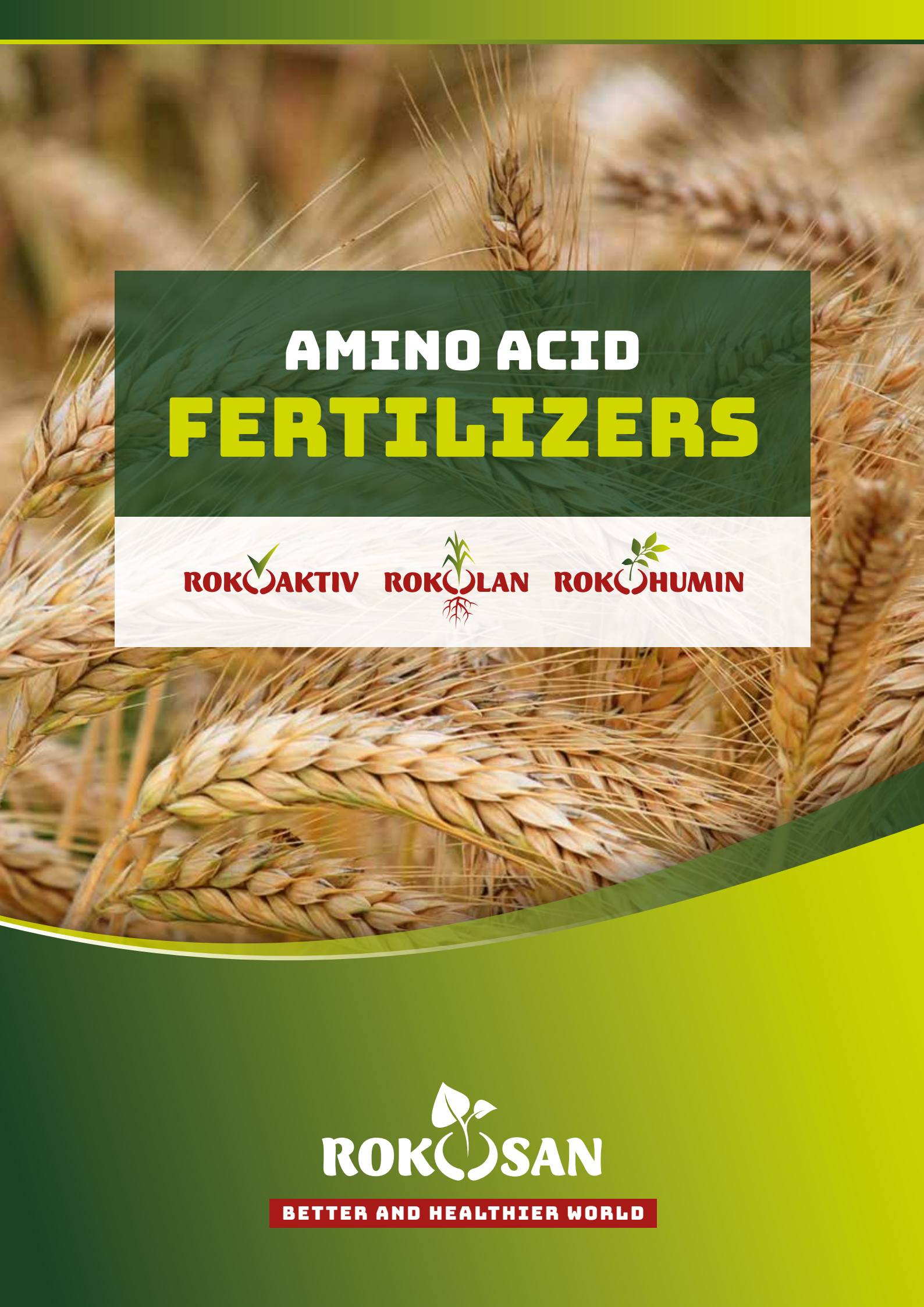


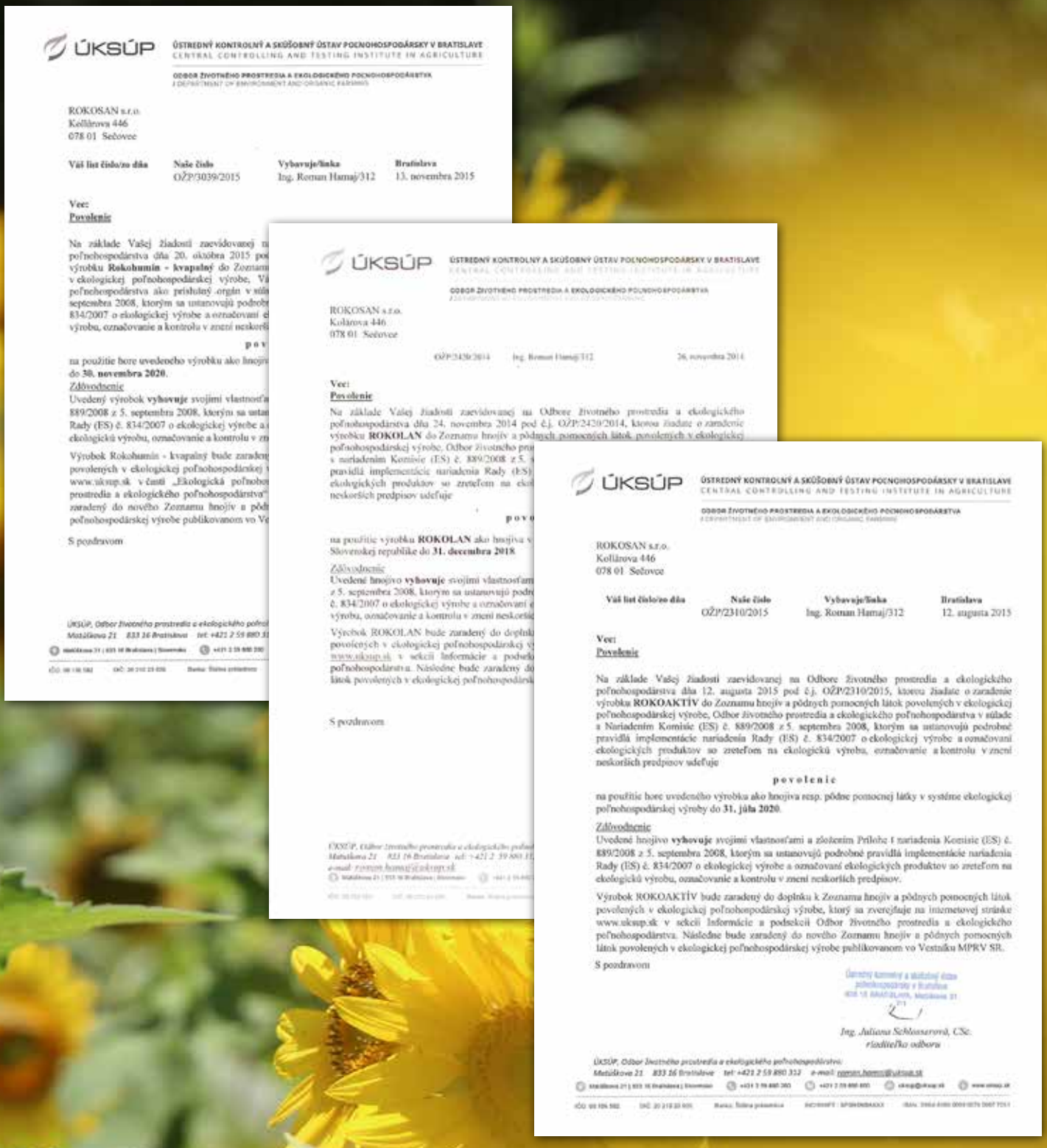
AMINO ACID FERTILIZERS

ROKOAKTIV ROKOLAN ROKOHUMIN

ROKOSAN

BETTER AND HEALTHIER WORLD

ROKOHUMIN, ROKOLAN, ROKOAKTIV
are approved for organic farming.



ÚKSÚP
ÚSTREDNÝ KONTROLNÝ A SKÚŠOBNÝ ÚSTAV POĽNOHOSPODÁRSKY V BRATISLAVE
CENTRAL CONTROLLING AND TESTING INSTITUTE IN AGRICULTURE
ODBOR ŽIVOTNÉHO PROSTREDIA A EKOLOGICKÉHO POĽNOHOSPODÁRSTVA

ROKOSAN s.r.o.
Kolárova 446
078 01 Sečovce

Váš list číslo/zo dňa	Naše číslo	Vybavuje/linka	Bratislava
	OŽP/3039/2015	Ing. Roman Hamaj/312	13. novembra 2015

Vec:
Povolenie

Na základe Vašej žiadosti zaevidovanej na Odbore životného prostredia a ekologického poľnohospodárstva dňa 20. októbra 2015 pod č.j. OŽP/3039/2015, ktorou žiadate o zaradenie výrobku **Rokohumin - kvapalný** do Zoznamu hnojív a pôdnych pomocných látok povolených v ekologickej poľnohospodárskej výrobe, Odbor životného prostredia a ekologického poľnohospodárstva ako príslušný orgán v súlade s Nariadením Komisie (ES) č. 889/2008 z 5. septembra 2008, ktorým sa ustanovujú podrobné pravidlá implementácie nariadenia Rady (ES) č. 834/2007 o ekologickej výrobe a označovaní ekologických produktov so zreteľom na ekologickú výrobu, označovanie a kontrolu v znení neskorších predpisov udeľuje

p o v

na použitie hore uvedeného výrobku ako hnojiv
do **30. novembra 2020**.

