



PETRO



**Much more
than a fertilizer**



+ safer



+ more roots



+ higher production



Produce more with healthy methods!

Agriges' answer to the new challenge of modern agriculture is the Green Path project. The Green Path project is centred on providing the technical means by which to obtain bumper crops, which are sustainable from an environmental point of view and safe for consumption: produce more with healthy methods. The project envisages the partnership by Agriges with research institutes, experimental centres, universities, cooperatives and farms to develop products which produce bumper crops whilst reducing the use of potentially harmful chemical substances.



+ safer



+ sustainable



+ production



+ quality



- chemicals



- pollution

Goal

preserve and improve soil fertility

The soil is the main source of nutrients for crops and a fundamental resource for a successful crop. Over time, the chemical, physical and biological properties of soil fertility undergo substantial changes. **Sustainable agriculture** strongly implies that soil **fertility** is a resource to preserve and improve for current and future crops.

Basal fertilisation is, therefore, not just a fundamental practice for restoring the fertilising units removed from the soil by the previous crops or production year, it must also provide organic substances, meso and microelements and compounds that are a source of nutrition for the microorganisms that live in the soil and release nutrients for plants.

Petro: more than just a simple fertiliser

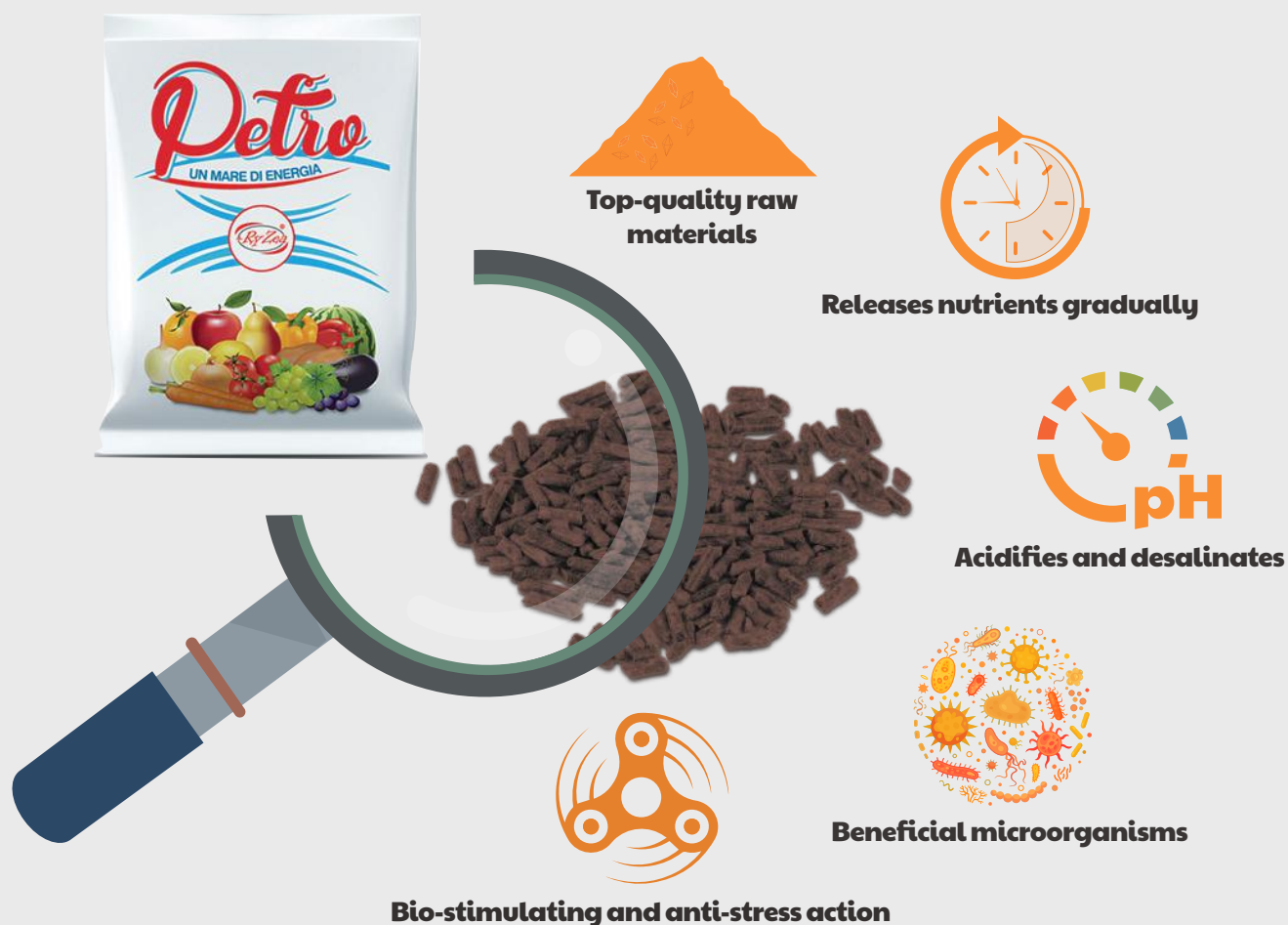
PETRO is the historic line of basal fertilisers by Agriges, the result of constant research and focus placed on raw materials, in addition to stringent controls in the **production stages**.

