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Healthy Land
BIOPREPARATIONS

LET'S GROW
biogarden

BIOLOGICAL PRODUCTS FOR AGRICULTURE



BTU



2025

BTU GROUP OF COMPANIES

>500
employees

>4
million ha/year

>60
Biological products in portfolio

>2300
field trials with 90% success rate and 10% ≈ increase of the yield







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BTU ON THE MARKET OF BIOLOGICALS IN UKRAINE AND IN THE WORLD



The largest producer and exporter of biologicals in Ukraine (market share – 46.5%)*



It is among the 25% of the world's largest producers of bioproducts

IBMA
INTERNATIONAL BIOCONTROL MANUFACTURERS ASSOCIATION

The only Ukrainian manufacturer recognized by IBMA

1999

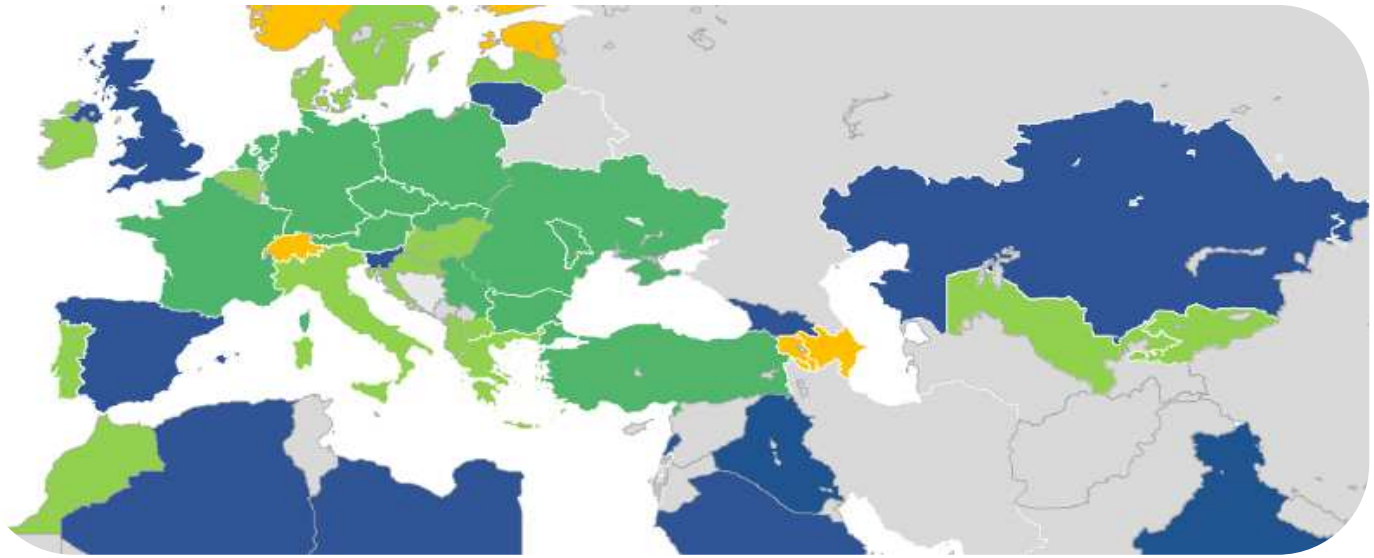
Private company founded by Bolokhovsky family



Office in Germany since 2019 – BTU-CENTER Europe GmbH

>25

scientific and educational institutions in collaboration around the world



>20 countries
Export on a permanent basis

40 countries
Performing studies and registration

>15 biologicals
Registered in the EU; most are FIBL certified

*Source: according to Fin. reports of the main market operators; assessment by Pro-Consulting

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PRODUCTION



ISO 9001 certification



Production capacity 10,000 t/year



Special equipment for tentatively sterile conditions



Special storages with temperature control



Modern bottling lines



Few hundred of deposited strains of microorganisms

OFFICES IN GERMANY AND UKRAINE









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BTU ON THE FOREFRONT OF BIOLOGICALS INDUSTRY



NewAg Conferences (Poland, Germany, Brazil, Thailand etc.)



BioAgTech Congress (Spain, USA, India etc.)



ABIM (since 2017)



World Biostimulants Congress (USA, Italy, Spain etc.)



DLG, FIBL ORGANIC FIELD DAYS (GERMANY – SINCE 2022)



EuroSoil, AgraME, EGU and other industrial events

INTERNATIONAL POLICY - MAXIMUM SUPPORT OF PARTNERS

01 **We identify the most promising solutions for each country**

02

We **test selected preparations** in local conditions

03

We **prepare a dossier** for the registration of preparations

04

We **patent** trademarks

05

We **teach** specialists of our partners

06

We carry out additional **certification** if it is required

07

We carry out **farm trials** with the most promising customers

08

We **track the test results** and summarize them together with a partner

09

We provide **ongoing agronomic support** and advice on preparations application

10

We **coordinate the development** of the presence of our preparations in each country

11

We provide **marketing support:** materials, joint participation in events, publications

12

We hold the **annual meeting of international partners** for training and sharing experiences

13

We try to be the **best suppliers for partners,** respond to all requests and suggestions

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MOST PERSPECTIVE PRODUCTS OF BTU



ECOSTERN

Plant residues decomposition, soil recovery

12



GROUNDFIX

PK-mobilization

17



MYCOFRIEND

Complex mycorrhizal product

20



AZOTOFIT/ AZOTOHELP

N-fixation and growth activation

25



ORGANIC-BALANCE

Growth stimulation and stress management

30



LIPOSAM

Natural adhesive agent

34



RIZOLINE

Symbiotic bacteria for leguminous

39



COMPONAZA

Acceleration of composting process

43

To be registered in the EU in 2025



FITOCID

Antagonist of pathogenic microflora

47



SCLEROCID

Biological control agent against white rot (Sclerotinia)

51



METAWHITE

Protection of plants from soil pests

57



BITOXIBACILIN -BTU

Biological insecticide

61

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VITAL EFFICIENCY DATA



	>155(70)	>300	>410(165)	>480(230)	>290	>320(90)
	90%	83%	90%	81%	80%	86%
	>2 mln ha	>2 mln ha	> 250 K ha	>150 K ha	>100 K ha	>150 K ha
	>70 $/ha	>30 $/ha	>100 $/ha	>60 $/ha	>55$/ha	>65 $/ha
	15	15	15	12	10	15

BTU SOLUTIONS ADDRESSING GLOBAL AGRICULTURAL CHALLENGES

1. **C-management.** With the use of biologicals as **Ecostern**, you can:
   - enhance soil C-capture processes,
   - accelerate plant residues decomposition,
   - stop the loss of humus compounds,
   - restore biological activity/functionality of the soil.
2. **PK-mobilization with Groundfix**
   - >86% guarantee of extra yield based on 600+ trials when applied to standard technology;
   - proven possibility to decrease dosages of fertilizers up to 20-30%;
   - proven enhancement of fertilizers: organic, granular, LCF, etc.
3. **N-fixation with Azotohelp**
   - cost efficient alternative to alter N: 20-60 kg/ha;
4. **Alternative to the chemical adjuvant – Liposam**
   - prevention of active substance dropping from the surfaces;
   - stress mitigation (drought, herbicide);
   - preservation of rapeseed, soya pods from cracking of the pods.
5. **Abiotic stress management – Organic-Balance, Azotohelp, Liposam**
   - drought, salinity, flood.
6. **Biological control of pathogens:**
   - Fitocid against *Powdery Mildew, Botrytis, Fusarium, Septoria, Alternaria* etc.
   - Sclerocid against *Sclerotinia*



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ECOSTERN SC, PREMIUM WP

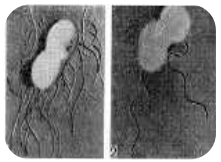


Complex microbial preparation for decomposition of plant residues

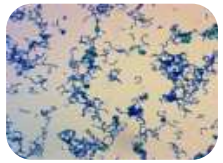
ECOSTERN treats the soil and accelerates the decomposition of crop residues, in particular those that are difficult to decompose. Bioproduct contains the active factors such as different bacteria and spores\mycelium of *Trichoderma* fungi which influence the natural cellulose-destroying processes.

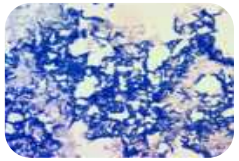
Effect of application:
- effective decomposition of crop residues;
- enrichment of organic matter and available elements of plant nutrition;
- neutralization of phytotoxins;

Rate of application: 1-2 l/ha; 0,5-1 kg/ha;
Application methods: after harvesting cereal, technical and other crops for treatment of soil and crop residues in order to accelerate their decomposition; improvement of soil physical and agrochemical parameters;
Titer: SC - $>1\times10^9$ CFU/cm^3; **WP** - $>1\times10^8$ CFU/g;
Shelf life: SC - 6 months at 4 °C to 10 °C or 12 months at 0 °C to 4 °C; **WP** - 18 months at 4 °C to 10 °C or 12 months at 10 °C to 25 °C.


Agrobacterium pusense


Bacillus velezensis

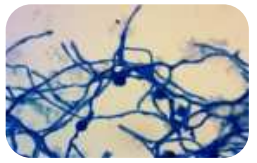

Bacillus subtillis


Bacillus licheniformis


Bacillus amyloliquefaciens


Paenibacillus polymyxa


Enterococcus


Trichoderma viride

Priestia megaterium
Agrobacterium salinitolerans
Trichoderma koningii
Trichoderma harzianum

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ECOSTERN. HOW TO CHECK THE DESTRUCTOR'S WORK?

VISUALLY



- Change in the structure of plant residues



- Decrease in the amount of residues in 3 months
- Improving soil condition



- Better plant development
- Crop yields increase

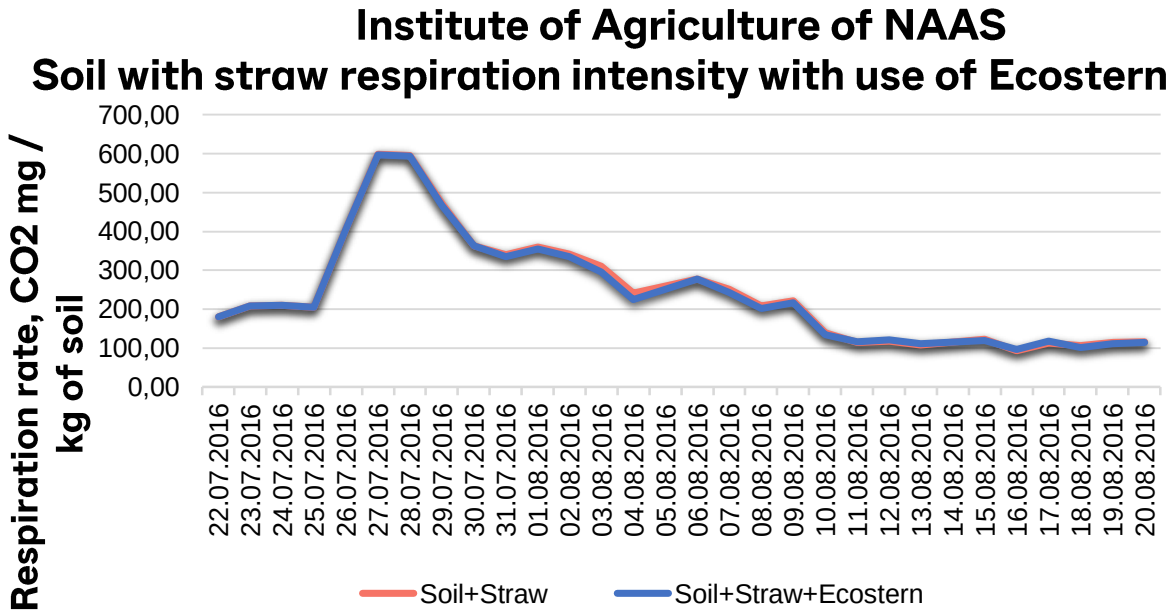
LABORATORY METHODS

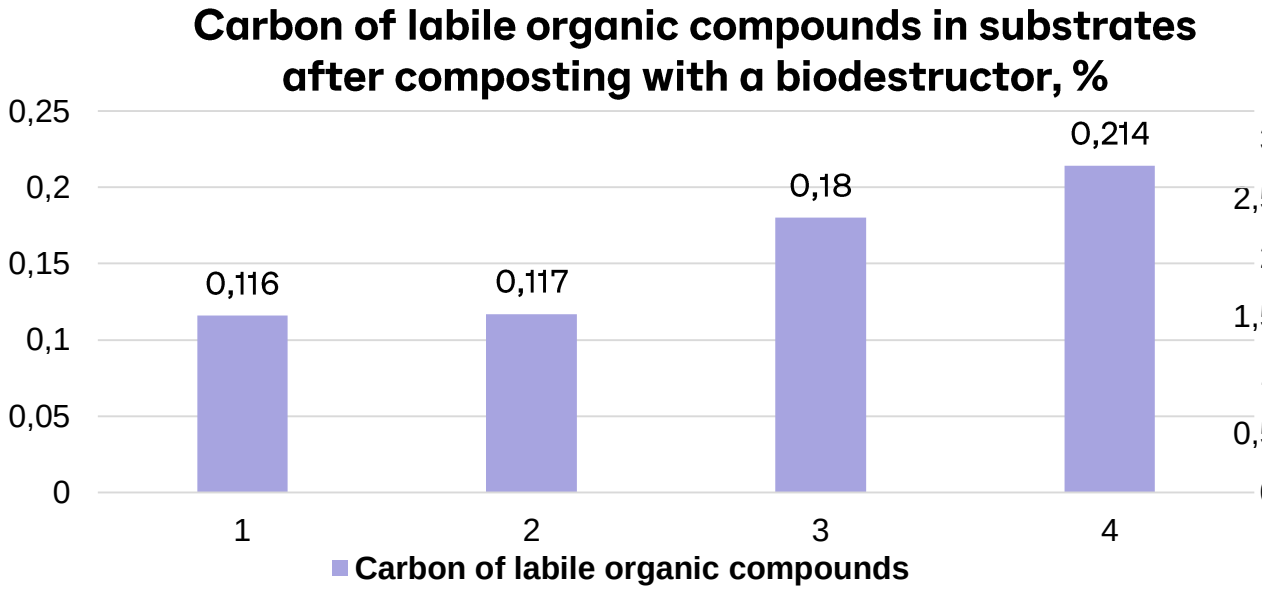
- Selection and weighing of plant residues
- Microbiological and mycological soil analysis to determine the quantitative and qualitative composition of the soil microbiome
- Agrochemical analysis of soil to determine the provision of soil with basic nutrients
- The structure of biometric indicators of the yield and product quality

