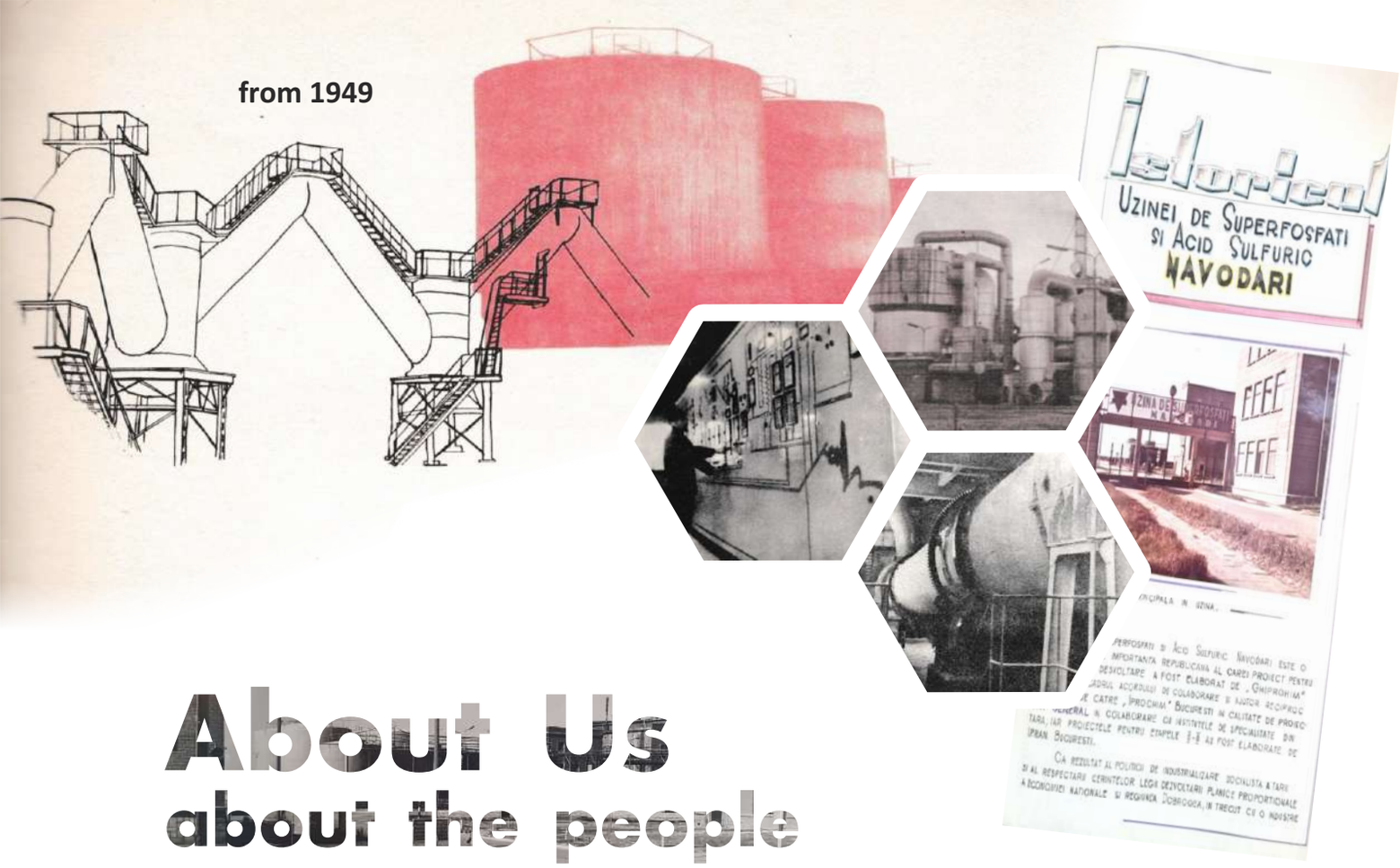
cich.ro

CICh®

for a good growth

NĂVODARI CHEMICAL FERTILIZER FACTORY



About Us
about the people

"We, the Chemical Fertilizer Plant Năvodari, are in a continuous development of the human factor, so that we can manage and especially solve our customers' problems.

We stand next to our customers and we offer the best solutions for their farms and not only from an environmental but also from an economic point of view.

Together, you the agricultural producers and us the industry, in these 20 years, we have achieved remarkable results, results that are mentioned in the top places of the European rankings.

So, dear Partners, we guarantee that our motto will remain the same:

WE ARE WITH YOU, WE LISTEN TO YOU, WE WILL FIND SOLUTIONS TOGETHER! "

President, **Ernesto Sudati**

1949-1954 – the foundations have been set: Superphosphates Plant

1960-1980 – the glorious years of the plant: TSP and SSP production, Sulfuric Acid, Industrial Derivatives

2002 – CICh restarts production

2011 – **N-Guard**: full protection of nitrogen

2019 – **Nutri-Top Range**: Phosphorus protection

2020 – Development of the range of the professional biostimulators Terram and Nutrifolium

2023 – Green granulator" is put into operation

CICh®
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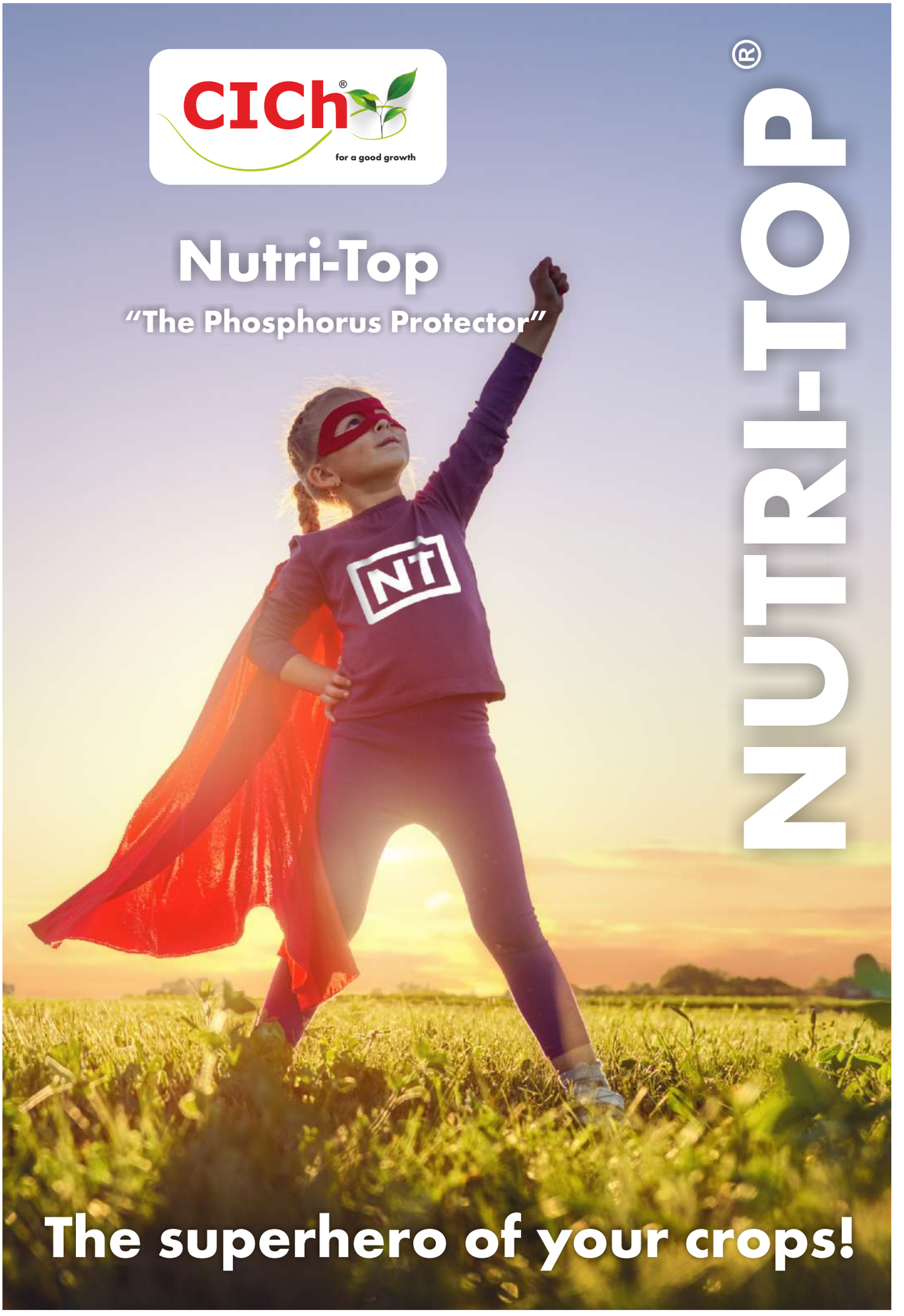
Contents


CICh®
for a good growth
Nutri-Top
"The Phosphorus Protector"
NUTRI-TOP®
NT
The superhero of your crops!

What is NUTRI-TOP Technology?

CiCh's years of research, development and innovation have resulted in the ability to implement **in a single granule the technologies to optimize nutrient efficiency.**

One single grain of NUTRI-TOP contains:

- Newest polymer generation that optimizes phosphorus availability and absorption throughout the whole vegetation cycle;
- Nitrification inhibitor for the stabilization and complete assimilation of ammonium nitrogen in the initial stages of vegetation, from 4 to 6 weeks;
- Humic extracts, Amino acids, Vitamins, Organic carbon;
- N, P and K + Secondary Macroelements and Microelements

NUTRI-TOP TECHNOLOGY

ENSURES PHOSPHORUS AVAILABILITY THROUGHOUT THE GROWING SEASON

In acidic soils, phosphorus (P) forms insoluble complexes with iron (Fe) and aluminum (Al) hydroxides (Fe and Al phosphates) and in basic, limestone-rich soils, it reacts with calcium (Ca) and transforms (by retrogradation) into dicalcium phosphate or tricalcium phosphate, thus becoming unavailable for crops.

NUTRI-TOP TECHNOLOGY is based on a new generation polymer with a specific molecular structure that results in a high cation exchange capacity. The polymer binds preferentially with metal cations such as aluminum, iron and calcium on acidic and alkaline soils, including neutral reacting soils.

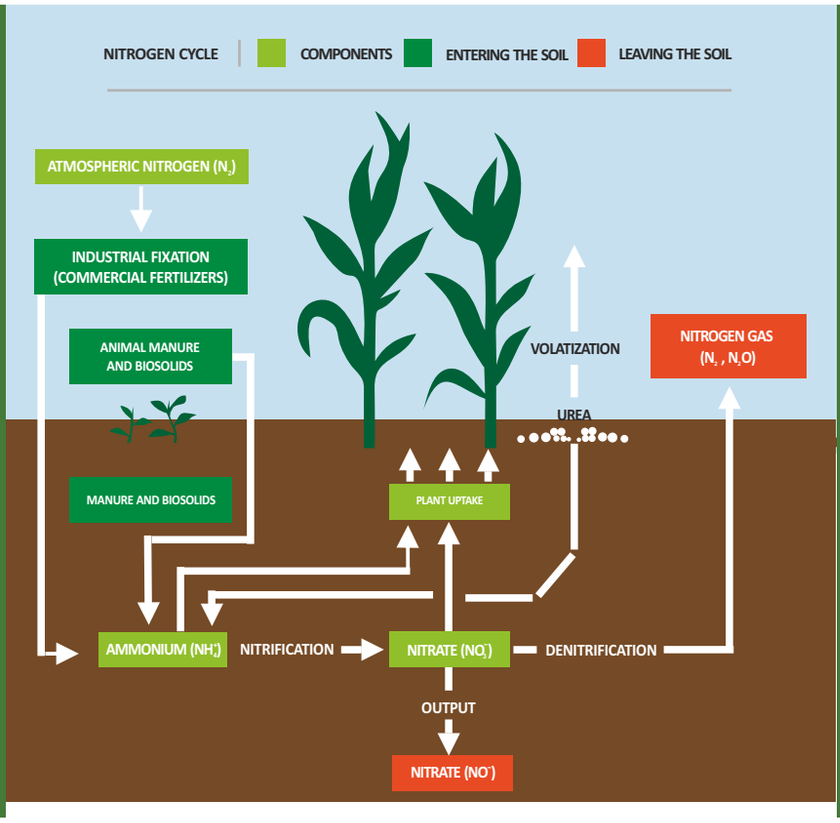
This polymer protects the phosphorus present in CICh fertilizer granules from known retrogradation/blocking phenomena. Phosphorus (P) will therefore be available to the crop even during critical and maximum consumption stages, with a performance that tends to double the availability and soil dynamics of the applied units throughout the growing season.

