easily transported within a plant, accumulating in nodes and underground rhizomes of weeds and completely destroying meristematic tissues. Its mode of action is based on acetyl-CoA carboxylase inhibition and disruption of lipid synthesis.

Hermes Forte, OD herbicide has an innovative oil formulation that provides maximum effect of active ingredients regardless of weather conditions.

Protective effect period

Effective against dicotyledonous and grass weeds throughout the growing period. Effective against weeds that have already emerged or are emerging during treatment.

Rate of exposure

The action of the product starts within one hour after treatment. Visible signs of damage appear after 5–7 days, in the form of discoloration and brown staining of growth points, followed by chlorosis and complete elimination of weeds.

Weeds completely die 2–3 weeks after treatment. The time to growth retardation depends on weather conditions during treatment (humidity, temperature), weed species, and development phase. Young weeds are more sensitive to the herbicide. Leaves of sensitive weeds become affected by chlorosis 1–3 weeks after treatment, and the growth point dies.

Action spectrum

Annual and some perennial grass and dicotyledonous weeds, as well as all broomrape races

Sensitive species: common stork's-bill, common ragweed, field thistle, Persian speedwell, speedwell, field bindweed, knotweed (sp.), mustard (sp.), black bindweed, common fumitory, chickweed, cockspur grass, orache (sp.), foxtail grass, field poppy, lamb's quarters, bent grass, sun spurge, annual bluegrass, scorpion grass, wild oat, field sow thistle, red chickweed, black nightshade, shepherd's purse, hemp-nettle (sp.), Swiss ryegrass, switchgrass, broomcorn millet, couch grass, wild radish, chamomile (sp.), purple crabgrass, Bermuda grass, Aleppo grass, field pansy, foxtail (sp.), amaranth (sp.), field pennycress, common henbit, etc.

Product application features

Short-term phytotoxicity is possible, in the form of growth arrest, as well as light discoloration and crimping of sunflower leaves. These symptoms may last for 1–2 weeks after treatment and then disappear, with little influence on yield.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sunflower (imidazolinone-resistant hybrids*)	Annual and some perennial grass and dicotyledonous weeds	1,0-1,5	200-300	Spraying of crops during early phases of weed growth (2–4 leaves) and the 4–5 true leaves stage in the crop. *Observe restrictions on the crop rotation*	60(1)

** Imidazolinone-resistant hybrids (IMI); Imidazolinone-resistant varieties and hybrids plus (IMI+)*

Warning! Observe restrictions on the crop rotation:

- at the year of application, winter wheat and rye, as well as winter rapeseed (imidazolinone-resistant) can be sown;
- 9 months after application, spring cereal crops, soybean, peas, alfalfa, legumes, maize, sorghum, lupine, and sunflower (imidazolinone-resistant) can be sown;
- 19 months after application, sunflower (including conventional varieties and hybrids), cucumbers, tomatoes, carrots, potatoes, onions, and millet can be sown;
- 26 months after application, sugar beet, table beet, and rapeseed (including conventional varieties and hybrids) can be sown.

Effectiveness of Hermes Forte, OD application

Herbicidal effect of Hermes Forte, OD on weeds in imidazolinone-resistant sunflower crops

Glk. GLOK NEW WG

Florasulam 150 g/kg +Iodosulfuron-methyl-sodium 60 g/kg + mefenpyr-diethyl antidote 60 g/kg

Systemic herbicide to combat a wide range of dicotyledonous weeds in cereal crops

ADVANTAGES

- **Wide spectrum of suppressed dicotyledonous weeds**
- **Elimination of bromegrass and other problematic weeds**
- **Low application rates: cost-effective treatment of 1 ha and optimized logistics costs**
- **High efficiency at low temperatures of +5 °C and lower**

triazolopyrimidine, sulfonylureas	**2 years**
water dispersible granules	**-30°C to +30°C**
Hazard Class 3, moderately hazardous substance	**0.5 L (0.4 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**
Aerial spraying is allowed	

Mode of action

Iodosulfuron-methyl sodium from the sulfonylurea class is an acetolactate synthase (ALS) inhibitor that acts on sensitive plants. It targets dicotyledonous weeds.

Florasulam from the triazolpyrimidine class also provides systemic action. They are mainly absorbed by the leaves of weeds and quickly move to the root system and stems, where they accumulate in growth points and exert a herbicidal effect. It inhibits acetolactate synthase (ALS), an enzyme involved in the biosynthesis of essential amino acids in the meristematic tissues of weeds.

Protective effect period

Against annual weeds — at least 25–30 days before the appearance of a new wave of seedlings. Against perennial weeds — throughout the entire growing season.

Rate of exposure

Active growth of sensitive weeds stops within several hours after spraying the crops with the product. Yellowing of leaves of susceptible plants is noted for the first 3–5 days, after 7–14 days chlorotic spots are formed and growing points die off. Although the herbicide quickly penetrates into the leaves and roots of plants, complete die-off of weeds is noted 2–3 weeks after treatment of crops.

The most rapid herbicidal effect can be achieved by spraying weeds during early growth phases, as well as under favorable growth conditions (optimal humidity and temperature).

Action spectrum

Both annual and perennial dicotyledonous weeds, including stork's-bill, cornflower blue, veronica species, field gromwell, guasca, knotweed species, mustard species, Tatar buckwheat, black bindweed, flixweed, treacle mustard, chickweed, common cocklebur, Tatar lettuce, field poppy, white lamb's quarters, field scorpion grass, common dandelion, common sow thistle, field milk thistle, shepherd's purse, common hemp-nettle, cleavers, common sunflower, broomcorn millet, corn chamomile, fallow rapeseed, wild radish, non-scented chamomile, red-root amaranth, field pennycress, etc.

Compatibility with other preparations

Compatible with most herbicides, fungicides, insecticides, and foliar applications. However, in each specific case, a preliminary check for chemical compatibility of the components to be mixed is necessary

Glk. GLOK NEW WG

Product application features

The most rapid herbicidal effect can be achieved by spraying weeds during early growth phases, as well as under favorable growth conditions (optimal humidity and temperature).

The product is safe for use on spring and winter wheat, spring and winter barley, as well as winter rye and triticale.

Caution: Application on oats has caused phytotoxic effects, leading to reduced yields.

Usage regulations

Crop	Harmful object	Consumption rates: preparation, kg/ha	Consumption rates: working liquid, l/ha	Method, treatment time, and application features	Safety intervals (treatment frequency
Spring and winter wheat, spring and winter barley, winter rye, winter triticale	Annual and perennial dicotyledonous weeds, including those resistant to 2.4-D and MCPA	0,03-0,04 0,03-0,04 (A)	100-300 25-50 (A)	Spraying of crops in spring from the tillering phase to the phase of formation of the second internode of the crop (including) and early growth phases (2–4 leaves) of weeds	60(1)
		0,03-0,04	100-300	Spraying of crops in spring from tillering phase to the phase of formation of the second internode of the crop (inclusive) and early growth phases (2-4 leaves) of weeds with the addition of 200 ml/ha of surfactant Satellite, L (0.1% of the working liquid volume)	
		0,03-0,04 (A)	25-50 (A)	Spraying of crops in spring from tillering phase to the phase of formation of the second internode of the crop (inclusive) and early growth phases (2-4 leaves) of weeds with the addition of surfactant Satellite, L (0.1% of the working liquid volume)	
Winter wheat, winter barley	Annual and perennial dicotyledonous weeds, including those resistant to 2.4-D and MCPA	0,03-0,04	100-300	Spraying of crops in fall from 2-3 leaf phase and early growth phases (2-4 leaves) of weeds	60(1)

(A) - aerial treatment

Effectiveness of Glok, WG application

1–3. Herbicidal effect of Glok, WG 0.04 kg/ha + Satellite, L 0.2 L/ha on weeds 17 days after the treatment

4. Control

1. 2. 3. 4.

tribenuron-methyl 750 g/kg

Postemergence herbicide of systemic effect intended to control annual dicotyledonous weeds, including those 2.4-D and MCPA resistant weeds on cereal crops

ADVANTAGES

- **Highly efficient at low consumption rates**
- **Highly selectivity with regard to cereal crops**
- **No limitations for rotating crops**
- **Wide range of application periods in terms of crop growth phases**
- **Efficient at min. ambient temperature of 5°C**
- **Economical and easy to apply and store**
- **Compatible with most pesticides, which makes is suitable for integrated protection purposes**

sulfonylureas	**3 years**
water dispersible granules	**-30˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**1 L (0.5 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

The preparation has a systemic effect. The active ingredient penetrates the plant via its aboveground portion, inhibits cell division in sensitive weeds, thus stopping their growth in several hours after treatment.

Protective effect period

Controls dicotyledonous weeds throughout the vegetation period (unless 2nd wave of weeds appears).

Rate of exposure

The herbicide is quickly absorbed by leaves and moves along the entire plant, however complete perishing of weeds is observed in 2 or 3 weeks after treatment. How fast the signs of delayed growth appear depends on weather conditions during treatment (humidity, temperature), species composition of weeds and their growth stage. Young weeds are more sensitive to the herbicide.

Action spectrum

Annual dicotyledonous weeds, including 2.4-D and MCPA resistant weeds.

Sensitive species: Canadian thistle, cranebill (species), pepper plant (species), charlock, blindweed, day-nettle (species), vetch, wall rocket, tansy mustard, hemp nettle (species), buttercup (species), treacle erysimum, chickweed, copper rose, wild radish, field chamomile, chamomile (species), campion (species), common sunflower, loesel (species), stinkweed, field pansy, sandweed, green amaranth, yellow field sow thistle, pigweed, cockweed, sandwort (species), storksbill, candytuft (species), toadflax (species), stoneseed, hollyhock (species).

Moderately sensitive species: bluebottle, common fumitory, wild pansy, catch weed, common dandelion.

Feebly sensitive species: ragweed, sheepbine, winterweed.

Compatibility with other preparations

The preparation is compatible with most herbicides: Drotik, CSC; Primadonna, SE; Primadonna Super, CSC; Lintaplant, SC; Ovsugen Super, EC; Ovsugen Express, EC; Lornet, SL; Zinger, WP; Kassius, WSP; Fenizan, SL; Lornet, SL; Sprut Extra, SL. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Product application features

The best result and quickest herbicide action of the preparation are achieved during active growth of young weeds at 2-4 leaves stage.

Gra.
GRANAT WG

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Spring wheat and barley, oats	Annual dicotyledonous weeds, including 2.4-D and MCPA resistant weeds	0,015-0,02	200-300	Planting spraying at 2-3 leaves stage – start of crop tillering at earlier stages of weed growth	60(1)
Spring and winter wheat and barley, oats	Annual dicotyledonous weeds, including 2.4-D and MCPA resistant weeds, Canadian thistle	0,02-0,025	200-300	Planting spraying at crop tillering stage (winter crops in spring) and earlier stages of weed growth (annual – 2-4 leaves, Canadian thistle – rosette)	60(1)
Spring and winter wheat, spring and winter barley	Annual dicotyledonous weeds, including 2.4-D and MCPA resistant weeds	0,01-0,015	200-300	Plant spraying at crop tillering stage (winter crops in spring) with a 200 ml/ha mix of Satellite, L at earlier stages of weed growth (2-4 leaves) and Canadian thistle - rosette	60(1)
Spring and winter wheat, spring and winter barley	Annual dicotyledonous weeds, including 2.4-D and MCPA resistant weeds	0,015-0,02	200-300	Plant spraying at crop tillering stage (winter crops in spring) with a 200 ml/ha mix of Satellite, L at earlier stages of weed growth (2-4 leaves)	60(1)

Effectiveness of Granat, WG application

Spring wheat crops

1. Treatment with Granat, WG
2. Control without treatment

dicamba acid /dimethylamine salt/ 480 g/L

Systemic postemergence herbicide to combat a wide range of dicotyledonous weeds in cereal crops and maize.

ADVANTAGES

- **It shows high biological efficiency against a wide range of dicotyledonous weeds, including the toughest ones.**
- **It suppresses weeds resistant to 2,4-D, MCPA and triazines.**
- **It has a strong synergism with the preparations containing 2,4-D, MCPA, sulfonylureas, triazines, glyphosates.**
- **It is a highly effective component of tank mixtures for enhancing herbicidal action.**
- **It has no restrictions for crop rotation.**
- **It has a milder effect on the crop compared with 2,4-D-based preparations.**

Mode of action

The active ingredient penetrates into the tissue of weedy plants through the leaves, stems, and root system, can move through the whole plant. It causes a hormonal imbalance in the plant, inhibits the process of photosynthesis, increases the rate of cell division, accelerates the processes of respiration. As a result, the normal growth of cells and the development of the whole plant are impaired, which leads to twisting of weeds, loss of turgor, and their death.

Protective effect period

4–6 weeks.

Rate of exposure

Visible symptoms of the product effect appear after 7–15 days, depending on the temperature conditions and the stage of weed development during the treatment period. The complete death of weeds occurs in 15–30 days.

benzoates

5 years

soluble liquid

-30˚C to +40˚C

Hazard Class 3, moderately hazardous substance

canister of 5 l

No phytotoxicity at recommended rates

Action spectrum

Annual dicotyledonous, including those resistant to 2,4-D, MCPA and triazines, and some perennial dicotyledonous weeds.

Susceptible species: ragweed, creeping thistle, cornflower, field bindweed, knotweed (species), cocklebur (species), drug fumitory, chickweed, lamb's quarters, field milk thistle, cleavers, chamomile (species), hemp-nettle (species), amaranth (species), buttercup (species), sorrel (species), hogweed, shepherd's purse, pennycress, wild radish, mustard, buttonweed, dead-nettle (species), etc.

Compatibility with other preparations

The product is compatible in tank mixtures with most pesticides. However, in each case, the products to be mixed should be checked for compatibility.

Product application features

It should be applied to actively vegetative weeds in the temperature range from +10 °C to +28 °C. The maximum recommended rate of product consumption is used for high contamination and overgrown weeds.

Perform spraying in the morning or evening hours in calm weather, not allowing the product to be removed to neighboring cultures.

If replanting is required, sow only cereal crops. Do not use on cereal crops with legumes. Do not treat under heavy dew or if rain is expected within next four hours.

Dmb.
DAMBA SL

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, winter wheat, spring barley	Annual dicotyledonous, including those resistant to 2,4-D and MCPA, and some perennial dicotyledons, including Cirsium arvense, weeds	0,15-0,3	150-400	Spraying of crops in the crop tillering stage, 2–4 leaves in annuals and 15 cm in height in perennial weeds	60(1)
Maize	Annual dicotyledonous, including those resistant to 2,4-D and MCPA, and some perennial dicotyledons, including Cirsium arvense, weeds	0,4-0,8	150-400	Spraying of crops at the stage of 3–5 leaves: 2–4 leaves in annuals and 15 cm in height in perennial weeds	60(1)

tembotrione 100 g/L + iodosulfuron-methyl-sodium 2 g/L + antidote ciprosulfamide 40 g/L

Cross-spectrum herbicide for controlling resistant weed biotypes in maize

ADVANTAGES

- **A new mode of action for controlling resistant forms of grass and dicotyledonous weeds, including perennial species**
- **Control of sunflower and rapeseed seeds**
- **Excellent control of white marigold, pigweed, ragweed, chicken millet, and other common weeds**
- **A wide application window — from 3 to 8 leaves of the crop**
- **The effectiveness does not depend on the moisture level**
- **There are no after-effects in crop rotation**

Mode of action

Tembotrione belongs to the chemical class of triketones and has a systemic effect; it is absorbed primarily by the leaves, moving freely throughout the plant with downward and upward currents, and it can also be absorbed by the roots of plants in small amounts. At the biochemical level, it inhibits the p-hydroxyphenyl-pyruvate-dioxygenase (HPPD) enzyme, an enzyme involved in the synthesis of tocopherol and plastochinone, a compound that transports electrons during photochemical reactions in plant cells. It belongs to Group 27 of the HRAC classification.

It is effective against annual and perennial grass and broad-leaved weeds in maize crops. It affects weeds growing in crops at the time of treatment, but does not affect plants that appear after treatment. The characteristic symptoms of herbicidal action are discoloration of the green parts of plants and subsequent necrosis.

Iodosulfuron-methyl-sodium blocks the function of acetolactate synthase (ALS), a key enzyme in the biochemical synthesis of branched-chain aliphatic amino acids (leucine, isoleucine, and valine).

Ciprosulfamide ensures rapid breakdown of the active substances of this product and their metabolites in maize plant tissues.

triketones, sulfonylureas, antidote	**2 years**
Oil dispersion	**-15°C to +35°C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Action spectrum

Annual and perennial dicotyledonous and grass weeds

Susceptible species: ragweed (spp.), little-flower quickweed, field thistle, black bindweed, lady's thumb, charlock mustard, common cocklebur, common chickweed, butterweed, barnyard grass (spp.), goose-foot (spp.), lamb's quarters, self-seeded poppy, sow thistle (spp.), black nightshade, shepherd's purse, tenacious bedstraw, weedy sunflower, wild radish, rapeseed drop, chamomile (spp.), crabgrass, amaranth (spp.), bristle grass (spp.), dead-nettle (spp.).

Low susceptible species: field bindweed, speedwell (spp.), Cuba grass (Sorghum halepense), quack grass.

Protective effect period

The herbicide has an effect on weeds present in the crops during the spraying period and does not affect those that appear later, but these weeds no longer represent significant competition for the crop.

Rate of exposure

Visible symptoms of the herbicidal effect appear 3-5 days after using the product. Weeds die completely within 2-4 weeks, depending on the species composition and phase of development of weeds, as well as depending on weather conditions.

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DEPRIMO OD

Compatibility with other preparations

It is compatible in tank mixtures with pesticides and agrochemicals used at the same time.

In each specific case, a preliminary check of the physical and chemical compatibility of the mixed products should be carried out, and the phytotoxicity of the mixture to maize plants should be assessed. When preparing tank mixtures, direct mixing of products without prior dilution (dispersion) in water is not allowed.

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize	Annual and perennial grass and dicotyledons weeds	0.8-1.0	200–300	Spraying crops in the phase of 3-8 leaves of the crop and the early phases of weed growth	60(1)

** Under registration*

2,4-D acid /2-ethylhexyl ether/ 400 g/L

Selective postemergence herbicide of systemic effect intended to control annual and perennial dicotyledonous weeds on cereal crops and maize plantings.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation CSC**
- **Herbicide from 2,4-D group of highest bio-activity: an ether penetrates weeds much faster and affect sensitive species to a greater degree compared to 2,4-D salts**
- **Highly efficient against perennial difficult-to-eradicate weeds (sow thistle, thistle, prickly lettuce, corn bindweed, vine-type milkweed)**
- **Rain-resistant: is not washed off by rain in one hour after treatment**
- **Remains efficient in drought conditions**
- **Herbicidal activity starts to appear at +5 °C, thus treatment may be performed earlier than with other preparations of 2,4-D group**
- **No crop rotation limitations**
- **Excellent component for prepared mixes with sulfonylurea herbicides**

Mode of action

2,4-D acts as an auxin-like growth inhibitor. The herbicide in the form of a compound ether has an increased activity. It penetrates and spreads through all parts of weeds, including roots, easily and rapidly, within 1 hour. By accumulating in growth points, it blocks cell growth by inhibiting oxidative phosphorylation, nucleic acid synthesis, and the production of endogenous auxins. It causes deformed leaves, damaged reproductive organs, and the death of apical plant parts.

Protective effect period

This herbicide has no soil activity and works only on weeds present at the time of spraying. It provides effective control of sensitive weeds for the entire growing season.

phenoxy-carboxylates	**5 years**
colloidal solution concentrate	**-20˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Rate of exposure

Visible damage occurs rapidly, depending on air temperature, the specific plant species, and the application rate. Sensitive weeds stop growing within hours of treatment, with visible signs appearing within 1–4 days, and complete death occurring within 3–7 days or more.

Action spectrum

Annual and perennial dicotyledonous weeds.

Sensitive species: pinweed, Canadian thistle, vetch, sheepbine, kew weed, charlock, bankweed, tansy mustard, sheep bur, pigweed, copper rose, Canadian fleabane, vine-type milkweed, corn bindweed, field scorpion grass, field sow thistle, caseweed, weed sunflower, dayflower (species), wild radish, upland cress, curled dock, dish mustard, etc.

Moderately sensitive species: ragweed, bluebottle, speedwell (species), peppergrass (species), velvetleaf, weed hemp, nettle (species), field scabious, saltwort (salt grape), common orach, tormentil (species), button (species), stickseed (species), flaxweed, foalfoot, dandelion (species), catch weed, field daisy (whiteweed), hedge-nettle betony, amaranth (species), chickweed (species), day-nettle (species), houndsberry, etc.

Feebly sensitive species: pepper plant (species), black bindweed, common fumitory, winterweed, spring squaw-weed, hemp nettle (species), green ginger, field chamomile, chamomile (species), bladder campion, field pansy, etc.

Compatibility with other preparations

The preparation has a good compatibility with most herbicides: Zinger, WP; Kassius, WSP; Fenizan, SL; Lornet, SL; Sprut Extra, SL; Ovsugen Super, EC; Ovsugen Express, EC. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, spring barley	Annual and some perennial dicotyledonous weeds	0,5-0,65	200-300	Planting spraying at crop tillering stage and earlier stages of weed growth amid low weed concentration	60(1)
	Annual and perennial (including thistle and sow thistle, lettuce, vine milkweed, sheepbine, etc.) dicotyledonous weeds	0,65–0,9	200-300	Planting spraying at crop tillering stage and earlier stages of weed growth	60(1)
Winter wheat, winter barley, rye	Annual and some perennial dicotyledonous weeds	0,5-0,7	200-300	Planting spraying in spring at crop tillering stage and earlier stages of weed growth amid low weed concentration	60(1)
	Annual and perennial (including thistle and sow thistle, lettuce, vine milkweed, sheepbine, etc.) dicotyledonous weeds	0,7-0,9	200-300	Planting spraying in winter at crop tillering stage and earlier stages of weed growth	60(1)
Maize	Annual and perennial (including thistle and sow thistle, lettuce, etc.) dicotyledonous weeds	0,75-1,2	200-300	Planting spraying at 3-5 leaves stage and earlier stages of weed growth	60(1)

metsulfuron-methyl 600 g/kg

Selective herbicide of systemic effect intended for postemergence treatment of spring and winter wheat, spring and winter barley, oats, and common flax to control annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds, undesired annual and perennial dicotyledonous and grass weeds and Sosnovsky cow-parsnip on non-agricultural lands.

ADVANTAGES

- **Wide range of action - inhibition of nearly all annual dicotyledonous weeds and some perennial dicotyledonous weeds**
- **Low consumption rate of the preparation**
- **Low cost of treatment rate per hectare**
- **High flexibility in terms of application timing**
- **Convenient packing - water-soluble bags**
- **Moderate toxicity to mammals, virtually harmless to bees**
- **Bio-efficiency of the preparation virtually does not depend on weather conditions**

Sulfonylureas	**3 years**
wettable powder	**-15˚C to +40˚C**
Hazard Class 3, moderately hazardous substance	**packet 1 kg (Water-Soluble packet 20*50 g)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**
Aerial spraying is allowed	

Mode of action

The preparation has a systemic effect - penetrates weeds via leaves and roots, is absorbed and moves along the plant through meristematic tissues, thus acting on acetolactate synthase (ALS) ferment. ALS inhibition results in impairment of amino acid synthesis, arrest of cell division and growth, and further plant death.

Protective effect period

During the vegetation period in favorable conditions.

Rate of exposure

The preparation gradually penetrates weeds within 4 hours while arresting their growth. The herbicidal effect appears within 7-21 days depending on weather conditions.

Action spectrum

Annual dicotyledonous weeds, including 2,4-D and 2M-4X resistant weeds, and some perennial dicotyledonous weeds.

Sensitive species: Canadian thistle, vetch, charlock, tansy mustard, sheep bur, satin flower, common groundsel, copper rose, field scorpion grass, dandelion (species), blindweed, hemp nettle (species), field chamomile, wild radish, mayweed, bladder campion, sandweed, field pansy, amaranth (species), dish mustard, day-nettle, and Sosnovsky cow-parsnip.

Moderately sensitive species: speedwell (species), pepper plant (species), milkweed, sow thistle (species), green ginger.

Feebly sensitive species: ragweed, bluebottle, sheepbine, knotweed, common fumitory, common orach, pigweed (species), houndsberry, catch weed.

Compatibility with other preparations

Efficient when used alone. May be combined with preparations based on 2,4-D, MCPA, glyphosate and other pesticides. The preparation may be used in prepared mixes or successively with insecticides or fungicides registered for use on cereal crops or common flax. Test for physical and chemical compatibility before use.

Do not mix Singer, SP herbicide, packaged in water-soluble film, with any boron-containing agrochemicals, including Ultramag Bor, Ultramag Calcium / Calcium Active, Biostim Cereals, due to an irreversible chemical interaction between the polymer film and boron compounds.

Product application features

Attention! Due to high activity of the preparation at low consumption rates, the sprayer tank shall be thoroughly flushed before using a different preparation.

The best result and quickest herbicide action of the preparation is achieved when treating crop at earlier stages of weed growth.

Attention! Comply with crop rotation limitations.

For cereal crops. Treated areas shall be re-sown with spring cereal crops only.

Beet, vegetables, sunflower and buckwheat shall not be sowed the next year after cereal and flax cropping – deep plowing is required at first.

Sunflower and buckwheat shall not be sowed the next year, if soil pH is above 7.5 or after prolonged drought during the period from preparation application until planting of such crops.

For common flax. Treated areas shall be re-sown with spring cereal crops only.

Beet and vegetables shall not be sowed the next year.

Sunflower and buckwheat shall not be sowed the next year, if soil pH is above 7.5 or after prolonged drought during the period from preparation application until planting of such crops.

Application technique. Mix preparation method

Prepare the mix immediately before use.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Spring wheat, spring barley, oats	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds	0,008-0,01 0,008-0,01(A)	200-300 25-50(A)	Planting spraying at earlier growth stages of annual dicotyledonous weeds (2-4 leaves) and perennial weeds in rosette phase, starting from 2 leaves to cereal tillering. Comply with crop rotation limitations	60(1)
Winter wheat, winter barley	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds	0,008-0,01 0,008-0,01(A)	200-300 25-50(A)	Planting spraying in spring at crop tillering stage and earlier growth stages of annual (2-4 leaves) and perennial weeds in rosette phase. Comply with crop rotation limitations	60(1)
Common flax	Annual dicotyledonous weeds, including MCPA resistant weeds,and some perennial dicotyledonous weeds	0,007-0,01 0,007-0,01(A)	200-300 25-50(A)	Planting spraying at 'herringbone' stage with crop as high as 3-10 cm. Comply with crop rotation limitations.	-(1)
Non-agricultural lands (protection zones of power transmission lines, glades, routes of gas and oil pipelines, embankments, and right-of-ways for rail and motor roads, aerodromes and other industrial sites)	Undesired annual and perennial dicotyledonous plants	0,1-0,2	200-300	Spraying of vegetating undesired plants before blossoming to form cereal cover	-(1)
	Undesired annual and perennial dicotyledonous plants	0,2-0,3	200-300	Spraying of vegetating undesired plants after blossoming to form cereal cover	-(1)
	Sosnovsky cow-parsnip	0,15-0,2	200-300	Spraying of vegetating cow-parsnip plants of various ages until budding	-(1)
	Sosnovsky cow-parsnip	0,04-0,05	200-300	Spraying o vegetating annual cow-parsnip plants	-(1)

(A) - aerial treatment

metribuzin 250 g/L

System herbicide in an innovative formulation for controlling a wide range of dicotyledonous and grass weeds on potatoes, tomatoes, soybeans, chickpeas, lupine, winter wheat.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation CSC**
- **Most efficient herbicide based on metribuzin for potato and tomato protection**
- **High bio-activity at consumption rates of the active ingredient reduced by 1.4 to 1.7 times per ha compared to similar dry metribuzin based preparations**
- **'Screening effect" to prevent emergence of weeds**
- **Better penetration into the plant**
- **Reduced pesticide load and cost of treatment**
- **Mix stability**
- **The preparation contains bioactivator**
- **Timely ravage of weeds with Zontran reduces the risk of buck eye rot on potato plantin**

Mode of action

The mode of action is based on inhibiting transport of electron s involved in photosynthesis. The preparation moves in an acropetal manner. The active ingredient is easily absorbed by roots and rootlets of plants, but may also penetrate through leaves.

The formulation - colloid solution concentrate - allows fast metribuzin penetration into the plant and good preparation adhesion to the leaf. This makes the preparation bio-efficient at a reduced mertribuzin dose.

Protective effect period

The preparation effectively suppresses rootlets of vegetating seeds and defers the second way of weeds. The preparation frees plantings from weeds for 1 month depending on weather conditions during the vegetation period.

Rate of exposure

Weeds cease growing as soon as these are treated with the preparation. Visible signs of exposure appear in 2 to 7 days, and weeds perish in 10 to 15 days after treatment.

triazinones	**5 years**
colloidal solution concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Action spectrum

Annual dicotyledonous and grass weeds

Sensitive species: bluebottle, speedwell (species), knotweed (species), charlock, tansy mustard, sheep bur, common fumitory, bur grass (species), satin, spring groundsel, pigweed (species). copper rose, loose silky bent, milkweed (species), rough-stalked bluegrass, oat grass, dandelion (species), caseweed, hemp nettle (species), ryegrass (species), wild radish, chamomile (species), crabgrass, bladder campion, sandweed, foxtail (species), amaranth (species), day-nettle.

Moderately sensitive species: Canadian thistle, velvetleaf, foxtail, field scorpion grass, sow thistle (species), houndsberry, common purslane, field chamomile, quack grass, sorgho (species), field pansy, dish mustard.

Feebly sensitive species: ragweed, catch weed.

Compatibility with other preparations

Compatible with most herbicides, fungicides, and insecticides applied to agricultural crops. In each specific case, especially when mixed with microfertilizers, the components to be commingled shall be checked for physical and chemical compatibility.

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ZONTRAN CSC

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

• treatment at earlier stages of weed growth;

• under favorable growth conditions (optimal humidity and temperature).

If recommendations on preparation application timing and rates are met, no adverse effect on crops is noted. In specific cases, signs of phytotoxicity may be visible during the first days after application, but these do not affect further crop development. Plantings shall not be treated that the crop is under stress (drought, overwatering of heavy soils, plantings attacked by diseases or pests).

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Potato	Annual dicotyledonous and grass weeds	1+ (0.4-0.6)	200-300	Treatment of vegetating weeds before crop emergence and further treatment as tops become as high as 5 cm.	30(2)
		1.1-1.4	300-400	Treatment as tops become as high as 5 cm.	30(1)
Seed tomato (field-seeded)	Annual dicotyledonous and grass weeds	0.4+0.8	300-400	Planting spraying successively at 1-2 crop leaves stage and 2-4 crop leaves stage.	60(2)
		1.2-1.5	300-400	Spraying of plantings at 2-4 crop leaves stage	60(1)
Transplanted tomato	Annual dicotyledonous and grass weeds	1.7	500	Treatment of weeds in 15 to 20 days after transplantation	60(1)
Soybeans	Annual dicotyledonous and grass weeds	0.6-1.2	200-300	Soil treatment before crop emergence	-(1)
Chickpeas	Annual dicotyledonous and grass weeds	1.0-1.5	200-300	Treatment of vegetating weeds before crop emergence	60(1)
Winter wheat	Annual dicotyledonous and grass weeds	0.3-0.5	300-400	Planting spraying in autumn at crop tillering stage and earlier stages of weed growth	60(1)
Lupin	Annual dicotyledonous and grass weeds	1.0-1.5	300-400		-(1)

Caution! The maximum concentration of the working solution must not exceed 0.5 % of the formulated product.

imazamox 40 g/L+ clopyralid /2-ethylhexyl ether/ 90 g/L

Innovative herbicide intended to control grass and dicotyledonous weeds on imidazolines-resistant rapeseed

ADVANTAGES

- **Maximum extended spectrum of action for grass and dicotyledonous weeds due to the effective combination of two active ingredients and unique oil formulation**
- **Control of hard-to-control and offset weeds such as sow thistle, plume thistle, amaranth, black bindweed, etc.**
- **Unconstrained penetration even through the waxy layer of cuticle and fast delivery of active ingredients to all growing points of weeds**
- **Eradication of weeds with their root systems, including buds of renewal and root sprouts**
- **Containment of new waves of weeds (with sufficient soil moisture)**

Mode of action

Clopyralid has a systemic effect, is absorbed by leaves and roots of weed plants, and easily moves accumulating in the growing points and roots. Clopyralid is a synthetic form of natural plant growth hormones that replace natural plant hormones and block their functions. Oversaturation with synthetic hormones leads to disruption of growth processes and plant death. It destroys both the ground part and the root system of weeds, including the buds of renewal and root sprouts of sow thistle.

Imazamox is absorbed by the leaves and root systems of dicotyledonous and grass weeds and moves through the xylem and the phloem accumulating in meristematic tissues. It inhibits the acetolactate synthase enzyme in sensitive plants, which results in the decreased level of amino acids in plant tissues with subsequent disturbance of the synthesis of proteins and nucleic acids. The growth of sensitive weeds ceases several hours after treatment.

Protective effect period

The effect of the herbicide on weed plants lasts from 4 to 8 weeks depending on the climatic and weather conditions.

phyridine-carboxylates, imidazolinones	**2 years**
Oil dispersion	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

The effect on weed plants is most apparent from 5 to 7 days after treatment of crops and depends on the climatic and weather conditions.

Action spectrum

Annual grass and annual and perennial dicotyledonous weeds.

Susceptible species: amaranth (spp.), scarlet, goose-foot (spp.), black mustard, shepherd's purse, lamb's quarters, spurge (spp.), wild buckwheat, drug fumitory, Henbit dead-nettle, chamomile (spp.), field scorpion grass, self-seeding poppy, knotweed, lady's thumb, wild radish, black nightshade, chickweed, corn speedwell, bird's-eye speedwell, field pansy, dogs' chamomile, corn chrysanthemum, coltsfoot, clover (spp.), cornflower, mountain bluet, common groundsel, common dandelion, garden vetch, creeping thistle, common ragweed, field sow thistle, creeping thistle, lettuce (spp.), common cocklebur, large crabgrass, cockspur, Panicum miliaceum subsp. ruderale, bristle grass (spp.), Cuba grass.

Moderately susceptible species: butterweed, cleavers, meadow foxtail grass, wild oat, annual ryegrass, corn pansy.

Compatibility with other preparations

Efficient when used alone. Compatible with most fungicides and insecticides. However, in each specific case, a preliminary check for chemical compatibility of the components to be mixed is necessary.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Imidazolines-resistant spring rapeseed	Annual grasses, annual and perennial dicotyledonous weeds	0,8-1,2	200-300	Spraying of crops in the early phases of weed growth (2-4 leaves) and 2-6 leaves of the crop (before stem elongation phase). *Observe crop rotation restrictions.*	57 (1)
Imidazolines-resistant winter rapeseed				Spraying of crops in spring or autumn in the early phases of weed growth (2-4 leaves) and 2-6 leaves of the crop (before stem elongation phase). *Observe crop rotation restrictions.*	

Observe crop rotation restrictions:

Warning! In the year of application, winter wheat and winter rapeseed (imidazolinone-resistant) may be sown;

the following year – spring and winter wheat, barley, rye, triticale, maize, soybeans, peas, beans, sorghum, alfalfa, lupine, rapeseed, and sunflowers (imidazolinone-resistant);

two years later – oats, sunflowers (traditional varieties and hybrids);

three years later – any crops without restrictions, including traditional varieties and hybrids of rapeseed; sugar beets.

Effectiveness of Ilion, OD application

1.

2.

Imidazolinone-resistant spring rapeseed crops

1. Treated with Ilion, OD 1.2 L/ha

2. Untreated control

rimsulfuron 250 g/kg

Selective herbicide of systemic effect intended to control annual and perennial dicotyledonous and grass weeds on maize and potato plantings.

ADVANTAGES

- **Ravages the broadest range of grass and dicotyledonous weeds**
- **Kassius application fully replaces pre-emergence and postemergence treatment with herbicides**
- **Low consumption rates**
- **No crop rotation limitations**
- **Preparation activity does not depend on weather conditions**
- **Low toxicity to the warm-blooded**

Sulfonylureas	**3 years**
water-soluble powder	**-25˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**1 L (0.5 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

The active ingredient suppresses acetolactate synthase enzyme and stops cell division in sprout and root growing points of sensitive weeds. It is absorbed mainly by leaves, and its efficiency is not therefore dependent on moisture content in soil.

Protective effect period

The bio-effect lasts throughout the vegetation period.

Rate of exposure

In several hours after exposure, sensitive weeds cease growing and no longer compete with crop plant for moisture and mineral absorption. Other visible symptoms (reddening, chlorosis, necrosis, and leaf deformation) appear in 2 or 3 days after treatment, and sensitive weeds die totally in 5 to 15 days.

Action spectrum

Annual and perennial grass and dicotyledonous weeds.

Sensitive species: ragweed, quack grass, Aleppo grass, common orach, loose silky bent, rough-stalked bluegrass, barnyard grass, foxtail (species), crabgrass, sorgho, oat grass, ryegrass, velvetleaf, amaranth (species), pigweed (species), wild radish, caseweed, common fumitory, catch weed, chamomile (species), charlock, spring groundsel, sow thistle (species), sheep bur, vetch, satin, foxtail, copper rose, tufted vetch, hemp nettle (species), woundwort (species), dish mustard, day-nettle.

Moderately sensitive species: Canadian thistle, sheepbine, bladder campion, prickly lettuce, pepper plant (species), field pansy.

Feebly sensitive species: tansy mustard, jimsonweed, houndsberry, blue couch grass.

Compatibility with other preparations

Efficient when used alone. It may be commingled with 2,4-D based preparations for maize treatment, or Zontran, CSC for potato treatment. When combining in mixes, perform trial mixing. Where physical and chemical properties change, avoid combined use.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

• crop treatment in the most favorable weather conditions: optimal air humidity and temperature of 15°C to 25°C.

• Do not use when plants are wet after rain or dew.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Maize	Annual dicotyledonous and grass weed	0,04	200-300	Planting spraying at 2-6 crop leaves stage and earlier stages of weed growth using mix with 200 ml/ha of Satellite, L (surfactant)	60(1)
	Annual and perennial grass and dicotyledonous weeds	0,05	200-300	Planting spraying at 2-6 crop leaves stage with 10-15 cm high weeds (wheat grass) and sow thistle rosette stage using mix with 200 l/ha Satellite, L (surfactant)	60(1)
		0,03 + 0,02	200-300	Spraying of plantings at 2-6 crop leaves stage. Two partial treatments during the 1st and 2nd weed waves (in 10 to 20 days) using mix with 200 l/ha Satellite, L (surfactant) (individual for each treatment)	60(2)
Potato (except early-ripe species)	Perennial (quack grass), annual grass and some dicotyledonous weeds	0,05	200-300	Planting spraying after mounding, at earlier growth stages (1-4 leaves) of annual weeds and with quack grass as high as 10-15 cm using mix with 200 l/ha Satellite, L	60(1)
		0,03 + 0,02	200-300	Planting spraying after mounding during the 1st wave of weeds and second treatment during the 2nd wave of weeds, at earlier growth stages (1-4 leaves) of annual weeds and with wheat grass as high as 10-15 cm using mix with 200 l/ha Satellite, L (surfactant) (individual for each treatment)	60(2)

Effectiveness of Kassius, SP application

Action of the tank mixture of Cassius, SP 0.03 kg/ha + Drotik, CSC 0.4 L/ha on weeds in maize crops

triflusulfuron-methyl 500 g/kg

Postemergence herbicide of systemic effect intended to control annual dicotyledonous weeds on sugar beet plantings

ADVANTAGES

- **Control of a broad range of weeds after beet emergence**
- **Termination of weed growth in 2 hours after treatment**
- **High selectivity toward the crop**
- **High efficiency in any weather conditions**
- **Important element of beet protection system**

Mode of action

It is absorbed mainly by leaves, especially in dry conditions. In wet soil, the preparation is also absorbed by roots, which strengthens its effect. Kondor suppresses acetolactate synthase enzyme driving synthesis of leucine, isoleucine and valine amino acids, stops cell division in sprout and root growing points.

Rate of exposure

In several hours after treatment, sensitive weeds cease growing and significantly reduce absorption of nutrients and water, which actually means that it no longer competes with the crop. However, visible signs, such as anthocyan color, chlorosis, and necrosis, appear only in several days after treatment with weed death in 10 to 15 days.

Sulfonylureas	**3 years**
water dispersible granules	**-30˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**packet 0.6 kg (Water-Soluble packet 10*60 g)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Action spectrum

Annual dicotyledonous weeds.

Sensitive species: green amaranth, common caseweed, sunweed, day-nettle (species), stinging nettle, common nipplewort, Kickxia spuria, chamomile (species), houndsberry, burnet rose, wild radish, knotted pepper plant, common persicaria, rape drop, sunflower drop, yellowweed, field mustard, watercress, bird»s-eye speedwell, field scorpion grass, hemp nettle, dish mustard, velvetleaf, false parsley, sow thistle species (sprouts), catch weed, annual mercury, barnyard grass.

Moderately sensitive species: copper rose, maple-leaved goosefoot, field pansy, knotweed, foxtail, ragweed.

Feebly sensitive species: orach (species), Canadian thistle, pigweed, woundwort (species), common fumitory, satin, black bindweed, winterweed, sheepbine, amaranth.

Protective effect period

The period of protective effect: until the emergence of the second wave of weeds.

Compatibility with other preparations

The preparation is compatible and may be used in the mixes with the following herbicides:

• To enhance the spectrum of action against broad-leaved weeds: Betaren group (Betaren 22, Betaren Express AM, Betaren Super MD), clopyralid (Lornet), metamitron (Mitron) - in reduced doses.

• For postemergence control of grass weeds: quizalofop-P-ethyl (Forward, OEC), phenoxaprop-P-ethyl, quizalofop-P-tefuryl (Healer, OEC). The preparation does not have any limitations on the use of leaf and soil insecticides and fungicides.

Do not mix KONDOR, WG herbicide, packaged in water-soluble film, with any boron-containing agrochemicals, including Ultramag Bor, Ultramag Calcium / Calcium Active, Biostim Cereals, due to an irreversible chemical interaction between the polymer film and boron compounds.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

• Weed treatment at seed leaf stage to 2 leaves stage. Some species, such as charlock and sunflower drop are totally controlled at up to 6 leaves stage. Treatment at later stages demonstrates reduced efficiency, and some species of weeds are rather suppressed than killed.

• Crop treatment during the emergence phase (70-90% of sprouts) to rig closing.

• To enhance the spectrum of action, the preparation is usually mixed in reduced doses with other herbicides for sugar beet. To efficiently control weeds, these shall be normally treated twice.

• Do not perform treatment if rain, or heavy temperature rise or drop is expected in two hours.

• Surfactant Satellite, L shall be used both for individual use and in mixes with other herbicides.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous weeds	0,03	200-300	Planting spraying at seed leaf – 2 true leaves stage and, where necessary, repeated treatment as 2nd wave of weeds appear using mix with 200 l/ha surfactant Satellite, L	60(2)

triflusulfuron-methyl 120 g/L

A highly effective systemic herbicide in oil formulation intended to control a wide range of annual dicotyledonous weeds in sugar beet plantings.

ADVANTAGES

- **Most effective oil formulation of the product compared with "dry" analogs**
- **Additional inclusion of surfactant is not required as the product contains a sufficient amount of adjuvants.**
- **Control of tough weeds (butterweed, red-root amaranth, etc.)**
- **High efficiency in any weather conditions**
- **Expanded spectrum of action and enhanced herbicidal activity of Betaren series products**
- **Decreased consumption rates for sugar beet herbicides when used timely**

Sulfonylureas	**2 years**
Oil dispersion	**-15˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

In dry conditions, the product is absorbed by leaves. In wet soil, the product is also absorbed by roots, which strengthens its effect. The product inhibits the acetolactate synthase enzyme driving the synthesis of leucine, isoleucine, and valine amino acids, stops cell division in sprout and root growing points.

Protective effect period

Until the second wave of weeds.

Rate of exposure

In several hours after treatment, the growth of sensitive weeds ceases. Visible signs, such as anthocyanin color, chlorosis, and necrosis, appear only several days after treatment with weed death in 10 to 15 days.

Action spectrum

Annual dicotyledonous weeds.

Susceptible species: green amaranth, common caseweed, sunweed, day-nettle (spp.), stinging nettle, common nipplewort, chamomile (spp.), houndsberry, burnet rose, wild radish, knotted pepper plant, common persicaria, rape drop, sunflower drop, yellowweed, field mustard, bird's-eye speedwell, field scorpion grass, hemp nettle, dish mustard, butterweed, sow thistle species (sprouts), catchweed, annual mercury, barnyard grass.

Moderately susceptible species: copper rose, maple-leaved goosefoot, field pansy, knotweed, common ragweed.

Low susceptible species: orach (spp.), Canadian thistle, pigweed, woundwort (spp.), common fumitory, chickweed, black bindweed, winterweed, sheepbine, prostrate amaranth.

Compatibility with other preparations

The product is compatible and may be used in tank mixtures with the following herbicides:

- To enhance the spectrum of action against broad-leaved weeds: Betaren group (Betaren 22, Betaren Express AM, Betaren Super OD), clopyralid (Lornet), metamitron (Mitron) – in reduced doses.
- For postemergence control of grass weeds: quizalofop-P-ethyl (Forward), quizalofop-P-tefuryl.

Kndf.
KONDOR FORTE OD

Product application features

For optimal results and the fastest possible herbicide action:

- Treat weeds when they are in the seedling to two-leaf stage. Certain species, such as field mustard and sunflower volunteer plants, are fully controlled at the up to six-leaf stage. Treatment at later stages demonstrates reduced efficiency, and some species of weeds are rather suppressed than killed.
- Apply the product to crops during the growth stage from germination (70-90% emergence) until row closure.
- To broaden the spectrum of control, the product is commonly mixed with reduced doses of other herbicides for sugar beets.
- The ideal application temperature range is between 15 °C and 25 °C.
- At temperatures above 25 °C or below 10 °C for 3-5 hours, metabolism slows, which can cause temporary yellowish spotting on the leaves of treated crops. These symptoms do not appear on new leaves and typically disappear within 10 days, without impacting crop growth or yield.
- Do not apply the product if the crops are affected by diseases, pests, or unfavorable weather conditions such as drought or frost.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous weeds	0,125	200-300	Spraying of crops at the seed leaf stage to the stage of two true leaves in weeds (on the first and second waves)	10(2)
				Spraying of crops at the seed leaf stage to the stage of two true leaves in weeds (on the first, second, and third waves)	10(3)

imazamox 38 g/L + chlorimuron-thyl 12 g/L

Postemergence selective herbicide of systemic effect intended to control annual grass and dicotyledonous weeds on soybean plantings.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OD**
- **Ideal combination of active ingredients**
- **Most extended spectrum of action on weeds at soybean plantings**
- **Prolonged protective period:**
- **Exposure on weeds through leaves and roots**
- **Soil herbicidal activity**

Mode of action

The preparation penetrates leaves of weeds and quickly moves towards roots and stalks. In several hours, cell division in sensitive species of weeds and their growth stops. The formulation of oil dispersion increases wetting and absorbing capacities and improves penetration of active ingredients.

Protective effect period

Useful to control dicotyledonous and grass weeds throughout the vegetation period. Affects weeds already emerged and sprouting during treatment virtually throughout the entire crop vegetation period.

Action spectrum

Annual dicotyledonous and grass weeds.

Sensitive species: ragweed, pepper plant (species), charlock, jimsonweed, sheep bur (species), common fumitory, satin flower, velvetleaf, common orach, copper rose, pigweed, field oat grass field, catch weed, common purslane, barnyard grass, wild radish, violet (species), horehound, foxtail (species), amaranth (species), etc.

imidazolinones, sulfonylureas	**2 years**
Oil dispersion	**-10˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
Phytotoxicity may occur	**Stock solution preparation is required**

Rate of exposure

Sensitive weeds cease growing in several hours after treatment. The herbicide is quickly absorbed by leaves and moves along the entire plant, however complete perishing of weeds is observed in 2 or 3 weeks after treatment. How fast the signs of delayed growth appear depends on weather conditions during treatment (humidity, temperature), species composition of weeds and their growth stage. Young weeds are more sensitive to the herbicide. Leaves of sensitive weeds become chlorotic in 1 to 3 weeks after treatment, and the growing point perishes.

Compatibility with other preparations

Crop rotation limitations shall be observed after using Concept, OD herbicide considering its potential aftereffects.

When re-sowing during the year of application, winter wheat shall be sown. Next year, spring and winter cereals may be sown, and in 2 years all crops without limitations.

Knz.
CONCEPT OD

Product application features

After applying Concept, OD herbicide, and considering its potential residual effects, **observe the following crop rotation restrictions:**

When reseeding in the year of application, it is recommended to plant winter wheat. The following year, spring and winter cereals, as well as maize, may be sown; two years later – all crops with no restrictions.

Do not treat soybean crops under stress from low temperatures (cooling to 6 °C), heat, drought, mechanical damage, or pest and disease pressure.

The product is not phytotoxic to soybeans when applied according to label instructions. However, in some cases, the use of the maximum herbicide rate may cause temporary discoloration of the soybean leaves that were sprayed. These symptoms will fade over time and will not appear on new soybean leaves.

Extended use of herbicides containing sulfonylurea and imidazolinone may lead to the development of resistant weed biotypes. To prevent this, alternate herbicides from different chemical groups with varying modes of action.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Soybean	Annual grass, and annual and some perennial dicotyledonous weeds.	0,6-1,0	200-300	Planting spraying at earlier stages of weed growth (1-3 true leaves) and at 1-3 true crop leaves stage. Comply with crop rotation limitations. When re-sowing during the year of application, winter wheat shall be sown. Next year, spring and winter cereals may be sown, and in 2 years all crops without limitations.	60(1)

terbutilazine 250 g/L + 2,4-D acid/ 2-ethylhexyl ether/ 80 g/L + nicosulfuron 30 g/L

A new option for long-term control of a wide range of weeds in maize.

ADVANTAGES

- **Innovative, unparalleled herbicide for maize protection**
- **An effective combination of three active ingredients of different classes in an advanced formulation for the best result**
- **Increased herbicidal activity against a wide range of grass and dicotyledonous weeds, including tough ones and species with late germination terms**
- **Reinforced soil screen**
- **A longer period of culture protection**
- **No residual effect on rotation crops**

triazines, phenoxyacetic acid derivatives, sulfonylureas	**2 years**
suspension emulsion	**-15˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Protective effect period

Due to the synergy effect and special formulation, the control of annual and perennial grass and annual dicotyledonous weeds is achieved during the whole vegetative period.

Mode of action

Terbutilazin has a systemic effect. It is absorbed by the roots and leaves of weeds, moves acropetally via the xylem. The substance inhibits electron transport during photosynthesis, which leads to the death of weeds.

2,4-D acid /2-ethylhexyl ether/ as part of the product acts as an auxin-like growth inhibitor. It possesses system activity, easily and quickly, within one hour, penetrates and spreads through all parts of weeds, including roots, and blocks cell growth in young tissues.

Nicosulfuron has a systemic effect, which penetrates mainly through the leaves. It is an inhibitor of the formation of the acetolactate synthase enzyme involved in the synthesis of essential amino acids.

The active ingredients contained on Cornegi, SE, possess different herbicidal activity against dicotyledonous and grass weeds. The pronounced synergism and the additive effect of the herbicide components provide an expanded spectrum of action on the weeds and a longer period of their control in maize.

Action spectrum

Annual and perennial grass weeds, annual dicotyledonous weeds

Susceptible species: cut-leaf geranium, trailing hollyhock, knotweed, ragweed, speedwell (species), pale persicaria, lady's thumb, field mustard, black bindweed, thorn apple, common fumitory, chickweed, buttonweed, lamb's quarters, maple-leaved goosefoot, argentill, scarlet pimpernel, shepherd's purse, common hemp-nettle, cleavers, weedy sunflower, switchgrass, common purslane, barnyard grass, couch grass, rapeseed (volunteers), chamomile (species), large crabgrass, Aleppo grass, field pansy, corn pansy, foxtail (species), amaranth (species), field pennycress, dead-nettle (species), corn speedwell, field vetch, little-flower quickweed, hedge mustard, flixweed, common cocklebur, common arache, frosted orach, foxtail, field poppy, blue lettuce, willow euphorbia, bluegrass (species), field scorpion grass, wild oat (species), black nightshade, ryegrass (species), wild radish, common winter cress.

Moderately susceptible species: field milk thistle, creeping thistle, sea aster, field bindweed.

Compatibility with other preparations

The product is compatible with herbicides used at the same time of maize treatment. However, in each case, the products to be mixed should be checked for compatibility.

Product application features

The best results and the fastest herbicidal action of the product are achieved with:

- Optimal choice of treatment time: at the early stages of the development of the dicotyledonous weeds and at the stage of 3-5 leaves of maize.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize	Annual dicotyledons, annual and perennial grass weeds	1,75-2,0	200-300	Spraying the growing crops at the stage of 3 to 5 leaves of the crop.	60(1)

Effectiveness of Cornegi, SE application

1.

2.