Zdôvodnenie
Uvedený výrobok **vyhovuje** svojimi vlastnosťa
889/2008 z 5. septembra 2008, ktorým sa ustan
Rady (ES) č. 834/2007 o ekologickej výrobe a
ekologickú výrobu, označovanie a kontrolu v zn

Výrobok Rokohumin - kvapalný bude zaradený
povolených v ekologickej poľnohospodárskej
www.uksup.sk v časti „Ekologická poľnoho
prostredia a ekologického poľnohospodárstva"
zaradený do nového Zoznamu hnojív a pôd
poľnohospodárskej výrobe publikovanom vo Ve

S pozdravom

ÚKSÚP, Odbor životného prostredia a ekologického poľnoh
Matúškova 21 833 16 Bratislava tel: +421 2 59 880 31

ÚKSÚP
ÚSTREDNÝ KONTROLNÝ A SKÚŠOBNÝ ÚSTAV POĽNOHOSPODÁRSKY V BRATISLAVE
CENTRAL CONTROLLING AND TESTING INSTITUTE IN AGRICULTURE
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ROKOSAN s.r.o.
Kolárova 446
078 01 Sečovce

OŽP/2420/2014 Ing. Roman Hamaj/312 26. novembra 2014

Vec:
Povolenie

Na základe Vašej žiadosti zaevidovanej na Odbore životného prostredia a ekologického poľnohospodárstva dňa 24. novembra 2014 pod č.j. OŽP/2420/2014, ktorou žiadate o zaradenie výrobku **ROKOLAN** do Zoznamu hnojív a pôdnych pomocných látok povolených v ekologickej poľnohospodárskej výrobe, Odbor životného pros
s nariadením Komisie (ES) č. 889/2008 z 5.
pravidlá implementácie nariadenia Rady (ES)
ekologických produktov so zreteľom na ek
neskorších predpisov udeľuje

p o v

na použitie výrobku **ROKOLAN** ako hnojiva v
Slovenskej republike do **31. decembra 2018**.

Zdôvodnenie
Uvedené hnojivo **vyhovuje** svojimi vlastnosťam
z 5. septembra 2008, ktorým sa ustanovujú podr
č. 834/2007 o ekologickej výrobe a označovaní
výrobu, označovanie a kontrolu v znení neskorši

Výrobok ROKOLAN bude zaradený do doplnk
povolených v ekologickej poľnohospodárskej
www.uksup.sk v sekcii Informácie a podsek
poľnohospodárstva. Následne bude zaradený d
látok povolených v ekologickej poľnohospodársk

S pozdravom

ÚKSÚP, Odbor životného prostredia a ekologického poľnoh
Matúškova 21 833 16 Bratislava tel: +421 2 59 880 312
e-mail: roman.hamaj@uksup.sk

ÚKSÚP
ÚSTREDNÝ KONTROLNÝ A SKÚŠOBNÝ ÚSTAV POĽNOHOSPODÁRSKY V BRATISLAVE
CENTRAL CONTROLLING AND TESTING INSTITUTE IN AGRICULTURE
ODBOR ŽIVOTNÉHO PROSTREDIA A EKOLOGICKÉHO POĽNOHOSPODÁRSTVA

ROKOSAN s.r.o.
Kolárova 446
078 01 Sečovce

Váš list číslo/zo dňa	Naše číslo	Vybavuje/linka	Bratislava
	OŽP/2310/2015	Ing. Roman Hamaj/312	12. augusta 2015

Vec:
Povolenie

Na základe Vašej žiadosti zaevidovanej na Odbore životného prostredia a ekologického poľnohospodárstva dňa 12. augusta 2015 pod č.j. OŽP/2310/2015, ktorou žiadate o zaradenie výrobku **ROKOAKTÍV** do Zoznamu hnojív a pôdnych pomocných látok povolených v ekologickej poľnohospodárskej výrobe, Odbor životného prostredia a ekologického poľnohospodárstva v súlade s Nariadením Komisie (ES) č. 889/2008 z 5. septembra 2008, ktorým sa ustanovujú podrobné pravidlá implementácie nariadenia Rady (ES) č. 834/2007 o ekologickej výrobe a označovaní ekologických produktov so zreteľom na ekologickú výrobu, označovanie a kontrolu v znení neskorších predpisov udeľuje

p o v o l e n i e

na použitie hore uvedeného výrobku ako hnojiva resp. pôdne pomocnej látky v systéme ekologickej poľnohospodárskej výroby do **31. júla 2020**.

Zdôvodnenie
Uvedené hnojivo **vyhovuje** svojimi vlastnosťami a zložením Prílohe I nariadenia Komisie (ES) č. 889/2008 z 5. septembra 2008, ktorým sa ustanovujú podrobné pravidlá implementácie nariadenia Rady (ES) č. 834/2007 o ekologickej výrobe a označovaní ekologických produktov so zreteľom na ekologickú výrobu, označovanie a kontrolu v znení neskorších predpisov.

Výrobok ROKOAKTÍV bude zaradený do doplnku k Zoznamu hnojív a pôdnych pomocných látok povolených v ekologickej poľnohospodárskej výrobe, ktorý sa zverejňuje na internetovej stránke www.uksup.sk v sekcii Informácie a podsekcii Odbor životného prostredia a ekologického poľnohospodárstva. Následne bude zaradený do nového Zoznamu hnojív a pôdnych pomocných látok povolených v ekologickej poľnohospodárskej výrobe publikovanom vo Vestníku MPRV SR.

S pozdravom

Ing. Juliana Schlosserová, CSc.
riaditeľka odboru

ÚKSÚP, Odbor životného prostredia a ekologického poľnohospodárstva
Matúškova 21 833 16 Bratislava tel: +421 2 59 880 312 e-mail: roman.hamaj@uksup.sk

These products can be used standalone in the technological processes, but excellent results in soil recovery and fertility growth are achieved by **combining all three fertilizers.**

Amino acid fertilizers containing **18 basic amino acids.**
In addition, Rokoaktiv and Rokohumin contain **humic acids.**

LEAF NUTRITION

ROKOHUMIN

The advantage of foliar nutrition lies in that it provides enough varied nutrients, which are nearly essential, to the plants. It fixed the deficit most effectively and quickly, or if intake through the roots is for some reason limited (eg pH of the environment). Leaf nutrition is quickly taken up by the plant and its effect is therefore visible the fastest.

Rokohumin is a nutritional cocktail of amino acids, peptides, humic acids, macro and micronutrients – that's why it's the right choice for plants.

Rokohumin can be used:
1. During each phase of the growth
2. In the case of a deficit of one or more nutrients
3. During a stressful situation of any kind

Effects:
- allows better rooting
- improves root hair formation, root length and thus nutrient intake from the soil
- prolongs the period of vegetation of fruit vegetables and fruits

- improves metabolism and natural resistance to diseases and pests
- increases the overall vitality of plants
- Helps increase soil fertility by supporting soil microflora (revitalizes the soil) - this means that the fertilizer used is not only retained on the leaf, but a certain part always reaches the surface and thus, act as food for soil microflora.
- prevents the accumulation of heavy metals and harmful substances in plants

Contents:

Total nitrogen (N)	14 % in dry matter
phosphorus (P_2O_5)	9 % in dry matter
potassium (K_2O)	14 % in dry matter

it further comprises amino acids, humic acids, S, B, Fe, Zn, Cu, Mn, Mo.

Amino acids in a fertilizer are needed for plant growth, regeneration and development. They are also of great importance for soil microflora by promoting the activity of soil microorganisms and enzyme activity. Plants are able to synthesize all the amino acids they need. Many amino acids are precursors or activators of phytohormones and growth agents in plants. In stressful situations, a plant can accumulate a significant amount of free amino acids that serve as a protective mechanism. The importance of this accumulation is that the plant spends less energy on protein synthesis. If the amino acid is supplied in the form of foliar nutrition, the plants will be in better conditions, which will affect growth and development. Thus, when a plant has individual building elements available and does not have to create them, its structure is growing at a faster rate.

Effects of a few amino acids

PROLINE – contributes to the strength of the cell wall, increases the resistance of plants to stress factors and reduces the risk of damage, increases the ability of the pollen to fertilize the plant and the fruit seed.

GLICINE – Increases chlorophyll concentration and improves photosynthetic process conditions, has a positive effect on pollination and fruit formation.

GLUTAMIC ACID – affects osmotic processes in protoplasm and influences the opening and closing of vents, has a positive effect on pollination, activates seed germination, participates in nitrogen metabolism and protein synthesis

METHIONINE – is a precursor of ethylene, enhances root development, regulates the opening of vents.

TRYPTOPHAN – an auxin precursor (a phytohormone that promotes the growth and strengthening of young roots, stimulates the growth of meristematic tissues), helps to overcome stress and prevents growth retardation.

ARGININE – increases the synthesis of hormones associated with the formation of flowers and fruits and facilitates the penetration of soil nutrients into the roots.

ALANINE, VALINE and **LEUCINE** – help to improve the quality of fruits

HISTIDINE – promotes germination.

Nutrients from the leaf surface are most rapidly absorbed and maximally utilized by the plant. They improve leaf quality parameters in nutrient uptake, photosynthesis and other biochemical processes (leaf area size, chlorophyll content).

When plants cannot receive nutrients from the soil?