Nutrient efficiency (%) of the conventional fertilizers according to the soil pH values

pH	N	P	K
4.5	21	8	21
5.0	38	10	30
5.5	52	15	45
6.0	63	15	60
7.0	70	30	60

Research results show that, of the conventional NP/NPK fertilizers applied annually, only a small ratio of 5 to 25% of their phosphorus content is available for plant uptake during the growing season, both on acidic and alkaline soils, with values often below requirements even on neutral soils.

MAXIMIZES NITROGEN UPTAKE IN INITIAL STAGES OF VEGETATION



NUTRI-TOP TECHNOLOGY

is based on nitrification inhibitor to stabilize and assimilate ammonia nitrogen in the early stages of vegetation, for a period of 4 to 6 weeks (depending on the amount of mineral nitrogen applied and soil temperature), without losses and negative impact on the environment.

HUMIC EXTRACTS: HUMIC AND FULVIC ACIDS, AMINO ACIDS, VITAMINS AND ORGANIC CARBON

NUTRI-TOP TECHNOLOGY is a source of nutrients, amino acids, vitamins and organic carbon for plants and a source of energy for soil organisms (algae, bacteria, fungi, etc.) that support important functions, such as improving the natural fertility and physical-mechanical properties of the soil (structural, color, consistency, drainage and aeration, etc.), balanced growth and development of plants and inducing their resistance against various pathogens. Last but not least, improved soil microbial activity leads to faster and better decomposition/mineralization of plant debris.

NUTRI-TOP TECHNOLOGY is also based on the major impact of humic extracts in increasing water retention capacity, soil structuring and physico-chemical properties such as soil exchange and buffering capacity. When humic extracts, amino acids and vitamins are incorporated into fertilizers, they have a positive effect on nutrient bioavailability, balanced plant growth and development, and thus on maximizing agricultural yields.

Humic acids increase the nutrient and water storage capacity (the ability of humic acids to retain water in the root zone is about seven times greater than that of clay particles) - the insolubility of toxic aluminum (Al) compounds is additionally ensured and they will no longer be absorbed into plant structures, and metal compounds such as Fe, Cu, Zn, Mg, Mn become more accessible to plants and are used as microelements.

Fulvic acids improve membrane permeability and optimize the use of nutrients by "chelating" them into organic forms that are more easily absorbed by the root system - through a synergistic effect, humic and fulvic acids stimulate and support germination, seed viability and uniform crop growth.

The CICh NUTRI-TOP range supports rapid root mass development and sustained root growth, especially in length, optimizing nutrient consumption from fertilizers applied throughout the growing season - loss of nutrients from deep roots through leaching is prevented. Comparing the impact of humic substances on root system growth, it has been concluded in the literature that root systems that have benefited from humic substances or found humic-rich soil were 20-50% more developed.

NUTRI-TOP 80

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
20% P_2O_5	32% SO_3 28% CaO	

TECHNOLOGY

Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

NUTRI-TOP 80 is a solid, granular fertilizer containing phosphorus, sulphur and calcium, innovative due to the presence of phosphorus protection polymer and humic extracts.

NUTRI-TOP 80 can be used to correct phosphorus deficiencies in agricultural land and is recommended for all types of soil.

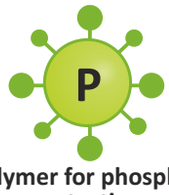
Use: by incorporation into the soil when preparing the seedbed.

NUTRI-TOP CEREALFOS

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
40% P_2O_5	10% SO_3 22% CaO	0,5% MgO 0,3% Fe 0,03% Zn

TECHNOLOGY



Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

Nutri-Top Cerealfos is a solid, granulated fertilizer with a high content of phosphorus, calcium, sulphur and microelements, innovative due to the presence of phosphorus protection polymer and humic extracts.

Nutri-Top Cerealfos can be used to correct phosphorus deficiencies in agricultural land and is recommended for all types of soil.

Use: by incorporation into the soil when preparing the seedbed.

NUTRI-TOP PERFORMANCE

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
5% N 30% P_2O_5	15% SO_3 6% CaO 0,65% MgO	1,65% Fe 0,05% B 0,04% Mn 0,01% Zn

TECHNOLOGY

Nitrification inhibitor

Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

Nutri-Top PERFORMANCE is a solid, granular fertilizer, based on nitrogen, phosphorus, macro and micro elements, innovative due to presence of phosphorus protection polymer and humic extracts, in addition, the presence of the nitrification inhibitor allows nitrogen to be used for a period of 4 to 6 weeks.
Nutri-Top PERFORMANCE is a fertilizer recommended for all soil types.

Use: by incorporation into the soil, when preparing the seedbed or localized with sowing.

NUTRI-TOP STARTER

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
5% N 25% P_2O_5	10% SO_3 30% CaO 1,5% MgO	0,02% B 0,01% Cu 1% Fe 0,02 Mn 0,01% Zn

TECHNOLOGY

Nitrification inhibitor

Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

Nutri-Top STARTER is a solid, granular fertilizer based on nitrogen, phosphorus, macro and micro elements, innovative due to the presence of phosphorus protection polymer and humic extracts. In addition, the presence of the nitrification inhibitor allows nitrogen to be used for a period of 4 to 6 weeks.

Nutri-Top STARTER is a fertilizer recommended for all soil types.

Use: by incorporation into the soil when preparing the seedbed.

NUTRI-TOP COMPLEX

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
4% N, 20% P_2O_5, 10% K_2O	12% SO_3, 12% CaO, 1% MgO	0,1% Fe, 0,07% B, 0,07% Mn, 0,05% Zn, 0,02% Cu

TECHNOLOGY

Nitrification inhibitor

Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

Nutri-Top COMPLEX is a solid, granulated fertilizer based on nitrogen, phosphorus, potassium, macro and micro elements, innovative due to the presence of phosphorus protection polymer and humic extracts. In addition, the presence of the nitrification inhibitor allows nitrogen to be used for a period of 4 to 6 weeks.

Nutri-Top COMPLEX is a fertilizer recommended for all soil types.

Use: by incorporation into the soil when preparing the seedbed or localized with sowing.

NUTRI-TOP SPECIAL

CHEMICAL COMPOSITION

MAIN MACROELEMENTS	SECONDARY MACROELEMENTS	MICROELEMENTS
4% N, 12% P_2O_5, 24% K_2O	12% So_3, 7,6% CaO, 0,34% MgO	0,5% Fe, 0,01% B, 0,01% Mn, 0,01% Zn

TECHNOLOGY

Nitrification inhibitor

Polymer for phosphorus protection

Humic extracts (amino acids, humic and fulvic acids, organic carbon)

Nutri-Top SPECIAL SPECIAL is a solid, granular fertilizer based on nitrogen, phosphorus, potassium, macro and micro elements, innovative due to the presence of phosphorus protection polymer and humic extracts. In addition, the presence of nitrification inhibitor allows the use of nitrogen for a period of 4 to 6 weeks.

Nutri-Top SPECIAL is a fertilizer recommended for all soil types.

Use: by incorporation into the soil when preparing the seedbed or localized with sowing.


CICh®
for a good growth
Be the Hero of future generations with
NUTRI-TOP®

CICh®
for a good growth

For over 10 YEARS

For over 10 years CICH Romania is the sole manufacturer for Europe of N-Guard total nitrogen protection fertilizers.

TECHNOLOGY N-GUARD®

CHARACTERISTICS OF THE DIFFERENT TYPES OF INHIBITORS

DIFFERENCES BETWEEN INHIBATORS*	N-GUARD	NBPT	NPPT	DMPP	DCD	NITRAPYRIN
RELEASE DATE	2011	1970/1980	2006	2001	1960/1970	1960/1970
FORMULATION	LIQUID	POWDER/ LIQUID/ SOLID (WHITE)	POWDER (WHITE)	SOLID	SOLID (COLORLESS)	CRYSTALIN SOLID (COLORLESS)
COMPOSITION TYPE	VEGETAL EXTRACTS	ORGANO-PHOSPHORIC	ORGANO-PHOSPHORIC	PHOSPHACTIC SALT	CYANAMIDE/ CYANOGLU-NIDINE	CHLOROPYRIDINE
FORMULATION		$C_4H_{14}N_3PS$	$C_3H_{12}N_3PS$	$C_5H_{11}N_2O_4P$	$C_2H_4N_4$	$C_6H_3Cl_4N$
NEEDS INCORPORATION INTO SOIL	✗	✗	✗	✗	✗	✓
Protection against volatilization	✓	✓	✓	✗	✗	✗
Nitrification protection	✓	✗	✗	✓	✓	✓
Protection from 0-20 days	✓	✓	✓	✓	✓	✓
Protection from 0-40 days	✓	✗	✗	✓	✓	✓
Protection from 0-110 days	✓	✗	✗	✗	✗	✗
Repellent effect against nematodes	✓	✗	✗	✗	✗	✗
Insect repellent effect (thrips larvae, flies, moths, etc.)	✓	✗	✗	✗	✗	✗
BIOCIDAL CHARACTER	✗	✗	✗	✓	✓	✓
Develop active soil bacteria	✓	✗	✗	✗	✗	✗
Develop active soil fungi	✓	✗	✗	✗	✗	✗
Use with sowing, no germination problems	✓	✓	✓	✓	✓	✗

* information taken from scientific literature

TECHNOLOGY

N-GUARD®

CICh® for a good growth

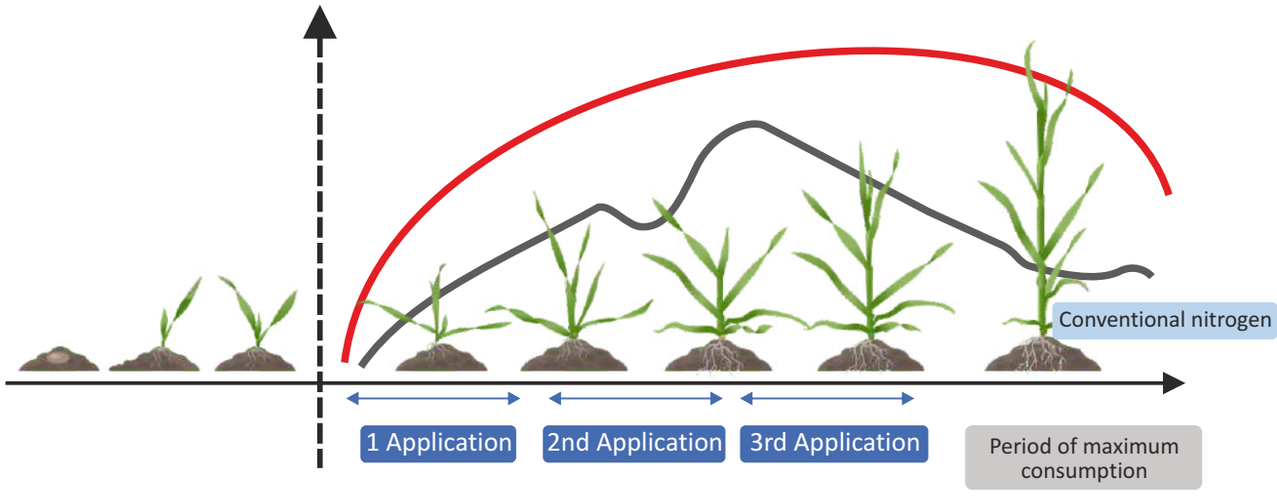
N-GUARD technology®
Nitrogen to the 3rd power!

In the case of conventional nitrogen products, depending on soil temperatures, nitrogen (N) is available to plants for up to 4-6 weeks!

Soil temperature	Hydrolysis of urea to ammonium NH_4^+	Soil temperature	Nitrification of ammonium NH_4^+ to nitrate NO_3^-
2 Celsius degrees	4 days	5 Celsius degrees	6 weeks
10 Celsius degrees	2 days	10 Celsius degrees	2 weeks
20 Celsius degrees	one day	20 Celsius degrees	one weeks

Only N-GUARD Technology offers protection against volatilization, denitrification and leaching for 90 to 110 days.

N-GUARD: Only one single application



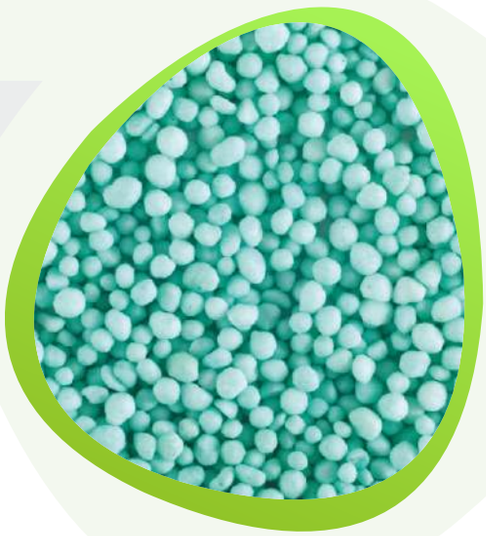
N-GUARD nitrogen is absorbed by crops continuously during the growing season, according to nutrient uptake curves, with minimal losses and no negative impact on the environment.