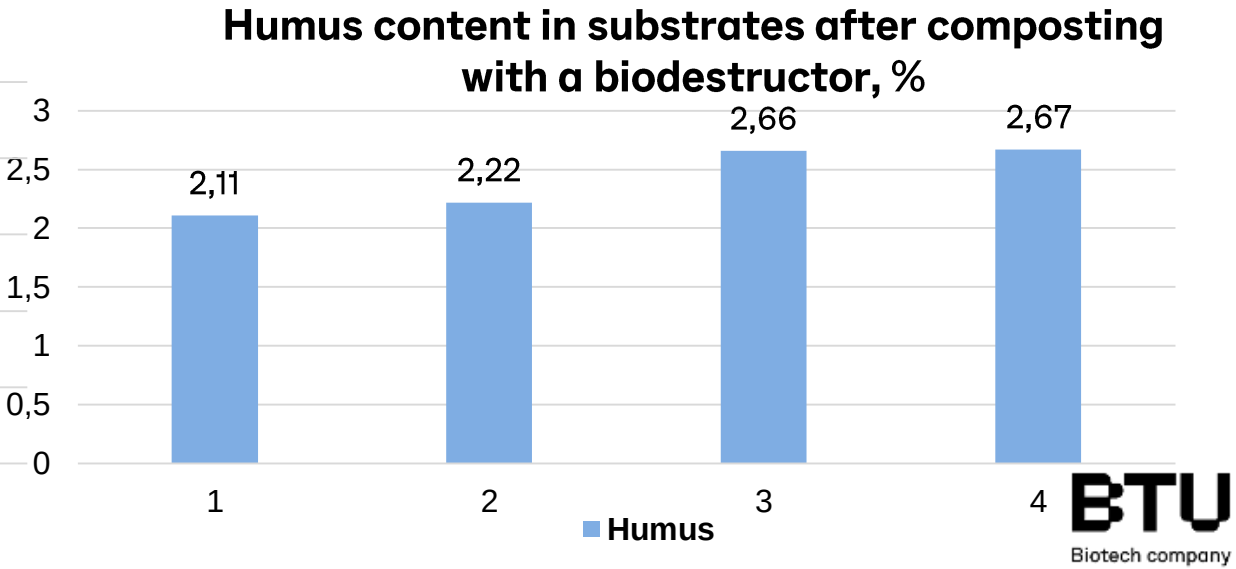


CARBON SEQUASTRATION WITH ECOSTERN

Location	NSC "NAAN INSTITUTE OF AGRICULTURE"
Crop	Corn
Product	Ecostern
Scheme of trial	1 - soil (native - without removing small roots, grinding and sifting through a 2 mm sieve); 2 - soil + Ecostern; 3 - soil + stalks (corn); 4 - soil + stalks (corn) + Ecostern
Duration of trial	30 days
Other	Replication x4. After completion of the trial the content of total humus and carbon of labile organic compounds in the soil was determined.

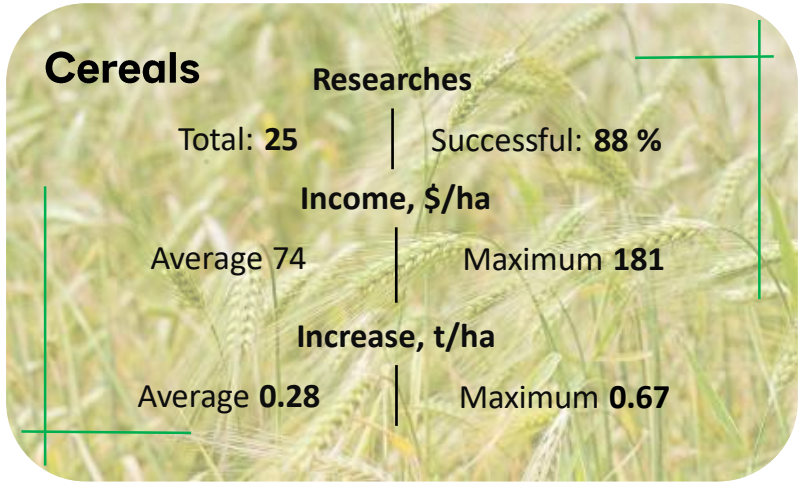


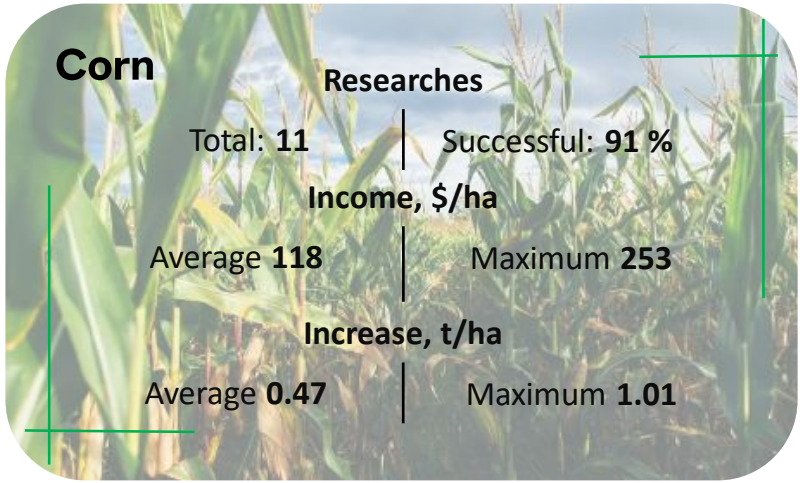


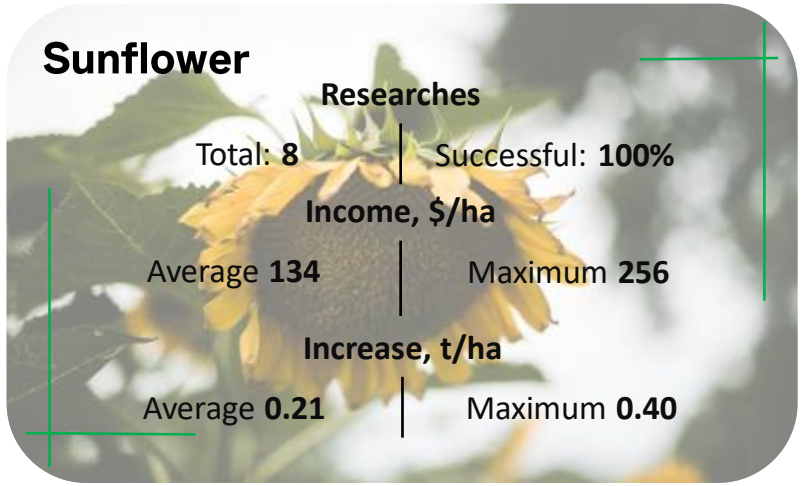


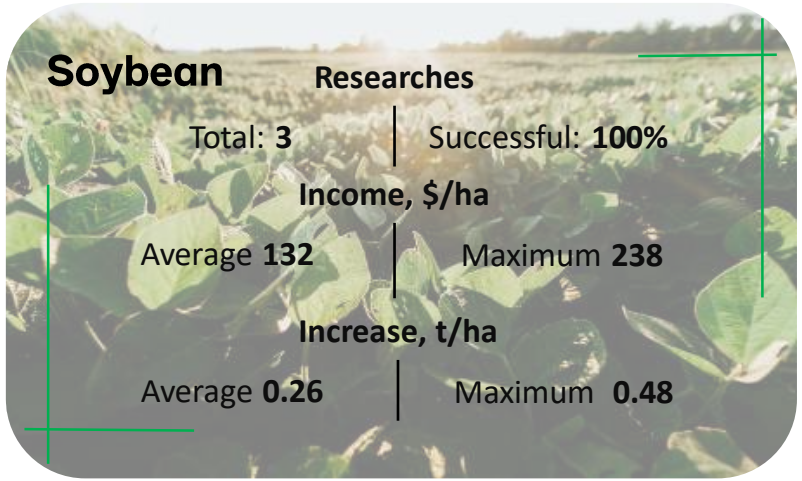
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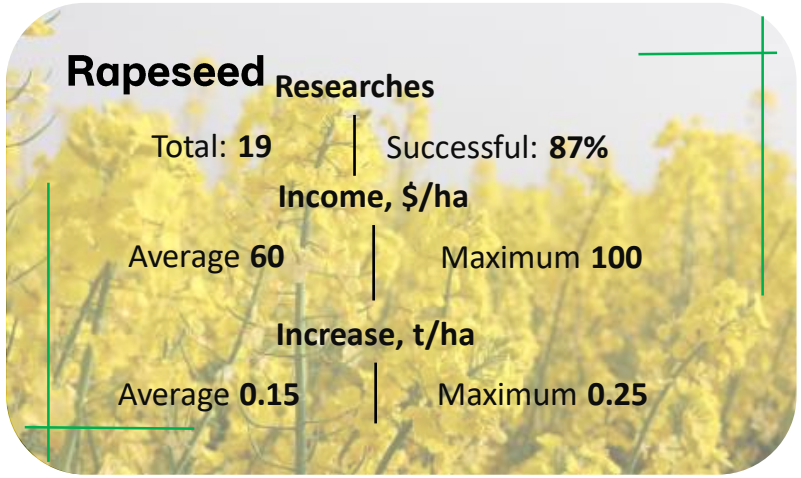
ECOSTERN. STATISTICS OF RESULTS FOR DIFFERENT CROPS











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DIFFERENT FORMULATIONS OF GROUNDFIX

Ukrainian biotechnologies

Manufacture | Consultation office | R&D







#	GROUNDFIX, SC	GROUNDFIX EXTREME, SC	GROUNDFIX, WP
Position	The most cost-effective, efficacy proven in 400+ trials; fast action and complex effect (NPK)	For extreme storage conditions (up to 6 months at +40) and application (in tank mixes; on granules; in hot regions); easy to use (liquid)	Concentrated, complex; easy to distribute (dry form)
Composition	*Bacillus subtilis,* *Priestia megaterium,* *Agrobacterium pusense,* *Agrobacterium salinitolerans,* *Paenibacillus polymyxa,* *Bacillus licheniformis*	*Bacillus subtilis,* *Priestia megaterium,* *Paenibacillus polymyxa,* *Bacillus licheniformis,* *Paenibacillus mucilaginosus*	*Bacillus subtilis,* *Priestia megaterium,* *Agrobacterium pusense,* *Agrobacterium salinitolerans,* *Paenibacillus polymyxa,* *Bacillus licheniformis*
Titer	>1,0 x 10^9 CFU/cm^3	>1,0-1,5 x 10^9 CFU/cm^3	>2,0 x 10^9 CFU/g
Storage	12 months at 4 °C to 10 °C or 6 months at 10 °C to 15 °C	24 months at +4°C to + 25°C or 6 months at +40 °C	36 months at 4 °C to 25 °C
Application rate	3-5 l/ha	1-3 l/ha	0,5-1,5 kg/ha

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GROUNDFIX SC, EXTREME SC, PREMIUM WP

Complex Soil BioFertilizer

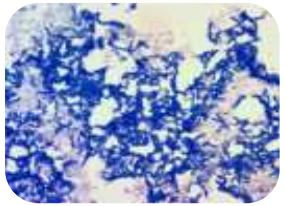


Groundfix (PK-mobilizer) is based on spores and the living cells of natural phosphorus and potassium mobilizing, nitrogen-fixing bacteria. Product composition contains the beneficial metabolites: vitamins, phytohormones, amino acids and other physiologically active substances.

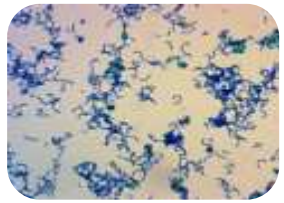
Effect of application:

- provides a gradual increase in available to plants forms of phosphorus and exchangeable potassium in soil;
- increases the nutrient/fertilizer use efficiency by 1.2-1.5 times;
- reduces the consumption of fertilizers up to 20%, etc.;

Rate of application: 0,5-3 l/ha; 0,5-1,5 kg/ha;
Application methods: primary cultivation, before sowing cultivation, treatment in tranche during sowing, early spring treatment, UAN fertilization;
Titer: SC - >1,0×10^9 CFU/cm^3; **WP** - >2,0 × 10^9 CFU/g;
Shelf life: SC - 24 months at temperature from 4 °C to 25 °C; 6 months at temperature from 40 °C;
WP - 36 months at 4 °C to 25°C.



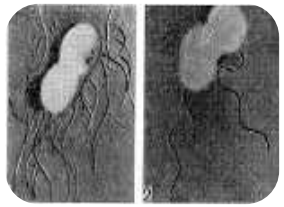
Bacillus licheniformis



Bacillus subtilis



Priestia megaterium



Agrobacterium pusense



Paenibacillus polymyxa

Agrobacterium salinitolerans

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GROUNDFIX. HOW TO CHECK THE PRODUCT WORK?



- Increases the biological activity of the soil, improves the soil, increases the stress resistance of plants.



- Positive aftereffect in agrocenoses;
- Increases the utilization rate of nutrients from fertilizers by 1.2-1.5 times.



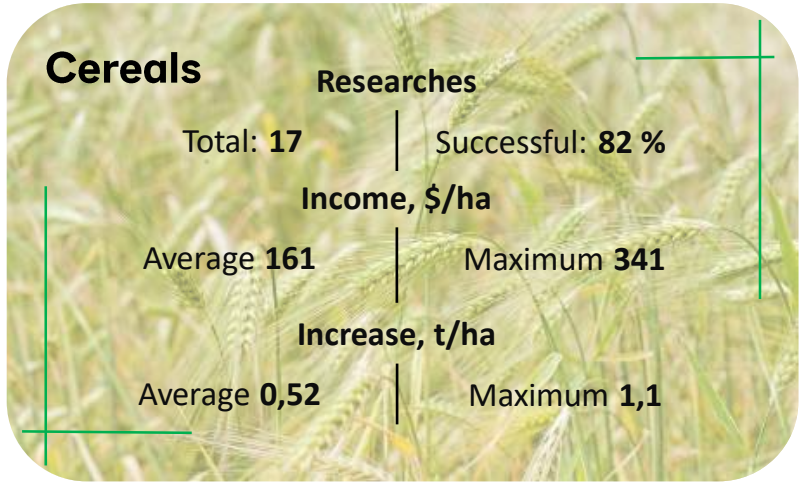
- Increases yields by up to 25%;
- The possibility of reducing the application rates of mineral fertilizers by 30%.

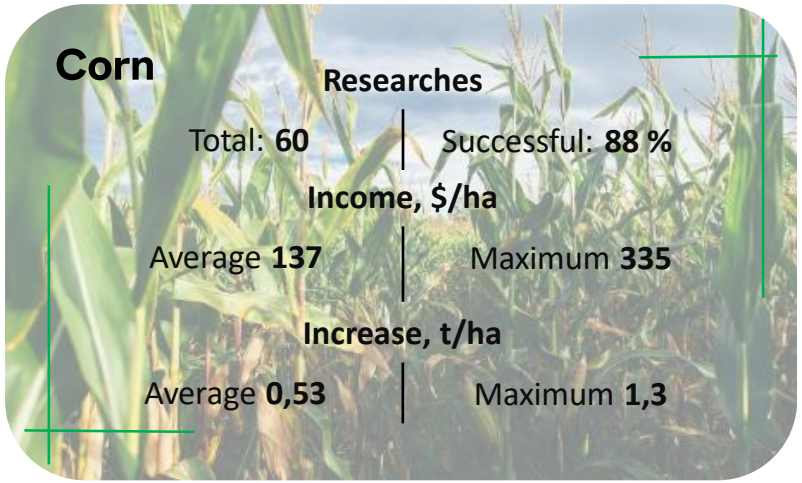
- Mobilizes of fixed soil phosphorus and potassium and make it accessible for plants;
- Improves the assimilation of biogenic elements from mineral fertilizers by plants;
- Increases the degree of mobility of phosphorus in the soil by 16-41 %, potassium by 5-16 % and their availability to plants.