Maize crops after treatment with Cornegi, SE 2 L/ha

1. 2 weeks after treatment

2. 1 month after treatment

terbuthylazine 250 g/L + 2,4-D acid /2-ethylhexyl ether/ 80 g/L + clopyralid /2-ethylhexyl ether/ 40 g/L + nicosulfuron 30 g/L

Cross-spectrum herbicide for maize protection

ADVANTAGES

- **Extended spectrum of action and increased efficacy on dicotyledonous weeds**
- **Soil screen**
- **No residual effect on rotation crops**
- **A unique oil formulation for maximum efficacy**

triazines, phenoxyacetic acid derivatives, phyridine-carboxylates, sulfonylureas	**2 years**
Oil dispersion	**-15°C to +30°C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Terbutilazin has a systemic effect. It is absorbed by the roots and leaves of weeds, moves acropetally via the xylem. The substance inhibits electron transport during photosynthesis, which leads to the death of weeds.

2,4-D acid /2-ethylhexyl ether/ as part of the product acts as an auxin-like growth inhibitor. It possesses system activity, easily and quickly, within one hour, penetrates and spreads through all parts of weeds, including roots, and blocks cell growth in young tissues.

Nicosulfuron has a systemic effect, which penetrates mainly through the leaves. It is an inhibitor of the formation of the acetolactate synthase enzyme involved in the synthesis of essential amino acids.

Clopyralid has an auxin type systemic effect. It is absorbed by leaves and roots, easily moves along plants and accumulates in the growing point and roots.

The active ingredients contained on Cornegi Plus, OD, possess different herbicidal activity against dicotyledonous and grass weeds. The pronounced synergism and the additive effect of the herbicide components provide an expanded spectrum of action on the weeds and a longer period of their control in maize.

Action spectrum

Annual and perennial grass weeds, annual dicotyledonous weeds

Susceptible species: ragweed (species), common stork's-bill, chickweed, little-flower quickweed, field mustard, knotweed (species), field pea, common cocklebur, thorn apple, buttonweed, goose-foot (species), lamb's quarters, horseweed, field milk thistle, black nightshade, shepherd's purse, common hemp-nettle, common purslane, cleavers, scentless mayweed, red-root amaranth, prostrate amaranth, tumbleweed amaranth, hedge-nettle betony, field pennycress (species), dead-nettle (species), field bindweed, creeping thistle, field milk thistle (species), goose grass, cockspur, yellow foxtail, green foxtail, switchgrass, large crabgrass, Aleppo grass, couch grass

Rate of exposure

Under favorable conditions, the growth of sensitive weeds stops within six hours after spraying. The complete death of weed plants occurs within 7-15 days after treatment.

Protective effect period

Due to the synergy effect and special formulation, the control of annual and perennial grass and annual dicotyledonous weeds is achieved during the whole vegetative period.

Krpl.
CORNEGI PLUS OD

Compatibility with other preparations

The product is compatible with herbicides used at the same time of maize treatment. However, in each case, the products to be mixed should be checked for compatibility.

Product application features

The best results and the fastest herbicidal action of the product are achieved with:

- Optimal choice of treatment time: at the early stages of the development of the dicotyledonous weeds and at the stage of 3-5 leaves of maize.
- Under Sufficient soil moisture conditions.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize	Annual dicotyledons, annual and perennial grass weeds	1,5-2,0	200-300	Spraying the growing crops at the stage of 3 to 5 leaves of the crop.	60 (1)

Effectiveness of Cornegi Plus, OD application

1.

2.

3.

4.

Result of treatment with Cornegi Plus, OD
1. Before processing
2. 5 days after treatment with Cornegi Plus, OD 1.85 L/ha
3. Left control, right treated with Cornegi Plus, OD
4. 40 days after treatment with Cornegi Plus, OD 1.85 L/ha

MCPA acid 500 g/L (mixture of dimethylamine, potassium, and sodium salts)

It is a systemic post-emergence herbicide for the control of dicotyledonous weeds in a wide range of crops.

ADVANTAGES

- **It is highly effective against a wide range of annual dicotyledonous weeds**
- **It is one of the best products to combat horsetail**
- **It provides suppression of certain types of perennial dicotyledonous weeds (field bindweed, willow euphorbia, etc.)**
- **Rapid manifestation of the herbicidal effect**
- **It does not impose restrictions on crop rotation**

Mode of action

MCPA belongs to the group of hormonal herbicides and acts as an auxin-like hormone. It penetrates plants through above-ground organs, mainly through leaves, and moves throughout the plant, reaching growth points. It causes hypertrophied cell division and deformation of vegetative organs and inhibits the processes of photosynthesis and respiration to kill the weeds.

Rate of exposure

Inhibition or complete cessation of plant growth occurs within several hours. The first symptoms of herbicidal action in the form of wilting, drying out and curling of susceptible weeds appear after 3-7 days, and complete death occurs 2-3 weeks after spraying with the product, depending on prevailing weather conditions.

Protective effect period

The product protects crops from treatment until a new wave of weeds.

aryloxyalkanecarboxylic acids	**3 years**
soluble concentrate	**-15°C to +30°C**
Hazard class 2, substance highly hazardous	**canister of 10 l**
No phytotoxicity at recommended rates	

Action spectrum

Annual dicotyledonous weeds

Susceptible specie: Convolvulus buckwheat, Artemisia ragweed, Hemlock stork, Blue cornflower, Field mustard, Gooseberry officinalis, Descurainia sophia, Common cocklebur, Left-wort jaundice, Field cabbage, Kochia broom, Stinging nettle, Spring ragwort, Spreading quinoa, Self-seeded poppy, Goosefoot (spp.), field forget-me-not, dandelion (spp.), shepherd's purse, weedy sunflower, wild radish, swamp grass, acorn grass (spp.), jasmine, field grass, tuber bulrush, Alisma, annual chickweed, horsetail

Moderately susceptible species: field thistle, speedwell (spp.), field vetch, field bindweed, knotweed (spp.), smokeweed, Theophrastus's rope, spurge, sow thistle (spp.), field bindweed, bladder campion

Weakly susceptible species: common chickweed, black nightshade, hempnettle (spp.), catchweed, common wormwood, odorless chamomile, corn spurry, field violet

Compatibility with other preparations

To expand the spectrum of action on dicotyledonous weeds, it is advisable to combine the product with sulfonylureas. It is also possible to mix it with insecticides, fungicides and fertilizers, provided that the application periods coincide. Before use, it is recommended to test the physical and chemical compatibility of the mixed products.

Kr. NEW KRONVERK SL

Product application features

The fastest herbicidal effect is achieved:

- when treated at early stages of weed development (2-5 true leaves)
- under favorable growth conditions: optimal humidity and temperature (15-200°C). In dry weather, the efficiency of the herbicide is reduced, since the penetration of the active substance into the plant slows down due to a general decrease in the outflow of assimilates from the leaves.

If the recommendations regarding the timing and standards of product application were followed, no negative impact on crops was noted. When used at maximum application rates on some crops and species (flax, peas), slight negative manifestations of the herbicide's action are possible in the first days after application. It is not recommended to use the product if the culture is under stress.

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Winter wheat and barley	Annual dicotyledonous weeds	1.0–1.5	200-300	It is recommended to spray crops in the spring during the tillering phase of the crop before it goes into the tube.	60 (1)
Spring wheat and barley	Annual dicotyledonous weeds	0.7-1.5	200-300	It is recommended to spray crops in the tillering phase of the crop before it goes into the tube.	60 (1)
Peas	Annual dicotyledonous weeds	0.5-0.8	200-300	It is recommended to spray crops in the phase of 3-5 true leaves of the crop (with a pea plant height of 10-15 cm). It is forbidden to treat the crop during flowering.	60 (1)
Oil flax	Annual dicotyledonous weeds	0.8-1.0	200-300	It is recommended to spray crops in the «herringbone» phase at a crop height of 3-10 cm	60 (1)
Rice	Sedges, including compact and seaside Bolboschoenus, as well as marsh weeds (Alisma, Monochoria, Sagittaria, flowering rush)	1.5	200-300	It is recommended to spray crops in the full tillering phase of the crop.	60 (1)

** Under registration*

thifensulfuron-methyl 750 g/kg

A postemergent herbicide to control annual dicotyledonous weeds in soybean and maize. An ideal component of the tank mixtures to enhance the herbicidal effect

ADVANTAGES

- **Highly effective component of the tank mixture to enhance the herbicidal effect**
- **The elimination of most species of annual dicotyledonous weeds, including those resistant to 2,4-D and triazines**
- **Reliable control of tough weeds (species of the cruciferous family, amaranth, cocklebur, etc.)**
- **Without restrictions for crop rotation**

sulfonylureas	**5 years**
water dispersible granules	**-30˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**0.2 L (0.1 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

A systemic herbicide, which is mainly absorbed by the leaves of weeds and quickly moves to the root system and the stems, where it concentrates in the growing-points and exerts a herbicidal effect. At the biochemical level, the mode of action is to block the acetolactate synthase (ALS) enzyme, which is involved in the biosynthesis of essential amino acids in the weed meristematic tissues. This causes cessation of protein synthesis and stops cell division, which leads to the death of weeds.

Protective effect period

Depending on the species composition of weeds, the soil and climatic and weather conditions, the period of protective action is up to 8-10 weeks after the application of the herbicide.

Rate of exposure

The active growth of sensitive weeds and competition with the crop halt within a few hours after treatment. Visible symptoms, such as halt of growth, chlorosis, dying of growth points and necrosis, appear after 2-3 days. The death of sensitive weeds occurs in 10-20 days. Weeds that are in the late developmental stages during spraying stop their growth, which significantly weakens their potential to compete with the crop.

Action spectrum

Annual dicotyledonous weeds, including those resistant to 2,4-D and triazines.

Susceptible species: ragweed, speedwell (species), knotweed (species), field mustard, black bindweed, hedge mustard, cocklebur (species), common fumitory, treacle mustard, chickweed, buttonweed, common arache, field poppy, lamb's quarters, field scorpion grass, hemp-nettle (species), cleavers, sunflower volunteers, common purslane, corn chamomile, wild radish, chamomile (species), common winter cress, violet (species), shepherd's purse, hedge-nettle betony, amaranth (species), corn spurry, field pennycress, dead-nettle (species), etc.

Moderately susceptible species: field bindweed, common dandelion, willow euphorbia.

Low susceptible species: cornflower, black nightshade, field vetch, kochia.

Compatibility with other preparations

The product is compatible with most herbicides, fungicides, insecticides, growth regulators, and mineral fertilizers used in soybean crops (for example, with herbicides Geyser, KKR, Hermes, MD, Concept, MD) and maize (with 2,4-D, Dicamba-based herbicides). In each case, especially when mixed with micronutrient fertilizers, a preliminary check of the components for the chemical compatibility is required.

Tifensulfuron-methyl is incompatible with organophosphate insecticides, which are used for soil, seed treatment, or spraying the leaves 14 days before or 14 days after applying the herbicide.

Kpg. KUPAZH WG

Product application features

- The optimum result and the fastest herbicidal action of the product are achieved:
- Optimal choice of treatment time: At the early stages of the development of the annual dicotyledonous weeds (2-4 leaves) and with their outbreak
- Favorable weather conditions: spraying is carried out at optimum humidity and air temperature, in windless clear weather, providing full coverage of the treated surface with the working solution

Do not use in crops that are under stress caused by frosts, a sharp decrease in temperature, drought, flooding, or other factors.

The interval between treatment and possible atmospheric fallout should be at least 3-4 hours.

To enhance the herbicidal activity and expand the action spectrum based on the species composition of weeds, it is recommended to use in tank mixtures with basic herbicides on soybean (Geyser, KKR, Hermes, MD, Concept, MD) and maize.

- To enhance the herbicidal activity and expand the action spectrum based on the species composition of weeds, it is recommended to use in tank mixtures with basic herbicides on soybean (Geyser, KKR, Hermes, MD, Concept, MD) and maize (Oktava, MD).

To prevent the development of herbicide-resistant weed biotypes, it is recommended to apply this herbicide in tank mixtures with other herbicides from different chemical groups that have distinct modes of action.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Soybean	Annual dicotyledonous weed plants	0,006-0,008	200-300	Spraying of crops at the stage of 1-2 true leaves of the crop and the early stages of weed growth with the addition of 200 mL/ha of the Satellite, L surfactant	60(1)
Maize	Annual dicotyledonous weeds, including those resistant to 2,4-D and triazines	0,015	200-300	Spraying the crops at the stage of 3-5 leaves of the crop and early growth stages of weeds	60(1)
		0,01		Spraying of crops at the stage of 3-5 true leaves of the crop and the early stages of weed growth with an addition of 200 mL/ha of the Satellite, L surfactant	60(1)
Common flax*	Annual dicotyledonous weeds, including MCPA resistant weeds	0,025	200-300	It is recommended to spray crops in the «herringbone» phase of the crop.	60(1)

**- crop expansion pending registration*

Effectiveness of Kupazh, WG application

Maize crops after treatment with tank mixture of herbicides in comparison with control

1. Control

2. Protection with Octave, OD + Kupazh, WG + Assistant

1. 2.

MCPA 500 g/L

Selective herbicide of systemic effect intended to control annual dicotyledonous weeds on cereal crop, potato, flax, pea and other plantings.

ADVANTAGES

- **Efficient protection of critical agricultural crops**
- **Controls a wide range of annual dicotyledonous weeds**
- **Highly selective**
- **Has a systemic effect**

aryloxyalkanecarboxylic acids	**3 years**
soluble concentrate	**-5˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Mode of action

It penetrates plants through aboveground organs, mainly leaves, and moves along the plant towards growing points, that is why MCPA is often referred to as a herbicide of growth-affecting action.

Protective effect period

The preparation protects plantings from the treatment moment until 2nd wave of weeds.

Rate of exposure

First signs of herbicidal effect, such as withering, drying, and twisting of sensitive weeds, appear in 3 to 7 days with their death in two or three weeks after treatment depending on current weather conditions. The fastest herbicidal effect is achieved by treatment at earlier growth stages of annual dicotyledonous seeds and at rosette stage of perennial creeping-rooted weeds, and during favorable weather conditions: optimal humidity and temperature. In arid weather, the herbicidal effect may weaken, as penetration of the active ingredient into the plant becomes slower due to general reduction of assimilate outflow from leaves.

Action spectrum

Annual dicotyledonous weeds, and harmful and poisonous dicotyledonous weeds.

Sensitive species: ragweed, bluebottle, charlock, tansy mustard, sheep bur, spring groundsel, common orach, copper rose (species), field scorpion grass, dandelion (species), caseweed, hemp nettle (species), wild radish, sandweed, amaranth (species), , day-nettle, dish mustard, clubroot, water plantain.

Moderately sensitive species: Canadian thistle, speedwell (species), vetch, sheepbine, pepper plant (species), common fumitory, velvetleaf, milkweed, sow thistle (species), field chamomile, mayweed, bladder campion.

Feebly sensitive species: satin flower, houndsberry, catch weed, green ginger, green pansy.

Compatibility with other preparations

To enhance the spectrum of action on dicotyledonous weeds, it is feasible to combine the preparation with sulfonylureas. It may also be combined with insecticides, fungicides and fertilizers provided their application periods coincide. Before use, check for physical and chemical compatibility of preparations to be commingled.

Lin.
LINTAPLANT SL

Product application features

Cereal crops are highly resistant to the preparation during the recommended growth phases (from tillering to evolving into tube), and their yield is sure to increase after treatment. When used in maximum doses on vegetating plants of some crops (flax, pea, potato), feeble adverse sings of herbicidal effect may be observed during the first days after application. For flax, for example, it may be manifested as a minor decrease in plant height and quality of flax straw. Thus, to reduce consumption rates, the preparation should be widely mixed with other herbicides.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Winter wheat, rye	Annual dicotyledonous weeds	1-1.5	200-300	Planting spraying at crop tillering stage before evolving into tube in spring	60(1)
Spring wheat, barley, oats	Annual dicotyledonous weeds	0.7-1.5	200-300	Planting spraying at crop tillering stage before evolving into tube	60(1)
Millet	Annual dicotyledonous weeds	0.7-1.2	200-300	Planting spraying at crop tillering stage before evolving into tube	60(1)
Sorgho	Annual dicotyledonous weeds	0.7-1.2	200-300	Spraying of plantings at 3-6 crop leaves stage	60(1)
Pea for grain	Annual dicotyledonous weeds	0.5-0.8	200-300	Planting spraying at 3-5 true crop leaves stage (with pea plants as high as 10-15 cm). Do not treat the crop during blossom time	47(1)
Potato	Annual dicotyledonous weeds	1.2	200-300	Soil treatment before crop emergence or as tops of potato reach 10-15 cm	50(1)
Common flax	Annual dicotyledonous	0.8-1	200-300	Planting spraying at 'herringbone' stage with crop as high as 3-10 cm	-(1)
Hop clover and white clover	Annual dicotyledonous weeds	0.8-1.2	200-300	Planting spraying during the year of sowing after 1st crop trefoil leaf appears	-(1)
Hop clover (seed plantings)	Annual dicotyledonous weeds	0.8-1.2	200-300	Planting spraying during the year of seed sowing for 2 or 3 weeks from aftergrowing to embryotic stage of crop inflorescence. Straw may be used as cattle fodder not earlier than 45 days after treatment	-(1)
Hop clover under barley cover	Annual dicotyledonous weeds	0.8-1.2	200-300	Planting spraying at 1-2 trefoil leaves stage (during barley tillering)	-(1)
Timothy grass	Annual dicotyledonous weeds	1-1.5	200-300	Spraying of plantings at crop tillering stage	-(1)
Awnless brome, common foxtail, oat grass, meadow fescue	Annual dicotyledonous weeds	1-1.5	200-300	Weed treatment during the year of crop sowing starting from 1-2 leaves stage to crop evolving into tube. Cattle grazing not earlier than 45 days after treatment	-(1)
Grasslands and pastures	Harmful and poisonous dicotyledonous weeds	1-1.5	200-300	Treatment of vegetating weeds and unwanted greenery. Cattle grazing and mowing not earlier than 40 days after treatment	-(1)

clopyralid 500 g/L

Postemergence selective herbicide intended to control various species of sow thistle, chamomile, and pepper plant on cereal crop, sugar beet, common flax, and other plantings.

ADVANTAGES

- **Irreplaceable for controlling difficult-to-eradicate weeds, such as sow thistle, chamomile, pepper plant, and others**
- **High bio-efficiency**
- **Ravages both the aboveground portion and root system of weeds due to its systemic effect**
- **Highly selective to crops protected**
- **Protects throughout the vegetation period**
- **Demonstrates synergy in mixtures with other herbicides recommended against dicotyledonous and grass weeds**

Mode of action

This is an auxin type preparation of systemic effect. The herbicide is absorbed by leaves and roots, easily moves along plants and accumulates in the growing point and roots.

Protective effect period

Protects the crop against weeds throughout the vegetation period.

Rate of exposure

The preparation quickly penetrates weeds. Arrest of weed growth is observed in several hours after treatment. Visible signs of exposure appear in 4 to 7 days, and weeds perish in 10 to 15 days. Efficiency and speed of action are dependent on consumption rates, weather conditions and weed condition during herbicide application. Maximum herbicide efficiency is attained as it is applied to leaves of young and actively developing plants. Do not use at reduced temperature (below plus 10°C).

phyridine-carboxylates	**5 years**
soluble liquid	**-25˚C to +25˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Action spectrum

Perennial and annual dicotyledonous weeds.

Sensitive species: ragweed, Canadian thistle, bluebottle, vetch, pepper plant (species), black bindweed, sheep bur, tansy mustard, satin flower, spring groundsel, pigweed (species), milkweed (species), dandelion (species), sow thistle (species, including prickly lettuce), caseweed, houndsberry, caseweed, field chamomile, chamomile (species), amaranth (species), dish mustard, day-nettle (species).

Moderately sensitive species: speedwell (species), sheepbine, charlock, common fumitory, field scorpion grass, hemp nettle (species), green ginger, common purslane, wild radish, bladder campion.

Feebly sensitive species: common orach, copper rose, catch weed.

Compatibility with other preparations

The preparation is compatible with preparations based on phenmedipham, desmediphan, ethofumesate, metamitron, MCPA and 2,4-D in the form of salt, and sulfonylureas.

To enhance the range of inhibited weeds, it is recommended to mix the preparation with herbicides to control dicotyledonous weeds (Lintaplant, Fenizan, Betaren 22, Betaren Express AM, and others) and grass weeds (Forward, Healer, etc.). To treat sugar beet plantings, the preparation should be used together with Betaren series herbicides + Forward, OEC.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- application to leaves of young and actively developing weeds;
- crop treatment at ambient temperature above plus 10°C (at reduced ambient temperatures below plus 10°C, herbicidal effect of the preparation become slower);
- using the preparation in mixes;
- application at mix temperature plus 10°C to plus 20°C to ensure maximum herbicidal effect;
- in case of high weed content and active vegetation of weeds, use the maximum recommended dose.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, barley	Species of sow thistle, chamomile, pepper plant, thistle, lettuce	0.16-0.66	200-300	Planting spraying at crop tillering stage before evolving into tube	60(1)
Sugar beet	Species of sow thistle, chamomile, pepper plant, thistle, lettuce	0.3-0.5	200-300	Spraying of plantings at 1-3 crop leaves pairs stage	60(1)
		0.1 + 0.2	200-300	Spraying crops, starting with the phase of cotyl leaves of the crop on weeds of the first and second waves	60(2)
Maize	Species of sow thistle, chamomile, pepper plant, thistle, lettuce	1	200-300	Spraying of plantings at 3-5 crop leaves stage	60(1)
Common flax, oilseed flax	Species of sow thistle, chamomile, pepper plant, thistle	0.1-0.3	200-300	Planting spraying at crop 'herringbone' stage and rosette stage of perennial dicotyledonous weeds	44(1)
Strawberry	Perennial dicotyledonous (sow thistle species, sorrel, dandelion) and some annual dicotyledonous weeds (mayweed, pepper plant species)	0.5-0.6	200-300	Treatment of vegetating weeds after cropping	-(1)
Spring and winter rapeseed (seed plantings)	Species of sow thistle, chamomile, pepper plant, thistle	0.3-0.4	200-300	Spraying at 3-4 leaves stage of spring rapeseed and until flower buds of winter rapeseed	-(1)
Lawns (sports facilities)	Annual and perennial dicotyledonous weeds (dandelion, plantain, sorrel, milfoil, chamomile, etc.)	0.16-0.66	200-300	Treatment of vegetating plants after first mowing. No one shall stay on areas treated within 15 days	-(1)

metamitron 700 g/L

Systemic herbicide intended to control multiple species of annual dicotyledonous weeds on beet plantings.

ADVANTAGES

- Ensure initial planting cleanliness as a pre-emergence herbicide
- Produces a powerful 'screen' against subsequent weed emergence
- Mild effect upon the crop
- Easily tolerated by beet plants regardless of the application method
- Extended protective period when used as a component of mixes with Betaren series herbicides
- Acts in a wider range of temperatures than betanal group preparations
- Maximum efficiency achieved as a result of effect through both soil and leaves

Mode of action

The preparation has systemic activity. It penetrates through roots, but may penetrate plants through the lamina as well. The preparation moves in an acropetal manner. Its herbicidal effect consists in inhibition of the Hill reaction during photosynthesis.

Protective effect period

Protects the crop during 3 to 8 weeks depending on temperature, climatic conditions and soil type.

Rate of exposure

Visible signs of weed inhibition appear in 2 to 7 days with weeds perishing totally in 2 or 3 weeks. In case of postemergence treatment, preparation effect on weed sprouts appears in 5 to 10 days.

triazine	**3 years**
suspension concentrate	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Action spectrum

Annual dicotyledonous weeds

Sensitive species: speedwell (species), pepper plant (species), charlock, loesel (species), tansy mustard, common fumitory, satin flower, common groundsel, orach (species), pigweed (species), caseweed, houndsberry, hemp nettle (species), catch weed, common purslane, chamomile (species), wild radish, amaranth (species), dish mustard, day-nettle, field pansy.

Compatibility with other preparations

It is recommended to use in mixes with other herbicides, mainly of betanal group, Healer, OEC; Censor, EC; Forward, OEC; Action, SC; Lornet, SL; Betaren 22, OEC; Betaren Super MD, OEC; Betaren Express AM, EC. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Mitr.
MITRON SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Annual dicotyledonous weeds	1,5-2,0	200-300	Planting spraying after weed emergence (at seed lead stage for dicotyledonous weed and first list stage for grass weeds) and further treatment in 8-14 days if weeds start regrowing once again	60(2)

Effectiveness of MITRON, SC application

Herbicidal effect of the tank mixture of Betaren Express AM, EC 1.5 L/ha + Mitron, SC 1.5 L/ha on weeds

fenoxaprop-P-ethyl 140 g/L + antidote 47 g/L

Selective herbicide of systemic effect intended for postemergence treatment of spring and winter barley (including malt barley) against annual grass weeds

ADVANTAGES

- **Highly efficient graminicide for barley**
- **High selectivity with regard to crops treated**
- **Wide range of application periods regardless of crop growth phases**
- **Fast and strong effect through aboveground parts of the plant**

Mode of action

The preparation is absorbed by aboveground organs of the plant within 1-3 hours after application and accumulates in growing points. This causes necrosis of growing points, which results in growth arrest and weed death.

Protective effect period

Throughout the vegetation period. The preparation has a herbicidal effect on sensitive grass weeds present in plantings during treatment and does not affect those emerging after treatment (2nd wave of weeds).

Rate of exposure

Visible signs of effect appear in 3 to 7 days. Grass weeds perish totally in 10 to 15 days after treatment depending on weather conditions.

Action spectrum

Annual grass weeds, including oat grass, foxtail species, barnyard grass, weed millet, silky bent grass, bluegrass, common bunting, etc.

aryloxyphenoxy-propionates + antidote	**3 years**
emulsion concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Compatibility with other preparations

Compatible with most herbicides, fungicides, insecticides, growth regulators, and mineral fertilizers applied to agricultural crops. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- treatment at earlier stages of grass weed growth (starting from 2 leaves);
- optimal selection of application periods (when the bulk of annual grass weeds emerge);
- treatment under weather conditions favorable for plant growth and development.

Ovs.
OVSUGEN SUPER EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring barley (including malt barley)	Foxtail species	0,4 0,4(A)	100-200 25-50(A)	Planting spraying over vegetating weeds starting from 2 leaves stage to end of tillering (regardless of crop growth stage)	60(1)
	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass, etc.)	0,4-0,6 0,4-0,6(A)	100-200 25-50(A)		
	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass, etc.)	0,3	100-200	Planting spraying over vegetating weeds, at earliest ages of their growth – 2-3 leaves (regardless of crop growth stage) using mix with 200 l/ha of surfactant Satellite, L	
Winter barley	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass, corn grass, etc.)	0,4-0,6 0,4-0,6(A)	100-200 25-50(A)	Planting spraying in spring starting from 2 leaves stage to end of tillering of annual grass weeds (regardless of crop growth stage)	60(1)
	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass, corn grass, etc.)	0,3	100-200	Planting spraying in spring over vegetating weeds, at earliest ages of their growth – 2-3 leaves (regardless of crop growth stage) using mix with 200 l/ha of surfactant Satellite, L	

(A) - aerial treatment

fenoxaprop-P-ethyl 140 g/L + antidote 35 g/L

Selective herbicide of systemic effect intended for postemergence treatment of spring and winter wheat against annual grass weeds.

ADVANTAGES

- **Highly efficient graminicide for wheat**
- **High selectivity with regard to crops treated**
- **Wide range of application periods regardless of crop growth phases**
- **Fast and strong effect through aboveground parts of the plant**

aryloxyphenoxy-propionates + antidote	**3 years**
emulsion concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Mode of action

The preparation is absorbed by aboveground organs of the plant within 1-3 hours after application and accumulates in growing points. This causes necrosis of growing points, which results in growth arrest and weed death.

Protective effect period

Throughout the vegetation period. The preparation has a herbicidal effect on sensitive grass weeds present in plantings during treatment and does not affect those emerging after treatment (2nd wave of weeds).

Rate of exposure

Visible signs of effect appear in 3 to 7 days. Grass weeds perish totally in 10 to 15 days after treatment depending on weather conditions.

Action spectrum

Annual weeds, including oat grass, foxtail species, barnyard grass, weed millet, silky bent grass, bluegrass, common bunting, etc.

Compatibility with other preparations

Compatible with most herbicides, fungicides, insecticides, growth regulators, and mineral fertilizers applied to agricultural crops. In each specific case, the components to be commingled shall be checked for physical and chemical compatibility.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- treatment at earlier stages of grass weed growth (starting from 2 leaves);
- optimal selection of application periods (when the bulk of annual grass weeds emerge);
- treatment under weather conditions favorable for plant growth and development.

Ove.
OVSUGEN EXPRESS EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat	Foxtail species	0,4 0,4(A)	100-200 25-50(A)	Planting spraying over vegetating weeds starting from 2 leaves stage to end of tillering (regardless of crop growth stage)	60(1)
	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass)	0,4-0,6 0,4-0,6(A)	100-200 25-50(A)	Planting spraying over vegetating weeds starting from 2 leaves stage to end of tillering (regardless of crop growth stage)	
		0,3	100-200	Planting spraying over vegetating weeds, at earliest ages of their growth – 2-3 leaves (regardless of crop growth stage) using mix with 200 l/ha of surfactant Satellite, L	
Winter wheat	Annual grass weeds (foxtail species, barnyard grass, weed millet, oat grass, corn grass, etc.	0,4-0,6 0,4-0,6(A)	100-200 25-50(A)	Planting spraying in spring starting from 2 leaves stage to end of tillering of annual grass weeds (regardless of crop growth stage)	60(1)
		0,3	100-200	Planting spraying in sprig over vegetating weeds, at earliest ages of their growth – 2-3 leaves (regardless of crop growth stage) using mix with 200 l/ha of surfactant Satellite, L	

(A) - aerial treatment

nicosulfuron 60 g/L + florasulam 3.6 g/L

Two-component herbicide to control annual and perennial grass, dicotyledonous weeds on maize plantings.

ADVANTAGES

- **Maximum herbicidal effect is achieved due to original combination of two active ingredients from various chemical classes.**
- **Formulation of oil dispersion deeply penetrates weeds and arrest their further growth and development.**
- **Protective period lasts throughout the vegetation period; 'soil screen" is produced.**
- **Applied to protect against grass and dicotyledonous weeds, including amaranth, bindweed, and sow thistle.**
- **Adjuvants contained in the preparation enhance herbicidal effect.**

Mode of action

Nicosulfuron inhibits cell division by blocking acetolactate synthase enzyme, one of the main enzymes for biosynthesis of indispensable amino acids of the plant. ALS inhibition results in arrest of cell division and therefore termination of plant growth processes. Within several days, the plants exposed see the signs of chlorosis to appear, which evolves into necrosis and then into death in 2 to 4 weeks.

The active ingredient is absorbed mainly through the leaf surface. The herbicide moves along phloem and xylem into meristematic tissue of the weed.

Florasulam inhibits acetolactate synthase, which is the key enzyme in biosynthesis of branched amino acids, such as leucine, isoleucine and valine.

Protective effect period

Depending on species composition of weeds, soil, climatic, and weather conditions, the protective period lasts for 8 to 100 weeks after herbicide application.

Rate of exposure

Depending on weather conditions, the herbicide starts affecting the growth of weeds as soon as in 4 to 6 hours after treatment. Weeds stop growing and change their color within a week (grow brown). Total extinction is observed in 2 to 4 weeks after preparation application.

sulfonylureas, triazolpyrimidines	**2 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Action spectrum

The herbicide is intended for maize plantings. It ravages annual grass, perennial grass weeds, and annual and some perennial dicotyledonous weeds. The following species are sensitive to the preparation: barn grass, (barnyard grass), yellow-foxtail grass, green foxtail grass, witchgrass, blood-red crabgrass, Aleppo grass (green valley grass), quack grass, catch weed, red root pigweed, prostrate amaranth, charlock, bifora, bluebottle, jimsonweed, common groundsel, prickly (wild) lettuce, copper rose, wild radish, chamomile (species), rape (drop), satin flower, common caseweed, weed sunflower (lens-shaped), field chamomile, golden chamomile, dog»s chamomile, winter cress, velvetleaf, common purslane, Chamomilla recutita, pigweed, dish mustard, thistle (species).

Compatibility with other preparations

Check physical and chemical compatibility of components in the prepared mix before used.

Okt.
OCTAVA OD

Product application features

Crop leaves may discolor for a short time under unfavorable weather conditions before and after preparation application, which ends quickly and does not pose any adverse effect on further growth, development and crop size. Some sorts and hybrids may be sensitive to the herbicide, which shall be taken into account during application.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize	Annual and perennial dicotyledonous and grass weeds	0,8-1,0	100-200	Planting spraying at earlier stages of weed growth and at 3-6 crop leaves stage	60(1)

Effectiveness of OCTAVA, OD application

1.

2.

Maize after treatment with Octava, OD, 1.0 L/ha

1. After 1 month

2. Before harvesting

flumetsulam 50 g/L + florasulam 36 g/L

Postemergence herbicide in the oil formulation against a wide range of dicotyledonous weeds in cereal crops

ADVANTAGES

- **Is effective against a wide range of dicotyledonous weeds, including some weeds resistant to 2,4-D and sulphonylureas**
- **Increased herbicidal activity and quick effect because of the innovative oil formulation**
- **The best efficacy against Cruciferae and catchweed bedstraw**
- **Mild effect without herbicidal stress**
- **Has a wide application window: from tillering till the second internode formation**
- **No restrictions on crop rotation**

Mode of action

Flumetsulam and florasulam have a systemic effect. They are mainly absorbed by leaves of weeds and quickly move to stems and roots, where they accumulate in growth points and exert an herbicidal effect.

At the biochemical level, the mode of action is to block the acetolactate synthase (ALS) enzyme, which is involved in the biosynthesis of essential amino acids in the meristematic tissues of weeds. This causes a halt in protein synthesis and cell division, resulting in weed death.

Pinta, OD, herbicide has been developed in the innovative oil formulation (oil dispersion). It ensures the best herbicidal properties of the active substances, high efficacy in a variety of weather and climatic conditions and penetration even through the waxy layer and pubescence on weed leaves.

Rate of exposure

Active growth of weeds is halted within 24 hours after treatment. Under favourable conditions, visible signs of damage appear within 1-2 days after treatment. Complete elimination is achieved within 2-3 weeks after treatment.

triazolpyrimidines	**2 years**
Oil dispersion	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

The product shows the best herbicidal effect after the immediate treatment of plants. Moreover, it has a short-term (2-3 weeks) effect in the soil against new sprouts of some weeds, as the product is adsorbed by roots.

Weeds are eliminated 2-3 weeks after treatment, depending on the species and development phase of the weeds, as well as weather conditions, and crop protection is ensured until harvesting.

Action spectrum

Annual and perennial dicotyledonous weeds

Susceptible species: common stork's-bill, ragweed, pale persicaria, black bindweed, field mustard, flixweed, chickweed, prickly lettuce, field poppy, field milk thistle, sunflower volunteers, common hemp-nettle, cleavers, scentless mayweed, bladder campion, corn spurry, hedge-nettle betony, red-root amaranth, field pennycress, field dead-nettle, etc.

Moderately susceptible species: lamb's quarters, creeping thistle, etc.

Low susceptible species: field pansy, forking larkspur, field bindweed, treacle mustard, common dandelion, etc.

Pin.
PINTA OD

Compatibility with other preparations

In tank mixtures, the product is compatible with most herbicides, fungicides and insecticides. However, physical and chemical compatibility of the components to be mixed is required in each case prior to working solution preparation.

Product application features

The best result and the fastest herbicidal action of the product are achieved:

- when treating young weeds at the early stages of their development;
- under weather conditions (temperature, humidity) favourable for the growth and development of plants.

Where necessary, the product can be used in cool weather (air temperature from +7 °C).

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, spring and winter barley	Annual and perennial dicotyledonous weeds, including thistle species	0,1-0,15	200-300	Spraying of vegetative plants in spring, from tillering through the second internode formation of the crop, as well as during early growth phases (from sprouting till 2-4 leaves in annual plants and leaf rosette in perennial plants) for dicotyledonous weeds.	60(1)

Warning!
After using the product in spring, the following crops can be sown in the fall of the same year: winter cereal crops, winter rapeseed and grasses. There are no limitations for the spring of the next year. Where replanting is required, spring cereal crops, maize and sorghum can be sown in the same field. Do not use the product on cereal crops with undersowing of clover, alfalfa or other legumes.

typhensulfuron-methyl 90 g/L + flumetsulam 24 g/L + florasulam 18 g/L

Premium-class herbicide for controlling a wide range of dicotyledonous weeds in the late stages of the development of cereal crops

ADVANTAGES

- **High efficiency and rapid action due to innovative oil formulation and synergistic effect of three active ingredients**
- **Maximum extended spectrum of action for dicotyledonous weeds, including those that are difficult to control**
- **Effectiveness in overgrown weeds**
- **Wide window in application phases, from tillering to flag leaf**
- **Exceptionally mild effects on crops, no loss in the yield due to herbicidal stress**
- **No restrictions for crop rotation**

Mode of action

Tifensulfuron-methyl, flumetsulam, and florasulam are systemic compounds. They are mainly absorbed by the leaves of weeds and quickly move to the root system and the stems, where they concentrate in the growing-points and exert a herbicidal effect. At the biochemical level, the mode of action is to block the acetolactate synthase (ALS) enzyme, which is involved in the biosynthesis of essential amino acids in the weed meristematic tissues. This causes cessation of protein synthesis and stops cell division, which leads to the death of weeds.

The total synergistic effect of the three active substances maximizes the herbicidal activity of the product in relation to the widest spectrum of dicotyledonous weeds.

Protective effect period

Throughout the growing period (depending on the weather conditions and in the absence of a new weed «wave»).

sulfonylureas, triazolpyrimidines	**2 years**
Oil dispersion	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

The active growth of sensitive weeds and competition with the crop halt within a few hours after treatment. The first visible symptoms of weed depression appear 2-5 days after application, and their final death occurs 2-4 weeks after treatment and depends on the species composition and the developmental phase of weeds, the degree of contamination, and climatic conditions before, during, and after spraying.

Action spectrum

Annual and perennial dicotyledonous weeds

Susceptible species: ragweed, cornflower, speedwell (species), field vetch, field bindweed, knotweed (species), field mustard, black bindweed, hedge mustard, flixweed, common cocklebur, drug fumitory, treacle mustard, field larkspur, chickweed, buttonweed, common wood sorrel, common arache, field poppy, goosefoot (species), field scorpion grass, sunflower volunteers, rapeseed volunteers, black nightshade, shepherd's purse, hemp-nettle (species), cleavers, common purslane, corn chamomile, wild radish, chamomile (species), bladder campion, common winter cress, sorrel (species), amaranth (species), field pennycress, dead-nettle (species).

Moderately susceptible species: creeping thistle, field gromwell, trailing hollyhock, thistle (species), nettle (species), spurge (species), dandelion (species), common wormwood, violet (species)

Compatibility with other preparations

Compatible with fungicides and insecticides. However, in each case, especially when combined with micronutrient fertilizers, before preparing the working solution, it is recommended to check the physical mixing properties of the preparations.

Product application features

After spring application, winter cereals, winter rapeseed, and cereal grasses can be sown in the same field in the fall of the same year.

There are no limitations for the spring of the next year.

Where replanting is required, spring cereal crops, maize and sorghum can be sown in the same field. Do not use the product on cereal crops sown with clover, alfalfa, or other leguminous plants.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, spring barley	Annual and perennial dicotyledonous weeds, including sow thistle, plume thistle species	0,25-0,3	200-300	Spraying of crops from the crop tillering stage through a phase of the second internode formation (inclusive)	60(1)
Winter wheat, winter barley		0,25-0,3	200-300	Spraying of crops from the crop tillering stage through a phase of the second internode formation (inclusive)	

Effectiveness of PIXEL, OD application

1.

2.

3.

Action of Pixel, OD on some weed species

1. Black bindweed
2. Cleavers (more than 5 whorls)
3. Common sunflower

2.4-D acid /2-ethylhexyl ether/ 200 g/L + florasulam 3.7 g/L

Selective postemergence herbicide of systemic effect intended to control annual and perennial dicotyledonous weeds on cereal crop and maize plantings.

ADVANTAGES

- **Highly efficient two-component herbicide to protect cereal crops against a wide range of dicotyledonous weeds**
- **Powerful herbicidal effect ensured by synergy of two active ingredients with various mode of action**
- **Exterminates malicious, difficult-to-eradicate weeds, such as catch weed, mayweed, canadian thistle, yellow sow thistle, and others**
- **Has a wide range of application timing: from cereal crop tillering stage to evolving into tube**
- **Excellent systemic activity of the preparation allows easy and fast (within an hour) penetration into and spread within a weed, while blocking weed growing processes**
- **High rain resistance: precipitation does not affect its efficiency as early as an hour after treatment**
- **Selective with regard to all types of cereal crops**
- **No crop rotation limitations**
- **Compatible in mixes with gramicides, insecticides, fungicides and growth regulators**

phenoxy-carboxylates, triazolpyrimidines	**3 years**
suspension emulsion	**-10˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Mode of action

Florasulam inhibits biosynthesis of indispensable amino acids by inactivation of acetolactate synthase enzyme. 2.4-D contained in the preparation acts as an auxin like growth inhibitor. The preparation has a systemic effect and quickly (within 1 hour) penetrates into and spreads within all parts of weeds, including roots, thus blocking cell growth in young tissues.

Protective effect period

The duration of herbicidal effect depends on preparation dose, weather conditions, species sensitivity and weed age. The best result is achieved when treating 5-10 cm annual dicotyledonous weeds and perennial weeds at rosette stage.

Rate of exposure

Weeds on plantings cease growing within a day after treatment. First signs of exposure become visible as early as in 3 or 4 days. Depending on weed kind and weather conditions, total extinction of weeds takes place in 2 or 3 weeks after treatment.

Action spectrum

Annual and perennial dicotyledonous weeds.

Sensitive species: ragweed, Canadian thistle, yellow thistle, speedwell (species), pepper plant (species), charlock, black bindweed, bankweed, tansy mustard, common fumitory, yellow cress, satin flower (common chickweed), Tartarian lettuce, copper rose, pigweed, common dandelion, field sow thistle, rough sow thistle, houndsberry, caseweed, catch weed, wild radish, chamomile (species), amaranth (species), dish mustard, day-nettle species, and others.

Compatibility with other preparations

Compatible with many herbicides for protection of cereal crops, including Granat, Fenizan, Zinger, Ovsugen Express, Ovsugen Super, and others, as well as with insecticides, fungicides, and agrochemicals. Before use, check the mix for compatibility and phytotoxicity with regard to the crop treated.

Product application features

The best result and the fastest herbicidal action of the product are achieved:

- when treating annual dicotyledonous weeds 5–10 cm tall and perennial weeds in the rosette stage;
- when applying the product in the most favorable weather conditions.

Pri.
PRIMADONNA SE

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, spring and winter barley	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds	0,6-0,9	200-300	Planting spraying at crop tillering stage and earlier stages of weed growth. Winter crops are to be treated in spring	56(1)
		0,9	200-300	Planting spraying at tube stage (1-2 internodes) and earlier stages of weed growth (considering sensitivity of sorts) where catch weed prevails, unless weather conditions dictated earlier treatment. Winter crops are to be treated in spring.	
Maize	Annual weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds.	0,6-0,9	200-300	Planting spraying at 2-4 leaves stage and earlier stages of weed growth	60(1)
		0,75-0,9	200-300	Planting spraying at 3-5 leaves stage and earlier stages of weed growth	

Effectiveness of PRIMADONNA, SE application

Elimination of weeds in maize crops after application of tank mixture

Primadonna, SE 0.6 L/ha + Cassius, SP 0.05 kg/ha

2,4-D acid /2-ethylhexyl ether/ 200 g/L + florasulam 5.0 g/L

Selective postemergence herbicide of systemic effect intended to control annual and perennial dicotyledonous weeds on cereal crop and maize plantings.

ADVANTAGES

- **Unique formulation contributing to rapid penetration into plants and arrival at growth points**
- **Highly efficient two-component herbicide for a wide range of dicotyledonous weeds, including difficult-to-eradicate (sow thistle, catch weed, thistle, etc.)**
- **Ideal combination of active ingredients ensuring powerful herbicidal actions**
- **Wide range of application**
- **No crop rotation limitations**
- **Excellent compatibility in mixes with other herbicides**

Mode of action

The combined herbicide containing two active ingredients (florasulam and 2,4-D), each having a specific mode of action. Florasulam inhibits acetolactate synthase, which is the key enzyme in biosynthesis of branched amino acids, such as leucine, isoleucine and valine.

2,4-D is an auxin type phenoxy-compound simulating the action of auxin - natural growth hormone - and inhibiting growth of weed cells.

It affects weeds only that already emerged before treatment.

Protective effect period

Virtually throughout the vegetation period (depending on weather conditions and until the next wave of weeds).

phenoxy-carboxylates, triazolpyrimidines	**3 years**
colloid solution concentrate	**-15˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Action spectrum

Chamomile (species), satin flower (species), field sow thistle, rough sow thistle, Canadian thistle, yellow thistle, charlock, common caseweed, dish mustard, wild radish. pigweed, amaranth (species), copper rose, pepper plant (species), knotweed, speedwell (species), ragweed, bankweed, tansy mustard, common fumitory, yellow cress, Tartarian lettuce, common dandelion, day-nettle (species), catch weed.

Compatibility with other preparations

The herbicide may be used in mixes with sulfonylurea, dicamba, carfentrazone-ethyl, and isoproturon preparations, as well as with fungicides, and insecticides.

Rate of exposure

Weeds on plantings treated with PRIMADONNA SUPER, CSC stop growing in a day after treatment. First signs of exposure become visible as early as in 3 or 4 days. Depending on weed kind and weather conditions, total extinction of weeds takes place in 2 or 3 weeks after treatment.

Prs.
PRIMADONNA SUPER CSC

Product application features

The duration of herbicidal effect depends on preparation dose, weather conditions, species sensitivity and weed age.

- The best result is achieved when treating 5-10 cm annual dicotyledonous weeds and perennial weeds at rosette stage.
- The best result of treatment is achieved at 8°C to 25°C.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, spring and winter barley, oats, winter triticale	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds	0,4-0,75	200-300	Planting spraying at crop tillering stage and earlier stages of weed growth. Winter crops are to be treated in spring.	60(1)
		0,6-0,75	200-300	Planting spraying at tube stage (1-2 internodes) and earlier stages of weed growth (considering sensitivity of sorts) where catch weed prevails, unless weather conditions dictated earlier treatment. Winter crops are to be treated in spring.	
Maize	Annual dicotyledonous weeds, including 2,4-D resistant weeds, and some perennial dicotyledonous weeds	0,4-0,75	200-300	Planting spraying at 2-4 leaves stage and earlier stages of weed growth	60(1)
		0,6-0,75	200-300	Planting spraying at 3-5 leaves stage and earlier stages of weed growth	

clopyralid /2-ethylhexyl ester/ 100 g/L + fluroxypyr 15 g/L

Postemergence herbicide of systemic effect intended to control annual and perennial dicotyledonous weeds on rapeseed plantings.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation CSC**
- **Efficient control of catch weed and corn bindweed**
- **Fast penetration and high bio-efficiency due to unique formulation**
- **Wide range of application timing**
- **Elaborate combination of two active ingredients complementing each other prevents the occurrence of weed resistance**

Mode of action

Clopyralid has an auxin type systemic effect. It is absorbed by leaves and roots, easily moves along plants and accumulates in the growing point and roots. Fluroxypyr is quickly absorbed by weed leaves and partially by plant roots from soil. It actively moves and spreads along the entire plant, including growing points. By the principle of action, fluroxypyr is similar to a natural hormone - indolyl acetic acid. It causes unbalance of growth hormones in weed meristems. Oversaturation of meristem cells with synthetic hormone results in impairment of cell division and growth.

Protective effect period

Protects the crop against weeds throughout the vegetation period.

phyridine-carboxylates, aminopyridines	**5 years**
colloidal solution concentrate	**-10˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Rate of exposure

Sensitive weeds cease growing in 2 hours after preparation application. Visible signs of exposure (growth arrest, leaf and stalk deformations) appear in 2 to 5 days after herbicide application, and total extinction takes place in 2 or 3 weeks depending on kind of weeds and weather conditions. The best result is achieved when treating young, actively growing weeds.

Action spectrum

Annual and perennial dicotyledonous weeds, including catch weed and corn bindweed.

Susceptible species: dogs' chamomile, corn chrysanthemum, coltsfoot, lady's thumb, clover (species), cornflower, common groundsel, black bindweed, common dandelion, garden vetch, creeping thistle, thistle (species), yellow thistle, ragweed, common cocklebur, lettuce (species), chamomile (species), cleavers, chickweed, common hemp-nettle, scarlet pimpernel, field scorpion grass, black bindweed, black nightshade, common purslane, buttonweed, treacle mustard, cocklebur (species), horseweed.

Moderately susceptible species: amaranth (species), shepherd's purse, field bindweed, field pennycress, dead-nettle (species), lamb's quarters, drug fumitory, Tatar buckwheat, field pansy, nettle (species).

Low-susceptible species: speedwell (species), buttercup (species)

Rpr.
REPER CSC

Compatibility with other preparations

The preparation may be used in mixes with herbicides and insecticides provided the registered usage regulations are met and their application times coincide.

Product application features

To avoid resistance of weeds, alternate the preparation with herbicides of other chemical classes.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter rapeseed	Perennial and annual dicotyledonous weeds, including catch weed, species of chamomile, pepper plant, pigweed, amaranth, thistle, so-thistle, etc.	0,8-1,0	200-300	Treatment of vegetating plants starting from 3-6 true leaves stage until rapeseed flower buds	60(1)

Effectiveness of Reper, CSC application

Treated with Reper, CSC 1.0 L/ha

clopyralid /2-ethylhexyl ether/ 267 g/L + picloram 80 g/L + aminopyralid 17 g/L

A highly effective three-component postemergence herbicide in oil formulation intended to control dicotyledonous weeds on rapeseed plantings.

ADVANTAGES

- **A wide spectrum of action due to three systemic herbicide components**
- **High herbicidal activity due to the highly effective oil formulation and synergism of active ingredients**
- **The fastest penetration into tissues of treated weeds and long-term retention of herbicidal properties regardless of weather conditions**
- **Highly effective against such hard-to-control weeds as cleavers, chamomile species, knotweed, amaranth, goosefoot, and other tough species**
- **Eradication of perennial weeds along with their root system**
- **Long-term protective period due to soil activity**
- **Wide range of application timing**

Mode of action

Active ingredients of the product have a systemic action, enter the weed plants through leaves, and easily move inside the plant to all growing points. The product interferes with the growth processes of meristem cells. The herbicide action is based on the auxin-type reaction.

Picloram and aminopyralid can be absorbed both by the leaves and roots of plants. Moreover, aminopyralid also has a long-term soil activity.

Protective effect period

Throughout the growing period.

Rate of exposure

Weeds stop competing with the crop in a few hours. First visible signs of exposure (twisting, leaf and stalk deformations) appear in 12 to 18 hours. The leaves of susceptible weeds become chlorotic in 1–3 weeks, then a growing point dies.

phyridine-carboxylates, aminopyridines	**2 years**
Oil dispersion	**-15˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Compatibility with other preparations

The preparation may be used in mixes with herbicides and insecticides provided the registered usage regulations are met and their application times coincide.

However, in each specific case, the products to be mixed should be checked for physico-chemical compatibility.

Action spectrum

Annual and perennial dicotyledonous weeds.

Susceptible species: Common ragweed, creeping thistle, yellow thistle, cornflower, vetch (common vetch), knotweed (spp.), lady's thumb, cocklebur (spp.), common fumitory, chickweed, calendula, clover (spp.), stinging nettle, common groundsel, blue lettuce, creeping crowfoot, goosefoot (spp.), sow thistle (spp.), black nightshade, shepherd's purse, cleavers, dogs' chamomile, wild radish, chamomile (spp.), black bindweed, sorrel (spp.), amaranth (spp.).

Moderately susceptible species: Littleflower quickweed, Tartary buckwheat, corn poppy, field scorpion grass, hemp nettle, field pansy, redroot amaranth, day-nettle (spp.).

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring rapeseed	Annual and perennial dicotyledonous weeds including cleavers, chamomile species, knotweed, knotweed, goosefoot, black bindweed, sow and plume thistle species	0,2-0,3	200-300	Spraying of vegetating plants starting from stage 3-6 of true leaves until rapeseed flower bud. Observe restrictions on the crop rotation.	60(1)
Winter rapeseed				Spraying of vegetating plants in autumn or spring, starting from the stage of 3-6 true leaves and up to the flowering of rapeseed flower buds. Observe crop rotation restrictions.	

Attention! Observe restrictions when reseeding

If reseeding is necessary in the season of the drug application, maize, sorghum, spring cereals and cereal grasses can be grown on the same field 1 month after the drug application. In this case, deep plowing should be carried out before sowing.

Crop rotation sequence following Reper Trio, OD herbicide application

Attention should be paid to recommendations on crop rotation and the possibility of sowing subsequent crops.

Sequence of sowing crops after application of Reper Trio, MD herbicide:

In case of reseeding in a month after the application of the drug it is possible to sow cereal crops, rapeseed, sorghum.

In thefall after spring application of the preparation, winter cereals, winter rapeseed, cereal grasses can be sown.

Spring cereal crops,spring rapeseed, maize, sorghum can be sown in the springof the year following the application of the preparation.

At least in 11 months after application of the preparation and 300 mm of precipitation can be sown: sunflower, potatoes, alfalfa, onions, sugar beet, lignum flax, cabbage.

Not earlier than 14 months later all the above crops can be sown , as well as lentils, chickpeas, soybeans, fodder beans, peas, carrots, cotton, dill.