N-Guard Benefits:

- **Nitrogen to the third power! One application of N-Guard replaces 2-3 applications of conventional products.**
- **Natural nitrification inhibitor, friendly to the environment and soil microorganisms.**
- **Repellent effect on nematodes and some insects.**
- **Nitrogen protection for 90-110 days.**
- **Reduce losses of N due to leaching and denitrification.**
- **Nitrogen available to the plant during critical and consumption periods.**
- **Increasing profitability in one pass!**

N-Guard TECHNOLOGY®

UREA NG 46% N



CHEMICAL COMPOSITION

in which

Nitric Nitrogen (NO_3)	Ammonium Nitrogen (NH_4)	**Ureic Nitrogen (amidic)**
-	-	**46%**

CHARACTERISTICS

Appearance	Color	***Technology***	Grain size 2 - 4 mm	ph
Grains	Green	***NG***	95%	8,5 - 9,0

AMOSULF NG 33% N + 29% SO3

CHEMICAL COMPOSITION

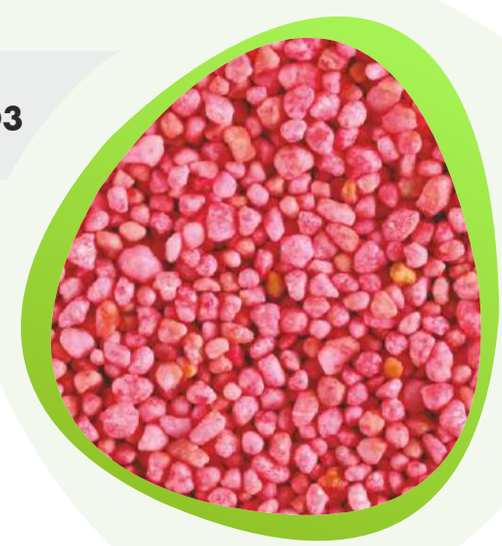
in which

Nitric Nitrogen (NO_3)	Ammonium Nitrogen (NH_4)	**Ureic Nitrogen (amidic)**	**Water-soluble sulphur (SO3)**
-	**10,0%**	**23%**	**29,0%**

CHARACTERISTICS

Appearance	Color	***Technology***	Grain size 2 - 4 mm	ph
Grains	Yellow	***NG***	95%	6,8 - 7,0

UTIL SAN NG 21% N + 58% SO3



CHEMICAL COMPOSITION

in which

Nitric Nitrogen (NO_3)	Ammonium Nitrogen (NH_4)	**Ureic Nitrogen (amidic)**	**Water-soluble sulphur (SO3)**
-	**21%**	-	**58,0%**

CHARACTERISTICS

Appearance	Color	***Technology***	Grain size 2 - 4 mm	ph
Grains	Pink	***NG***	95%	4,0- 5,0

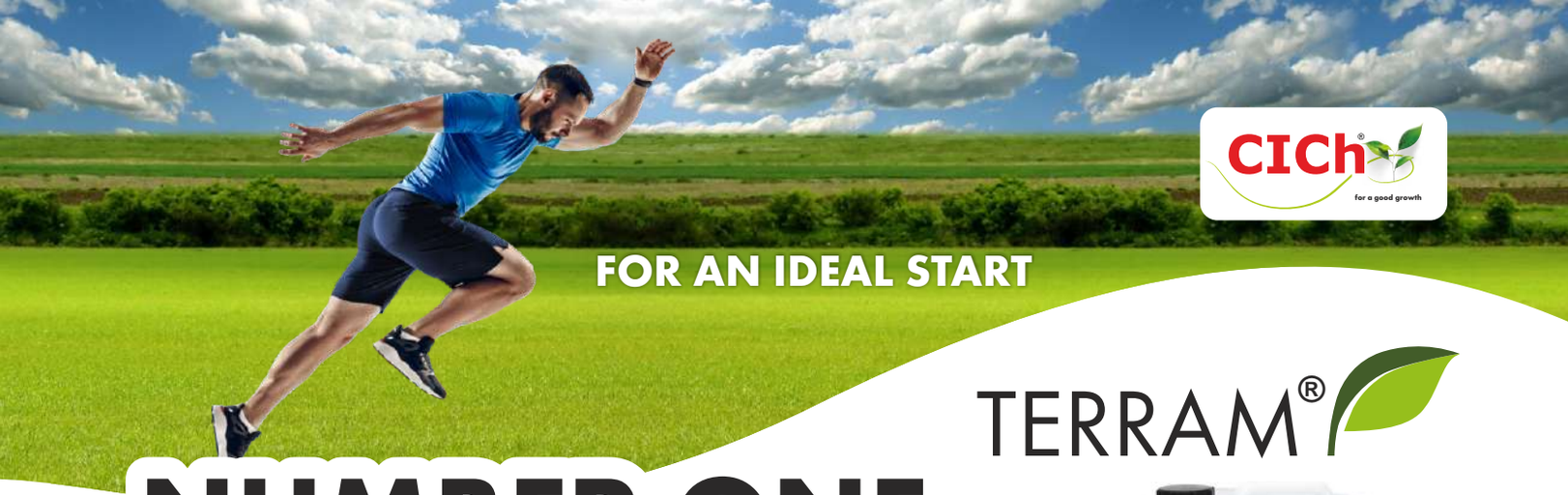
CICh®
for a good growth

SPECIAL PRODUCTS

Benefits:

- STIMULATES INITIAL ROOTING
- ACCELERATED GROWTH OF ROOT SYSTEM
- OPTIMIZED NUTRIENT UPTAKE FROM THE SOIL
- INCREASED STRESS TOLERANCE OF PLANTS
- SUPPORTS THE WINTER STAGES OF CROPS

TERRAM®



FOR AN IDEAL START

TERRAM®

NUMBER ONE

Number One is a professional root system biostimulant with high carbon (C) content and organic substances, amino acids and polysaccharides.

HOW IT WORKS

It is based on the Terram Molecular Complex - a patented Cich formula, that is an addition of organic molecules, assimilated by the plant, with a root biostimulation effect, involving:

- Stimulation of rooting (absorbent hairs and lateral roots).
- Stimulation of absorption and mobilization of nutrients.
- Increase plants resistance to overwintering and frost.
- Activation of the plants natural defense system against pathogens.

Characteristics:

pH (20°C):	6,6
Density (20°C):	approx. 1,18 kg/l

BENEFITS

✚ Number One is a great recommendation for foliar and/or root applied biostimulant in autumn and early spring (winter cereals and rapeseed). It stimulates the development of the root system in plants and minimizes the negative impact caused by extreme stress conditions (drought, frost, waterlogging, technological accidents, etc.). Due to the high content of organic substances with a very low molecular mass, Number One is more easily absorbed by plants, even in critical periods of stress.

✚ Alginic acids act as a natural adjuvant, so at the time of application a film is formed on the surface of the leaves, increasing the absorption of products with which Number One is combined, such as fungicides, insecticides or other foliar fertilizers.

✚ Applying Number One to rapeseed and winter cereals in the autumn prepares the crop for winter, stimulating the root system and the plants resistance to diseases and stress factors. Spring application supports vegetative restart and helps plants to overcome periods of stress.

Composition	%,w/v
Total nitrogen (N)	1,2
Organic soluble nitrogen (N)	1,2
Organic carbon (C) of biological origin	11,8
Potassium oxide (K_2O)	7-8
Organic substance with nominal molecular weight <50 kDa	35,4
Alginic acids	<7
Mannitol	1,2 - 2,4
Betaine	3,54

APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- From 2-4 leaves, throughout the entire growing season	1.5-3 l/ha (1-2 applications)
Rapeseed	- From 2-4 leaf stage to stem elongation	1.5-3 l/ha (1-2 applications)
Sunflower	- From 2-4 leaf stage to stem elongation	1.5-3 l/ha (1-2 applications)
Maize	- From 2-4 leaves to stem elongation	1.5-3 l/ha (1-2 applications)
Soybeans, peas, beans	- Starting with 2 real leaves	1.5-3 l/ha (1-2 applications)
Orchards	- At the start of vegetation - At flowering - At petal fall	2-4 l/ha
Vineyards	- At the start of vegetation - Shoot 5-7 cm - Shoot 10 cm	2-4 l/ha
Field vegetables, greenhouses and solariums	- After the transplantation	200-400 ml/1000 sqm
Potato	- Until side shoots are formed	1.5-3 l/ha (1-2 applications)
Sugar beet	- When leaves develop	1.5-3 l/ha (1-2 applications)

TERRAM®

TOP-CAL

TOP-CAL has all the characteristics of a biostimulant and complex foliar fertilizer with its balanced content of nitrogen, soluble calcium plus soluble and EDTA-chelated trace elements (B, Cu, Fe, Mn, Mo, Zn), readily available to agricultural and horticultural crops.

HOW IT WORKS

- Top-Cal is a root biostimulant containing **Terram Molecular Complex**, a patented Cich formula, represented by an addition of organic molecules, assimilable by the plant, with root biostimulation effect, which involves: stimulating the development of absorbing root hairs and lateral roots, supporting photosynthesis and improved nutrient uptake, increasing plant stress tolerance and improving soil quality.
- Top-Cal has a high concentration of nitrogen (N) and calcium (Ca), that is applied foliar and to the soil, with a role in plant root development, increasing tolerance for disease and pest attack and other stress factors, increasing the level and quality of agricultural production.

BENEFITS

- Calcium increases the uptake of nitrogen, potassium and phosphorus (including from basic fertilization), stimulates photosynthesis and increases the size and quality of fruit. It also makes nitrogen use more efficient.
- Top-Cal is the ideal supplement to treat and prevent calcium deficiency, including physiological diseases such as apical wilt, fruit and flower drop and abortion, marginal scorch, etc. In the case of fruit and vegetables, it increases shelf life and commercial value.
- The organic carbon in the Top-Cal composition supports the activity of beneficial soil microorganisms.

Caracteristici:

pH (20°C):	2,5 - 3,0
Density (20°C):	approx. 1,42 kg/l

Composition	%,w/v
Total nitrogen (N)	11,4
Nitric nitrogen (N-NO_3)	8,2
Ammoniacal nitrogen(N-NH_4)	1,7
Water-soluble organic nitrogen (N)	1,4
Calcium oxide (CaO) total	15,6
Water-soluble boron (B)	0,014
Copper (Cu) chelated with EDTA	0,014
Copper (Cu) chelated with EDTA	0,028
Manganese (Mn) chelated with EDTA	0,014
Water-soluble molybdenum (Mo)	0,0014
Zinc (Zn) chelated with EDTA	0,014
Vegetal-origin organic carbon (C)	8,5

APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- Before and immediately after the shooting - Stem elongation - Appearance of the flag leaf	2-3 l/ha combined with NUMBER-ONE (Example: 1-1.5 l Top-Cal + 1.5 l Number One)
Rapeseed	- From the start of vegetation to the beginning of flowering	2-3 l/ha or together with NUMBER-ONE
Maize	- 4-6 leaves	2-3 l/ha or together with NUMBER-ONE
Sunflower	- From leaf development to to the beginning of flowering	2-3 l/ha or together with NUMBER-ONE
Sugar beet	- From 4 leaves to full cover of vegetation	2-3 l/ha or together with NUMBER-ONE
Potato	- From side shoot formation to flowering	2-3 l/ha or together with NUMBER-ONE
Field vegetables, greenhouses and solariums	- Transplanting - Vegetative growth period - Fruit growth	300ml/1000 sqm
Orchards and vineyards	- From the appearance of the buds to the fruit growth	2-3 l/ha

TERRAM®

FACTOR

Factor is a corrector of Boron and Molybdenum deficiencies, and a rooting biostimulant with Terram Molecular Complex.

HOW IT WORKS

Terram Molecular Complex is a patented Cich formula, represented by an addition of organic molecule, assimilable by the plant, with root biostimulation effect, which involves:

- Rapid uptake of the product by the plant.
- Improved nutrient uptake and transport.
- Accelerates root development, especially in autumn rapeseed.
- Increased plant tolerance to stress in the early vegetation period.

BENEFITS

- Quickly prevents and corrects Boron and Molybdenum deficiency.
- Ensures uniform flowering and pollen viability for increased yields.
- Influences nitrogen synthesis and nitrogen fixation activity in soil by Rhizobium bacteria in leguminous plants.
- Stimulates migration of sugars into root tissues, stimulating soil microbial activity.