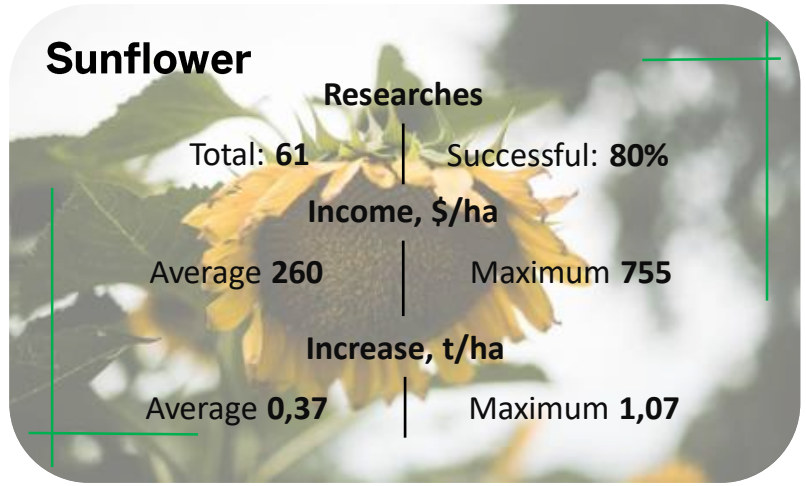


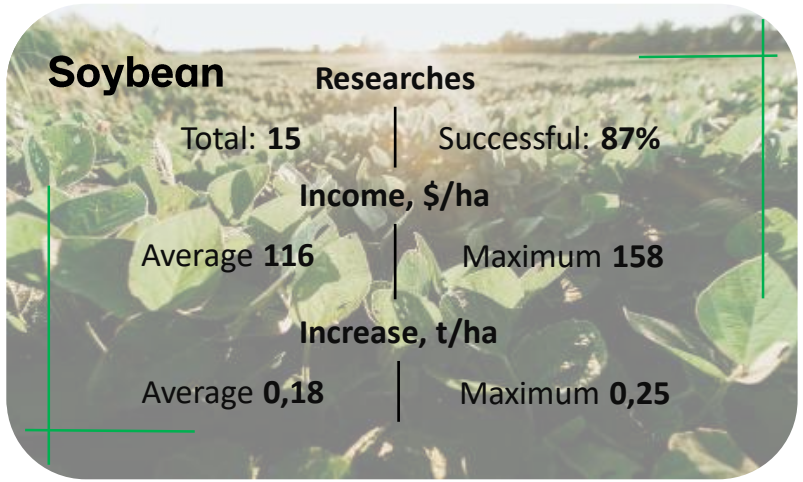
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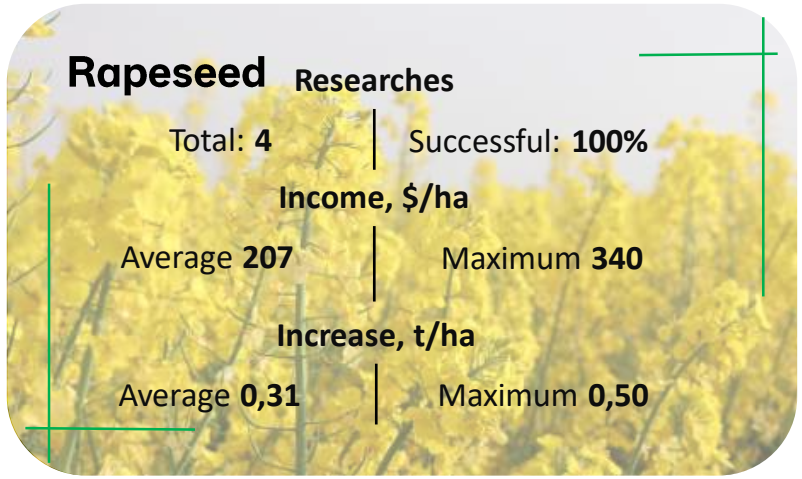
GROUNDFIX. STATISTICS OF RESULTS ON DIFFERENT CROPS











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MYCOFRIEND SC, AP



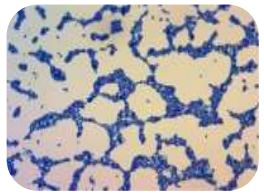
Complex mycorhizal product

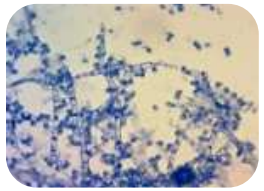
MYCOFRIEND (SC) and MYCOFRIEND-t (AP - peat form). Mycorrhizal bioproduct for plant nutrition. It promotes colonization of the root zone and rhizosphere with mycorrhizal fungi, saprophytes and rhizosphere bacteria; increases resistance to stressful conditions, intensify the metabolism of plants and nutrition.

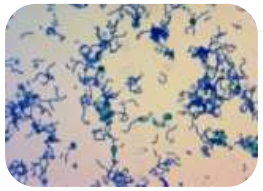
Effect of application:

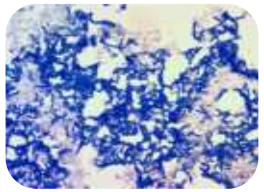
- increase the absorption area of the root system of plants due to the development of mycorrhiza;
- providing plants with balanced mineral nutrition;
- improvement of seed germination, survival of seedlings and saplings;

Rate of application: 1,5 – 5 l/t, 0,2-0,3 l/ha; 1-8 kg/t;
Application methods: pre-sowing seed treatment, application in-furrow;
Titer: SC >1×10^8 CFU/ml; **WP** - >1×10^8 CFU/g.
Shelf life: SC 12 months at 4 °C to 10 °C; **AP** - 24 months at 4° C to 25°C.

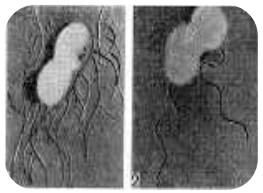

Glomus sp.


Trichoderma sp.


Bacillus spp.


Priestia spp.


Paenibacillus spp.


Agrobacterium spp.


Rhodotorula sp.

Candida sp.

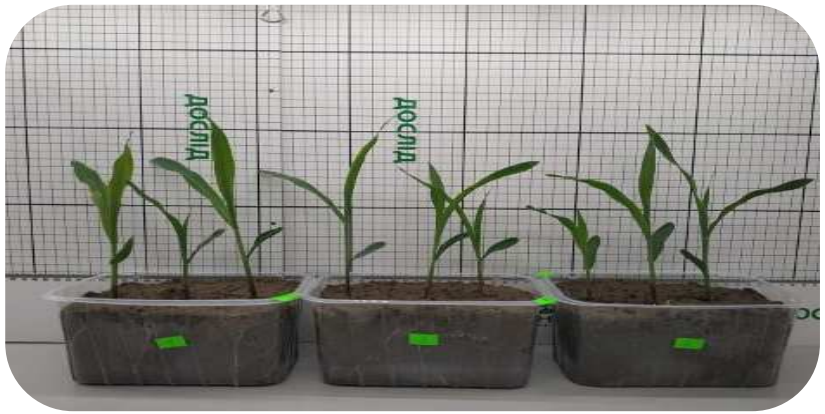
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MYCOFRIEND. HOW TO CHECK THE PRODUCT WORK?



- Increases the root system's absorption of nutrients and moisture through the development of mycorrhiza.

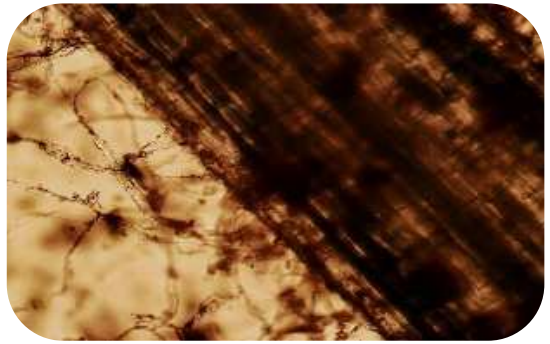


- Improvement of seed germination, survival of seedlings and saplings.



- Increases crop yields and economic efficiency (e.g. on maize EBITDA) by $120/ha and on sunflowers by $90/ha).

- Colonizes of root and rhizosphere by mycorrhizal fungi and saprophytic rhizosphere bacteria;
- Provides moisture retention in the root zone of the plant;
- Ensures plants with vitamins, phytohormones, amino acids;
- Improves product quality.



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HOW TO USE THE DRY FORM OF THE PRODUCTS?



Video on our YouTube channel



Opening foil packaging



We receive the preparation in vacuum packaging



We provide air access to the bag



Blend contents to a smooth powder



Distribute evenly across compartments



Start mixing the top layers



Thoroughly mix the lower layers



Sowing)))

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HOW TO USE THE LIQUID FORM OF PRODUCTS?



1. Complex of equipment for seed treatment stationary





4. The system of applying LCF in a row during sowing



2. Screw dressing machine

3. With the help of a knapsack sprayer during grain loading with a screw loader in seed machine, or when unloading grain from a big bag into a seeder hopper.



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EFFICACY OF MYCOFRIEND® (FARMERS TRIALS)

CEREALS

Trials

Total: 60 | Successful: 78 %

Income, $/ha

Average: 48 | Maximum: 238

Increase, t/ha

Average: 0,26 | Maximum: 1,28

CORN

Trials

Total: 87 | Successful: 88 %

Income, $/ha

Average: 45 | Maximum: 310

Increase, t/ha

Average: 0,27 | Maximum: 1,87

SUNFLOWER

Trials

Total: 53 | Successful: 86%

Income, $/ha

Average: 51 | Maximum: 151

Increase, t/ha

Average: 0,17 | Maximum: 0,50

LEGUMES

Trials

Total: 29 | Successful: 86%

Income, $/ha

Average: 87 | Maximum: 331

Increase, t/ha

Average: 0,21 | Maximum: 0,80

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AZOTOHELP SC, PREMIUM WP





Natural growth stimulant; N-fixer

Bioproduct in **SC formulation** is based on active cells of natural nitrogen-fixing bacteria *Agrobacterium pusense*. **Premium WP** is based on *Agrobacterium pusense and Bacillus licheniformis.* After application, it produces biologically active metabolites: amino acids, vitamins and phytohormones.

Effect of application:

- actively fixes the molecular atmospheric nitrogen;
- increases resistance of plants to stress factors;
- improves seed germination;
- stimulates development of the root system and plants;
- improves nutrient absorption;
- increases crop yield;

Rate of application: 0,1 - 1,5 l/t; 0,2 - 3,0 l/ha; 0,15-1 kg/ha;
Application methods: pre-sowing treatment of soil or seeds/tubers, root fertilizing (fertigation, rowing), foliar fertilizing (spraying of plants);
Titer: SC >1,0×10^9 CFU/cm^3; **WP** - 1.0 × 10^9 CFU/g;
Shelf life: SC - 12 months - at 4 °C - 10 °C; **WP -** 24 months at 4 °C to 25°C.

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AZOTOHELP. HOW TO CHECK THE PRODUCT WORK?



- Improves seed germination;
- Stimulates the development of the root system.

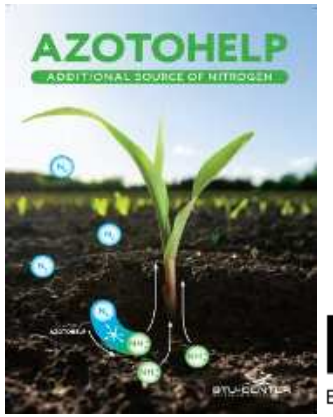


- Improve the quality and size of raw material;
- Increases crop yield.



- Increases plant resistance to stress factors;
- Activation of plant growth and flowering.

- Actively captures molecular atmospheric nitrogen and enriches the soil with up to 60 kg/ha (average 25 kg/ha),
- Synthesizes growth-stimulating substances (biologically active substances, nicotinic acid, pantothenic acid, pyridoxine, biotin, heteroauxin, gibberellins, growth hormones),
- Improves nutrient absorption and strengthens the immune system of plants.



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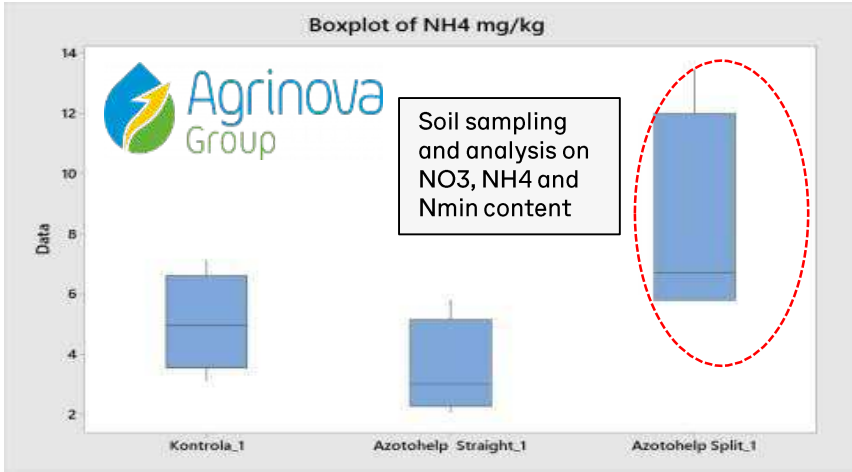
AZOTOHELP. COMPENSATION 160 KG/HA UREA, CZECH REPUBLIC, HUMPOLEC STATION, 2022

Trials executor: VÚRV, Field station Humpolec, The Czech Republic
Method: small plot trials, 4 repetitions



Variants	Before planting	6 leaves stage	Before blister
Control standard „var. 4“	urea 200 kg/ha + amofos120 kg/ha		
AZOTOHELP straight „var. 6“	urea 40 kg/ha + amofos 120 kg/ha	Azotohelp 0,5 l/ha	
AZOTOHELP split „var. 9“	urea 40 kg/ha + amofos120 kg/ha	Azotohelp 0,25 l/ha	Azotohelp 0,25 l/ha

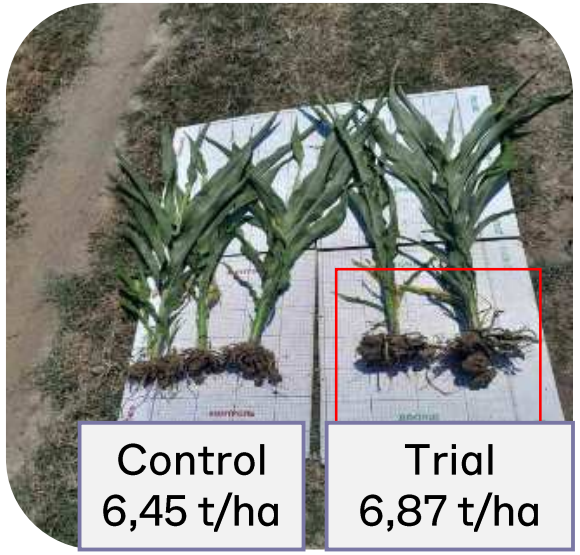
№	Variant	Green mass	Yield of mass (recalculated. to 100% dry matter)	Dry mass
		t/ha	t/ha	%
4	Control	52,07	19,95	38,30
6	Azotohelp 0,5 l/ha	54,79	22,85	41,71
9	Azotohelp 2x0,25 l/ha	55,85	22,07	39,52