All the products in the PETRO range are formulated starting from high-quality, organic and mineral-based raw materials, expertly processed and mixed to produce an all-round product which:

- 1. Nourishes the plant;**
- 2. Stimulates telluric microorganisms;**
- 3. Improves the chemical, physical and biological properties of the soil.**

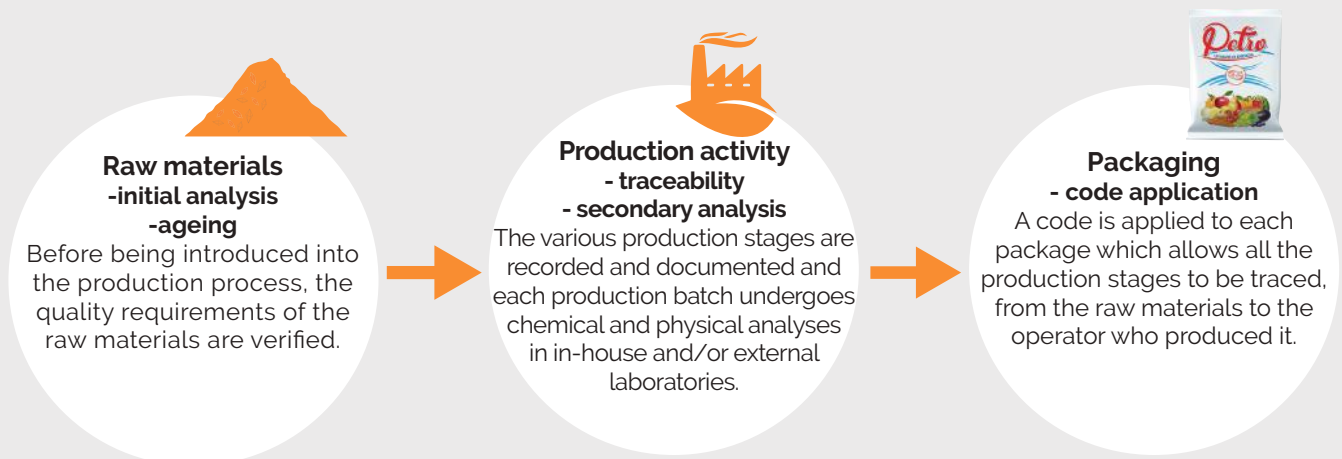
The products in the PETRO range have a low moisture content, are free from *Salmonella* and *E. coli* and are easily distributed.

PETRO is much more than a simple fertilizer thanks to:



Quality control: from the raw materials to the finished product

Agriges focuses on the safety of its products, consequently the in-house control programs cover a wide range of potential contaminants and undesirable substances including: heavy metals and pathogenic microorganisms for humans, as well as perchlorates and chlorates, carbamates, nitrates, GMO and other unwanted traces, highlighted by different actors in the food supply chain, including **large-scale retail organisations**.