Characteristics:

pH (20°C)	7 - 8
Density (20°C)	approx. 1,35 kg/l

Composition	%,w/v
Boron (Bo) water soluble	14,2
Molybdenum (Mo) water soluble	0,135

APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Rapeseed	- 4-8 leaves - Beginning of flowering	1-3 l/ha
Sunflower	- From 4-6 leaves to flower bud appearance	1-3 l/ha
Sugar beet	- From 4 leaves up to full cover of vegetation	1-3 l/ha
Potato	- From side shoot formation to flowering	1-3 l/ha
Lucerne	- Leaf growth	1-3 l/ha
Peas, beans, soybeans	- 5-10 cm - pre-bloom	1-3 l/ha
Orchards	- floral buds - after petals fall - after harvesting	1-3 l/ha

NUTRIFOLIUM®

Benefits:

- STIMULATION OF THE VEGETATIVE GROWTH
- IMPROVED ABSORPTION OF NUTRIENTS AND WATER FROM THE SOIL
- STIMULATION OF FLOWERING AND FRUITING
- INCREASED WATER STRESS TOLERANCE

SPECIAL PRODUCTS

CICh® for a good growth

REMEDY
AGAINST STRESS

NUTRIFOLIUM®

MISTER X

Mister X is a professional foliar biostimulant with a high content of amino acids, nitrogen (N) and organic carbon, microelements and Nutrifolium Molecular Complex. Maximum effects are produced when applied at the start of vegetation in autumn crops and in the early stages of development in spring crops.

HOW IT WORKS

- Nutrifolium Molecular Complex - patented formula developed in Cich laboratories, with biostimulating effect on vegetative and foliar growth by improving nutrient uptake, decreasing the risk of flower abortion and increasing crop tolerance to water stress.
- Nutrifolium molecular complex increases the efficacy of plant protection products when applied together.

BENEFITS

- Mister X ensures rapid development of the root system and stimulates the development of leaf mass, helping plants to achieve their maximum production potential. By providing amino acids plants save energy that would otherwise be consumed for nitrogen metabolism, thereby improving other processes such as stress resistance, plant growth and yields.

- The betaine found in the Mister X formulation is an amino acid that increases plant tolerance to environmental stresses such as salinity, extreme temperatures, UV radiation and heavy metals.

- Mister X rapidly stimulates and regenerates crops when applied even in extreme cases of stress such as hail, excessive surface ponding, phytotoxicity, drought or frost.

Characteristics:

pH (20°C)	8 - 8,5
Density (20°C)	approx. 1,15 kg/l

Composition	%,w/v
Organic nitrogen (N)	4,5
Water-soluble organic nitrogen (N)	4,5
Water-soluble boron(B)	0,03
Water-soluble manganese (Mn)	0,1
Water-soluble zinc (Zn)	0,06
Water-soluble molybdenum (Mo)	0,001
Biological-origin carbon (C)	16
Total aminoacids	29
Free aminoacids	3,4
Betaine	4,5

APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- From the beginning of the stem elongation to the bud stage	1-3 l/ha
Rapeseed	- From side shoot formation to flowering	1-3 l/ha
Maize	- 6-8 leaves to first internode	1-3 l/ha
Sunflower	- From leaf development to stem elongation	1-3 l/ha
Soybeans, peas, beans	- Starting with 4-6 leaves	1-3 l/ha
Potato	- From side shoot formation to tubercle formation	1-3 l/ha
Field vegetables, greenhouses and solariums	- At each intervention	1-3 l/ha
Orchards and vineyards	- At each intervention	1-3 l/ha

CICh® for a good growth

NUTRIFOLIUM®

UPPER

Upper is a biostimulator specially designed to provide plants with the necessary nitrogen (N), sulphur (S) and microelements during periods of active vegetation, in a formula that is easy to be assimilated by foliar application.

HOW IT WORKS

- Nutrifolium Molecular Complex - patented formula developed in Cich laboratories, with biostimulating effect on vegetative and foliar growth by improving nutrient uptake, decreasing the risk of flower abortion and increasing crop water stress tolerance.
- Nutrifolium molecular complex increases the efficacy of plant protection products when applied together.
- Sulphur plays an important role in plant metabolism. Sulphur is essential for the formation of amino acids and proteins, vitamins and enzymes. Together with nitrogen, sulphur is essential for the formation of amino acids needed for protein synthesis. Upper successfully meets this need by providing balanced supply of nitrogen (N) and sulphur (S).

BENEFITS

- Helps to improve the tillering of cereal crops.
- Supplements the sulphur requirements of plants such as rapeseed, wheat or sugar beet.
- Increases the quality of cereals by providing a high protein and oil content in oilseeds.
- Ensures balanced vegetative and productive development.

Characteristics:

pH (20°C)	7 - 8
Density (20°C)	approx. 1,31 kg/l

Composition	%,w/v
Total nitrogen (N)	20,8
Nitric nitrogen (N-NO_3)	2,6
Ammoniacal nitrogen (N-NH_4)	13
Ureic nitrogen (amide N-NH_2)	5,2
Water-soluble sulfur (SO_3)	59,2
Water-soluble boron(B)	0,013
Copper (Cu) chelated with EDTA	0,013
Iron (Fe) chelated with EDTA	0,026
Manganese (Mn) chelated with EDTA	0,013
Water-soluble molybdenum (Mo)	0,0013
Zinc (Zn) chelated with EDTA	0,013

APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- From the beginning of tillering	2-5 l/ha (1-2 applications)
Rapeseed	- From stem elongation to flowering	2-5 l/ha (1-2 applications)
Maize	- From 4-8 leaves to third internode	2-5 l/ha (1-2 applications)
Sugar beet	- From 4-6 leaves to 6-8 leaves	2-5 l/ha (1-2 applications)
Sunflower	- At 4-6 leaves stage	2-5 l/ha (1-2 applications)
Potato	- From leaf development to the beginning of flowering	2-5 l/ha (1-2 applications)

MEGA PRODUCTION

NUTRIFOLIUM®

MEGA-N

Mega-N is a biostimulator with high nitrogen content and Nutrifolium molecular complex, with a role in supplying the nitrogen needed by plants during critical stages and in the gluten and protein formation phases.

HOW IT WORKS

- Nutrifolium Molecular Complex - patented formula developed in Cich laboratories, with biostimulating effect on vegetative and foliar growth by improving nutrient uptake, decreasing the risk of flower abortion and increasing crop tolerance to water stress.
- Nutrifolium Molecular Complex increases the efficacy of plant protection products when applied together.

BENEFITS

- Mega-N contains all forms of nitrogen (urea 16.1%, nitric 7.5% and ammonia 7.5%). Mega-N allows a better foliar penetration, is quickly absorbed in leaves and young tissues with active growth.
- Zinc content stimulates hormonal activity, through the production of Auxins.
- The application of Mega-N stimulates the regeneration of crops affected by climatic conditions or technological errors.
- Mega-N has a "stay green" effect and in the case of winter cereals it prolongs the life of the flag leaf, thus ensuring a high quality yield.

Characteristics:

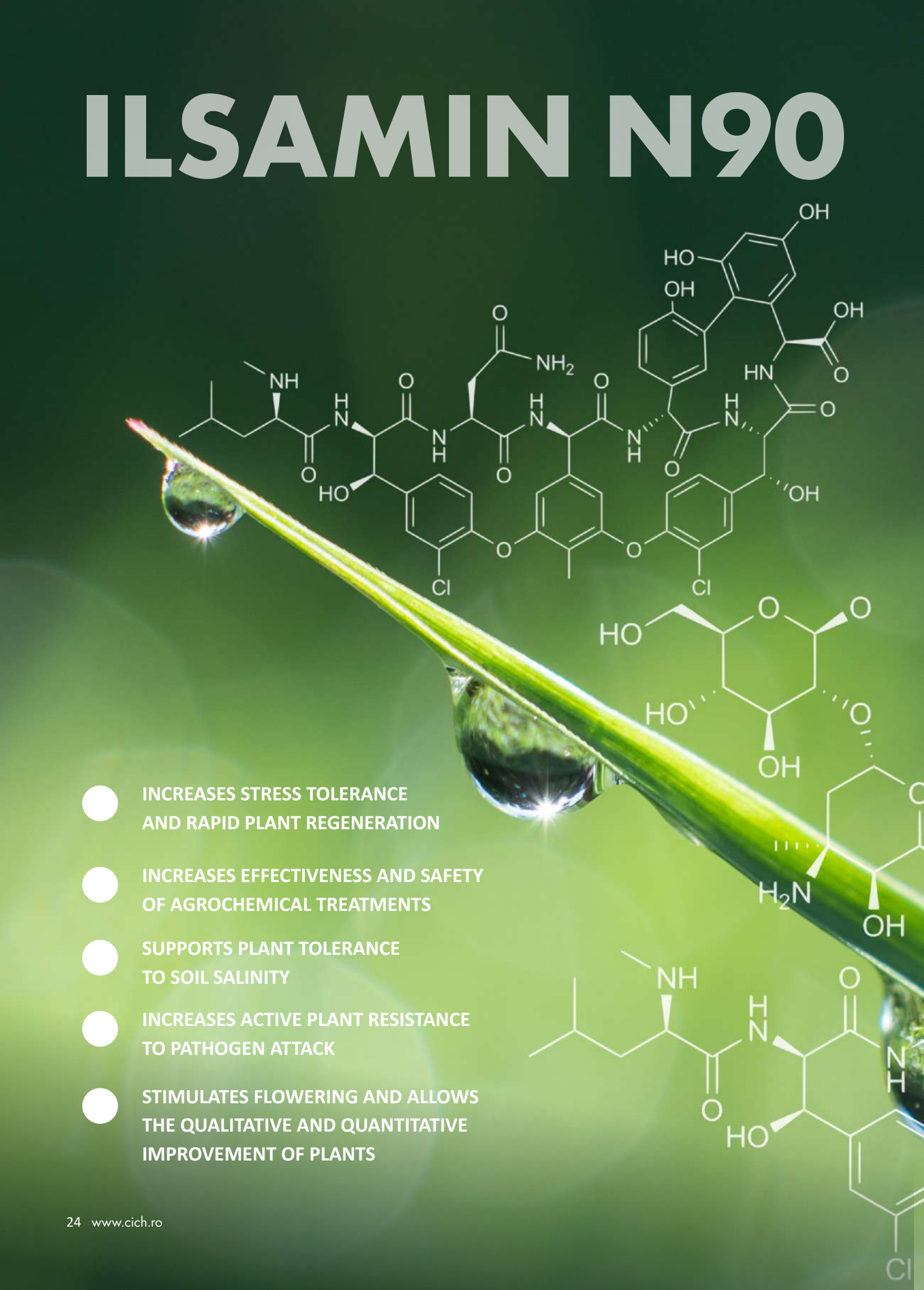
pH (20°C)	7 - 7,5
Density (20°C)	approx. 1,24 kg/l

Composition	%,w/v
Total nitrogen (N)	31
Ammoniacal nitrogen ($N\text{-}NH_4$)	7,5
Nitric nitrogen ($N\text{-}NO_3$)	7,5
Ureic nitrogen (amide $N\text{-}NH_2$)	16,1
Zinc (Zn) chelated with EDTA	0,12

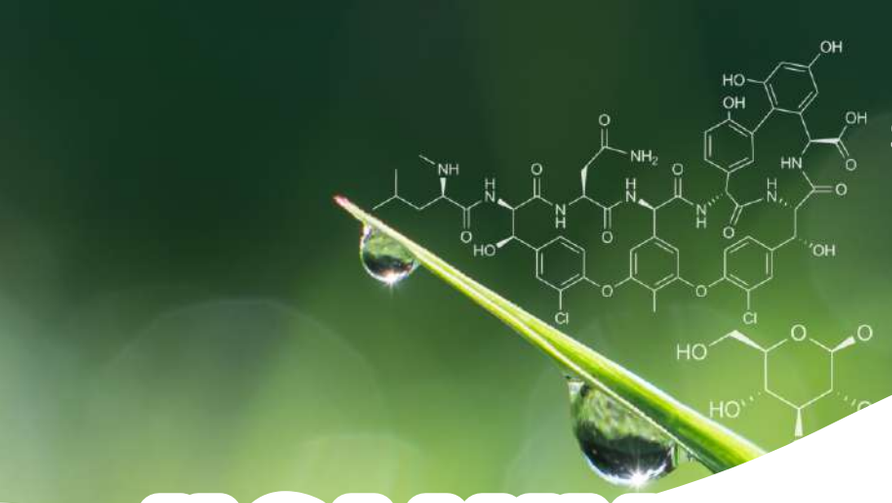
APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- From the beginning of tillering	3-5 l/ha
Rapeseed	- From stem elongation to flowering	3-5 l/ha
Maize	- From 4-8 leaves to third internode	3-5 l/ha
Sunflower	- From leaf development to the beginning of flowering	3-5 l/ha
Soybeans, peas, beans	- Before and after flowering	3-5 l/ha
Potato	- From tuber formation	3-5 l/ha
Sugar beet	- From 4-6 leaves	3-5 l/ha

ILSAMIN N90



- **INCREASES STRESS TOLERANCE AND RAPID PLANT REGENERATION**
- **INCREASES EFFECTIVENESS AND SAFETY OF AGROCHEMICAL TREATMENTS**
- **SUPPORTS PLANT TOLERANCE TO SOIL SALINITY**
- **INCREASES ACTIVE PLANT RESISTANCE TO PATHOGEN ATTACK**
- **STIMULATES FLOWERING AND ALLOWS THE QUALITATIVE AND QUANTITATIVE IMPROVEMENT OF PLANTS**



STRESS TOLERANCE BIOSTIMULATOR, VEGETATIVE GROWTH, FLOWERING AND CROP QUALITY

ILSAMIN N90

Ilsamin N90 is a high quality biostimulator and fertilizer with a high content of organic nitrogen and free amino acids, obtained from Gelamin by enzymatic hydrolysis of collagen.

