FERTIMORE

Thinking green, growing green

PRODUCTS CATALOGUE


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WHO ARE WE

Fertimore is a new brand of Italian fertilisers, which has been created for export in order to satisfy the increasing demand of top quality commodities: Granular, Water-soluble and Liquid.

Fertimore comes from a successful experience in foreign markets combined with the industrial and agronomic knowhow that are the milestones of any successful plant nutrition business. Fertimore main target markets are Africa, the Middle East and Asia with a worldwide ambition.

VISION | To bring all our nutrition expertise to customers worldwide through smart efficient and pure products.

MISSION | To provide high quality, 'made in Italy', appealing, intelligent and efficient fertilisers to different customers and diverse needs all over the world.

VALUES | Fertimore is based on its solid EXPERIENCE in plant nutrition, a strong COMMITMENT to satisfy market needs, an availability to assist customer, by giving them SUPPORT through professional advices and info, tailored to their specific needs. In other words: RELIABILITY & RESPONSIBILITY.

OUR BUSINESS PARTNERS | Since the creation of Fertimore, our export team have connected different parts of the world building contacts in different countries and developing new markets in all continents with local distributors.

Albania, Algeria, Georgia, Greece, Lebanon, Madagascar, Malesia, Ivory Coast, People's Republic of China, Romania, Senegal, Sultanate of Oman, The Arab Republic of Egypt, The Democratic Socialist Republic of Sri Lanka, The Federal Democratic Republic of Ethiopia, The Hashemite Kingdom of Jordan, The Islamic Republic of Iran, The Kingdom of Thailand, The Republic of Armenia, The Republic of Azerbaijan, The Republic of Kazakhstan, The Republic of Mali, The Republic of the Union of Myanmar, The Republic of Iraq, The Republic of Uzbekistan, The Republic of Yemen, The Russian Federation, The Socialist Republic of Vietnam, The State of Eritrea, The Syrian Arab Republic, Tunisia, Turkey.

PRODUCTION UNITS

The company has two production units, one to the south of Italy and the other one to the north, in order to cover efficiently all the national territory and get easier connections to the export routes. The average production capacity is 550 tons per day for the southern unit and 800 tons per day for the northern one.

PRODUCTION PLANT IN RIPALTA ARPINA (CR)

PRODUCTION PLANT IN BARLETTA (BT)

QUALITY PRODUCTION

Both our production plants are certified ISO9001, which guarantees the Quality Management System (QMS) to meet customer expectation and satisfaction, and ISO14001, which sets out the criteria for an Environmental Management System (EMS) for an effective management of the environmental burdens of our production.

We are not subject to the 'Seveso Directive' because our products are safe; we do not use any dangerous substances. The production lines in the plants are equipped with systems to protect our air and water resources in compliance with the EU environmental standards.

PRODUCT SUMMARY

GRANULAR 'EC FERTILISERS'

NUTRIMAX GLOBAL

A complete and balanced nutrition at 360°:

NPK 19-6-5 + TE
NPK 16-6-16 S
NPK 15-15-15 S
NPK 15-15-15
NPK 12-12-17 S
NPK 12-12-17 + TE
NPK 12-12-12

NUTRIMAX NITROGEN

For a healthy and vigorous vegetative growth:

N 30
NPK 29-5-5 + TE
NPK 22-8-11 S
NPK 21-7-14 + TE
NPK 15-7-6 OM

NUTRIMAX PHOSPHORUS

Strengthens cell tissues and simulates metabolic activities:

NPK 11-22-16
SUPER P 19
NP 10-30
NP 8-18
NP 10-30 OM

NUTRIMAX POTASSIUM

Improves yields in quantity and quality (size, colour and sugar content):

NPK 10-5-20
NPK 12-8-18 S
NPK 5-7-14 OM

WATER-SOLUBLE 'EC FERTILISERS'

FERTISOL CALCIUM
Strengthens cell tissues and simulates metabolic activities:

NPK 12-8-24 + 10 CaO + TE
NPK 12-8-24 + 9 CaO + 2 MgO + TE

FERTISOL BALANCE
A complete and balanced nutrition at 360°:

NPK 18-18-18 + TE
NPK 20-20-20 + TE

FERTISOL NITROGEN
Guarantees a vigorous plant for a healthy photosynthesis and plant metabolism:

NPK 28-14-14 + TE
NPK 30-10-10 + TE

FERTISOL PHOSPHORUS
At the early growth of the root system and the development of new tissues:

NPK 15-30-15 + TE
NPK 12-36-12 + TE
NPK 10-40-10 + TE
NPK 10-52-7 + TE

FERTISOL POTASSIUM
Improves yields in quantity and quality (size, colour and sugar content):

NPK 15-15-30 + TE
NPK 7-17-34 + TE
NPK 10-5-35 + TE
NPK 12-12-36 + TE
NPK 3-37-37 + TE
NPK 5-10-40 + TE
K 50

All trace elements (TE) are water-soluble.
All trace elements (TE) are EDTA chelated except B and Mo.