Organic raw materials



Manure

The manure, which has a **very low initial moisture content**, is supplied solely by selected and constantly controlled companies. The manure supplied undergoes:

- **shredding**, which breaks it up into smaller particles and lowers the initial moisture content;
 - **natural fermentation**, which takes place exclusively in the ageing production unit where the manure is periodically turned over throughout the process and sanitised to eliminate any microorganisms that are harmful to human health.
- After about **six months** of ageing, the material is moved to the storage unit to prevent contamination by fresh material. Only then is it ready to be used for the production of basal fertilisers.



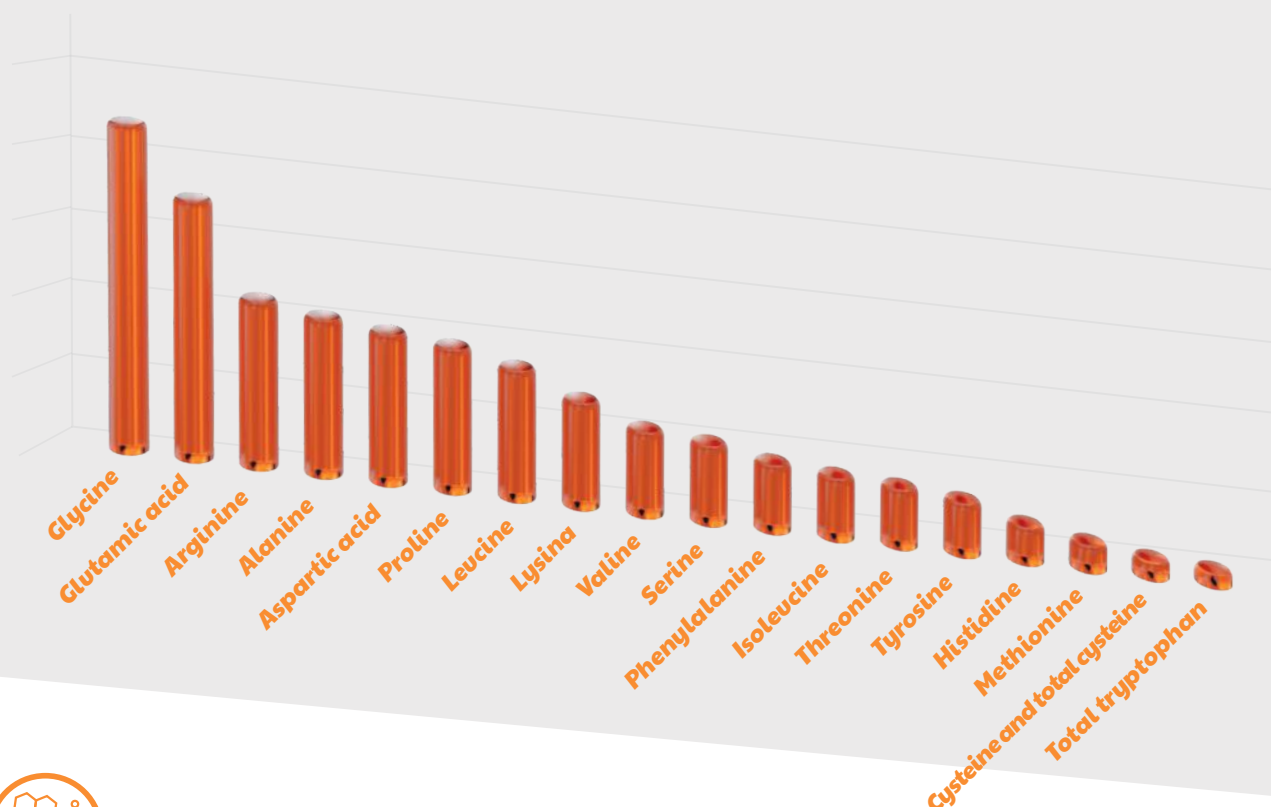
Plant cakes

The safe organic plant components, derived from food industry by-products contribute towards producing an all-round product with an **excellent carbon-to-nitrogen ratio**. The breakdown of the entirely plant-based raw materials produces **top-quality humus** and thus, reduces loss through leaching whilst aiding drainage in heavy soils. The plant component supplies a **high-quality organic substance**, free from harmful industrial by-products and is safe and completely natural.