Crop residues should be left in the field and incorporated to a depth of at least 10 cm by plowing, cultivation, disking as soon as possible after harvest when the microbiological process necessary to achieve complete decomposition of crop residues is active; a minimum 4-month interval between incorporation and sowing of sensitive crops should be observed.

Effectiveness of Reper Trio, OD application

1.

2.

3.

Herbicidal effect of Reper Trio, OD on weeds

1. Black bindweed
2. Lamb's quarters
3. Ruderal hemp

Cyhalofop-butyl 300 g/L + bispyribac sodium 18 g/L

A highly selective two-component herbicide in oil formulation for rice protection against the most harmful weeds

ADVANTAGES

- **A unique unparalleled combination of active ingredients in oil formulation**
- **Highly efficient against weeds of different families (such as dicotyledonous and grass weeds, including resistant populations of barnyard grass)**
- **Selective for all rice species and varieties**

aryloxyphenoxypropionates, pirimidyloxy-benzoic acids

2 years

Oil dispersion

-15˚C to +35˚C

Hazard Class 3, moderately hazardous substance

canister of 5 l

Phytotoxicity may occur

Aerial spraying is allowed + UAS

Stock solution preparation is required

Mode of action

Cigalofop-butyl is a systemic herbicide from the group of aryloxyphenoxypropionates. Highly active against grass weeds in rice, including resistant populations of barnyard grass. It inhibits the acetyl-coenzyme A carboxylase responsible for the biosynthesis of fatty acids. The rice tolerance is due to a rapid metabolic transformation of cyhalofop butyl in culture into an herbicide-inactive cyhalofop-dibasic acid.

Bispyribac sodium is a selective postemergence herbicide belonging to the class of pirimidyloxy-benzoic acids. Effective in controlling grass, sedge and broadleaf weed plants. It has a systemic action, spreads through all parts of the plant including growing points. It inhibits the acetolactate synthase and blocks the biosynthesis of amino acids.

Rate of exposure

Visual symptoms of the herbicidal effect are observed 5-7 days after application. Complete control of annual grass weeds is achieved within 15-20 days, while perennial weeds may require up to 30 days for full eradication.

Protective effect period

During the growing season.

Action spectrum

Annual grass (miliary), sedge (including Bolboschoenus) and marsh broadleaf (including Monochoria, Alisma, Sagittaria, etc.) weed plants.

Compatibility with other preparations

It is compatible in tank mixtures with pesticides and agrochemicals used at the rice crops.

In each case, a preliminary check for the physical and chemical compatibility of the components being mixed is recommended. When preparing tank mixtures, direct mixing of products without prior dilution (dispersion) in water is prohibited.

Product application features

To maximize the effect, drain water from paddy fields before starting treatment; reflooding of paddy fields can be carried out 1 day after treatment completion.

Riz. NEW
RISOTTO OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Rice	Annual grasses (milfoil), sedges including Bolboschoenus) and marsh broadleaf (including Monochoria, Alisma, Sagittaria, etc.) weed plants.	1,5-2,0 1,5-2,0 (A) 1,5-2,0 (UAS)	200-300 50-100 (A) 5-10 (UAS)	Spraying of crops from the phase of 2-4 leaves to the end of tillering and early phases of weed growth (2-4 leaves for grass weeds and 5-7 leaves for sedges).	60 (1)

(A) - aerial treatment
(UAS) - unmanned aerial systems

Effectiveness of Risotto, OD application

1.

2.

1. Result of treatment with Risotto, OD

2. Control without herbicide (miliary weeds, more than 1800 pcs./m^2)

cyhalofop-butyl 190 g/L+ bispyribac sodium 50 g/L

A highly selective two-component herbicide in oil formulation for rice protection against the most harmful weeds.

ADVANTAGES

- **A unique unparalleled combination of active ingredients in oil formulation**
- **Highly efficient against weeds of different families (such as dicotyledonous marsh and grass weeds, including resistant populations of barnyard grass)**
- **Destruction of growing points and elimination of new sprout growth**
- **A prolonged protective effect up to 2 months**
- **Safe for all rice species and varieties**

Mode of action

Cigalofop-butyl is a systemic herbicide from the group of aryloxyphenoxypropionates. Highly active against grass weeds in rice, including resistant populations of barnyard grass. It inhibits the acetylcoenzyme. A carboxylase responsible for the biosynthesis of fatty acids. The rice tolerance is due to a rapid metabolic transformation of cyhalofop butyl in culture into an herbicide-inactive cyhalofop-dibasic acid.

Bispyribac sodium is a selective postemergence herbicide belonging to the class of pirimidyloxy-benzoic acids. Effective in controlling grass, sedge and broadleaf weed plants. It has a systemic action, spreads through all parts of the plant including growing points. It inhibits the acetolactate synthase and blocks the biosynthesis of amino acids.

aryloxyphenoxypropionates, pirimidyloxy-benzoic acids	**2 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**
Stock solution preparation is required	

Protective effect period

Throughout the growing period.

Rate of exposure

The herbicide's effect on susceptible weeds becomes visible within the first few days after application, but complete plant death occurs later, depending on weather conditions.

Action spectrum

Annual grass (miliary), sedge (including Bolboschoenus) and marsh broadleaf (including Monochoria, Alisma, Sagittaria, etc.) weed plants.

Product application features

To maximize the effect, drain water from paddy fields before starting treatment; reflooding of paddy fields can be carried out 1day after treatment completion.

Ris.
RESTYLE OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Rice	Annual grass (miliary), sedge (including Bolboschoenus) and marsh broadleaf (including Monochoria, Alisma, Sagittaria, etc.) weed plants.	0,7-0,8 0,7-0,8(A)	200-300 50-100(A)	Spraying of crops at the early stages of 2-4 leaves to the end of the crop tillering and early stages of the weed growth	60(1)

(A) - aerial treatment

tribenuron methyl 750 g/kg

A highly effective postemergence herbicide for the cultivation of tribenuron-methyl resistant sunflower

ADVANTAGES

- **Control of a wide range of dicotyledonous weeds over a long period**
- **High selectivity to tribenuron-methyl resistant sunflower hybrids**
- **Safety for any subsequent crop rotation**

sulfonylureas	**3 years**
water-dispersible granules	**-30˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**1 L (0.5 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Tribenuron-methyl has a systemic effect. It is absorbed by roots and leaves, moves easily in the plants. In sensitive weeds, it blocks the acetolactate synthase enzyme, which leads to growth arrest and then to the death of plants. Weed growth ceases several hours after spraying.

Protective effect period

During the entire growing season (in the absence of the second wave of weeds).

Rate of exposure

The herbicide quickly enters the leaves and moves within the whole plant. In sensitive weeds, growth ceases several hours after treatment. Other symptoms, like chlorosis and necrosis, appear within 1-3 weeks, then the weeds die.

Action spectrum

Annual and some perennial dicotyledonous weeds

Sensitive species: Canadian thistle, cranebill (species), pepper plant (species), charlock, blindweed, day-nettle (species), vetch, wall rocket, tansy mustard, hemp nettle (species), buttercup (species), treacle erysimum, chickweed, copper rose, wild radish, field chamomile, chamomile (species), campion (species), common sunflower, loesel (species), stinkweed, field pansy, sandweed, green amaranth, yellow field sow thistle, pigweed, cockweed, sandwort (species), storksbill, candytuft (species), toadflax (species), stoneseed, hollyhock (species).

Moderately sensitive species: bluebottle, common fumitory, wild pansy, catch weed, common dandelion.

Feebly sensitive species: ragweed, sheepbine, winterweed.

Compatibility with other preparations

Do not use the product in a tank mixture with antigrass herbicides, with organophosphorus insecticide compounds. Do not add other herbicides during the use of the tribenuron-methyl-based product or fertilizers.

Snf. SANFLO WG

Product application features

- The herbicide technology based on tribenuron-methyl involves sowing specialized sunflower hybrids and applying the herbicide after the crop has sprouted, during the 1 to 4 true leaf stage.
- After application, sunflower plants may show color changes (yellowing) or a temporary delay in growth. Normal growth and appearance are usually restored within 1–2 weeks.
- If the recommended herbicide application rate is exceeded, deformation, complete absence of the flower head, and the formation of unproductive additional flower heads in the leaf axils may occur.
- The best result and the fastest possible herbicidal action are achieved with an optimal choice of treatment time:

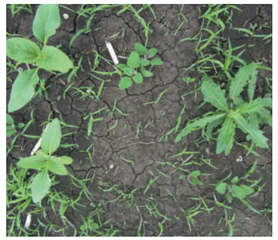
- At the early stages of the development of the annual dicotyledonous weeds (up to 4-6 true leaves), including goosefoot, up to 4 true leaves, common ragweed, up to 2 true leaves, cleavers, up to a phase of 3-4 rings; at the stage of perennial weed rosette

- For actively growing weeds with their outbreak, since the herbicide kills only weeds that have sprouted at the time of treatment
- Treat the crops under favorable weather conditions, providing full coverage of the treated surface with a working solution.
- Do not apply the herbicide under sharp fluctuations in day and night temperatures over the period of the product application, with excessive humidity of the air and soil (if rain is expected or immediately after heavy rains, until excessive moisture leaves the soil), in dry weather conditions, and if sunflower crops are stressed.
- The use of the herbicide does not impose any restrictions for planting other crops next spring. However, in case of the death of the crop, subculture only with tribenuron-methyl-resistant sunflower or spring cereal crops.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Tribenuron-methyl-resistant sunflower	Annual and some perennial dicotyledonous weeds	0,025-0,05	200-300	Spraying of crops at the stage from 2-4 to 6-8 true leaves of the crop and the early stages of weed growth (2-4 leaves) in pure form or mixed with surfactant Satellite, L (200 mL/ha)	60(1)

Effectiveness of Sanflo, WG application



1.

2.

3.

1. Sunflower before treatment
2. Creeping thistle after 1 week after treatment with Sanflo, WG
3. Winter cress 1 week after treatment

glyphosate acid /potassium salt/ 540 g/L

Non-selective systemic herbicide of continuous action intended to exterminate annual and perennial grass and dicotyledonous weeds, grassland, trees and shrubs.

ADVANTAGES

- **Most efficient among various glyphosate**
- **Glyphosate as potassium salt promotes fast absorption and spread of the active ingredient along the entire weed, including root system**
- **Elevated content of the active ingredient allows preparation application in reduced doses**
- **Optimal content of highly efficient adjuvant in the preparation maximizes bio-efficiency**
- **No soil activity, no aftereffects for the crop**
- **Allows application of energy-saving soil protection technologies**
- **Used at any above-zero ambient temperatures until persistent frost**

Mode of action

The preparation penetrates weeds through leaves and other green parts and spreads along all weed organs, including root system, while blocking synthesis of aromatic amino acids.

Protective effect period

Perennial weeds - throughout vegetation period, annual weeds - for 30-60 days or more (until regrowing from seeds).

Rate of exposure

Depending on weed growth intensity and weather conditions during treatment, herbicidal action is manifested in 5 to 10 days.

glycine derivatives	**5 years**
soluble liquid	**-15˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
There are no resistant plant species other than transgenic plant	

Action spectrum

Annual and perennial grass and dicotyledonous weeds, woody-shrub vegetation.

Compatibility with other preparations

Efficient when used alone. May be mixed with other herbicides.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- Treatment during active weed growth in wet conditions. In dry weather, treatment efficiency is reduced.
- An interval of at least 3 or 4 hours shall be between treatment and potential precipitation.

Probability of resistance

Long-term use of this herbicide is known to lead to the development of glyphosate-resistant populations of weeds from the Amaranth family, as well as wild radish, horseweed, threepartite ragweed, wormwood ragweed, field bluegrass, ryegrass species, Aleppo grass and cockspur.

Spr.
SPRUT EXTRA SL

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Fields intended for cereal and other crops cultivated with minimum or zero treatment effort	Annual dicotyledonous and grass weeds	1.4-2.5	100-200	Treatment of vegetating weeds in spring before sowing or crop emergence	-(1)
	Perennial grass and dicotyledonous weeds	2.5-4			
Fields intended for various crops (cereals, legumes, potato, industrial (including flax), oil plants, cucurbits crops, floricultural crops and other spring crops)	Annual dicotyledonous and grass weeds	1.4-2.5	100-200	Treatment of vegetating weds in spring or before crop emergence	-(1)
	Perennial grass and dicotyledonous weeds	2.5-4.0			
Fallow lands	Annual and perennial grass and dicotyledonous weeds	1.4-2.8	100-200	Treatment of vegetating weeds during their active growth	-(1)
Non-agricultural lands (protection zones of power transmission lines, glades, routes of gas and oil pipelines, embankments, and right-of-ways for rail and motor roads, aerodromes and other industrial sites)	Annual and sensitive perennial unwanted grass and dicotyledonous herbs	1.4-2.8	100-200	Treatment of unwanted weeds. Do not gather berries and mushrooms during treatment of non-agricultural lands	-(1)
	All types of undesirable herbaceous plants (except relatively resistant reedgrass, reed), deciduous tree and shrub species (aspen, birch, alder)	2.0-3.0			
	All kinds of unwanted herbs (except resistant species of woodreed, reed and others), deciduous trees and shrubs (asp, birch, alder)	3-5			
Non-agricultural lands (protection zones of power transmission lines, glades, routes of gas and oil pipelines, embankments, and right-of-ways for rail and motor roads, aerodromes and other industrial sites)	Annual and perennial grasses and dicotyledonous weeds, including borscht of Sosnovsky	2.0-3.0		Spraying of vegetating plants of different ages of pine-borscht with a height of 20-40 cm. The duration of the protective period is 30-45 days. The period of possible stay of people in the treated territories is not earlier than 15 days after processing. The collection of wild mushrooms and berries in the processing season is not allowed	

acifluorfen 320 g/L

A postemergent herbicide to control annual dicotyledonous weeds in soybean crops.

ADVANTAGES

- **Highly effective component of the tank mixture to enhance the herbicidal effect**
- **Increased herbicidal activity due to innovative formulation**
- **Pronounced synergism with herbicides on soybean**
- **The effective control of accumulated weeds that are weakly sensitive to other herbicides in soybean crops**
- **An ideal option for controlling broadleaf weeds**
- **Without restrictions for crop rotation**

diphenyl ether	**3 years**
colloidal solution concentrate	**-15˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
Phytotoxicity may occur	

Mode of action

Acifluorfen is a selective contact active ingredient that is absorbed by leaves and roots, may slightly move through the plant. Acifluorfen inhibits the synthesis of carotenoids, chlorophyll, protein, and RNA, promotes the metabolism of phenylpropanoids, biosynthesis of phytoalexins, and other stress metabolites. It increases permeability of weed plant membranes.

Protective effect period

It becomes effective from the moment of treatment until the second wave of weeds.

Rate of exposure

Depending on weather conditions, visible signs of oppression and death of weed plants appear on days 3-4 days after treatment with a herbicide.

Action spectrum

Annual dicotyledonous weeds.

Susceptible species: ragweed, little-flower quickweed, knotweed (species), field mustard, common fumitory, chickweed, small nettle, common groundsel, field poppy, lamb's quarters, spurge (species), sunflower volunteers, rapeseed volunteers, black nightshade, shepherd's purse, annual hepatica, cleavers, common purslane, wild radish, chamomile (species), field pansy, amaranth (species), field pennycress.

Compatibility with other preparations

Compatible with most pesticides recommended for treating soybeans.

However, in each case, the products to be mixed should be checked for physical compatibility.

Tnt.
TANTO CSC

Product application features

• The best results and the fastest herbicidal action of the product are achieved with:

- Optimal choice of treatment time: At the early stages of the development of the annual dicotyledonous weeds (2-4 leaves) and with their outbreak.

- Favorable weather conditions: spraying is carried out at optimum humidity and air temperature, in windless clear weather, providing full coverage of the treated surface with the working solution. It is advisable to treat crops in the evening since the herbicidal power of the active substance is enhanced at night.

• Do not use in crops that are under stress caused by frosts, a sharp decrease in temperature, drought, flooding, or other factors.

• To enhance the herbicidal activity and expand the action spectrum according to the species composition of weeds, it is recommended to use in tank mixtures with basic herbicides on soybean (Geyser, KKR, Hermes, MD, Concept, MD).

• Immediately after spraying, especially at high temperatures and at the early stages of growth (cotyledons, 1st leaf), burns and lightening of the leaves appear on soybean plants, which gradually disappear and do not appear on the leaves that grow later. This does not affect the subsequent growth of plants and the yield.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Soybean	Annual dicotyledonous weed plant	0,75-1,0	200-300	Spraying of crops starting from the crop 1st-4th leaf stage and in the early stages of weed growth (2-6 leaves)	60(1)

Effectiveness of Tanto, CSC application

Elimination of weeds after application of tank mixture Tanto, CSC 1.0 L/ha + Hermes, OD 1.0 L/ha

fluroxypyr 100 g/L + florasulam 2.5 g/L

Postemergence selective herbicide with systemic effect for the control of annual and perennial dicotyledonous weeds in cereal crops.

ADVANTAGES

- **100% control of severe, hard-to-control weeds, such as cleavers, black bindweed, field bindweed.**
- **A potent herbicidal effect and an expanded spectrum of susceptible weeds due to the synergism of the two active ingredients with different mode of action.**
- **High efficiency and rapid effect due to the unique formulation.**
- **Wide range of application timing.**
- **High rain tolerance: precipitation does not affect efficacy as early as one hour after treatment.**
- **No restrictions for subsequent crops in crop rotation.**

aminopyridines, triazolpyrimidines	**3 years**
colloidal solution concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	

Mode of action

Fluroxypyr is rapidly absorbed by the weed leaves and partially absorbed from the soil by the roots. It actively moves and spreads throughout the plant, including the growing points.

Florasulam is an inhibitor of the biosynthesis of essential amino acids as a result of acetalactate synthase inactivation.

The herbicide has a systemic activity, penetrates and spreads through all parts of weed plants easily and rapidly, within 1 hour, including roots, and blocks the growth of cells in young tissues.

Protective effect period

Almost throughout the growing period (depending on the weather conditions and in the absence of a new weed «wave»).

Rate of exposure

The timing of the product herbicidal effect depends on the application rate, weather conditions, species susceptibility, and the age of the weeds.

The growth of weeds in crops is stopped one day after treatment. The first signs of its effect can be observed after 3-4 days. Depending on the weed species and weather conditions, the final eradication of weeds occurs 2-3 weeks after treatment.

Action spectrum

Annual and perennial dicotyledonous weeds

Susceptible species: cleavers, field bindweed, black bindweed, hempnettle (sp.), sorrel (sp.), chickweed, field forget-me-not, burningbush, black nightshade, common dandelion, creeping thistle, knotweed (sp.), common cocklebur, treacle mustard, buttonweed, common purslane, black bindweed, etc.

Moderately susceptible species: speedwell (sp.), common fumitory, small nettle, blue-scarlet pimpernel, sunflower (self-seeding), corn spurry, corn chamomile, violet (sp.), field chickweed, dead-nettle (sp.), hogweed (sp.), chamomile (sp.), sow (sp.), cornflower, field pennycress, wild radish, lamb»s quarters, self-seeding poppy, amaranth (sp.), shepherd»s purse, common ragweed, herb-Sophia, blue lettuce, etc.

Compatibility with other preparations

Compatible with most pesticides.
However, in each case, the products to be mixed should be checked for physical compatibility.

Product application features

The optimum result and the fastest herbicidal action of the product are achieved:

- With the treatment of weeds at the early stages of development
- With the treatment of the crop in the most favorable weather conditions at a temperature of 8-25 °C

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, spring barley	Annuals, including those resistant to 2,4-D and MCPA, and perennial dicotyledonous weeds, including cleavers, black bindweed, field bindweed	1,0-1,5	150-300	Spraying of crops from the tillering stage till the stage of flag appearance and the early growth stages of weed plants. Winter crops should be treated in the spring.	40(1)
	With the predominance of perennial dicotyledonous weeds (sow and plume thistle species, field bindweed, etc.)	1,25-1,5	150-300		
	Perennial and annual dicotyledonous weeds, including those resistant to 2,4-D and MCPA, including cleavers, black bindweed, field bindweed	1,5	150-300	Spraying of crops in the heading stage and early growth stages of weeds (considering variety susceptibility) in case of cleavers and field bindweed predominance; if the weather conditions prevented earlier treatment. Winter crops should be treated in the spring.	40(1)

Effectiveness of Uniko, CSC application

1.

2.

Winter wheat crops, weeded with bedstraw, after treatment with Uniko, CSC

1. Compared to control

2. Overgrown bedstraw after treatment

2,4-D acid /2-ethylhexyl ether/ 320 g/L + chlorsulfuron acid 4.2 g/L

Postemergence herbicide in the oil formulation against a wide range of dicotyledonous weeds in cereal crops.

ADVANTAGES

- **A unique combination of active substances from two widely used chemical classes**
- **A broader spectrum of action against dicotyledonous weeds, compared to 2,4-D-based herbicides**
- **High efficacy against annual and offset weeds, including those resistant to 2,4-D**
- **The most efficient oil formulation**
- **Long-term retention of herbicidal properties regardless of weather conditions**
- **Soil screen formation**

Mode of action

The herbicidal effect of the product involves a combination systemic effect of 2,4-D and chlorsulfuron. Both active substances are absorbed mainly by leaves and roots, quickly move through the plant with assimilation or transpiration currents, accumulating in young meristematic tissues of leaves, stems and roots (growth points).

2,4-D is a hormone-like herbicide (synthetic auxin) that disrupt plant growth, causing tissue outgrowth and deformation of xylem and phloem cells, which inhibits the movement of photosynthesis products, and the plant dies. 2,4-D ethers cause deeper damage to roots, compared to salts. When the recommended consumption rates are followed, 2,4-D is quickly inactivated in the soil and disintegrates within 1-1.5 months.

Chlorsulfuron inhibits acetolactate synthase, suppressing the biosynthesis of the essential amino acids leucine, isoleucine and valine. Chlorsulfuron decomposes in the soil for a long period of time, therefore it has a soil effect.

phenoxy-carboxylates, sulfonylureas	**2 years**
oil dispersion	**-15˚C to +30˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

The herbicide effect against weeds (particularly those sensitive to 2,4-D) starts within a few hours after treatment. Visible signs of the effect of both components against weeds appear 2-7 days after spraying (cessation of growth, chlorosis, death of growth points, necrosis). Then the rest of the plant is affected, including the root system. Dicotyledonous weeds resistant to 2,4-D are affected slowly (5-10 days) and die in 2-3 weeks. Some of them, especially those at a later stage of growth, do not die at the time of application. However, they stop growing, remain in the lower layer and do not compete with crops.

Action spectrum

Annual dicotyledonous weeds, including those resistant to 2,4-D, and some perennial dicotyledonous weeds.

Susceptible species: ragweed, green field speedwell, field gromwell, common persicaria, pale persicaria, field mustard, black bindweed, flixweed, treacle mustard, chickweed, narrow-leaved peppergrass, blue lettuce, European stickseed, common mallow, goosefoot, ball mustard, field milk thistle, shepherd's purse, common hemp-nettle, common sunflower, bladder campion, corn spurry, hedge-nettle betony, red-root amaranth, field pennycress, common henbit, etc.

Moderately susceptible species: field thistle, prickly lettuce, catchweed bedstraw, wormwood, forking larkspur, scentless false mayweed, etc.

Low susceptible species: field pansy, common dandelion, field bindweed, common stork's-bill, etc.

Fmd.
FEMIDA OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, spring barley, oats	Annual dicotyledonous weeds, including 2,4-D resistant weeds, and some perennial dicotyledonous weeds	0,7-0,9	200-300	Spraying of crops in the tillering phase of the crop and early phases of weed growth	60 (1)
Winter wheat, winter barley, rye		0,7-0,8	200-300	Spraying of crops in spring or autumn during the tillering phase of the crop and the early phases of weed growth	

Warning!
One year after the product application, both cereal crops and chlorsulfuron-sensitive crops, such as maize, rapeseed, buckwheat, beets and peas, can be sown.
If replanting is required during the product application season, cereal crops can be sown in the same field.

Effectiveness of Femida, OD application

Wheat crops: left — control, right — treated with Femida, OD

dicamba acid 360 g/L + chlorsulfuron acid 22.2 g/L

Postemergence herbicide intended to control annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds on cereal (wheat, barley, oats, rye) and common flax and oilseed flax plantings.

ADVANTAGES

- **Proprietary formulation of a widely known combination of two active ingredients with a bioactivator**
- **Widest spectrum of action**
- **Maximum efficiency with minimum cost of treatment per 1 ha**
- **Prolonged application timing - until cereal evolving into tube**
- **Recommended for autumn treatment of winter crops**
- **Allowed for aerial treatment**

benzoates, sulfonylureas	**2 years**
soluble liquid	**-30˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Mode of action

Dicamba affects growth processes in sensitive weeds. Chlorsulfuron affects acetolactate synthase enzyme responsible for synthesis of amino acids.

Protective effect period

Depending on soil and climatic conditions, species composition and growth phase of weeds, cereal crop plantings are freed from weeds after preparation application for 30 to 60 days or more.

Rate of exposure

The preparation penetrates weeds in a step-by-step manner within 4 hours. Weeds cease growing during the first day after treatment. The first signs of weed inhibition (twisting of leaves, damage to the top of stalks, whitening of the growing point) may be visually observed in 15 days depending on weather conditions.

Action spectrum

Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds:

Sensitive species: ragweed, Canadian thistle, bluebottle, pepper plant (species), charlock, black bindweed, tansy mustard, common fumitory, satin flower, velvetleaf, spring groundsel, common orach, pigweed (species), dandelion (species), houndsberry, caseweed, hemp nettle (species), catch weed, field chamomile, wild radish, mayweed, bladder campion, sandweed, horehound, amaranth (species), dish mustard, day-nettle.

Moderately sensitive species: speedwell (species), corn bindweed, sheep bur, copper rose, milkweed, field scorpion grass, sow thistle (species), green ginger, spurge, houndsberry, green ginger, Sigesbeckia pubescens, field pansy.

Feebly sensitive species: barnyard grass, foxtail grass, loose silky bent, rough-stalk blue grass, foxtail (species).

Compatibility with other preparations

Fenizan is compatible with other herbicides, fungicides and insecticides. Before use, check for physical and chemical compatibility of formulations.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- treatment of plantings in the morning or evening at ambient temperature of 8°C to 25°C (5°C to 10°C in autumn), wind speed of max. 3 m/sec (in case of cloudy, but not rainy weather, spraying may be performed throughout the day);
- time from treatment until rain – min. 4 hours;
- at earlier stages of weed growth.

The following must not be done:

- treatment of plantings immediately before rain (time from treatment until rain – min. 4 hours) and after it;
- treatment of plantings after frost and strong heat (over 25°C);
- retreatment of plantings.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, spring barley, oats	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds.	0,14-0,2 0,14-0,2(A)	200-300 25-50(A)	Planting spraying at start of crop tillering stage (3-4 leaves) – end of tillering and earlier stages of weed growth	60(1)
Winter wheat, winter barley, rye		0,14-0,2 0,14-0,2(A)	200-300 25-50(A)	Planting spraying in spring and autumn at crop tillering stage and earlier stages of weed growth	
Spring and winter wheat, spring and winter barley, rye, oats		0,14-0,2 0,14-0,2(A)	200-300 25-50(A)	Planting spraying in spring at tube stage (1-2 internodes) and earlier stages of weed growth if urgent, unless weather conditions dictated earlier treatment. Do not perform late treatment of seed-production and selective plantings	
Common flax, oilseed flax	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds.	0,14-0,2 0,14-0,2(A)	200-300 25-50(A)	Planting spraying at 'herringbone' stage with crop as high as 3-10 cm and earlier stages of weed	60(1)

(A) - aerial treatment

etamethsulfuron-methyl 750 g/kg

It is a post-emergence systemic herbicide for the control of dicotyledonous weeds, including the main types of cruciferous plants, in rapeseed and sunflower crops.

ADVANTAGES

- **It is highly effective in controlling cruciferous weeds**
- **This is a good component of tank mixtures to expand the spectrum of action**
- **High selectivity to rapeseed and sunflower of any selection**
- **Flexible terms and wide application window**
- **Low application rates: economical treatment of 1 ha and optimized logistics costs**
- **High efficiency at low temperatures of +5°C and higher**

sulfonylureas	**3 years**
water-dispersible granules	**-15°C to +35°C**
Hazard Class 3, moderately hazardous substance	**1 L (0.5 kg)**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Etametsulfuron-methyl belongs to the group of acetolactate synthase (ALS) inhibitors; it blocks the formation of the enzyme acetolactate synthase, which is involved in the synthesis of essential amino acids. This herbicide has a systemic effect; it is absorbed through leaves and roots and easily moves into weeds, stopping their growth. It acts on weeds that are vegetating at the time of treatment and, in addition, with sufficient soil moisture after its application, it exhibits partial soil activity. The drug is effective in a wide temperature range (from 5 °C).

Protective effect period

The product protects crops from treatment until a new wave of weeds.

Rate of exposure

The growth of sensitive weeds stops a few hours after spraying. The time to growth retardation depends on weather conditions during treatment (humidity, temperature), weed species, and development phase (young plants are more sensitive to this herbicide). 1-3 weeks after treatment, the leaves of weeds become chlorotic, and the growing point dies; then necrosis of the leaves occurs, and the complete death of the weeds occurs after 2-3 weeks.

Action spectrum

Annual and some perennial dicotyledonous weeds

Susceptible species: Descurainia sophia, field mustard, field lily, shepherd's purse, upturned acorn, common hemp-nettle, common chickweed, field forget-me-not, chamomile (spp.), nettle (spp.), lady's thumb, pale persicaria, geranium (spp.), etc.

Moderately susceptible species: thorn apple, lamb's quarters, black nightshade, smokeweed, cleavers, Theophrastus's rope, etc.

Low susceptible species: blue cornflower, field violet, wild radish, convolvulus knotweed, species of thistle, thistle and milkweed, ragwort, speedwell (spp.), self-seeded poppy, Tatarian buckwheat, etc.

Compatibility with other preparations

Compatible with most pesticides.

However, in each case, the products to be mixed should be checked for physical compatibility.

Flm. NEW
FLAMENCO WG

Product application features

The fastest herbicidal effect is achieved:

- when treated at the early stages of weed development (in the phase of 2–5 true leaves)
- under favorable growth conditions: optimal humidity and temperature (15-20°C). In dry weather, the efficiency of the herbicide is reduced, since the penetration of the active substance into the plant slows down due to a general decrease in the outflow of assimilates from the leaves.
- do not use the product if the crop is under stress.

When used at maximum application rates on some crops and varieties (flax, peas), slight negative manifestations of the herbicide's action are possible in the first days after application.

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Spring rapeseed	Annual (including species of the cruciferous family) and some perennial dicotyledonous weeds	0,015-0,025	50-300	Spraying of crops, starting from the early stages of growth of dicotyledonous weeds (from cotyledons to 2-4 leaves in annuals and rosettes of leaves in perennials) with the addition of 200 ml/ha of the surfactant Satellite, L (200 mL/ha) The optimal phase of development of cultivated plants is from cotyledons to the formation of flower buds. If reseeding is necessary, you can sow spring wheat and barley, maize, soybeans, sunflower after plowing or surface cultivation of the soil.	60(1)
Winter rapeseed				Spraying of crops must be carried out in autumn or spring, starting from the early growth stages of dicotyledonous weeds (from cotyledons to 2-4 leaves in annuals and rosette leaves in perennials) with the addition of 200 ml/ha of the Satellite, L surfactant. The optimal phase of development of cultivated plants is from cotyledons to the formation of flower buds. If reseeding is necessary, you can sow winter wheat and barley after plowing or surface cultivation of the soil	60(1)
Sunflower	Annual (including species of the cruciferous family) and some perennial dicotyledonous weeds	0,02-0,025	50-300	Spraying of crops should be carried out in the early stages of growth of dicotyledonous weeds (from cotyledons to 2-4 leaves in annuals and rosettes in perennials) with the addition of 200 ml/ha of surfactant Satellite, L. The optimum phase of crop development is from 2 to 8 true leaves. If reseeding is necessary, you can sow spring wheat and barley, maize, soybeans, or spring rapeseed after plowing or surface cultivation of the soil.	60(1)

** Under registration*

quizalofop-P-ethyl 60 g/L

Postemergence herbicide intended to control annual and perennial grass weeds on plantings of sugar beet, soybeans, rapeseed, sunflower, common flax, oilseed flax, pea, and chickpea.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OEC**
- **Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation**
- **Efficient against most malicious grass weeds - quack grass, oat grass, barnyard grass, blue couch grass, etc.**
- **Exterminates weeds together with their root system**
- **Compatibility with other preparations in mixes**
- **Treatment regardless of crop growth phase**
- **No crop rotation limitations**

Mode of action

Oil emulsion concentrate improves significantly herbicide absorption by weeds. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation; when applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions. Demonstrating a high systemic activity, the active ingredient quickly moves to growing points of roots and shoots, while exterminating weeds together with their root systems and preventing regrowing. Thus, Forward, OEC demonstrates its maximum efficiency in any weather conditions and ensures the highest level of weed control.

aryloxyphenoxypropionates	**5 years**
oil emulsion concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Protective effect period

Protects the crop against weeds throughout the vegetation period. The preparation is absorbed by leaves and moves to sprout and rootstock growing points, and has a herbicidal effect on sensitive weeds present on plantings during treatment.

Rate of exposure

Weeds cease growing immediately after treatment. First signs of exposure appear in 7 to 10 days, and weeds perish in 2 or 3 weeks.

Action spectrum

Annual grass weeds - foxtail grass, apera, common oat grass, barnyard grass, ribbon grass, yellow bristle grass, green bristle grass, crabgrass, ryegrass, brome grass, annual meadow grass.

Perennial grass weeds - quack grass, scutch grass, green valley grass, herd grass, rough-stalked meadow grass, signal grass, common reed.

Compatibility with other preparations

The herbicide may be used in mixes with Betaren series preparations (Betaren 22, Betaren Express AM, EC, Betaren Super MD) on beet plantings, clopyralid preparations (Lornet) on beet plantings, permitted herbicides against dicotyledonous weeds on soybean and flax plantings. In each specific case, the components to be commingled should be checked for physical and chemical compatibility.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

Treatment of actively growing weeds. It is important that these have enough leaves for fast absorption of the active ingredient. The herbicide should not be used to treat crops that are under stress due to frost, wind, attack by insects, inadequate nutrition, and previously applied herbicides.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Beet and table beet, soybean, spring and winter rapeseed, sunflower, pea, chickpea	Annual grass weeds	0,9-1,2 0,9-1,2(A)	200-300 25-50(A)	Spraying of plantings at 2-4 leaves stage of weed	60(1)
	Perennial grass weeds (quack grass)	1,2-2,0 1,2-2,0(A)	200-300 25-50(A)	Planting spraying as quack grass becomes as high as 10-15 cm	
Oilseed flax	Annual grass weeds	0,9-1,2 0,9-1,2(A)	200-300 25-50(A)	Planting spraying at 2-4 leaves stage of annual weeds ('herringbone' stage of flax)	60(1)
	Perennial (quack grass) grass weeds	1,2-2,0 1,2-2,0(A)	200-300 25-50(A)	Planting spraying as quack grass becomes as high as 10-15 cm ('herringbone' stage of flax)	
Common flax	Perennial (quack grass) and annual grass weeds	1,2-2,0 1,2-2,0(A)	200-300 25-50(A)	Planting spraying at 2-4 leaves stage of annual weeds and as quack grass becomes as high as 10-15 cm ('herringbone' stage of flax)	-(1)

(A) - aerial treatment

2,4-D acid /2-ethylhexyl ether/ 200 g/L + aminopyralid 10 g/L + florasulam 5 g/L

A powerful herbicide for cereal crops, protecting against repeated dicotyledonous weed infestations

ADVANTAGES

- **Unparalleled efficacy against bedstraw and other annual winter-ing and spring weeds**
- **Effective control of sunflower drop irrespective of herbicide technologies, as well as rapeseed drop**
- **Effect on roots of perennial offset weeds**
- **Effective against the second wave of weeds**
- **Wide application window**
- **High efficacy irrespective of weather conditions provided by oil formulation**

phenoxy-carboxylates, aminopyridines, triazolpyrimidines	**2 years**
Oil dispersion	**-15°C to +30°C**
Hazard class 2, highly hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Fortissimo, OD is a systemic herbicide. Effective against a wide range of dicotyledonous weeds because of mutually reinforcing effects of three active ingredients.

2,4-D acid acts as an auxin-like growth inhibitor. The herbicide in the form of a compound ether has an increased activity. It penetrates and spreads through all parts of weeds, including roots, easily and rapidly, within 1 hour. It causes deformation of leaves, damage to reproductive organs, and apical necrosis of plants.

The effect of aminopyralid is also based on an auxin-type reaction, disrupting growth of meristematic cells. It is absorbed by weeds both through leaves and roots, and is easily transported to all growth points. Aminopyralid has long-lasting activity in soil, preventing new weed waves.

Florasulam inhibits acetolactate synthase (ALS inhibitors), an enzyme involved in the biosynthesis of essential amino acids in meristematic tissues of weeds. They are mainly absorbed by the leaves of weeds and quickly move to the root system and stems, where they accumulate in growth points and exert a herbicidal effect.

Fortissimo, OD herbicide has an innovative oil formulation: oil dispersion, that provides maximum effect of active ingredients regardless of weather conditions.

Protective effect period

Thanks to the soil activity of the product on new weed seedlings, crop protection is ensured throughout the growing season.

Rate of exposure

The active growth of sensitive weeds stops within one day after the product is absorbed by the plant. Visible symptoms of weed suppression appear 1–2 days after treatment, and complete weed death occurs 2–3 weeks after treatment, depending on the weed species, growth phase, level of infestation, and climatic conditions before, during, and after spraying.

Action spectrum

Annual and perennial dicotyledonous weeds

Sensitive species: common ragweed, field thistle, cornflower, speedwell (sp.), knotgrass, field bindweed, field mustard, black bindweed, field poppy, flixweed, chickweed, China jute, blue lettuce, lamb's quarters, thistle (sp.), common fumitory, shepherd's purse, catchweed, sunflower (drop, including imidazolinone- and sulfonylurea-resistant hybrids), rapeseed (drop, including imidazolinone-resistant hybrids), wild radish, scentless chamomile, wild chamomile, black nightshade, redroot amaranth, common hemp-nettle, field pennycress, henbit (sp.), etc.

Product application features

The best result and the fastest herbicidal action of the product are achieved:

- when spraying actively growing weeds. It is important that weeds have enough leaf area to absorb the active ingredient quickly. Crops under stress due to frost, wind, insect damage, nutrient deficiencies, or previously applied herbicides should not be treated with the product.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat, spring and winter barley	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, and some perennial dicotyledonous weeds	0,4-0,7	200-300	Spraying in spring, from tillering through the second internode formation Winter crops should be treated in spring	46(1)
	Annual dicotyledonous weeds, including 2,4-D and MCPA resistant weeds, perennial dicotyledonous weeds, including catchweed, thistle (sp.), sunflower drop	0,5-0,7			

If replanting is required during the product application season, maize, sorghum, spring cereal crops, and grasses can be sown on the same field one month after application of the product. Deep tillage should be carried out before sowing.

Effectiveness of Fortissimo, OD application

1.

2.

3.

1–2. Effect of Fortissimo, OD on sunflower volunteers in wheat crops

3. Untreated control

quizalofop-P-tefuryl 40 g/L

Postemergence herbicide of systemic effect intended to control annual and perennial grass weeds on cereal crop plantings.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation OEC**
- **Inhibits a wide range of grass weeds even at late growth stages**
- **Prevents regrowing of rootstock weeds**
- **Flexible herbicide application timing regardless of crop growth phases**
- **Efficient at any soil and climatic conditions**
- **Resistant to rain**

aryloxyphenoxypropionates	**5 years**
oil emulsion concentrate	**-5˚C to +25˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Mode of action

Inhibition of acetyl-CoA-carboxylase results in arrest of cell division and growth with further weed death.

Oil emulsion concentrate improves significantly herbicide absorption by weeds. Particularly, oil serves as a conductor of the active ingredient through the wax layer of a leaf and facilitates preparation penetration in deeper layers of a weed. Particles of the active ingredient in oil emulsion are at a fine state, thus providing highest stability and homogeneity of the sprayed solution, which promotes deep penetration of the preparation; When applied on a weed, oil emulsion distributes evenly and forms a film on the leaf surface preventing preparation evaporation and washing-off. This helps maintain preparation activity that does not depend on weather conditions. Demonstrating a high systemic activity, the active ingredient quickly moves to growing points of roots and shoots, while exterminating weeds together with their root systems and preventing regrowing. Thus, Healer, OEC demonstrates its maximum efficiency in any weather conditions and ensures the highest level of weed control.

Protective effect period

Throughout the vegetation period. The preparation is absorbed by leaves and moves to sprout and rootstock growing points, and has a herbicidal effect on sensitive weeds present on plantings during treatment.

Rate of exposure

Weeds stop growing during the first day after treatment. First signs of exposure appear in 5 to 10 days, and weeds perish in 2 or 3 weeks.

Action spectrum

Annual and perennial grass weeds, including green valley grass, bur grass (species), foxtail grass, loose silky bent, rough-stalked bluegrass, oat grass, ryegrass (species), barnyard grass, quack grass, crabgrass species, blue couch grass, sorgho (species), foxtail (species), and others.

Compatibility with other preparations

May be mixed with other herbicides intended to control broad-leaved weeds (Betaren Express AM, Betaren 22, Lornet, etc.), as well as with organophosphorous and pyrethroid insecticides. In each specific case, the components to be commingled should be checked for physical and chemical compatibility.

Hlr. HEALER OEC

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- treatment at earlier stages of grass weed growth (starting from 2 leaves);
- optimal selection of application periods (when the bulk of annual grass weeds emerge);
- treatment under weather conditions favorable for plant growth and development.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet, soybean, spring and winter rapeseed, sunflower, common flax	Annual grass weeds (barnyard grass, field sorgho, foxtail species)	0,75-1,0	200-300	Planting spraying at 2-4 weed leaves stage regardless of crop growth phase	60(1)
	Perennial grass weeds (quack grass)	1,0-1,5	200-300	Planting spraying with weeds as high as 10-15 cm regardless of crop growth phase	

Effectiveness of Healer, OEC application

Healer, OEC 1.0 L/ha, killing miliary weeds in soybean crops

clethodim 240 g/L

Highly efficient postemergence herbicide intended to control annual and perennial grass weeds on plantings of sugar beet, sunflower, and soybeans.

ADVANTAGES

- **Exterminates nearly all annual and perennial grass weeds, including malicious ones (quack grass, blue couch grass, green valley grass)**
- **No usage limitations with regard to crop development phase**
- **High efficiency at reduced doses regardless of soil and climatic conditions**

Mode of action

The preparation has a systemic effect, penetrates weeds through leaves and stalks, actively moves along toward the root system, accumulates in growing points and blocks synthesis of lipids.

Protective effect period

Throughout the vegetation period. However, new sprouts may emerge from seeds of annual grass weeds by season end.

Rate of exposure

The herbicide has a high systemic activity. The first signs of exposure appear in 2 to 4 days after treatment. Weeds cease growing within 5-7 days and grow brown in growing points; leave chlorosis is observed.

Action spectrum

Annual and perennial grass weeds, including self-seeding of cereal crops and maize, quack grass, creeping finger grass, green valley grass, and others.

Cyclohexanedione	**2 years**
emulsion concentrate	**-10˚C to +25˚C**
Hazard Class 3, moderately hazardous substance	**canister of 5 l**
No phytotoxicity at recommended rates	

Compatibility with other preparations

Efficient when used alone.

Using a clethodim preparation in mixes with other preparations may result in reduced efficiency. Check for physical compatibility with other preparations in a small vessel before mixing, and meet usage regulations and recommendations for all components of the mix. Do not commingle with fertilizers.

Product application features

The best result and quickest herbicide action of the preparation are achieved by:

- plant treatment in the morning at ambient temperature of +25°C;
- minimum preparation doses while observing optimal treatment timing;
- maximum doses – in case of high weed content and overgrown weeds.

Cnz.
CENSOR EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet, sunflower, soybeans	Annual grass weeds	0,2-0,4	200-300	Planting spraying at 2-6 weed leaves stage regardless of crop growth phase using mix 0.5% of preparation surfactant Mikado, CE	60(1)
	Perennial grass weeds (quack grass)	0,7-1,0	200-300	Planting spraying with quack grass as high as 10-20 cm regardless of crop growth phase using mix 0.5% of preparation surfactant Mikado, CE	

clethodim 120 g/L

A highly efficient grass-active herbicide intended to control all types of grass weeds on plantings of sugar beet, lupine, soybean, and other crops

ADVANTAGES

- **A more effective oil formulation of the product compared with conventional emulsion analogs**
- **Better parameters of wetting and penetration into weed plants**
- **Effective at high air temperatures due to long-term preservation of active ingredients in a liquid state**
- **The use of the stabilizer adhesive is not required since it contains a sufficient amount of adjuvants.**
- **Rapid manifestation of the herbicidal effect**
- **Cost-effective under the conditions of high weediness with annual grass weeds**

Cyclohexanedione

2 years

oil emulsion concentrate

-15˚C to +25˚C

Hazard class 2, highly hazardous substance

canister of 5 l

No phytotoxicity at recommended rates

Mode of action

The product has a systemic effect, penetrates the weeds through leaves and stalks, actively moves along toward the root system, accumulates in growing points, and blocks the synthesis of lipids, which leads to the death of weeds.

Protective effect period

Throughout the growing period. However, new sprouts may emerge from seeds of annual grass weeds by the end of a season.

Rate of exposure

The herbicide has high systemic activity. The first signs of exposure appear in 2 to 4days after treatment. Weeds grow brown in growing points; leave chlorosis is observed.

Action spectrum

Annual and perennial grass weeds, including self-seeding of grain crops and maize, quack grass, creeping finger grass, green valley grass, and others.

Compatibility with other preparations

The product is effective when used alone. It is recommended to check for physical compatibility with other products in a small vessel before mixing as well as meet usage regulations and recommendations for all components of the mix.

Product application features

Product application features

The best result and quickest herbicide action of the product are achieved by:

- plant treatment in the morning at ambient temperature up to +25°C;
- minimum doses of the product while observing optimal treatment timing;
- maximum doses – in case of high weed content and overgrown weeds.

Czm.
CENSOR MAX OEC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet, onion, flax, fiber flax, lupine	Annual grass weeds	0,6-0,7	200-300	Planting spraying at stage 2-6 of weed leaves regardless of the crop growth phase	60(1)
	Perennial grass weeds (quack grass)	1,4-1,6	200-300	Planting spraying with quack grass as high as 10-20 cm regardless of the crop growth phase	

Effectiveness of Censor Max, OEC application

1.

2.

3.

Sugar beet

1–2. Herbicide effect on grass weeds

3. Control

imazapyr 250 g/L

Systemic herbicide of continuous action intended to control annual and perennial grass and broad-leaved (including tree species) plants at non-agricultural facilities

ADVANTAGES

- **Much more efficient than glyphosate herbicides**
- **Excellent soil activity - 100% control of unwanted vegetation for 2 years**
- **Reliable exterminates herbs, shrubs and trees, including difficult-to-eradicate and quarantine weeds (willow, blackberry, bindweed, Russian centaury, etc.)**
- **An innovative way to create protective mineralized strips**
- **May be applied both before weed emergence and over emerged weeds**
- **Unlimited timing of protective measures**
- **No adverse effect from precipitation in an hour after treatment**
- **Quickly penetrates and exterminates plants under a layer of dust and oil**
- **Steadily high efficiency in all regions of Russia with different soil and climatic conditions and species composition of unwanted vegetation**

Mode of action

The preparation is absorbed by roots and leaves, moves along phloem and xylem, and accumulates in growing points. The active ingredient inhibits synthesis of branched amino acids that control protein synthesis and cell growth. This results in impairment of protein synthesis, thus disturbing DNA synthesis and retardation of weed cell growth.

Protective effect period

Protects against weeds for at least a season. On non-agricultural lands, the effect from the preparation may last for 3 to 5 years.

Rate of exposure

Visible signs of herbicide action on annual weeds are observed within 2–4 days, while on most perennials, they appear after 7–10 days. Weed die-off occurs 2–4 weeks after treatment. Arboricidal effects on tree and shrub vegetation (leaf drop) take place within 1 month or more after treatment.

imidazolinones	**3 years**
soluble concentrate, soluble liquid	**-10˚C to +25˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 l**
No resistant crops exist	

Action spectrum

This product is effective on all types of herbaceous and woody-shrub vegetation.

Compatibility with other preparations

Efficient when used alone. May be mixed with other herbicides.

Product application features

In addition to spraying, other methods can be used to control unwanted woody vegetation:

- Treating freshly cut stumps of hardwood trees to prevent root sprouting
- Injecting into tree trunks

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Non-agricultural lands (protection zones of power transmission lines, glades, routes of gas and oil pipelines, embankments, and right-of-ways for rail and motor roads, aerodromes and other industrial sites), the creation of anti-fire mineralized strips	All kinds of weeds, including ragweed and Russian centaury	2,0-2,5	100-300	Spray weeds in the early growth stages, including ragweed in the 2–4 leaf stage and creeping mustard during stem elongation. The restriction period for harvesting wild mushrooms and berries is 20 days.	-(1)
	All kinds of unwanted herbs and trees (asp, birch, alder, willow, pine, fir, etc.)	2,0-5,0	100-300	Spraying of vegetative plants and soil is recommended from April to September. The restriction period for harvesting wild mushrooms and berries is 20 days.	

Objects of application of Shkval, SL

Est. ESTAMP EC

pendimethalin 330 g/L

General-purpose pre-emergence herbicide intended to control annual grass and dicotyledonous weeds on agricultural crop plantings.

ADVANTAGES

- Excellent efficiency in controlling a wide range of annual grass and dicotyledonous weeds
- Used for soil treatment before crop emergence, thus eliminating competition with weeds at earlier stages of crop growth
- Prolonged protective period
- High and steady efficiency in various soil and climatic conditions

dinitroanilines	5 years
emulsion concentrate	-15˚C to +40˚C
Hazard Class 3, moderately hazardous substance	canister of 10 l
No phytotoxicity at recommended rates	

Mode of action

Pendimethalin absorbed by roots and plantlets restrains cell division and growth in meristems of sensitive weeds. Treated weeds perish soon after emergence or after sprouts crop out. Emergence itself is not inhibited.

Protective effect period

Depending on soil and climatic conditions - 8 to 10 weeks, throughout the vegetation period virtually.

Rate of exposure

Weeds die at the emergence stage. Sprouts die in 3 or 4 days.

Action spectrum

Annual grass and dicotyledonous weeds

Sensitive species: speedwell (species), pepper plant (species), charlock, bur grass, satin flower, common orach, copper rose, pigweed (species), loose silky bent, rough-stalked bluegrass, field scorpion grass, sow thistle (species), caseweed, field chamomile, wild radish, mayweed, sorgho (species), field pansy, foxtail (species), amaranth (species).

Moderately sensitive species: common fumitory, velvetleaf, foxtail grass, houndsberry, catch weed, crabgrass, day-nettle.

Compatibility with other preparations

Not required, general-purpose herbicide.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Onion (except when for green sprouts)	Annual grass and dicotyledonous weeds	2,3-4,5	200-300	Soil treatment before crop emergence	60(1)
Sunflower		3,0-6,0	200-300	Soil treatment before crop emergence	60(1)
Garlic, cabbage, carrot, tomato*		3,0-6,0	200-300	Soil treatment before crop emergence	60(1)

** - crop expansion pending registration*

Bi. BINARY PACKS

Drotik Combi, Drotik Grant, Primadonna Combi, Primadonna Grant – binary packs of systemic postemergence herbicides with selective action against a wide range of dicotyledonous weeds in cereal crops.

ADVANTAGES

- Maximum protection at minimum cost
- Convenient packaging with pre-measured doses for preparing tank mixtures
- Labor savings and reduced per-hectare treatment costs
- More efficient use of machinery and equipment
- Elimination of mixing errors in tank mixtures
- Enhanced effectiveness against target species and expanded spectrum of action

A binary pack consists of a canister with two compartments, where the liquid and solid components are kept separate.

One binary pack is designed to treat 8–12 hectares of crops and allows precise dosing of mixture components, ensuring no risk of overdose.

Bi. PRIMADONNA COMBI

2.4-D acid /2-ethylhexyl ether/ 200 g/L + florasulam 3.7 g/L and metsulfuron-methyl 600 g/kg

PRIMADONNA, SE + ZINGER, WP	suspension emulsion and wettable powder
phenoxy-carboxylates, triazolpyrimidines+ sulfonylureas	binary pack of 5 l + 0,05 kg

Bi. PRIMADONNA GRANT

2.4-D acid /2-ethylhexyl ether/ 200 g/L + florasulam 3.7 g/L + tribenuron-methyl 750 g/kg

PRIMADONNA, SE + GRANAT, WG	suspension emulsion and water dispersible granules
phenoxy-carboxylates, triazolpyrimidines + sulfonylureas	binary pack of 5 l + 0,1 kg

Bi. DROTIK COMBI

2,4-D acid /2-ethylhexyl ether/ 400 g/L+ metsulfuron-methyl 600 g/kg

DROTIK, CSC + ZINGER, WP	colloidal solution concentrate and wettable powder
phenoxy-carboxylates + sulfonylureas	binary pack of 5 l + 0,05 kg

Bi. DROTIK GRANT

2,4-D acid /2-ethylhexyl ether/ 400 g/L + tribenuron-methyl 750 g/kg

DROTIK, CSC + GRANAT, WG	colloidal solution concentrate and water dispersible granules
phenoxy-carboxylates + sulfonylureas	binary pack of 5 l + 0,1 kg

diquat 150 g/L

Non-selective contact desiccant for pre-cropping desiccation of sunflower, pea, rapeseed, soybeans, cereal crops, alfalfa.