– Insect damage
– Lack of moisture
– Unsuitable soils pH
– Low temperature
– High temperature

GERMINATION ACTIVATOR

ROKOAKTIV

Is an stimulant excipient on an organic basis affecting the rooting and initial phase of plant growth.

Advantages:
- stimulates plant growth and development
- returns the dressed seed to its original physiologically active state
- due to several components of Rokoaktiv, the root system is intensively formed and developed and thus intensive intake of nutrients (macro- and microelements) and water is intensified, making the crop optimally prepared for wintering in the case of winter crops. In the case of other crops, like spring plants, it helps with better start and durability.
- the excellent condition of the crop helps to cope with less favourable conditions

Effects:
- Supports the formation of fine root capillaries. As a result, it increases the use of moisture and nutrition.
- Stimulates growth and yield. In particular, it promotes the flow of metabolites into seeds and fruits.
- Increases seed size. Especially with a good supply of nutrients.
- Favourably affects the N content of food wheat grain.

It increases germination energy and significantly affects germination speed and quality. It allows balanced emergence of stands and increases photosynthesis of germinating plants.

The effect of Rokoaktiv is exhibited by:
a) better seed emergence
b) promoting vegetative growth,
c) accelerating the development of the whole plants,
d) changing and optimizing the root-above roots ratio,
e) increased yield and, in most cases, higher nutrient intake and improved plant health

The aim is to return the seed to its original biological active state, that is, as it had before the seed had been dressed.

Rokoaktiv is widely used as a root for cuttings or young seedlings. It significantly contributes to the creation, development and regeneration of the root system and above-ground parts of flowers and decorative trees.

Contents:

Total nitrogen (N)	5 % in dry matter
phosphorus (P_2O_5)	9 % in dry matter
potassium (K_2O)	23 % in dry matter
Humic acids	20 % in dry matter
Dry matter content	20 %

it further comprises amino acids, S, B, Fe, Zn, Cu, Mn, Mo.

Application and dosage:
- added during seed dressing / tank-mix (TM)
- a dose of 4 - 6 litres per 1 ton of seed

SEED DRESSER + ROKOAKTIV

SEED DRESSER + other, rival stimulator

SEED DRESSER

SOIL ACTIVATOR

Rokolan is an amino acid fertilizer intended for incorporation into the soil before sowing.

Effects of Rokolan:
- Activates the soil microflora by providing sufficient nutrients to the microorganisms in the soil and thus, directly it contributes to a significant increase in their total quantity and to the revitalization and regeneration of the soil
- Indirectly helps to make nutrients in the soil available, by increasing the number of microorganisms in the soil, it catalyses their processes in the soil therefore making more nutrients available to the plant root system
- Reduces plant demand on the amount of mineral fertilizers used
- Helps to break down digestible residues after sowing by supporting the process by intensifying the activity of microorganisms

The nitrogen cycle in nature consists of three main processes that are conditioned by the action of microorganisms:
- Synthetic processes that produce organic nitrogen substances (the binding of atmospheric nitrogen by nitrogenic bacteria),
- Degradation processes by which the mineralization of organic nitrogen substances is carried out (ammonization),
- Conversion of mineral nitrogen compounds (nitrification, denitrification).

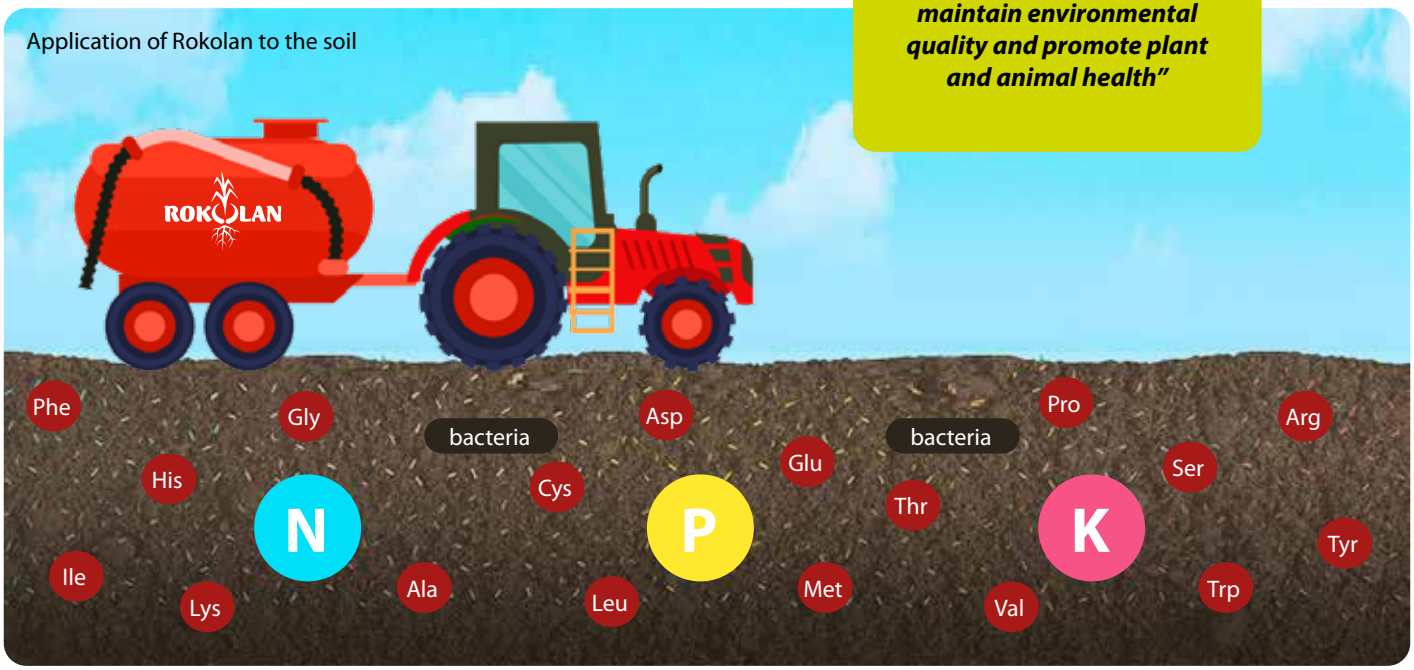
Contents:

Nitrogen in organic form (N) in dry matter	min. 4,5%
Phosphorus (P_2O_5) in dry matter	min. 13.0%
Potassium (K_2O) in dry matter	min. 19,5%
Dry matter v %	min. 30,0%
Combustile substances in dry matter	min. 50,0%
Amino acids	**18**

Dosage:
recommended dose per hectare: 50 liters / ha


Drill applying a liquid fertilizer

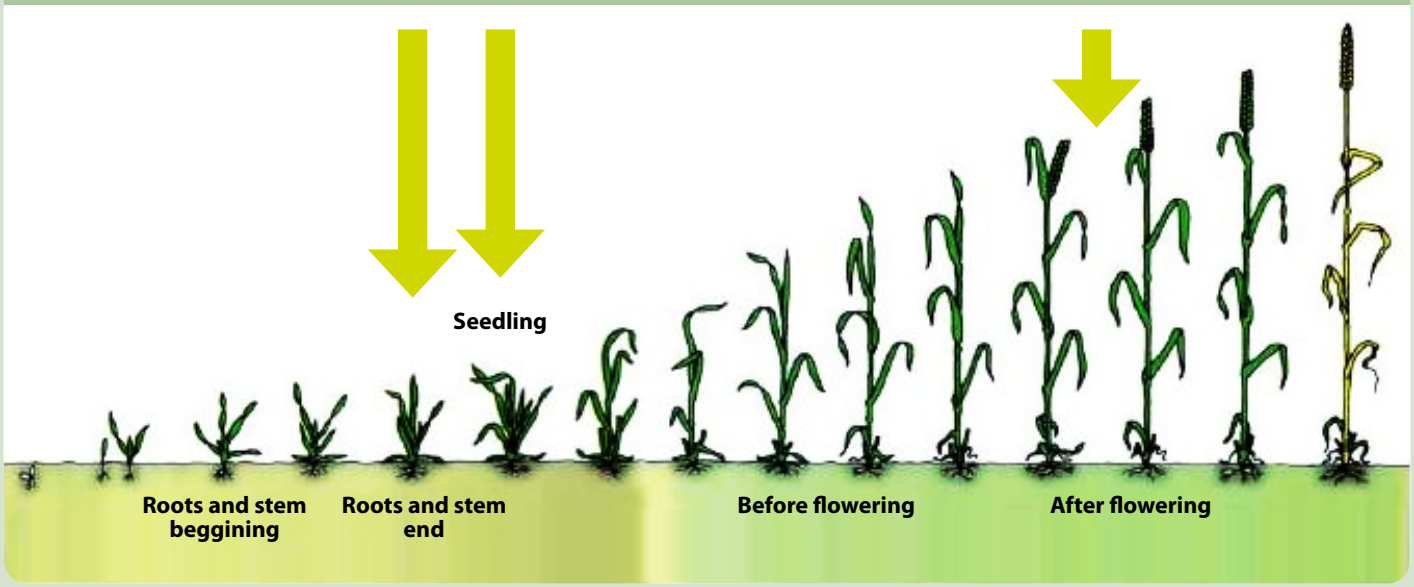
Doran and Parkin (1994) defined soil quality as "the capacity of a soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality and promote plant and animal health"



Application of Rokolan to the soil

DENSELY SOWN GRAIN

Crop	Repeat	Growth phase	Dose per ha
densely sown grain	2-3x with protection against diseases/pests	1. End of tillering 2. Stable 3. Post- flowering (mild maturation phasei – food wheat)	5 litres of Rokohumin / 150L of water



Accompanying effect - improving crop condition, optimizing root system growth, optimizing nitrogen uptake.