MICRO-NUTRIENTS

- **FAST-ACTING HIGHLY SOLUBLE FORMULAS.**
- **CONFER A BALANCED AND COMPLETE NUTRITION FOR A HIGHER YIELD AND IMPROVED QUALITY.**
- **COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.**
- **REDUCE DISTRIBUTION LOSSES AND IMPROVE LEAVES ABSORPTION.**
- **PREVENT AND CORRECT MULTIPLE MICRO DEFICIENCIES RELATED TO THE INHIBITION OR ABSENCE OF MICRO-NUTRIENTS.**

Xtra CALCIUM

Improves yield quality (size, structure and taste), for better storage and longer shelf life.

Xtra CA-MG

Activates photosynthesis and triggered synthesis of sugars and enzymes. Improves yield quality, enhances organoleptic characteristics.

Xtra IRON

Higher respiratory and photosynthetic activity to prevent and correct chlorosis.

Xtra MULTIMIX

Activates the overall plant metabolic effectiveness and corrects deficiencies.

Xtra MN-ZN

Activates enzymes involved in plant cell respiration, amino acid and lignin synthesis. Stimulates plant functions.

ALL MICRO-NUTRIENTS ARE COMPLEXED WITH AMMONIUM LIGNOSULPHONATE, A NATURAL COATING AGENT TO IMPROVE APPLICATION AND ABSORPTION EFFICIENCY.

Biostimulants

- **TO PROMOTE THE OVERALL CROP GROWTH, ELONGATION OF DIFFERENT CROP ORGANS AND TO IMPROVE FRUIT MATURATION AND COLORATION.**
- **TO ENHANCE NUTRITION EFFICIENCY UPTAKE.**
- **TO DEVELOP NATURAL STRESS TOLERANCE TO BIOTIC AND ABIOTIC FACTORS.**
- **FREE OF CHEMICAL HORMONES AND OF ANY ANIMAL SOURCE.**

Xtra Root

Humic extracts to generate active, bigger and healthier root systems.

Xtra Power

Amino acid based biostimulant with anti-stress effect.

Xtra PowerBio

Amino acid based biostimulant for organic agriculture with anti-stress effect.

Xtra BrixOne

Algal extract for plant bio-stimulation mainly formulated to enhance crop quality.

ALL PRODUCTS ARE MANUFACTURED USING ENZYMATIC HYDROLYSIS PROCESS AND FURTHER INDUSTRIAL PROCESS. THE ORGANIC ORIGIN OF THE PRODUCTS IS FREE FROM ANY SEWAGE AND DISCHARGE WATERS OR SOLID WASTES.

FERTISOL

Water-soluble fertilisers

FERTISOL PRODUCTS ARE HIGHLY WATER-SOLUBLE FORMULAS MADE FROM PREMIUM RAW MATERIALS AND EDTA CHELATED MICRO-NUTRIENTS.

- FOR ALL CROPS AND FOR THE ENTIRE LIFE CYCLE OF THE CROP.
- COMPLETE NUTRITIONAL SUPPLY.
- PURE CRYSTALS, FREE FROM SODIUM, CHLORIDES AND CARBONATES.
- SUITABLE FOR ALL IRRIGATION SYSTEMS.
- REDUCED SEDIMENTATION.
- PREVENT NOZZLE CLOGGING AND TUBES BLOCKAGE.
- IDEAL TO USE FOR SALT-SENSITIVE CROPS AND IN HOT AND DRY CLIMATE WHERE SALINITY PROBLEMS ARE SEVERE.
- FORMULAS ARE CHARACTERISED BY LOW pH.
- FORMULAS CONTAIN IMPORTANT AMOUNTS OF SO_3 AN IMPORTANT ELEMENT FOR THE DEMOBILISATION OF THE MINERAL ELEMENTS OF THE SOIL.

APPLICATION | Constant applications are recommended for best results. FERTISOL products are compatible with most soluble fertilisers. It is always recommend discussing the specific crop and field conditions with an agronomist.

THE RATES OF APPLICATIONS SHOULD BE ADJUSTED ACCORDING TO:

- The dilution indications (concentration of 10-20%).
- The irrigation system in use.
- The crop type and variety.
- The phenological stage of development.
- The number of applications intended.
- The agricultural practices.
- The soil characteristics.