ADVANTAGES

- **Fast drying of crops, thus facilitating cropping**
- **Fast and uniform ripening**
- **Reduced losses of seeds during cropping**
- **Facilitates cropping**
- **Reduced moisture content in seeds**

Mode of action

Tongara, SL contains a high concentration of active ingredient – 150 g/L in the form of diquat ion, which is equivalent to 280 g/L of diquat dibromide. The high concentration of diquat ion ensures a high biological effect under any weather conditions.

Diquat is a contact desiccant. Drying of treated crops occurs by disrupting physiological and biochemical processes in the plant, which weakens the water-holding capacity of tissues, destroys tonoplasts, disrupts cell contents, kills cells, and ultimately leads to plant desiccation.

It causes complete desiccation of treated plants.

The active ingredient decomposes quickly within the plant, making the product safe for use on both seed crops and crops intended for food use.

Rate of exposure

Depending on weather conditions, signs of desiccation become visible in 5 to 10 days after treatment. Signs of preparation action: gradual withering, yellowing, then drying of plant leaves.

pyridiniums	**5 years**
soluble liquid	**-10˚C to +35˚C**
Hazard class 2, highly hazardous substance	**canister of 10 l**
No resistant crops exist	**Aerial spraying is allowed**

Product application features

The interval between treatment and possible atmospheric fallout should be at least 3–4 hours. The optimal air temperature for treatment is between 15 °C and 25 °C. When applied to sunflower crops, it is compatible with urea.

The effectiveness of Tongara, SL as a desiccant is highly dependent on the quality of water used for preparing the working solution. It is recommended to improve water quality with the Lakmus product before preparing the desiccant working solution.

Tng.
TONGARA SL

Usage regulations

Crop	Назначение	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sunflower	Desiccation	1,5-2,0 1,5-2,0(A)	200-300 50-100(A)	Planting spraying at start of anthode browning	7(1)
Pea (for grain)	Desiccation	1,5-2,0 1,5-2,0(A)	200-300 50-100(A)	Spraying after full biological ripening, 7 to 10 days before cropping	7(1)
Spring and winter rapeseed	Desiccation	1,5-2,0 1,5-2,0(A)	200-300 50-100(A)	Planting spraying as seeds grow brown in medium tier pods	7(1)
Soybeans	Desiccation	1,5-2,0 1,5-2 (A)	200-300 50-100(A)	Spraying as 50-70% of pods grow brown, 7 to 10 days before cropping	12(1)
Cereal crops	Desiccation	1,5-2,0 1,5-2,0(A)	200-300 50(A)	Planting spraying as these become ripe, seed moisture content max. 30%	7(1)
Alfalfa (seed plantings)	Desiccation	2,0-3,0 2,0-3,0(A)	200-300 50(A)	Spraying as 85-90% of pods grow brown	7(1)
Fields intended for sowing spring crops (cereals, soybeans, maize, sunflower) cultivated under minimum or zero tillage technologies	Annual dicotyledonous and grass weeds	1,0-2,0 1,0-2,0(A)	50-200 50-100(A)	Spraying of vegetative weeds before sowing or before the emergence of crop sprouts	-(1)

(A) - aerial treatment

Insecticides and acaricides

spirodiclofen 250 g/L

Contact-action product of insecticide acaricidal chemical class to combat mites and other pests on apple, grapes, and soybean crops

ADVANTAGES

- **A very powerful acaricidal effect due to the active substance of the new chemical class in the innovative formulation**
- **Special mode of action against all stages of mite development**
- **An active effect on populations resistant to conventional acaricides**
- **Additional action against armoured scales, slow worms, and planthoppers**
- **Translaminar effect**
- **Rapid action and high efficiency in all weather conditions**

Mode of action

Spirodiclofen inhibits lipid synthesis at all stages of the development of herbivory mites, i.e. eggs, larvae, protonymphs, deutonymphs, as well as in adult females. Ceasing of lipid production leads to impaired biochemical processes in the cells of tissues and, accordingly, to the death of insects. In view of its non-systemic action, the product is selective to the male insects, which do not harm the crop due to their inherent small numbers (the remaining males are destroyed by predatory mites)

ketoenols

3 years

colloidal solution concentrate

-15 to +35°C

Hazard Class 3 - for humans 3 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, a preliminary verification of the physical and chemical compatibility of the components to be mixed is required.

Akr.
AKARDO CSC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Herbivory mites, California scale	0,4-0,6	600-1200	Treatment during growing season	28(2)
	Apple sucker		600-800		
Grapes	Spider mites, grape erineum mite, leafhoppers	0,4	500-1000	Treatment during growing season	28(2)
Soybean	Two-spotted spider mite	0,4-0,5	200-400	Treatment during growing season	28(2)

Effectiveness of Acardo, CSC application

1.

2.

1. Vineyard protection program including Acardo, CSC and Mekar, ME

2. Control without acaricides (development of grape erineum mite)

pyriproxyfen 100 g/L

Hormonal insecticide with an innovative oil formulation for the protection of rapeseed, fruit crops and vegetable crops

ADVANTAGES

- **A unique mode of action that disrupts the hormonal balance in pests**
- **The most efficient oil formulation, compared to conventional emulsion concentrates**
- **Has an impact on all stages of pest development**
- **Long-term protection because of high residual activity**
- **Low-toxic for bees and warm-blooded animals**
- **A necessary component of complex anti-resistance crop protection programs**

juvenoids (synthetic analogues of juvenile hormone)	**3 years**
oil emulsion concentrate	**-10˚C to +30˚C**
Hazard Class 3 - for humans 3 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Pyriproxyfen is a contact enteric insecticide. Its mode of action is associated with irreversible disruption of hormonal balance in pests. It affects numerous physiological processes in insects, similar to juvenile hormones, and acts as a potent inhibitor of embryogenesis, metamorphosis and adult insect formation.

When applied to eggs and larvae, pyriproxyfen disrupts preimaginal development, resulting in deformed unviable species with signs of a larva or imago.

Adult insects exposed to pyriproxyfen become sterile and unable to lay viable eggs, preventing the potentially harmful development phase.

Pyriproxyfen has long-term residual activity. A single treatment causes lethal changes in each stage of development, reducing both the treated and subsequent pest populations.

The innovative oil formulation improves the lipophilic properties of the product and extends the activity of the active substance. Oil enhances the contact properties of the product, ensuring even distribution and good adhesion of the insecticide to the insect's body and treated surface. This ensures a rapid toxic effect on the insect and long-term protection during subsequent feeding on the leaves. Furthermore, the oil film on the treated surface keeps the active substance in liquid form for a longer period of time, preventing crystallisation, evaporation and washout by precipitation. As a result, the product remains effective even in adverse weather conditions.

Protective effect period

The product provides long residual activity throughout the growing season. The product causes irreversible disruption of the hormonal balance in pests, leading to abnormal development and eventual death.

Rate of exposure

As a long-acting insect growth regulator, the product causes pest mortality both during application and at subsequent developmental stages.

Compatibility with other pesticides

Do not mix with malathion-containing products, as pyriproxyfen and malathion are antagonistic.

Apx.
APEX OEC

Product application features

Pyriproxyfen exhibits delayed action and lacks an immediate «knockdown effect». It induces irreversible, lethal hormonal disruption across all pest life stages, with greatest efficacy against early instars (eggs and young larvae). In mixed-age pest populations – including both damaging and non-damaging stages – during outbreaks, or when rapid knockdown combined with prolonged control is needed, Apex, OEC is recommended in tank mixes with pyrethroids or neonicotinoids (Meadows, OD / Pirelli, EC / Beretta, OD, etc.).

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter rapeseed	Diamondback moth, white butterflies, cabbage moth	0,3-0,5	200-400	Spraying during the growth period	28(3)
Apple tree	California scale, codling moth	0,5-0,8	600-1200	Spraying during the growth period	15(3)
Greenhouse tomatoes and cucumbers	Greenhouse whitefly	0,2-0,3	1000-3000	Spraying during the growth period	3(1)

Btd. BATARDO NEW OD

indoxacarb 105 g/L + lufenuron 90 g/L

It is a highly effective insecticide with ovicidal action against lepidopteran pests of gardens, vineyards and vegetable crops.

ADVANTAGES

- **It provides a double mode of protection against lepidopteran pests at the initial stage of their development.**
- **The embryonic and larval development processes of pests are blocked.**
- **It is an excellent component of a comprehensive garden protection system.**
- **It has a long-term protective period.**

oxadiazines, benzoylureas	**2 years**
Oil dispersion	**-15 to +35 °C**
Hazard class: 3 - for humans 1 - for bees	**canister of 5 L**
Not phytotoxic at observance of the procedures for the product application	**Stock solution preparation is required**

Mode of action

Indoxacarb belongs to the chemical class of oxadiazines; according to the IRAC classification, it belongs to Group 22 — voltage-gated sodium channel blockers. It has a contact-intestinal and ovicidal effect, and a partial translaminar effect. Insects die upon contact with the treated surface of the leaves and when the drug enters the intestines. The effect of indoxacarb is most pronounced when spraying laid eggs and in the phase of the beginning of the hatching of larvae, which die when they gnaw through the egg shell. The main factor for the manifestation of the ovicidal effect is the presence of moisture. The substance is capable of reactivation in humid conditions.

Lufenuron belongs to the chemical class of benzoylureas; According to the IRAC classification, it belongs to Group 15 — inhibitors of chitin biosynthesis. Lufenuron inhibits chitin synthetase enzymes in lepidopteran eggs and in junior larvae. It acts transovarially or enters the body of larvae with food, which leads to the cessation of molting and feeding processes.

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect. The death of imago is observed within 24 hours, and larvae die within several days after treatment.

Btd. BATARDO NEW OD

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Grapes	Bunion budworm, cotton bollworm	0.3-0.4	500-800	Spraying during the growth period	10(2)
Apple tree	Codling moth	0.4-0.6	600-1200	Spraying during the growth period	12(2)
Tomato (open ground)	Cotton budworm	0.3-0.4	200-400	Spraying during the growth period	7(2)
Tomato (greenhouse)	Cotton bollworm, South American fruit moth		1000-2000		3(2)

** Under registration*

bifenthrin 60 g/L + thiamethoxam 40 g/L + alpha-cypermethrin 30 g/L

Highly effective three-component insecticide, oil formulation, for control of especially harmful pests of cereal crops, potato, rapeseed, and sugar beet.

ADVANTAGES

- **A new combination of three active ingredients in a highly effective oil formulation**
- **Strong synergism of active components: toxic effect on various stages of nerve impulse transmission of an insect**
- **Several modes of action: systemic, contact enteric, translaminar, and repellent**
- **Strong knockdown effect and long-term protection (up to 35 days) even during mass reproduction periods**
- **Control of the widest spectrum of the most harmful pests, including diamondback moth, snout beetle, rapeseed beetle, etc.**
- **Effective impact on hiding pests and pests living on the back of the leaf**
- **Triple toxic effect for the elimination of resistant populations**

pyrethroids, neonicotinoids	**2 years**
oil dispersion	**-15˚C to +35˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Alpha-cypermethrin has an acute contact enteric action with a rapid initial and long-term residual toxic effect, as well as knockdown effect. Is one of the active substances with the highest activity among pyrethroids. Protective effect period up to 15-20 days.

Both pyrethroids affect the nervous system by blocking sodium channels and impairing the permeability of cell membranes. This results in death of insects, including those with resistance to pyrethroids.

Bifenthrin has an acute contact enteric action. It effectively inhibits the development of pests, including Coleoptera, Orthoptera, Diptera, and Lepidoptera orders, as well as some mites. Has repellent properties. Has a longer residual effect: the protective effect period lasts up to 20-30 days.

Thiamethoxam has a systemic and contact enteric action with translaminar activity. It is effective against hiding pests and pests feeding on the back of the leaf.

The active ingredient is rapidly absorbed by the plant and moves along the xylem to the untreated parts of plants affecting the nicotinic acetylcholine receptors of the nervous system of insects.

A combination of three active ingredients allows control of the widest spectrum of pests, ensuring long-term results by means of systemic effects, translaminar effect, and contact enteric action. In total, the protective effect period lasts up to 35 days.

Strong synergism of components is ensured by the impact on insects on various stages of nerve impulse transmission.

Is highly effective against resistant insect races.

Oil formulation ensures improved lipophilic properties of the active ingredient. The product is fixed perfectly on the body of an insect, which ensures an improved contact action. The product shows better adherence to leaves of plants and uniform distribution along the surface, thus fully exhibiting the translaminar effect and retaining protective properties for a longer period.

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Scarab beetles, sunn pest, aphids, Lema beetles, corn flies, thrips	0,4	100-200	Treatment in the growing period	28(1)
Winter wheat	Ground beetle	0,3	200-300	Treatment in the sprouting period	28(2)
Spring and winter barley	Aphids, Lema beetles, corn flies, thrips	0,4	200-300	Treatment in the growing period	28(2)
Potato	Colorado beetle	0,4	200-400	Treatment in the growing period	30(2)
Spring and winter rapeseed	Crucifer flea beetles	0,3-0,4	100-200	Treatment in the sprouting period	28(2)
	Turnip sawfly, rapeseed beetle, cabbage seedpod weevil, diamondback moth		200-400	Treatment in the growing period	
Potato	Beet flea beetles, weevils and cut worms	0,3-0,4	100-200	Treatment in the sprouting period	20(2)
	Sod webworm, aphid, beet stalk borer,mining flies, spider mites	0,3-0,4	200-400	Treatment in the growing period	

aluminium phosphide 570 g/kg

Fumigant insecticide for desinsection in various empty storages, and food, seed and fodder grain stocks in storages and elevator bins that are stored in bulk or bags under a film cover.

ADVANTAGES

- High fumigant activity
- Exterminates storage pests in hard-to-reach places
- Exterminates insect pests of any age
- No effect of product quality
- Easy to use

inorganic substances	3 years
tablets	-20˚C to +35˚C
Hazard class 1, extreme hazard.	0.3 kg
No phytotoxicity at recommended rates	

Mode of action

As a result of chemical reaction of aluminum phosphide with atmospheric moisture, the Dakfosal tablet emits phosphine gas, which, when penetrating the organism of insect pests, impairs reduction-oxidation systems, inhibits the respiratory activity, disturbs metabolism and blocks oxygen intake, thus causing death of insects. Toxic effect on insects increases with temperature and slows down sharply at a temperature of max. 15°C.

Protective effect period

Protective period lapses after complete phosphine liberation from the preparation.

Spectrum of action

Grain weevil, mealworm, saw-tooth grain beetle, corn moth, meal moth, drugstore beetle, coffee bruchid weevil, cigarette beetle, mites and other species of storage insect pests.

Rate of exposure

Rate of exposure is dependent on gas concentration, ambient temperature (above 15°C), pest species and insects life stage.

Compatibility with other pesticides

Should not be used with other insecticides. Phosphine action may become stronger amid elevated content of carbon dioxide.

Product application features

Calculate the required number of tablets before use. When possible, use packing (flask, container) contents for one operation. Perform fumigation at above 15°C.

For fumigation of elevators and grain storages.

Add tablets into the grain flow in a short and fast manner at equal interval as grain is loaded into the bin. Grain is loaded into the bin via a belt conveyer. Tablets may be introduced into the bin using a chute. Add tablet using mechanical equipment (automatic dispenser) or manually with rubber gloves on.

The elevator bin shall be filled as soon as possible.

For fumigation of crops in bags.

Place tables uniformly among bags and around bag piles.

Piles shall be gas-tight and covered with plastic sheets.

Empty grain storages.

Close rooms tightly before fumigation. Place tablets all over the room.

Phosphine has no adverse effect on seed germinating capacity of various plant species, when the recommended fumigation conditions and technique are used.

Preparation of limited usage. Diluted phosphine concentrations in air on outdoor sites are harmful for the environment. Phosphine oxidizes in plants and preparations store to phosphoric acid. In animal organisms, it metabolizes to non-toxic phosphates.

Access of humans after complete ventilation (not earlier than on 11th day after degassing started).

Df.
DAKFOSAL TB

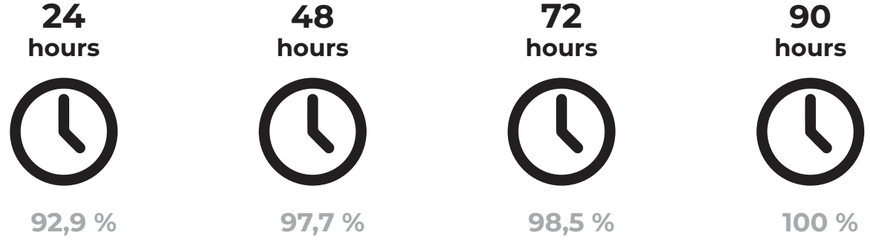
Usage regulations

Crop / object of treatment	Harmful object	Consumption rates of preparation
Empty grain storages	Storage insect pests	5 g/m³
Food, seed and fodder grain stored in bulk, elevator bins and in bags under film cover	Insects and mites – storage pests	9 g/t
Grain processing enterprises	Storage insect pests	6 g/m³
Grain food, seed, fodder in the holds of ships with a bulk of grain up to 4-6 m high in the inland ports of Russia	Storage insect pests	6 g/m³
Grain of cereal crops, soybeans, tapioca and meal in the holds of domestic bulk-type ships and tankers and in foreign ships in terms of their inspection, unloading and loading in domestic ports	Storage insect pests	2.4 g/m³
Flour and cereals in warehouses or under film	Insects and mites – storage pests	6 g/m³
Grain food, seed, fodder in bulk in grain wagons en route	Insects and mites – storage pests	9 g/t
Dry vegetables in warehouses or under film	Insects and mites – storage pests	5 g/m³

CAUTION! Dakfosal, TB is authorized for use exclusively by professional personnel under agricultural production conditions. Fumigation must be performed strictly in accordance with the label instructions and registered use patterns.

The product must NOT be sold through retail channels, used on private farms, or applied to cellars, basements, or similar structures.

Fumigation efficacy at different exposure times, %



Mortality of mobile stages of the elongate mite (larvae, nymphs, adults) at a phosphine concentration of 0.85 g/m³, 25°C, 75 % relative humidity and different exposure times.

diflovidazin 200 g/L

A powerful contact acaricide of a new chemical class for control of mites on apple trees, grapes, and soybeans

ADVANTAGES

- An unparalleled acaricide
- A unique mode of action at all stages of a life cycle of various mite species
- Elimination of mites at the back of the leaf by means of translaminar activity
- Effective impact on winter and summer ovipositioning
- Additional sterilizing effect on female mites
- High selectivity to useful entomofauna
- A perfect tool for anti-resistance crop protection programs

tetrazines	3 years
suspension concentrate	-5˚C to +50˚C
Hazard Class 3 - for humans 3 - for bees	canister of 5 L
No phytotoxicity at recommended rates	

Mode of action

Diflovidazin is a contact acaricide of tetrazines class with translaminar action and sterilizing properties (females lay sterile eggs). Effectively impacts the mites during the whole life cycle (including the impact on winter and summer ovipositioning). Inhibits larval processes, prevents the completion of molting in postembryonic insects. Has a pronounced hormonal and transovarian action, affecting the eggs forming in a female's body. Enters the eggs at the back of the leaf by means of translaminar activity.

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect.

Compatibility with other pesticides

Compatible with most pesticides. Before application, check the chemical and biological compatibility with a particular product at recommended doses.

Selectivity

Has no negative impact on bees, predator mites, predator bugs, lacewing larvae, Stethorus bugs, Encarsia.

Product application features

To maximize acaricidal efficacy, it is recommended to:

- initiate treatments before mite populations exceed the economic injury level (EIL) and before visible leaf damage appears;

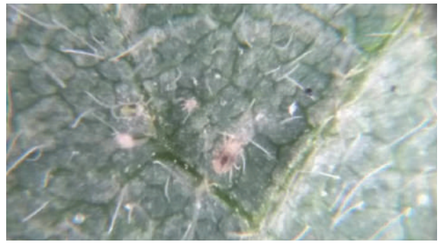
- enhance translaminar activity by using oil-based adjuvants, etc.

Dphl.
DIFLOMITE SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Mites	0,24-0,45	600-1200	Spraying during vegetation at a concentration of 0.04%.	30(1)
Grapes		0,2-0,4	500-1000	Spraying during vegetation at a concentration of 0.04%.	30(1)
Soybean		0,3	200-300	Spraying during the growth period	36(1)

Effectiveness of Diflomite, SC application



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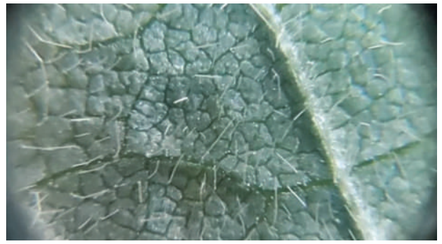

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4.

1–2. Soybean crop condition before acaricide treatment (various mite development stages on leaf, leaf marbling)

29 days after treatment

3. Diflomite, SC 0.3 L/ha.

4. Propargite-based acaricide.

imidacloprid 200 g/L

Insecticide of systemic effect against a wide range of pests on potato, cucumbers, tomato, sugar beet, cereal crops, pastures.

ADVANTAGES

- Neonicotinoid insecticide
- Prolonged protection against most malicious insects
- Efficient use in greenhouses
- High efficiency in any weather conditions
- No phytotoxic effect

Mode of action

The preparation has an acute contact intestinal and systemic effect. Imidacloprid blocks postjunctional nicotine receptors of the insect»s nervous system. This results in inhibition of signal transfer through the central nervous system of pests, these lose their locomotor activity, at first, then stop feeding and die within a day.

Protective effect period

Protective period - min. 14 days depending on the kind of insect pest and weather conditions.

Neonicotinoids	**5 years**
soluble concentrate, soluble liquid	**-10˚C to +30˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Rate of exposure

High speed of toxic effect.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Wheat	Eurygaster integriceps	0,07 0,07(A)	200-400 20-50(A)	Treatment during vegetation period	28(1)
	Intrastalk flies	0,06 0,06(A)			
Oats, barley	Oulema	0,06 0,06 (A)	200-400 20-50(A)	Treatment during vegetation period	28(1)
Potato	Potato beetle	0,1	200-400	Treatment during vegetation period	20(1)
Potato (seed plants)	Greenflies	0,25	200-400	Treatment during vegetation period as pests appear	-(3)
Greenhouse cucumbers	Greenflies	0,15-0,75	1000-3000	Treatment during vegetation at concentration of 0.015-0.025%	3(1)
	White fly	0,5-1,5	1000-3000	Treatment during vegetation at concentration of 0.05%	
Greenhouse tomato	White fly	0,5-1,5	1000-3000	Treatment during vegetation at concentration of 0.05%	3(1)
Sugar beet	Beet flea beetles and weevils	0,1-0,2	100-200	Treatment of sprouts	45(1-2)
	Beet leaf aphid, cut worms	0,1	200-400	Treatment during vegetation period	
	Sod webworm	0,15			
	Beet stalk borer	0,25-0,4	200-400	Spraying during the growth period	30(2)
Rapeseed	Cruciferous flea beetles	0,15 0,15(A)	100-200	Treatment of sprouts	30(1)
	Rape sawfly, rapeseed beetle	0,15 0,15(A)	200-400 20-50(A)	Treatment during vegetation	
	Rapeseed ceutorrhynchid beetle	0,15-0,25 0,15-0,25 (A)	200-400 25-50(A)		
Pastures, areas inhabited by acridoid grasshoppers	Acridoid grasshoppers	0,05-0,075 0,05-0,075(A)	200-400 20-50(A)	Treatment at larva development stage. Access to treated areas allowed not earlier than 3 days after treatment	-(1)

(A) - aerial application

Caution! The maximum concentration of the working solution must not exceed 0.4 % of the formulated product.

Imidacloprid 200 g/L

Systemic insecticide from the neonicotinoid class for a wide range of crops

ADVANTAGES

- New formulation with improved physicochemical properties and high adjuvant content
- Rapid action and long-lasting protection against resistant pest populations
- Additional effect: enhancement of growth processes under stress conditions
- Aerial spraying is allowed

Mode of action

The product has acute contact-enteric and systemic action on adults and larvae of all instars.

Imidacloprid inhibits acetylcholinesterase activity, activates postsynaptic nicotinic acetylcholine receptors of the postsynaptic membrane, and prolongs the opening of sodium channels. As a result, the transmission of nerve impulse via the pest central nervous system is blocked, paralysis and convulsions develop, which causes the death of pests.

Neonicotinoids	**5 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Period of protective effect

Imidacloprid exhibits high residual activity. The protective period is not less than 14 days depending on the kind of insect pest and weather conditions.

Exposure rate

High rate of toxic action on pests: already in 1 hour after treatment, insects lose their motor activity.

Imix.
IMIDOR EXTRA SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Eurygaster integriceps, corn flies	0,1-0,15 0,1-0,15(A)	200-300 25-50(A)	Spraying during the growth period	30 (1)
Spring and winter barley	Lemas				
Potato	Colorado beetle	0,1	200-300	Spraying during the growth period	14 (1)
Sugar beets	Beet flea beetles, sugar-beet weevils	0,1-0,2	100-200	Spraying sprouts	30 (2)
	Cut worms	0,1	100-200		
	Beet leaf beetles	0,1 0,1(A)	200-300 25-50(A)	Spraying during the growth period	
	Sod webworms	0,15 0,15(A)	200-300 25-50(A)	Spraying during the growth period	
	Sugar beet weevils	0,25-0,4 0,25-0,4(A)	200-300 25-50(A)	Spraying during the growth period	
Spring and winter rapeseed	Crucifer flea beetles	0,15	100-200	Spraying sprouts	30 (1)
	Rapeseed sawflies, rapeseed blossom beetles	0,15-0,25 0,15-0,25(A)	200-300 25-50(A)	Spraying during the growth period	
	Cabbage seedpod weevils	0,15 0,15(A)	200-300 25-50(A)	Spraying during the growth period	
Pastures, locust-infested areas, wild vegetation	Acridoid grasshoppers	0,05-0,075 0,05-0,075(A)	200-300 25-50(A)	Spraying during the period of larval development. The period where people may be located on the areas treated with the product is no earlier than 20 days after treatment; collection of wild mushrooms and berries during the treatment season is not allowed	- (1)

(A) - aerial application

Lambda-cyhalothrin 50 g/L

Insecticide against a wide range of pests on agricultural crops.

ADVANTAGES

- **Powerful pyrethroid insecticide against a wide range of pest on various crops**
- **Fast and prolonged effect**
- **Acaricide effect**
- **Low consumption rates and low cost of treatment per 1 hectare**

pyrethroids

5 years

emulsion concentrate

-5˚C to +25˚C

Hazard Class 3 - for humans 1 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Mode of action

The preparation has an intestinal contact effect. It affects the nervous system of pests, impairs permeability of cell membranes, and blocks sodium channels.

Protective effect period

Minimum 14 days.

Rate of exposure

High speed of action - insects die within the first hours after treatment.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Product application features

To mitigate resistance development, rotate with insecticides from other chemical classes.

Krch.
KARACHAR EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Soybean	Two-spotted spider mite	0.4	200-400	Treatment during vegetation period	40(1)
Mustard	Rapeseed beetle	0.1	200-400	Treatment during vegetation period	30(1)
Apple tree	Apple blossom weevil	0.1-0.15	600-800	Treatment before blossom	21(2)
	Codling moths, leaf rollers, mites	0.4	600-1500	Treatment during vegetation period	21(2)
Cherry trees (mother trees)	Brown marmorated stinkbug	0.4	600-1200	Treatment during vegetation period	-(3)
Grapes	Mites, Brown marmorated stinkbug	0.32-0.48	500-1000	Treatment during vegetation period	30(2)
Rapeseed	Rapeseed beetle	0.1-0.15	200-400	Treatment during vegetation period	21(2)
Common flax	Flea beetles	0.1-0.15	100-200	Treatment of sprouts	-(1)

dimethoate 300 g/L + beta-cypermethrin 40 g/L

Intestinal contact insecticide against pests on plantings of cereal crops, sugar beet, potato and other crops.

ADVANTAGES

- **Two components with different modes of action**
- **Synergy of two active ingredients enhance toxic effect of the preparation**
- **Prolonged protective period**
- **Highly efficient against resistant kinds of insects**

organophosphates, pyrethroids

3 years

emulsion concentrate

-10˚C to +25˚C

Hazard Class 3 - for humans 1 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Mode of action

Neurotoxic insecticide containing pyrethroid and organophosphorous components. Beta-cypermethrin affects the nervous system of insects causing irreversible activation of sodium channels in nerve cell membranes. Dimethoate inhibits enzymes responsible for metabolism of beta-cypermethrin into non-toxic components in the insect»s organism.

Protective effect period

Protective period - min. 14 days depending on the kind of insect pest and weather conditions.

Rate of exposure

High speed of toxic effect

Compatibility with other pesticides

Compatible with most insecticides and fungicides, except strongly alkaline formulations. Perform a small-scale compatibility test at recommended rates before large-scale use.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Wheat	Zabrus tenebrioides	0,5	100-200	Treatment of sprouts	30(1)
	Eurygaster integriceps	0,15-0,25	200-400	Treatment during vegetation period	
Barley, oats	Oulema	0,15-0,2	200-400	Treatment during vegetation period	30(1)
Potato	Potato beetle	0,15-0,2	200-400	Treatment during vegetation period	20(1)
Pastures, areas inhabited by acridoid grasshoppers	Acridoid grasshoppers	0,3-0,4	200-400	Treatment at larva development stage. Access to treated areas allowed not earlier than 4 days after treatment	-(1)
Sugar beet	Beet flea beetles and weevils	0,25-0,4	100-200	Treatment of sprouts	40(2)
	Beet stalk borer	0,25-0,4	200-300	Treatment during vegetation period	
	Beet leaf aphid, sod webworms	0,25		Treatment during vegetation period	
Soybeans	Soybean seed worm, sod webworm	0,3	200-400	Treatment during vegetation period	21(1)
	Common red spider	0,3-0,5			
Sunflower	Sod webworm	0,25-0,4	100-200	Treatment of sprouts	60(2)
	Cut worms	0,25	200-400	Treatment during vegetation period	
	Cabbage and cotton cutworms	0,25-0,4			
Maize	Sod webworm	0,25-0,4	100-200	Опрыскивание в период всходов	60(2)
	Cut worms	0,25	200-400	Treatment during vegetation period	
	Cotton cutworm, maize stem worm, frog-flies	0,25-0,4			
Pea	Pea beetle, pea seedworm, greenflies	0,25-0,4	200-300	Treatment during vegetation period	21(1)
Chickpea	Cotton cutworm, chickpea fly	0,25-0,4	200-300	Treatment during vegetation period	21(1)
Apple tree	Apple worm, leaf rollers	0,4-0,5	600-1500	Treatment during vegetation period	21(2)
Pear tree	Pear blindworm	0,4-0,5	600-1500	Treatment during vegetation period	21(2)
Grapes	Grape leaf roller	0,4-0,5	500-1200	Spraying during the growth period	60(2)
	Brown marmorated stinkbug	0,3-0,5			
Mandarin oranges (nurseries)	Brown marmorated stinkbug	0,3-0,5	500-1200	Spraying during the growth period	-(3)

dimethoate 300 g/L+ alfa-cypermethrin 40 g/L

Insecticide with acute contact enteric effect for rapeseed protection against pests complex

ADVANTAGES

- **Enhanced toxic effect due to the synergism of two active ingredients with different modes of action**
- **Effective elimination of larvae and imago of the pests even in places that are hard to reach**
- **Minimum risk of resistant population emergence**
- **Potent insecticidal effect**
- **Prolonged protection due to systemic activity**

Mode of action

A neurotoxic insecticide containing pyrethroid and organophosphorus components with different modes of action. Alpha-cypermethrin affects the nervous system of insects causing irreversible activation of sodium channels in nerve cell membranes. Dimethoate has contact and enteric effect on insects, moves through the system of the plant. It inhibits cholinesterase by affecting the nervous system and causing paralysis and death of insects.

Protective effect period

The protective period is not less than 14 days depending on the kind of insect pest and weather conditions.

organophosphates, pyrethroids	**3 years**
emulsion concentrate	**-10˚C to +25˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Rate of exposure

High rate of toxic effect.

Compatibility with other pesticides

Compatible with most insecticides and fungicides, except strong alkaline preparations. Perform trial mix in recommended doses before large-scale use.

Knfn.
KINFOS NEO EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter rapeseed	Cabbage seedpod weevil, rapeseed beetle	0,2-0,3	200-400	Spraying during the growth period	40(2)
	Diamondback moth	0,3-0,4			

diflubenzuron 125 g/L + imidacloprid 110 g/L

Powerful double-action insecticide to combat locusts, needle- and leaf-eating insects, pests of rapeseed crops.

ADVANTAGES

- **Unparalleled insecticide**
- **Total eradication of locusts**
- **Pronounced knockdown effect in controlling imago**
- **Potent effect on larvae of all ages due to a combination of two active ingredients that belong to different chemical classes and have different modes of action**
- **Shortest possible periods of effect and a long period of protection**
- **Three applications methods: ground application, aerial application, and aerosol spraying using an aerosol generator**

Mode of action

Diflubenzuron has contact and enteric effect, inhibits chitin synthesis, and interferes with the formation of the cuticle during molting. It does not affect imago but interrupts the development of eggs and larvae (ovicidal and larvicidal effect). Larvae die during the next molting when their cuticle is ruptured and the body contents flow out. The ovicidal effect is observed when the eggs are laid on the treated plants.

Imidacloprid has systemic and acute contact enteric effects. It blocks postsynaptic nicotinergic receptors of the nervous system in insects. As a result, the transmission of signals via the pest central nervous system is inhibited, paralysis and convulsions develop, which causes the death of pests. Active ingredient exhibits high residual activity.

benzoylurea derivatives, neonicotinoids	**5 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect. The death of imago is observed within 24hours, larvae die within several days

Compatibility with other pesticides

Effective as a standalone treatment.

Product application features

Warning! People may be located in the treated areas notearlier than 20 days after the procedure; the collection of mushrooms and berries during the treatment season is not allowed.

Lok.
LOKUSTIN SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sites invaded with locusts	Locusts	0,08-0,12 0,08-0,12(A)	200-400 25-50	Spraying during mass nymph hatching	-(1)
		0,08-0,12	2-3	Spraying during mass nymph hatching. Aerosol spraying "GARD"	
Conifers	Needle-eating insects, including Siberian lappet, pine webspinning sawfly (Acantholyda posticalis), foxcoloured sawfly, and gypsy moth	0,07-0,1 0,07-0,1(A)	100-200 3-25(A)	Spraying when caterpillars and senior and junior larvae develop	-(1)
		0,1	1-3	Spraying in the period when caterpillars and junior and senior larvae and imago develop using the "GARD" aerosol adjustable dispersiveness generator. The effective operating range is 140–480m	
Foliage species	Leaf-eating and sucking insects, including oak lace bugs, oak flee, and gypsy moth	0,07-0,1 0,07 -0,1(A)	100-200 3-25(A)	Spraying when larvae and imago develop	-(2)
		0,1	1-3	Spraying when larvae and imago develop using the GUARD aerosol adjustable dispersiveness generator. The effective coverage range is 140 to 480 m	-(1)
Spring and winter rapeseed	Crucifer flea beetles	0,2	200-400	Spraying during in the sprouting period upon reaching the economic injury level	30(3)
	Turnip sawfly, rapeseed beetle, cabbage seedpod weevil	0,2		Spraying during in the growing period	
	Diamondback moth	0.2-0.4	100-200		
Mustard, redcurrant, thistle (seed crops)*	Crucifer flea beetles	0.2	100–200	Spraying at sprouts	–(3)
	Rape sawfly, rape pollen beetle, rape seed weevil	0.2	200–400	Spraying during the growing season	
	Diamondback moth	0.2–0.4	200–400	Spraying during the growing season	

**- crop expansion pending registration*
(A) - aerial application

Effectiveness of Lokustin, SC application

1.

2.

1. Before Lokustin, SC application
2. Mortality of adult locusts after treatment

methomyl 250 g/L+ lambda-cyhalothrin 20 g/L

It is a broad-spectrum insecticide with a quick knockout effect.

ADVANTAGES

- **It ensures rapid death of pests within a few hours.**
- **It destroys larvae of all ages, including the last stable instar.**
- **Combination of systemic and contact activity**
- **Control of a wide range of pests with gnawing and piercing-sucking mouthparts**
- **Acaricidal properties**
- **Wide range of protected crops**

carbamates, pyrethroids	**2 years**
suspension concentrate	**-15 to +35 °C**
Hazard class: 2 - for humans 1 - for bees	**5 L canister**
No phytotoxicity at recommended rates	

Mode of action

Insecticide with contact and stomach action.

Methomyl belongs to the class of carbamates, it has insecticidal and acaricidal activity, and exhibits systemic and contact effects. It is classified as an acetylcholinesterase (AChE) inhibitor - Group 1 by the IRAC (Insecticide Resistance Action Committee). Methomyl inhibits the action of the enzyme acetylcholinesterase and inhibits the hydrolysis of acetylcholine. Due to the accumulation of acetylcholine, the normal passage of nerve impulses to the muscular systems is disrupted.

Lambda-cyhalothrin has insecticidal and acaricidal activity and is characterized by contact-intestinal and repellent effects. According to the IRAC classification, it is a sodium channel modulator that belongs to Group 3. It has rapid initial toxicity and high photostability, and has a long-lasting protective effect on the surface of plants.

Protective effect period

Not less than 14 days

Rate of exposure

High mortality of harmful objects is observed during the first hours after treatment.

Compatibility with other pesticides

It is compatible with most pesticides applied at the same time. Before using the product, it is necessary to check the physicochemical and biological compatibility of the components.

Mcl. NEW
MACLEOD SC

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Grapes	European grapevine moth	0.8-1.0	500-800	Spraying during the growth period	15(3)
Apple tree	Codling moth	1.0–1.3	600-1200	Spraying during the growth period	10(3)
Onion	Onion fly, onion (tobacco) thrips	0.8-1.0	200-400	Spraying during the growth period	15(2)
Tomato (open ground)	Cotton budworm	1.0–1.3	200-400	Spraying during the growth period	7(3)
Sunflower			200-400		30(2)
Soybeans			200-400		15(2)
Maize	Cotton moth, meadow moth	1.0–1.3	200-400	Spraying during the growth period	15(2)
Cabbage	Diamondback moth, cabbage moth	0.8-1.0	200-400	Spraying during the growth period	15(2)

** Under registration*

acetamiprid 200 g/L

A systemic insecticide with low toxicity for bees

ADVANTAGES

- **Rapid toxic effect and prolonged protective effect**
- **Efficient oil formulation**
- **Low risk to all pollinator species**
- **Wide range of controlled pests**
- **High biological efficiency at elevated temperatures**
- **European standard of protection**

Mode of action

Acetamiprid has a rapid systemic and contact action. It blocks nicotinic acetylcholine receptors in the nervous system, thus interfering with the synaptic nerve impulse transmission, and the insect dies due to surexcitation. Fast action. At the same time, it has a low hazard for pollinators.

Oil formulation ensures improved lipophilic properties of the active ingredient. The preparation is better retained on plant leaves and evenly distributed over the surface, fully manifesting its systemic action and retaining its protective properties longer.

Neonicotinoids	**2 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 3 - for humans 3 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

At least 14 days.

Exposure rate

High toxic action rate, with effects observed within the first hours after treatment.

Mds. MEADOWS OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Barley flea beetle	0,05-0,075	100-200	Spraying sprouts	30 (1)
	Eurygaster integriceps, grain moths		200-400	Spraying during the growth period	
Spring and winter barley	Barley flea beetle	0,05-0,75	100-200	Spraying sprouts	
	Lemas		200-400	Spraying during the growth period	
Spring and winter rapeseed	Crucifer flea beetles	0,075-0,15	100-200	Spraying sprouts	21 (1)
	Rapeseed blossom beetle, rapeseed seed borer, rapeseed sawfly		200-400	Spraying during the growth period	
	Diamondback moth	0,1-0,25			
Apple tree	Apple fruit moths, aphids	0,18-0,36	600-1200	Spraying during vegetation at a concentration of 0.03%	15(1)
	Apple blossom beetle and apple honey beetle	0,18-0,24	600-800		
Grapes	Cicadas	0,15-0,3	500-1000	Spraying during vegetation at a concentration of 0.03%	21(1)

abamectin 18 g/L

Enteric contact insectoacaricide for the protection of apple trees, grapes, soya from mites

ADVANTAGES

- **Increased efficacy, faster and longer effect due to the innovative formulation.**
- **Translaminar activity which makes it possible to kill pests even at untreated sites.**
- **High efficiency against the mites resistant to the acaricides of other chemical classes.**
- **Insecticide of natural origin, safe for entomofauna.**
- **An important component of anti-resistant garden protection programs.**

Mode of action

Abamectin is a selective contact and enteric insecticide with translaminar activity. It has a mode of action of the neurotoxin type: it is a promoter of the release of γ-aminobutyric acid that inhibits the nerve impulse transmission and causes paralysis in insects and mites.

Protective effect period

2 to 3 weeks.

avermectins	**2 years**
microemulsion	**-15˚C to +30˚C**
Hazard Class 2 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Rate of exposure

After 24 hours, mites lose activity, their death occurs within 2-3 days due to the inhibition of nerve impulses and paralysis.

Compatibility with other pesticides

Compatible with most pesticides. If it is necessary to mix the product with other pesticides, it is recommended to verify compatibility with other products.

Mek.
MEKAR ME

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Herbivorous mites	0,75-1,0	600-1200	Treatment during vegetation period	28(2)
	Apple sucker	0,75	600-800		
Grapes	Spider mites, grape erineum mite	0,75-1,0	500-1000	Treatment during vegetation period	34(2)
Soya	Spider mites	0,4-0,6	200-400	Treatment during vegetation period	30(2)
Sugar beet	Spider mites	0,4-0,6	200-400	Treatment during vegetation period	30(2)

Effectiveness of Mekar, ME application

Apple orchards Integrated protection program including Mekar ME insecticide at 1.0 L/ha

chlorpyrifos 400 g/L + bifenthrin 20 g/L

A unique insecto-acaricide combination with a strong toxic effect on sugar beet, soybean and rapeseed pests.

ADVANTAGES

- **Ensures strong knockdown effect and long-term protection**
- **Has fumigant action and repellent properties and is able to penetrate into plant tissues**
- **Ensures elimination of pests in hard-to-reach places, as well as pests resistant to other insecticides**
- **Has perfect acaricidal properties**
- **Eliminates pests at all stages of their development**
- **Is highly effective during mass reproduction periods**
- **Is especially effective against owl moths and weevils**
- **Retains toxicity at both low and high air temperature**

organophosphates, pyrethroids	**3 years**
emulsion concentrate	**-15˚C to +35˚C**
Hazard Class 2 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Mode of action

Chlorpyrifos has an enteric, contact and fumigant action. It decreases the activity of acetylcholine esterase, an important zymoprotein involved in nerve impulse transmission. It results in tremor with subsequent paralysis. It shows a quick (seconds to minutes) and long-term (up to 2 weeks) protective effect. It eliminates pests at all stages of their development (egg, larvae, imago) and remains highly effective at both low and high temperatures.

Bifenthrin has an acute contact enteric action and affects the nervous system by blocking sodium channels. It effectively inhibits the development of pests, including Coleoptera, Orthoptera, Diptera, and Lepidoptera orders, as well as some mites. Has repellent properties. Has a rapid toxic (knockdown) and long-term residual effect, up to 20-30 days.

Both components complement and reinforce each other's effect (synergism). It ensures high efficacy of the product against a wide range of pests of main agricultural crops. The product contains two active ingredients of different chemical classes, so resistance is highly unlikely.

Protective effect period

Not less than 14 days.

Rate of exposure

High. Visible signs of damage to pests are observed in 30 minutes (knockdown effect). Death in 2-5 hours

Product application features

Optimum temperature for the product application is from +10°C to +25°C during the physiological activity period of pests. However, the product is already efficient at +8°C. Do not use if frosts are expected or immediately after them.

Compatibility with other pesticides

Compatible with most pesticides, except copper-based compounds and highly alkaline products. Prior to mixing and application, verify chemical and biological compatibility with the specific product at recommended rates.

Pir.
PIRELLI EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Beet flea beetles	0,5	100-200	Spraying in the sprouting period	20(2)
	Sugar beet weevils, cut worms	0,8-1,0			
	Spider mites	0,8-1,0	200-400	Spraying during the growth period	
Soybean	Cotton budworm, sod webworm, lima bean pod borer, spider mites	0,8-1,0	200-400	Spraying during the growth period	40(2)
Spring and winter rapeseed	Crucifer flea beetles	0,5	100-200	Spraying in the sprouting period	30 (2)
	Turnip sawfly, rapeseed beetle, cabbage seedpod weevil	0,5	200-400	Spraying during the growth period	
	Diamondback moth	0,8-1,0			

Effectiveness of Pirelli, EC application

1.

2.

Sugar beet moth damage

1. Protection system including Pirelli, EC and Kinfos, EC insecticides

2. Alternative protection system

Prf. PORFIR NEW SC

Chlorantraniliprole 200 g/L

Highly effective insecticide with a unique mode of action against scale pests on apple, grape, vegetable and industrial crops

ADVANTAGES

- **A new and unique mode of action**
- **Acts at all stages of pest development**
- **High efficacy against pest populations resistant to other classes of insecticides**
- **Fast initial action and long protective period of up to 3 weeks**
- **Low risk to all pollinator species**
- **Aerial spraying is allowed**

anthranilamides	**3 years**
suspension concentrate	**-10°C to + 30°C**
Hazard Class 3 - for humans 3 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Mode of action

Chlorantraniliprole is an active ingredient from the anthranilamide class and belongs to group 28 (IRAC) – ryanodine receptor modulators. Ryanodine receptors regulate insect nervous and muscle activity by altering calcium levels in cells. Chlorantraniliprole provokes uncontrolled release of calcium ions and drastically reduces its internal stores. This causes the insects to stop contracting their muscles, resulting in paralysis. Within minutes of eating the poisoned food, the insects stop feeding. Death is observed within 2–4 days.

Protective effect period

Not less than 14 days.

Rate of exposure

Pests cease feeding within 1–4 hours after application; mortality occurs within 2–4 days.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Prf. PORFIR NEW SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Potato	Colorado potato beetle	0,04-0,05 0,04-0,05(A)	200-400 25-50(A)	Spraying during the growth period	5 (2)
Apple trees	Apple worm, leafrollers	0,15-0,3	600-1200		21(3)
Grapes	European grapevine moth	0,15-0,25	500-1000		
Open ground tomatoes	Cotton budworm	0,15-0,2 0,15-0,2(A)	200-400 25-50(A)		21(2)
Maize	Cut worms	0,1-0,15	100-200	Spraying in the sprouting period	7(2)
	European corn borer, cotton budworm, sod webworm	0,1-0,15 0,1-0,15 (A)	200-400 25-50(A)	Spraying during the growth period	
Sunflower	Cut worms	0,1-0,15	100-200	Spraying in the sprouting period	21(2)
	Sod webworm, sunflower moth, cotton budworm	0,1-0,15 0,1-0,15 (A)	200-400 25-50(A)	Spraying during the growth period	

(A) - aerial application

emamectin benzoate 50 g/L + lambda-cyhalothrin 50 g/L

It is a translaminar insecticide of contact-intestinal action for the control of lepidopteran pests in maize and sunflower crops.

ADVANTAGES

- **Dual mode of defense: combination of active ingredients from different classes**
- **Impact on different targets of the neuromuscular system of pests**
- **Effective NANOformulation: microemulsion**
- **Aerial spraying is allowed**

avermectins, pyrethroids	**2 years**
microemulsion	**-15 to +35 °C**
Hazard class: 3 - for humans 1 - for bees	**5 L canister**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Mode of action

Emamectin benzoate is an insecticide belonging to the class of avermectins with contact-intestinal action. It disrupts the function of the nervous system by blocking the transmission of nerve impulses at the neuromuscular synapse. According to the IRAC classification, emamectin benzoate belongs to Group 6 — allosteric modulators of glutate-dependent chloride channels. It has a translaminar action.

Lambda-cyhalothrin is a contact-intestinal insecticide characterized by rapid initial toxicity and high photostability, and has a long-term protective effect on the surface of plants. According to the IRAC classification, lambda-cyhalothrin belongs to Group 3 — sodium channel modulators. It affects calcium metabolism in synapses and sodium-potassium channels, disrupting the function of the nervous system. This leads to a significant excess release of acetylcholine during the passage of a nerve impulse.

Protective effect period

Not less than 14 days.

Rate of exposure

Caterpillars stop eating after 1-4 hours, death occurs on days 1-3, depending on age.

Compatibility with other products

Compatible with most pesticides. Before large-scale use of the product, it is necessary to check for physical and chemical compatibility with a specific drug at recommended doses. Do not use it with drugs that have an alkaline reaction. Do not use in a tank mixture with aluminum-based fungicides.

Scu. NEW
SCUTER ME

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sunflower, maize	Cut worms	0.3-0.4	100-200	Spraying sprouts	14(2)
	Cotton moth, meadow moth	0.3-0.4 0.3-0.4(A)	200-400 25-50(A)	Spraying during the growth period	14(2)

(A) - aerial application

** Under registration*

thiamethoxam 150 g/L + fipronil 90 g/L

Combination broad-spectrum insecticide

ADVANTAGES

- **A combination mode of action provided by active ingredients from different chemical classes**
- **Effective against a wide range of insect pests, including those resistant to organophosphates and pyrethroids**
- **High toxicity and long-term protection**
- **Oil formulation for maximum efficacy**
- **Effective against hiding pests and pests living on the back of the leaf**

neonicotinoids, phenylpyrazoles	**2 years**
Oil dispersion	**-15˚C to +35˚C**
Hazard Class 2 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Mode of action

Thiamethoxam has a systemic and contact enteric action with translaminar activity. It is effective against hiding pests and pests feeding on the back of the leaf.

The active ingredient is rapidly absorbed by plants and moves along the xylem to the untreated parts of plants, affecting the nicotinic acetylcholine receptors of the nervous system of insects.

Fipronil is a broad-spectrum contact enteric insecticide with a moderate systemic activity. It affects the nervous system of insects by blocking gamma-aminobutyric acid receptors. This active ingredient has a high and long-term insecticide toxicity.

Oil formulation ensures improved lipophilic properties of the active ingredient. The product shows improved adherence to leaves of plants and uniform distribution along the surface, thus fully exhibiting the translaminar effect and retaining protective properties for a longer period.

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Spr.
SPARRING OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Barley flea beetle	0,1-0,15	100-200	Spraying in the sprouting period	30(2)
	Corn flies, cereal chafers, grain moths		200-400	Spraying during the growth period	
	Corn bug	0,1-0,2	200-400		
Winter wheat	Ground beetle	0,2-0,3	100-200	Spraying in the sprouting period	
			200-400	Обработка в период вегетации	
Spring and winter barley	Lema beetles, corn flies, thrips	0,1-0,15	200-400	Spraying during the growth period	
Sunflower	Cut worms, weevils	0,1-0,2	100-200	Spraying in the sprouting period	40(2)
	Sod webworms	0,1-0,2	200-400	Spraying during the growth period	
	Cotton moth, cabbage moth, sunflower moth	0,2-0,3			
Potato	Colorado beetle, aphids	0,15-0,2	200-400	Spraying during the growth period	20(2)
Spring and winter rapeseed	Crucifer flea beetles	0,1-0,2	100-200	Spraying in the sprouting period	30(2)
	Turnip sawfly, rapeseed beetle	0,1-0,2	200-400	Spraying during the growth period	
	Diamondback moth	0,2-0,3	200-400		

Tgr. TAGOR EC

dimethoate 400 g/L

Insectoacaricide against a wide range of pests on cereal crops and grapes.

ADVANTAGES

- **High initial activity - pests die within the first hours after treatment**
- **Systemic effect, resistant to rain as early as in 1 hour after treatment**
- **Efficient against many insect pests, feasible to use during maximum density of pests in the field**

Mode of action

Intestinal contact insecticide of neurotoxic action. It inhibits cholinesterase in the pest body, affect the nervous system, and causes respiratory and cardiac activity depression.

Protective effect period

Minimum 7 days.

organophosphates

2 years

emulsion concentrate

-10˚C to +30˚C

Hazard Class
3 - for humans
1 - for bees

canister of 10 L

No phytotoxicity at recommended rates

Speed of action

The preparation starts acting in 3 to 5 hours after application.

Compatibility with other pesticides

Compatible with most insecticides and fungicides, except alkaline and sulfur-containing products. Before large-scale application, chemical and biological compatibility with specific products at recommended doses must be verified.