Amino acids

The addition of protein-based raw materials allows the finished product to be enriched with amino acids which provide an instant source of **energy**, stimulating growth and the root system activity. The amino acids also contribute towards a greater assimilation of nutrients. Glycine and glutamic acid are anti-stress amino acids which boost the plants' response to the most common factors which are responsible for production losses.



Humic and fulvic acids

After the natural ageing process, the fertilisers in the PETRO range are rich in humic and fulvic acids, compounds from which the plants benefit on multiple levels because they: stimulate the development of **healthier roots**, result in **higher yields** and allow for a **greater absorption of the nutrients**. In the soil, these compounds also have a positive impact on the **chemical and physical properties of the ground**, thus improving the conditions for development of both the roots and telluric microorganisms.



Mineral raw materials

The fertilisers in the PETRO range are naturally rich in **meso and microelements**. Other titres are rich in magnesium, iron, zinc, manganese and many other micro nutrients, all with high bio-availability because they are **"protected" and conveyed by the organic component** which prevents immobilisation and increases root absorption.

The fertilisers in the PETRO range are enriched with **calcium** and **sulphur**, essential elements which provide nutrients to the soil and improve its chemical and physical properties. Calcium sulphate **acidifies and desalinates** the soil, both on chalky and alkaline (sodium) soils.

Furthermore, the products of PETRO line are improved with micronized elemental sulphur (average particle diameter of 100 µm); this feature means that the processes of bio-oxidation and transformation into sulfuric acid by bacteria and soil moisture are faster. In this way, the product is able to rebalance the pH of the soils.

The added value: two production technologies

RyZea, the algae triptych that promotes plant growth



All the products in the PETRO range include the **RyZea** production technology that involves the extraction of bioactivating molecules from three algae: *Ascophyllum nodosum*, *Fucus spp.* and *Laminaria spp.*, originating in the Atlantic Ocean, which are collected in the stage of their cycle when the concentration of phytoactivating compounds reaches its peak.

The extraction process is extremely "gentle", so as not to alter the stability of the phytostimulating algae molecules.

This allows the phytoactivating properties of the algae to be left unchanged, thus providing:

- **natural chelating agents** which improve the assimilation of the nutrients and their translocation in the plant;
- **natural plant hormones** and hormone-like molecules which activate the plant's metabolism and growth;
- **elicitor compounds** which induce the plant's endogenous resistance to the main stress factors;
- **energy compounds** ready for use by crops.



Ascophyllum nodosum



Fucus spp.



Laminaria spp.

The extraction process



QUALITY CONTROL

Before starting the extraction process, the three seaweed types are selected, identified and controlled in order to check their compliance with the quality requirements, and only then do we proceed with their processing.



MICRONIZATION

The extraction principle underlying the RyZea technology is seaweed micronization and the application of pressure differentials to the micronized products.



FILTERING

The extract is then filtered at 100 mesh (150 microns), so as to make sure that the product will not create problems during its field application.



EXTRACTION

The extraction technology does not involve the use of high temperatures or dehydration and/or freezing processes, nor the use of chemical agents. To guarantee this, the final pH is more acidic than that of the other products on the market (between 8 and 10).

ThioBac

Agriges technology against salinity and soil fatigue

As part of the "Benevegefit" project, which has seen the collaboration of Agriges with the University of Naples Federico II, the new ThioBac technology was born.

The aim of the project was to bioactivate plant metabolism and reduce production losses, even in the event of severe abiotic stresses such as osmotic stress. The heart of the technology is the synergy between the unique siderophore bacteria and the organic and mineral matrices:



Siderophores and PGPR

Bacillus megaterium S3Nb3 is an exclusive bacterial strain, isolated and deposited by Agriges in an international reference microbial collection capable of:

- **produce siderophores**, molecules with high affinity for iron, which chelate and make it more assimilable by the plant;
- **solubilize phosphorous**;
- stimulate the **well-being** of the plant.



Organic acids

The **organic acids** contained in ThioBac, separate and create complexes of the sodium in the soil, suspending it again in the circulating solution and aiding its removal. They also lower the conductivity of the soil and release calcium, which replaces sodium, thus improving the structure of the soil.