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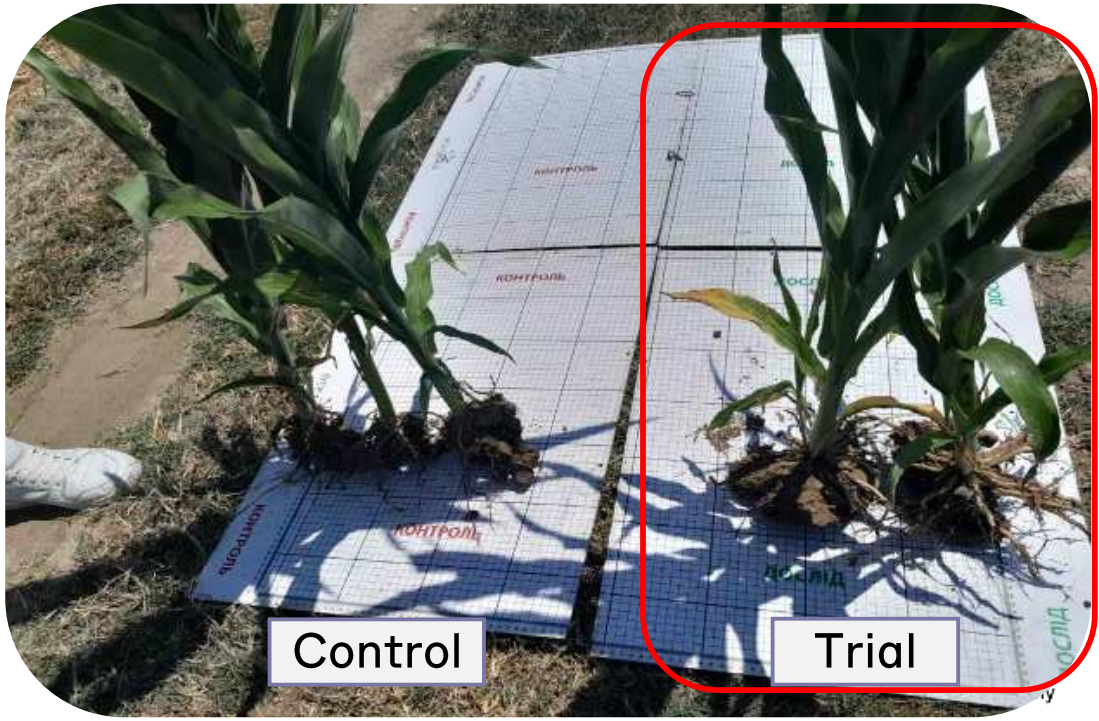
AZOTOHELP. EFFICIENCY OF DRY FORMULATION ON SORGHUM IN ITALY, 2023

Trial with Azotohelp WP.
Location: Italy, Bologna
Background: heavy rains during seedling stage. Temperature at date of inspection - 46 C.
Tank mix: Azotohelp 0,15 kg/ha + Liposam 0,3 l/ha.
Date of application: 21.06.2023.
Date of inspection: 10.07.2023

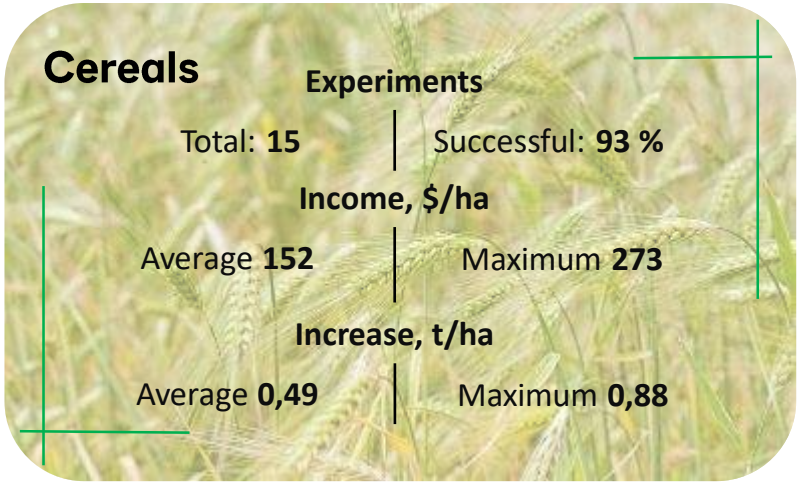


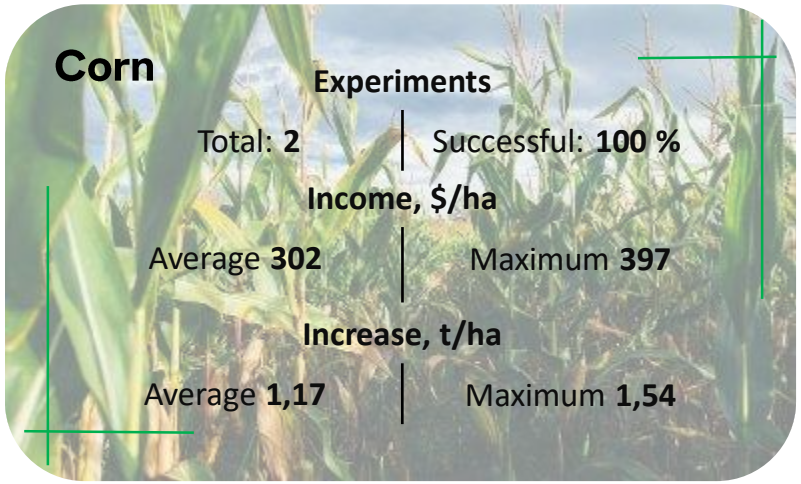


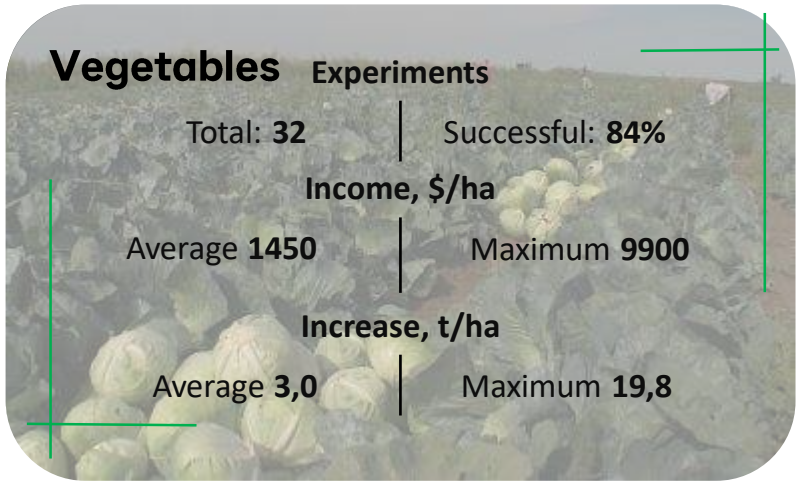


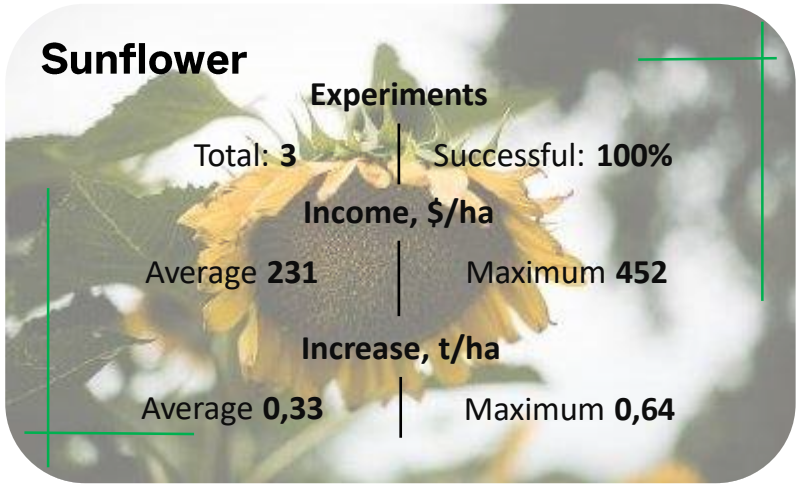


AZOTOHELP. STATISTICS OF RESULTS ON DIFFERENT CROPS









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ORGANIC-BALANCE, SC

Biostimulant, basic component of the “STOP STRESS” program



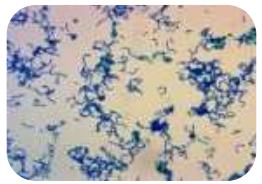
Bioproduct is based on living bacteria such as: nitrogen-fixing bacteria which provide plants with nitrogen, phosphorus- and potassium-mobilizing bacteria which transform compounds difficult for assimilation in accessible forms. In addition, the product contains biologically active metabolites: amino acids, vitamins, phytohormones.

Effect of application:
- increases resistance of plants to stress factors: biotic, anthropogenic, climatic, edaphic;
- increases germination, provides seedling uniformity and vigor;
- provides plant balanced nutrition, improved development;
- increases the crop yield;

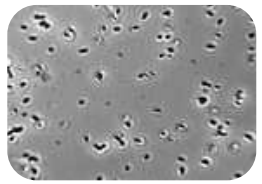
Rate of application: 0,15 - 6 l/t, 0,2 - 2 l/ha;
Application methods: pre-sowing seed treatment, spraying of plants during the growing season;
Titer: >1×10^8 CFU/ml;
Shelf life: 24 months at 0° C to +10°C or 12 months at +10° C to +15°C.



www.freepik.com



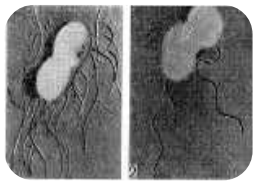
Bacillus spp.



Lactobacillus spp.



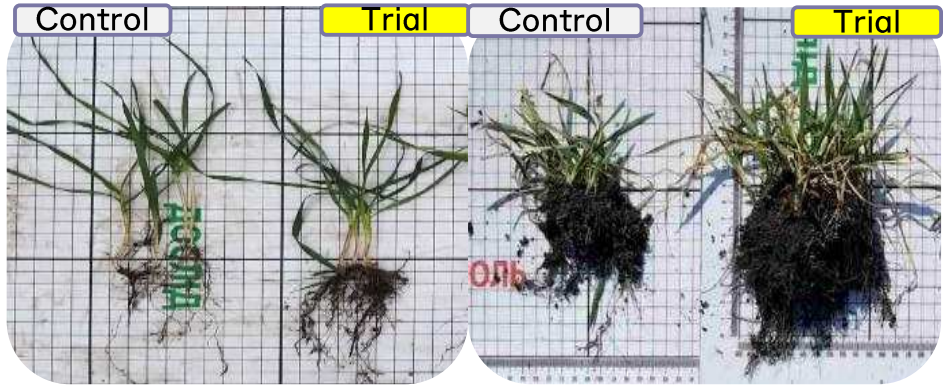
Paenibacillus spp.



Agrobacterium spp.

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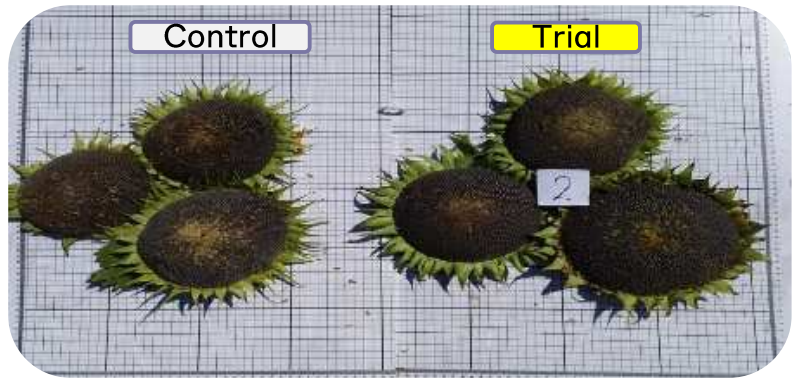
ORGANIC-BALANCE. HOW TO CHECK THE PRODUCT WORK?



- Increases germination, provides seedling uniformity and vigor;
- Increases resistance of plants to stress factors: biotic, anthropogenic, climatic, edaphic;



- Improve state of plant health (based on NDVI index);
- Universal in application for various crops.



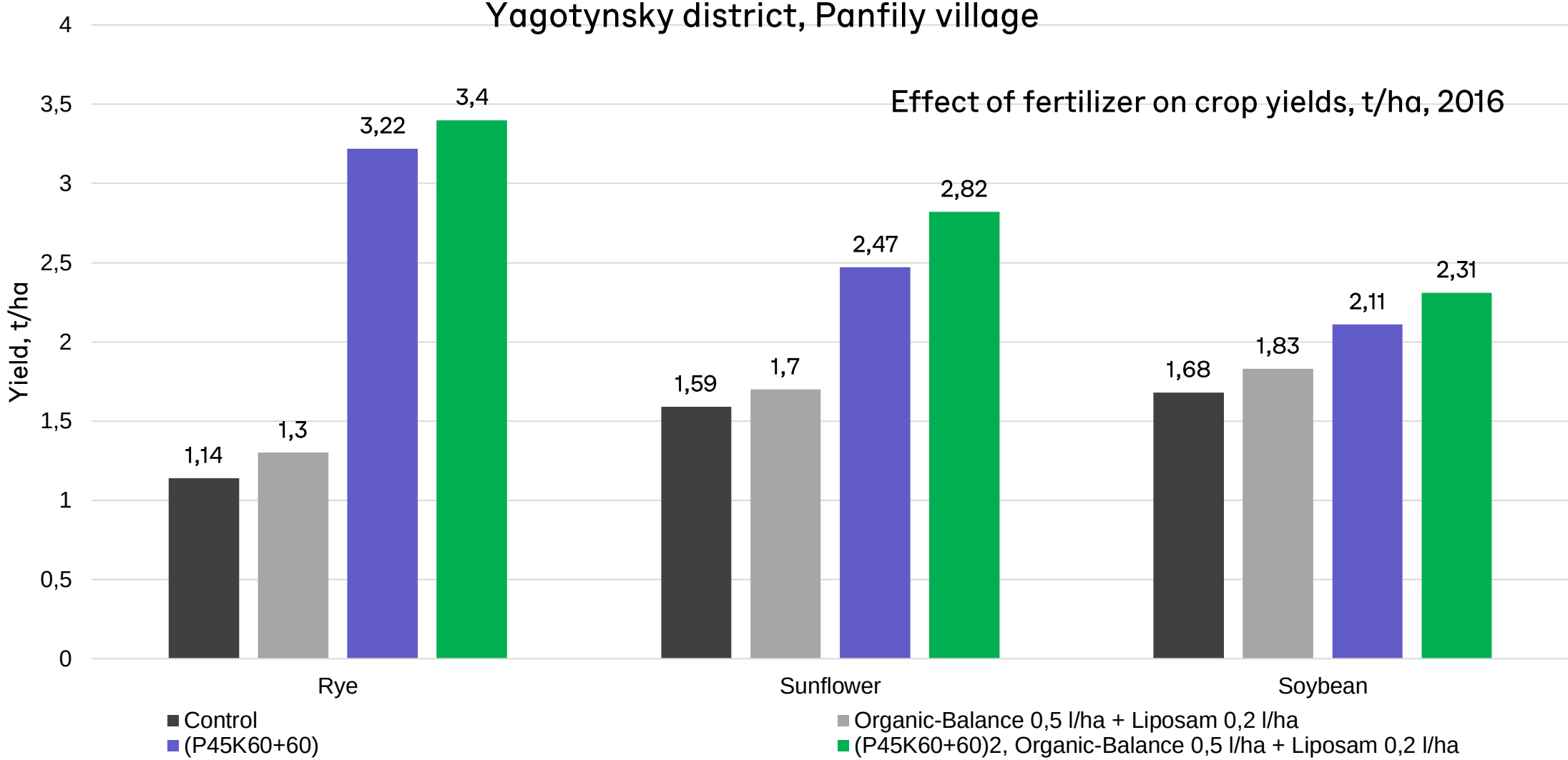
- Improves the quality and size of the product/raw material;
- Increases the crop yield.