Tgr. TAGOR EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Wheat	Eurygaster integriceps, Oulema, corn flies, greenflies, thrips	1,0-1,5	200-400	Spraying during the growth period	40(2)
Rye, barley	Oulema, corn flies, greenflies, thrips	1,0-1,2	200-400	Spraying during the growth period	40(2)
Oats	Corn flies, greenflies, Oulema	1,0-1,2	200-400	Spraying during the growth period	40(2)
Grapes	Mites, leaf rollers	1,2-3,0	600-1000	Spraying during the growth period	28(2)

diflubenzuron 180 g/L + imidacloprid 45 g/L

Contact enteric and systemic insecticide used to protect apple trees, pear trees, and grapes from gnawing and sucking insects

ADVANTAGES

- **Unparalleled insecticide**
- **Has a potent insecticidal effect due to a combination of two active ingredients that belong to different chemical classes and have different modes of action.**
- **Pest control at all stages of their development: from egg to imago.**
- **Long-term protective effect.**
- **Guaranteed control of pest populations that have developed resistance to the insecticides of other chemical classes.**
- **An excellent component of anti-resistant garden protection programs.**

Mode of action

Diflubenzuron belongs to the class of chitin synthesis inhibitors, blocks its formation, and interferes with the formation of the cuticle during molting. The product has ovicidal and larvicidal contact enteric effects. The active ingredient penetrates the eggshell and prevents larvae hatching or kills the insect larvae of different ages as a result of cuticle rupture during molting. If a larva is treated with the product at the latest age, cuticle formation may be disturbed in the pupa or adult insects. The maximum manifestation of the ovicidal effect is observed when the eggs are laid on the treated plants. Also, the product is able to additionally prevent laying viable eggs by adult insects.

Imidacloprid has a systemic and acute contact enteric effects. It blocks postsynaptic nicotinergic receptors of the nervous system in insects. As a result, the transmission of signals via the pest central nervous system is inhibited, paralysis and convulsions develop, which causes the death of pests. Active ingredient exhibits high residual activity.

benzoylurea derivatives, neonicotinoids	**3 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect. The death of imago is observed within 24 hours, larvae die within several days.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Tw.
TWINGO SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Apple worm, leafrollers	0,75-1,2	600-1200	Spraying during the growth period	20(2)
	Apple blossom weevil		600-800	Treatment in the period of bud separation	
Pear tree	Pear psylla	0,75-1,2	600-1200	Spraying during the growth period	20(2)
Grapes	European grape moth, brown marmorated stink bug	0,75-1,2	500-1000	Spraying during the growth period	20(2)

Effectiveness of Twingo, SC application

Grapes. Schelkovo Agrohim integrated protection program including Twingo, Sc at 1.2 L/ha

diflubenzuron 180 g/L+ acetamiprid 45 g/L

A combined insecticide with ovicidal effect to protect gardens against various pests

ADVANTAGES

- **A unique combination of active ingredients with different modes of action to control pests at all stages of their development: from eggs to imago**
- **It contains neonicotinoid that has a rapid toxic effect and at the same time is low-toxic for bees**
- **A highly effective oil formulation provides a more active effect and long protective period.**
- **Rapid action at all motile stages of pests**
- **It has an ovicidal effect and prevents caterpillars from hatching out of the egg and harm fruits**

Mode of action

Diflubenzuron belongs to the class of chitin synthesis inhibitors, blocks its formation, and interferes with the formation of the cuticle during molting. The product has ovicidal and larvicidal contact-enteric effects. The active ingredient penetrates the eggshell and prevents larvae hatching or kills the insect larvae of different ages as a result of cuticle rupture during molting. The maximum manifestation of the ovicidal effect is observed when the eggs are laid on the treated plants. In addition, the product additionally preventsthe viable eggs laying by adult insects.

Acetamiprid has a rapid systemic and contact action. It blocks nicotinic acetylcholine receptors in the nervous system, thus interfering with the synaptic nerve impulse transmission,and the insect dies due to surexcitation. It ensures a rapid and at the same time long-lasting effect –up to 4 weeks. At the same time, it has a low hazard for pollinators.

benzoylurea derivatives, neonicotinoids	**2 years**
oil dispersion	**-15˚C to +35˚C**
Hazard Class 3 - for humans 3 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

Not less than 14 days.

Rate of exposure

High rate of toxic effect.

Twe.
TWINGO EURO OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Codling moth, leafrollers	0,75-1,2	600-1200	Spraying during the growth period	28(2)
	Apple blossom weevil		600-800	Treatment in the period of bud separation	

Tj. THEJA SC

thiacloprid 480 g/L

Contact enteric and systemic insecticide used to protect apple trees from gnawing and sucking insects

ADVANTAGES

- **Systemic, translaminar active insecticide.**
- **Rapid effect and guaranteed result.**
- **Long-term protection of gardens from pests complex.**
- **Short waiting period.**
- **Destruction of pest populations that have developed resistance to the insecticides of other chemical classes.**

neonicotinoids

3 years

suspension concentrate

-10˚C to +30˚C

Hazard Class
2 - for humans
3 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Mode of action

Has system, contact enteric effect. Thiacloprid binds to postsynaptic nicotinic acetylcholine receptors of the insect central nervous system, resulting in paralysis and convulsions that cause their death. Thiacloprid has a general toxic effect on the insect organism.

Protective effect period

15 to 30 days depending on the weather conditions.

Rate of exposure

It has high initial toxicity. The death of harmful insects occurs within the first hours after application.

Compatibility with other pesticides

scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Tj. THEJA SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Apple worm, leafrollers, armored scales	0,3-0,45	600-1200	Spraying during the growth period	10(3)
	Apple blossom weevil	0,18-0,3	600-800	Treatment in the period of bud separation	10(1)
Grapes*	European grape moth	0,2-0,3	500-800	Spraying during the growth period	(2)

** - crop expansion pending registration*

Effectiveness of Theja, SC application

1.

2.

1. Control without treatment
2. Treated with Theja, SC at 0.3 L/ha

alpha-cypermethrin 100 g/L

Intestinal contact insecticide of synthetic pyrethroid group against a wide range of pests (flea beetles, greenflies, frog-flies, thrips, acridoid grasshoppers, Oulema, potato beetle, weevils, leaf rollers, etc.) of cereal crops, potato, sugar beet, maize, and other agricultural crops.

ADVANTAGES

- **Wide spectrum of action**
- **High speed of toxic action - immediate death of insects**
- **High efficiency due to elevated contents of active isomers in the active ingredient**
- **Prolonged protective period**
- **One of the most efficient and cost effective insecticides**

Mode of action

Alpha-cypermethrin affects the nervous system of pests, impairs permeability of cell membranes, and blocks sodium channels.

Protective effect period

Protective period - 2 to 4 weeks depending on the kind of insect pest and weather conditions.

pyrethroids

5 years

emulsion concentrate

-15˚C to +30˚C

Hazard Class
2 - for humans
1 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Rate of exposure

High speed of toxic action inherent to all pyrethroids.

Compatibility with other pesticides

Compatible with most insecticides and fungicides. Check for chemical and physical compatibility with a specific preparation in recommended doses before large-scale use.

Fsk.
FASKORD EC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Wheat	Intrastalk flies	0,1-0,15	100-200	Treatment of sprouts	20(2)
	Eurygaster integriceps	0,1-0,15	200-400	Treatment during vegetation period	
	Flea beetles, frog-flies, thrips, Oulema	0,1			
Barley	Oulema	0,1	200-400	Treatment during vegetation period	20(2)
Rapeseed, mustard (except oilseed mustard)	Cruciferous flea beetles	0,1-0,15	100-200	Treatment of sprouts	20(2)
	Rapeseed beetle	0,1-0,15	200-400	Spraying during the growth period	21(2)
Potato	Potato beetle	0,07-0,1	200-400	Treatment during vegetation period	20(2)
Sugar beet, fodder beet	Beet leaf aphid, beet fly	0,1	200-400	Treatment during vegetation period	45(2)
Vegetable pea, pea	Pea beetle, pea seedworm, pea aphid	0,1	200-400	Treatment during vegetation period	20(1)
Alfalfa (seed plantings)	Weevils, bugs, greenflies	0,15-0,2	200-400	Treatment during budding period	-(1)
Pastures, areas inhabited by acridoid grasshoppers	Acridoid grasshoppers	0,3	200-400	Treatment at larva development stage	-(1)
Maize	Frog-flies	0,15-0,2	200-400	Treatment during vegetation: first treatment – 1st wave of pests, 2nd – in 10-14 days (if necessary)	28(1-2)
	Maize stem worm, sod webworm, cotton cutworm, polytrophic owl-moths, greenflies	0,2-0,25			
Common flax / oilseed flax	Flea beetles	0,1-0,15	100-200	Treatment of sprouts	35(1)/-(1)
	Thrips, owl-moths	0,1-0,15	200-400	Treatment during vegetation	

imidacloprid 200 g/L + alpha-cypermethrin 120 g/L

A highly effective combined insecticide with a long-term protective period for reliable control of different types of pests in a broad range of crops

ADVANTAGES

- **Systemic activity and acute contact enteric effect to achieve results quickly**
- **Reliable control of hiding, sucking, and leaf-eating insects throughout the period of harmfulness**
- **Elimination of highly hazardous pests, including brown marmorated stink bug, ground beetle, sod webworm, polyphagous cutworms, moth, and others**
- **Highly effective during mass reproduction periods of harmful insects**
- **A double toxic effect for the elimination of resistant populations**
- **Aerial application to treat large areas in a short time**

Neonicotinoids, pyrethroids

3 years

suspension concentrate

-10˚C to +35˚C

Hazard Class 3 - for humans 1 - for bees

canister of 5 L

No phytotoxicity at recommended rates

Aerial spraying is allowed

Mode of action

Imidacloprid blocks the postsynaptic nicotine-energy receptors of the nervous system of insects. As a result, signal transmission through the central nervous system of pests is suppressed and pests first lose their motor activity, stop feeding and die within one day.

Alfa-cypermethrin affects the central nervous system of insects, impairs the permeability of cell membranes, and blocks nervous channels.

Protective effect period

The protective period is 2-4 weeks, depending on the type of pest and weather conditions.

Rate of exposure

The rate of toxic effect is high.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Chaetocnema hortensis	0.1	100–200	Spraying sprouts	20 (2)
	Sunn pest, greenbugs, thrips, scarab beetles, corn flies	0.1 0.1 (A)	200–400 25–50 (A)	Spraying during the growing period	20 (2)
Winter wheat	Ground beetle	0.15-0.25 0.15–0.25 (A)	100–200 25–50 (A)	Spraying sprouts	20 (2)
Spring and winter barley	Chaetocnema hortensis	0.1	100–200	Spraying sprouts	20 (2)
	Greenbugs, thrips, corn flies, Lema beetles	0.1 0.1 (A)	200–400 25–50 (A)	Spraying during the growing period	20 (2)

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Maize	Cut worms	0.15-0.2	100-200	Spraying sprouts	30(2)
	European corn borer, cotton budworm, planthopper	0.15-0.2 0.15-0.2	200-400 25-50(A)	Spraying during the growth period	30 (2)
	Sod webworms, aphids	0.1-0.15 0.1-0.15(A)			
	Brown marmorated stinkbug	0.1-0.2 0.1-0.2(A)			
Sunflower	Cabbage moth, cotton budworm	0.15-0.2 0.15-0.2(A)	200-400 25-50 (A)	Spraying during the growth period	31 (2)
	Sod webworms	0.1-0.15 0.1-0.15(A)			
Pea	Field pea weevil, pea aphid	0.1-0.15 0.1-0.15(A)	200-300 25-50 (A)	Spraying during the growth period	14 (2)
	Pea moth	0.15-0.2 0.15- 0.2(A)			
Soybean	Cotton budworm, soybean pod borer	0.15-0.2 0.15-0.2(A)	200-400 25-50 (A)	Spraying during the growth period	30 (2)
	Lima bean pod borer, sod webworms	0.1-0.15 0.1-0.15(A)			
Sugarbeet	Sugar-beet weevil, beet flea beetle	0.1-0.15	100-200	Spraying sprouts	21(2)
	Beet leaf beetle, sod webworms	0.1-0.15 0.1-0.15(A)	200-400 25-50 (A)	Spraying during the growth period	
	Sugar beet weevil	0.2-0.3 0.2-0.3(A)			
Spring and winter rapeseed	Crucifer flea beetles	0.1-0.15	100-200	Spraying sprouts	34(2)
	Turnip sawfly, bronzed blossom beetle,cabbage seedpod weevil	0.1-0.15 0.1-0.15(A)	0.15-0.2 0.15-0.2(A)	Spraying during the growth period	
	Diamondback moth	0.15-0.2 0.15-0.2(A)			
Chickpea	Cotton cutworm, chickpea fly	0.1-0.2	200-400	Spraying during the growth period	14 (2)
Conifers	Needle-eating insects, including Siberian lappet, pine webspinning sawfly (Acantholyda posticalis), foxcoloured sawfly, and gypsy moth	0.05-0.07 0.05-0.07(A)	100-200 3-25 (A)	Spraying when caterpillars and senior and junior larvae develop	- (1)
		0.07	1-3	Spraying in the period when caterpillars and junior and senior larvae and imago develop using the «GARD» aerosol adjustable dispersiveness generator. The effective operating range is 140–480m.	- (1)
Foliage species	Leaf-eating and sucking insects, including oak lace bugs, oak flee, and gypsy moth	0.05-0.07 0.05-0.07(A)	100-200 3-25 (A)	Spraying when caterpillars and senior and junior larvae develop	- (2)
		0.07	1-3	Spraying in the period when caterpillars and junior and senior larvae and imago develop using the «GARD» aerosol adjustable dispersiveness generator. The effective operating range is 140–480m.	- (1)

**(A) – aerial application.*

(GARD)—Ground Application with Regulated Dispersion aerosol generator

Attention! Humans are not allowed to arrive at and stay in the treated areas until 3 days after treatment. Picking up wild-growing mushrooms and berries is prohibited in the treatment period.

acetamiprid 100 g/L+ alpha-cypermethrin 60 g/L

A highly effective insecticide in oil formulation for long-term protection of sugar beet against weevils

ADVANTAGES

- **A new combination of active ingredients with different modes of action to eliminate resistant populations of pests**
- **A highly effective oil formulation provides a more active effect and long protective period.**
- **Reliable control of the most harmful and hiding sugar beet pests**
- **Highly effective during hot weather**
- **Rapid action at all motile stages of pests and prolonged action at active development stages inside the stem**

Mode of action

Acetamiprid has a rapid systemic and contact action. It blocks nicotinic acetylcholine receptors in the nervous system, thus interfering with the synaptic nerve impulse transmission, and the insect dies due to surexcitation. It ensures a rapid and at the same time long-lasting effect –up to 4 weeks.

Alpha-cypermethrin has a contact enteric action. It affects the central nervous system of insects, impairs the permeability of cell membranes, and blocks nervous channels. Poisoning is manifested as damaged motor centers and strong excitation. It has a long-term residual toxic effect.

Neonicotinoids, pyrethroids	**2 years**
oil dispersion	**-20˚C to +35˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

Not more than 14 days (depending on weather conditions and pest colonization).

Rate of exposure

High rate of toxic effect.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Sugar-beet weevils	0,2-0,3	100-200	Spraying sprouts	14(2)
	Sugar beet weevil – stem borer	0,4-0,5	200-300	Treatment during growing season	

Target pests for Espero Euro, OD

1.

2.

Damage to sugar beet:

1. Common beet weevil.
2. Stem-boring weevil.

Emamectin benzoate 50 g/L

Contact enteric insecticide used for crop protection against scale pests

ADVANTAGES

- **Due to the innovative formulation, provides increased efficacy, rapid action, and prolonged protection.**
- **Has a high biological activity against the codling moth caterpillar.**
- **The product is an insecticide of natural origin, safe for beneficial insects.**
- **The product is non-phytotoxic for the treated plants, does not cause stress, has no impact on the product presentation.**
- **Has a short waiting period.**
- **Due to its special mode of action, it is highly effective against insect populations that are resistant to the insecticides of other chemical classes.**
- **Easy-to-use liquid formulation in contrast to similar products.**

Mode of action

The substance affects two areas of the central nervous system of insects: it binds the synapse γ-aminobutyric acid receptors and the muscle cell h-receptors. This results in muscle relaxation (they are not able to contract) and death of an insect.

Has a selective effect on *Lepidoptera*.

avermectins	**3 years**
Microemulsion	**-15˚C to +35˚C**
Hazard Class 3 - for humans 1 - for bees	**canister of 5 L**
No phytotoxicity at recommended rates	

Protective effect period

The duration of protective effect is 10-15 days.

Rate of exposure

1-4 hours after treatment, insects stop moving and feeding; insects die within 1-3 days.

Compatibility with other pesticides

Compatible with most pesticides. Before large-scale application, it is necessary to check the physical, chemical and biological compatibility with a particular product at recommended doses.

Yun.
YUNONA ME

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Codling moth	0,4-0,5	600-1200	Spraying during the growth period	10(3)
Grapes	Grapevine moth	0,3-0,4	500-1000	Spraying during the growth period	7(2)
Tomato	Cut worms	0,3-0,4	100-200	Spraying sprouts	5(2)
	Cotton cutworm		200-400	Spraying during the growth period	
Maize	Cut worms	0,2-0,3	100-200	Spraying during the growth period	30 (2)
	Cotton budworm	0,3-0,4 0,3-0,4 (A)	200-400 25-50 (A)		
	European corn borer, sod webworms	0,2-0,4 0,2-0,4 (A)	200-400 25-50 (A)		
Sunflower	Cut worms	0,2-0,3	100-200	Spraying sprouts	30 (2)
	cotton budworm	0,3-0,4 0,3-0,4 (A)	200-400 25-50 (A)	Spraying during the growth period	
	Cabbage moth, sod webworms	0,2-0,4 0,2-0,4 (A)	200-400 25-50 (A)		
Soybean	Cut worms	0,2-0,3	100-200	Spraying sprouts	30 (2)
	Cotton budworm	0,3-0,4 0,3-0,4 (A)	200-400 25-50 (A)	Spraying during the growth period	
	Lima bean pod borer, sod webworms	0,2-0,4 0,2-0,4 (A)	200-400 25-50 (A)		
Sugar beet	Cut worms	0,2-0,3	100-200	Spraying sprouts	30 (2)
	Beet leaf aphid, sod webworms	0,2-0,4 0,2-0,4 (A)	200-400 25-50 (A)	Spraying during the growth period	

Pheromone traps

Schelkovo Agrohim JSC is one from a short list of companies producing pheromone traps by synthesizing active ingredients identical to sex pheromones of insects.

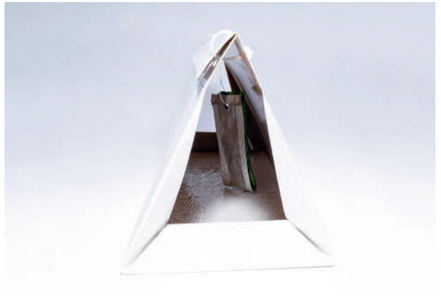
Pheromones of insects make integral part of the integrated plant protection. These are environmentally friendly substances having a specific effect on an individual insect or a group of allied insect species. Pheromones are applied in extremely low doses (nanograms) commensurate with natural background smells produced by insects. Due to their natural origin, they are environmentally compatible and maximize protection of the target crop.

Pheromones production is a specific process. Synthesis of active ingredients requires well-developed technological capabilities, costly equipment, high production standards, and highly skilled chemists. Some dozens or hundreds of grams of pheromone components will be enough to meet the monitoring requirements of the Russian Federation. Such synthesis is practical in laboratory conditions. That is the way Schelkovo Agrohim JSC chose and is capable of producing sets of traps for monitoring purposes upon corporate requests for over 60 agricultural and forest pest species.

Pheromone traps types

1.

2.



3.

4.

1-2. Trap type «Delta»/ Dispenser type - rubber tube

3. Trap type «Delta»/ Dispenser type - foil-film

4. Trap type «Pyramidal barrier» for brown-marble bug

More details in the video

Fer.
PHEROMONE TRAPS

Pheromone traps for crop pests

№	Pests
PHEROMONE TRAPS FOR FRUIT AND BERRY CROP PESTS	
1	Hawthorn tortrix moth *Archips crataegana*
2	Zygaenid grape moth *Theresimima ampellophaga*
3	Oriental fruit moth *Grapholita molesta*
4	Great brown tortrix moth *Archips podana*
5	European grapevine moth *Lobesia botrana*
6	Pomegranate borer *Euzophera bigella*
7	Bipedal tortrix moth *Eupoecilia ambiguella*
8	Leopard moth *Zeuzera pyrina*
9	Willow curvilinear tortrix moth *Pandemis heparana*
10	Brown-marble bed bug *Halyomorpha halys*
11	Bembecia hylaeiformis *Pennisetia hylaeiformis*
12	Tentiform leaf miner *Lithocolletis pyrifoliella*
13	Fruit variegated tortrix moth *Hedya nubiferana*
14	Pine shoot moth *Rhyacionia buoliana*
15	Double shoot moth *Rhyacionia duplana*
16	Pine-bud shoot moth *Evetria turionana*
17	Pine-bud tortrix moth *Spilonota ocellana*
18	Three-dotted rose moth *Arhips rosana*
19	Fruit-tree tortrix moth *Adoxophyes orana*
20	Plum moth *Grapholita funebrana*
21	Currant borer moth *Synanthedon tipuliformis*
22	Apple ermine moth *Yponomeuta malinellus*
23	Codling moth *Cydia pomonella*
24	Apple borer moth *Synanthedon myopaeformis*
PHEROMONE TRAPS FOR VEGETABLE AND INDUSTRIAL CROP PESTS	
25	Bean (acacia) moth *Etiella zinckenella*
26	Dart exclamator moth *Agrotis exclamation*
27	Eastern meadow moth *Mythimna separata*
28	Pea moth *Cydia nigricana*
29	Cabbage moth *Plutella xylostella*
30	Cabbage moth *Mamestra brassica*
31	Potato moth *Phthorimaea operculella*

№	Pests
32	Brown-marble bug *Halyomorpha halys*
33	Corn (stem) moth *Ostrinia nubilalis*
34	Meadow moth *Loxostege sticticalis*
35	Garden moth *Mamestra oleracea*
36	Turnip moth *Agrotis segetum*
37	Dog's Tooth *Mamestra suasa*
38	Beet moth *Scrobipalpa ocellatella*
39	C-black moth *Xestia C-nigrum*
40	Gamma moth *Autographa gamma*
41	Tomato moth *Tuta absoluta*
42	Cotton moth *Helicoverpa armigera*
PHEROMONE TRAPS FOR FOREST AND ORNAMENTAL CROP PESTS	
43	Big pine beetle *Tomicus piniperda*
44	Green oak leafhopper *Tortrix viridana*
45	Brown-marble bug *Halyomorpha halys*
46	Engraver beetle *Ips typographus*
47	Small pine beetle *Tomicus minor*
48	Gypsy moth *Lymantria dispar*
49	Common conifer sawflies *Diprion pini*
50	Red conifer sawflies *Neodiprion sertifer*
51	Box moth *Cydalima perspectalis*
52	Siberian silk moth *Dendrolimus sibiricus*
53	Pine noctuid *Panolis flammea*
54	Pine silk moth *Dendrolimus pini*
55	Sawyers Monochamus: *Monochamus: M.galloprovincialis, M.sutor, M.urussovi*
56	Black arches *Lymantria monacha*
PHEROMONE TRAPS FOR STORED FOODS PESTS	
57	Mill moth *Ephestia kuehniella*
58	Cocoa grain moth *Ephestia elutella*
59	Dried fruit moth *Cadra cautella*
60	Southern barn moth *Plodia interpunctella*
61	Moths (multi-purpose)

Fungicides

Microbiological fungicides

carbendazim 300 g/L + azoxystrobin 100 g/L

Combined fungicide for the protection of cereal crops, soybeans and sugar beet from a complex of diseases

ADVANTAGES

- **Exhibits enhanced fungicidal effect due to the combination of two active ingredients that possess complementary biological properties.**
- **Provides highly effective protection of winter cereals after wintering and of spring crops against root rot and powdery mildew at the early phases of the crop development.**
- **Preventative treatment prevents the development of leaf diseases in a later period of crop development.**
- **Has a preventive, curative, and eradicating effects.**
- **The different mode of action of the product ingredients results in guaranteed protection and prevents the manifestation of resistant pathogen strains.**
- **Has a stimulating effect on the growth and development of crops, enhances photosynthesis in flag leaves - the pronounced green leaf effect, positively affects the formation of the crop.**

benzimidazoles, strobilurins	**3 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Mode of action

Carbendazim has protective and curative effects. The active substance is absorbed by the leaves and roots followed with a predominantly upward movement. It inhibits the cell division in the pathogens. The systemic effect makes it possible to protect even those parts of diseased plants with which the product does not come into contact. Thanks to the treatment (curative) effect, the fungicide effectively suppresses diseases even after their symptom manifestation in the plant.

Azoxystrobin has a systemic and contact action with protective and curative effects. The mode of action is due to the ability of the substance to inhibit the mitochondrial breathing in the pathogen cells, which leads to their rapid death.

Protective effect period

The total protection period is four weeks from the date of treatment. Carbendazim has protective and curative effects, its protective effect lasts up to three weeks.

The protective effect of azoxystrobin lasts for four weeks from the time of treatment.

Rate of exposure

Azoxystrobin is effective within one hour after application; carbendazim is effective in 3-5 hours after treatment.

Compatibility with other pesticides

Compatible with most insecticides, herbicides. Before large-scale application, it is necessary to test the chemical and biological compatibility with a particular product at recommended doses.

Azr.
AZORRO SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat	Rust, powdery mildew, septoria leaf blotch, tan spot	0,8-1,0	200-300	Spraying of crops during the growing season with the first signs of the disease manifestation	40 (1-2)
Winter wheat	Rust, powdery mildew, septoria leaf blotch, Cercosporella spot	0,8-1,0			
Barley spring, winter	Net blotch, dark brown spot, rhynchosporium leaf spot	0,8-1,0			
Soybeans	Ascochytosis, downy mildew, Cercospora spot, Septoria blight	0,8-1,0	200-400	Spraying during the growing season (first: after the first signs of the disease; second: in 10–14days)	50 (1-2)
Sugar beet	Cercospora spot, powdery mildew, Phoma rot	0,6-1,0			

Effectiveness of Azorro, SC application

1.

2.

1. The use of Azorro, SC fungicide in the spring for treating winter wheat during the tillering phase ensures the absence of signs of diseases

2. The control (without fungicide) leads to root rot damage

chlorothalonil 450 g/L + boscalid 30 g/L

It is a highly effective fungicide with a therapeutic and preventive effect for controlling potato diseases.

ADVANTAGES

- **This fungicide, which has no analogues in terms of the combination of active ingredients, has contact and systemic activity.**
- **It provides high efficiency with pronounced protective properties against a wide range of pathogens.**
- **The level of control of all types of potato Alternaria is high.**
- **The risk of resistance is minimized through various modes of action.**
- **It can be used during irrigation due to its excellent resistance to flushing.**

chloronitriles, pyridine carboxamides	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Mode of action

The active ingredients of the Beludzhi fungicide, SC belong to different chemical groups and have different modes of action on pathogens.

Chlorothalonil belongs to the chemical group of chloronitriles (FRAC M, Group M5), which inhibit the germination of conidia and spores due to their multisite activity. The mode of action on the fungal cell is nonspecific; it binds the thiol groups of peptides, proteins, and amino acids, disrupting the functions of the cells' respiratory and glycolytic enzymes, preventing the pathogen from entering the plant.

Boscalid belongs to the chemical group of pyridinecarboxamides (FRAC C2, Group 7) and has a new, unique mode of action on a wide range of pathogens. During treatment, one part of the active substance remains on the plant surface, while the other part penetrates and spreads translaminally, and then spreads acropetally through the leaf vascular system. The mode of action of boscalid is to inhibit succinate dehydrogenase (SDHI) in the mitochondrial electron transport chain. Boscalid blocks a key step in cell respiration in Complex II, disrupting the energy supply of pathogens. Boscalid inhibits spore germination, the growth of germ tubes, and the formation of appressoria. In some fungi, it also affects the development of mycelium and spores.

Rate of exposure

Due to its anti-sporulating effect on germinating spores, the solution acts immediately after application, and the mycelium of pathogens inside plant tissues dies within 1-3 hours after treatment.

Protective effect period

Up to 14 days, depending on the infectious load, weather conditions, and other factors.

Bel. NEW
BELUDZHI SC

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Potato	Late blight and Alternaria blight	2.0–2.3	200–400	Spraying during the growing period	21(3)

** Under registration*

benomyl 500 g/kg

Fungicide of systemic action intended to protect cereal crops and sugar beet against a wide range of diseases.

ADVANTAGES

- **Most efficient preparation against snow mold on cereal crops**
- **Efficient suppression of a pack of diseases**
- **Preventive and curative action**
- **Extends vegetation period**
- **Treatment of winter crops improves crop overwintering capability**
- **Treatment of vegetating beet plants reduces losses of root crops from storage decay during storage**

Mode of action

The mode of action consists in inhibition of cell division in pathogenic organisms. Benomyl translocates towards the tops in the apical direction.

Since the product has not only protective but also curative effect, it efficiently suppresses diseases.

Protective effect period

3 or 4 weeks.

benzimidazoles	**3 years**
wettable powder	**-10˚C to +40˚C**
Hazard Class 2, highly hazardous substance	**5 kg**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

3 to 5 hours after treatment

Compatibility with other pesticides

Compatible with other plant protective agents, except preparations with strong alkaline and acidic reaction.

Product application features

Do not use the preparation when the crop is under stress due to pest attack, frost, or heavy rains.

Bnz.
BENAZOL WP

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Winter wheat, winter rye	Fusarium root rot, snow mold, cercosporella spot	0,3-0,6	200-300	Treatment of plants during vegetation period	50 (1)
Spring and winter wheat	Powdery mildew	0,5-0,6	200-300		
Sugar beet	Powdery mildew, Cercospora blight, Phoma rot	0,6-0,8	200-400		40 (1-3)

Effectiveness of Benazol, WP application

1.

2.

Winter wheat crops

1. Treated with Benazol, WP (0.6 l/ha)

2. Development of snow mold during the control without treatment

based on the bacterium strain Pseudomonas asplenii, titer no less 10^9 CFU/ml

A microbiological fungicide for an integrated fruit and vegetable crop protection system

ADVANTAGES

- **Completely safe for the environment**
- **Unique composition: a highly effective proprietary Pseudomonas strain**
- **Inhibits a wide range of phytopathogens and promotes endogenous immunity**
- **Increases the resistance to adverse weather conditions**
- **Has a growth-promoting effect**
- **Has both preventive and curative properties**
- **Requires no waiting time after treatment**

liquid

3-6 months

Hazard Class 3, moderately hazardous substance

+4˚C to +25˚C

canister of 10 L

Biocomposite PRO, L, a biological fungicide, provides the best effect against diseases when used both during the pre-sowing seed treatment and growth period.

Pseudomonas bacteria have a systemic effect: they protect all organs of the plant, promote its growth, improve product quality and enhance growth processes, productivity and resistance to various adverse environmental factors. They also have a fungistatic effect, i.e., inhibit the disease at the stage of mycelium growth and sporulation.

Mode of action

Biocomposite PRO, L, is based on live cells of Pseudomonas selected by their ability to suppress the development of various phytopathogens. The protective effect is based on the ability of bacterial cells to produce extracellular metabolites (siderophores, phenazines, etc.) that inhibit the growth of phytopathogenic bacteria and fungi while promoting endogenous immunity. Moreover, bacterial cells produce indolyl-3-acetic acid (IAA, growth promoter) and various organic acids that convert insoluble phosphates in the soil into plant-available forms and produce a variety of phytohormones.

Protective effect period

After soaking the seeds, the product acts on the roots of the plants throughout the growing season. The bioproduct acts on the stems and leaves of plants for 10-20 days, depending on the degree of infection and weather conditions.

Compatibility with other pesticides

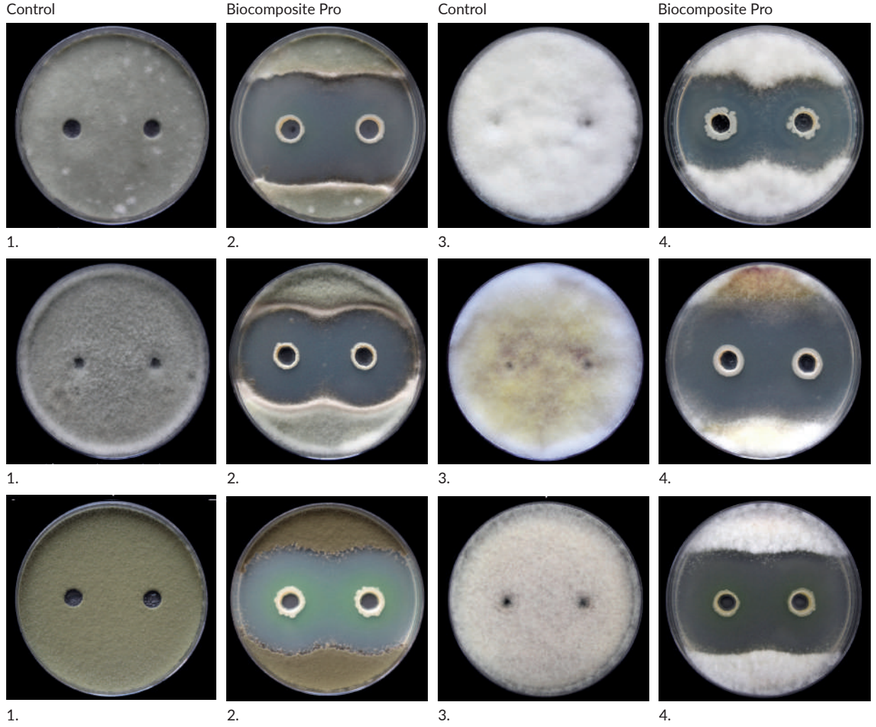
Compatible with microbial fertilizers. Not compatible with chemical products.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Scab, moniliosis, powdery mildew	1,0-3,0	800-1000	Spraying during the growth period and before harvesting	7(4)
Grapes	Mildew, Oidium, grey mould	1,0-3,0			7(4)
Tomatoes (greenhouse)	Fusarium, Rhizoctonia, Pythium and bacterial root rots	0,1 л/кг	1,0-1,5 л/кг	Soaking of seeds 1 day before sowing	-(1)
	Brown spot, powdery mildew, downy mildew, late blight	5,0-10,0	500-1000	Spraying during the growth period, every 20 days	7(4)

Effectiveness of Biocomposite PRO, L application

Fungicidal activity of the drug against pathogens (the method of diffusion into double-layer agar, Biolaboratory)



1-2. ***Alternaria alternata*** (a causative agent of *Alternaria alternata*)

3-4. ***Fusarium oxysporum*** (a causative agent of root rot, *fusarium* wilt)

1-2. ***Alternaria tenuissima*** (a causative agent of *Alternaria alternata*)

3-4. ***Fusarium culmorum*** (a causative agent of root rot, *fusarium* wilt)

1-2. ***Cladosporium herbarum*** (a causative agent of tomato olive blotch)

3-4. ***Fusarium sporotrichioides*** (a causative agent of root rot, *fusarium* wilt)

difenoconazole 65 g/L + flutriafol 25 g/L

A systemic combined fungicide with the innovative formulation to control a wide range of diseases in sugar beet, soy, pea, chickpea, rice and other crops.

ADVANTAGES

- **High rate of penetration of active ingredients to the place of infection and immediate effect on pathogens due to the innovative formulation**
- **Enhanced initial fungicidal activity and prolonged protective effect due to the effective combination of two active ingredients**
- **Expanded spectrum of action**
- **Powerful curative and long-term preventive effect**
- **Additional fumigant action against Erysiphales**
- **Aerial spraying is allowed**

Mode of action

The product has a systemic action. When spraying, the product is absorbed by leaves and stems by penetrating the plant tissues. Difenoconazole and flutriafol inhibit sterol biosynthesis causing the disruption of cell membrane permeability, cell division stoppage, and pathogen death. Moreover, additional fumigant antifungal activity of flutriafol, especially against powdery mildew, allows the product to deeply penetrate the plant tissues with maximum speed and kill pathogens immediately.

The presence of active ingredients in the form of microemulsion ensures the fastest curative effect and prolonged protection against pathogens.

triazoles	**5 years**
microemulsion	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	**Aerial spraying is allowed**

Protective effect period

Up to 30days, in case of epiphytoty from 7 to 14 days.

Rate of exposure

High exposure rate, the product is effective immediately after treatment.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, the products to be mixed should be checked for compatibility

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Cercospora, powdery mildew, Phoma	0,6-0,8 0,6-0,8 (A)	200-300 50-100 (A)	Spraying in the vegetation period: first, the appearance of single symptoms one of the disease; the second - if necessary after 10-14 days	40 (1-2)
Soybeans	Ascochytosis, anthracnose, Septoria blight, Fusarium blight	0,6-0,8 0,6-0,8 (A)	200-300 50-100 (A)		40 (1-2)
Peas (except vegetable)	Ascochytosis, rust, Powdery milde	0,8-1,0 0,8-1,0 (A)	200-300 50-100 (A)		28 (1-2)
Rice	Rice blast	0,8-1,0 0,8-1,0 (A)	200-300 50-100 (A)	Spraying during the growing season: the first - preventive or when there are single signs of the disease in the phase of the appearance of the flag sheet; the second is the beginning of the sweep of the broom	40 (2)
Chickpea	Ascochytosis	0,8-1,0	200-300	Spraying during the growing season when the first signs of the disease, but not later than the phase of budding, subsequent if necessary - at intervals of 10-14 days	28 (1-2)
Lupin	Anthracnose, brown leaf spot	0,8	200-300	Spraying during the growing season when the first signs of the disease	-(2)
Oilseed flax	Anthracnose, Fusarium blight	0,8-1,0	100-300	Spraying during the growth period, from the 'herringbone' stage to the budding stage: 1st - when one of the diseases appears, then at intervals of 10-14 days	40 (1-2)

(A) - aerial spraying

Effectiveness of Vintage, ME application

1.

2.

Pea plant condition

1. Rust development during control without treatment
2. Treated with Vintage, ME (1.0 l/ha) two times

dithianon 350 g/L

A special-purpose contact fungicide for control of apple scab and grapes mildew

ADVANTAGES

- **High fungicidal activity against scab**
- **A perfect product for preventive protection from the earliest stages of apple tree development**
- **Good adherence to the treated surface and resistance to wash-out by precipitation**
- **Long-term protective screen period**
- **A necessary component of an anti-resistance garden protection system ensuring high quality of fruits**
- **A convenient liquid formulation**

quinones	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Mode of action

Dithianon is a contact fungicide of quinones class. Has a long-term protective effect. The mode of fungicidal action is ensured by inhibition of pathogen spore development on the surface of leaves. The mode of action is multiple-site (nonspecific), so resistance in pathogens is highly unlikely.

After treatment, a protective layer resistant to precipitation and sunlight is formed on a plant, which effectively inhibits fungal spore germination for a long period of time.

Protective effect period

7-10 days for preventative treatment in case of moderate disease and 7 days in case of epiphytoty.

Rate of exposure

During the first day after treatment.

Compatibility with other pesticides

Do not mix with oil- and sulfur-containing products. Wait 5 days after treatment with such products. When preparing tank mixtures with other plant protection agents, check the compatibility of products in advance.

Gr.
GRANNY SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Scab	1,0-1,4	800-1000	First treatment: preventative, during the green cone phase. Subsequent treatments: with an interval of 7-10 days	28 (5)
Grapes	Mildew	1,0-1,4	800-1000	Spraying during the growing season. First treatment: preventative. Subsequent treatments: with an interval of 7-10 day	15 (6)

Effectiveness of Granny, SC application

1.

2.

Infection of grapes by mildew

1. Applying the Granny, SC + Indigo, SC defense system

2. Control without fungicides

Propiconazole 70 g/L + tebuconazole 70 g/L + pyraclostrobin 60 g/L

Systemic fungicide of therapeutic and preventive action on a wide range of crops, growth regulator on winter rapeseed crops

ADVANTAGES

- **Triple defense mechanism: powerful prevention + stop effect + eradication**
- **A pronounced curative effect at all stages of the disease**
- **Control of a wide range of pathogens from different classes, including oomycetes**
- **Reliable and long-lasting protection of crops in conditions of increased infectious background**
- **Practical solution for farms with a wide range of crops**
- **Expressed physiological effect: prolonging the life of the "green leaf", increasing the period of photosynthetic activity, maximizing the outflow of nutrients into the emerging cro**

Mode of action

Pyraclostrobin fungicide from the strobilurin class has contact and translaminar activity with protective, curative, and eradicative effects against a wide range of pathogens, including Oomycetes. The active ingredient is rapidly absorbed by the plant and is mainly retained in the cuticular wax layer of the leaf. As a result, reserves of the active ingredient are formed on the leaf surface, which are not washed away by precipitation and provide protection against fungal infections for a long period. Good translaminar movement through the leaf allows control of pathogens on both sides of the leaf. The component is most active in preventive treatments.

The strobilurin mode of action is to inhibit mitochondrial respiration of pathogenic fungi, inhibit germination of fungal spores in plant tissue, and block mycelial growth. It is a strong antisporulant.

Pyraclostrobin actively influences the biological and physiological reactions of plants, resulting in the green leaf effect, effective preservation of green matter, and nutrient supply for a high-quality crop.

triazoles, strobilurins	**2 years**
Suspension emulsion	**-10°C to +35°C**
Hazard Class 2, highly hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Propiconazole and tebuconazole are active ingredients from the triazole class with high systemic properties but different mobility in the plant. The mode of action is based on inhibition of sterols biosynthesis in fungal cells, which inhibits the growth of vegetative organs of fungi. Due to systemic action they move throughout the plant, reaching all sites of infection localization.

The pronounced synergism and complementary action of three active components (strobilurin and triazoles) has a prolonged protective, rapid and strong curative, and antisporulant effect against a wide range of pathogens at all stages of the infectious process.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, the products to be mixed should be checked for compatibility.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Powdery mildew, brown rust, Septoria blight, tan spot, black spot	0.6-0.8	200-300	Spraying during the growth period	21(2)
Winter wheat	Fusarium head blight	0.8	200-300		
Winter triticale	Powdery mildew, brown rust, stem rust, septoriosis, pyrenophorosis, rhynchosporium	0.6-0.8	200-300		
Oats	Crown rust, stem rust, leaf blotch, powdery mildew, septoriosis	0.6-0.8	200-300		
Spring and winter barley	Powdery mildew, dark brown patch, net blotch, rhynchosporium	0.6-0.8	200-300		
Maize	Root and stem rots caused by Helminthosporium disease and Fusarium blight, Helminthosporium spot disease, blister smut, kernel rot, ear mold	0.6-0.8	200-300		
Sugar beets	Cercospora spot, powdery mildew, Phoma rot	0.6-0.8	200-300		
Sunflower	Alternaria leaf mold, white rot, blossom blight, Phoma rot, rust	0.6-0.8	200-400		
Spring and winter rapeseed	Alternaria leaf mold, powdery mildew, Phoma rot, Sclerotinia disease	0.6-0.8	200-400		
Winter rapeseed		0.6-0.8	200-300	Spraying in fall in the phase of 6–8 leaves and in spring in the phases of stem elongation to pod formation in the lower tier.	
Peas	Pod spot, ascochyta leaf blight, powdery mildew, rust	0.6-0.8	200-300	Spraying during the growth period	
Soybean	Ascochyta leaf blight, septoriosis, cercosporosis, downy mildew	0.6-0.8	200-300		
Spring rapeseed	Decrease in plant height, Increasing plant resistance to lodging, activation of form-building processes, increasing yield and product quality	0.8	200-400	Spraying of plants in the phase of 4–8 leaves.	-(1)
Winter rapeseed	Reduction of plant height, increase of plant resistance to lodging, improvement of overwintering, increase of resistance to low positive temperatures, activation of form-building processes, increase of yield and quality of products		200-400	Spraying of plants: the 1st spraying in fall in the phase of 6–8 leaves, the 2nd spraying in the period from the beginning of vegetation renewal in spring up to the phase of stemming (one-time)	-(1-2)

trifloxystrobin 375 g/L + difenoconazole 200 g/L

It is a combined protective-curative fungicide with a growth-stimulating effect to protect crops of sugar and table beets, horticultural crops and grapes.

ADVANTAGES

- **This is a fungicide that has no analogues in the combination of active ingredients**
- **It is highly effective against a range of pathogenic fungi**
- **Combined mode of action: powerful protective shield with mesostemal action + systemic activity**
- **It has a long-term preventive and pronounced therapeutic effect with a greening effect.**
- **Protection of new growth**
- **High resistance to rain wash-off**
- **Efficiency which does not depend on weather conditions**

Mode of action

Dzhotto, SC contains two active substances with different mode of action and distribution in the plant.

Trifloxystrobin belongs to the chemical class of strobilurins based on the methoxyaminoacetate (FRAC C3, Group 11); it ensures the fungicidal effect by inhibiting the mitochondrial respiratory chain of pathogenic fungi, inhibits the germination of fungal spores in plant tissue and blocks mycelial growth. It is a strong antisporulant. It has contact and translaminar action with mesostemal activity. The high lipophilicity of trifloxystrobin contributes to its fixation on the treated plant surface and tight binding to the wax layer. The remaining amount of trifloxystrobin penetrates into deep tissues or onto the back surface of the leaf blade, providing protection against diseases of the untreated leaf surface. Trifloxystrobin, like all strobilurins, actively influences the biological and physiological reactions of plants, exhibiting a «green leaf effect,» maximizing the preservation of vegetative mass and the outflow of nutrients for the formation of a high-quality harvest.

Difenoconazole belongs to the chemical class of triazoles (FRAC G1, Group 3) and has a systemic effect; it penetrates into plant tissue, completely inhibits the growth of subcuticular mycelium, and reduces the level of pathogen sporulation. The mode of action is to inhibit the biosynthesis of sterols in fungal cells. Due to systemic action, it moves throughout the plant, reaching all areas where the infection is localized. The product is absorbed by the leaves, providing an immunizing, protective and healing effects. It is the most reliable and effective triazole for the control of scab, powdery mildew and other important diseases of pomaceous and stone fruits.

strobilurins, triazoles	**2 years**
suspension concentrate	**-15°C to +35°C**
Hazard Class 3, moderately hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Protective effect period

Up to 3 weeks.

Rate of exposure

The product is effective immediately after treatment.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, a preliminary verification of the physical and chemical compatibility of the components to be mixed is required. When preparing tank mixtures, direct mixing of products without prior dilution (dispersion) in water is not allowed.

Dzh. NEW
DZHOTTO SC

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Cercospora spot, powdery mildew, Phoma rot	0.2-0.3	200-400	How to spray during the growing season: the first spraying should be preventive or when the first signs of one of the diseases appear; subsequent spraying should take place if necessary at intervals of at least 10-14 days	21(2)
Table beet	Cercosporosis				
Apple, pear and quince trees	Scab, powdery mildew	0.2-0.3	600-1000	How to spray during the growing season: the first spraying should be preventive or when the first signs of one of the diseases appear; subsequent spraying should take place at intervals of at least 10-14 days	15(3)
Grapes	Powdery mildew	0.2-0.3	800-1000	How to spray during the growing season: the first spraying should be preventive or when the first signs of one of the diseases appear; subsequent spraying should take place at intervals of at least 10-14 days	21(3)

** Under registration*

carbendazim 500 g/L

Systemic fungicide intended to protect cereal crops, sugar beet and other agricultural crops against a wide range of diseases, and to treat seeds of cereal crops.

ADVANTAGES

- **Effective against root and foot rots**
- **An indispensable component of fungicidal protection under the conditions of high saturation of crop rotation with cereal crops**
- **Hampers the development of Fusarium mold even under conditions of high infection load**
- **Has a potent curative, eradicating, and preventive effect**
- **An additional advantage is the prevention of lodging of cereal crops.**
- **Effective protection of beet against powdery mildew and Cercospora spot**

Mode of action

The preparation has a protective and curative action. The active ingredient is absorbed by leaves and roots, and moves primarily upwards. It restrains cell division in pathogens. The systemic action makes it possible to protect even parts of sick plants that the preparation does not come in contact with. Thanks to its curative action, the fungicide is efficient against diseases even when the plant already exhibits the symptoms thereof.

Protective effect period

The preparation has a protective and curative effect; protective period - up to 3 weeks.

benzimidazoles	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Rate of exposure

3 to 5 hours after treatment.

Compatibility with other pesticides

Compatible with most pesticides that are generally used on cereal crops. Check for chemical and physical compatibility with a specific preparation in recommended doses before large-scale use.

Product application features

Spraying of cereals is carried out during the tillering phase, and winter crops – in the fall to prevent lodging and the development of root and basal rot.

Zim.
ZIM 500 SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Winter wheat	Root and radical rots, cercosporrelle rot of the root neck, prevention of drowning	0,3-0,6	200-300	Spraying during the growth period	40(1-2)
Spring and winter wheat	Powdery mildew	0,5-0,6	200-300		
Winter barley	Root and radical rots, cercosporrelle rot of the root neck, prevention of drowning	0,3-0,6	200-300	Spraying during the growth period	
Spring and winter barley	Powdery mildew	0,5-0,6	200-300	Spraying during the growth period	
Sugar beet	Cercospora blight, powdery mildew	0,6-0,8	200-300	Spraying during the growth period	40(3)

tribasic copper sulfate 345 g/L

Contact fungicide of preventive action for the professional protection of gardens, vineyards and vegetables crop against a range of diseases.

ADVANTAGES

- **An essential element in modern systems of protection of gardens and vineyards**
- **An effective method to prevent a range of diseases**
- **A broad application window starting from early spring treatments**
- **Preservation of fungicidal efficacy at low air temperatures and heat**
- **High resistance to flushing from the surface of the plant**

Mode of action

Indigo, SC, is a contact fungicide and has protective properties. The active components of the fungicide, copper ions, penetrate phytopathogen cells where, interacting with various enzymes, they suppress their activity, impair respiration processes, and cause nonspecific denaturation of proteins. This leads to the cessation of the growth of spores and conidia of phytopathogenic fungi and blocking their penetration into the plant. The product is characterized by good adhesion and evenly covers the treated surface. After treatment, a rain-resistant protective layer is formed on the plant, which effectively suppresses the germination of fungal spores, preventing the further development and spread of pathogens and providing reliable protection even under adverse weather conditions.

Protective effect period

7-14 days depending on weather conditions and infection load. After this period, retreatment is required.

Rate of exposure

It starts to act immediately after treatment.

inorganic copper compounds	**2 years**
suspension concentrate	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 L**
Phytotoxicity may occur	

Compatibility with other pesticides

Compatible with other pesticides, except the products that have a strongly acidic or strongly alkaline reaction. In each case, it is necessary to check the components to be mixed for compatibility.

Product application features

• The maximum fungicidal effect is found in the prophylactic use of the product until the disease symptom manifestation (germination of the pathogen spores or conidia).

• Strictly observe the intervals (7-10 days) between successive treatments to exclude infection of the new growth.

• When spraying, ensure a complete and uniform coating of the treated surface with the working solution.

Perform treatments under favorable weather conditions: optimum humidity and air temperature in windless clear weather in the morning or evening.

• Avoid atmospheric fallout within 4-5 hours after treatment, do not spray immediately after rain.

If used according to the recommendations, the product is not phytotoxic. In high humidity seasons, it can cause damage (formation of a «mesh» on fruits and burns of leaves) to some copper-sensitive apple varieties.

Ing.
INDIGO SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree, pear tree	Scab, frosty pod rot	3.0-5.0	800-1000	Spraying during the growing season, the first one at the stage of the «green cone,» the next ones, at an interval of 7-10 days	15(4)
Grapes	Blossom blight, black spot	4.0-6.0	800-1000	Spraying during the growing season, the first one at the stage of the «green cone,» the next ones, at an interval of 7-10 days	20(4)
	Mildew			Spraying during the growing season, the first one is preventive, the next ones, at an interval of 7-10 days	
Peach, cherry, plum, sweet cherry	Frosty pod rot, shot-hole disease, leaf curl	4.0-5.0	800-1000	Spraying during the growing season, the first one when first signs of disease appear (before flowering), the next ones, at an interval of 7-10 days	7(4)
Potato	Late blight, Alternaria blight	4.0-5.0	200-400	Spraying during the growing season, the first one is preventive, the next ones, at an interval of 7-10 days	20(3)
Tomatoes	Late Blight of Tomato, Alternaria blight	4.0-5.0	400-600		21(3)
Cucumbers	Downy mildew	4.0-5.0	600-800		7(3)
Onion	Downy mildew	4.0-5.0	200-400	Spraying during the growing season, the first one is preventive, the next ones, at an interval of 7-12 days	7(3)

Effectiveness of Indigo, SC application

1a. 1b. 1c.

2a. 2b. 2c.

Fungicidal activity of Indigo, SC in a model experiment with artificial infection with the causative agent of moniliosis (*Monilia fructigena*)

1. Indigo, SC

2. Control

a - 3rd day, b - 9th day, c - 15th day

cyprodinil 150 g/L + fludioxonil 140 g/L

A special-purpose fungicide for anti-rot protection of apples during storage

ADVANTAGES

- **The only fungicide with oil formulation that solves the problem of fruit rot during storage**
- **It controls a wide range of pathogens - all fruit rots, including gray rot**
- **It acts at all stages of pathogen development, providing protection against disease entry and development**
- **It preserves marketable quality, provides excellent shelf life and transportability of fruits**
- **It prevents re-infestation of fruits during storage**
- **It demonstrates high rain resistance and effectiveness over a wide temperature range**

Mode of action

Fungicide Insignia, OD is specifically designed to control fruit storage diseases. Fruits are treated twice during the ripeness beginning phase and a week before harvesting. It effectively suppresses pathogens such as Botrytis, Penicillium, Aspergillus, Rhizopus, Cladosporium, Alternaria, Trichothecium, and others. Due to the combination of two components with different modes of action, the fungicide acts at all stages of pathogen development, providing reliable protection against the penetration and development of diseases.

anilinopyrimidines, phenylpyrroles	**2 years**
Oil dispersion	**-15˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

High, the product is effective immediately after treatment.