Atomised sulphur

Atomised sulphur (with an average particle diameter of: 100 µm) is the optimal corrective and desalinating element since, once in the soil, it undergoes bio-oxidation into **sulphuric acid** which helps to rebalance the pH, release calcium in the soil and eliminate excess salts in the soil.



Iron

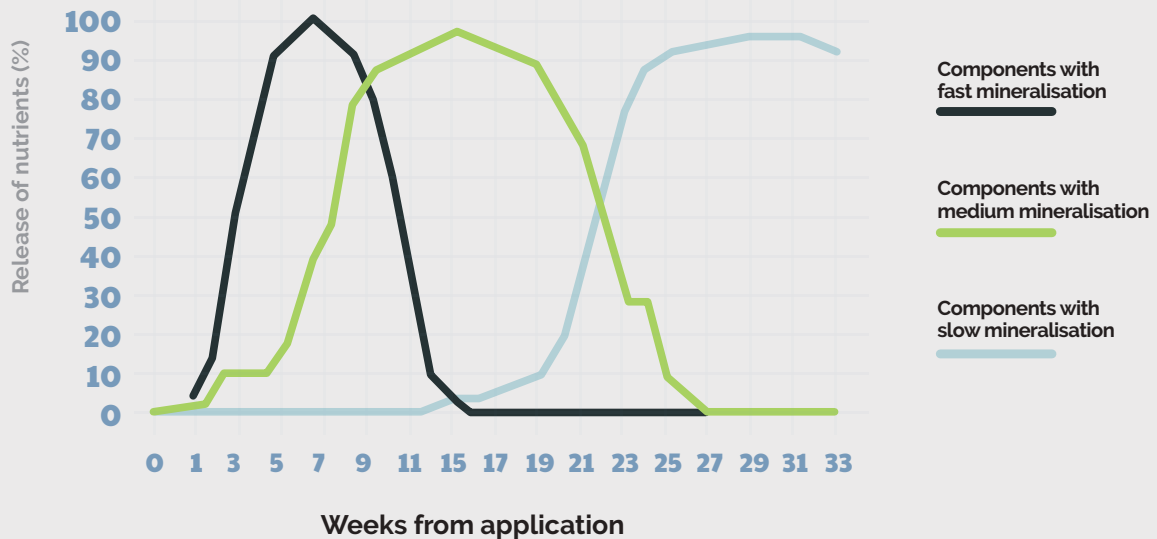
The presence of freely available iron guarantees an immediate improvement in the state of well-being of the crop, **greening** up vegetation and stimulating the formation of **photosynthetic** compounds.



Gradual release of nutrients

The specific composition of PETRO ensures a **constant and gradual release of nutrients**, even up to thirty-three weeks from product application.

This occurs in a totally natural and sustainable manner thanks to the expert mixture of a variety of organic raw materials which have different **mineralisation times** and ensure targeted and balanced nutrition which is capable of sustaining the crop over time.



Acidifying, desalinating and unblocking action

Lowering soil pH is an essential step in many production contexts!

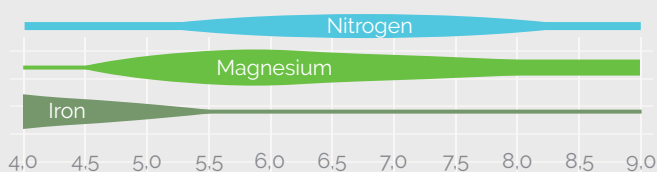
In alkaline soils, the high content of calcium carbonate prevents the plant from absorbing most of the nutrients of the soil naturally present and / or supplied with fertilizers, such as iron and phosphorus. In fact, they are retained by calcium, forming insoluble compounds and, consequently, the plant will always show symptoms of deficiency.

The addition of **calcium sulphate**, however, in the PETRO products releases the solution of ionic forms circulating in the soil that **reduce the pH** of the circulating solution, thus counteracting the alkaline properties of the soil.