- Provides plant balanced nutrition by mobilizing the potassium and phosphorus in the soil (soil analysis);
- Test for quality of raw material. Non-toxic to humans, animals and insects.
- Compatible with other biologicals in tank mix;

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ORGANIC-BALANCE. TRIALS ON AGRICULTURAL CROPS. RESEARCH STATION, UKRAINE, 2016

NSC "Institute of Farming of NAAS", Panfilska Research Station, Kiev region, Yagotynsky district, Panfily village



BTU Biotech company

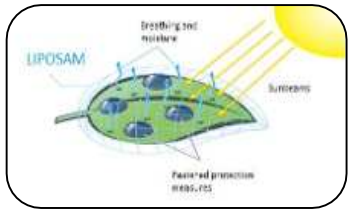
ORGANIC-BALANCE. FIELD EFFICIENCY STUDIES

Year	Region	Crop	Application rate, l/ha	Yield, t/ha		Increase, t/ha
				Control	Trial	
2017	Kirovograd	Corn	0,5	5,28	5,94	0,66
2017	Kirovograd	Buckwheat	0,5	0,89	1,44	0,55
2017	Kyiv	Winter rye	0,5	3,23	3,53	0,3
2017	Kyiv	Winter Triticale	0,5	4,34	4,72	0,38
2018	Ternopil	Winter wheat	0,5	6,12	6,95	0,83

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LIPOSAM, GEL







Paenibacillus polymyxa

Increase the efficiency and duration of nutrition and plant protection products, enhance resistance to stress factors

Bioproduct is based on complex of natural exopolysaccharides produced by bacteria. LIPOSAM® is a sticking agent-carrier for tank mixtures of plant protection agents, biostimulants and foliar fertilizers. Bioproduct is allowed for organic farming.

Effect of application:

- fixes the bioproducts and other plant protection and nutrition products on the planting material;
- forms a protective elastic grid that retains moisture;
- provides high efficiency of soil herbicides under adverse weather conditions;
- operates in a wide range of temperatures up to 50 °C;
- sorbent-carrier, antistressant and increases the drought tolerance of plants;

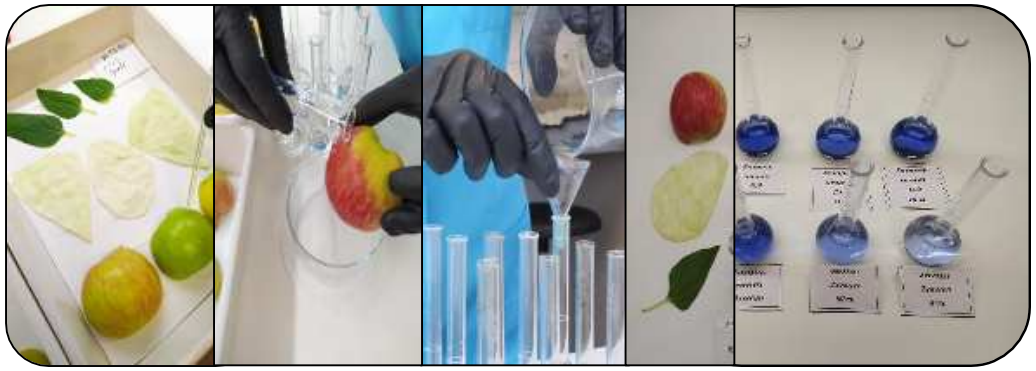
Rate of application: 0,2 - 1,0 l/ha; 0,15 - 1,5 l/t;

Application methods: application together with soil herbicides; pre-sowing treatment of seeds, potato tubers, bulbs; spraying of plants during the growing season together with biological and chemical plant protection and nutrition preparations; soaking roots of seedlings, other planting material;

Shelf life: 3 years at 0 °C - 20 °C.

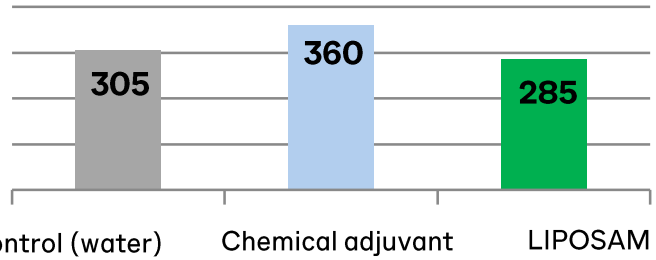
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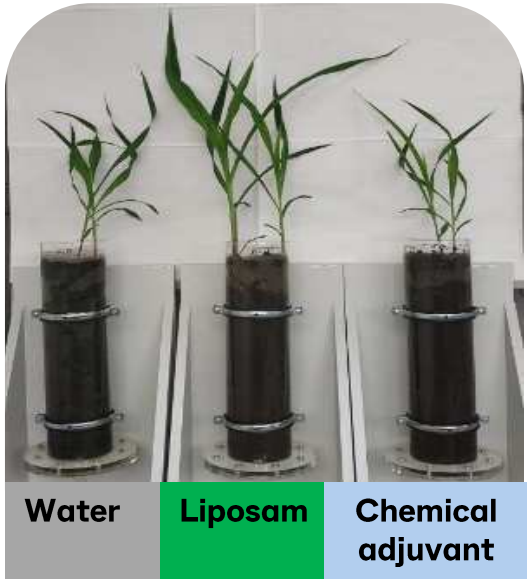
LIPOSAM LABORATORY TESTS, 2020-2021



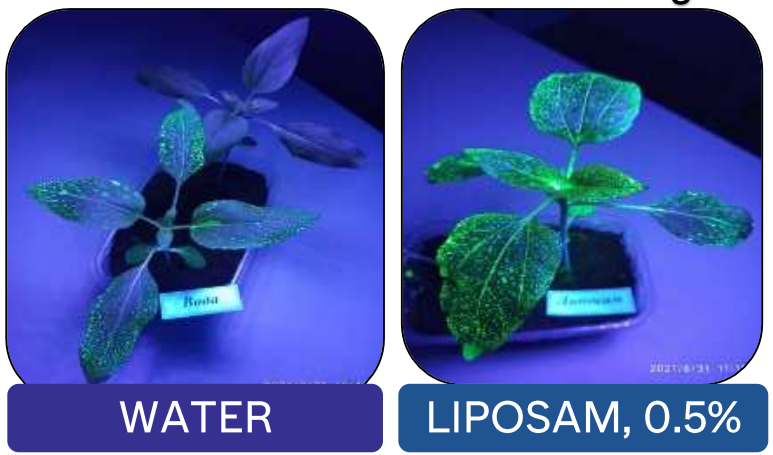
Parameters	% of active substance remained on the leaves after rain simulation		
	Water	LIPOSAM	Proportion of fixation due to the use of LIPOSAM
Crop	**30 min. after application**		
tobacco	20	42	**+22 (+100%)**
sunflower	25	36	**+11 (+50%)**
corn	17	31	**+14 (+100%)**
60 min. after application			
tobacco	26	62	**+36 (+138%)**
sunflower	26	50	**+24 (+92%)**
corn	26	50	**+24 (+92%)**
cabbage	17	46	**+29 (+170%)**
apple	4	24	**+20 (+500%)**

Influence of Liposam on water holding capacity in the 0-50 cm soil layer in strong rain model, amount of leachate obtained during 2 months

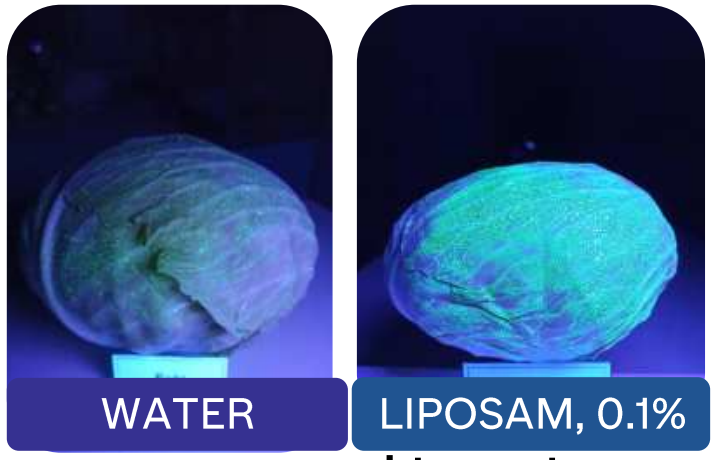




Plants leaves, treated with paint, after 3-5 min of rain modeling



Fluorescent paint model for adhesion assessment



LIPOSAM TO IMPROVE DROUGHT TOLERANCE OF PLANTS. LAB TESTS, 2020



WATER

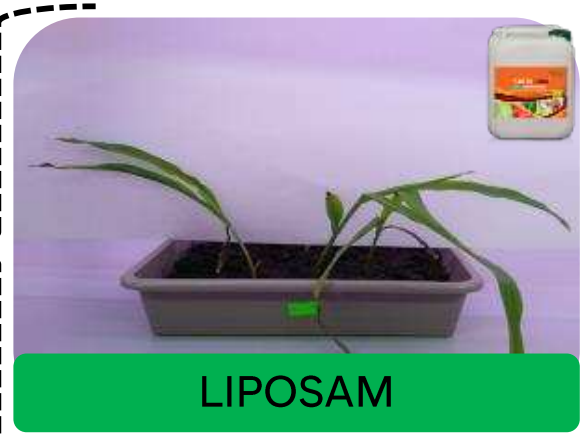


LIPOSAM

24.04.20

Working solution with **LIPOSAM**, water applied to the plants and stop watering

02.05.20
1 day after watering



LIPOSAM



WATER



LIPOSAM

30.04.20
6 days after stopping watering



2 repetition of the experiment



WATER

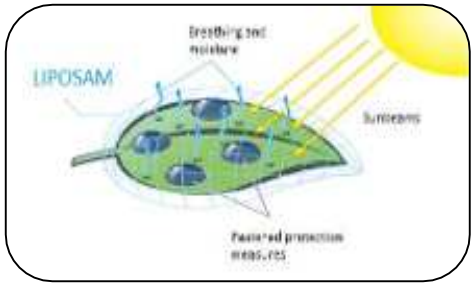
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LIPOSAM BIO-GLUE, GEL

Bio-glue to prevent cracking of fruits of technical and legume crops



Bioproduct is based on composition of natural biopolymers with adhesive properties. It contains an active factor - exopolysaccharide of bacterial origin with high molecular weight bonds. LIPOSAM bio-glue also allowed for organic farming. Product use focuses on gluing pods, beans and other fruit organs to prevent from cracking/shattering.



Effect of application:

- forms flexible, elastic grid, which is able to stretch and glue;
- provides natural maturation of both lower and upper tiers of technical and legume crops;
- breathing and photosynthesis of the plant are free;
- promotes accumulation of oil in oilseeds and protein in legumes over the last 3-4 weeks;
- sorbent-carrier, antistressant and increases the drought tolerance of plants;

Rate of application: 0,5 - 2 l/ha;
Application methods: ground spraying, aerial treatment;
Shelf life: 3 years at 0 °C - 20 °C.



Paenibacillus polymyxa



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LIPOSAM BIO-GLUE. TRIALS ON RAPESEED.

Germany, Anröchte 2022. Application of Liposam bio-glue 2 l/ha, 21.07.2022. Checked



Ukraine. Application of Liposam bio-glue. Shake test in field



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RIZOLINE SC, WP

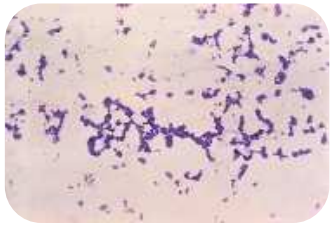
For pre-sowing inoculation seeds of soybean, pea and other legumes



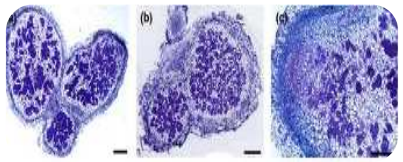
Bioproduct is based on liquid or dry form of biological inoculant. A concentrate consists viable cells of nodule bacteria: *Bradyrhizobium japonicum, Rhizobium leguminosarum (bv. phaseoli, bv. viciae)*, *Mesorhizobium cicero, Sinorhizobium sp.*; bacteria biologically active metabolites (vitamins, heteroauxin, gibberellins, etc.).

Effect of application:
- fixes the atmospheric nitrogen (in symbiosis with legumes) and transforms into accessible form;
- intensifies the process of nodulation;
- provides plants with growth-stimulating substances (vitamins, phytohormones);
- increases the yield of soybeans, peas and other legumes up to 15%;

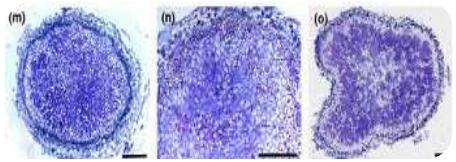
Rate of application: 2-3 l/t; 0,2-0,3 l/ha; 2-3 kg/t;
Application methods: pre-sowing inoculation of seeds of soy, pea and other legumes, row fertilization when sowing;
Titer: >1×10^9 CFU/cm^3 for **SC**; 0,5 × 10^9 CFU/g for **AP**;
Shelf life: SC -6 months at 4 °C - 10 °C or **AP** - 12 months at 4° C to 10 °C or 18 months at 0 °C to 4 °C from the date of manufacture.



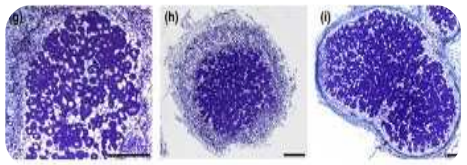
Bradyrhizobium japonicum



Rhizobium leguminosarum



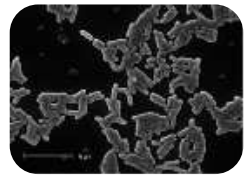
Rhizobium leguminosarum bv. phaseoli



Rhizobium leguminosarum bv. viciae



Sinorhizobium meliloti



Mesorhizobium ciceri

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RIZOLINE. HOW TO CHECK THE PRODUCT WORK?