HOW IT WORKS

- Stimulates the recovery of biochemical activities of plants under stress, allowing a balanced development of plants, reducing the time of their recovery in case of damaged plant tissues (temperature changes, hail, water or nutritional imbalances, etc.);
- Improves photosynthesis and stimulates flowering;
- Supports the biosynthesis of carbohydrates ensuring higher and better quality production in cereal, industrial, horticultural and fruit crops.

Soluble organic nitrogen (N)	8,9%
Organic carbon	25,0%
Free amino acids mainly left-handed	> 10%

BENEFITS

- Improves the effectiveness of plant protection treatments;
- Increases the level of nitrogen uptake from applied fertilizers;
- Stimulates flowering and number of flowers and transfer of sugars into fruit;
- Increases the protein content of crops.

Characteristics:

pH (20°C)	5,6 ± 0,5
Density (20°C)	approx. 1,22 kg/l

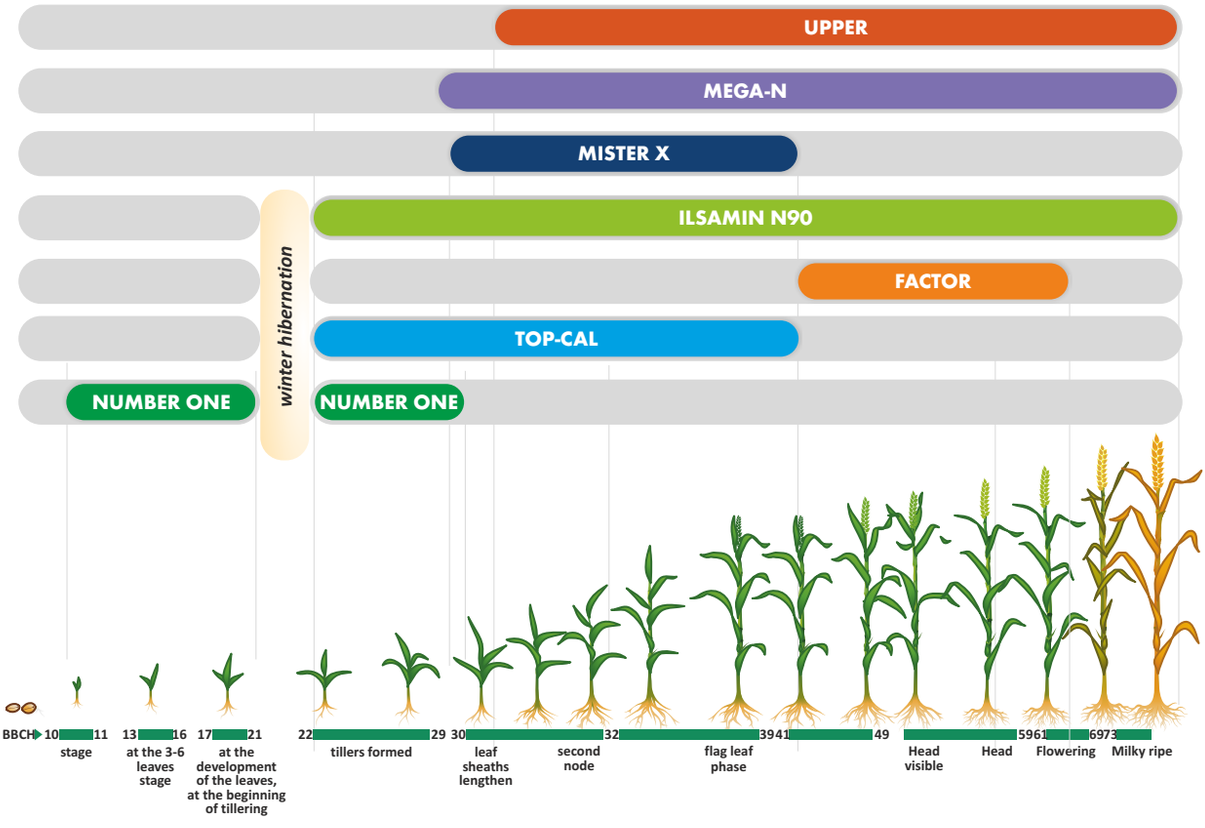
Liquid product with high stability and low salinity

Recommended dose:
1 – 2 l/ha

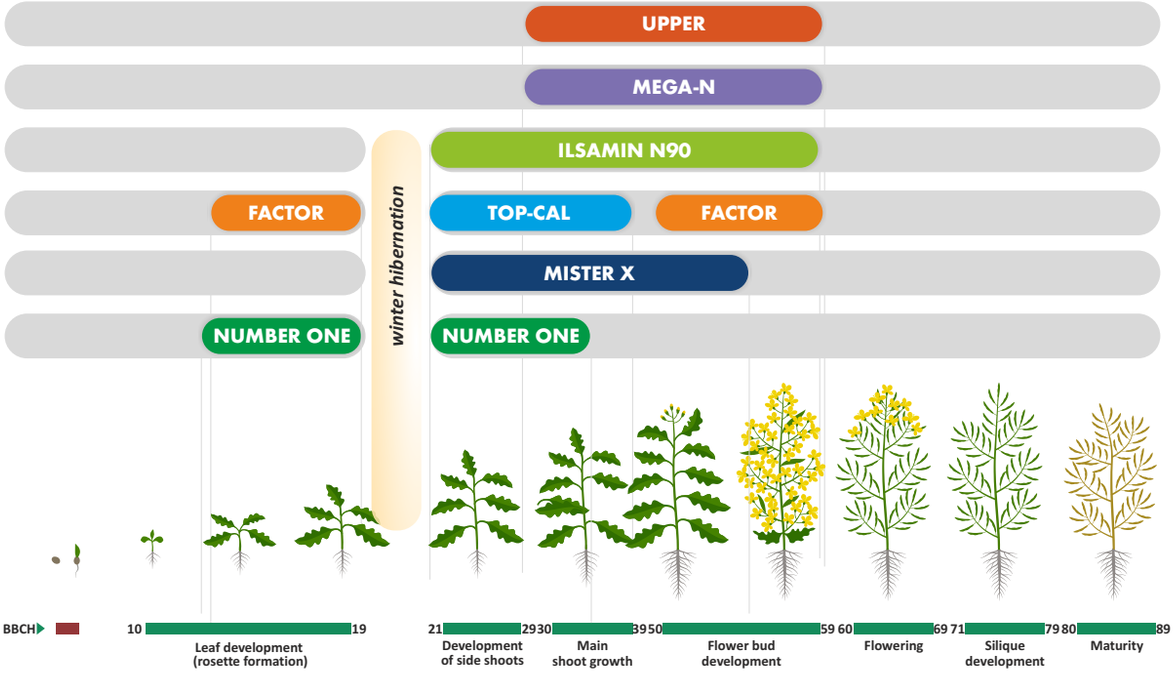
APPLICATION RECOMMENDATIONS TO MAIN CROPS

CROP	RECOMMENDED APPLICATION TIME	DOSE
Cereals	- From the beginning to after flowering	1-2 l/ha
Rapeseed	- From side shoot formation to flowering	1-2 l/ha
Sunflower	- From 2 leaves to flowering	1-2 l/ha
Maize	- From 2-4 leaves	1-2 l/ha
Soybeans, peas, beans	- Starting with 2 real leaves	1-2 l/ha
Vineyards	- When starting up in vegetation - Shoot 5-7 cm - Shoot 10 cm	1-2 l/ha
Field vegetables, greenhouses and solariums	- After transplantation	1-2 l/ha