Protective effect period

3-8 months during storage (depending on storage method).

Insg. NEW
INSIGNIA OD

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Storage rots: monilial fruit rot, gray rot, glaucous mold, penicillium rot, cladosporiasis rot, bitter rot.	0,8-1,0	800-1000	Spraying over vegetative plants starting from the fruit maturity phase	10 (2)

Effectiveness of Insignia, OD application

1.

2.

3.

4.

Development of apple moniliasis

1-2. Treated with Insignia, OD on the 4th and 6th days

3-4. Control on the 4th and 6th days

benzoic acid 300 g/L

Fungicide with an exceptional physiological effect that prevents mass losses of sugar beetroot crops and potato tubers from decay at the storage facilities and in the field.

carboxylic acids	5 years
soluble concentrate	-10˚C to +35˚C
Hazard Class 3, moderately hazardous substance	canister of 10 L

ADVANTAGES

Sugar beet vegetation:

Prevents the spread and development of fungal and bacterial infections in crops and on the roots

Stops the development of decay processes in the field and contributes to the drying of the damaged areas of root crops

Increases the sugar accumulation in root crops by activating the outflow of assimilates from leaves

Helps to obtain healthy root crops with excellent storability in piles

During storage:

Effective and environmentally safe way to protect sugar beetroot crops and potato tubers from storage decay

Long-term protective period of 90–120 days

Reduction of rot mass and reduction of losses in root crops and tubers during storage

Mode of action

The product has a strong inhibitory action on yeasts, bacteria, and mold fungi; it suppresses the activity of enzymes in cells that drive oxidation-reduction reactions as well as sugar-splitting enzymes.

Protective effect period

Has a long-term protective effect.

Rate of exposure

Has a long-term protective effect.

Product application features

Treatment of crops by vegetation period

Prepare the working solution immediately before use and use it on the day of preparation.

Fill the sprayer tank with water to 1/2, start the stirrer, add the full dose of the product at the rate of L/ha of the product per 300L/ha of the working solution, and add the remaining water. Flush the product container with water several times and pour the flushing water into the sprayer tank. Mix the entire volume thoroughly.

Prepare the working solution and refill the sprayer at designated filling places in tanks equipped with mechanical stirrers that are to be deactivated later. During treatment of sugar beet crops by vegetation period, use commercially available ground boom sprayers intended for the application of fungicides.

Treatment of sugar beet root crops before storing in piles

Fill the tank of the unit supplying the working solution with water to 1/2, start the stirrer, add the full dose of the product at the rate of 0.06L/t of the product per 3L/t of the working solution, and add the remaining water. Flush the product container with water several times and pour the flushing water into the sprayer tank. Mix the entire volume thoroughly.

Prepare the working solution and refill the unit at designated places for filling in tanks equipped with mechanical stirrers that are to be deactivated later.

Option 1: Sugar beetroot crops are unloaded and stacked in piles by a stacker of the BUM-65M type equipped with a unit for root crop treatment.

The unit consists of a collector ring 1.3 m in diameter with 4 nozzles. The ring is fixed to the stacker arm at an angle of 40 degrees at a distance from the arm end equal to 1m.

It includes spray tips (three through-type and one end-type with a shut-off device that are placed inside the ring facing each other) and nozzles of various types (cone-shaped, injecting, flat-jet).

Under windy conditions, it is necessary to use injecting spray tips. Flat-jet spray tips are used if root crops are mixed with remains of tops, etc. In other cases, cone-shaped spray tips are used.

At a predetermined flow rate of the working solution 3L/t of root crops, the pressure should be within the range of 2–2.2bars. The working solution is supplied through the sprayer that should be equipped with a stirrer.

Option 2: Sugar beetroot crops are unloaded and stacked in piles by a loader of the ROPAeuroMaus-3 type equipped with a 300L plant having pipes with six spray tips for wetting shafts with water solution in the feed chamber (with two flat and two injecting nozzles) and after-cleaning chamber (with two injecting nozzles). The solution is distributed uniformly on the root crop surface. Every root crop is turning over on the shafts of the feed chamber and after-cleaning chamber. The system pressure is maintained at a constant level. The liquid is stirred constantly in the tank. Thus, the product application is fairly high quality and uniform.

For surface treatment of potato tubers before storage

Potatoes are discharged in the hopper and supplied to the stacker by a conveyor. Before potatoes enter the stacker, they undergo treatment with the mixed solution when moving on the conveyor, then they enter the stacker for storage.

The sprayer unit is equipped with a tank of capacity up to 350 liters and two rotating nozzles (the distance between nozzles is from 5 to 6m). Fill the sprayer tank with water to 2/3, add the full dose of the product, add the remaining water, and treat the potatoes.

For surface treatment of potato tubers before planting

Pretreatment of potato tubers is carried out using pickling machines of the Gremmy type or similar.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/t, l/ha	working liquid, l/t, l/ha		
Sugar beet	Storage rots	0,06	3	Treatment of root crops before piling for storage	-(1)
	Root and storage rots	2,0	300	Treatment of plants 2-4 weeks before cropping	
Potato	Fusarium blight, soft rot, Phoma rot	0,25-0,4	10	Treatment of tubers before storage	-(1)
	Rhizoctonia blight, Fusarium blight	0,5-0,8	10	Treatment of tubers before planting	

Effectiveness of Kagatnik,SL application

1.

2.

3.

Root crop condition in sugar beet crops

1. Crops treated with Kagatnik, SL

2-3. Untreated

1.

2.

3.

Condition of root crops in storage clamps

1. Treated with Kagatnik, SC

2. Untreated control - rot incidence up to 70%.

cyprodinil 200 g/L

System fungicide for the protection of gardens (apple trees, pear trees) and vineyards against a complex of diseases

ADVANTAGES

- **Increased fungicidal activity against a complex of diseases due to an innovative formulation (nanolevel of active ingredient).**
- **Deep penetration, rapid initial effect, and high eradicating ability.**
- **Effective protection for any infectious load.**
- **Reliable protection of grapes against rot in the period of harvest formation.**
- **Short waiting time when used for grapes.**
- **High fungicidal activity even at a low air temperature (from +3 °C).**
- **Resistance to washout by rain as early as 2 hours after treatment.**
- **Easy-to-use liquid formulation in contrast to similar products.**

Mode of action

Cyprodinil quickly penetrates the plant tissues, has a good acropetal and laminar translocation. It inhibits the methionine biosynthesis. It exhibits systemic (within 7-10 days) and therapeutic (within 36 hours, if treatment is performed when the first signs of infection appear) effects.

Protective effect period

Within 7-10 days, depending on the disease stage.

anilinopyrimidines	**5 years**
colloidal solution concentrate	**-15˚C to +30˚C**
Hazard Class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

2 to 3 hours post-treatment.

Compatibility with other pesticides

Compatible with most insecticides, fungicides. Before large-scale application, it is necessary to test the chemical and biological compatibility with a particular product at recommended doses.

Product application features

To achieve maximum effectiveness, the fungicide is recommended to be applied in the early stages of disease development.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Grapes	Grey rot, black rot, rot disease complex of fruits, such as blue-green mold, Rhizopus, Aspergillus	1,7-2,6	800-1000	Spraying during growing season: 1st spraying, the budding stage till the beginning of flowering; 2nd spraying, before closing the fruits in the clusters; 3rd, at the beginning of the fruits coloring	10(3)
Apple tree, pear tree	Scab, frosty pod rot, Alternaria leaf mold, powdery mildew, fruit rot	0,65-0,75		Spraying twice during growing period: 1st spraying at the «green cone» stage-that is, the end of blooming stage with an interval of 7 to 10 days	28(2)
Cherry, plum, sweet cherry	Shot-hole disease, cherry leaf spot	0,75-1,3		Spraying during growing season: 1st spraying, at the first signs of the disease; subsequent, with an interval of 7 to 10 days	15(2)
	Monilial burn			Spraying during growing season: 1st spraying, before blooming; subsequent, with an interval of 7 to 10 days	
	Monilial rot			Spraying during growing season: 1st spraying, with the occurrence of the first signs of the disease; 2nd, 14 days before harvesting	

Effectiveness of Kantor, CSC application

1a. 1b. 1c.

Fungicidal activity of the Kantor, CSC product in a model experiment with artificial infection with the causative agent of moniliosis *(Monilinia fructigena)*

1. Kantor, CSC (150 g of active substance per ha)
2. Analog, WG (150 g of active substance per ha)
3. Control

a - 4th day, b - 6th day, c - 11th day

2a. 2b. 2c.

3a. 3b. 3c.

propiconazole 120 g/L + flutriafol 60 g/L + difenoconazole 30 g/L

A systemic combined fungicide to protect cereal crops and grapes against a wide range of diseases.

ADVANTAGES

- **High fungicidal activity against diseases of leaves and spikes**
- **The combination of three active ingredients ensures an extended spectrum of action**
- **Microemulsion ensures a high rate of penetration of active ingredients to the place of infection and the fastest protective effect**
- **Strong preventive and curative effects and long-term protective period**
- **Stimulating effect on the growth and development of protected plants and increased photosynthesis in flag leaves of winter wheat**
- **Contribution to high-quality grain formation**

triazoles

microemulsion

Hazard Class 2, highly hazardous substance

Phytotoxicity may occur

5 years

-10˚C to +35˚C

canister of 10 L

Mode of action

The product has a systemic action, penetrates through the leaves and stems, and moves acropetally.

Active ingredients inhibit sterol biosynthesis causing the disruption of cell membrane permeability, cell division stoppage, and pathogen death.

The presence of active ingredients in the form of microemulsion ensures immediate eradicating, curative and prolonged effects on pathogens.

Protective effect period

3–4weeks, in case of epiphytoty from 7 to 10 days.

Rate of exposure

2 to 3 hours post-treatment.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, the products to be mixed should be checked for compatibility.

Product application features

The product is not phytotoxic at observance of the procedures for the product application. The cultivated plants show a rather high level of tolerance to the product. Sometimes after treatment, a short-term yellowing of the leaves is observed, which does not affect the growth and development of the crop.

Kpl.
CAPELLA ME

Usage regulations

Crop	Harmful object	Consumption rates		Способ, время, Product application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring wheat, Winter wheat	Powdery mildew, rust, Septoria blight, Helminthosporium blight, tan spot	0,8-1,0	200-300	Treatment during vegetation at 'in the tube exit phase – start of ear formation' stages, against Fusarium blight of the head – end of ear formation to start of blossoming	40(1-2)
	Cercosporella root rots with a mild development of the disease	0,9-1,0			
Winter wheat	Fusarial head blight, dark mildew	1,0			
Spring barley, winter barley	Powdery mildew, rust	0,8-1,0	200-300	Treatment during the vegetation period	40(1-2)
Winter barley	Dark brown spot, netted spotting, rhynchosporium	0,9-1,0			
Grapes	Oidium, gray mold, black mold, black spot	0,8-1,0	800-1000	Treatment during vegetation: first treatment – preventive or as symptoms of diseases appear, further treatments – every 10-14 days	30(4)
Apple tree, pear*	Scab, monilial fruit rot, powdery mildew, Alternaria, storage rots: monilial fruit rot, penicillium rot, gray rot, cladosporiosis rot, bitter gleosporium rot	0,8-1,0			40(4)

**- crop expansion pending registration*

Effectiveness of Capella, ME application

Winter wheat
Capella, ME 1.0 L/ha

Winter wheat
Control without spraying

captan 500 g/L

Contact fungicide for disease prevention in gardens and vineyards

ADVANTAGES

- **Reliable prevention of a wide range of leaf and fruit diseases: scab, moniliosis, mildew, etc.**
- **The only liquid formulation of captan with maximum efficacy**
- **A unique mode of action based on three pathways of pathogen damage**
- **A go-to tool in anti-resistant garden protection programs**
- **As part of protective measures, improves marketable quality and shelf life of fruit**

Mode of action

The mode of action of *captan* on fungal cells is non-specific: the active ingredient inhibits biochemical processes involving enzymes and coenzymes containing sulfhydryl groups, and thiol-containing cell components, inactivates phosphorus conversion enzymes, and inhibits the biosynthesis of citrate from acetate. During interaction with cellular thiols, phosgene is formed, which reacts with proteins, amino acids, and other fungal cell components.

Protective effect period

The product retains biological activity for 7-14 days (depending on the pathogen).

Rate of exposure

The product is effective immediately after treatment.

phthalimides

3 years

suspension concentrate

-15˚C to +35˚C

Hazard Class 2, highly hazardous substance

canister of 10 L

No phytotoxicity at recommended rates

Product application features

• For optimal protection, it should be used in combination with systemic fungicides

• It's best to apply the product in the morning or in the evening, at a temperature not exceeding 25 °C

• Optimal water temperature for working liquid preparation is not less than +10 °C, water pH 5.0–5.5 (not more than 7.0)

• Do not use within 4 days before and after mineral oil-based pesticide application

• In case of rapid or mixed infections (ascospore and conidial stages), increase the consumption rate to maximum (3.0 L/ha)

• In case of stable scab, with a single type of infection in the garden, the consumption rate of 2.5 L/ha will be sufficient

Kpr.
KAPERANG SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Apple tree Scab	2,5-3,0	800-1000	Spraying of plants during the growing period, starting from the green cone phase, and then every 8–10 days	30(3)
	Moniliosis	2,5-3,0	800-1000	Spraying of plants during the growing period, in the pink bud phase, and then every 8–10 days	30(2)
Grapes	Mildew	2,5-3,0	800-1000	Spraying of plants during the growing period; first preventive spraying in the flower initiation phase, and then every 8–10 days	40 (5)

thiram 400 g/L

Strong special-purpose contact fungicide for the protection of fruit crops

ADVANTAGES

- **Effective control of pome and stone fruit diseases**
- **Improved liquid formulation with minimum size of active ingredient particles, compared to the equivalent**
- **Long-lasting protective barrier against phytopathogens**
- **Non-specific mode of action against pathogens, preventing resistance**
- **Efficacy not affected by environmental factors**
- **An essential component of anti-resistant garden protection system**

Mode of action

Thiram has a non-specific effect on the enzyme complex of the pathogen: it inhibits the biosynthesis of citrate from acetate in the mitochondrial matrix of fungi by interacting with the sulfhydryl group of coenzyme A. The product is effective against a wide range of pathogenic fungi by inhibiting spore germination and mycelium growth.

Protective effect period

The period of protective action is 7-14 days.

dithiocarbamates	**3 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Product application features

- For maximum efficacy against diseases, it should be used in combination with systemic fungicides
- In cases when scab persists after previous treatments, increase the consumption rate to maximum (5.5–6.0 L/ha)
- In case of stable scab (fruit growth period), the consumption rate of 5.0 L/ha will be sufficient

Ktrx.
KATREX SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Scab, moniliosis	4,0-6,0	800-1000	Spraying during the growing period: first spraying at the end of green cone (mouth ear) phenophase, and then every 7–14 days	30 (4)
Peach	Moniliosis, leaf curl, Coryneum blight				40 (3)
Plum and cherry tree	Monilial fruit rot, monilial burn, clusterosporiasis				

difenoconazole 50 g/L + flutriafol 30 g/L

Systemic fungicide intended to protect gardens, vineyard and conifers against a wide range of diseases.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative formulation ME**
- **Bio-efficiency against a number of most harmful diseases due to optimal combination of two active ingredients**
- **Reliable protection against aerogenic diseases at initial vegetation stages**
- **High rate of penetration to the infection point and quickest curative effect due to innovative formulation**
- **Ability to restrain sporogenesis of pathogens and to mitigate secondary contamination, if optimal treatment timing is missed, and symptoms of diseases have already appeared**

triazoles

5 years

microemulsion

-10˚C to +35˚C

Hazard Class 3, moderately hazardous substance

5 L canister

No phytotoxicity at recommended rates

Mode of action

Difenocanazole impairs biosynthesis of sterols in the fungus organism. As a result, it inhibits the processes of growth tube elongation, cell differentiation and mycelium growth. Flutriafol inhibits demethylation of sterol biosynthesis and impairs selectivity of pathogen cell membrane permeability.

Protective effect period

For preventive measures - 7-10 days (for moderate rates of disease development) and 7 days for epiphytotic development of diseases.

Rate of exposure

Visible symptoms appear in 2 or 3 hours after treatment.

Compatibility with other pesticides

The product is compatible with other fungicides and insecticides, agrochemicals and plant growth regulators used to protect the declared crops, with the exception of products with a highly alkaline reaction.

In each case, a preliminary check for the physical and chemical compatibility of the components being mixed is recommended.

When preparing tank mixtures, direct mixing of products without prior dilution (dispersion) in water is prohibited.

Med.
MEDEYA ME

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree	Scab, oidium, Phyllosticta leaf blight, fruit rot, fruit storage decay: Monilia, penicilliosis, bitter, moldlike	0,8-1,2	800-1000	Treatment during vegetation: first treatment – preventive or as symptoms of diseases appear, further treatments – every 7-10 days	28 (4)
Grapes	Oidium, black rot, black spot, gray rot	0,8-1,2	800-1000		
Conifers (nurseries)	Common schutte	1,0	100-200	Spraying during the growing season at 3-week intervals	-(3)
	Snow Schutte			Spraying in late fall before snow cover is established	-(1)

Effectiveness of Medeya, ME application

1.

2.

1. Apple trees treated with Medeya, ME (1.0 L/ha) 3 times. No signs of disease

2. Development of diseases under control without treatment

mancozeb 640 g/kg + metalaxyl 80 g/kg

Contact fungicide of systemic action against potato and grapes diseases

ADVANTAGES

- **Systemic action ensuring protection of the entire plant, including new shoots**
- **Dual reliability due to contact and systemic properties**
- **Preventive and curative action**
- **Implementation of full crop potential**
- **Unrivaled protection of potato tubers in the field and storage**
- **Penetrates the plant in 30 minutes**
- **Resistant to precipitation**
- **Protection up to 14 days**
- **Improves tuber storability**

Mode of action

The preparation has a protective (spores die before infection), curative (affects pathogen after infection) and eradicative action (pathogen dies inside the spore-containing spot). Mancozeb protects the protected plant surface - leaves and stalks, and metalaxyl slowly penetrates into leaf tissue, spreads all over the plant with upbound blood, and protects leaves, stalks and growing tissues from the inside.

Protective effect period

The preparation has a preventive and curative effect and provides reliable protection of plants within 10 to 14 days.

Dithiocarbamates, phenylamides	**3 years**
water dispersible granules	**-10˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**bag 1; 5 kg**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Rate of exposure

The preparation affects pathogens on the leaf surface in 40 minutes after treatment.

Compatibility with other pesticides

The preparation is compatible in mixes with fungicides and insecticides. However, the preparations to be commingled should be checked for compatibility in each specific case.

The combined use of the Metamil MC, WG fungicide, packaged in a water-soluble film, in a tank mixture with any boron-containing agrochemicals, including Ultramag Boron, Ultramag Calcium / Calcium Active, Ultramag Combi for potatoes, Biostim Growth, is not allowed, because of the irreversible chemical interaction of the polymer film with boron compounds.

Mtm.
METAMIL MC WG

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, kg/ha	working liquid, l/ha		
Potato	Late blight, Alternaria blight	2,0-2,5	200-400	Treatment during vegetation: 1st treatment – preventive, further treatments – every 7-14 days	20(3)
Grapes	Downy mildew	2,5	800-1000	Treatment during vegetation: 1st treatment – preventive, further treatments – every 7-14 days	21(4)

Effectiveness of Metamil MC, WG application

1.

2.

1. Phytophthorosis development during control

2. Treated with Metamil MC, WG (2.5 kg/ha) two times

pyraclostrobin 80 g/L + tebuconazole 80 g/L + difenoconazole 40 g/L

A microemulsion fungicide with a strong protective and curative effect against leaf diseases of various etiologies, as well as a pronounced physiological effect

ADVANTAGES

- **A new combination of 3 active ingredients of different chemical classes in an innovative formulation**
- **A combination protective mechanism: powerful prophylactic effect + "stop effect" + elimination**
- **Prevention of secondary contamination**
- **A pronounced curative effect at all stages of the disease**
- **Improved control of pathogens causing downy mildew, Cercospora spot, Phoma rot**
- **Prolonged period of protection**
- **Decreased sensitivity of crops to the long-term impact of stress factors: high temperatures, drought, temperature extremes, etc.**
- **A pronounced physiological effect: longer life of a green leaf, prolonged period of photosynthetic activity, maximum accumulation of sugars and transfer of nutrients to the developing crop**

strobilurins, triazoles	**5 years**
microemulsion	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Mode of action

The pronounced synergism and complementary action of the three active ingredients strobilurin and two triazoles deliver prolonged protective activity, rapid and strong curative effects, and strong antisporulant action against a wide range of pathogens at all stages of infection (immediate arrest of disease development followed by eradicating effect and a durable preventive barrier).

Pyraclostrobin, an active substance of strobilurins class, has a contact and translaminar activity, with a protective, curative and eradicating effect against a wide range of pathogens, including Oomycetes. The active ingredient is rapidly absorbed by the plant and primarily retained in the leaf cuticular wax layer. As a result, a reservoir of active substance is formed on the leaf surface, which is not washed off by precipitation and provides long-lasting protection against fungal infections. Good translaminar movement through the leaf allows the product to control pathogens on both sides of the leaf. The component is most active in preventive treatments.

The mode of action of strobilurin is to inhibit mitochondrial respiration of pathogenic fungi; the germination of fungal spores into plant tissue is inhibited, and mycelial growth is blocked. It is a strong antisporulant. Pyraclostrobin actively influences the biological and physiological reactions of plants, resulting in the green leaf effect, effective preservation of green matter and nutrient supply for a high-quality crop.

Difenoconazole and *tebuconazole* are triazole-class active ingredients with strong systemic properties but differing mobility within the plant. The mode of action is to inhibit sterol biosynthesis in fungal cells, thereby suppressing the growth of vegetative structures. Their systemic activity ensures distribution throughout the plant, reaching all sites of infection.

Rate of exposure

The protective effect of the product starts from the moment of treatment

Protective effect period

21-28 days.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Sugar beet	Cercospora spot, powdery mildew, Phoma rot	1,0-1,25	300	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying after 10-14 days	21(1-2)
Soybean	Ascochitosis, Cercospora spot, Septoria spot, downy mildew	1,0-1,25	200-400		40(1-2)
Sunflower	Alternaria leaf mold, white rot, blossom blight, Phoma rot, rust	1,0-1,25	200-400		40(1-2)
Spring and winter rapeseed	Alternaria, fomosis, white rot (sclerotinia)	1,0-1,25	200-300	Spraying during the growth period	30(1-2)
Maize	Stem rots caused by Helminthosporium disease and Fusarium blight, Helminthosporium spot disease, blister smut, kernel rot, ear mold	1,0-1,25	200-300		

pyraclostrobin 80 g/L + tebuconazole 80 g/L + difenoconazole 40 g/L

A highly effective protectant and curative fungicide for orchard and vineyard disease management program targeting a complex of diseases.

ADVANTAGES

- **Exceptionally effective combination of strobilurins and triazoles in a ready-to-use mixture**
- **Broad-spectrum action against all economically significant diseases, including oidium and scab**
- **Strong curative effect and prevention of secondary infections**
- **Combined modes of action to prevent pathogen resistance development and provide greater flexibility in application timing**
- **Rapid uptake due to NANOformulation**
- **Easily integrates into the plant's defense system, halting the infection process at all stages**

strobilurins, triazoles	**2 years**
microemulsion	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Mode of action

Pyraclostrobin, a strobilurin-class fungicide, exhibits contact and translaminar activity with protective, curative, and eradicant effects against a wide range of pathogens, including oomycete fungi. The active ingredient is rapidly absorbed by the plant and primarily retained in the leaf cuticular wax layer. As a result, a reservoir of active substance is formed on the leaf surface, which is not washed off by precipitation and provides long-lasting protection against fungal infections. Good translaminar movement through the leaf allows the product to control pathogens on both sides of the leaf. The component is most active in preventive treatments.

The mode of action of strobilurin is to inhibit mitochondrial respiration of pathogenic fungi; the germination of fungal spores into plant tissue is inhibited, and mycelial growth is blocked. It is a strong antisporulant.

It actively influences the biological and physiological reactions of plants, resulting in the green leaf effect, effective preservation of green matter and nutrient supply for a high-quality crop.

Difenoconazole and *tebuconazole* are triazole-class active ingredients with strong systemic properties but differing mobility within the plant. The mode of action is to inhibit sterol biosynthesis in fungal cells, thereby suppressing the growth of vegetative structures. Their systemic activity ensures distribution throughout the plant, reaching all sites of infection.

The pronounced synergism and complementary action of the three active ingredients strobilurin and two triazoles deliver prolonged protective activity, rapid and strong curative effects, and strong antisporulant action against a wide range of pathogens at all stages of infection (immediate arrest of disease development followed by eradicating effect and a durable preventive barrier).

Compatibility with other pesticides

Before applying tank mixtures with other products, they should be tested for chemical and biological compatibility.

Riv. NEW
RIVIERA ME

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple, pear	Scab, monilial fruit rot, Alternaria, powdery mildew, phyllosticta leaf spot	0,8-1,0	800-1000	Foliar spray during the growing season: 1st and 2nd applications at green cone and pink bud stages; subsequent applications at 7-14 day intervals	21(3)
Grapes	Oidium, downy mildew, black spot, Alternaria	0,6-0,7	800-1000	Foliar spray during the growing season: 1st application as a preventive treatment; subsequent applications at 7-10 day intervals	21(3)

** Under registration*

Effectiveness of Riviera, ME application

1. 2. 3.

Development of *Monilinia fructigena* 1 (causal agent of apple moniliosis) in the untreated control

1. Day 4
2. Day 6
3. Day 8

1. 2. 3.

Development of *Monilinia fructigena* 1 (causal agent of apple moniliosis) after treatment with Riviera, ME

1. Day 4
2. Day 6
3. Day 8

sulphur 400 g/L

A contact fungicide with acaricidal activity for the protection of grapes and fruit crops

ADVANTAGES

- **Fungicidal protection + acaricidal effect**
- **An important component for the prevention of Erysiphaceae infection**
- **High biological efficacy and reliable protection**
- **The most efficient liquid formulation of sulphur with a smaller active substance particle size**
- **Excellent contact action and uniform distribution on the treated surface**

Mode of action

Sulphur provides a protective barrier that prevents spores from germinating and fungal infection from entering plant tissues.

The fungicidal effect of the product is ensured by sulphur reduction or oxidation products. Sulphur vapours penetrate the cells of fungi. Sulphur is a hydrogen acceptor and contributes to the disruption of hydrogenation/dehydrogenation reactions. Sulphur is converted to hydrogen sulphide, a fungitoxic compound, in the membrane or inside the cells of viable spores of the pathogen.

Rate of exposure

Within several hours after spraying.

Protective effect period

When used as a fungicide: 7-10 days, depending on the severity of infection and weather conditions. When used as an acaricide: not more than 14 days.

inorganic substances	**2 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**canister of 10 L**
Phytotoxicity may occur	

Compatibility with other pesticides

Compatible with many fungicides and insecticides used on respective crops. Do not use the product within 14 days after the application of products based on mineral oils and alkaline products. Do not mix the product with captan for spraying red-fleshed apple varieties. Check the physical and chemical compatibility before using the product in a tank mixture.

Product application features

Grapes:

- Preventive treatment is recommended before the onset of infection.
- Number of applications per season: not more than six.

Apple tree, pear tree:

- Early-spring treatment is recommended, from bud bursting till the pink bud phase.
- During the period of fruit growth, treatment with sulphur-containing fungicides is not recommended due to the risk of mesh formation on the fruits.
- It is not recommended to use at temperatures above 25 °C due to phytotoxicity..

Some sensitive crops may be damaged by sulfur treatments in certain climates. Sulfur can burn foliage or cause fruit damage if the air temperature is very high at the time of application. Do not use mineral oil-based products within 14 days after treatment with the product.

Sul.
SULPHUR 400 SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Apple tree, pear tree	Powdery mildew, scab, rust	6,0-16,0	800-1000	Spraying during the growth period in case of a high infection load	-(6)
		6,0-10,0	800-1000	Spraying during the growth period: 1st applications at green cone, 2nd - at pink bud stages; subsequent applications at 7-10 day intervals	-(6)
Grapes	Oidium	10,0-16,0	800-1000	Spraying during the growth period: 1st application as a preventive treatment; subsequent applications at 7-10 day intervals	-(6)
	Spider mites	8,0-12,0	500-1000	Spraying during the growth period	-(6)

Stk. NEW STAKKATO L

based on Bacillus amyloliquefaciens strain 133 (VKPM V-11986), titer not less than 10^9 CFU/mL

A microbiological fungicide for the protection of vegetable, fruit, and berry crops against fungal and bacterial diseases during the growth season and in storage.

ADVANTAGES

- **Unique, patented bacterial strain with high fungicidal and bactericidal activity against a wide range of phytopathogenic microorganisms**
- **Easily integrated into conventional crop protection systems, reducing pesticide load on crops**
- **Reduces yield losses in vegetables and potatoes caused by storage rot**
- **Ecologically safe for humans and the environment, part of the EcoPlus product line**
- **No waiting period required**
- **Extended shelf life**

Mode of action

Bacillus amyloliquefaciens strain 133 (VKPN V-11986) secretes into the substrate a range of antibiotic substances that suppress the development of phytopathogens, as well as a complex of cell-wall degrading enzymes that lyse fungal and bacterial cells.

Rate of exposure

Bacillus amyloliquefaciens begins to exert fungicidal activity within 24 hours after application.

hazard class 4, low- hazard substance

24 months

+4°C to +25°C

canister of 10 L

Protective effect period

The product is effective throughout the entire growing season.

When applied pre-storage, the product remains active during the entire storage period.

Совместимость с другими препаратами

Compatible with microbial fertilizers. Not compatible with chemical pesticides.

Co-application with other products during storage is not advisable.

Stk. NEW STAKKATO L

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Treatment during the growing season					
Field tomatoes	Powdery mildew, phytophthora, Alternaria, bacterial diseases	3-5	200-400	Spraying during the growth period	- (4)
Protected tomatoes	Gray mold	3-5	1000-1500	Spraying during the growth period	
Cabbage	Sclerotinia (white mold), Alternaria, bacterial soft rot and black rot, phomosis	3-5	200-400	Spraying during the growth period, last application 10 days before harvest.	
Onion (including for greens), garlic	Downy mildew, purple blotch	3-5	200-400	Spraying during the growth period	
Plum, sour cherry, sweet cherry, cherry plum	Shot hole disease, leaf curl, coccomycosis, spur blight	3-5	600-800	Spraying during the growth period, last application 10 days before harvest	
Strawberry	Gray mold, powdery mildew, Septoria leaf spot	3-5	600-800		
Potato	Anthracnose, Alternaria, late blight	1-3	100-300	In-furrow application at planting	- (1)
		3-5	200-400	Foliar and soil spray at first sign of disease	- (4)
Apple tree	Scab, powdery mildew, fire blight	5-8	600-1000	Spraying during the growth period	-(5)
Grapes	Powdery mildew (oidium), downy mildew, gray mold				
Pre-storage treatment					
Cabbage	Storage rots: gray mold, Fusarium rot, Alternaria, Rhizoctonia, white mold, moldy rot, bacterial soft rot	1-3	4-6	Treatment at storage entry	-(1)
Carrot	Storage rots: white mold (Sclerotinia), gray mold, black rot (Alternaria), dry rot (phomosis), moldy rot, bacterial soft rot	1-3	4-6		
Potato	Storage rots: phomosis, Fusarium dry rot, Alternaria, anthracnose, common scab, silver scurf, black rot, moldy rot, bacterial soft rot	1-3	4-6		
Onion (including for greens), garlic	Storage rots: basal rot (Fusarium), gray neck rot, moldy rot, bacterial soft rot	1-3	4-6		
Table beet	Storage rots: gray mold, white mold, phomosis, moldy rot, bacterial soft rot	1-3	4-6		

** Under registration*

pyraclostrobin 150 g/L + propiconazole 70 g/L + difenoconazole 45 g/L

It is a fungicide in NANOformulation with therapeutic and prophylactic action to combat blast disease in rice crops.

ADVANTAGES

- **This fungicide has no analogues in terms of the combination of active ingredients and formulation**
- **Combined protection mechanism: powerful prevention + pronounced therapeutic effect**
- **It is a strong antisporulant that has an effect on all stages of disease development**
- **Pronounced physiological and "anti-stress" effect**
- **High resistance to washing off**
- **Aerial spraying is allowed, including with the help of unmanned aerial systems**

strobilurins, triazoles	**2 years**
suspension concentrate	**-15˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	**Aerial spraying and unmanned aerial systems are allowed**

Mode of action

Tessa, ME contains three active ingredients with different modes of action and patterns of distribution in the plant. It has a long-lasting protective and rapid therapeutic effect on a wide range of pathogens at all stages of the development of the infectious process (instant blocking of the development of the disease with a subsequent eradicating effect on pathogens and a powerful preventive screen).

Pyraclostrobin is a fungicide that belongs to the class of methoxycarbamate strobilurins (FRAC C3, Group 11), it has contact and translaminar activity with protective, therapeutic and eradicative effects on a wide range of pathogens, including fungi from the class of oomycetes. The active substance is quickly absorbed by the plant and is mainly retained in the cuticular wax layer of the leaf. As a result, layers of the active substance are formed on the surface of the leaves, which are not washed off by precipitation and provide protection against fungal infections for a long period. Good translaminar movement through the leaf allows the product to control pathogens on both sides of the leaf. The component is most active in preventive treatments.

The mode of action of strobilurin is to inhibit mitochondrial respiration of pathogenic fungi; the germination of fungal spores into plant tissue is inhibited, and mycelial growth is blocked. It is a strong antisporulant.

It actively influences the biological and physiological reactions of plants, resulting in the green leaf effect, effective preservation of green matter and nutrient supply for a high-quality crop.

Propiconazole and difenoconazole belong to the chemical class of triazoles (FRAC G1, Group 3), they completely inhibit the growth of subcuticular mycelium and reduce the level of sporulation of the pathogen. The mode of action is to inhibit the biosynthesis of sterols in fungal cells. Due to systemic action, it moves throughout the plant, reaching all areas where the infection is localized. The active substances are sorbed by the leaves, providing a protective and healing effect.

Protective effect period

Up to 4-5 weeks depending on the phytosanitary condition of the crop at the time of treatment.

Rate of exposure

The product is effective immediately after treatment.

Compatibility with other pesticides

The product is compatible with most pesticides in tank mixtures. However, in each case, a preliminary verification of the physical and chemical compatibility of the components to be mixed is required. When preparing tank mixtures, direct mixing of products without prior dilution (dispersion) in water is not allowed.

Tss. NEW
TESSA ME

Usage regulations*

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Rice (seed crops)	Pyriculariosis	1.0–1.3 1.0-1.3(A) 1.0-1.3(UAS)	200–300 50-100(A) 5-10(UAS)	Spraying during the growth period	-(2)

(A) = aerial spraying.
(UAS) = unmanned aerial systems
** Under registration*

propiconazole 390 g/L

Systemic fungicide against a wide range of diseases on plantings of cereal crops, sugar beet, rapeseed, grape.

ADVANTAGES

- **Basic protection in conditions of a moderate infectious background**
- **High penetration rate to the source of infection and a powerful therapeutic effect**
- **Long-term protective activity up to 40 days**
- **The drug from the Eco Plus series with increased biological effectiveness against a complex of diseases**
- **Profitability of the hectare application rate**
- **A practical solution for a farm with a wide range of crops**
- **Aerial spraying allowed**

Mode of action

The preparation penetrates plants through leaves and stalks and moves in an acropetal way. It produces a fungicidal effect of vegetative organs of fungi and inhibits sporogenesis. It inhibits synthesis of ergosterol regulating permeability of the cell membrane.

Protective effect period

Minimum 3 or 4 weeks.

Rate of exposure

Visible signs appear in 3 to 7 days.

triazoles	**5 years**
colloidal solution concentrate	**-10˚C to +35˚C**
Hazard Class 3, moderately hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	**Stock solution preparation is required**
Aerial spraying is allowed	

Compatibility with other pesticides

Compatible with most fungicides. Check for compatibility before use in mixes with other plant protective chemicals.

Product application features

Spraying is carried out in dry, windless weather in the morning or evening hours, when there are no rising air currents, and the temperature and humidity are close to optimal.

Optimal results are achieved under the following conditions:

• at the ideal time of use, when infection has already occurred, but the disease is still at a very early

stage of development;

• at a comfortable air temperature during the period of application of the fungicide.

Titul 390 is equally effective at both high and low air humidity.

Do not use the product when the crop is under stress due to pests, frost, or heavy rains.

Tl.
TITUL 390 CSC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Powdery mildew, brown rust, stem rust, yellow rust, Helminthosporium disease, Septoria blight, Fusarium blight of the head	0,26 0,26(A)	200-400 50(A)	Treatment during vegetation (except Fusarium blight of the head) at 'flag – start of ear formation' stages, against Fusarium blight of the head – end of ear formation to start of blossoming	40(1-2)
Spring and winter barley	Helminthosporium disease, Powdery mildew, rust	0,26 0,26(A)	200-400 50(A)	Spraying during the growth period	40(1)
Winter rye	Brown rust, stem rust, Septoria blight, Rhynchosporia blight, Cercosporella spot, Powdery mildew, olive mold	0,26 0,26(A)	200-400 50(A)	Spraying during the growth period	40(1)
Sugar beet	Cercospora blight, Powdery mildew, Phoma rot	0,26 0,26(A)	200-400 50(A)	Treatment during vegetation as first signs of disease appear, then, when necessary, every 10-14 days	40(1-2)
Winter rapeseed	Alternaria blight, Phoma rot	0,26-0,32 0,26-0,32(A)	200-400 50(A)	Treatment during vegetation: 1st – in autumn at rosette stage after 6-8 leaves, 2nd – first signs of disease at stage of stem elongation – start of seedpod formation at lower tiers of plants	60(2)
Spring rapeseed	Alternaria blight, Phoma rot	0,26-0,32 0,26-0,32 (A)	200-400 50(A)	Treatment during vegetation at first signs of disease at stage of stem elongation – start of seedpod formation at lower tiers of plants	60(1)
Grapes	Oidium, gray mold	0,15-0,25	600-1200	Treatment during vegetation: 1st – preventive at visible inflorescence formation stage, then every 10-14 days	30(4-6)

(A) - aerial spraying

Tld.
TITUL DUO CSC

propiconazole 200 g/L + tebuconazole 200 g/L

Systemic fungicide against a wide range of diseases on cereal crops.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative preparative form CSC**
- **A wide range of effects and reliable protection during vegetation**
- **Protective period up to 40 days**
- **Fast penetration into the plant and prolonged preparation activity**
- **Reduced dependence on adverse weather conditions**
- **No case of resistance**
- **Growth stimulating activity ('green leaf" effect)**
- **Extended vegetation period and life of flag**
- **Quality grain**

Mode of action

The preparation penetrates plants through leaves and stalks and moves in an acropetal way. It produces a fungicidal effect of vegetative organs of fungi and inhibits sporogenesis. It inhibits biosynthesis of ergosterol (principal steroid compound of most fungi) regulating permeability of the cell membrane.

Protective effect period

3 to 4 weeks.

triazoles

5 years

colloidal solution concentrate

-10˚C to +35˚C

Hazard Class 2, highly hazardous substance

5 L canister

No phytotoxicity at recommended rates

Rate of exposure

It starts to act immediately after treatment.

Compatibility with other pesticides

Efficient when used alone. Check for physical and chemical compatibility before use of mixes with other plant protective chemicals.

Product application features

It is recommended to treat even crops not affected by diseases: due to growth-stimulating activity and a clear manifestation of the green leaf effect, a significant increase in yield is achieved.

Do not use the product when the crop is under stress due to pest attack, frost, or heavy rain.

Tld.
TITUL DUO CSC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Powdery mildew, brown rust, stem rust, yellow rust	0,25	200-400	Treatment during vegetation at 'flag – start of ear formation' stages, against Fusarium blight of the head – end of ear formation to start of blossoming	40 (1-2)
	Septoria blight, Pyrenophora leaf blight	0,25-0,32			
	Fusarium blight of the head	0,32			
Spring and winter barley	Powdery mildew, dwarf rust	0,25	200-400	Spraying during the growth period	40 (1-2)
	Dark brown spot, netted spotting, Septoria blight, Rhynchosporia blight	0,25-0,32			
Winter rye	Brown rust, stem rust, Septoria blight, Rhynchosporia blight, Powdery mildew	0,25	200-400	Treatment of plants during vegetation period	40 (1-2)
Sugar beet	Cercospora blight, Powdery mildew, Phoma rot	0,3-0,4	200-400	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying at an interval of 10-14 days (where necessary)	40 (1-2)
Sunflower	Verticillium withering, dry-rot of anthodes, Alternaria blight, white and gray rot	0,4-0,5	300-400	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying at an interval of 10-14 days, but not later than the end of budding the beginning of flowering.	40 (1-2)
Spring rapeseed	Alternaria blight, Phoma rot, Powdery mildew	0,4-0,5	200-400	Spraying during the growth period after the first signs of one of the diseases, during the stem stretching the beginning of pod formation in the lower layer.	30 (1)
Winter rapeseed				Spraying during the growth period, in 6-8 leaves phase, in autumn and spring, after the first signs of one of the diseases, during the stem stretching the beginning of pod formation in the lower layer	30 (2)
Pea	Rust, Powdery mildew, Ascochyta blight, anthracnose	0,32-0,4	300-400	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying at an interval of 10-14 days.	30 (1-2)

Tlt. TITUL TRIO CSC

tebuconazole 160 g/L + propiconazole 80 g/L + cyproconazole 80 g/L

A three-component fungicide in an innovative formulation with improved fungicidal activity against a complex of diseases in a broad range of crops

ADVANTAGES

- **A new combination of 3 active ingredients provides powerful elimination and preventive action against the widest range of pathogens**
- **An innovative colloid formulation ensures maximum manifestation of the target properties of active ingredients**
- **Immediate arresting of disease and long-term protection, up to 40 days**
- **Reliable protection of crops under conditions of high infection load**
- **High efficacy both in case of drought and high humidity**
- **Stimulating effect on the development of crops and improved photosynthetic activity**
- **Long-term impact on yield quality**

Mode of action

The product contains 3 triazole-based components with different systemic properties, penetration rates and fungicidal activity spectra. Triazoles have a protective, eliminating and curative effect. The mode of action of triazoles is based on inhibition of sterols biosynthesis in fungal cells, which inhibits the growth of vegetative organs of fungi.

triazoles

5 years

colloidal solution concentrate

-15˚C to +35˚C

Hazard Class 2, highly hazardous substance

5 L canister

No phytotoxicity at recommended rates

Protective effect period

3-4 weeks.

Rate of exposure

High initial activity.

Tlt. TITUL TRIO CSC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Winter wheat, spring wheat	Powdery mildew, brown rust, Septoria blight, tan spot, black spot	0,4-0,6	200-300	Spraying during the growth period	28(1-2)
Winter wheat	Fusarium head blight	0,6	200-300	Spraying during the growth period, at the end of the earing – the beginning of flowering	28(1)
Spring barley, winter barley	Powdery mildew, dark brown spot, net blotch, rhynchosporium leaf spot	0,4-0,6	200-300	Spraying during the growth period	28(1-2)
Maize	Root and stem rots caused by Helminthosporium disease and Fusarium blight, Helminthosporium spot disease, blister smut, kernel rot, ear mold	0,4-0,6	200-300	Spraying during the growth period	28(1-2)
Sugar beet	Cercospora spot, powdery mildew, Phoma rot	0,4-0,6	200-300	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying at an interval of 10-14 days (where necessary)	7(1-2)
Sunflower	Alternaria leaf mold, white rot, blossom blight, Phoma rot, rust	0,4-0,6	200-400	Spraying during the growth period after the first signs of one of the diseases. Subsequent spraying at an interval of 10-14 days, but not later than the end of budding – the beginning of flowering.	28(1-2)
Spring rapeseed	Alternaria leaf mold, powdery mildew, Phoma rot	0,4-0,6	200-400	Spraying during the growth period after the first signs of one of the diseases, during the stem stretching – the beginning of pod formation in the lower layer.	28(1-2)
Winter rapeseed		0,4-0,6	200-400	Spraying during the growth period, in 6-8 leaves phase, in autumn and spring, after the first signs of one of the diseases, during the stem stretching – the beginning of pod formation in the lower layer.	28(1-2)

propiconazole 140 g/L + tebuconazole 140 g/L + epoxyconazole 72 g/L

Systemic fungicide intended to protect cereal crops against a wide range of diseases.

ADVANTAGES

- **Highly effective at reduced concentration of the active ingredient due to innovative preparative form CSC**
- **Three highly efficient active ingredients in optimal proportion**
- **Indispensable for controlling leaf and stem diseases of cereal crops (Septoria blight, oidium, rust, etc.)**
- **Fast penetration into the plant and arrest of disease development**
- **Optimal combination of active ingredients prevents resistance**
- **Quality grain**

Mode of action

The preparation penetrates plants through leaves and stalks and moves in an acropetal way. It produces a fungicidal effect of vegetative organs of fungi and inhibits sporogenesis. It inhibits biosynthesis of ergosterol (principal steroid compound of most fungi) regulating permeability of the cell membrane. Due to the absence of ergosterol, fungi fail to form cell membranes. This blocks the growth and development of harmful pathogen.

triazoles	**2 years**
colloidal solution concentrate	**-10˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	**Stock solution preparation is required**

Protective effect period

3-4 weeks.

Rate of exposure

It starts to act immediately after treatment.

Compatibility with other pesticides

The preparation is compatible in mixes with other pesticides. However, the preparations to be commingles should be checked for compatibility in each specific case.

Trd. TRIADA CSC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Powdery mildew, brown rust, stem rust, Septoria blight, Pyrenophora leaf blight	0,5-0,6	300	Spraying during the growth period	30 (1-2)
Spring barley, including brewing barley	Powdery mildew, dark brown spot, netted spotting, Rhynchosporia blight	0,5-0,6	300	Spraying during the growth period	30 (1-2)
Spring and winter wheat	Fusarium head blight	0,6	200-300	Spraying during the growth period, at the end of the earing – the beginning of flowering	30 (1)

Effectiveness of Triada, CSC application

Treated with Triada, CSC fungicide (0.6 L/ha)

Control without treatment

fluazinam 500 g/L

Highly effective contact fungicide for controlling potato late blight, apple scab, mildew and black spot of grapevine.

ADVANTAGES

- **Protects potato sprouts, destroying the primary infection in the soil and significantly reducing the risk of infection**
- **Prevents the spread of infection to the healthy tops and excellently protects the tubers from infection**
- **Effectively protects the apple tree from scab, grapes from mildew and black spotting**
- **Has a high resistance to rainfall washing, ensuring a stable protection in conditions of watering and precipitation**
- **Does not have phytotoxicity to culture**
- **Can be used throughout the growing season, without fear of the emergence of resistant strains of pathogens**

Mode of action

Fungicide with protective effect. It also has mild curative and systemic effects. It has a longer period of protection and is also resistant to rainwash.

Fluazinam affects the pathogen in two ways: by suppressing the breathing process through inhibition of the energy exchange in the pathogen cells and by preventing spore germination and their motility. The dual mode of the product action has a significant advantage over other contact fungicides, so it can be used throughout the growing season without the risk of the emergence of resistant pathogen strains.

Protective effect period

It has long-term protective effect (7-14 days).

pyridine derivatives	**3 years**
suspension concentrate	**-10˚C to +30˚C**
Hazard Class 3, moderately hazardous substance	**5 L canister**
No phytotoxicity at recommended rates	

Rate of exposure

The effect comes over 2 to 3 hours post-treatment.

Compatibility with other pesticides

Compatible with most insecticides, fungicides, and agrochemicals used in the same timeframes. It is not recommended to use the product in the tank mixture with the products that exhibit an alkaline reaction. Before large-scale application, it is necessary to test the chemical and biological compatibility with a particular product at recommended doses.

Sh.
SHIRMA SC

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Potato	Late blight	0,3-0,4	200-400	Spraying during growing season: the first preventive spraying is to be performed during the stem stretching stage, subsequent spraying should be performed at an interval of 7-10 days	7(4)
Apple tree	Scab	0,5-0,75	800-1000	Spraying during growing season: the first preventive spraying is to be performed during the green cone or pink bud stages, subsequent spraying should be performed at an interval of 7-10 days	28(3)
Grapes	Mildew, black spot	0,5-0,75	800-1000	Spraying during growing season: the first spraying is preventive, subsequent spraying should be performed at an interval of 10-14 days	20(3)

tebuconazole 160 g/L + pyraclostrobin 80 g/L + prothioconazole 40 g/L

A three-component fungicide in the NANOformulation, with preventive, curative and eradicating properties, for the protection against leaf and ear diseases of cereal crops.

ADVANTAGES

- **Control of the most economically important cereal crop diseases, including Gibellina cerealis**
- **Effective against Fusarium blight and black spot**
- **Quick action with a pronounced stop effect and subsequent long-term protection for up to 4 weeks**
- **Immunostimulatory effect**
- **A wide application window, both for the prevention and symptomatically**
- **Double greening effect**
- **High resistance to stress factors**
- **Perfect adaptability to weather conditions**
- **Ensures maximum yields of cereal crops**

Mode of action

Ace, CSC, is a three-component fungicide ensuring effective preventive protection and curative effect against economically important cereal crop diseases, even in cases of an increased infection load. By suppressing pathogen activity at all stages of development (when pathogens penetrate the plant, grow and develop inside plant tissues and form spores), the risks of plant infection and disease spread are reduced. The product is recommended both for prevention and symptomatic treatment, from tillering to blooming. Ace, CSC, has a physiological effect on the growth and development of plants, preserves the best yield potential and improves the quality of grain without mycotoxins.

Tebuconazole is a third-generation triazole. It has a systemic translocating action. It has the broadest spectrum of action against phytopathogens, with protective, eradicating and curative properties. Tebuconazole is distributed acropetally in the plant. It quickly penetrates the waxy layer and is distributed throughout the plant, providing a quick onset of action (stop effect) with a subsequent progressive effect on pathogens, eradicating the disease completely.

Tebuconazole inhibits the biosynthesis of ergosterol in pathogen cell membranes by suppressing C14 demethylation. The synthesis of D5-sterols also has an effect on metabolism, which distinguishes the active substance from other triazoles.

triazoles, strobilurins, triazolinthiones	**3 years**
colloidal solution concentrate	**-15˚C to +35˚C**
Hazard Class 2, highly hazardous substance	**canister of 10 L**
No phytotoxicity at recommended rates	

Pyraclostrobin, an active substance of strobilurins class, has a contact and translaminar activity, with a protective, curative and eradicating effect against a wide range of pathogens, including Oomycetes. Pyraclostrobin is quickly absorbed by plants, accumulating in the cuticular waxy layer of the leaf. As a result, the active substance accumulates on the leaves' surface. It is not washed away by precipitation and provides long-term protection against fungal infections. Good translaminar movement across the leaf allows the control of pathogens on both sides of the leaf. Pyraclostrobin is most effective when used for preventive treatment.

Pyraclostrobin inhibits mitochondrial respiration of fungal pathogens. As a result, it significantly reduces the cellular energy (ATP) required to maintain pathogen vital functions, ultimately leading to their death. It inhibits the fungal spore invasion into plant tissues and blocks mycelium growth. It is a potent antisporulant.

Pyraclostrobin actively influences the biological and physiological reactions of plants, resulting in the green leaf effect, effective preservation of green matter and nutrient supply for a high-quality crop.

Prothioconazole is a triazolinthione, a subclass of active substances with improved triazole properties.

It has a systemic action with an immunising effect.

It shows protective, eradicating and curative properties. It inhibits the demethylation of sterol biosynthesis and violates the selectivity of pathogen cell membrane permeability.

Prothioconazole penetrates the plant more slowly than tebuconazole, providing long-lasting protection. It is distributed acropetally in the plant.

Prothioconazole has a green leaf effect, enhances drought resistance and influences the formation of grain quality indicators. This is the only triazole for which this physiological effect has been reported.

The innovative NANOformulation (colloidal solution concentrate) ensures:

• High quality and stability of the working solution over time: not subject to separation, precipitation, formation of suspensions, which affects the performance of equipment components and spraying efficiency

• Maximum coverage and distribution of the active substance: high spreading coefficient, complete wetting of the treated surface with a high degree of adhesion

• Rapid and deep penetration into the treated surface: accelerated effect on pathogens in all areas of infection containment

• High resistance to washout by precipitation

• The best target properties of active ingredients: increased biological efficacy compared to products based on conventional formulations

Protective effect period

The product has a rapid onset of action, followed by long-term protection for up to 4 weeks.

Usage regulations

Crop	Harmful object	Consumption rates		Method, treatment time, and application features	Safety intervals (treatment frequency)
		preparation, l/ha	working liquid, l/ha		
Spring and winter wheat	Powdery mildew, rust, Septoria blight, tan spot, Helminthosporium blight	0,6-1,0	200-300	Spraying during the growth period	40(1-2)
Winter wheat	Fusarium head blight	1,0	200-300	Spraying during the growth period at stages end of ear formation to start of blossoming	40(1)
	Gibellina cerealis	1,0	200-300	Spraying during the growth period	40(2)
Spring and winter barley	Powdery mildew, rust, net blotch, dark brown spot, Rhynchosporium leaf spot, Septoria blight	0,6-1,0	200-300	Spraying during the growth period	40(1-2)

Rodenticides

Molluscocides

brodifacoum 2 g/L

A rodenticide intended for the preparation of poisoned food bait used to combat various types of rodents on plantings of all crops of open and protected soil, including winter crops, perennial grasses, greenlands, pastures, trees, and bushes, in premises of various purposes and adjacent areas.