- Intensifies the process of nodulation;
- Promotes better development of the root system.

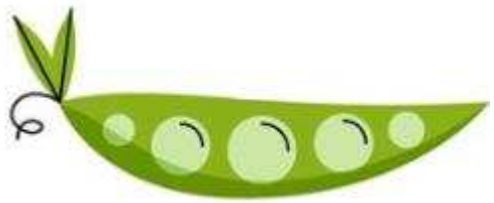


- Increase the vegetative mass and make plants more greenish;
- Improved development in different climatic zones.



- Improves the quality of the raw material;
- Increases the yield of soybeans, peas and other legumes up to 15%.

- Improves soil agrochemical and physical performance;
- Increases content of proteins, fats, B vitamins in products;
- Reduces consumption of nitrogen fertilizers.



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RIZOLINE®

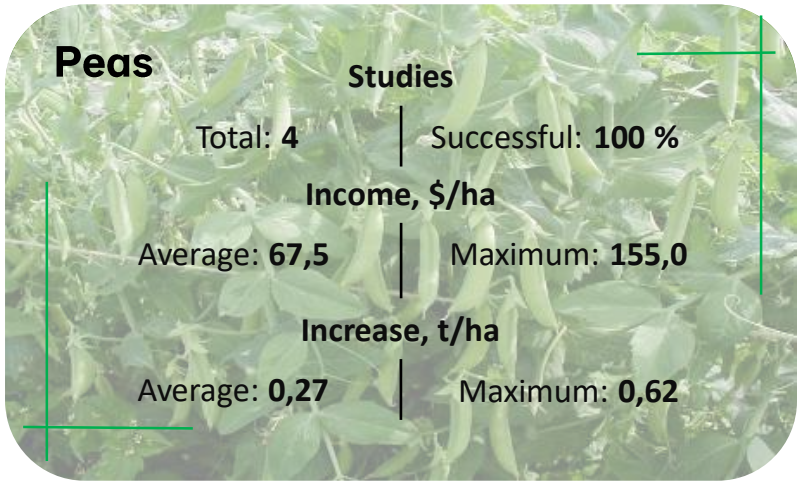
EACH NODULE WORKS

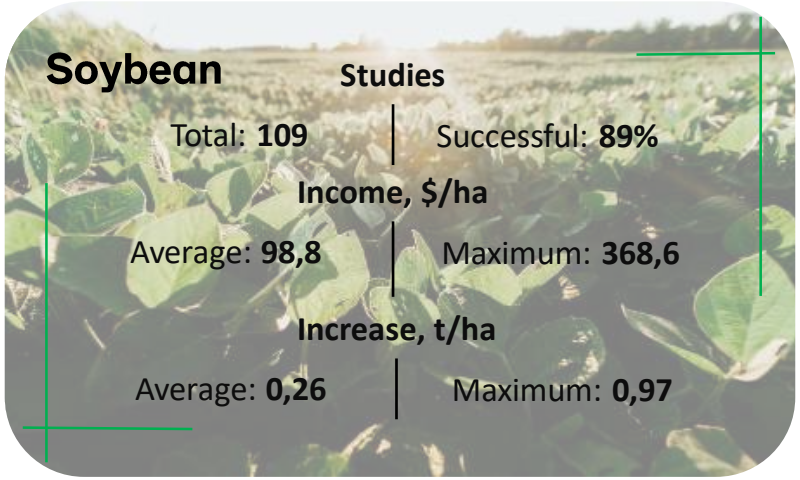


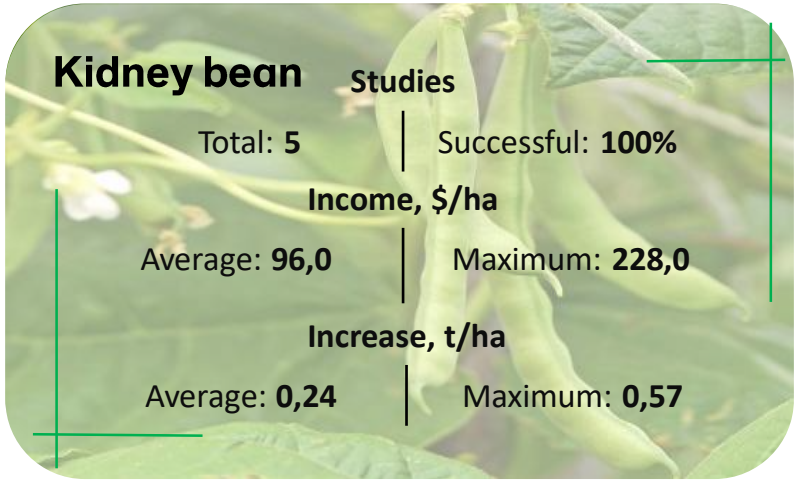
- >1 600 000 ha of legumes are treated with Rizoline
- >2600 agricompanies have used the inoculant
- +0,35 t/ha - average additional yield on legumes
- 11 years of effective presence on the market

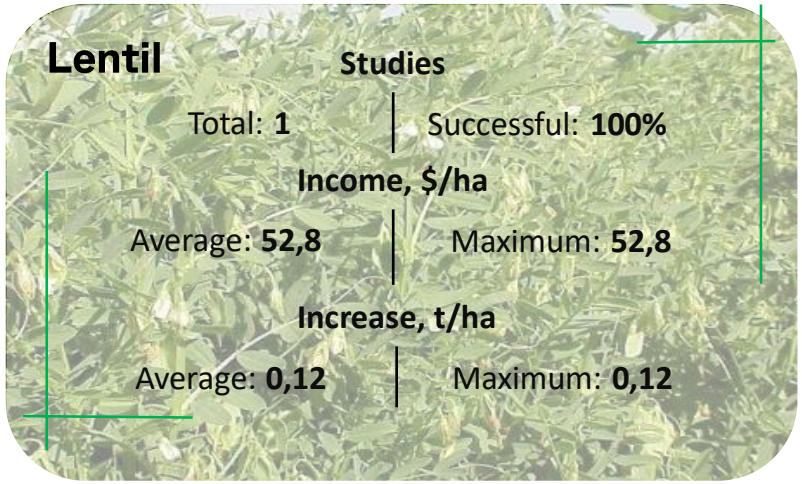
Active agent is a concentrate of viable cells of nodule bacteria, symbiotic to legumes

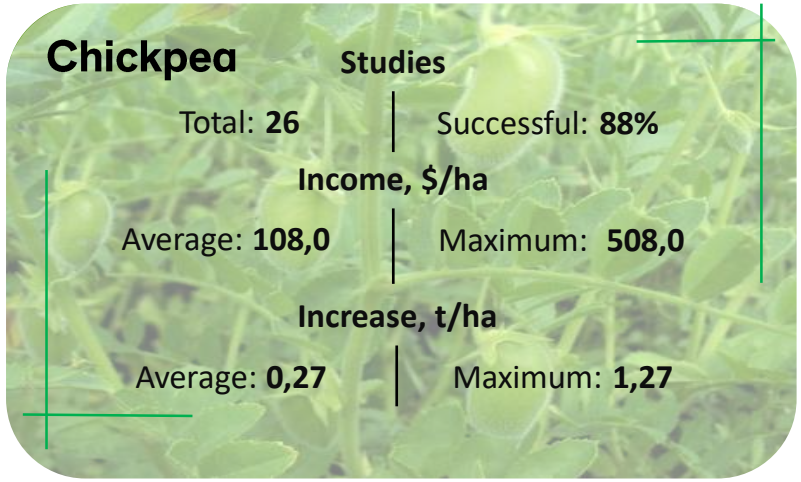
RIZOLINE. STATISTIC RESULTS ON DIFFERENT CROPS











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Biotech company

COMPONAZA, SC

Biological product for accelerating the composting of organic waste



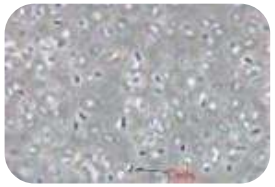
Bioproduct is based on viable bacteria *Bacillus subtilis*, *Rodex*, fungi of the genus *Trichoderma* and others that are functioning as phosphorus and potassium-mobilizing soil bacteria-humifiers; metabolites of microorganisms: polysaccharides; enzymes for the decomposition of cellulose, pectins, lignin, etc.

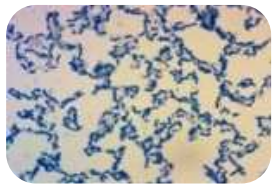
Effect of application:

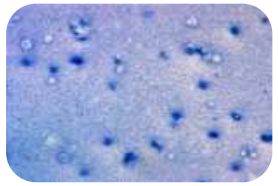
- it accelerates the composting of organic waste;
- it neutralizes the toxic substances under the influence of microorganisms-dioxides;
- allows to receive valuable organic fertilizer in 1,5-2,0 months;
- the resulting biocompost enriches the soil with nutrients, improves soil structure and its fertility;

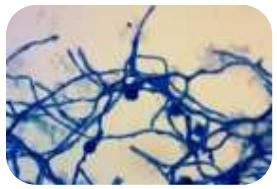
Preparative form: concentrated suspension;
Application methods: spraying of working solution;
Rate of application: 0,15 - 0,50 l/t;
Titer: >1x10^9 CFU/cm^3;
Shelf life: SC 12 months at 4 °C to 10 °C or 6 months at 10 °C to 15 °C.

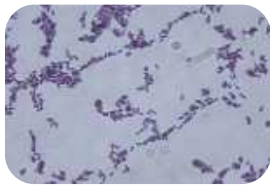



Azotobacter


Bacillus megaterium


Enterococcus


Trichoderma


Bacillus subtilis

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COMPONAZA. HOW TO CHECK THE PRODUCT WORK?



- Accelerates the decomposition of organic waste;
- Neutralizes toxic substances under the influence of detoxifying micro-organisms.



- Helps eliminate unpleasant odors;
- Reduces the volume of organic waste by up to 40%;



- Facilitates to get valuable organic fertilizer in 1-1.5 months with the help of a compost turner (aerator), in 2-2.5 months - with the help of a front-end loader.

- Enriches the soil with nutrients and improves its structure and fertility;
- Produces a humified substrate enriched with beneficial microflora and nutrition;
- Stabilizes the volatile ammonia compounds in the composting materials, with their subsequent conversion into nitrates and nitrites.

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COMPONAZA. COMPOSTING CATTLE MANURE IN ANAEROBIC CONDITIONS, "BOGDANLVSKYE" LTD.

Place of research - UKRAINE
Region: Cherkassy
District: Zolotoninskii
Location: Bogdani village
Study object: Bedding cattle manure
Pile volume: 50 m3
COMPONAZA - 200 ml/m3
Beginning : 11.11.2020.
End: 09.03.2021.



Result:
Air temperature - (- 1 °C)
Temperature in the pile - (+ 15 ... + 21.7 °C)
The mixture is dark, homogeneous and the straw tears easily.

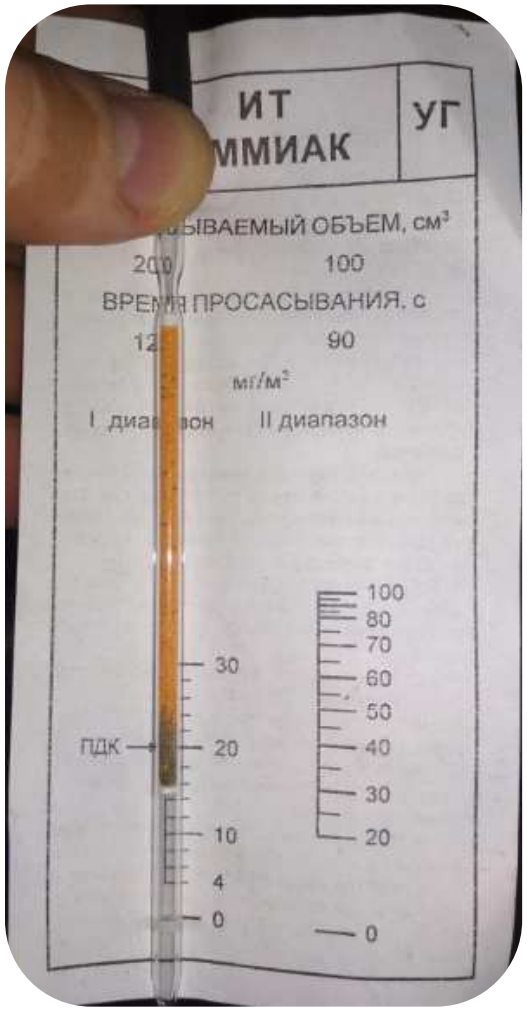
BTU
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COMPONAZA IN PIG FARMS, AGR. COMPANY “MAYAK LTD.”, UKRAINE, 2021

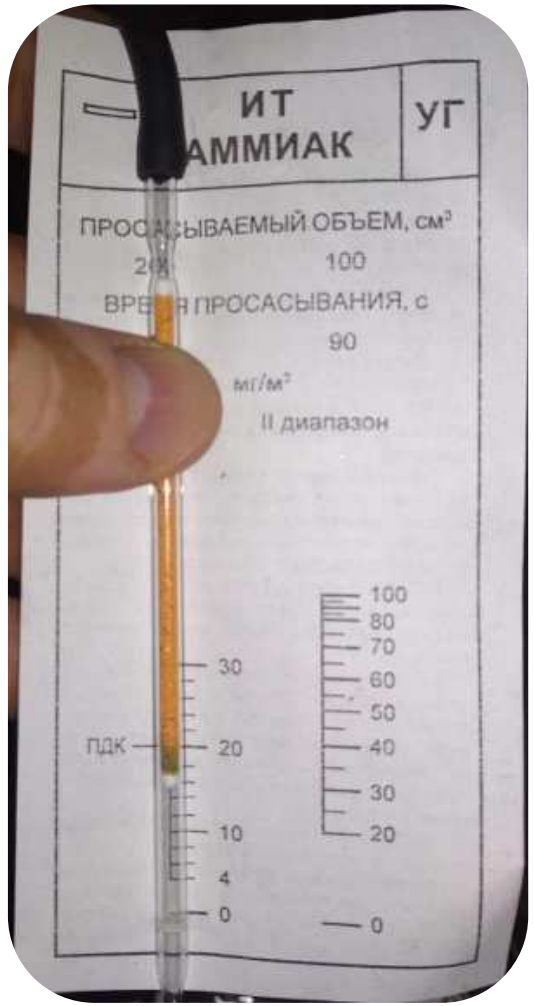
Place of research
Region: Cherkassy
District: Zolotoninskii
Location: Bakayevka village
Study object:
Pig manure (liquid)
Bath volume: 350 m^3
COMPONAZA – 110 ml/m^3
Beginning: 11.03.2021
End: 23.03.2021
Re-application of COMPONAZA after removal of the manure at half rate.

Successful: Reduce ammonia emissions to the maximum allowable concentration.
Failed: Decompose the top, solid part of the manure.