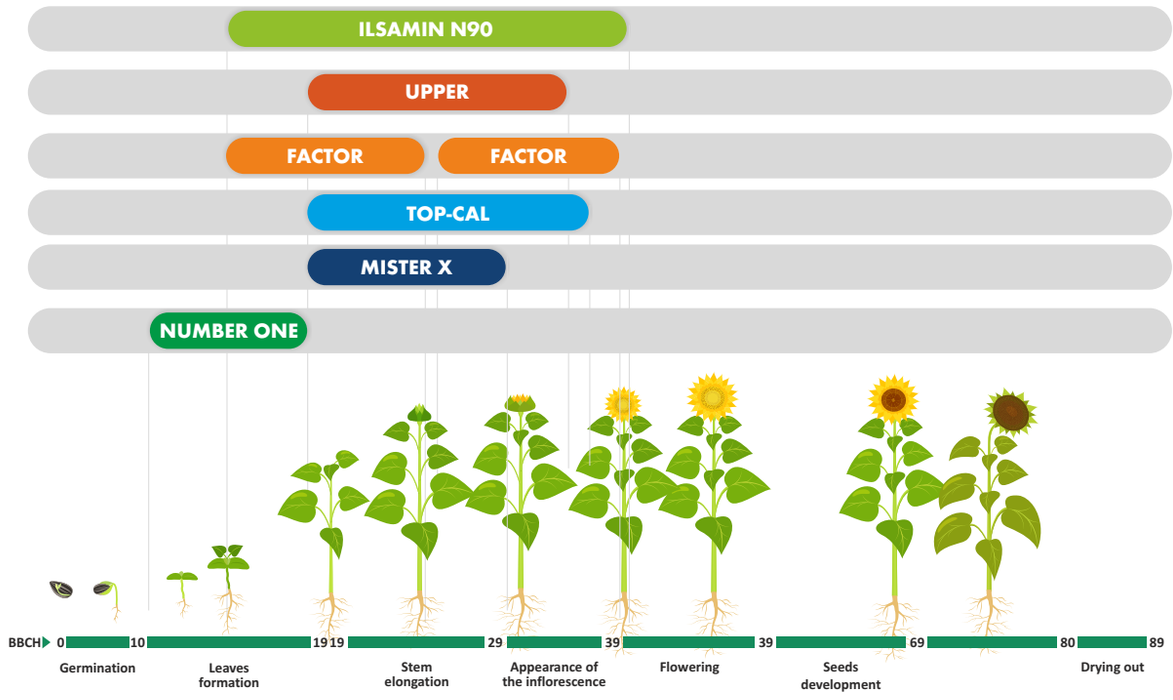
CICH BIOSTIMULATION TECHNOLOGY OF WINTER CEREALS



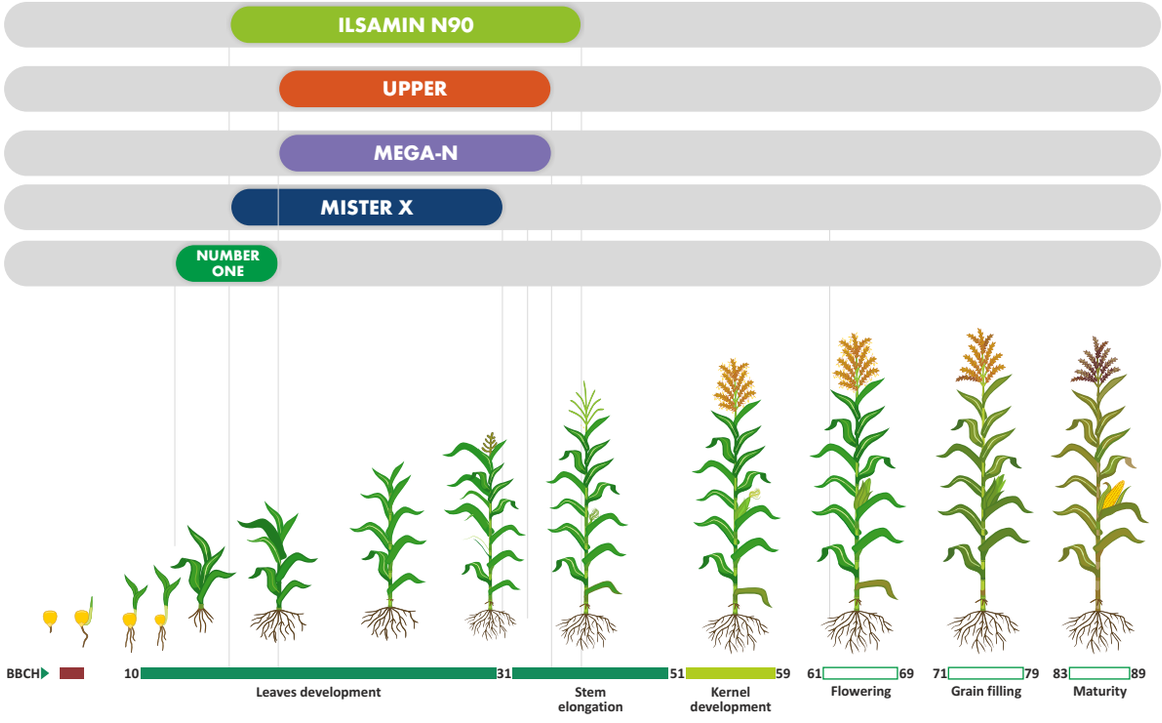
CICH BIOSTIMULATION TECHNOLOGY OF OILSEED RAPE



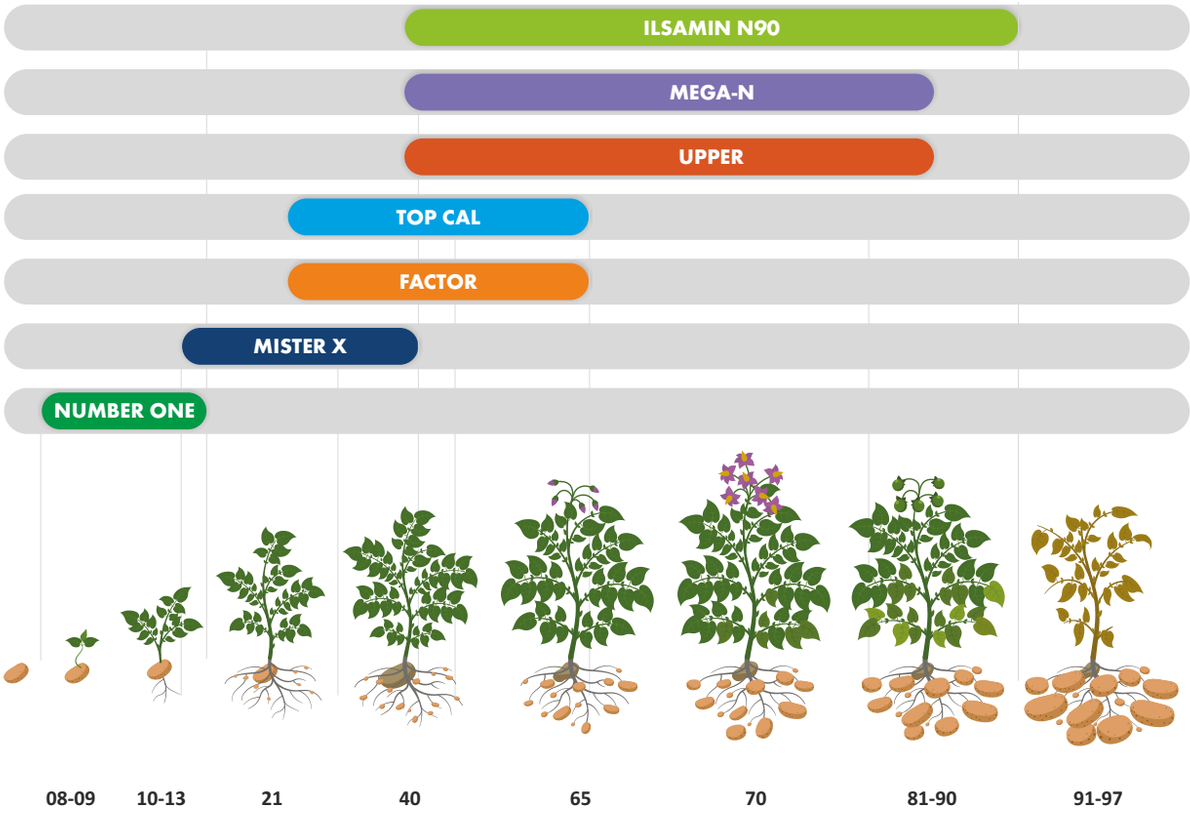
CICH BIOSTIMULATION TECHNOLOGY OF SUNFLOWER



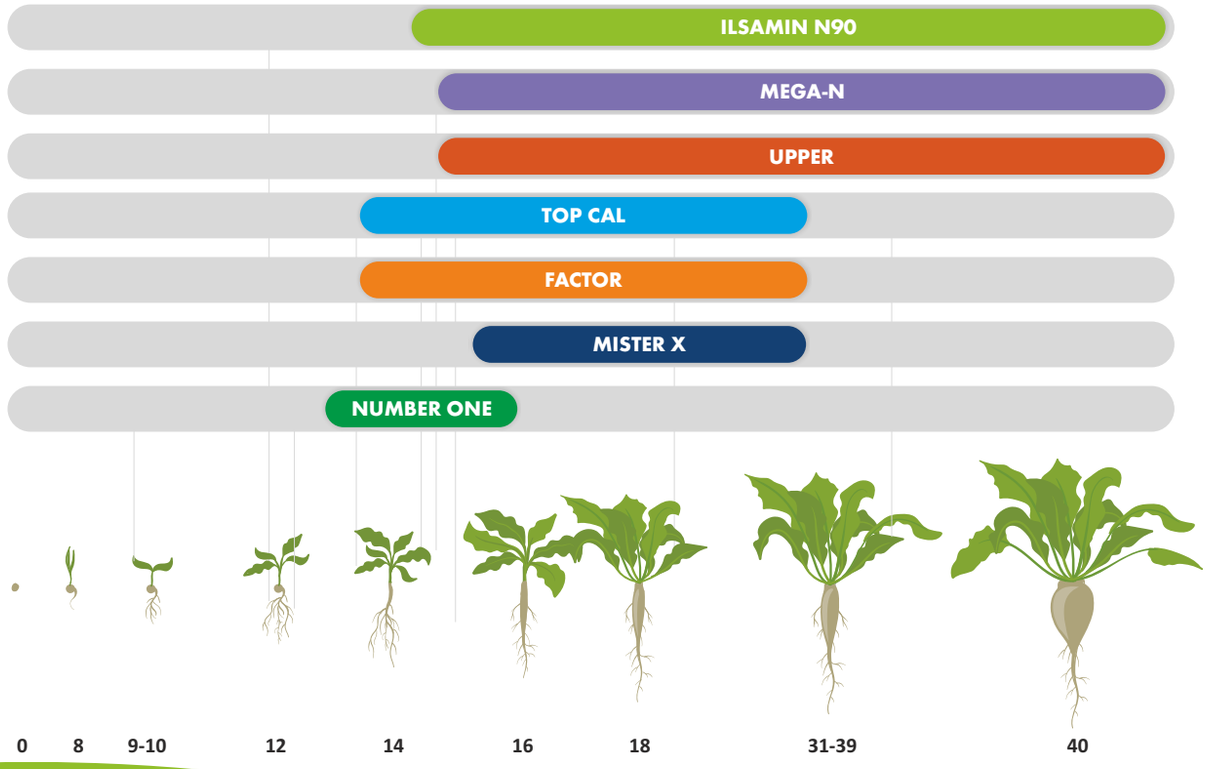
CICH BIOSTIMULATION TECHNOLOGY OF MAIZE



CICH BIOSTIMULATION TECHNOLOGY OF POTATO

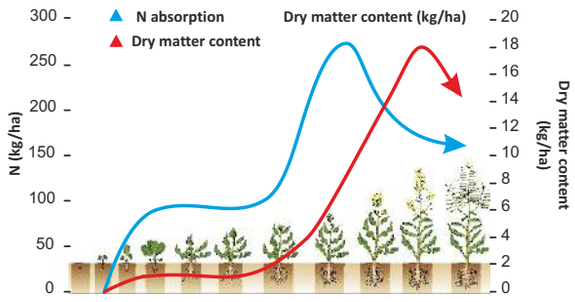


CICH BIOSTIMULATION TECHNOLOGY OF SUGAR BEET

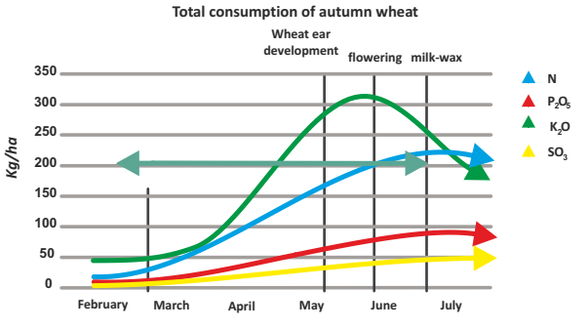


NUTRIENT UPTAKE DYNAMICS

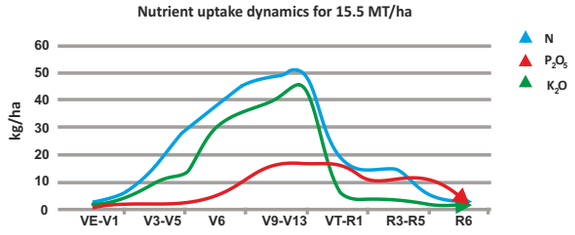
Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Autumn Rapeseed	Seeds (kg/t)	4	35.0	18.0	12.0	10.0	3.5
	Vegetal (kg/t)	5	15.0	6.0	30.0	20.0	3.0
	Total seeds and vegetal exports		215.0	102.0	198.0	140.0	29.0



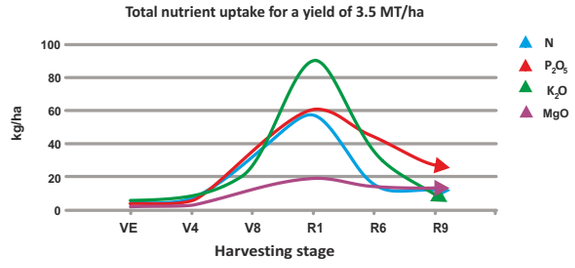
Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Wheat	Grains (kg/t)	8	20.0	8.0	5.0	4.5	1.9
	Straw (kg/t)	8	9.0	2.5	20.0	6.5	0.9
	Total grains and vegetal exports		232.0	84.0	200.0	88.0	22.0



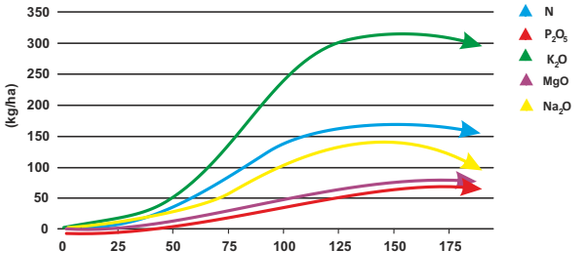
Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Maise	Grains (kg/t)	10	12.0	6.0	5.0	4.0	1.3
	Vegetal (kg/t)	8	9.0	2.7	19.5	3.5	1.2
	Total seeds and vegetal exports		192.0	81.6	206.0	68.0	22.6



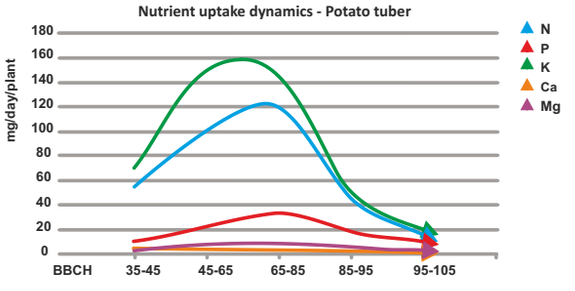
Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Sunflower	Seeds (kg/t)	4	26.0	11.0	10.0	6.5	4.5
	Vegetal (kg/t)	3	20.0	4.5	17.0	6.5	4.5
	Total seeds and vegetal exports		164.0	56.0	91.0	45.5	31.0



Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Sugar beet	Roots (kg/t)	60	1.8	1.0	3.7	0.7	0.4
	Vegetal (kg/t)	40	3.5	2.0	9.5	0.7	0.7
	Total seeds and vegetal exports		248.0	140.0	602.0	70.0	49.0



Crop	Product	Harvest (tons)	Export of nutrients per ton of product				
			N	P_2O_5	K_2O	SO_3	MgO
Potato	Tubers (kg/t)	45	2.8	1.5	6.0	0.6	0.3
	Vegetal (kg/t)	15	2.2	0.8	3.5	0.6	0.4
	Total seeds and vegetal exports		159.0	78.0	322.0	36.0	18.0



ORGANIC PRODUCTS

ORGANIC FARMIC

CICh®
for a good growth

ORGANIC SOLID PRODUCTS

Organic solid fertilizers obtained from AGROGEL with high nitrogen content with modulated natural release, complexed microelements and organic matter.