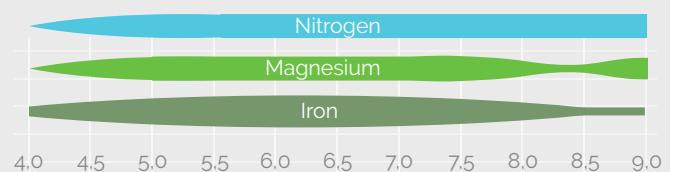
Calcium sulphate also affects the **elimination of sodium** directly from the exchange complexes, thus reducing its harmful effects on the soil: flocculation and destabilisation of the colloid structure.

The pH, however, is not the only factor which affects the availability of mineral nutrients in the soil. It has been demonstrated that even the organic substance significantly increases the availability of nutrients compared to soil with less organic compounds.

Ultimately, the PETRO range offers both these benefits by being able to both acidify the soil and provide top-quality organic substances.



The affect of the pH on the availability of organic nutrients in soil lacking organic substance



The affect of the pH on the availability of organic nutrients in soil rich in organic substance

Doses and methods

Crops	Soil application	Dose kg/ha
Fruit trees	At the planting, before the vegetative reawakening or after the harvest	700-1200
Horticultural	Before sowing/transplanting during the working of the soil	500-1100
Industria	Before sowing/transplanting during the working of the soil	600-1200
Cereals	Before sowing during the working of the soil	400-700
Fourth range	Before sowing during the working of the soil	400-700

The above-mentioned doses are given by way of example and may vary based on the soil and climate conditions in each area, as well as the density of the system and type of crop. Moreover, they must be included in the overall fertilisation plan.

WARNINGS

Keep in the original container in a cool, dry place away from excessive heat.

Formulation

Pellet

Diameter

3.5 mm

Packaging

25-600 kg / sack, big bag

Humidity

5-6%



Soil application



Exclusive production technology



Exclusive technology Agriges production



Some products allowed in organic farming

Main products

The numerous titres in the catalogue ensure targeted and balanced nutrition, capable of providing all the farm crops with the energy required in the initial stages.

Main products		Aerobic microbial flora *	Anaerobic microbial flora *	Total amino acids *	Humic and fulvic acids *	Total Nitrogen (N)	Organic Nitrogen (N)	Ammoniacal Nitrogen (N)	Ureic Nitrogen (N)
Z	N 5 HST	7,6*10 ⁹ UFC/g	8,0*10 ⁸ UFC/g	25,4 %	12-13%	5,0%	5,0%	-	-
NP	335 FERRO PIU' ThB	1,0*10 ⁹ UFC/g	5,5*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	33+16CaO+3MgO ThB	3,2*10 ⁹ UFC/g	2,0*10 ⁸ UFC/g	15,9 %	10-11%	3,0%	3,0%	-	-
	300 SPECIAL MIX ThB	1,0*10 ⁹ UFC/g	4,2*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	330 ST BIO ThB	1,2*10 ⁹ UFC/g	5,6*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	330 LT BIO ThB PLUS	2,0*10 ⁹ UFC/g	4,5*10 ⁸ UFC/g	16,8 %	10-11%	3,0%	3,0%	-	-
	318 ACID ThB	1,0*10 ⁹ UFC/g	5,5*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	33-27 CALCIO ThB	2,2*10 ⁹ UFC/g	3,0*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	390 ZN ThB	2,0*10 ⁹ UFC/g	4,5*10 ⁸ UFC/g	16,8 %	10-11%	3,0%	3,0%	-	-
	44 + 2 MgO BORO PIU' ThB	5,6*10 ⁹ UFC/g	6,5*10 ⁸ UFC/g	18,7 %	11-12%	4,0%	4,0%	-	-
	440 ThB PLUS	5,6*10 ⁹ UFC/g	6,5*10 ⁸ UFC/g	18,7 %	11-12%	4,0%	4,0%	-	-
	450 BORO PIU' ThB	5,8*10 ⁹ UFC/g	6,0*10 ⁸ UFC/g	19,1 %	11-12%	4,0%	4,0%	-	-
	450 H CA-MICRO ThB	6,2*10 ⁹ UFC/g	5,5*10 ⁸ UFC/g	18,2 %	11-12%	4,0%	4,0%	-	-
	570 ZLT ThB	6,2*10 ⁹ UFC/g	6,0*10 ⁸ UFC/g	24,7 %	12-13%	5,0%	5,0%	-	-
NPK	357 W	1,5*10 ⁹ UFC/g	6,0*10 ⁸ UFC/g	18,2 %	10-11%	3,0%	2,0%	1,0%	-
	3-6-12+2 MgO BIO	2,2*10 ⁹ UFC/g	5,2*10 ⁸ UFC/g	16,2 %	10-11%	3,0%	3,0%	-	-
	555 CS MO	3,0*10 ⁹ UFC/g	4,3*10 ⁸ UFC/g	17,4 %	10-11%	5,0%	3,5%	-	1,5%
	558 S PH-BIO	6,2*10 ⁹ UFC/g	6,0*10 ⁸ UFC/g	24,7 %	12-13%	5,0%	5,0%	-	-
	8-5-12 + 2 MGO	2,5*10 ⁹ UFC/g	3,5*10 ⁸ UFC/g	17,1 %	10-11%	8,0%	3,5%	-	4,5%
	1055 CS	1,0*10 ⁹ UFC/g	1,8*10 ⁸ UFC/g	12,3 %	10-11%	10,0%	1,5%	2,5%	6,0%
	5-5-12+2 MgO+0,5 Fe	5,0*10 ⁹ UFC/g	2,8*10 ⁸ UFC/g	25,2 %	12-13%	5,0%	5,0%	-	-