Before application



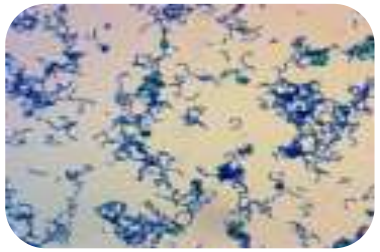
After 12 days



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FITOCID, SC





Bacillus velezensis 221
(formerly Bacillus subtilis 221)

Bioprotectant based on *Bacillus velezensis*

Bioproduct is based on live cells of natural fungicidal bacteria *Bacillus velezensis,* their active metabolites: enzymes, vitamins, fungicidal substances. The preparation has antimicrobial and growth-promoting properties, which are based on *Bacillus velezensis* microorganisms ability to actively inhabit all the plants' tissues resisting disease agents penetration, to produce antimicrobial substances and metabolites.

Effect of application:

- protects plants from a wide range of pathogens of bacterial and fungal diseases: scab, late blight, black stem, root rot, Powdery mildew, Fusarium blight;
- stimulates plant growth and development;
- strengthens the immune system of plants;
- improves the quality of crop production;
- increases crop yield;

Rate of application: 1-3 l/ha;
Application methods: pre-sowing seed treatment; treatment of vegetable seedlings before planting; spraying of plants during the growing season;
Titer: > 1.0×10^9 CFU/cm^3;
Shelf life: 3 years from the manufacture date at temperature of 0°C - 20 °C.

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HOW WE CHECKED THAT PRODUCT WORK?

Chemical fungicide Amistar (1,0 l/ha)

FITOCID (2,0 l/ha)

Market analogues



Dreschlera graminea

Petri dishes tests against wide range of pathogens



Laboratory tests on infected seeds and tests in controlled conditions



Field tests on research stations and with farmers

Studies performed by BTU:
- Potato
- Sugar beet
- Wheat (cereals)
- Tomato (open field and greenhouses)
- Cucumbers (open field and greenhouses)
- Apples
- Grapes etc.

Collected data shows perspectives for registration against:
- Powdery mildew
- Root rots
- Septoriosis
- Fusarium blights
- Alternariosis
- Phytophthora etc.

This data does not include all the practice of farmers, which use FITOCID on much wider range of crops and diseases. Besides that, we found >25 scientific published works with FITOCID tested on different crops (potato, legumes, cereals, sunflower, apples, strawberry, cucumbers, tomatoes, carrots, zucchini, onions etc.).

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FITOCID. STATISTICS ON APPLE TREE

Year	Location	Crop	Variety	Disease	Product	Rate, L/ha	Repetitions	Technical efficiency, %	Spread of the disease, %	Disease development, %
2019	Institute of Gardening of the National Academy of Sciences of Ukraine	Apple tree	Reinette Simirenka	Apple scab	FITOCID	3,0	4 treatments	85,3	10	1,36
2019			Reinette Simirenka	Powdery mildew		3,0	4 treatments	67	0,13	94
2020			Reinette Simirenka			3,0	4 treatments	71	25	6,1
2021			Reinette Simirenka			3,0	4 treatments	75	16,7	3,4
2020			Reinette Simirenka			3,0	4 treatments	100	0	
2019			Svarog			1,5	-	81,1	10,5	1,2
2019			Tjasmin			1,5	-	81,4	11,5	1,4
2019			Svarog			1,5	-	80,3	8,7	1,8
2019			Tjasmin			1,5	-	81,7	8,5	1,2
2020			Svarog			1,5	-	72,3	9	1,8
2020			Tjasmin			1,5	-	74,6	8,5	1,2

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FITOCID. PRIMARY TECHNICAL EFFICACY ON FIELD CROPS (FARMERS TESTS)

Crop	Disease	Product	Application method	Technical efficacy, %
Winter wheat	Root rot	Fitocid	Seed treatment	89,1 - 95
	Septoriosis		Foliar	74,5 - 79,4
	Powdery mildew			72,0 - 81,2
	Fusarium ear blight			100
Soybean	Septoriosis			64,3 - 66,1
	Ascochyta leaf spot			66,7 - 71,8
	Angular leaf spot			65,7 - 70,1

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SCLEROCID SC, WP

Biofungicide against white rot

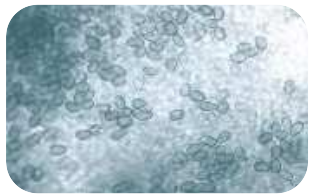


Biological fungicide for suppressing the development of white rot pathogens: *Sclerotinia sclerotiorum* и *Sclerotinia minor*. Ingredients: antagonist fungi “component” 1 and *Trichoderma harzianum*, as well as bacteria *Bacillus licheniformis* and *Bacillus subtilis*.

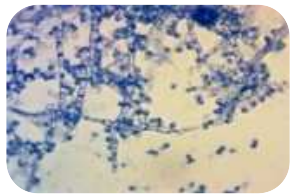
Effect of application:
- highly effective protection against *Sclerotinia sclerotiorum, Botrytis cinerea, Leptosphaeria lindquistii, Diaporthe helianthi, Puccinia helianthi* and other pathogens;
- strengthening of plant immunity;
- soil condition improvement;

Rate of application: 1 - 5 l/t, 1 - 5 l/ha;
Application methods: after harvesting or with pre-sowing cultivation, seed treatment, during the growing season, row application with sowing;
Titer: >3 × 10^9 CFU / ml;
Shelf life: WP 12 months - at 4 °C - 10 °C.

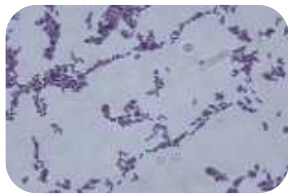




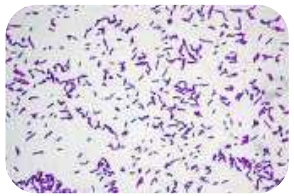
‘Component 1’ (in the process of patenting)



Trichoderma harzianum



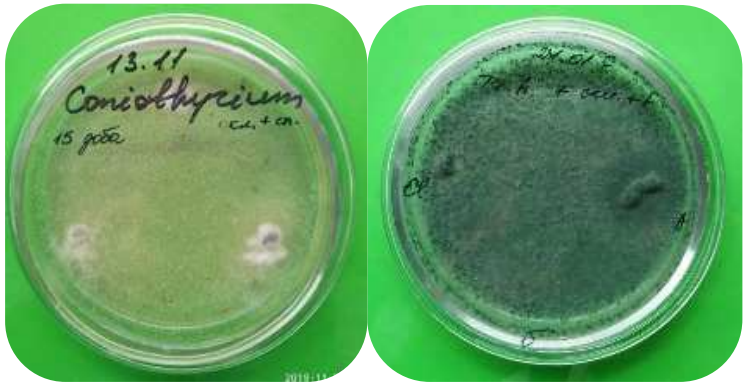
Bacillus subtillis



Bacillus licheniformis

BTU Biotech company

SCLEROCID. HOW TO CHECK THE PRODUCT WORK?



- Provide highly effective protection against white rot pathogens *(Sclerotinia) Sclerotinia minor, Sclerotinia sclerotiorum.*



- Promotes protection for stem and head form of white mold;
- Neutralizes the pathogen at the stages of mycelial growth and sclerosis.



- Saves a significant part of the sunflower and soybean yield;
- Provides suppression of the pathogen in crop residues after harvest.

- Proves that Coniothyrium minitans has a unique selectivity of against sclerotia fungi of the genus Sclerotinia and the properties of Coniothyrium minitans and Trichoderma harzianum to exhibit hyperparasitism to fungi of the genus Sclerotinia;
- Has no phytotoxicity (well tolerated by plants regardless of the stage of crop development).

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SCLEROCID. EFFICACY STUDY

IN 2017-2020 THE FIELD (ON THE SQUARE AREA OF MORE THAN 10,000 HA) AND LABORATORY STUDIES WITH SCLEROCID WERE CONDUCTED

In laboratory conditions, the effect of Sclerocid and its biocomponents, antagonistic fungi, *Coniothyrium minitans* and *Trichoderma harzianum* on the ability of white rot sclerotia to germinate was studied. Sclerotia were treated with solutions of Sclerocid, liquid culture of *C. minitans* and *T. harzianum*, and cultivated for 14 days.



Control (water)



Sclerotia treated with SCLEROCID



Sclerotia treated with liquid culture of *C. minitans* (diluted 1:10)



Sclerotia treated with T. harzianum liquid culture (dilution 1:10)

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SCLEROCID. REVIEW OF FIELD TRIALS OF APPLICATION UNDER MAIN SOIL TILLAGE

Year	Place	Method of application	Preparations / application rate	Disease spread, %		Disease development, %		Yield, t/ha		Increase, t\ha
				Control	Trial	Control	Trial	Control	Trial	
2021	Vinnitsa region	In the main, autumn, tillage	Sclerocid 2.0 l/ha, Ecostern 2.0 l/ha	16,7	10,0	9,4	4,6	-	-	-
	Vinnitsa region		Sclerocid 1.5 l/ha, Ecostern 1.5 l/ha	5,6	4,9	-	-	-	-	-
	Vinnitsa region		Sclerocid 2.0 l/ha	-	-	-	-	3,33	3,44	+0,11
	Vinnitsa region		Ecostern 2.0 l/ha, Sclerocid 2.0 l/ha + UAN	16,7	10,0	9,4	4,6	3,7	3,9	+0,30
2020	Vinnitsa region		Ecostern 1.5 l/ha, Sclerocid 2 l/ha	7,0	3,0	6,5	0,15	-	-	-
2019	Khmelnitsky region		Sclerocid 1.5 l/ha	5,6	0,8	2,25	0,07	2,50	2,65	+0,15
	Lviv region		Ecostern 1 l/ha, Sclerocid 3 l/ha	6	1	5,5	0,3	-	-	-
	Vinnitsa region		Ecostern 1l/ha, Sclerocid 3 l/ha	33,5	8	26,8	6,6	-	-	-
	Vinnitsa region		Ecostern 1 l/ha, Sclerocid 3 l/ha	33,5	8,2	26,8	6,6	3,74	4,19	+0,45

SCLEROCID. REVIEW OF FIELD TRIALS WITH APPLICATION UNDER PRE-SOWING TILLAGE

Year	Place	Method of application	Preparations / application rate	Disease spread, %		Disease development, %		Yield, t/ha		Increase, t\ha
				Control	Trial	Control	Trial	Control	Trial	
2021	Vinnitsa region	Pre-sowing cultivation in spring/pre-sowing tillage	Sclerocid 1.5 l/ha	2,3	0,55	1,3	0,2	-	-	-
	Vinnitsa region.		Sclerocid 2.0 l/ha	19,9	2,0	16,5	1,5	-	-	-
	Vinnitsa region		Sclerocid 2.0 l/ha	11,0	4,9	7,8	3,1	3,2	3,4	+0,2
				5,0*	1,9*	3,7*	0,9*			
	Vinnitsa region		Ecostern 1.0 l/ha, Sclerocid 2.0 l/ha + UAN	10,07	0,42	6,80	0,3	2,4	2,8	+0,4
				27,8**	2,3**	13,8**	1,1**			
	Kyiv region		Sclerocid 2.0 l/ha	30,0	2,8	10	1,7	-	-	-
	Vinnitsa region		Sclerocid 1.8 l/ha	4,8	1,0	0,65	0,48	-	-	-
	Vinnitsa region		Sclerocid 2.0 l/ha	11,0	4,9	7,8	3,7	-	-	-
				5,0*	1,9*	3,1*	0,9*	-	-	-
	Sumy region		Sclerocid 2 l/ha	-	-	-	-	2,8	3,1	+0,3
2020	Cherkassy region		Sclerocid 2.0 l/ha, Ecostern 1.5 l/ha	2,00	0,25	1,6	0,2			
	Khmelnitsky region		Sclerocid 1.5 l/ha	5,6	1,8	18,9	8,6	-	-	-
2019	Vinnitsa region		Ecostern 1.0 l/ha, Sclerocid 3.0 l/ha	33,5	8,2	26,8	6,6	3,7	4,2	+0,5
2018	Chernihiv Oblast		Ecostern 1.5 l/ha, Sclerocid 1 l/ha	-	-	-	-	3,70	4,15	+0,45
			Ecostern 1.5 l/ha, Sclerocid 2 l/ha	-	-	-	-	3,70	4,04	+0,34
			Ecostern 1.5 l/ha, Sclerocid 3 l/ha	-	-	-	-	3,70	3,96	+0,26

*** Effect of Sclerocid on *Phoma helianthi* , and **phomopsis**

SCLEROCID. REVIEW OF FIELD TRIALS WITH ROW APPLICATION

Year	Place	Method of application	Preparations / application rate	Disease spread, %		Disease development, %		Yield, t/ha		Increase t\ha
				Control	Trial	Control	Trial	Control	Trial	
2021	Vinnitsa region	Application into the row + LCF	Sclerocid 1.0 l/ha	2,3	1,0	1,3	0,4	3,76	3,76	-
				16,9	5,3	13,8	2,24	-	-	-
	Khmelnitsky region	Application into the row	Sclerocid 1.5 l/ha	4,8	0,2	3,0	0,2	-	-	-
				7,2	0,8	3,3	0,4	-	-	-
	Vinnitsa region	Application into the row + LCF	Sclerocid 1.5 l/ha	0,6	0	0,5	0	2,18	2,33	+0,14
				46,8**	13,0**	9,0**	4,5**			
	Kyiv region	Application into the row	Sclerocid 2.0 l/ha	30,0	2,8	10,0	1,7	-	-	-
	Vinnitsa region	Application into the row + LCF	Sclerocid 1,8 l/ha (field 1)	4,8	1,0	0,65	4,8	-	-	-
			Sclerocid 1,8 l/ha (field 2)		3,9	-	-	-	-	-
			Sclerocid 1,8 l/ha (field 3)		1,3		-	-	-	-
2020	Khmelnitsky region	Application into the row	Sclerocid 1,5 l/ha	5,6	1,8	-	-	-	-	-

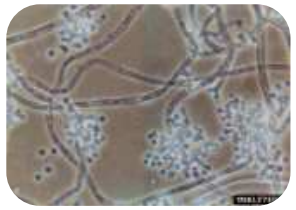
METAWHITE SC, WP



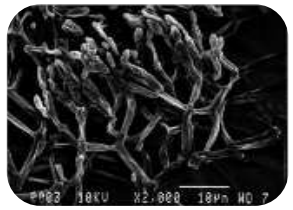
Bioproduct of insecticidal action to protect plants from soil pests

Bioproduct is based on viable cells of fungi and bacteria: *Metarhizium anisopliae, Beauveria bassiana, Bacillus pumilis, Bacillus thuringiensis var. thuringiensis, Streptomyces, Pseudomonas.* Entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana* are able to grow through the skin of pests, damaging adipose tissue and intestinal tract.

Preparative form: powder, suspension concentrate;
Rate of application: 1 - 15 l/ha;
Application methods: drop irrigation, seedbed or row application, soil treatment;
Titer: 2×10^8–1×10^9 CFU/ml;
Shelf life: SC 3 months at 0 °C to +10 °C; **WP** 24 months from + 4 °C to +25 °C.