- High quality organic nitrogen fertilizers with slow natural release;
- AGROGEL® ensures maximum safety in terms of composition - the product is homogeneous, standardized and characterized by the controlled release of nitrogen into the soil via micro-organisms;
- High content of fully available organic matter with complex biostimulating action that improves natural soil conditions and allows plants to reach their full production potential;
- All the elements are absorbed by the crops, continuously, during the growing season, without losses, without negative impact on the environment.

FERTIL 12,5

ORGANIC FARMIC

Total organic nitrogen (N)	12,5%
- Water soluble organic nitrogen	5,0%
Organic carbon	40,0%
- Extractable organic carbon	95,0%
Organic substance	70%
- Amino acids	80-85%

RECOMMENDED DOSE / pellets 4,5 mm:
150 – 300 kg/ha

- soil application at land preparation and in vegetation at all crops (product label*).

PROGRESS MICRO 6 - 5 -13

ORGANIC FARMIC

Total nitrogen (N)	6,0%
-Nitrogen (N)	6,0%
Total Phosphoric anhydride (P_2O_5)	5,0%
Water soluble potassium oxide K_2O	13,0%
Water soluble magnesium oxide MgO	2,0%
Water soluble sulphuric anhydride So3	10,0%
Organic carbon (C)	18,0%
Organic substance	43%
Amino acids	30-40%

RECOMMENDED DOSE / pellets 4,5 mm:
150 – 300 kg/ha

- soil application at land preparation and in vegetation at all crops (product label*).

BIOPHOS

ORGANIC FARMIC

product 100% natural

Granulated solid fertilizer with high content of phosphorus, calcium and magnesium

Total phosphoric anhydride P_2O_5	26,0%
Calcium Oxide CaO	46%
Magnesium oxide MgO	0,35%

RECOMMENDED DOSE / granules between 2 and 5 mm, minimum 90%:
150 – 300 kg/ha

- Soil application at preparation all crops (product label*).

- important source of phosphorus, calcium and magnesium;
- helps re-mineralize soils;
- shows colloidal activity - improves the exchange capacity of the soil, allowing the retention of cations - calcium, potassium, microelements until their use by plants, without losses;
- soil conditioner (including sandy soils) through its colloidal activity - colloidal minerals provide benefits for the health of soil microflora, and support root activity;
- easy to dispense - granular product;
- retains ammonia which is subject to volatilization losses when used in composting;
- composting with BIOPHOS promotes the release of nutrients in soluble ionic form.

CICh® for a good growth

ADJUVANTS
PENETRANTS
ANTIFOAM AGENTS
WATER
CONDITIONERS

Magnet

P-Hidro

MAGNET

Coadjuvant, penetrating agent, anti-foaming

Glycols	6.5%
Emulsion of dimethylpolysiloxane	10%,
in a concentration of	5%

Characteristics:

Density (20°C)	1 kg/l

Recommended dose:
50 -100 ml per 100 liters of water. Apply with all treatments and do not mix with other adjuvants/water conditioners.

- is an adjuvant which, due to the presence of particular substances, favors the homogeneous distribution of fertilizers on the laminar surface of the treated leaves;
- the high penetration power produces an increase in the contact surface between the nutrient solutions and the plant tissue, thus producing a more effective penetration and a consistent assimilation of the nutrients and other inputs;
- has a significant anti-foaming action.

P-HIDRO

Product for water conditioning and cleaning of treatment equipment

Total phosphoric anhydride P_2O_5	25,0%

Characteristics:

pH (20°C)	0,61 - 0,73
Density (20°C)	approx. 1,24 kg/l

Recommended dose:
The recommended dose to reduce water pH between 8 -9 to pH 5 is 75 -115 ml per 100 liters of water.

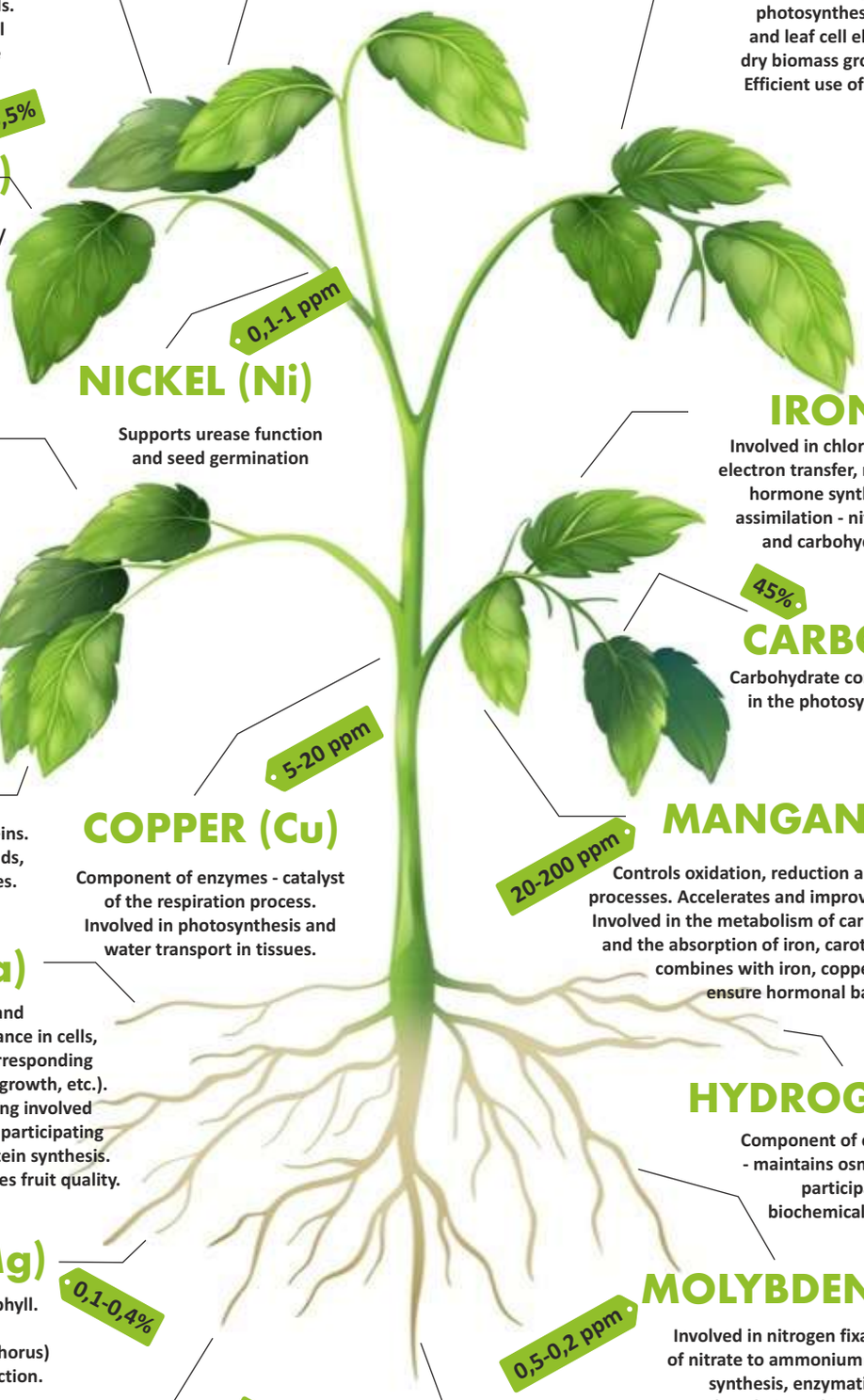
For cleaning of installations prepare a 1,5% solution (1,5 liters per 100 liters of water) and treat for 15 minutes.

- corrects the alkaline reaction of the water used for treatments -generally the waters in Romania have alkaline pH, not being suitable for the application of foliar products;
- the high pH level of the spraying solution can cause some pesticides to be rapidly degraded by precipitation or hydrolysis;
- **P-HIDRO is the solution, in this case, being a product with intense acidifying action:**
- it significantly reduces the pH values of nutrient and protective solutions applied to crops;
- improves the foliar absorption of nutrients and increases the efficiency of phytosanitary treatments;
- can be used to carry out deep cleaning of pipes/installations used for treatments and equipment (tanks, cisterns, containers, etc.) as well as to clean drip irrigation installations from mineral salt deposits and lime deposits.

14 ESSENTIAL NUTRIENTS

CICh® for a good growth

FOR IMPROVING AND PROTECTING PLANT HEALTH



1-5%

NITROGEN (N)

Component of amino acids, proteins, chlorophyll and nucleic acids. Supports rapid growth, full vegetative and productive development of plants.

45%

OXIGEN (O)

Carbohydrate component - required in the breathing process.

0,01-0,1%

CHLORINE (Cl)

Involved in oxygen production and photosynthesis. Involved in root and leaf cell elongation, fresh and dry biomass growth, C02 utilization. Efficient use of water and nitrogen.

0,1-0,5%

PHOSPHORUS (P)

Component of proteins, coenzymes, nucleic acids-involved in photosynthesis/ energy transfer. Supports nutrition processes, growth, flowering and fruiting.

0,1-1 ppm

NICKEL (Ni)

Supports urease function and seed germination

50-250 ppm

IRON (Fe)

Involved in chlorophyll synthesis and electron transfer, respiratory processes, hormone synthesis and nutrient assimilation - nitrogen metabolism, and carbohydrate formation.

0,5-1%

POTASSIUM (K)

Involved in photosynthesis, carbohydrate translocation and protein synthesis. Regulates water use through its involvement in stomatal activity - enhances plants ability to absorb water, and resist frost and drought.

45%

CARBON (C)

Carbohydrate component required in the photosynthesis process.

0,1-0,4%

SULFUR (S)

Component of some enzymes and proteins. Involved in the production of amino acids, some vitamins and enzymatic processes.

5-20 ppm

COPPER (Cu)

Component of enzymes - catalyst of the respiration process. Involved in photosynthesis and water transport in tissues.

20-200 ppm

MANGANESE (Mn)

Controls oxidation, reduction and photosynthesis processes. Accelerates and improves seed germination. Involved in the metabolism of carbohydrates, nitrogen and the absorption of iron, carotene and vitamin C - combines with iron, copper and zinc to ensure hormonal balance.

0,5-1%

CALCIUM (Ca)

Structural element of cell walls and membranes. Maintains the acid-base balance in cells, binds them together and sustains the corresponding divisions and elongations (e.g. root length growth, etc.). Protects plants against heat stress by being involved in the control of stomatal function and by participating in the induction of heat shock specific protein synthesis. Slows down the ageing process and influences fruit quality.

5-6%

HYDROGEN (H)

Component of carbohydrates - maintains osmotic balance, participates in biochemical reactions.

0,1-0,4%

MAGNESIUM (Mg)

Enzyme activator, component of chlorophyll. Involved in metabolic, enzymatic, absorption of other nutrients (e.g. phosphorus) and supports amino acid/protein production.

0,5-0,2 ppm

MOLYBDENUM (Mo)

Involved in nitrogen fixation, conversion of nitrate to ammonium in plants, protein synthesis, enzymatic processes, phosphate and iron metabolism.

6-60 ppm

BORON (B)

Involved in sugar translocation and carbohydrate metabolism. Essential role in cell division and elongation and in calcium translocation, pollen viability, fruiting and seed formation.

25-150 ppm

ZINC (Zn)

Involved in enzyme activity, synthesis of hormones (auxin) and nucleic acids. Role in protein synthesis, carbohydrate metabolism - increases soluble sugar content and water absorption and utilization efficiency.

Tissue concentration

NUTRIENT DEFICIENCIES

BORON (B)

Young leaves or terminal bud become light green at base; leaves twist and become brittle, growing tip dies back; chlorosis on young leaves.