ADVANTAGES

- **A coumarin anticoagulant**
- **Pestilent for rodents, even with a single bait ingestion**
- **It destroys all types of rodents, including populations that are resistant to other anticoagulant rodenticides**
- **It has pronounced cumulative properties and skin resorptive effect**
- **Convenient for making bait**
- **Due to the oil-based formulation, an even distribution of the active substance in the bait base is achieved**

Mode of action

Brodifacoum is an anticoagulant chemical that prevents blood clotting and causes internal bleeding in rodents, such as rats, house mice, and other members of the order Rodentia that cause damage to agriculture and any other branches of human production as well as in habitations. One day after taking a lethal dose of brodifacum, the degree of blood clotting in rodents is sharply reduced, and any external or internal damage to the animal leads to internal bleeding, as a result of which the rodents die.

Protective effect period

Depends on the status of the rodent population, with an increase in its number it may require several treatments per season, and on the contrary, when working with an isolated population of a rodent, or if its population decreases, the period of protective action may reach a year or more.

coumarins

2 years

emulsion in oil

-15˚C to +30˚C

Hazard class 2, highly hazardous substance

canister of 10 L

No phytotoxicity

Rate of exposure

In most cases, death occurs within 3 to 8 days after oral administration of the product in the body.

Compatibility with other pesticides

Simultaneous use with other rodenticides is economically impractical; therefore, alternating with rodenticides of a different mechanism of action is recommended; if pesticides from other groups get on rodenticidal baits, this can reduce their consumption by rodents and, accordingly, make rodenticidal treatment less effective.

Procedure for bait preparation

A rodenticide bait (20-30 mL of the preparation per kg of bait product) is prepared in designated containers or drums, pickling machines, in a metal trough. Wet or steamed wheat, shelled oats, sunflower, cubes (1-2 cm) of carrots, potatoes, sugar beets, pumpkins, and apples are used as the bait base. For brown rats and house mice, baits are also used made in whole or in part from products of animal origin (meat, fish, offal, fats). The preparation mixed with the bait base is recommended to stand for several hours to absorb this preparation, followed by stirring the bait before use. The prepared bait is placed in a lockable container designed to hold the bait or transport it to the place of use.

Iz.
IZOCIN BFK EO

Usage regulations

Crop	Harmful object	Product consumption limits	Method, treatment time, and application features	Safety interval, days (application frequency)
All crops of open and protected soil, including winter crops, perennial grasses, greenlands, pastures, trees, and bushes.	Arvicolines: common vole, southern vole, social vole, bank vole, and mouse-like pest rodents	20-30 ml per bait kg up to 6 kg bait per ha 10 g bait/ burrow	Mixing the preparation with bait product: 20-30 mL/kg of bait (wheat grain, shelled oats, sunflower, 1-2 cm cubes of carrots, potatoes, sugar beets, pumpkin, apple). Placing a bait in burrows, other shelters, tubes, baiting boxes manually using special applicators, regardless of the season, with a population density from the beginning of population up to 600 bur/ha, as required, at intervals between treatments up to two weeks, not more than two treatments in a row with one bait product. For the control of all rodents, alternating with drugs of a different mechanism of action. Application in the conditions that exclude eating by humans or nontarget warm-blooded animal	-(-)
	Water vole, mole rat, common hamster	20-30 ml per bait kg 20 g bait/ burrow		
Multifunctional premises and adjacent areas	Brown rat	20 g bait/ burrow, shelter, up to 50 g in tubes and baiting boxes	Mixing the drug with the bait product (wheat, peeled oats, chopped potatoes, carrots, sugar beets or apples, meat, and fish products). Placing the bait in baiting boxes, tubes manually using special applicators in rodent habitats, such as under shelters, along walls, partition walls. From the beginning of population, from 3 to 5 m between the points of placing, depending on the number of rodents, the addition of bait as it is eaten by rodents for two weeks. For the control of all rodents, alternating with drugs of a different mechanism of action. In the conditions that exclude eating by humans or nontarget warm-blooded animals	-(-)
	House mouse	10 g bait/ burrow, shelter, up to 50 g in tubes and baiting boxes		

methalaldehyde 60 g/kg

Contact-entheric molluscocide against slugs and snails on winter wheat crops

ADVANTAGES

- **High efficiency and long-lasting protection up to 3 weeks**
- **Ready-to-use granules, no additional bait preparation required**
- **Helps to preserve the harvest**

aldehydes

granules

Hazard Class 3

No phytotoxicity

3 years

-15 to + 30 °C

20 kg bags

Mode of action

Contact-entheric. Slugs and snails suffer bad burns when in contact with granules. Pests first secrete a lot of mucus, then lose their mobility. Within 2 days, complete dehydration develops and death occurs. The substance causes damage to the gastrointestinal mucosa of pests when ingested. This leads to rapid death.

Protective effect period

Not less than 14 days.

Rate of exposure

The effect of the pesticide begins a few minutes after ingestion by a slug or a snail.

Usage regulations

Crop	Harmful object	Preparation consumption rate, kg/ha	Method, treatment time, and application features	Safety interval, days (application frequency)
Winter wheat	Slugs, snails	7.0	Spreading of granules on the soil between rows	-(3)
Sunflower, maize, legumes (excluding others), mustard, winter and spring rapeseed*	Slugs, snails	7.0	Spreading of granules on the soil between rows	-(3)

** Under registration*

Plant growth regulator

320
Hfk.
HEFK

321
Kos.
COSTANDO
SL

322
Sl.
SALDO
EC

323
Gb.
GIBBERA
SL

324
Krk.
KORENNIK
SL

WP

Hfk.
HEFK SL

ethephon 480 g/L

The preparation is intended for use as a plant growth regulator and retardant on plantings of cereal and other agricultural crops.

ADVANTAGES

- **Prevents drowning of cereal crops**
- **Stimulates growth and expansion of the root system, strengthens the stem by reducing the length of internode and increasing stem diameter**
- **Increases the number of productive stems**
- **Has a positive effect of yield volume and quality**
- **Creates favorable conditions for cropping**

Chloroethylphosphonic acid derivatives

5 years

soluble liquid

-10˚C to +35˚C

Hazard Class 3, moderately hazardous substance

canister of 10 L

No phytotoxicity at recommended rates

Mode of action

The product quickly penetrates the plant and accelerates the biosynthesis of ethylene in plant tissues. Ethylene is a plant hormone that regulates many physiological processes in the plant. For example, due to the accumulation of ethylene, the growth of the root system is stimulated and the growth of the stem is inhibited, which leads to shortening of the stem and thickening of the second and third internodes, straw walls, as well as an increase in the number of productive stems.

This feature of ethylene is important in preventing lodging of grain crops. Also, ethylene accelerates the formation and ripening of the crop.

Protective effect period

During vegetation or storage period after treatment.

Rate of exposure

7 to 10 days after treatment.

Compatibility with other pesticides

It is compatible with some other pesticides that do not have alkaline properties and are not inhibitors of ethylene biosynthesis or its action and oxidizing agents. It is incompatible with solutions containing iron, copper, zinc ions and fungicides containing manganese.

Usage regulations

Crop	Purpose	Consumption rate		Method, treatment time, and application features	Safety interval, days (application frequency)
		product, l/ha	working solution, l/ha		
Spring and winter wheat, spring barley, winter and spring triticale, winter rye	Enhanced resistance to drowning, faster ripening, higher yield, better product quality	0.5-1.0	300	Plant treatment at end of tubing stage	-(1)
Tomato	Faster ripening, higher yield of sales fruit	1.5	400-600	Spraying of plants during the beginning of mass ripening (at the phase of milk ripeness of fruits)	5(1)
Common onion	Improved crop safety, reduced sprouting, higher resistance to diseases during storage	3.0-4.5	400-600	Treatment of plants 21 days before cropping	21(1)

Kos.
COSTANDO EC

trinexapac-ethyl 250 g/L

Plant growth regulator for prevention of lodging of grain crops and better productivity and grain quality.

ADVANTAGES

- **Decreases the risk of lodging by decreasing the internodes length and thickening of straw walls**
- **Improves wintering of plants by strengthening the roots and increasing the sugar content in autumn**
- **A wide application window, from tillering to flag development**
- **A possibility of double application on winter wheat, in autumn and in spring**
- **No fitotoxicity**

cyclohexanedione derivatives

5 years

emulsion concentrate

-15˚C to +30˚C

Hazard Class 3, moderately hazardous substance

canister of 5 L

No phytotoxicity at recommended rates

Mode of action

The mode of action of trinexapac-ethyl is based on inhibition of gibberellic acid synthesis by inhibition of 3ß-hydroxylase enzyme. This results in slower cell growth and smaller length of internodes and the plant in general. Promotes the growth of the roots and thickening of straw walls.

Rate of exposure

The active ingredient is mostly absorbed by the assimilating parts of plants within 2 hours and is redistributed in the plant, entering the points of growth. From this moment, the targeted action of the product on the plant starts.

Compatibility with other pesticides

It is compatible with most pesticides applied at the same time. Before using the product, it is necessary to check the physicochemical and biological compatibility of the components.

Usage regulations

Crop	Purpose	Consumption rate		Method, treatment time, and application features	Safety interval, days (application frequency)
		product, l/ha	working solution, l/ha		
Winter wheat	Prevention of lodging, improvement of productivity and grain quality	0.2	150-200	Spraying of plants: first – during the tillering phase, second – during the period from stalk-shooting to flag development	60(2)
Winter rye, spring and winter wheat, spring and winter barley		0.2-0.4	150-200	Spraying of plants during the period from tillering and stalk-shooting to flag development	60(1)

Sl. SALDO SL

6-benzyladenine 20 g/L

Growth regulator of fruit plants (apples, pears) for thinning the ovaries at the early stages of fruit development in intensive gardening systems.

ADVANTAGES

- Enhancing growth and morphogenetic processes
- Increased yields and improved presentation
- Formation of higher quality fruit
- Setting of flower buds for the next year
- Avoiding alternation of fruitful and barren years

cytokinin phytohormone	5 years
soluble liquid	-15˚C to +30˚C
Hazard Class 3, moderately hazardous substance	canister of 5 L
No phytotoxicity at recommended rates	

Mode of action

Chemical thinning of the ovary is the method that allows obtaining high-quality fruits and at the same time provides intensive flowering for the next year. This method also provides good and uniform yields over the years, with the total yields of a well-thinned out garden over several years being higher than those of an unbroken garden.

The process of apple fruit formation lasts 16-18 months and covers two consecutive seasons, starting from the differentiation of the flower buds during their fruiting in the first season till flowering and subsequent fruit ripening in the next year.

Chemical thinning of the ovary helps the tree»s natural tendency regulate the fruit load itself by shedding weaker fruits, thereby promoting the growth of the stronger ones. This enables obtaining the yield of mainly commercial quality. Thinning out the ovaries contributes to better coloring of the fruit, reduces the likelihood of breakage of parts of the tree by the fruitage, helps notice the appearance of pests and diseases, and also prevents the weakening of the tree.

Rate of exposure

24 hours after treatment.

Compatibility with other pesticides

It is not recommended to mix Saldo with other pesticides, growth regulators or fertilizers. It is possible to use the Saldo growth regulator together in tank mixtures with the Gibber growth regulator, but this requires preliminary testing in local conditions.

Usage regulations

Crop	Purpose	Consumption rate		Method, treatment time, and application features	Safety interval, days (application frequency)
		product, l/ha	working solution, l/ha		
Apple tree, pear tree	Thinning out the ovaries at the early stages of fruit development	7.5	800-1000	Spraying of plants at the stage of the "hazel" fruit size (the fruit diameter is 12-14 mm)	-(1)

Gb. GIBBERA SL

gibberellic acids A_4, A_7 10 g/L

Hormonal-type growth regulator to promote fruit formation, accelerate the growth and ripen apple fruits in intensive gardening systems, as well as vegetable crops.

ADVANTAGES

- Stimulates fruit set
- Enhances growth and morphological processes
- Accelerates crop maturation
- Increases yield
- Prevents fruit cracking and color disorders
- Improves marketable appearance and enhances produce quality

phytohormones, diterpene tetracyclic acids	3 years
soluble liquid	-15˚C to +30˚C
Hazard Class 3, moderately hazardous substance	canister of 5 L
No phytotoxicity at recommended rates	

Rate of exposure

Within 5-7 days from the treatment time.

Compatibility with other pesticides

It is not recommended to mix the Gibbera product with other pesticides, growth regulators or fertilizers. It is possible to use the Gibbera growth regulator in tank mixtures together with the Saldo growth regulator, but this requires preliminary tests in local conditions.

Usage regulations

Crop	Purpose	Consumption rate		Method, treatment time, and application features	Safety interval, days (application frequency)
		product, l/ha	working solution, l/ha		
Apple tree	Promotion of fruit formation, intensification of growth and morphogenetic processes, acceleration of ripening, increase in yield. Improving the saleable condition, increasing product quality	0.25-0.5	800-1000	Spraying the plants: 1st spraying, at the end of the flowering stage; 2nd and 3rd spraying, at an interval of 7-10 days	-(3)
Tomato		0.3	300	Spraying of plants: 1st - at the phase of the beginning of flowering of the first brush, 2nd - at the beginning of flowering of the second brush, 3rd - at the phase of the beginning of flowering of the third brush	-(3)
Eggplant (protected soil)		0.3	300	Spraying of plants: 1st - in the phase of budding, 2nd - in the phase of the beginning of flowering	-(2)
Pepper (protected soil)		0.3	300	Spraying of plants: 1st - in the phase of budding, 2nd - in the phase of the beginning of flowering	-(2)
Cucumber (open and protected soil)		0.25	300	Spraying of plants: 1st - in the phase of budding, 2nd - in the phase of the beginning of flowering	-(2)
White cabbage		0.2	300	Spraying of plants: 1st - in the 6-8 leaf stage, 2nd - at the beginning of head formation	-(2)

Krk. KORENNIK WP

4-(indole-3-yl) butyric acid, 5 g/kg

A growth regulator to promote the root formation of cuttings and seedlings of fruit, soft fruit, citrus, flower, and ornamental plants.

ADVANTAGES

- **Stimulates lateral and adventitious root formation**
- **Promotes the development of a vigorous root system, enhances survival rate, and supports further growth of the cutting or seedling**
- **Improves transplant success rate and stimulates growth processes**
- **Enhances the quality of planting material**

auxin phytohormone

3 years

wettable powder

-20˚C to +35˚C

Hazard Class 3A, moderately hazardous substance

packing 5; 10 g; 1 kg bottle 30; 50; 500 g

No phytotoxicity at recommended rates

Rate of exposure

Within 7-10 days from the treatment time.

Usage regulations

Crop	Purpose	Consumption rate		Method, treatment time, and application features	Safety interval, days (application frequency)
		product	working solution		
Fruit, soft fruit, ornamental plants (cuttings)	Promoting rooting, increasing survival ability, improving the quality of planting material	10-20 g per 1,000 cuttings 0.1-0.2 g per 10 cuttings (L)		Dipping premoistened basal cut of the cutting -(-)	-(1)
Fruit, soft fruit, ornamental plants (cuttings, seedlings)	Promoting rooting, increasing survival ability, enhancing the growing processes	1 g pet L of water 1 g per L of water (L)	100 L per 100 plants 1 L per plant (L)	Root soaking for six hours -(-)	-(1)
		1 g pet L of water 1 g per L of water (L)	50 L per 100 plants 0.5 L per plant (L)	Water at the roots 10 days after planting -(-)	
Flower plants (seedlings, young plants)	Promoting rooting, increasing survival ability, enhancing the growing processes, improving decorative qualities	1 g pet L of water 1 g per L of water (L)	1 L per 20 plants 1 L per 20 plants (L)	Watering at the root immediately after planting the young plants -(-)	-(1)

Special-purpose products

Ast.
ASSISTANT

Organic silicone (modified heptamethyltrisiloxane) – above 80%, auxiliary substances

Superwetting agent reducing the surface tension of working solutions.

ADVANTAGES

- **Increases the area of plant coverage with working solution**
- **Improves penetration of the product into the leaf through waxy coating and pubescence**
- **Minimizes product losses during processing due to reduced droplet rebound**
- **Allows reducing the volume of working solution by 20-40% without reducing the treatment efficiency**
- **Improves resistance of the applied solution to washout by precipitation**
- **Increases biological effectiveness of treatment**

liquid	**3 years**
Hazard class 3, moderately hazardous substance	**-15˚C to +35˚C**
No phytotoxicity	**1 L container**

Application method

It is recommended to mix the product thoroughly before use.

Prepare the working solution immediately before use and use it on the day of preparation. Fill the sprayer tank two-thirds full with water and slowly add the full dose of the spraying product and water from rinsing the container while stirring. Make up to 90% of the estimated volume with water, then add Assistant and stir the solution for at least 5 minutes. Make up to 100% of the estimated volume with water.

Perform the treatment with the agitator continuously on, in moderately warm weather and in the absence of strong wind.

It is not recommended to use the product with copper-based formulations, except for the concentration of 0.01–0.02% in cases where copper-based formulations were previously used for spraying.

Prepare the working solution and refill the sprayer at designated places that are to be deactivated later.

Use rod sprayers (Amazone, Lemken, Hardi, OPSh-15-01, OP-2000-2-01 or similar sprayers).

Usage regulations

Crop	Consumption rate product
All crops	15–100 ml of Assistant per 100 l of working solution (0.015–0.1%)

The consumption rate may be increased for dusty plants, plants with strong pubescence or significant wax deposits, or overgrown plants.

Lm.
LAMINAR

Silicone emulsion

A highly efficient silicone emulsion defoamer.

ADVANTAGES

- **Prevents foaming in the working solution tank**
- **Reduces the stability of foam formed during the working solution for pesticides and agrochemicals**
- **Ensures high-performance plant treatment**
- **Compatible with all pesticides and agrochemicals**

emulsion	**3 years**
Hazard class 4, low-hazardous substance	**-15˚C to +35˚C**
No phytotoxicity	**1 L container**

Application method

It is recommended to mix the product thoroughly before use.

Prepare the working solution immediately before use and use it on the day of preparation. Fill the sprayer tank two-thirds full with water and slowly add the full dose of the spraying product while stirring. In the case of foaming, add Laminar defoamer to the sprayer tank in batches while stirring, up to a partial or complete defoaming. Perform the treatment with the agitator continuously on.

In subsequent refilling of the sprayer, Laminar may be added to the water prior to a pesticide and agrochemical.

Prepare the working solution and refill the sprayer at designated places that are to be deactivated later.

Use rod sprayers (Amazone, Lemken, Hardi, OPSh-15-01, OP-2000-2-01 or similar sprayers).

Usage regulations

Crop	Consumption rate product
All crops	5–15 ml of Laminar per 1,000 l of working solution

Select the dose based on the amount of water and product as well as other conditions up to defoaming.

Orthophosphoric acid, acidity indicator, buffer reagents, adjuvant, water

The preparation is intended to regulate acidity and to improve the quality of water used to prepare working solutions of plant protection products and agrochemicals.

ADVANTAGES

- **Improves water quality**
- **Neutralizes water hardness salts and reduces water alkalinity**
- **Improves stability and homogeneity of the working solution**
- **Reduces surface liquid tension due to presence of adjuvant**
- **Increases the overall effectiveness of chemical treatment**

Application method

The consumption rate of the product depends on the pH and hardness of the water used to prepare the working solution, and is 50-180 ml per 100 liters of water.

Before use, you should first select the required dose for the specific water in a separate container using the color scale. The optimal pH of the working solution is between 4.5 and 5.5.

For the calculation you will need the following: 1 liter of analyzed water, a 5 ml medical syringe and a Lacmus canister with a label.

You need to fill a syringe with 3 ml of Lacmus and add it drop by drop to the water. The color of the water will change as the product is added. There is a color scale on the label, according to which you need to bring the color of the resulting solution to yellow. Calculation: to obtain a yellow solution in accordance with the label, we needed 1.7 ml of Lacmus per 1 liter of water. Thus, 100 liters of water will require 170 ml of Lacmus, and 1,000 liters will require 1.7 liters of Lacmus.

5 years

-20˚C to +35˚C

canister of 5 L

Note: When used with fertilizers or agrochemicals that also acidify water, pour water into a separate container, add the required amount of fertilizer or agrochemical, and then determine the rate of consumption of the product. **This sequence is used for calculation purposes only.**

Important! Before preparing working pesticide liquids, Lacmus should be added to the water first, and only then the necessary plant protection products should be added.

Precautions

The product has a strong acidic reaction. Avoid contact with skin, eyes or clothes.

When working with Lacmus, all personnel must be provided with special clothes (coveralls and rubber boots) and individual protection (rubber and cotton gloves, breathing masks, goggles).

Personal hygiene rules are to be observed. During work, it is prohibited to store or eat food. It is not allowed to use the product in household conditions.

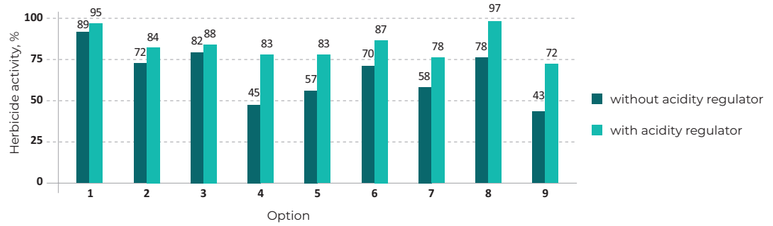
Secondary use of the containers for domestic needs is prohibited.

It is not allowed to discharge the preparation into water bodies or the sewage system.

Lkm.
LACMUS

Efficiency of Lacmus application

The effect of adding the Lacmus acidity regulator at a dose of 50 ml/ha to various natural water samples on the level of biological activity of Sprut Extra, SL at a dose of 0.125 l/ha for sunflower test plants (Artificial Climate Laboratory, ACI)



Option	Region	Water hardness*, mg-eq/l $CaCO_3$	pH
1.	Moscow region (Artificial Climate Laboratory of the All-Russian Research Institute of Phytopathology). Water from an artesian well (purified through an ion exchange column)	0,1	5,6
2.	Vyselkovsky district, Krasnodar Territory. Pond water	0,6	7,2
3.	Stavropol. Irrigation systems	3,3	7,9
4.	Zainsky District, Tatarstan. Artesian water	5,5	8,1
5.	Mordovian District, Tambov Region. Artesian water	6,15	7,6
6.	Moscow region (Artificial Climate Laboratory of the All-Russian Research Institute of Phytopathology, field). Water from an artesian well	6,4	7,3
7.	Zainsky District, Tatarstan. River water	7,95	7,8
8.	Kaibitsy District, Tatarstan. Pond water	8,0	8,0
9.	Lebedyansky District, Lipetsk Region. Artesian water	14,5	7,3

Laboratory trials

Research conducted by academician Yu. Ya. Spiridonov (All-Russian Research Institute of Phytopathology) to study the influence of water hardness and pH using the herbicide Sprut Extra based on glyphosate acid allow us to reliably state the following:

• Water with a high level of hardness reduces the biological effectiveness of the herbicide working solution under the ACI conditions from 36% to 2- of 3-fold compared to the reference option.

• Adding the acidity regulator Lacmus to the water used for preparing working fluids enhances the biological effect of destroying weeds from 32% to 2-fold depending on the level of initial water hardness.

Field results

• Republic of Tatarstan: when using very hard water in the sugar beet processing scheme with the Lacmus acidity regulator, the working fluid was stable for a long time, and the visual herbicidal effect 3 days after treatment was significantly higher.

• Omsk Region: in a region with very hard water, the use of glyphosate-based herbicides was difficult due to clogging of sprayers. Adding the Lacmus acidity regulator while simultaneously reducing the application rate to the minimum possible allowed us to eliminate the problem and increase the efficiency of herbicide use.

• Orenburg Region: the use of the Lacmus acidity regulator to improve water quality when preparing the working solution of the Sprut Extra herbicide provided an increase in biological efficiency by 20-30%.

Mkd. MIKADO EC

mixture of fatty acid methyl esters 842 g/L, excipients

Non-ionogenic adjuvant based on vegetable oil derivatives to improve the biological efficiency of treatment.

ADVANTAGES

- **Promotes uniform wetting of the leaf surface**
- **Reduces the evaporation rate of drops, prolonging the contact of the product with a harmful object**
- **Keeps the active substance semi-liquid, preventing crystallisation on the leaf**
- **Improves absorption of the product by leaves with a thick waxy layer**
- **Improves the stability of working solution**

emulsion concentrate	**3 years**
Hazard class 3	**-15˚C to +35˚C**
No phytotoxicity	**canister of 10 L**

Application method

It is recommended to mix the product thoroughly before use.

Prepare the working solution immediately before use and use it on the day of preparation. Fill the sprayer tank one-thirds full with water and slowly add the full dose of the spraying product and water from rinsing the container while stirring. Then add Mikado, EC and stir the solution for at least 5 minutes. Make up to 100% of the estimated volume with water. Perform the treatment with the agitator continuously on, in moderately warm weather and in the absence of strong wind.

Usage regulations

Crop	Consumption rate product
All crops	100–500 ml of Mikado, EC per 100 L of working solution (0.1–0.5%)

St. SATELLITE L

isodecyl alcohol ethoxylate 900 g/L

Surfactant. It is used as an additive (wetting agent and biological activator) to herbicides.

ADVANTAGES

- **Reduces surface tension of herbicide working solution**
- **Improves coverage of leaves with the working solution of preparations**
- **Helps increase herbicide effectiveness**

liquid	**5 years**
Hazard class 3, moderately hazardous substance	**-10˚C to +35˚C**
No phytotoxicity	**canister of 5 L**

Application method

Prepare the working solution immediately before use. Measure the required amount of herbicide for one filling of the sprayer. To prepare the stock solution, fill a container (bucket, tank) a quarter full with water, add a measured amount of herbicide, mix and add water to three quarters of the volume, then add the required amount of surfactant (Satellite, L) and mix thoroughly. Next, the sprayer tank is filled halfway with water, the prepared stock solution of herbicide with a surfactant is poured into it, the container in which the stock solution was prepared is washed several times, water is added to the tank until the full volume is filled, and the working liquid is mixed with mechanical stirrers. During spraying, the sprayer hydraulic agitator must be turned on. The final working solution should be used immediately after preparation. After treatment with the herbicide, rinse the sprayer tank thoroughly with water and soda ash.

Usage regulations

Crop	Consumption rate product	Особенности применения препарата
Maize, spring barley (including malting barley), winter barley, spring wheat, winter wheat, sugar beet, sunflower	0.2 L/ha	It is used as an additive to herbicides on appropriate crops Kassius, SP, Kondor, WG, Granat, WG, Glock, WG Kupazh, WG, Ovsugen Express, EC, Ovsugen Super, EC Sanflo, WG *according to the regulations of the State Catalog.*

Slf.
SELFI

Cellulose derivative, auxiliary substances and water

The tool is designed for use as a glue that prevents cracking of pods of rapeseed, soybean, peas by creating pods on the surface of the polymer membrane.

ADVANTAGES

- **Creates a permeable film that does not interfere with natural maturation of the seeds**
- **Has a long efficiency, resistant to adverse weather conditions (heat, wind, rain, sunlight)**
- **Contributes to the preservation of the full potential of the crop**
- **Reduces losses during harvesting and reduces the cost of post-harvest revision**
- **Biodegradable, has low toxicity to humans and the environment**
- **Convenient in application, easily soluble in water**
- **Is not phytotoxic**
- **Significantly reduces the problems associated with previous rape**

soluble liquid

3 years

Hazard class 4, low-hazard substance

-5˚C to + 35˚C

No phytotoxicity

canister of 10 L

Aerial spraying is allowed

Warning! Do not leave the solution in the tank or sprayer after use. Wash the equipment thoroughly after treatment. If the treatment is necessary for several days in a row, be sure to fill the tank with water and rinse the nozzles at the end of each day.

Application method

The product is an aqueous solution of cellulose derivative, additionally contains auxiliary components. Creates on the surface of the pods of a film which prevents them from cracking. Unlike similar medications Selfi works even in the absence of sunlight, creates on the surface of the fruit permeable membrane preventing the natural ripening and drying of seeds.

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	product, L/ha	working liquid, L/ha	
Rapeseed, soybeans, peas	1,0 1,0(A)	200-400 50-80(A)	Spraying 10-12 days before harvest

(A) – aerial application

Ut.
UTILITA

NEW

Surfactants, alkaline agent, complexing agent, water

This is a product for washing and cleaning agricultural equipment after using pesticides and agrochemicals

ADVANTAGES

- **High-quality washing and cleaning of agricultural machinery and equipment after the use of pesticides and agrochemicals**
- **It can be used to clean many types of equipment**

3 years

-30˚C to +40˚C

canister of 5 L

Application method

Cleaning the sprayer:

1. Thoroughly wash the inside walls of the sprayer tank with clean water. After washing, drain the water under pressure in spray mode. WARNING! There may be pesticide residues!

2 .Remove filters, end caps, nozzle screens and injectors.

3. Fill the sprayer tank halfway with water, turn on the mixer and add the required amount of Utilita. Add water to full volume. Rinse the canister with the remaining product several times with water and pour the water into the sprayer tank. Continue stirring for at least 10 minutes.

4. To distribute the cleaning solution throughout the entire hose and tube system, set the sprayer to spray mode for 5 minutes. The cleaning solution should remain at least half the volume of the tank.

5. Let it settle for 30 minutes (in case of heavy soiling, increase the soaking time to several hours). Then drain the cleaning solution in spray mode.

6. Thoroughly wash the inside walls of the sprayer tank with clean water. After washing, drain the water under pressure in spray mode.

To clean the sprayer after using sulfonylureas and imidazolinones, proceed as follows:

1. Carry out the sprayer cleaning procedure (steps 1-5)

2. Repeat steps 3-5.

3. Thoroughly wash the inside walls of the sprayer tank with clean water. After washing, drain the water under pressure in spray mode.

Cleaning the injectors and nozzle filters is carried out as follows:

1. *Prepare a cleaning agent solution:* fill a separate container with water, then add the Utilita cleaning agent at the rate of 15 ml per 10 liters of water, then mix it thoroughly;

2. Soak the nozzles and nozzle filters in the prepared cleaning solution for 30 minutes. In case of heavy contamination, increase the soaking time to several hours.

3. Drain the cleaning agent solution. Rinse nozzles and nozzle filters with running water

Consumption rate product

0.4-0.5 L of the product per 1000 L of water (0.04-0.05%)

substances of natural origin, auxiliary components and water

A product to protect plants from solar radiation

ADVANTAGES

- **Disperses ultraviolet rays, thus decreasing sunburns in plants**
- **Prevents overheating of plants by reflecting IR radiation**
- **Enhances the efficiency of moisture use, supports turgor**
- **Improves vegetative growth and development of plants, increases crop yield and products quality**

water suspension	**2 years**
Hazard class 3, moderately hazardous substance	**-15˚C to +35˚C**
No phytotoxicity	**canister of 10 L**

Application technique

Warning! Perform the treatment with the agitator continuously on. **Do not switch the agitator off until the tank contents are fully used!** When using hand-held and backpack sprayers that are not equipped with mixing devices, regularly shake the tank with the working solution to avoid stratification of the suspension.

- **Do not use the product in a tank mixture with pesticides and agrochemicals!**
- **The period between pesticide treatment and use of the Furshet product must be at least 7 days!**
- **Do not apply the product to plants pre-treated with pesticides!**
- **Do not use in sunny weather!**
- **Do not use acidifying agents for working solutions!**

After harvesting, before packaging for fresh consumption or storage, remove product residues using industrial washing equipment or manually.

Frsh.
FURSHET

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	preparation, l/ha	working solution, l/ha	
Cereal crops	1-3	200-300	Plant spraying at the booting — flag leave appearance stage. Repeat in 7-10 days if necessary and in dry, hot and sunny weather.
Leguminous crops	1-3	200-300	Plant spraying at the vegetation stage. The first treatment at the stage of 6-8 leaves. Further treatments with an interval of 7-14 days.
Sugar beet	2-5	200-300	Plant spraying at the vegetation stage. The first treatment at the stage of 8-10 leaves. Further treatments with an interval of 7-14 days.
Potato	2-5	200-300	Plant spraying at the vegetation stage. The first treatment at the stage of leave development (until crop closing). Further treatments with an interval of 7-14 days.
Fruit and nut crops: apple, pear, plum trees, citrus plants, cherry, pomegranate, pistachio, walnut trees, etc.	10-30	800-1000	Plant spraying at the vegetation stage. The first treatment 3-10 days before hot sunny weather at the early stages of fruit development. Pomaceous crops to be treated before the fruit is 15-20 mm in size. For nut crops treatment at the early stages of nut (fruit) formation. Further treatments with an interval of 7-14 days.
Vineyards, small fruit	10-30	600-1000	Spraying sensitive crops at the vegetation stage. Once or twice per season at the beginning of fruit growth and at the beginning of fruit ripening. Vineyards: The first treatment at fruit size 5-7 mm. The second treatment at the beginning of fruit ripening. The third treatment in 21-28 days, if necessary.
Vegetable and cucurbitaceous crops, cotton	2-10	200-300	When planting seedlings. One treatment before or immediately after the seedlings planting. Spraying crops during vegetation. The first treatment during full blossom or a while after full blossom. Further treatments every 14-28 days, if necessary, or after the first harvest.
Flower and decorative crops, including bushes	5-20	200-300	When planting seedlings. One treatment before or immediately after the seedlings planting. Spraying plants at the vegetation stage. The first treatment 3-10 days before the beginning of solar stress. Further treatments every 21-28 days or as may be necessary.
All crops	10-50	200-300	Soil spraying every 28-42 days. Treatment frequency as may be necessary. To reduce soil temperature or to prevent its overheating.

Microbiological products

Organomineral fertilizer

Amino acid biostimulants

Foliar fertilizers with micro- and macronutrients

NPK AZAFOK

NEW

A consortium of agriculturally valuable strains of several beneficial bacterial species in a culture liquid, with a total titre of at least 1×10⁹CFU/cm³

A liquid microbiological fertilizer to improve nitrogen, phosphorus, and potassium nutrition

Hazard class 3, moderate hazard substance

24 months

canister of 10 L

+4˚C to +25˚C

ADVANTAGES

- **Improves the supply of key nutrients: nitrogen, phosphorus, and potassium**
- **Wide range of application: soil treatment before seeding, seed and planting material treatment, foliar dressing during the growing period**
- **Compatible with chemicals, including seed treatments and other plant protection products, without loss of activity**
- **Growth-stimulating effect**
- **Fungicidal and bactericidal properties**
- **Retains all properties during long-term storage**
- **Can be used for outdoor and indoor growing, in all soil types**

Product specificatios

The product is based on a consortium of commercially valuable strains of three spore-forming bacteria species:

Bacillus aryabhattai BR4 (RNCIM B-13579),

Paenibacillus polymyxa RNCM B-747,

Paenibacillus mucilaginosus 27 (RNCIM B-13582).

Total number of viable microbial cells: not less than 1×10⁹ CFU/mL.

The bacterial strains in the product have nitrogen-fixing, potassium and phosphate-mobilizing, as well as antagonistic activity against pathogens.

Product application features

When preparing tank mixtures, Azafok should be added to the working solution last. Before preparing tank mixtures, it is essential to check the physical and chemical compatibility of the components.

Usage regulations

Crop	Consumption rate	Method, time and features of application
All crops	2–4 L/ha Working solution consumption: 200–300 L/ha	Application to the soil in spring, before seeding (planting)
Grain crops, legumes, technical crops, forage crops	1–2 L/t Working solution consumption: 5–30 L/t	Pre-sowing (pre-planting) seed (planting material) treatment
Vegetables, melons and gourds, fruit and berry crops, flower and ornamental plants	70–200 mL per 1 L of water	Soaking of seeds (planting material) before seeding (planting) for 20–30 minutes
Grain crops, legumes, technical crops, forage crops	1–3 L/ha Working solution consumption 50–300 L/ha	Foliar application 1–3 times throughout the growing period
Vegetables, melons and gourds, flower and ornamental plants, potato	1–3 L/ha Working solution consumption 300–800 L/ha	Foliar application 1–3 times throughout the growing period
Fruit and berry crops, grapes	1–3 L/ha Working solution consumption 800–1,000 L/ha	Foliar application 2–3 times throughout the growing period

Bkd. BIOCOMPOSITE DESTRUCT

A consortium of agriculturally valuable strains of several beneficial bacterial species in a culture liquid, with a total titre of at least 1×10⁹CFU/cm³

A microbiological degrader for accelerated decomposition of stubble remains after harvesting

Hazard class 4, low-hazard substance

24 months

canister of 10 L

+4˚C to +25˚C

ADVANTAGES

- **Provides quick decomposition of stubble and organic remains in soil**
- **Efficient both when applied before sowing (planting) and after harvesting crops**
- **Retains activity in case of drought**
- **It has a recurrent activity when favorable conditions for reproduction of bacteria, which will persist in the soil for a long time, occur**
- **Reduction of spread and development of diseases caused by soil phytopathogens**
- **It possesses growth-stimulating activity.**
- **Improvement of nutrition regime in the root zone of plants**

Product specificatios

The product is based on a consortium of valuable strains of three spore-forming bacteria:

Bacillus amyloliquefaciens (BIM V-842 D),

Bacillus mojavensis (VKPM V-13580),

Paenibacillus polymyxa RNCM B-747.

The total number of viable microbial cells is at least 1×10⁹ CFU/mL

Mode of action

The product is based on spore-forming bacteria with high destructive, fungicidal, and growth-stimulating properties. Active degradation of plant residues is achieved through the synthesis of a complex of lytic enzymes such as cellulase, endo-1,4-β-glucanase, protease, amylase, and others by the producing strains.

In addition to its destructive properties, the product has antagonistic effects due to the synthesis of antibiotic substances and is capable of actively suppressing the growth of phytopathogenic microorganisms, while also stimulating plant growth and increasing yield.

Product application features

To prepare the working solution, fill the sprayer tank about two-thirds full with non-chlorinated water, start the mixing device, add the required amount of the fertiliser, bring to the estimated volume with water, mix the solution and perform the treatment. Spraying of soil with stubble remains of the previous crop shall be performed immediately before the soil treatment (plowing, cultivation, etc.). To stimulate the decomposition of stubble and plant residues, ammonium nitrate or urea (urea) can be added in amounts of 210 kg/ha of active ingredient. The minimum nitrogen rate is recommended for treating cereal straw, while the maximum rate is for treating sunflower post-harvest residues.

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	preparation, l/ha	working liquid, l/ha	
All crops	1,0-3,0	200-300	Spraying of soil and shredded or non-shredded plant residues after harvesting previous crops or before sowing (planting). After the spraying, the time for starting work at the treated areas shall be set: one day for manual mechanised work.

Consortium of various bacterial strains, total titer not less than 1×10⁹ CFU/mL

This microbiological product is suitable for all farming systems and all stages of crop rotation.

ADVANTAGES

- **It promotes the accelerated breakdown of straw and mineralization of crop residues**
- **It improves soil health by suppressing plant pathogenic microflora and enhancing its suppressive ability**
- **It assimilates atmospheric nitrogen and mobilizes phosphorus bound in the soil, converting it into a form that plants can absorb**
- **It is a key component of the EcoPlus system**
- **Stimulates growth and development of plants**
- **It is especially recommended for short crop rotations and when the crop rotation is saturated with cereal crops, maize, and sunflowers**

Hazard class 4, low-hazard substance

12 months

canister of 10 L

+4˚C to +10˚C

Mode of action

1. Biodegrading bacteria produce enzymes that break down cellulose, straw, and the lignin in post-harvest residues.

2. Antagonistic bacteria produce biofungicides that inhibit pathogenic microflora.

3. Nitrogen-fixing bacteria assimilate atmospheric nitrogen into a form that plants can absorb.

4. Phosphate-mobilizing bacteria release bound phosphorus, converting it into a form that plants can easily absorb.

5. Bacteria produce growth-stimulating substances.

Product application features

The product is packaged in factory-sterilized containers.

Before use, check the product's expiration date and shake the container well.

Once the package is opened, the product and prepared working solution should be used on the same day. Prepare the working solution immediately before use. Use non-chlorinated water for preparing the working solution, and avoid exposure to direct sunlight.

When preparing tank mixtures, Biocomposite Correct should be added to the working solution last. Before preparing tank mixtures, it is essential to check the physical and chemical compatibility of the components.

Seed and planting material treatment

Pre-sowing treatment of seeds and planting material is done using machines and equipment designed for seed and planting material treatment or by hand tools.

The treatment should be carried out in warehouses or under cover. During transportation, cover the seeds with a tarpaulin to protect them from direct sunlight.

The product is compatible in tank mixtures with fungicidal seed treatments such as *Tebu 60, ME; Scarlet, ME; Polaris, ME; Benefis, ME*, and others, insecticidal treatments such as Imidor Pro, SC, and others, and with fertilizer-bio-stimulants for seed treatment like Biostim Start.

In tank mixtures, the recommended dosages of chemical seed treatments and Biocomposite Correct are used.

When using Biocomposite Correct with chemical seed treatments, the tank mixtures should be used within 46 hours of preparation. For maximum effectiveness, seeds should be sown on the same day they are treated.

Spraying of plants

Spray plants using any commercially available sprayer in the morning or evening. Spraying with Biocomposite Correct can be combined with chemical fungicides, insecticides, leaf fertilizers, and biostimulants. To increase the efficiency of Biocomposite Correct when used individually, you may add 5 kg of urea (carbamide) by weight to the working solution.

Bkk.
BIOCOMPOSITE CORRECT

Soil treatment

Soil treatment is performed by spraying the soil in the spring before sowing/planting or during the summer and fall after harvest. Spraying should be done using any commercially available sprayers, preferably in the morning or evening, on cloudy days, avoiding high temperatures and direct sunlight. Spraying the soil with crop residues from the previous harvest should be done immediately before the first or second discing.

After application, the product must be immediately incorporated into the soil using disc harrows or cultivators.

The time between application and incorporation should be minimized. The preparation is incorporated into the soil with plant residues to a depth of 510 cm to ensure good aeration conditions.

Biocomposite Correct can be used with soil herbicides.

To stimulate the decomposition of stubble and plant residues, ammonium nitrate or urea (urea) can be added in amounts of 210 kg/ha of active ingredient. The minimum nitrogen rate is recommended for treating cereal straw, while the maximum rate is for treating sunflower post-harvest residues.

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	preparation, l/ha, l/t	working liquid, l/ha, l/t	
Cereal and leguminous crops, potatoes	1,0-2,0	5-30	Pre-sowing treatment of seeds (planting material)
Cereal and leguminous crops, maize, sunflower, sugar beet, potatoes, vegetables, fruit, berry crops, grapes	1,0-3,0	200-800	Foliar application during the growing season 1-3 times
All crops	1,0-3,0	200-300	Application to the soil in the spring before planting the crop, or in the summer-fall period after harvesting the crop with immediate incorporation into the soil

Bradyrhizobium japonicum – 10^9-10^{10} CFU/ml

Highly effective liquid inoculant for soybean seed treatment and application to the soil during sowing

ADVANTAGES

- **A pure culture of the most effective strain of a specialised soybean bacterium**
- **High bacterial titre: 10 bln per 1 ml**
- **Wide range of sowing time: up to 90 days after inoculation**
- **Long shelf life**
- **Providing soybean with nitrogen in the most critical phases of development**
- **Increased yield and protein content**
- **Increased soil fertility and activation of soil microflora**
- **Positive impact on the crops in crop rotation**

Hazard class 4, low-hazard substance

6-18 months

3 L

+4˚C to +10˚C

Mode of action

Bradyrhizobium japonicum is the most effective strain of symbiotic nitrogen-fixing bacteria. It promotes the formation of nodules on the soybean root system, which fix atmospheric nitrogen and convert it into a form available to the crop.

Rizoform Soybean liquid inoculant provides high quality of inoculation because of better adherence of the product to the seeds and high ability of bacteria to be retained on the seed surface during transportation and sowing. The liquid formulation protects bacteria and increases their survival.

Static stabiliser adhesive allows bacteria to survive on the seed surface for an extended period of time, increasing the efficacy of inoculant treatment. Thus, it is recommended to use Rizoform Soybean together with Static.

Inoculation of seeds

For the inoculation of soybean seeds, mix Rizoform Soybean microbiological fertiliser with Static stabiliser adhesive in a ratio of 1:1 in the calculated amounts provided for by the product application procedure. Prepare the mixture immediately before use. Store the mixture for not more than 6 hours after preparation. Ensure thorough control of the accuracy of dosages and the ratio of inoculant and stabiliser adhesive. Insufficient amount of the stabiliser adhesive may result in insufficient protection of bacteria and lower efficacy of inoculation. Excessive amount of the stabiliser adhesive may result in excessive seed moisture and formation of lumps.

Compatibility with other products

Rizoform Soybean microbiological fertiliser is compatible with most biological products (biofungicides, bioinsecticides, etc.), agrochemicals based on humic compounds, macro- and micronutrients. Rhizoform Soya is also compatible with fungicide seed treatments such as Poirot, KS, and with non-corrosive chemical seed treatments like Fundazol, Maxim, and Benomyl. Not recommended: for use in tank mixtures with strongly alkaline and strongly acidic products.

Rizs.
RIZOFORM SOYBEAN

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	preparation, l/t	working liquid, l/t	
Soybean	1,5-1,8 + stabiliser adhesive – 1,5-1,8	10-20	Pre-sowing seed treatment (on the day of sowing) together with Static stabiliser adhesive in a ratio of 1:1
			Pre-sowing seed treatment performed in advance (30-90 days before sowing) together with Static stabiliser adhesive in a ratio of 1:1
	0,3-0,5 L/ha	45-55 L/ha	Application to the soil during sowing

**Static (stabiliser) is included in the kit.*

Effectiveness of Rizoform Soybean application

1.

2.

Result of seed treatment with Rhizoform Soybean inoculant.

3.

4.

Rhizobium leguminosarum D70 2-3×10⁹ CFU/mL, carbohydrates - 0.5%, salts - 0.1%, water - up to 100 mL, pH - 6.5-7.4

Liquid microbiological fertilizer for the treatment (inoculation) of pea, vetch, bean, and lentil seeds before sowing, in advance of sowing, or application in the furrow during sowing.

Hazard class 4, low-hazard substance

2 years

3 L

+4˚C to +25˚C

ADVANTAGES

- **The possibility of inoculation of pea, vetch, bean, and lentil seeds in advance of sowing (5-15 days before sowing)**
- **Savings of mineral fertilizers due to symbiotic nitrogen fixation providing up to 70-80% of nitrogen required for the plants**
- **Nitrogen flow into the plant as necessary and its maximum provision in the critical crop development phases**
- **Increased fertility and activation of soil microflora due to biological nitrogen**
- **Increased productivity of pea, vetch, beans, and lentils, increased protein content in the crop**
- **Positive impact on the crops in crop rotation**

Mode of action

Inoculation of pea, vetch, bean, and lentil seeds with an effective strain of symbiotic nitrogen fixing bacteria promotes the formation of nodules and provides plants with nitrogen nutrition in the critical phases of development.

The liquid inoculant of Rizoform Pea provides a guaranteed quality of inoculation due to the better adherence of the product to the seeds and a high ability of bacteria to be retained on the seed surface during transportation and seeding. The liquid formulation protects bacteria and increases their survival

Usage regulations

Crop	Consumption rate		Method, treatment time, and application features
	preparation, l/t	working liquid, l/t	
Pea, vetch, faba bean, lentil	1,0-3,0	5-10	Pre-sowing treatment of seeds (on the day of sowing)
	1,0-3,0 + stabilizer adhesive – 0,28-0,85	5-10	Pre-sowing treatment of seeds (chemical protectors not used) in advance (15 days prior to sowing) with Static stabilizer adhesive supplementation
	2,0-3,0 + stabilizer adhesive – 0,57-0,85	10	Pre-sowing treatment of seeds (chemical protectors used) in advance (15 days prior to sowing) with Static stabilizer adhesive supplementation
	0,3-0,6 l/ha	45-55 l/ha	Application to the soil during sowing (simultaneously with the seeds)

**Static (adhesive stabilizer) is included as part of the kit.*

Rizg.
RIZOFORM PEAS

Application Guidelines for Rhizoform Soybean and Rhizoform Peas inoculants.

Static adhesive stabilizer

An aqueous concentrated suspension containing a blend of natural hydrocarbons, this product is designed for use in conjunction with the microbial inoculants Rizoform Soybeen or Rizoform Peas. Static allows for early inoculation in accordance with the regulations for use: It ensures the preservation of viable bacteria on the seed surface for an extended period and improves seed planting qualities, specifically germination energy and rate.

Seed treatment technology

Seed treatment should be performed using the following machines: PSSh-5, PS-10A, Mobitox Super, PS-30, KPS-10, KPS-20, KPS-40, PUM-30, UMOP-30, UMOP-20, PKM-140, PKS-20 or other machines for seed treatment. Centrifugal machines for seed treatment (Petkus CM, Cimbria Centricoater, etc.) can be used as well.

In case of manual treatment, the seeds are placed on a tarpaulin (polymer) sheet and sprayed with a working solution of fertiliser, followed by mixing the seeds for uniform moistening and distribution of the microbiological fertiliser.

Use non-chlorinated water to prepare the working solution. Start the mixing device, add the required amount of the fertiliser and stabiliser adhesive to the dressing machine tank, bring to the estimated volume with water, mix the solution and perform the treatment. During seed treatment using centrifugal machines, the consumption rate of the working solution should be calculated in accordance with the machine's operating manual.

Inoculation of seeds is recommended to be performed in a place protected from direct sunlight. The treated seeds should be protected from direct sunlight and high temperatures.

The equipment used for applying the microbial inoculant to seeds must be thoroughly cleaned of any residual pesticides. For legumes, chemical seed treatments for pest and disease control must be applied prior to the microbial inoculant application: first, treat the seeds with pesticides, air dry them, and then treat the seeds with the microbial inoculant.

Application of the fertiliser working solution in the furrow during sowing (simultaneously with the seeds).

When applying fertilizer to the furrow during sowing seeds, it is recommended to install additional equipment on the seeder, equipment consisting of a tank with a mixer for the inoculum and water to ensure the solution homogeneity, electric pump, dispensing device, and the pipes that direct the solution to the furrow. The correct dosage is achieved by adjusting the dispenser. The volume of the tank depends on the area at which the fertiliser will be applied.

Do not store the open commercial packages with Rizoform Soybeen or Rizoform Peas and the Static adhesive stabilizer.

Suf.
POTASSIUM HUMATE SUFLER

Grade SL 20%.
The minimum mass fraction of organic matter is 11%, with potassium ranging from 2.0-3.5%

An organo-mineral fertilizer based on humic acids.

ADVANTAGES

- **Enhances plant resistance to diseases.**
- **Increases both germination energy and the rate of seed germination.**
- **Mobilizes and improves the plant's immune response.**
- **Stimulates the growth and development of a vigorous plant root system.**
- **Increases crop yield**

Hazard class 3, moderate hazard substance

5 years

canister of 10 L

-20˚C to +30˚C

Product application features

Preplant seed treatment for cereals, legumes, potatoes, and industrial crops is recommended to be carried out using commercial seed treating equipment.

In-soil fertilizer applications are recommended using drip irrigation systems and sprinkler systems.

Foliar fertilizer applications are done using commercially available ground boom sprayers.

Soaking seeds of vegetable, melon, flower, and ornamental crops is done using containers specifically designed for this purpose.

Preplant seed treatment and plant feeding applications can be performed alone or in tank mixtures with single-component or complex mineral fertilizers or pesticides.

Suf.
POTASSIUM HUMATE SUFLER

Usage regulations

Crop	Consumption rate		Method, time and features of application
	preparation, l/t, l/ha	working liquid, l/t, l/ha	
All crops	10-20	800-1000	Soil treatment before plowing (cultivation)
Cereals	0,3	10	Pre-planting seed treatment
Cereal, grain legume, industrial, and oilseed crops	0,5-1,3	10	Pre-planting seed treatment
Potato	1,0	40	Pre-planting tuber treatment
Vegetable, vine flower and decorative crops	100-125 ml/kg	1 l/kg	Seed soaking for 24 h
Cereal crops	0,25-0,3	50-300	Foliar dressing at tillering – start of tubing stage, and at blossoming – start of milky ripeness stage
Maize	0,25-0,3	50-300	Foliar dressing at emergence – 3-5 leaves stage and at paniculation – blossoming stage
Rice	0,25-0,3	50-300	Foliar dressing at tillering – start of tubing stage, and at blossoming – start of milky ripeness stage
Sugar beet	0,25-0,3	50-300	Foliar dressing at 2-3 leaves pairs stage and 4 leaves pairs stage
Soybeans	0,25-0,3	50-300	Foliar dressing at start of blossoming and in 10-15 days
Potato	0,25-0,3	50-300	Foliar dressing at 5-7 leaves stage and budding stage
Sunflower	0,25-0,3	50-300	Foliar dressing at 3-4 leaves stage and every 10-15 days
Vegetable crops	0,25-0,3	50-300	Foliar dressing after transplantation or at 2-3 leaves stage (for field-seeded method) and every 10-20 days
Edible roots	0,25-0,3	50-300	Foliar dressing at 2-3 leaves stage and every 10-20 days
Cabbage	0,25-0,3	50-300	Foliar dressing in 3-5 days after transplantation and every 10-12 days
Melon crops (water melon, melon, etc.)	0,25-0,3	50-300	Foliar dressing at 2-3 leaves stage (for field-seeded method) and every 10-20 days

BIOSTIM Start
BIOSTIM Growth
BIOSTIM Universal

BIOSTIM Cereals
BIOSTIM Beet
BIOSTIM Oilseed
BIOSTIM Maize

The Biostim series of organo-mineral multi-component fertilizer-biostimulants based on amino acids, macro- and microelements designed to counteract and alleviate stress loads on crops under challenging weather conditions.