* Average values of an indicative nature, not present on the label and referring to the living natural organic matrix

Humification rate *	Allowed in Organic Farming	Organic matter	Organic carbon C org	Sulphur trioxide SO ₃	Calcium oxide CaO	Zinc Zn	Boron B	Manganese Mn	Iron Fe	Magnesium oxide MgO	Potassium oxide K ₂ O	Phosphorus pentoxide P ₂ O ₅
75-85%	yes	34,0%	17,0%	-	-	-	-	-	-	-	-	-
75-85%	yes	26,0%	13,0%	15,0%	-	-	-	-	5,0%	-	-	3,0%
75-85%	yes	26,0%	13,0%	15,0%	16,0%	-	-	-	-	3,0%	-	3,0%
75-85%	yes	30,0%	15,0%	21,0%	15,0%	0,02%	-	0,02%	0,02%	-	-	3,0%
75-85%	yes	30,0%	15,0%	16,0%	10,0%	-	-	-	-	-	-	3,0%
75-85%	yes	26,0%	13,0%	24,0%	15,0%	-	-	-	-	-	-	3,0%
75-85%	yes	30,0%	15,0%	20,0%	14,0%	-	-	-	-	-	-	3,0%
75-85%	yes	28,0%	14,0%	5,0%	27,0%	-	-	-	-	-	-	3,0%
75-85%	yes	28,0%	14,0%	14,0%	15,0%	0,05%	-	-	-	-	-	9,0%
75-85%	yes	26,0%	13,0%	19,0%	16,0%	-	0,02%	-	-	2,0%	-	4,0%
75-85%	yes	26,0%	13,0%	25,0%	-	-	-	-	-	-	-	4,0%
75-85%	yes	28,0%	14,0%	19,0%	15,0%	-	0,1%	-	-	-	-	5,0%
75-85%	yes	30,0%	15,0%	20,0%	13,0%	-	-	-	-	-	-	5,0%
75-85%	yes	28,0%	14,0%	19,0%	14,0%	-	-	-	-	-	-	7,0%
75-85%	-	44,0%	22,0%	9,0%	12,0%	-	-	-	-	1,0%*	7,0%	5,0%
75-85%	yes	30,0%	15,0%	12,0%	-	-	-	-	-	2,0%	12,0%	6,0%
75-85%	-	28,0%	14,0%	6,0%	10,0%	-	-	-	-	-	5,0%	5,0%
75-85%	yes	28,0%	14,0%	8,0%	8,0%	-	-	-	-	-	8,0%	5,0%
75-85%	-	30,0%	15,0%	9,0%	8,0%	-	-	-	1,0%	2,0%	12,0%	5,0%
75-85%	-	16,0%	8,0%	10,0%	8,0%	-	-	-	-	-	5,0%	5,0%
75-85%	yes	32,0%	16,0%	-	-	-	-	-	0,5%	2,0%	5,0%	5,0%



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