Achieved effect - improves the quantitative and qualitative parameters of grain.

Tab. The effect of ROKOHUMIN on the structural parameters and yield of winter wheat

No.	Treatment	Yield t/ha
1	Inspection (without fertilizers)	4,28
2	**N30P45K45+ROKOHUMIN – 2x5L/ha**	**6,52**
3	$N_{30}P_{45}K_{45}$	6,28

ROKOHUMIN treatment of winter wheat was carried out twice during the growing season - in a full seedling stage and before the first flag leaf appeared - a single dose - 5l / ha.
Research results have shown that ROKOHUMIN improves crop quality indicators and winter wheat yield levels.


Application of foliar fertilizer

SUNFLOWER

Crop	Repeat	Growth phase	Dose per ha
sunflower	1-2 x with protection against diseases/pests	1. Stage of 6-8 leafs 2. Height of stand approx. 1 m (never in blossom phase!)	2x5 litres of Rokohumin / 150l of water or 10 litres of Rokohumin / 200l of water

Accompanying effect - optimization of root formation, good vegetation condition, support of inflorescence deployment, maintenance of vegetation in case of lack of moisture or in excess of moisture, optimization of nitrogen uptake.

Achieved effect - increases the number of grains and thus the overall crop, increases oil content.

Sunflower experiment based on ROKOLAN, ROKOAKTIV and ROKOHUMIN (2018-2019)

Tab. Sunflower harvest in t.ha^{-1} at standard humidity

Variant	2018	2019
Rokolan - 50l/ha per 150l of water (before sowing) **Rokoaktiv** - 5 l/t (seed dressing) **Rokohumin** - 2x 5l per 150l of water (foliar application)	3,83	3,75
$N_{15}P_{15}K_{15}$ - 200kg/ha (sowing under heel)	2,37	3,42
Non-fertilized control	1,48	1,66

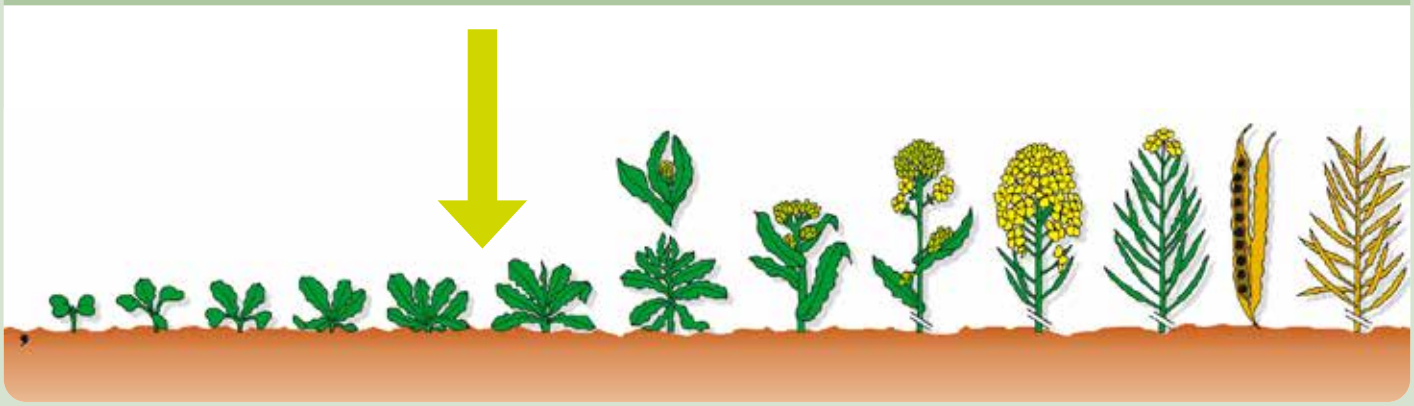
Foliar application 2x5l:
1st application in phase of 6-8 leaves
2nd application at height of stand approx. 1 meter (not during blossoming)
or 1x10l per 200l of water

Despite the dry weather in 2018 compared to 2019, the following fact was confirmed. Seed treated with ROKOAKTIV had a better start of germination and early growth than untreated seed. The emergence of the treated stand was 7-10 days earlier than the untreated stand. Untreated vegetation emerged after rainfall. Longer vegetation time and foliage application by ROKOHUMIN resulted in the crops produced.

The use of industrial fertilizers leads to soil degradation, causing a loss of microflora in the soil. Rokolan is a way to improve soil quality and increase soil humus.

RAPESEED

Crop	Repeat	Growth phase	Dose per ha
rapeseed	2-3 x with protection against diseases/pests	1. Spring during leaf covering min. 40-50% of soil 2. In the butonization stage 3. Before flowering	5 litres of Rokohumin / 150l water

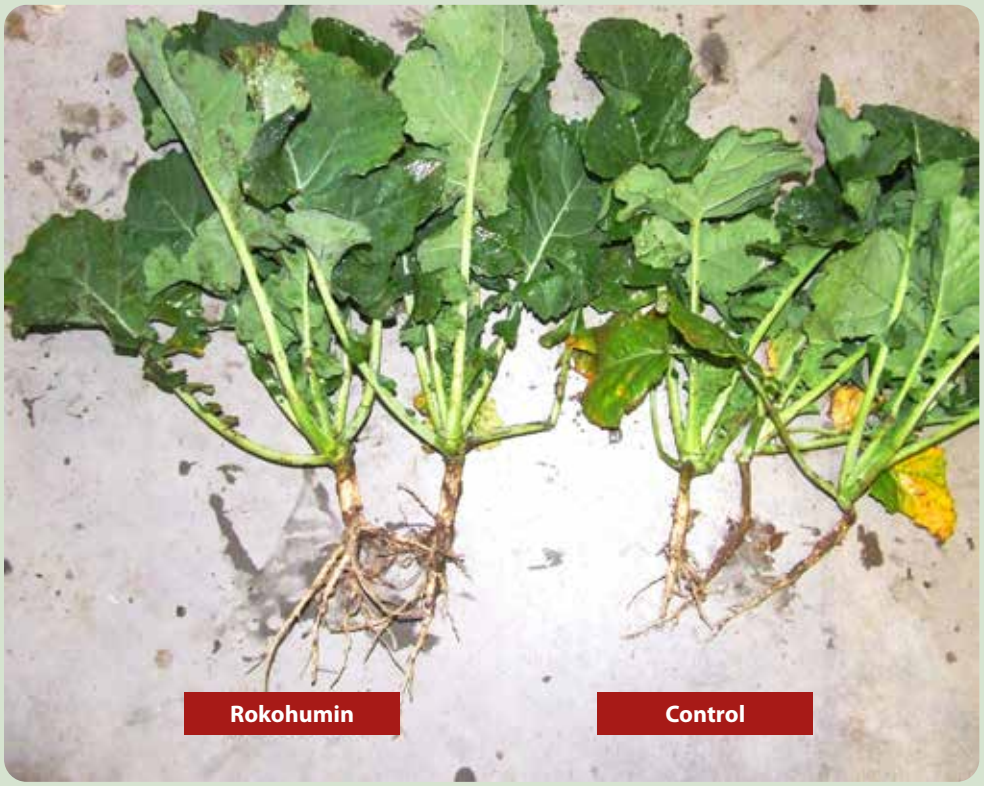


Accompanying effect - improving the condition of the stand, optimizing the growth of the root system, optimizing nitrogen uptake, increasing resistance to cold and drought, strengthening the stand.

Achieved effect - maintaining HTS at lack of moisture, increasing HTS at normal humidity.

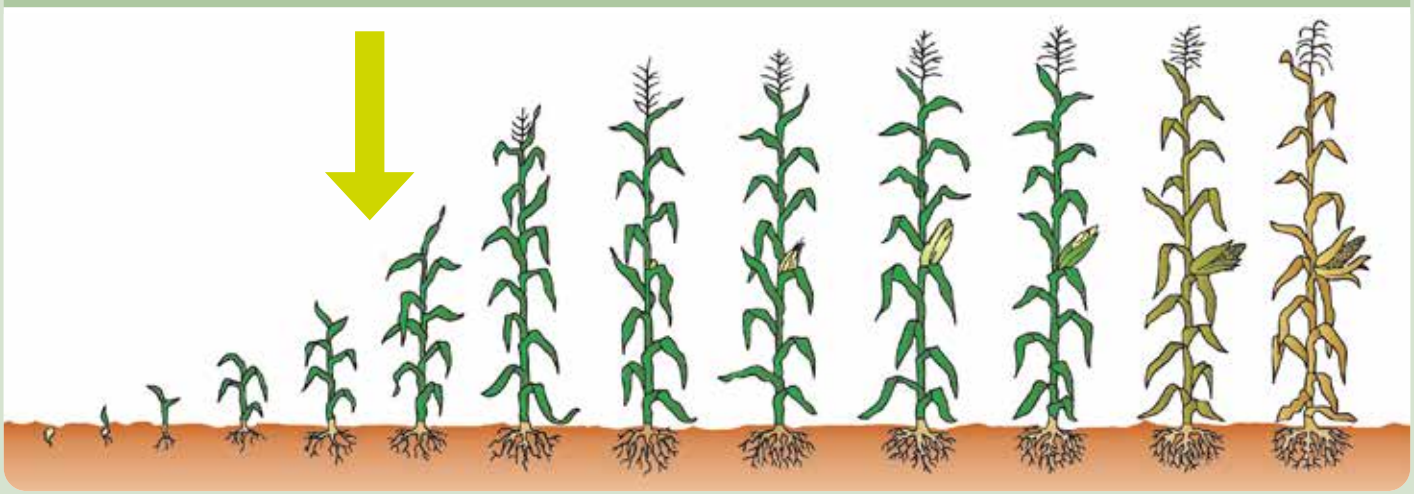
Tab. Impact of ROKOHUMIN on rapeseed yield

Variant	Yield $t.ha^{-1}$
control	3,15
Rokohumin 3 x 5l/ha	3,52



MAIZE

Crop	Repeat	Growth phase	Dose per ha
maize	1-2 x with protection against diseases/pests	1. 6-8 leaf stage 2. Height of stand approx. 1 m (never in blossom!)	2x5 litres of Rokohumin / 150 litres of water or 10 litres of Rokohumin / 200l water



Accompanying effect - optimization of root formation, good condition of the stand, support of inflorescence, maintenance of stands in case of lack of moisture or in case of excess moisture, optimization of nitrogen uptake.
Achieved effect – increase in the number of grains and HTS and thus in the overall harvest.