ADVANTAGES

- **Have a strong anti-stress action**
- **Powerful activators of metabolic processes in plants**
- **Balanced composition of macro- and microelements**
- **Contain free amino acids of plant origin, which function as natural chelating agents**
- **High degree of nutrient uptake and effectiveness**

Composition of amino acid biostimulants, %

BIOSTIM	Start	Growth	Universal	Cereals	Beet	Oilseed	Maize
Free amino acids of plant origin, %							
	5,5	4,0	10,0	7,0	6,0	6,0	6,0
Polysaccharides, %							
	7,0						
A complex of essential mineral nutrients, %							
N	4.5	4.0	6.0	5.5	2.5	1.9	7.0
P_2O_5	5.0	10.0		4.0			
K_2O	2.5		1.3	4.0			
MgO	1.0	2.0		2.0	1.5	3.0	2.0
SO_3		1.0	5.0	2.5	2.5	8.0	6.0
Fe		0.4		0.3	0.03	0.01	0.3
Mn	0.2	0.2		0.7	1.0	1.0	0.2
Zn	0.2	0.2		0.6	0.3	0.2	0.9
Cu	0.1			0.4	0.03	0.01	0.2
B	0.1	0.1		0.2	0.3	0.7	0.3
Mo	0.01			0.02	0.02	0.04	0.02
Co				0.01		0.02	0.02

BIOSTIM Start

- **Energizer and seed germination stimulator**
- **Accelerated root system formation**
- **Improving seedling establishment and minimizing post-transplanting stresses**

This product is intended for pre-plant (pre-sowing) treatment of seeds for cereals, legumes, industrial crops, oilseeds, vegetables, and flower and ornamental crops, for pre-plant treatment of potato tubers, as well as for soil dressing during the cultivation and transplanting of seedlings or starts, and for soil dressing of berry crops, fruit trees, vineyards, and ornamental trees and shrubs.

Consumption rates

0.5-1.2 L/t – preplant seed treatment

0.6-0.8 L/t – potato tuber pre-planting treatment

10-20 mL/kg – soaking seeds of vegetable and flower and ornamental crops before planting

1.0-5.0 L/ha – soil dressing of vegetable, flower and ornamental, and berry crops

2.0-7.0 L/ha – soil dressing of fruit trees, vineyards, and ornamental trees and shrubs during the bud break period.

BIOSTIM Growth

- **High phosphorus content**
- **Photosynthesis activator**
- **Vegetative growth stimulant**

It is intended for foliar application in all crops at the beginning of spring growth, particularly under unfavorable weather conditions, such as a prolonged spring or following late-season frosts, as well as on weakened or damaged crops after wintering.

Consumption rates

0.5-3.0 L/ha – foliar application in all crops at the start of the growing season 12 times with a 7-10 day interval.

BIOSTIM Universal

- **Multi-purpose bio-stimulating anti-stressant with increased content of free amino acids**
- **Effective prevention of stress and its consequences**
- **Rapid restoration of plant leaf apparatus and activation of growth processes after stress**

It is intended for foliar application in all crops throughout the entire growing period to stimulate vegetative growth, provide protection from abiotic and chemical stresses, increase disease resistance, and aid in the regeneration or restoration of plant leaf tissue and activate growth processes following mechanical damage like hail or waterlogging or temperature damage such as freezing.

Consumption rates

0.5-5.0 L/ha – foliar application in all crops during the growing season 15 times with a 7-14 day interval.

More details

BIOSTIM CEREALS

Biostimulant fertilizer with microelements for cereals crops

It is designed for foliar application in winter (spring) wheat, winter (spring) barley, oats, rice, and other cereal crops, as well as annual and perennial cereal grasses to maintain nutrient balance during the growing season, protect against abiotic stresses, restore productivity after stress, increase disease resistance, and improve the quantity and quality of the yield.

Consumption rates

0.5-2.0 L/ha – foliar application during the 2-3 leaf stage, at the tillering/tube emergence phase, and in the earing (panicle emergence)/flowering phase

BIOSTIM BEET

Fertilizer-bio-stimulant with microelements for sugar beets, table beets

It is designed for foliar application in sugar beet and table beet during the growing season to maintain nutrient balance, protect against abiotic stresses, restore productivity after stress, increase disease resistance, and improve the quantity and quality of the yield.

Consumption rates

0.5-2.0 L/ha – foliar application, starting from the seedling phase to the 2 true leaf stage with an interval of 7-14 days (up to 4 times).

BIOSTIM OILSEED

Fertilizer-bio-stimulant with microelements for oilseed, legume crops

It is designed for foliar application in spring (winter) rapeseed, turnip, false flax, sunflower, leguminous crops, leguminous grasses, long-flax, and oilseed flax during the growing season to maintain nutrient balance, protect from abiotic stresses, restore productivity after the effects of stress, increase resistance to diseases, and improve the quantity and quality of the yield.

Consumption rates

0.5-2.0 L/ha – foliar application according to the application recommendations for each phase.

BIOSTIM MAIZE

Biostimulant fertilizer with microelements for maize

It is designed for foliar application in maize for grain and silage during the growing season to maintain nutrient balance, protect against abiotic stresses, restore productivity after stress, increase disease resistance, and improve the quantity and quality of the yield.

Consumption rates

0.5-2.0 L/ha – foliar application during the 4-5 leaf stage and then 1-2 times with an interval of 7-10 days.

ULTRAMAG COMBI for cereals
ULTRAMAG COMBI for oilseeds
ULTRAMAG COMBI for beet
ULTRAMAG COMBI for potato
ULTRAMAG COMBI for corn
ULTRAMAG COMBI for legumes

New-generation multicomponent microfertilisers with a good balance of micro- and macronutrients, chosen for crop specificity.

ADVANTAGES

- **Maximum penetration and assimilation of nutrients**
- **Contains a special complex of adjuvants, including substances with surfactant properties**
- **Improves spreadability and maximum wetting of leaves by the working solution**
- **High content of essential micronutrients**
- **Contain titanium (Ti), a plant growth activator, which allows a qualitative increase in the assimilation of nutrients from the leaves and soil**
- **Effective maintenance of microelement balance during the critical periods of crop development**
- **Stable improvement of qualitative and quantitative yield parameters**
- **Good compatibility with pesticides**
- **Practically feasible liquid form**
- **Stable working solutions, do not clog nozzles**

Consumption rates

1.0-3.0 L/ha – foliar application during the growing season 1-2 times in accordance with the recommendations for a particular brand.

More details

Composition of fertilisers, %

Grades	N	MgO	SO_3	Na_2O	B	Cu	Fe	Mn	Zn	Mo	Ti	Co
ULTRAMAG COMBI												
for cereals	15,0	2,0	4,5			0,9	0,8	1,1	1,0	0,005	0,02	
for oilseeds	15,0	2,5	2,5		0,5	0,1	0,5	0,5	0,5	0,005	0,03	
for beet	15,0	2,0	1,8	3,0	0,5	0,2	0,2	0,65	0,5	0,005	0,02	
for potato	15,0	2,5	2,5		0,4	0,2	0,3	0,6	0,65	0,005	0,03	
for corn	15,0	2,0	4,2		0,4	0,6	0,7	0,7	1,1	0,005	0,02	
for legumes	15,0	2,0	1,0		0,5	0,2	0,3	0,4	0,3	0,003	0,02	0,002

The choice of foliar dressing program depends on farming intensity, the micronutrient content in the soil, and the condition of the crops.

ULTRAMAG PHOSPHORUS SUPER

Nitrogen (N) $_{total}$ - 6,4 %, Phosphorus (P_2O_5) - 35,0 %, magnesium (MgO) - 4,0 %, zinc (Zn) - 2,5 %

A liquid mineral fertiliser with macro- and micro-nutrients for the foliar dressing of agricultural crops.

Crops: cereals, legumes, maize, sunflower, sugar beet, winter rapeseed, spring rape, potato, cabbage, edible roots, onions, garlic, fruits and berries, grapes

- **Eliminates pseudodeficiencies and deficiencies of phosphorus in plants**
- **Fully supplies plants with easily digestible phosphorus during early development stages**
- **Activates photosynthesis processes in plants**
- **Increases plant resistance to weather changes and cold temperatures**
- **Accelerated crop formation**

Usage regulations

Crop	Consumption rate	Method, time and features of application
Cereal crops	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 3–4 leaf stage, at the tillering stage, shooting and paniculation stage
Maize	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 2–6 leaf stage, 7–8 leaf stage and in the stem elongation stage (before tasselling)
Legumes	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application to plants at the 3–4 ternate leaves stage, at the budding stage and the filling stage
Sunflower	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 2–3 leaf-pair stage and at the start of the budding stage
Sugar beet	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application is at the 4–6 leaf stage, at the 8–10 leaf stage and at the rows closing stage
Spring rapeseed	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 4–8 leaf stage, at the budding stage and at the end of blooming
Winter rapeseed	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 4–8 leaf stage (in autumn), at the start of vegetation resumption, at the budding stage and at the end of the blooming stage
Potato	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the full seedlings stage, at the budding stage and after blooming 1–2 times with the 10–14-day interval
Cabbage (all types)	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 2–3 weeks after the seedling planting and at the start of the loaf (rosette) formation
Vegetable crops	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 2–3 weeks after the seedling planting (emergence of seedlings) and then 1–2 times with a 10–15-day interval.
Edible roots, onions, garlic, lettuce	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 7–10 days of the week after the emergence of seedlings (transplanting of seedlings), then 1–2 times at with interval of 10–15 days
Fruit and berry crops, grapes	4–6 L/ha Working solution consumption 600–1000 L/ha	Foliar application at the beginning of the budding stage and then 3–4 times every 10–15 days (the last dressing is 2–4 weeks before harvesting)

ULTRAMAG PHOSPHORUS ACTIVE

Nitrogen (N) $_{total}$ – 5,2 %, Phosphorus (P_2O_5) – 35,0 %

Liquid concentrated fertilizer with high phosphorus content

Crops: cereals, legumes, technical, fodder crops, maize, fruit and berry crops, grapes, vegetables, etc.

- **Additional phosphorus nutrition for plants through foliar application**
- **Fully supplies plants with easily digestible phosphorus during early development stages**
- **Activates metabolic processes in plants**
- **Increases plant resistance to weather changes and frost**
- **Accelerates leaf formation, growth, and development**
- **Increases yield and product quality**

Usage regulations

Crop	Consumption rate	Method, time and features of application
Cereal crops	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 3–4 leaf stage, at the tillering stage, shooting and paniculation stage
Maize	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 2–6 leaf stage, 7–8 leaf stage and in the stem elongation stage (before tasselling)
Legumes	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application to plants at the 3–4 ternate leaves stage, at the budding stage and the filling stage
Sunflower	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 2–3 leaf-pair stage and at the start of the budding stage
Sugar beet	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application is at the 4–6 leaf stage, at the 8–10 leaf stage and at the rows closing stage
Spring rapeseed	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 4–8 leaf stage, at the budding stage and at the end of blooming
Winter rapeseed	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the 4–8 leaf stage (in autumn), at the start of vegetation resumption, at the budding stage and at the end of the blooming stage
Potato	2–6 L/ha Working solution consumption 200–400 L/ha	Foliar application at the full seedlings stage, at the budding stage and after blooming 1–2 times with the 10–14-day interval
Cabbage (all types)	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 2–3 weeks after the seedling planting and at the start of the loaf (rosette) formation
Vegetable crops	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 2–3 weeks after the seedling planting (emergence of seedlings) and then 1–2 times with a 10–15-day interval.
Edible roots, onions, garlic, lettuce	2–6 L/ha Working solution consumption 400–600 L/ha	Foliar application 7–10 days of the week after the emergence of seedlings (transplanting of seedlings), then 1–2 times at with interval of 10–15 days
Fruit and berry crops, grapes	4–6 L/ha Working solution consumption 600–1000 L/ha	Foliar application at the beginning of the budding stage and then 3–4 times every 10–15 days (the last dressing is 2–4 weeks before harvesting)

ULTRAMAG CALCIUM ACTIVE

Nitrogen (N) $_{total}$ – 2,0 %, calcium (CaO) – 9,0 %, zinc (Zn) – 1,4 %, Boron (B) – 1,2 %, amino acids – 3,7 %

A complex foliar fertilizer for crop nutrition containing amino acids, calcium, and trace elements.

Crops: cereals, legumes, industrial, fodder, vegetables, fruit and berry crops, grapes, etc.

- **Rapid and effective uptake and adsorption of calcium and boron**
- **Calcium, boron, and zinc deficiency compensation**
- **Improves the quality of flowering and fruit setting**
- **Increases stress resistance due to its amino acid content**
- **Improves crop yields and quality**

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereal crops	1.0-2.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application during tillering and from stalk-shooting to flowering
Sugar beet, fodder beet, table beet		Foliar application during the 4-6 leaves stage, 20-25 days after the first application, and 14-20 days before harvesting
Maize		Foliar application during the 4-6 leaves stage and 10-14 days after the first application
Legumes, legume grasses		Foliar application during the budding phase early flowering, and at the end of flowering during pod formation
Winter rapeseed, spring rapeseed, winter cress, false flax		Foliar application in spring, when the growing period is resumed, or at the phase of fully sprouted plants and budding/flowering phase
Sunflower		Foliar application from the start of pseudanthium formation till flowering, 1-2 times
Vegetable crops, potato	1.0-4.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application during budding/start of flowering, and then 2-3 times every 10-15 days Foliar application during the herringbone phase and budding
Fiber flax, oil flax	1.0-2.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application during the herringbone phase and budding
Fruit crops (pome fruit and stone fruit crops)	1.0-4.0 L/ha Working solution consumption: 600-1000 L/ha	Foliar application before flowering, at the end of flowering, and during fruit growth, 1-2 times
Grape	1.0-4.0 L/ha Working solution consumption: 600-800 L/ha	Foliar application during flower initiation/start of flowering and during berry growth, 2-3 times every 14-21 days
Berry crops	1.0-4.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application during budding and start of flowering

ULTRAMAG CALCIUM

Nitrogen (N) $_{total}$ – 10,0 %, calcium (CaO) – 17,0 %, magnesium (MgO) – 0,8 %, zinc (Zn) – 0,02 %, copper (Cu) – 0,02 %, Boron (B) – 0,05 %, molybdenum (Mo) – 0,001 %

A liquid, concentrated, chlorine-free fertilizer with a high calcium content in a form easily absorbed by the plant for both root dressing and foliar application.

Crops: fruit, stone fruit, grapes, vegetables, melons, potatoes, strawberries, flower and decorative, etc.

- **Stimulates root system growth and development, strengthens cell walls**
- **Prevents a number of physiological disorders caused by calcium deficiency**
- **Improves the mechanical strength of plant coverings, fruit peels, etc.**
- **Enhances the storage life of harvested crops**

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Vegetables, melons, potatoes	1.0-3.0 L/ha Working solution consumption 300-600 L/ha root feeding - depending on the irrigation	Fertilizing plants in the early period of fruit formation and then 2-3 times with an interval of 7-14 days
Fruit crops (pome)	2.0-4.0 L/ha Working solution consumption 800-1000 L/ha root feeding - depending on the irrigation	Fertilizing plants in the phase of fruit «walnut» and then 3-6 times at intervals of 7-14 days (the last feeding 14 days prior to harvest)
Fruit crops (stone fruit)	2.0-4.0 L/ha Working solution consumption 800-1000 L/ha root feeding - depending on the irrigation	Feeding plants 7-10 days after flowering and then 2-3 times with an interval of 7-14 days (the last feeding 14 days prior to harvest)
Berries (bushes)	2.0-4.0 L/ha Working solution consumption 800-1000 L/ha root feeding - depending on the irrigation	Fertilizing plants in the phase of «green ovary» and then 3-6 times at intervals of 7-14 days (the last feeding 14 days prior to harvest)
Grapes	2.0-4.0 L/ha Working solution consumption 800-1000 L/ha root feeding - depending on the irrigation	Fertilizing the plants during the ripening of berries 2-3 times with an interval of 14-21 days
Strawberries	2.0-4.0 L/ha Working solution consumption 300-600 L/ha root feeding - depending on the irrigation	Fertilizing plants in the budding phase and after blossoming
Green culture	2.0-4.0 L/ha Working solution consumption 300-600 L/ha root feeding - depending on the irrigation	Feeding plants 7-14 days after emergence (transplanting) and then 3-4 times with an interval of 7-14 days
Flower and decorative crops	1.0-3.0 L/ha Working solution consumption 300-600 L/ha root feeding - depending on the irrigation	Feeding plants in the period of intensive growth 3-4 times with an interval of 7-14 days

ULTRAMAG POTASSIUM

Nitrogen (N) $_{total}$ – 2,6%, potassium (K_2O) – 22,0%

A liquid, concentrated fertilizer with a high potassium content for foliar application in crops.

Improves carbohydrate translocation from leaves to the developing crop and promotes starch accumulation

Increases cell hydration, helping plants survive drought periods

Improves crop quality

Crops: fruit, grapes, sugar beet, beetroot, cereals, maize, potato, legumes, rape, vegetables, melons, strawberries, etc.

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereals	2.0-5.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in phase of tillering-booting stage and in the phase of milky-wax ripeness
Maize	2.0-5.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in 4-6 leaf stage
Legumes	2.0-5.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the phase of stooling
Winter rape	2.0-5.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the autumn in a phase of 4-6 leaves, in the spring beginning of the growing season and in the budding phase or after flowering
Sugar beet, fodder beet, beetroot	3.0-6.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in 4-6 leaf stage and the early phase of the closing
Potatoes	2.0-5.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the phase of full germination and in the phase of budding
Vegetables, melons, strawberries	2.0-6.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants during the vegetation period 2-3 times with an interval of 7-14 days
Fruit culture	2.0-6.0 L/ha Working solution consumption 800-1000 L/ha	Foliar feeding of plants during the vegetation period 2-3 times with an interval of 7-14 days
Grapes	2.0-6.0 L/ha Working solution consumption 800-1000 L/ha	Foliar feeding of plants before the onset of the flowering phase 1-2 times with an interval of 7-10 days in the period from closing of grapes until beginning of maturity 1 to 2 times with an interval of 7-14 days

ULTRAMAG SUPER SULFUR-900

Nitrogen (N) $_{total}$ – 5% (65 g/l), sulfur (SO_3) – 70% (910 g/l)

A liquid highly concentrated mineral fertiliser for the foliar application in agricultural crops.

High sulfur concentration in three chemical forms: sulfate, thiosulfate, and elemental sulfur

Rapid absorption and long-lasting effect

Enhances nitrogen absorption

Increases the protein and gluten content in grain

Crops: cereals, legumes, vegetable crops, maize, sugar beet, table beet, sunflower, rapeseed, potatoes, fruit crops, citrus, grapes.

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereal crops, leguminous, vegetable crops, maize, sugar beet, table beet, sunflower	0.2-3.0 L/ha Working solution consumption 200-300 L/ha	Application 1–3 times throughout the growing period
Spring and winter wheat	0.5-3.0 L/ha Working solution consumption 200-300 L/ha	Application at the stage of the flag leaf and the milky stage
Spring rapeseed	0.5-3.0 L/ha Working solution consumption 200-300 L/ha	Application at the beginning of the stem-extension stage and then 2–3 times at an interval of 10–14 days
Winter rapeseed	0.5-3.0 L/ha Working solution consumption 200-300 L/ha	Application at the stage of rosette formation (in autumn), when the growth period is resumed (in spring) and then 2–3 times at an interval of 10–14 days
Potato	0.5-3.0 L/ha Working solution consumption 200-300 L/ha	Foliar application during the full seedlings stage (plant height: 10–15 cm) and then 1–2 times at an interval of 10–14 days
Fruit (pome fruit, stone fruit, citrus) crops, grapes	1.5-3.0 L/ha Working solution consumption 600-1000 L/ha	Foliar application before blossoming and then 1–2 times at an interval of 10–14 days

ULTRAMAG SUPER ZINC-700

Nitrogen (N) $_{total}$ – 1,5%; zinc (Zn) – 40%

Liquid concentrated fertilizer with high zinc content for foliar application of agricultural crops, for all soil types

Crops: cereals, legumes, industrial, fodder, maize, fruit and berry crops, grapes, etc.

- **High zinc concentration of over 700 g/l in two chemical forms.**
- **Rapid absorption and correction of zinc deficiency throughout the growing season**
- **Prolonged action**
- **Improved resistance of plants to weather changes and frost**
- **Accelerates vegetative growth and development**
- **Resistance to rain, even distribution along a leaf**
- **Increases yield and product quality**

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereal crops, legumes, technical crops, forage crops	0.2-2.0 L/ha Working solution consumption 200-400 L/ha	Foliar application during the full seedlings stage, and then 1-4 times at an interval of 10-14 days
Vegetables, flower and decorative crops (open-ground)	0.1-2 L/ha Working solution consumption 200-1000 L/ha	Foliar application 10-15 days after emergence of seedlings (transplanting of seedlings), and then 1-4 times at an interval of 10-14 days
Fruit and berry crops, grapes, decorative crops	0.2-2 L/ha Working solution consumption 600-1000 L/ha	Foliar application in spring, when the growth period is resumed, and then 1-4 times at an interval of 10-14 days.

ULTRAMAG MOLYBDENUM

Nitrogen (N) $_{total}$ – 4,5 %, molybdenum (Mo) – 3,0 %

Liquid fertilizer containing molybdenum in a form easily absorbed by the plant for root, foliar application in agricultural crops and legume seed treatment.

Crops: grain legumes, cereals, rapeseed, vegetables, etc.

- **Contains molybdenum in a form easily absorbed by the plant for rapid elimination of deficiencies and pseudodeficiencies**
- **Improves the process of nutrient transportation to growth points**
- **Regulates photosynthesis, carbohydrate, protein, nitrogen and phosphorus metabolism**
- **Improves plant growth and development, Increases protein content in legumes, industrial, cereals and vegetable crops**
- **Increases vitamin and sugar content in fruits**
- **Accelerates nitrate reduction, limiting their accumulation in vegetable products**
- **Promotes the formation of nodules in legumes, which fix atmospheric nitrogen**

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereals (winter)	1.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the autumn period from the phase of 3-4 leaves - tillering phase-the beginning
Legumes	1.0 L/t Working solution consumption 5-10 L/t	Presowing treatment of seeds
Legumes	1.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the phase of stooling and in the budding phase
Winter rape	0.5-1.0 L/ha Working solution consumption 200-400 L/ha	Foliar feeding of plants in the autumn in a phase of 4-6 leaves, in spring in the period from the beginning of the resumption of the growing season before budding
Cabbage (seedlings)	0.1 L/100 L water Working solution consumption depending on the irrigation	Root feeding plants for 7-10 days before planting
Cabbage	0.4-0.6 L/ha Working solution consumption 300-600 L/ha; root feeding - depending on the irrigation	Feeding plants 14 days after transplanting, and then 1-2 times with an interval of 7-14 days
Roots table	1.0 L/ha Working solution consumption 300-600 L/ha; root feeding - depending on the irrigation	Fertilizing the plants during the beginning of the formation of root and 3 weeks before harvest
Onion, garlic	1.0-1.5 L/ha Working solution consumption 300-600 L/ha; root feeding - depending on the irrigation	Fertilizing plants in the phase of full shoots

ULTRAMAG BORON

Nitrogen (N) $_{total}$ – 4,7%, Boron (B) – 11,0%

A liquid fertilizer containing boron in an organic form that is easily absorbed by the plant to rapidly correct boron deficiency.

Crops: sugar beet, table beet, rapeseed, sunflower, grain legumes, maize, potatoes, flax, vegetables, berries, fruit, grapes, flower and ornamental plants, etc.

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Sugar beets, table beets	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the 4-6 leaves phase, then 1-2 times every 10-15 days
Winter rapeseed	0.75-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the rosette formation phase (in autumn), in spring at the resumption of growing in the stemming and budding phases
Spring rape	0.75-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the stemming and budding phases
Sunflower	0.75-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the 4-6 leaves phase and in the 8-10 leaves phase (if necessary)
Legumes	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the 6-8 leaves phase and during budding
Legume grasses	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application 1-2 times throughout the growing period
Maize	0.75-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application in the 68 leaves phase and in the 10-12 leaves phase
Potato	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application 10-15 days after full emergence and during the budding to early flowering phase (if necessary)
Fiber flax, oilseed flax	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application from the sprouting phase to the beginning of the «herringbone» phase and 7-10 days after the first application
Vegetable crops	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application 1-2 times during the vegetation period (last application not later than 20 days before harvesting)
Berry crops	0.5-1.0 L/ha Working solution consumption: 200-400 L/ha	Foliar application 1-3 times during the vegetation period (last application not later than 20 days before harvesting)
Fruit crops	0.5-1.0 L/ha Working solution consumption: 500-1000 L/ha	Foliar application 1-3 times during the vegetation period (last application not later than 20 days before harvesting)
Grape	1.0 L/ha Working solution consumption: 400-600 L/ha	Foliar application 1-2 times during the vegetation period (last application not later than 20 days before harvesting)
Flower and ornamental crops	0.5-1.0 L/ha Working solution consumption: 300-400 L/ha	Foliar application during the growing season 1-3 times

UL.
ULTRAMAG
series

ULTRAMAG CHELATE Fe-13

Iron (Fe) - 13,0 %

Crystalline fertilizer, completely water soluble.

Crops: cereals, legumes, technical, fodder, fruit and berry, vegetable, ornamental crops, grapes, etc.

ULTRAMAG CHELATE Zn-15

Zinc (Zn) - 15,0 %

Crystalline fertilizer, completely water soluble.

Crops: cereals, legumes, technical, fodder, fruit and berry crops, grapes, vegetables, etc.

ULTRAMAG CHELATE Mn-13

Manganese (Mn) - 13,0 %

Crystalline fertilizer, completely water soluble.

Crops: cereals, legumes, technical, fodder, fruit and berry, vegetable, ornamental crops, grapes, etc.

ULTRAMAG CHELATE Cu-15

Copper (Cu) - 15,0 %

Crystalline fertilizer, completely water soluble.

Crops: cereals, legumes, technical, fodder, fruit and berry crops, grapes, vegetables, etc.

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Cereals, legumes and technical crops	**for Fe-13, Zn-15 grades** 0.5-2.0 kg/ha **for Mn-13, Cu-15 grades** 0.5-1.0 kg/ha (maximum concentration of working solution 0.1%) Working solution consumption: 200-400 L/ha	Foliar application during the growing period: 1-4 times with an interval of 7-14 days (the last application not later than 20 days before harvesting)
Vegetable crops	**for Fe-13, Zn-15, Mn-13, Cu-15 grades** 0.5-1.0 kg/ha (maximum concentration of working solution 0.1%) Working solution consumption: 200-600 L/ha	Foliar application during the growing period: 1-4 times with an interval of 7-14 days (the last application not later than 20 days before harvesting)
Fruit and berry, ornamental crops, grapes	**for Fe-13 grade** 0.5-1.0 kg/ha **for Mn-13, Zn-15, Cu-15 grades** 0.1-1.0 kg/ha (maximum concentration of working solution 0.1%) Working solution consumption: 200-1000 L/ha	Foliar application during the growing period: 1-4 times with an interval of 7-14 days (the last application not later than 20 days before harvesting)
Flower and ornamental crops	**for Fe-13, Mn-13 grades** 0.05-0.5 kg/ha **for Zn-15, Cu-15 grades** 0.05-0.4 kg/ha (maximum concentration of working solution 0.1%) Working solution consumption: 200-600 L/ha	Foliar application during the growing period: 1-4 times with an interval of 7-14 days
Technical, fodder, vegetable, melons, fruit and berry, flower and ornamental crops, grapes	**for Fe-13, Mn-13, Cu-15 grades** 3.0-5.0 kg/ha **for Zn-15 grades** 5.0-7.0 kg/ha Consumption of working solution: depending on the irrigation system and application rate	Root dressing (applied with irrigation water) during the growing season (last application not later than 20 days before harvesting)

Composition of fertilisers Ultramag, %

Grade	Amino acids	N	P_2O_5	K_2O	CaO	SO_3	MgO	Zn	B	Cu	Fe	Mn	Mo
Phosphorus Active		5.2	35.0										
Phosphorus Super		6.4	35.0				4.0	2.5					
Potassium		2.6		22.0									
Calcium		10.0			17.0		0.8	0.02	0.05	0.02			0.001
Calcium Active	3,7	2,0			9,0			1,4	1,2				
Super Sulfur-900		5.0				70.0							
Super Zinc-700		1.5						40.0					
Boron		4.7							11.0				
Molybdenum		4.5											3.0
Chelate Fe-13											13.0		
Chelate Zn-15								15.0					
Chelate Mn-13												13.0	
Chelate Cu-15										15.0			

The choice of foliar dressing program depends on farming intensity, the micronutrient content in the soil, and the condition of the crops.

More details

Calcium (CaO) 10 %

Liquid calcium mineral calcium nitrogen-free fertilizer for pre-sowing seed treatment and foliar application in crops.

ADVANTAGES

- **Nitrogen-free calcium in active form**
- **Helps preserve flowers and ovaries, reducing the risk of abortion, especially in soybeans, including in hot and dry weather**
- **Contains an activator that improves calcium absorption by tissues with low transpiration level (flowers and buds); improves protection from stress.**
- **Complete absence of nitrogen (nitrate) and chloride, which allows the product to be applied multiple times without the risk of phytotoxicity or excessive vegetative growth**
- **Suitable for finishing treatments in orchards**
- **Improves the marketable appearance and extends the shelf life of fruits**

Mode of action

The mode of action is driven by calcium contained in the product.

Calcium is extremely important for plant nutrition:

- necessary for cell wall formation and cell division;
- important for pollen germination and pollen tube growth;
- necessary for fruit inception;
- influences carbohydrate and protein metabolism;
- decreases susceptibility to diseases in plants.

Calcium deficiency results in various diseases and physiological disorders. For example, in apple trees, calcium deficiency causes bitter pit, swelling, cracking, and small fruit size; the shelf life decreases dramatically.

Usage regulations

Crop	Consumption rate		Method, time and features of application
	preparation, l/t, l/ha	working liquid, l/t, l/ha	
Cereal crops, legumes, forage crops, technical crops, oil crops	0,5-1,0	5-10	Pre-sowing seed treatment
Cereal crops, grasses	0,5-2,0	200-400	Foliar application in the tillering/tube emergence phase and in the earing (panicle emergence)/flowering phase
Sugar beet, fodder beet, table beet	0,5-2,0	200-400	Foliar application in the 4-6 leaves phase and then 1-2 times every 10-14 days
Maize	0,5-2,0	200-400	Foliar application during the 4-6 leaves stage and 10-14 days after the first application
Legumes	0,5-2,0	200-400	Foliar application during budding/start of flowering and in the flowering end/bean formation phase
Winter rapeseed, spring rapeseed, winter cress, false flax	0,5-2,0	200-400	Foliar application in spring, when the growing period is resumed, or at the phase of fully sprouted plants and budding/flowering phase
Sunflower	0,5-2,0	200-400	Foliar application in the 3-5 leaves phase and then 1-2 times every 7-10 days
Potatoes, vegetable crops	1,0-5,0	400-600	Foliar application during budding/start of flowering and then 1-2 times every 7-10 days
Fiber flax, oil flax	0,5-2,0	200-400	Foliar application during the herringbone phase and budding
Fruit crops (pome fruit and stone fruit crops)	1,0-5,0	600-1000	Foliar application during fruit growth 4-5 times every 10-14 days (the last application not later than 10 days before harvesting)
Grape	1,0-5,0	600-800	Foliar application during flower initiation/start of flowering and during berry growth, 2-3 times every 14-21 days

ULTRAMIX GROWTH

Liquid mineral fertilizer with microelements for foliar feeding of fruit, fruit and berry, vegetable crops, and vineyards on all types of soil.

Crops: fruit (seed and stone fruits), grapes, berry and vegetable crops

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Fruit crops (pome fruit and stone fruit crops)	1.0-3.0 L/ha Working solution consumption 600-1,000 L/ha	carried out 1-2 times: the 1st feeding is carried out in the pink bud phase, the 2nd feeding takes place in the beginning of flowering phase
Grapes	1.0-3.0 L/ha Working solution consumption: 600-1000 L/ha	Foliar feeding of plants is recommended to be carried out 1-2 times: the 1st feeding is carried out during the start of flowering, the 2nd feeding takes place in the beginning of flowering phase
Berry crops	1.0-2.0 L/ha Working solution consumption: 200-600 L/ha	Foliar feeding of plants in spring at the beginning of the resumption of vegetation and before flowering
Vegetable crops	1.0-2.0 L/ha Working solution consumption: 200-600 L/ha	Foliar feeding of plants 10-15 days after planting seedlings or emergence of shoots and then 1-2 times at intervals of 14-21 days

ULTRAMIX DEVELOPMENT

Liquid mineral fertilizer with microelements for foliar feeding of fruit, fruit and berry, vegetable crops, and vineyards on all types of soil.

Crops: fruit (seed and stone fruits), grapes, berry and vegetable crops

Usage regulations

Crop	Consumption rate	Method, time and conditions of application
Fruit crops (pome fruit and stone fruit crops)	1.0-3.0 L/ha Working solution consumption 600-1,000 L/ha	Foliar feeding of plants is recommended to be carried out 1-2 times: the 1st feeding is carried out during the fruit growth phase (40-55 mm), the 2nd feeding takes place after 14-21 days
Grapes	1.0-3.0 L/ha Working solution consumption: 600-1,000 L/ha	Foliar feeding of plants is recommended to be carried out 1-2 times: the 1st feeding is carried out during the bunch formation, the 2nd feeding takes place after 14-21 days
Berry crops	1.0-2.0 L/ha Working solution consumption: 200-600 L/ha	Foliar feeding of plants after flowering and then 1-2 times with an interval of 14-21 days
Vegetable crops	1.0-2.0 L/ha Working solution consumption: 200-600 L/ha	Foliar feeding of plants during the period of fruit formation and growth 1-3 times with an interval of 14-21 days

Ulmx. NEW
ULTRAMIX series

Composition of fertilisers Ultramix, %

Brands	N_{total}	CaO	MgO	Fe	Mn	Zn	Cu	B	Mo
Growth	4,6	-	4,0	1,0	4,0	3,0	0,05	0,5	0,05
Development	2,0	10,0	5,0	0,7	2,0	-	-	-	-

General product information

- **Recommendations for the use of products**
- **List of crops and registered products**

RECOMMENDATIONS FOR THE USE OF PRODUCTS

Application technology for herbicides, insecticides, fungicides, desiccants, growth regulators, and specialty fertilizers

General recommendations for ground application

Prepare the working liquid immediately before use and use it on the day of preparation.

It is recommended to mix the product before use.

Fill the sprayer tank with water to a partial volume, then slowly add the required amount of product (or pre-prepared stock solution) for

one tank refill according to the recommended dosage. Rinse the canister with any remaining product (or the container used to prepare the stock solution) several times with water and pour it into the sprayer tank. Then, add water to the full volume while stirring. Stirring should continue throughout the application to ensure uniformity of the working solution.

Prepare the working liquid and refill the sprayer at designated places that are to be deactivated later.

For spraying, commercially available ground boom sprayers designed for applying crop protection products should be used. When using tank mixtures of herbicides, prepare the working liquid in accordance with the recommendations for each specific preparation.

Adding other preparations to the concentrated emulsion (stock solution) is not allowed.

General recommendations for aerial application

Prepare the working liquid immediately before use and use it on the day of preparation.

It is recommended to mix the product before use. Fill the filling unit's tank with water to a partial volume, then add the required amount of product (or pre-prepared stock solution) for one filling according to the recommended dosage. Rinse the canister with any remaining product (or the container used to prepare the stock solution) several times with water and pour it into the filling unit. Then, add water to the full volume while stirring.

Perform setting, adjustment, and installation of sprayers in accordance with the Guidelines for Technical Operation of the Spraying Equipment Installed at Aircraft.

When the aircraft approaches the treatment area, turn on the hydraulic agitator for additional mixing of the working solution (the hydraulic agitator should run for at least 2 minutes).

The working solution and the filling of the unit are conducted at stationary filling stations, which should be decontaminated afterward.

Recommended aircraft types: AN-2 airplane, MI-2 helicopter.

LIST OF PRODUCTS approved for aerial application

Product	Aerial spraying is allowed
HERBICIDES	
Benito, CSC	■
Hermes, OD	■
Glok, WG	■
Zinger, WP	■
Ovsugen Super, EC	■
Ovsugen Express, EC	■
Risotto, OD	■
Restyle, OD	■
Fenizan, SL	■
Forward, OEC	■
INSECTICIDES	
Imidor, SL	■
Imidor Extra, SC	■
Lokustin, SC	■
Porfir, SC	■
Espero, SC	■
FUNGICIDES	
Vintage, ME	■
Tessa, ME	■
Titul 390, CSC	■
DESICCANT	
Tongara, SL	■
SPECIAL-PURPOSE PRODUCTS	
Selfi	■

Preparation of stock solution

For certain products, it is necessary to prepare a concentrated emulsion (stock solution) beforehand. To do this, fill a separate container (bucket, tank) with water to 1/4 of its volume, add the measured amount of product, stir to create a homogeneous solution, then add water to 3/4 of the volume and pour the solution into the sprayer tank, which should be half-filled with water.

LIST OF PREPARATIONS for which preliminary preparation of stock solution is required

Product	Preparation of the stock solution is required	Concentration of stock solution
HERBICIDES		
Ballista, OD	■	30-40% active ingredient
Benito, CSC	■	30-50% active ingredient
Betaren Express AM, EC	■	50-70 % active ingredient
Betaren 320, OD	■	30-40% active ingredient
Betaren Max, OD	■	30-40% active ingredient
Versia, OD	■	30-40% active ingredient
Geizer, CSC	■	30-50 % active ingredient
Hermes, OD	■	30-40% active ingredient
Hermes Forte, OD	■	30-40% active ingredient
Glok, WG	■	
Granat, WG	■	
Deprimo, OD	■	
Zinger, WP	■	1 pack per 1 liter of water
Ilion, OD	■	30-40% active ingredient
Kassius, SP	■	
Kondor, WG	■	
Kondor Forte, OD	■	
Concept, OD	■	30-40% active ingredient
Kupazh, WG	■	
Cornegi Plus, OD	■	30-40% active ingredient
Octava, OD	■	30-40% active ingredient
Pixel, OD	■	30-40% active ingredient
Pinta, OD	■	30-40% active ingredient
Sanflo, WG	■	
Reper Trio, OD	■	30-40% active ingredient
Restyle, OD	■	
Risotto, OD	■	30-40% active ingredient
Femida, OD	■	
Flamenco, WG	■	
Fortissimo, OD	■	30-40% active ingredient
FUNGICIDES		
Benazol, WP	■	Until a paste is formed
Insignia, OD	■	
Kantor, CSC	■	30-40% active ingredient
Metamil MC, WG	■	15-20% active ingredient
Triada, CSC	■	30-40% active ingredient
Titul 390, CSC	■	10 % active ingredient
INSECTICIDES		
Batardo, OD	■	
Beretta, OD	■	30-40% active ingredient
Meadows, OD	■	30-40% active ingredient
Sparring, OD	■	
Twingo Euro, OD	■	30-40% active ingredient
Espero Euro, OD	■	30-40% active ingredient

Technology for applying seed treatment agents, inoculants

Prepare the working liquid immediately before treating the seeds. Fill the tank up with water and add the required amount of the product with continuous stirring.

Seed treatment is recommended to be performed using special machines intended for processing cereals, legumes, and technical crops. Perform preparation of working liquid and seed treatment at centralized treatment stations.

Fumigant application technology

Before use, calculate the required number of tablets. If possible, use the entire contents of the package (flask, canister) for one operation. Fumigation should be carried out at temperatures above 15 °C.

For fumigating (smoking) elevators and grain storage facilities.

Tablets should be added quickly and sharply into the grain stream at regular intervals as the grain is fed into the hopper. The grain is conveyed into the elevator hopper by a belt conveyor. Tablets can be introduced

into the hopper via a slope (chute). Tablets are added mechanically (using an automatic dispenser) or manually while wearing rubber gloves.

The elevator hopper should be filled as quickly as possible.

For fumigating crops stored in bags.

Evenly distribute tablets among the bags and around the stacks of bags.

Stacks must be gas-tight and covered with plastic sheeting.

Empty grain storage facilities.

Seal the rooms tightly before fumigating. Distribute the tablets evenly across the entire area of the room.

Technology for applying rodenticides

Bait preparation

In a seed treatment machine or metal trough, thoroughly mix the bait base with the rodenticide. The prepared bait should be placed in a sealed container designed for storing the bait or transporting it to the application site. The bait base can include wheat, cut potatoes, sugar beets, carrots, or apples.

Technology of tank mixture preparation

· Before preparing tank mixtures, carefully review the safety precautions and use the recommended personal protective equipment.

• Before large-scale application of the tank mixture, perform a test for the physical and chemical compatibility of the mixed components.

· Follow the recommendations for preparing working solutions for each component of the mixture. For certain products, a «stock solution» preparation is required.

· When preparing the tank mixture, first add water to the sprayer tank to an incomplete volume, then add the components of the mixture in the recommended dosage.

· Add components to the tank mixture sequentially with thorough mixing.

· The next component may only be added after the previous component has completely dissolved.

· When preparing tank mixtures, follow the correct order of adding components depending on the formulation:

Water
↓
Lacmus
↓
wettable powder (WP), water-soluble powder (SP)
↓
water dispersible granules (WG)
↓
suspension concentrate (SC)
↓
soluble liquid, soluble concentrate (SL)
↓
Oil dispersion (OD), oil emulsion concentrate (OEC)
↓
microemulsion (ME)
↓
colloidal solution concentrate (CSC)
↓
emulsion concentrate (EC)
↓
liquid fertilizers and micronutrients
↓
water up to 90% ▸ Surfactant
↓
Laminar
↓
Water to full volume

· Preparation of tank mixtures and application to crops should be accompanied by continuous mixing of the working solution.

Effect of water quality on product effectiveness

Water quality is an important factor in preparing working solutions. Water should be clean, free of impurities, and have an optimal physical and chemical composition. Low quality water can reduce the effectiveness of pesticides and agrochemicals and can damage spraying equipment. Water quality depends on the water source (artesian well, river, pond, aquifer, etc.).

Impurities
Dirty water often contains silt and clay particles, which can clog spraying equipment (nozzles, lines, filters), reducing productivity and shortening the life of the sprayer. These particles can also bind the active ingredients of the products, reducing their effectiveness.

Water hardness
Water hardness is determined by the concentration of dissolved salts of alkaline earth metals, primarily calcium and magnesium (referred to as «hardness salts»). Water is considered hard when there is a high percentage of these substances. Hard water can cause certain chemical elements to precipitate, affect the balance of the surfactant system, and impact properties such as wetting, emulsification, and dispersion. Very hard water may reduce the effectiveness of substances used to treat dirty water.

Classification of water hardness

Water group	Hardness salts content, mg-eq/L
Very soft	Up to 1.5
Soft	1.5-4.0
medium	4.0-8.0
Hard	8.0-12.0
Very hard	Over 12.0

Water pH value
The pH of water is one of the most important indicators of water quality, as it largely determines the nature of chemical and biological processes occurring in the water. Depending on the pH level, the rate of chemical reactions, the degree of corrosiveness, and the toxicity of contaminants may change. Most natural waters have a pH value between 6.5 and 8.5.
In solutions with a highly alkaline pH, many pesticides undergo alkaline hydrolysis, which leads to the breakdown of their active ingredients (this process is even used for disposing of substandard pesticides and their waste, as well as in wastewater treatment). Insecticides (organophosphates, pyrethroids), fungicides (benomyl, mancozeb), and herbicides (2,4-D, dicamba, glyphosate, etc.) are particularly sensitive to alkaline hydrolysis.
The maximum effectiveness of pesticides and agrochemicals is achieved at a slightly acidic pH.

Classification of water by pH

Water type	pH value
Strongly acidic water	Up to 3
Acidic water	3,0-5,0
Slightly acidic water	5,0-6,5
Neutral water	6,5-7,5
Slightly alkaline water	7,5-8,5
Alkaline water	8,5-9,5
Strongly alkaline water	Over 9,5

Improving water quality

Water with high levels of calcium and magnesium salts (hard water) and a high pH can negatively affect the quality of working solutions (leading to precipitation, separation, etc.) and reduce pesticide effectiveness.

To improve water quality, use the acidity regulator Lakmus.

LIST OF CROPS AND REGISTERED PRODUCTS

CROP	SEED TREATMENTS	HERBICIDES	FUNGICIDES	INSECTICIDES AND ACARICIDES	PLANT GROWTH REGULATOR	DESICCANT
Wheat	Benefis Benefis Supreme Bombarda Heraklion Imidor PRO Polaris Polaris Quatro Protego Max Scarlet Tebu 60 Tuareg Harita	Argo Argo Prime Ballista Glok Granat Damba Drotik Zinger Zontran Kronverk Lintaplant Lornet Ovsugen Express Pixel Pinta Primadonna Primadonna Super Uniko Femida Fenizan Fortissimo	Azorro Benazol Daizy ZIM 500 Capella Titul 390 Titul DUO Titul Trio Triada Ace	Beretta Imidor Imidor Extra Kinfos Meadows Sparring Tagor Faskord Espero	Hefk Costando	Tongara
Barley	Benefis Benefis Supreme Bombarda Heraklion Imidor PRO Polaris Polaris Quatro Protego Max Scarlet Tebu 60 Tuareg Harita	Glok Granat Damba Drotik Zinger Kronverk Lintaplant Lornet Ovsugen Super Pixel Pinta Primadonna Primadonna Super Uniko Femida Fenizan Fortissimo	Azorro Daizy ZIM 500 Capella Titul 390 Titul DUO Titul Trio Triada Ace	Beretta Imidor Imidor Extra Kinfos Meadows Sparring Tagor Faskord Espero	Hefk Costando	Tongara
Rye	Scarlet Tebu 60	Drotik Glok Lintaplant Primadonna Super Femida Fenizan	Benazol Titul 390 Titul DUO	Tagor	Hefk Costando	Tongara
Triticale		Glok Primadonna Super	Daizy			Tongara
Oats	Scarlet	Granat Zinger Lintaplant Primadonna Super Femida Fenizan	Daizy	Imidor Kinfos Tagor		
Millet		Lintaplant				

CROP	SEED TREATMENTS	HERBICIDES	FUNGICIDES	INSECTICIDES AND ACARICIDES	PLANT GROWTH REGULATOR	DESICCANT
Sorgho		Lintaplant				
Rice		Kronverk Restyle Risotto	Vintage Tessa			
Maize	Depozit Supreme Scarlet Imidor PRO	Acetal PRO Brig Versia Damba Deprimo Drotik Kassius Cornegi Cornegi Plus Kupazh Lornet Octava Primadonna Primadonna Super	Daizy Mysteria Titul Trio	Kinfos Macleod Porfir Scuter Faskord Espero Yunona		
Sugar beet	Imidor PRO Harita	Action Acetal PRO Betaren 22 Betaren Max Betaren 320 Betaren Super MD Betaren Express AM Gals Kondor Kondor Forte Lornet Mitron Forward Healer Censor Max Censor	Azorro Benazol Vintage Daizy Dzhotto ZIM 500 Kagatnik Mysteria Titul 390 Titul DUO Titul Trio	Beretta Imidor Imidor Extra Kinfos Mekar Pirelli Faskord Espero Espero Европо Yunona		
Potato	Bombarda Depozit Depozit Supreme Imidor PRO Kagatnik Puaro	Brig Zontran Kassius Lintaplant	Beludzhi Indigo Kagatnik Metamil MC Stakkato Shirma	Beretta Imidor Imidor Extra Kinfos Porfir Sparring Faskord		
Soybean	Benefis Benefis Supreme Heraklion Depozit Depozit Supreme Imidor PRO Scarlet Puaro Rizoform Rizoform Soybean	Acetal PRO Benito Brig Versia Gals Geizer Hermes Zontran Concept Kupazh Tanto Forward Healer Censor Max Censor	Azorro Vintage Daizy Mysteria	Akardo Diflomite Karachar Kinfos Macleod Mekar Pirelli Espero Yunona		Tongara Selfi

CROP	SEED TREATMENTS	HERBICIDES	FUNGICIDES	INSECTICIDES AND ACARICIDES	PLANT GROWTH REGULATOR	DESICCANT
Pea	Heraklion Depozit Depozit Supreme Imidor PRO Puaro Scarlet Rizoform Peas	Benito Geizer Hermes Kronverk Lintaplant Forward	Vintage Titul DUO Daizy	Kinfos Faskord Espero	Imidor PRO	Tongara Selfi
Chickpea	Depozit Depozit Supreme Puaro Imidor PRO	Brig Zontran Forward	Vintage	Kinfos Espero	Imidor PRO	
Beans		Brig				
Lupin	Depozit Supreme	Action Zontran Censor Max	Vintage			
Rapeseed	Scarlet Imidor PRO Harita	Gals Ilion Lornet Reper Reper Trio Flamenco Forward Healer	Daizy Mysteria Titul 390 Titul DUO Titul Trio	Apex Beretta Imidor Imidor Extra Karachar Kinfos Heo Meadows Lokustin Pirelli Sparring Faskord Espero	Daizy	Tongara Selfi
Mustard				Karachar Lokustin Faskord Espero		
Sunflower	Heraklion Depozit Supreme Imidor PRO Messer Scarlet Harita	Acetal PRO Bravura Brig Versia Hermes Forte Hermes Sanflo Flamenco Forward Healer Censor Estamp	Daizy Mysteria Titul DUO Titul Trio	Kinfos Macleod Porfir Scuter Sparring Espero Yunona		Tongara
Common flax	Tebu 60 Imidor PRO	Zinger Lintaplant Lornet Fenizan Forward Healer Censor Max		Karachar Faskord		
Oil flax		Kronverk Kupazh Lornet Fenizan Forward Censor Max	Vintage	Faskord		

CROP	SEED TREATMENTS	HERBICIDES	FUNGICIDES	INSECTICIDES AND ACARICIDES	PLANT GROWTH REGULATOR	DESICCANT
Tomato (open ground)		Zontran Estamp	Indigo	Batardo Macleod Porfir Yunona	Hefk Gibbera	
Tomato (greenhouse)			Biocomposite PRO	Apex Batardo Imidor	Hefk Gibbera	
Cucumbers (open ground)			Indigo		Gibbera	
Greenhouse cucumbers				Apex Imidor	Gibbera	
Onion		Censor Max Estamp	Indigo Stakkato	Macleod	Hefk	
Cabbage		Estamp	Stakkato	Macleod	Gibbera	
Eggplant					Gibbera	
Pepper					Gibbera	
Carrots		Brig Estamp	Stakkato			
Apple tree			Biocomposite PRO Granny Dzhotto Indigo Insignia Capella Kaperang Katrex Kantor Medeya Riviera Sulphur 400 Stakkato Shirma	Akardo Apex Batardo Diflomite Karachar Kinfos Macleod Meadows Mekar Porfir Twingo Twingo Euro Theja Yunona	Saldo Gibbera Korennik	
Pear tree			Dzhotto Indigo Kantor Capella Riviera Sulphur 400	Kinfos Twingo	Korennik Saldo	
Peach			Indigo Katrex		Korennik	
Cherry trees			Indigo Kantor Katrex	Karachar	Korennik	
Plum			Indigo Kantor Katrex		Korennik	
Sweet cherry			Indigo Kantor		Korennik	
Mandarin oranges				Kinfos		

CROP	SEED TREATMENTS	HERBICIDES	FUNGICIDES	INSECTICIDES AND ACARICIDES	PLANT GROWTH REGULATOR	DESICCANT
Strawberry		Lornet			Korennik	
Grapes			Biocomposite PRO Granny Dzhotto Indigo Kantor Capella Kaperang Medeya Metamil MC Riviera Sulphur 400 Stakkato Titul 390 Shirma	Akardo Batardo Diflomite Karachar Kinfos Macleod Meadows Mekar Porfir Sulphur 400 Tagor Twingo Theja Yunona	Korennik	
Grass and legume species		Lintaplant				Tongara
Alfalfa				Faskord		Tongara
Grasslands and pastures		Lintaplant		Imidor Kinfos Lokustin Faskord		
Lawns		Lornet				
Agricultural land		Sprut Extra		Imidor Kinfos Lokustin Faskord		
Conifers and foliage species			Medeya	Lokustin Espero		
Non-agricultural lands		Zinger Sprut Extra Shkval		Lokustin		
Grain storages				Dakfosal		

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Symbols:

 **Chemical class**

 **Formulation**

 **Hazard class for humans**

 **Guaranteed shelf life**

 **Storage temperature range**

 **Packaging**

 **Phytotoxicity**

 **stock solution preparation is required**

 **Aerial spraying is allowed**

Insecticide hazard classes for bees:

Hazard class 1, high hazard

Hazard class 2, medium hazard

Hazard class 3, low hazard

Warning!

The catalog contains promotional materials of an advisory nature.

Before applying a specific product, **strictly follow the instructions and application regulations attached to the packaging**. It is also necessary to comply with toxicological and safety requirements, recommendations for the protection of beneficial flora and fauna, as well as restrictions and safety measures during the transport, application, and storage of pesticides and agrochemicals.

The catalog includes products and updates to crop regulations that are currently in the process of registration. Please verify registration status with Schelkovo Agrohim representative offices. Only registered products may be used in accordance with regulations.

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