Beauveria bassiana



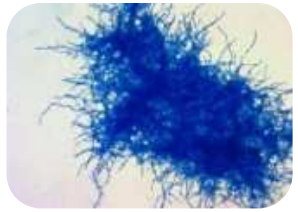
Metarhizium anisopliae



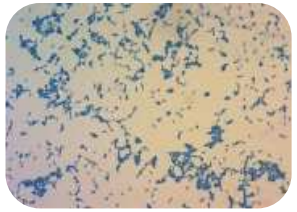
Bacillus pumilus



Bacillus thuringiensis var. thuringiensis



Streptomyces sp.



Pseudomonas fluorescens

BTU
Biotech company

METAWHITE. HOW TO CHECK THE PRODUCT WORK?



- Protects plants from soil pests, namely: imago and larvae of Cockchafer, Blossom feeder, Mole cricket, Click beetle.



- Affects pests that have a chitins covering and sprout through the pests' skin in the soil.



- Saves plant roots which leads to the preservation of the yield.

- Damages pest adipose tissue and intestinal tract, where they decompose chitin and form a cotton-like growth of mycelium on the body of pests, causing violations of all body functions;
- Contains spores, endo- and exotoxins produced by the bacterium Bacillus thuringiensis, the preparation causes intestinal dysfunction, paralysis of the nervous system, muscle tissue, and respiratory system.

BTU
Biotech company

METAWHITE. REVIEW OF EFFICACY AGAINST DIFFERENT PESTS 1

Year	Region	Crop	Application phase	Pest	Method of application	Rate, L/ha	Efficacy, %
							Trial
2020	Chernivtsi	Corn	-	**Elateridae**	Pre-sowing tillage (16.04.2020) (08-10.05.2020)		62,5
-	Vinnitsa	Storage raw material	-	**Mealworm** *(Tenebrio molitor)*	Laboratory test	5 10 15	80 86,7 93,3
2020	Slovakia	Potato	-	**Elateridae**	Sprayed in boxes	5	84
2019	Kyiv	Cherries	End of growth-formation of the apical bud	**Cockchafer** *(Melolontha melolontha)* **Blossom feeder** *(Tropinota hirta)*	Drip irrigation	5 10 15	50 50 43
2019		Blackberries	Flowering - ovary formation	**Cockchafer** *(Melolontha melolontha)* + **Elateridae**		2 3	93 100
		Blueberries, raspberry				5	100
	Zhytomyr	Raspberry	Ripening	***Cockchafer*** *(Melolontha melolontha)*		5	92
2019	Kyiv	Cherries	End of growth-formation of the apical bud	**Blossom feeder** (*Tropinota hirta*)		5 10 15	67 78 81
-	-	Phytotron*	-		Laboratory test	3 5	88 100
2019	-	-	-			15	88
2019	Chernivtsi	Corn	-	**European mole cricket** *(Gryllotalpa gryllotalpa L.)*	Pre-sowing cultivation	10 10	58,9 74,5

METAWHITE. REVIEW OF EFFICACY AGAINST DIFFERENT PESTS 2

Year	Region	Crop	Application phase	Pest	Method of application	Rate, L/ha	Effectiveness, %
							Trial
2020	Moldova	Tomatoes in greenhouses	-	**Cockchafer** *(Melolontha melolontha)*	-	3 6 10	37,95 54,57 63,19
				European mole cricket *(Gryllotalpa gryllotalpa L.)*	-	3 6 10	33,47 73,83 78,59
		Sunflower	-	**Cockchafer** *(Melolontha melolontha)*	-	5 10 15	77,8 88,9 88,9
				Elateridae		5 10 15	76,5 88,2 88,2
		Corn	-	**Cockchafer** *(Melolontha melolontha)*	-	5 10 15	75,0 87,5 87,5
				Elateridae		5 10 15	77,8 88,9 94,4

BTU
Biotech company

BITOXIBACILIN-BTU SC, WP

Bioinsecticide for protection of plants from insect pests, their larvae and mites





Bacillus thuringiensis

Bioproduct is based on viable cells of *Bacillus thuringiensis* bacteria, endospores and bacteria biologically active metabolites: protein crystals (endotoxins), heat-stable exotoxin and other biologically active bacterial substance. It is recommended to apply for destruction colorado potato beetle, aphids, white butterflies, codling moths, whiteflies, etc. on indoor and outdoor agricultural, horticultural, plants and flowers.

Effect of application:
- protects plants from pests;
- has a long period of effect, does not cause tolerance in pests;
- does not accumulate in plants and soil;
- time between treatment and the first signs of its effect is 1-3 days;
- duration of protective effect up to 14 days;

Preparative form: working solution prepared on the day of treatment;
Rate of application: 2 - 15 l/ha;
Application methods: spraying;
Titer: SC >1x10^9 CFU/cm^3; **WP – >**1x10^{10} CFU/cm^3;
Shelf life: SC, 12 months at 4 °C to 10 °C or 6 months at 10 °C to 15 °C; **WP** 18 months from 20 + to 30 °C.

BTU
Biotech company

BITOXIBACILIN-BTU. HOW TO CHECK THE PRODUCT WORK?



- Protects plants from pests (Spider mites, Colorado potato beetle, codling moths, etc.);
- Biopreparation of intestinal action.



- Has a long period of effect (up to 14 days), does not cause tolerance in pests;
- Shows the first signs of its effect is 1-3 days.



- Provides control of pest in agricultural and horticultural crops which leads to the preservation of yield.

- Contains biologically active metabolites: protein crystals (endotoxins) and heat-stable exotoxin.
- Does not accumulate in plants and soil.

BTU
Biotech company

BITOXIBACILIN-BTU. REVIEW OF EFFECTIVENESS AGAINST DIFFERENT PESTS 1

Year	Region	Crop	Application phase	Pest	Method of application	Rate, L/ha	Technical efficiency, %
							Trial
2019	Kyiv	Winter wheat	-	**Wheat Grain Beetle** (Anisoplia austriaca)	Spraying during the vegetation	4,0	81,6
			-	**Greenbug Aphid** (Schizaphis graminum)			76,4
			-	**Wheat Thrips** (Haplothrips tritic)			72,9
2018			-	**Twospotted spider mite** (Tetranychus urticae)		10,0	70,7
						15,0	89,5
2019			Tillering	**Barley flea beetle** (Phyllotreta vittula)		5,0	41
						10,0	77
			Milk ripeness	**Barley gout fly** (Chlorops pumilionis)		5,0 + 0,4 Biofriend	67
						5,0 + 0,4 Biofriend	86,8
						5 + 0,5 Pyrethrin	96,5
						5 + 0,1 Nem	91,2
				Cicadellidae (Cicadelidae)		5,0 + 0,4 Biofriend	37
						5 + 0,5 Pyrethrin	22
						5 + 0,1 Nem	1
	Ivano-Frankivsk	Rose	Bud formation	**Rose aphid** (Macrosiphum rosae)	Spraying on the leaf	3,0	100
		Apple-tree	Fruit growth	**Apple aphid** (Aphis mali)		7,0	100

BITOXIBACILIN-BTU. REVIEW OF EFFECTIVENESS AGAINST DIFFERENT PESTS 2

Year	Region	Crop	Application phase	Pest	Method of application	Rate, L/ha	Technical efficiency, %
							Trial
2019	Kyiv	Winter wheat	-	**Barley flea beetle** (Phyllotreta vittula)	Spraying during the vegetation	5,0	92
						10,0	51
						5 + 0,1 Azadirachtin 10000 ppm	73
						5 + 0,5 Pyrethrin	52
				Miridae		5,0 + 0,4 Biofriend	100
				Frit fly (Oscinella pusilla)		5 + 0,1 Azadirachtin 10000 ppm	43,7
				Cereal Leaf Beetle (Oulema melanopus)		5,0	100
2018				**European wheat stem sawfly** (Cephus pygmeus)		5,0	100
		Pea		**Pea leaf weevil** (Sitona lineatus)		5,0	100
		Cucumber		**Colorado potato beetle (larvae)** (Leptinotarsa decemlineata)		5,0 + 0,5 Abamectin ES 5%	100
						5,0 + 1% Matrine 5%	100
						10,0	85
	Ivano-Frankivsk	Apple-tree		**Fall webworm** (Hyphantria cunea)		10,0	94
						20,0	96
				Western corn rootworm (Diabrotica virgifera virgifera)		10,0	72

BITOXIBACILIN-BTU. REVIEW OF EFFECTIVENESS AGAINST DIFFERENT PESTS 3

Year	Region	Crop	Application phase	Pest	Method of application	Rate, L/t	Technical efficiency, %
							Trial
2020	Moldova	Winter wheat	-	**Cereal Leaf Beetle** (Oulema melanopus)	Spraying during vegetation	4,0	86,32
						6,0	88,91
		Soybean		**Pulse pod borer moth** (Etiella zinckenella)		4,0	88,2
						6,0	88,9
		Rapeseed		**Cabbage aphid** (Brevicoryne brassicae)		4,0	42,72
						10,0	45
				Cabbage white butterfly (Pieris rapae)		4,0	62,93
						10,0	77,99
				Cabbage stem weevil (Ceutorhynchus pallidactylus)		4,0	72,10
						10,0	84,93
				Common pollen beetle (Meligethes aeneus)		4,0	82,88
						10,0	86,60
2019	Rivne	Soybean	3-4 trifoliate leaves	**Painted lady** (Vanessa cardui)		7,0 + 1,0 Biofriend	100
	Kherson	Spring Rapeseed	Flowering – pod formation	**Diamondback moth** (Plutella xylostella)		5,0 + 1,0 Biofriend	100
		Pea		**Pea aphid** (Acyrthosiphon pisum)	Spraying during vegetation (27.05.2019; 01.06.2019)	7,0 + 1,0 Biofriend 5,0 + 1,0 Biofriend	100

PRODUCTS FOR AGRICULTURE

№	Product	Brief description	Organic*
Mycorrhizal preparations			
1	**MYCOFRIEND**	Complex michorrhizal product for plant nutrition and protection	✓
2	**MELANORIZ**	Complex michorrhizal product for plant nutrition and protection, detoxicant	✓
Bioactivators, Humates			
3	**AZOTOFIT/AZOTOHELP**	Active N-fixation, growth stimulation, nutrition; based on azotobacter chrononococcum	✓
4	**HUMIFRIEND**	Complex fertilizer that is based on potassium humate with the addition of useful microorganisms and products of its metabolism	✓
BioFungicides			
5	**FITOCID**	Biofungicide with broad spectrum activity for prevention of plant diseases, bacillus subtilis	✓
6	**FITOHELP**	Biofungicide with broad spectrum activity for prevention and treatment of plant diseases, several strains of bacillus subtilis, 3 years of storage in room temperature	✓
7	**SCLEROCID**	Biofungicide against Sclerotinia based on Coniothyrium minitans and other microorganisms	✓
8	**MYCOHELP**	Soil biofungicide, for seed and soil protection from diseases (esp. effective against root rot)	✓
BioInsecticides			
9	**LEPIDOCID-BTU**	Protection against most lepidopterous pests, bacillus thuringiensis var. kurstaki	✓
10	**BITOXIBACILIN-BTU (AKTOVERM-FORMULA)**	Protection against pests (their larvae) and mites, bacillus thuringiensis	✓
11	**AKTOVERM**	Protection against pests; complex of natural avermectins, Aversektin C (0.2%)	-
12	**METAWHITE**	Protection against soil and other pests, based on strains of Metarhizium, Beauveria, Bacillus Thuringiensis and some other insecticide microorganisms	✓

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PRODUCTS FOR AGRICULTURE

№	Product	Brief description	Organic*
BioInoculants			
13	**RIZOLINE+RIZOSAVE, soya**	Enforced pre-planting inoculant for soya with RIZOSAVE protector, planting during 7 days after treatment	✓
14	**RIZOLINE+RIZOSAVE, peas and legumes**	Enforced pre-planting inoculant for peas and other legumes with RIZOSAVE protector, planting during 7 days after treatment	✓
15	**BIOINOCULANT-BTU-r, soya**	Pre-planting inoculant for soya, planting during 1 days after treatment	✓
16	**BIOINOCULANT-BTU-t, soya**	Pre-planting inoculant for soya, planting during 1 days after treatment	✓
17	**BIOINOCULANT-BTU-r, peas and legumes**	Pre-planting inoculant for peas and other legumes , planting during 1 days after treatment	✓
18	**BIOINOCULANT-BTU-t, peas and legumes**	Pre-planting inoculant for peas and other legumes , planting during 1 days after treatment	✓
19	**UNDERHIZE**	Novel formulation of inoculant for legumes, which includes symbiotic bacteria plus phosphorus mobilizing microorganism Penicillium Bilai	✓
BioAdhesives, Sticking agents			
20	**LIPOSAM**	Adhesive agent for crops protection and nutrition means	✓
21	**LIPOSAM GLUE**	Bio-glue preventing technical and leguminous crops fruit dehiscence	✓
22	**ENPOSAM**	The biopreparation-fertilizer for plant nutrition and protection with adhesive properties	✓
23	**BIOFRIEND**	Potassium soap, enforces effectiveness of the fungicides and insecticides	✓
24	**LYPACTIVE**	Brand new adhesive agent with adjuvant functions	

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PRODUCTS FOR AGRICULTURE

№	Product	Brief description	Organic*
BioConservants			
25	**SILAC-PRO**	For green silage, haylage and grain mixtures ensilaging	✓
Organo-Mineral Fertilizers			
26	**HELPROST Seeds**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for seeds	✓
27	**HELPROST Root**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for roots	✓
28	**HELPROST Soya**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for soya	✓
29	**HELPROST Corn**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for corn	✓
30	**HELPROST Grains (autumn)**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for grains	✓
31	**HELPROST Grains**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for grains	✓
32	**HELPROST Beet**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for beet	✓
33	**HELPROST Rape**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for rape	✓
34	**HELPROST Sunflower**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for sunflower	✓
35	**HELPROST Vegetables**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for vegetables	✓
36	**HELPROST Horticultures**	Complex of micro-, macro-elements, vitamins, amino acids etc. in chelate form for horticultures	✓
37	**HELPROST Borium**	Complex of micro- (B first), macro-elements, vitamins, amino acids etc. in chelate form	✓
38	**HELPROST Zink**	Complex of micro- (Zn first), macro-elements, vitamins, amino acids etc. in chelate form	✓

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PRODUCTS FOR AGRICULTURE

№	Product	Brief description	Organic*
Soil improvers, biodestructors			
39	**GROUNDFIX**	Soil biofertilizer for phosphorus and potassium mobilization from the insoluble compounds, nitrogen fixation and mineral fertilizers efficiency enhancement	✓
40	**ECOSTERN**	Concentrated biodestructor for after-harvesting residues decomposition, soil sanitation and degradation prevention	✓
41	**COMPONAZA**	For accelerated composting of organic wastes of industrial, agricultural and domestic origin	✓
BioFertilizers			
42	**ORGANIC-BALANCE**	For crops growth stimulation, stress and pests resistance enhancement and balanced nutrition	✓
Fermented feed supplements, Probiotics			
43	**MATZERAZA-BTU**	Biologic active supplement for livestock and poultry feed production	✓
44	**BIOSEVEN**	Probiotic feed supplement based on lactobacillus strains, for livestock and poultry production	✓

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