1 Rokohumin
2, 3, 4 different fertilizers

Tab. Maize yield in t.ha^{-1} at standard humidity

Variant	2018	2019
Rokolan - 50l/ha per 150l water (before sowing) **Rokoaktiv** - 5 l/t (seed dressing) **Rokohumin** - 2x 5l na 150l vody (foliar application)	7,94	10,09
$N_{15}P_{15}K_{15}$ - 200kg/ha (sowing under the heel)	7,56	10,21
Unfertilised control	5,67	7,24

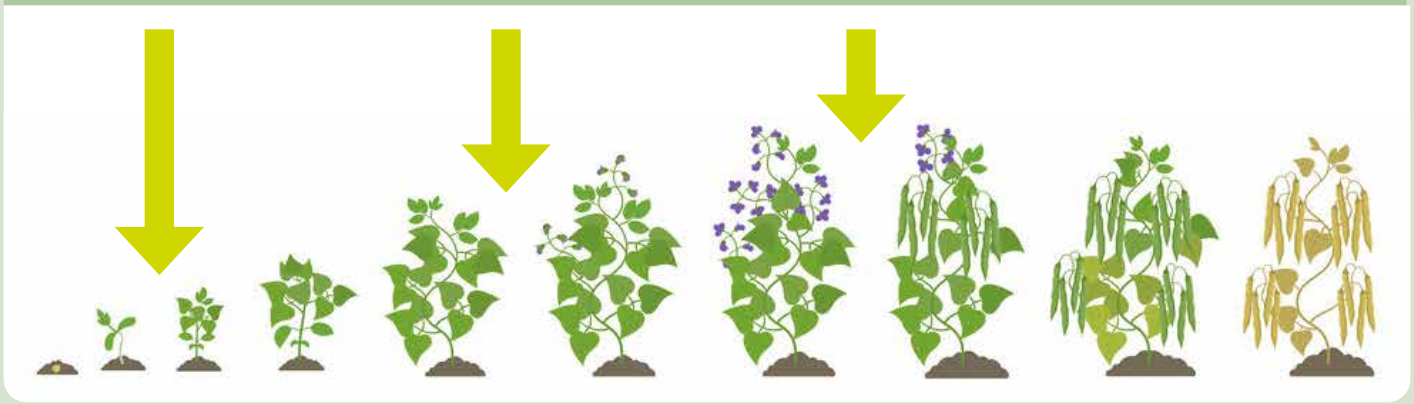
Foliar application 2x5l:
1st application in stage of 6-8 leaves
2nd application at height of stand 1m (not during flowering)
or 1x10l per 200l water

Despite the dry weather in 2018 compared to 2019, the following fact was confirmed. Seed treated with ROKOAKTIV had a better start of germination and initial growth phase than untreated seed. The emergence of the treated stand was 7-10 days earlier than the untreated stand. Untreated stands did not appear until after the rainfall. Longer growing time and leaf application with ROKOHUMIN was reflected in the resulting crops.

As a result of the use of industrial fertilizers, soil degradation occurs, which causes a loss of microflora in the soil. Rokolan is a way to improve the quality properties of the soil and increase humus in the soil.

LEGUMINOUS PLANTS

Crop	Repeat	Growth phase	Dose per ha
leguminous plants	2-3 x with protection against diseases/pests	1. Stage of young plants till 7 leaves 2. Period from main growth till start of flowering 3. flowering period – Teat formation	5 litres of Rokohumin / 150-200l of water



Accompanying effect - higher establishment of the lower floor of the branches, increased flow of assimilates into the seeds, increased drought resistance, support of root system formation, improvement of the condition of the stand.
Achieved effect - increase of nitrogen intake, maintenance of HTS in case of lack of moisture, increase of HTS at normal humidity, increase of yield.

Tab. Impact of Rokohumin on soy yield (Taken into account with 14% humidity)

Variant	Yield t.ha^{-1}
Control	2,78
Rokohumin 2 x 5l	3,18


Peas


Peas


Soy

VEGETABLES

Crop	Repeat	Growth phase	Dose per ha
vegetables	every 10-14 days	during the period of main growth (it is recommended to use a wetting agent)	5 litres of Rokohumin / 200l water

Tab. 1 Impact of Rokohumin on tomato yield

Fertilizer	Yield			Yield of commodity production			Marketability
		growth to standard			growth to standard		
	t/ha	t/ha	%	t/ha	t/ha	%	%
Non-fertilised control	39,7	-	-	36,5	-	-	91,9
NPK+Rokohumin	46,3	6,6	16,6	43,4	6,9	18,9	93,7

Tab. 2 Impact of Rokohumin on cucumber yield

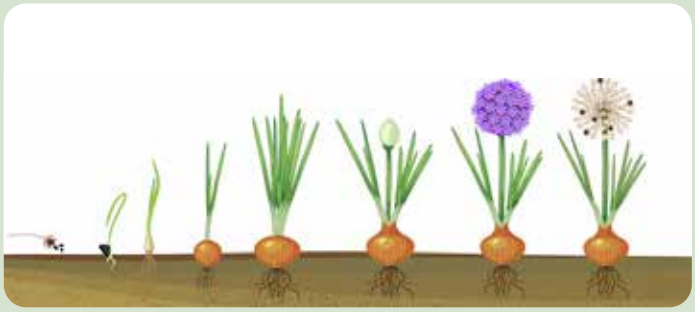
Fertilizer	Yield			Yield of commodity production			Marketability
		growth to standard			growth to standard		
	t/ha	t/ha	%	t/ha	t/ha	%	%
control	12,95	-	-	11,57	-	-	89,3
Rokohumin (foliar application in 3rd period)	15,02	2,07	16	13,66	2,09	18,1	90,9
NPK	16,25	-	-	14,58	-	-	89,7
NPK+ Rokohumin (foliar application)	18,82	2,57	15,8	16,9	2,32	15,9	89,8

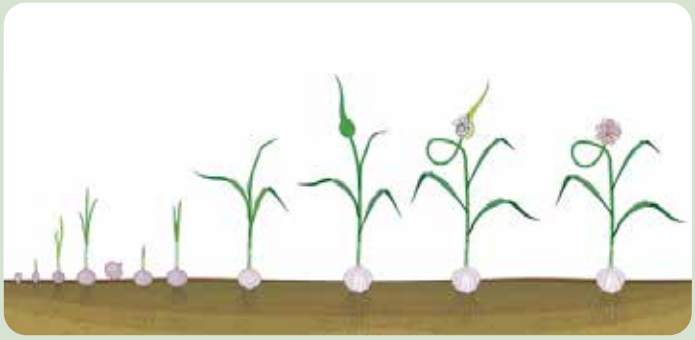
Accompanying effect - intensive formation of the root system, higher resistance to weather fluctuations.

Achieved effect - increasing nitrogen intake, creating conditions for higher and better yields.