IRON (Fe)

Young leaves with chlorosis between veins; clear distinction between veins and chlorotic areas

MANGANESE (Mn)

Young leaves with chlorosis between veins; no clear distinction between veins and chlorotic areas;

ZINC (Zn)

Mid-plant leaves with chlorosis between veins; growth stopped;

CHLORINE (Cl)

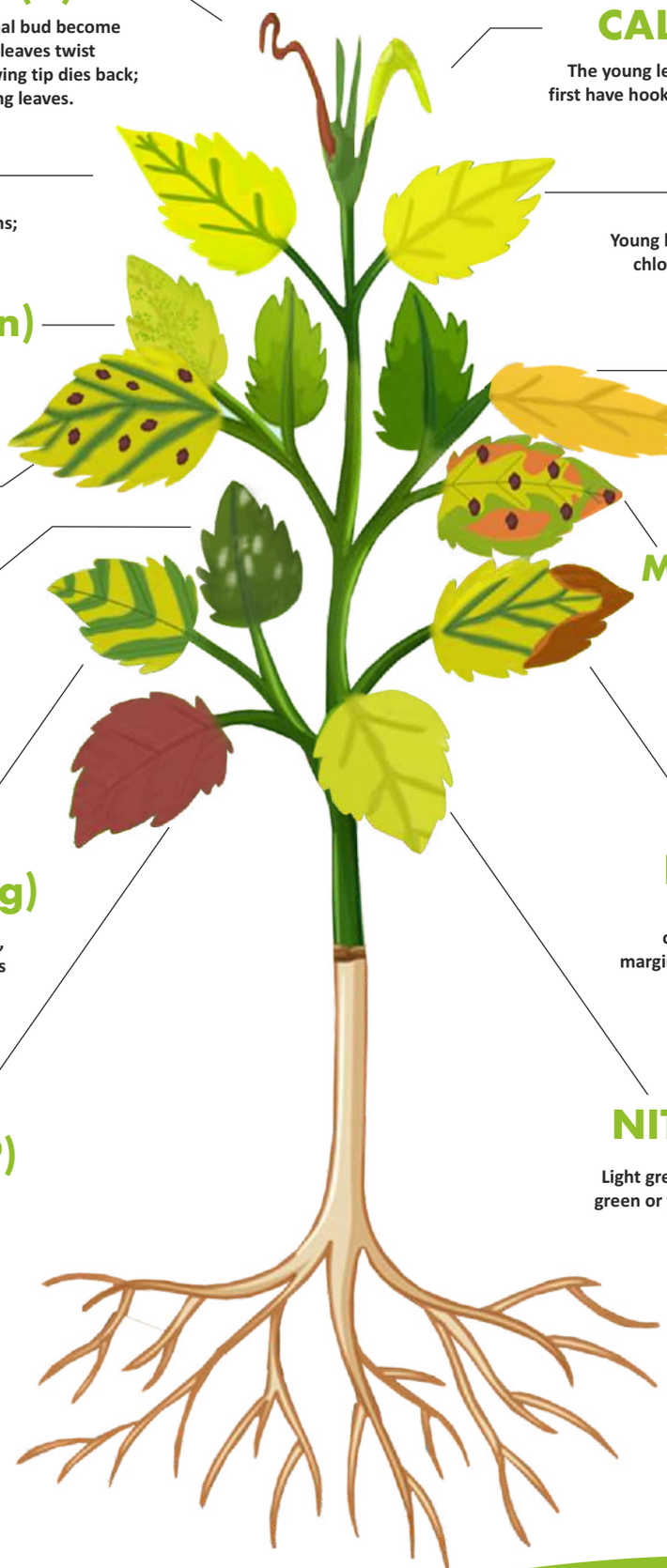
Distinct chlorosis and necrosis with localized spots, steep edges between dead and living tissue.

MAGNESIUM (Mg)

Chlorosis with discoloration between veins, leaves sometimes red or with necrotic spots

PHOSPHORUS (P)

Dark green plants, very often the color red or purple



CALCIUM (Ca)

The young leaves of the terminal bud at first have hook-shaped, then brown and die;

SULFUR (S)

Young leaves light green, usually without chlorotic spots or chlorosis in strips

COPPER (Cu)

Chlorosis in young leaves; tips appear wilted and will eventually die

MOLYBDENUM (Mo)

Plants light green in color; necrotic spots on leaves; leaves pale, sometimes burnt looking, folded or rolled

POTASSIUM (K)

No chlorosis between veins; chlorotic areas with burning of leaf margins, spots sometimes along leaf margins.

NITROGEN (N)

Light green plants with leaves of light green or yellow, without necrotic spots

NG TECHNOLOGY
SOIL MICROBIOLOGY ANALYSIS RESULTS

In order to ensure their growth and development, plants rely on the support of soil microorganisms during vegetation, which play an essential role in the decomposition of organic matter and mineralization of nutrients. Being actively involved in the research and development of fertilizers with latest generation technologies that maintain and improve the quality of soils, CICh ROMANIA demonstrates through the analyses carried out on the microbiological activity the positive impact of using N-GUARD technology:

GV1D- FERTILIZED WITH NG UREA IN AUTUMN AND SPRING

Total Bacteria (µg/g)	**998**
Total Fungus (µg/g)	**225**
Bacterii Active (µg/g)	**20.1**
Active Fungus (µg/g)	**17.6**
Hifal Diameter (µm)	2.89
Active Fungus/ Active Bacteria	**0.88**

GV2D FERTILIZED WITH NG UREA IN SPRING, ONE DOSE

Total Bacteria (µg/g)	**531**
Total Fungus (µg/g)	**183**
Active Bacteria (µg/g)	**22.9**
Active Fungus (µg/g)	**26.0**
Hifal Diameter (µm)	2.87
Active Fungus/ Active Bacteria	**1.14**

GVMD UNFERTILIZED CONTROL

Total Bacteria (µg/g)	**651**
Total Fungus (µg/g)	**217**
Active Bacteria (µg/g)	**16.9**
Active Fungus (µg/g)	**12.6**
Hifal Diameter (µm)	2.92
Active Fungus/ Active Bacteria	**0.74**

The results of the research carried out within the technical department of CICh ROMANIA on the impact of the use of the professional N-GUARD technology on soil microbiology have highlighted the following:

- **the total biomass of bacteria and fungi** is high in all tested variants, recording values well above the optimal values. However, it should be noted that the application of **UREEA NG** in fractioned doses in the vegetation, that is one third at the beginning of winter and two thirds at the beginning of March, records after harvesting the crop values of the biomass of microorganisms more than 50% higher than the non-fertilized variant.

- **the values of active bacteria and active fungi** are low **on unfertilized land** compared to land where **N-GUARD** technology was used, indicating that anaerobic microorganism activity is predominant in unfertilized land. It is preferable that the activity of aerobic micro-organisms is given priority so as to maximize the mineralization of plant residues and thus the decomposition of simple carbon compounds, thus ensuring the retention and continuous supply of nutrients to the crops. Not to be neglected is the positive impact of aerobic microorganism activity in soil restructuring.

- the recorded values **of the ratio of active fungi to active bacteria** indicate that, when using N-GUARD technology, the balanced growth of both bacteria and aerobic fungi is stimulated - values close to 1 are preferable.

NG TECHNOLOGY vs CONVENTIONAL FOR THE MAIZE CROP

Determination / Specification	*Reference LIMIT*	CICh1		Control		CICh2	
		Available elements	TOTAL (mg/kg)	Available elements	TOTAL (mg/kg)	Available elements	TOTAL (mg/kg)
pH	*6,5*	*6,1*		*6,4*		*6,5*	
N (mg/kg)	-	-	2098	-	2357	-	1891
Phosphorus (ppm)	*16*	12	488	12	534	7	472
Potassium (ppm)	*121*	283	6572	284	6777	198	6221
Organic matter (%)	*3,00*	3,9	-	4,2	-	3,1	-
Potential mineralizable nitrogen (kg/N/ha)	-	*58*	-	*43*	-	*55*	-
Microbial biomass (mg/kg)	-	*2076*	-	*1482*	-	*1834*	-
Report C:N	*10-12*	*10,8*	-	*10,2*	-	*9,5*	-
Total Nitrogen (%)	-	*0,210*	-	*0,240*	-	*0,190*	-
CO - C (mg/kg)	*>70*	*93*	-	*66*	-	*82*	-
Organic Carbon (%)	-	*2,3*	-	*2,4*	-	*1,8*	-

Research on the use of professional N-GUARD technology on maize compared to control areas fertilized with conventional nitrogen fertilizers has shown that the use of N-GUARD technology positively influences soil microbiology, resulting in significant increases in microbial biomass after application, ranging from 20-40% (soil analysis method based on the measurement of C02 content, mainly from the respiration of microorganisms).

NG TECHNOLOGY FOR THE OILSEED RAPE CROP

Determination / Specification	*Available LIMIT*	RVA (before application)		RVA (after application)	
		Available elements	TOTAL (mg/kg)	Available elements	TOTAL (mg/kg)
pH	*6,5*	6,0		5,9	
N (Kg/ha) N_4 - NH (ppm) N_3 - NO (ppm)	-	21 1,6 5,4	*130*	38 4,0 8,6	*1170*
Phosphorus(ppm)	*16*	*26*	*510*	*24*	*506*
Potassium (ppm)	-	266	*6031*	*239*	*5528*
Potential mineralizable nitrogen (kg/N/ha)	-	*46*	-	*81*	-
Microbial biomass (mg/kg)	-	*1768*	-	*3528*	-
Report C:N	*10-12*	*11,6*	-	*13,1*	-
Total Nitrogen (%)	-	*0,130*	-	*0,120*	-
CO - C (mg/kg)	*>70*	*79*	-	*159*	-
Organic Carbon (%)	-	*1,5*	-	*1,6*	-

Soil analysis carried out to the oilseed rape crop prior to the application of N-GUARD technology, in a single dose, in spring and immediately after harvest, show a significant increase (almost double) in the amount of potential mineralizable nitrogen and soil microorganism activity, as well as an improved retention of organic carbon in the soil.

It is also interesting to note that NUTRI-TOP and N-GUARD technologies ensure particularly high utilization coefficients of the content of active ingredients in fertilizers - the production results obtained in this case were achieved practically without significant changes in the content of available and total phosphorus in the soil.

ORGANIC M+

In order to ensure profitability and sustainability (while providing important environmental benefits), farmers can adopt and implement on their farms innovative fertilization technologies specific to both intensive and organic farming systems along with farmland management practices that are appropriate to their specific environment.

In this regard, CICh ROMANIA is currently working on the development of a new range of granulated organo-mineral fertilizers for agricultural and horticultural crops, fertilizers that contain, along with mineral elements, carbon and nutrients of exclusively biological origin.

Organo-mineral fertilizers are the optimal result of organic and mineral substances, depending on the nutritional needs of plants, which will lead to products that release nutrients (nitrogen, phosphorus, potassium, magnesium and other microelements) that, in addition to providing nutrients deficient plants, also have qualities to improve soil attributes (Blaga, Gh. et al., 2008).

These products, together with the appropriate fertilization method, constitute and represent modern technologies with significant quantitative and qualitative effects on yields and with positive economic and environmental impact.

0 Emissions

Environmentally friendly

No harmful pollutants dispersed in the atmosphere

The only ECO certified granulator in Eastern Europe

ECO certification process, totally new granulation line, 100% environmentally friendly

In the future, it is expected that the surfaces of organic crops will steadily increase

Maximum Efficiency

INNOVATIVE production process

High quality raw materials, ECO certified

Products that meet the needs of plants

In this context, to maximize the effectiveness of the use of applied organo-mineral fertilizers, farmers soils must have good physical characteristics to allow plant roots to access water and nutrients - the soil surface must be protected from crusting and erosion to maximize water infiltration and the soil itself should be free of compacted layers (which constitute a barrier to root growth and water movement) and allow adequate habitat for a diversity of beneficial organisms.

Regarding the impact of using organo-mineral fertilizers on farmland and their environmental benefits, the literature mentions the following:

- They integrate more easily into the soil by absorbing the water available at the surface of the granules (they have a beneficial effect on soil structure and water availability in the immediate vicinity of the granules)
- Improve availability, usage and assimilation of mineral elements in the composition
- Enhance microbial activity - increase the activity of microorganisms by up to 75% which results in a greater variety of root biostimulants (substances that behave like plant hormones)
- Promote and support root activity / increase plant assimilation capacity
- Improve mineralization of organic matter
- Reduce nitrate runoff by improving nutrient recycling
- Improve humic substances/humic acids content
- Ensure healthy and fertile soil

ORDER OF ADDING PRODUCTS TO THE TANK-MIX

Fill half the clean tank with water, start stirring and add one at a time:

1. Products formulated as water soluble bags. (WSB)
2. **Dry formulated products** - water soluble granules (WSG/SG), wettable powders (WP), water dispersible granules (WDG/WG)
3. Compatibility agents and/or half the amount of anti-foaming agent - wait 2-3 minutes before adding other products, maintaining agitation.
4. Suspension concentrates (SC), suspension emulsions (SE), emulsions in water (EW), micro capsules (CS)
5. Liquid anti-drift agents, before the addition of concentrated emulsion formulations (EC)
6. Liquid formulated products such as emulsion concentrates (EC) based on oils or solvents, micro-emulsion formulations (MEC) and/or oil dispersion (OD) formulations - agitate liquid formulated products prior to blending
7. Water soluble concentrates (WSC), water soluble solutions (AS/SN) and soluble liquids (SL)
8. Concentrated oil-based additives (COC), surfactants, stickers, etc.
9. Liquid fertilizers, biostimulants and remaining water until the tank is full
10. Products for correcting the pH to the desired final value and the remaining half of the amount of anti-foaming agent

To increase the effectiveness of the spraying solution do not forget to use

MAGNET and P-Hydro water conditioning products.

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for a good growth

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