BULB VEGETABLES

Crop	Repeat	Growth phase	Dose per ha
bulb vegetables	2 x after creating a sufficient leaf area	during main growth stage (on onion, garlic and chives it is essential to use wetting agent)	5 litres of Rokohumin / 200l water





Tab. Impact of Rokohumin on onion yield

Variant	Yield t/ha
Control (without fertilisers)	9,88
NPK (local - standard)	10,2
NPK (local) + Rokohumin 5l/ha	11,34

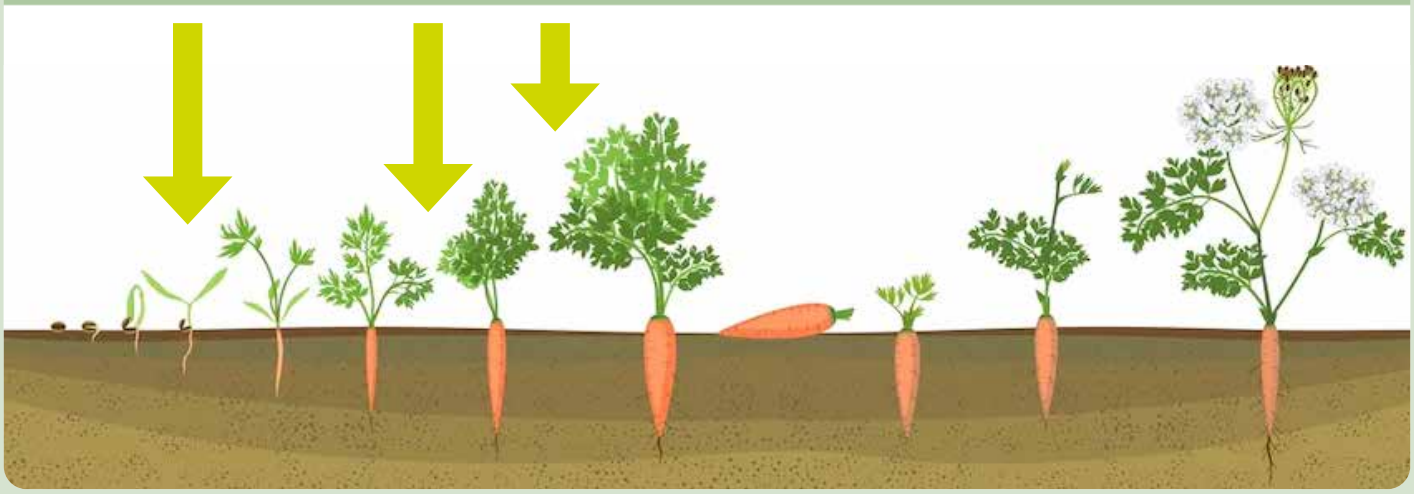
Recommendation for better yield and protection against diseases and pests for garlic:
Before planting the clove of garlic, soak in a 10% solution of Rokoaktiv with water in a ratio of 1:10 for 12 hours. Fertilize according to the application table.

Accompanying effect - intensive formation of the root system, higher resistance to weather fluctuations.

Achieved effect - increasing nitrogen intake, creating conditions for higher and better yields.

ROOT VEGETABLES

Crop	Repeat	Growth phase	Dose per ha
Root vegetables	2-3 x according to the condition of the stand and the course of weather/wind conditions	During spring, leaf covering of soil by plants min. 40-50% 2-3. Two-three-week intervals	5 litres of Rokohumin / 150l water



Accompanying effect - optimal condition of the stand, enlargement of the bougainvillea, root.

Achieved effect - increasing nitrogen intake and its effective use, creating preconditions for higher and better yields.

Tab. Impact of Rokohumin on carrot yield

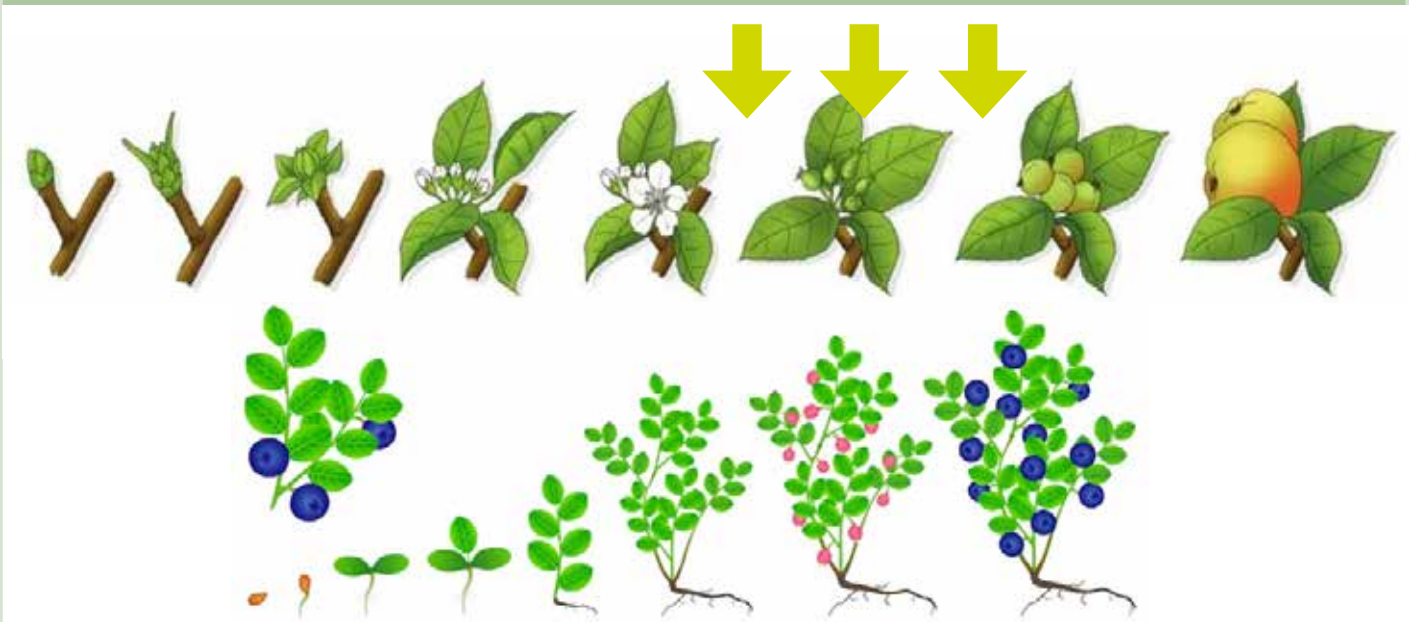
Fertilizer	Yield			Yield of commodity production			Marketability %
		growth to standard			growth to standard		
	t/ha	t/ha	%	t/ha	t/ha	%	
Non-fertilised control	32,9	-	-	29,3	-	-	89,1
NPK+Rokohumin	37,4	4,5	13,7	34,4	5,1	17,4	92

Rokohumin also has a positive effect on the biochemical parameters of carrots by increasing the content of carotene, ascorbic acid and reducing the content of nitrates.

ROKOLAN + ROKOAKTIV + ROKOHUMIN
pillars of a quality yield

FRUIT

Crop	Repeat	Growth phase	Dose per ha
fruit	3-4 x with protection against diseases/pests	1. Young growing twigs 2. 14-21 days after 1st application 3. 2-3 weeks after 2nd application	5-10 litres of Rokohumin / water as needed



Accompanying effect – increase of chlorophyll content in leaves, increase of number of leaves, higher flow of assimilates into fruits, significantly improvement of health condition.

Achieved effect - better condition of trees, increased sugar content, larger fruits.

Clients' feedback when using Rokohumin foliar fertilizer for fruit orchards:
When using Rokohumin fertilizer, they achieved a more even size and quality of fruit, thus achieving a higher % of marketable goods for direct consumption. The fruits have a more pronounced taste and aroma, there is an increase in sugar content and dry matter, which has a positive effect on storage. By applying the fertilizer, a larger number of pollinated flowers is preserved, which contributes to an increase in yield by 15% or more.

VINES

Crop	Repeat	Growth phase	Dose per ha
vines	4-5 x with protection against diseases/pests	1. Application on young growing bine 2. Application after flowering 3. Subsequently in 2-3 weeks Intervals in combination with protection against diseases and pests	5-7 litres of Rokohumin / water as needed

Accompanying effect - increased flow of assimilates into berries, immediate effect on the biosynthesis of sugars and acids.

Achieved effect – increasing sugar content and extract with a slight increase in yield, a significant improvement in health strengthening the growth and creating the condition for increasing the harvest.

Experiences:
When planting a vineyard and achieving a healthy and strong growth, we recommend soaking the roots in a solution of Rokoaktiv with water in a ratio of 1:10 for 12 hours before planting. For watering, we recommend Rokohumin at a dose of 2-3 times at 35L / ha or use the rest of Rokoaktiv. With an existing vineyard, we fertilize according to the application table.

Client feedback:
- resistant growth during the whole vegetation period against diseases, pests
- maturation of wood mass after harvest
- significant increased yield per ha
- increasing the concentration of aromatic substances transferred to the wine
- faster acquisition of sugar content required at harvest, this affects the earlier harvest

ROKOLAN + ROKOAKTIV + ROKOHUMIN
pillars of a quality yield

GRASSLAND

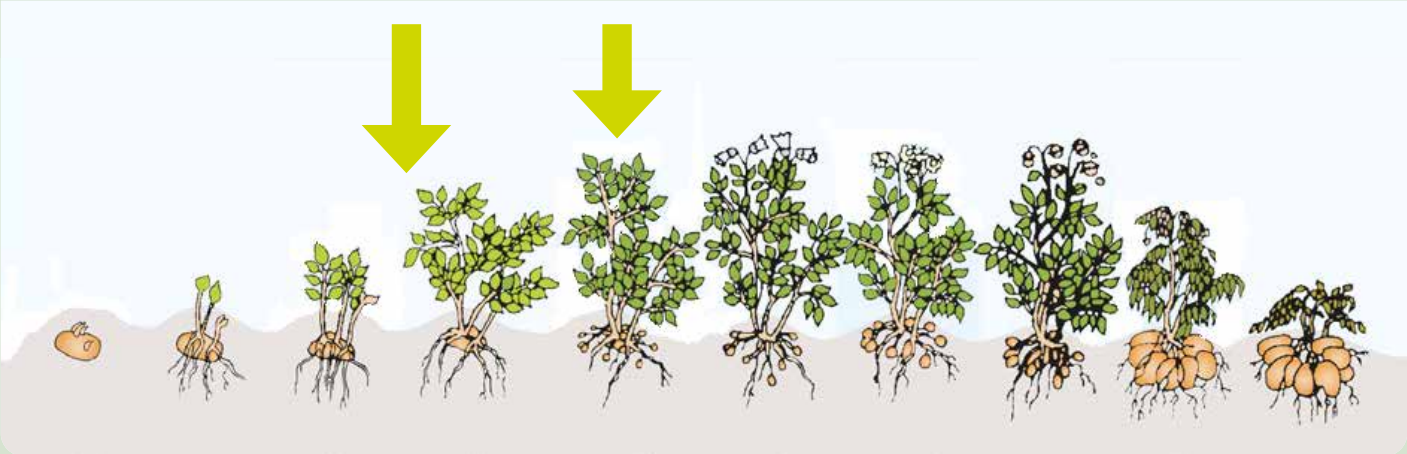
Crop	Repeat	Growth phase	Dose per ha
grassland	4 x	1. At the beginning of vegetation after creating sufficient leaf area at stand height of 10-15 cm 2-4. After regeneration, after mowing at a stand height of 10-15cm	5 litres of Rokohumin / 150l water

Accompanying effect - high nutritional value of grasslands, stimulation of the root system, increasing the density of all grasslands.

Achieved effect - earlier time of obtaining commercial biomass, quantitative increase, increase of leaf biomass, high feed value of obtained production.

POTATOES

Crop	Repeat	Growth phase	Dose per ha
potatoes	3 x with protection against diseases/pests	1. During spring, leaves covering the soil min.40-50% 2. a 3. If the need for application of agents protecting the plants arises	10 litres of Rokohumin / 200l water



Accompanying effect - support of root system formation, support of stand growth, increase of the number of medium and smaller tubers in seed potatoes, increase of starch content in industrial potatoes, increase in the number of tubers in ware potatoes.

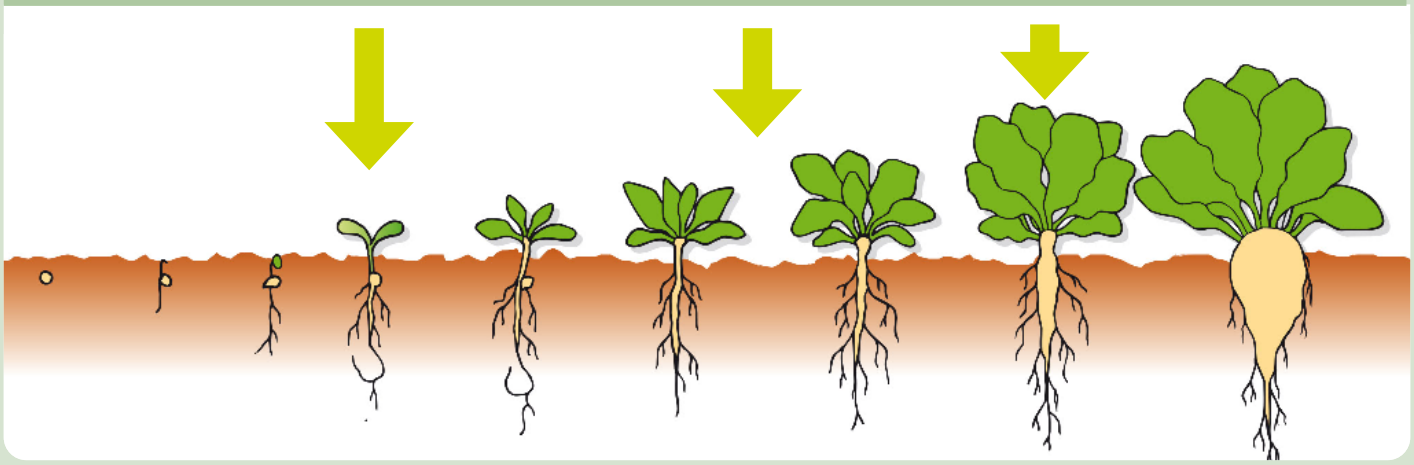
Achieved effect - increase of nitrogen intake and its effective use for crop production, optimal condition of plants, increase of chlorophyll concentration, enlargement of leaves and their slower aging.

Tab. Impact of Rokohumin potato yield

Variant	Yield $t.ha^{-1}$
unfertilised	24,24
NPK	31,06
NPK+Rokohumin (2 x 5l/ha)	37,22

SUGAR BEET

Crop	Repeat	Growth phase	Dose per ha
sugar beet	3-4 x with protection against diseases/pests	During spring, leaves covering the soil min 40-50% 2. a 3. In two-three-week intervals 4. Late summer (July)	5 litres of Rokohumin / 150l water



Accompanying effect - increase of nitrogen intake and its effective use, optimal condition of the stand, enlargement of bulbs, roots.

Achieved effect - late summer application (July) can increase the sugar content of the bulbs by up to 2%, higher and better yield.

Tab. Impact of Rokohumin on sugar beet yield

Variant	Yield $t.ha^{-1}$	Sugar content%
Unfertilised	38,04	18,50
NPK	44,56	18,89
NPK+Rokohumin (3 x 5l)	51,24	19,68

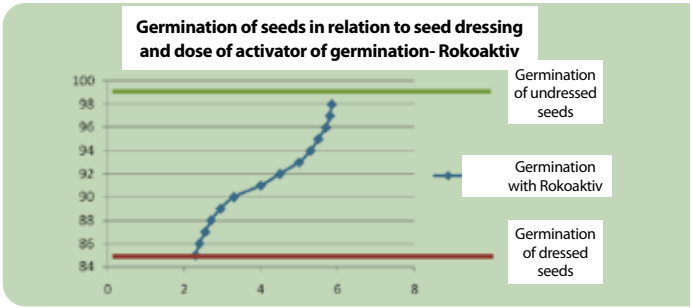
ROKOAKTIV

Contents:

Total nitrogen (N)	5 % in dry matter
phosphorus (P_2O_5)	9 % in dry matter
potassium (K_2O)	23 % in dry matter
humic acid	20 % in dry matter
amino acids	**18 types**
dry matter content	20 %
S, B, Fe, Zn, Cu, Mn, Mo.	

Rokoaktiv is an organic-based stimulant adjuvant acting as a germination activator with a stimulating effect on rooting and the initial stage of plant growth. Rokoaktiv prevents the negative effect of the feed dresser, increases the percentage of seed germination and ensures a better start in the initial phase of growth due to better root system development and a starting dose of nutrients with a high content of amino acids and humic substances.

The seed is inhibited by germination, growth and development due to the use of the feed dresser, which includes an effective slat. The goal of Rokoaktiv is to return the physiology of the plant to its original state. In the experiments, we closely monitored and recorded the factors and influences on changes in germination, rooting, growth intensity, the ratio of roots to the aboveground part and the strength of the cell structure, along with the balance of growth.



In 2018 and 2019, we carried out an experiment with the Rokoaktiv stimulator at the experimental workplace of the Agroecology Research Institute in Michalovce. The experiments at the workplace in Milhostov were based on two crops, sown maize and annual sunflower.

The emergence of vegetation is significantly influenced by the weather, which means that the seed treated with the Rokoaktiv stimulator emerged 10 days earlier than untreated. These did not arise until after the rainfall. After generalization, it can be emphasized that in the dry and warm weather, as in 2018, in the experiment with sown maize and annual sunflower, the highest yields were achieved in the treatment of seeds with Rokoaktiv. Higher resistance to stress conditions, drought was shown.

Rokoaktiv in the conditions of horticulture, viticulture and cultivation of decorative trees and flowers-roots

Rokoaktiv is widely used as a rooter for cuttings or young seedlings and as a regenerating agent for damaged roots of larger plants or woody plants.

The unique composition of Rokoaktiv, with its stimulating effect, contributes to the formation and growth of the plant root system.

The effect of Rokoaktiv in the conditions of fruit growers, winemakers, growers of decorative trees and flowers:

- best tree acceptance
- best condition of the stand
- faster onset of the fertility phase of fruit trees and vines
- for flowers and decorative trees, rapid regeneration of the root system and the aboveground part of the plants

Before planting, soak the roots in Rokoaktiv with water in a ratio of 1:10 for 12 hours. We will use the rest of Rokoaktiv for watering. Additional fertilization to the roots of already planted trees and vine sprouts is applied using a pruner or hydraulic drill.

ROKOAKTIV

Effects of Rokoaktiv as an activator in biological and efficiency in the economic field of agriculture in winter wheat cultivation.

1. Vplyv aktivátora Rokoaktiv na ukazovatele kvality zrna ozimnej pšenice:

Variant	Crude protein, % in dry matter	Crude protein yield, kg/ha	Yield q/ha	Pp, g/kg feed unitz yield	Security 1 k.j. Pp, g	Yield KJP, q/ha
Unfertilised (seed dressed by Polaris, ME, 1,5l/1t seeds)	13,7	401	41,1	106	88	42,1
$N_{80+40+30}P_{15}K_{30}$ Background (seed dressed by Polaris Polaris, ME, 1,5l/1t seeds)	13,6	527	54,7	105	87	55,6
Background+Rokoaktiv, seed treatment before sowing, 5l/t seeds	**13,8**	**564**	**57,4**	**107**	**89**	**58,9**

The use of the fertilizer Rokoaktiv contributed to the increase of the yield of crude protein by 37 kg / ha, feed and feed protein units by 2.7 and 3.3 q / ha, or by 6% on average compared to the mineral background $N_{60+40}P_{25}K_{35}$.

2. Impact of activator Rokoaktiv on the total grain yield of winter wheat.

Variant	Total Yield q/ha	+/-, q/ha		Dry matter Yield q/ha
		To control	To background	
Unfertilised (seed dressed by Polaris, ME, 1,5l/1t seeds)	34.0	-	-	29,2
$N_{80+40+30}P_{15}K_{30}$-Background (seeds dressed by Polaris, ME, 1,5l/1t seeds)	45.2	11,2	-	38,9
Background+Rokoaktiv, seed treatment before sowing, 5l/t seeds	**47.4**	**13,4**	**2,2**	**40,8**

Pre-sowing treatment of winter wheat seeds with Rokoaktiv activator had a positive effect on the total yield of winter wheat grain - a statistically reliable increase of crop grain of 2.2 q / ha was achieved at a yield of 47.4 q / ha, which is 5% more compared to the background. In the experiment, a maximum dry matter yield of 40.8 q / ha was achieved.

Related to the pre-sowing treatment of winter wheat seeds with Rokoaktiv activator at a dose of 5 liters per 1 ton of seeds in combination with seed dresser in growing the culture, high efficiency was confirmed at the minimum financial costs of using 1 liter of Rokoaktiv for seeds needed per 1-hectare areas of winter wheat.

ROKOLAN

Contents:

Nitrogen in organic form(N) in dry matter	min. 4,5%
phosphorus (P_2O_5) in dry matter	min. 13.0%
potassium (K_2O) in dry matter	min. 19,5%
dry matter in %	min. 30,0%
combustible substances in dry matter	min. 50,0%
amino acids	**18 types**

Rokolan is a basic fertilizer on an organic basis intended for root nutrition of agricultural crops. Its effect provides a better start in the initial phase of growth due to better development of the root system and the starting a dose of nutrients with a high amino acid content. Rokolan is a substitute for manure.

Due to the use of industrial fertilizers, water and wind erosion, soil degradation occurs, ie a reduction in the content of humic substances, a reduction in the formation of microbial biomass and an unnatural reduction in biological activity in the soil.

Rokolan is a way to improve the quality properties of the soil and increase the amount of microorganisms in the soil - to increase humus in the soil.

Rokolan application before sowing

Experiment in annual sunflower - Rokolan at a dose of 50l / ha

Experiment on sown maize - Rokolan at a dose of 50l / ha

Tab. Sunflower harvest in t.ha^{-1} at standard humidity

Variant	2018	2019
Rokolan - 50l/ha per 150l of water (before sowing) **Rokoaktiv** - 5 l/t (seed dressing) **Rokohumin** - 2x 5l per 150l of water (foliar application)	3,83	3,75
$N_{15}P_{15}K_{15}$ - 200kg/ha (sowing under the heel)	2,37	3,42
Unfertilised control	1,48	1,66

Leaf application 2 x 5l:
1st application in the stage of 6-8 leaves
2nd application at a stand height of 1 meter (not at flowering)
or 1 x 10l per 200l of water

Tab. Maize yield in t.ha^{-1} at standard humidity

Variant	2018	2019
Rokolan - 50l/ha per 150l of water (before sowing) **Rokoaktiv** - 5 l/t (seed dressing) **Rokohumin** - 2x 5l per 150l of water (foliar application)	7,94	10,09
$N_{15}P_{15}K_{15}$ - 200kg/ha (sowing under the heel)	7,56	10,21
Unfertilised control	5,67	7,24

Leaf application 2 x 5l:
1st application in the stage of 6-8 leaves
2nd application at a stand height of 1 meter (not at flowering)
or 1 x 10l per 200l of water

ROKOLAN


Seed drill with liquid fertilizer applicator

After application of Rokolan to the soil and subsequent activation of the microflora, which releases bound nutrients in the soil, the plants had a guaranteed supply of otherwise unacceptable nutrients. The more the plant drained, the more microorganisms replenished. Even after the nutrients were depleted by the plants, a good to very good supply of these nutrients remained in the soil. In the experiment of sown maize and annual sunflower, the highest yields were achieved with technologies such as the activator Rokoaktiv, application of Rokolan before sowing and leaf application of Rokohumin. Rokoaktiv acts to support seed germination and the initial phase of growth. Rokolan, in turn, acts as a support for the microflora in the soil, which makes nutrients available in the soil. Rokohumin then directly supports the plant and supplies the necessary nutrients.

Fertilization of orchards and vineyards with liquid amino acid fertilizer Rokolan

Fertilization of the soil with the vineyard / orchard already established by Rokolan is applied with a coulter to a depth of 25-30 cm, solitaires with a hydraulic drill or watering.

Rokolan application after planting


Hydro drill

Rokolan - technical crops

Technical crops intended for canning are fertilized and irrigated by drip irrigation in the presence of amino acid fertilizer Rokolan.

Advantages of drip irrigation:

It is ideal to supply nutrients to the plant in several stages (4x15l Rokolan per hectare), using Rokolan diluted with water. The essence is to distribute nutrients to the plants evenly throughout the growing season.


Drip irrigation

INNOVATIONS

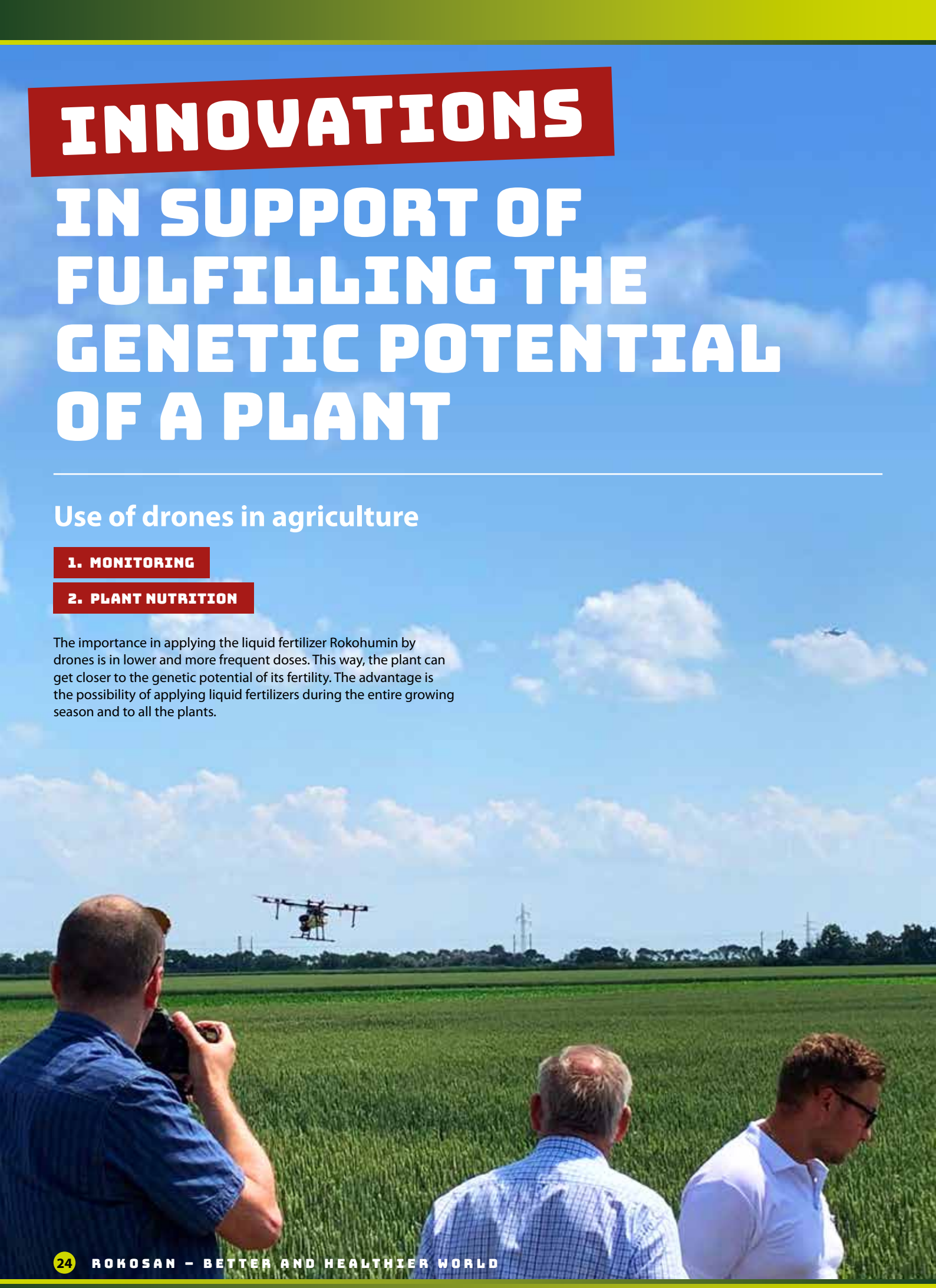
IN SUPPORT OF FULFILLING THE GENETIC POTENTIAL OF A PLANT

Use of drones in agriculture

1. MONITORING

2. PLANT NUTRITION

The importance in applying the liquid fertilizer Rokohumin by drones is in lower and more frequent doses. This way, the plant can get closer to the genetic potential of its fertility. The advantage is the possibility of applying liquid fertilizers during the entire growing season and to all the plants.



ACTIVITIES IN AFRICA

ORGANIC AGRICULTURE / FARMING / CULTIVATION

Excellent results in soil recovery and fertility growth are achieved by **combining all three fertilizers.**

ROKOLAN Soil **activator** + ROKOAKTIV Germination **activator** + ROKOHUMIN Leaf **nutrition**

BETTER AND HEALTHIER WORLD

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