AVAILABILITY | FERTISOL formulas are available in 25 Kg WPP laminated bags.
Tailor-made formulas, for a minimum tonnage of 25 tons.

25 Kg x min. **25 Ton**

Water-soluble fertilisers

FERTISOL Calcium

FERTISOL CALCIUM formulas have a high level of calcium added to nitrogen, phosphorus and potassium to strengthen cell tissues and simulate metabolic activities, providing at the same time the fundamental amount of nutrients required for a vigorous and healthy growth of the plant.

The presence of SO_3 is essential for an efficient uptake and assimilation of nutrients, for the role it plays in the demobilisation of the mineral elements in the soil. The protected microelements with EDTA coating adds to the formulas a complete nutritional provision for growth enhancement under high soil pH conditions and for the stimulation of biochemical interactions and activation between different nutrients. If applied according to the correct indications, FERTISOL CALCIUM guarantee a healthy root system, which ensures a balanced aboveground system.

FERTISOL CALCIUM	N		P_2O_5	K_2O	CaO	MgO	B	Cu	Fe	Mn	Mo	Zn
	Ureic	Nitric	Ws	Ws	Ws	Ws						
NPK 12-8-24 + 10 CaO + TE	1	11	8	24	10	-	0.14	0.01	0.02	0.01	0.01	0.01
NPK 12-8-24 + 9 CaO + 2 MgO + TE	1	11	8	24	9	2	0.14	0.01	0.02	0.01	0.01	0.01

Ws: Water-soluble.
All micro-nutrients are EDTA chelated except B and Mo, all are water-soluble.

INDICATOR	VALUE
Physical State	Powder
Colour	Yellow
Bulk Density	1070-1080 (Kg m^{-3} of water)
pH (10% w/v)	≈ 4
Solubility	150-300 (g L^{-1})

FERTISOL Balance

The balanced content of essential macro-elements makes it suitable for all types of plants, at any growth stage. The ammoniacal nitrogen content provides rapid green up and leaf expansion, while the high ureic nitrogen gives a longer nitrogen availability and reduces losses into the environment. The formula is enriched with SO_3 to prevent sulphur deficiencies and for the demobilisation of the mineral elements in the soil, hence, an efficient uptake and assimilation of nutrients. The supplement of protected microelements (chelated by EDTA coating) is beneficial for growth enhancement even in alkaline soils and for the stimulation of biochemical interactions and activation between different nutrients.

The phosphorus content is essential for growth; it stimulates cell division, root lengthening, seed and fruit development, and early ripening. The presence of potassium moves moisture and nutrients to the growing points, promotes strong plant cell membranes, root formation, and facilitates cell division, improving plants' systemic acquired resistance to stress and disease. All, factors affecting the quality and the quantity of the blooms and the harvest in the final stages of the growth (fruit set, fruit growth and ripening). FERTISOL BALANCE formulas guarantee a balanced crop for optimal agronomic results, if applied according to the correct indications.

FERTISOL BALANCE	N			P_2O_5	K_2O	SO_3	B	Cu	Fe	Mn	Mo	Zn
	Ureic	Amm.	Ws	Ws	Ws	Ws						
NPK 20-20-20 + TE	16	3	1	20	20	8	0.14	0.01	0.02	0.01	0.01	0.01
NPK 18-18-18 + TE	12.5	4.5	1	18	18	16	0.14	0.01	0.02	0.01	0.01	0.01

Ws: Water-soluble.
All micro-nutrients are EDTA chelated except B and Mo, all are water-soluble.

INDICATOR	VALUE
Physical State	Powder
Colour	Green
Bulk Density	1180-1200 (Kg m^{-3} of water)
pH (10% w/v)	4.8 - 6.4
Solubility	≈ 400 (g L^{-1})

FERTISOL Nitrogen

FERTISOL NITROGEN formulas guarantee a vigorous plant for a healthy photosynthesis and plant metabolism. The presence of SO_3 is essential for an efficient uptake and assimilation of nutrients, for the role it plays in the demobilisation of the mineral elements in the soil. The protected microelements chelated by EDTA coating adds to the product a complete nutritional provision for growth enhancement under high soil pH conditions and for the stimulation of biochemical interactions and activation between different nutrients.

FERTISOL NITROGEN	N			P_2O_5	K_2O	SO_3	B	Cu	Fe	Mn	Mo	Zn
	Ureic	Amm.	Nitric	Ws	Ws	Ws						
NPK 30-10-10 + TE	24.5	4	1.5	10	10	9	0.14	0.01	0.02	0.01	0.01	0.01
NPK 28-14-14 + TE	24	2.5	1.5	14	14	-	0.14	0.01	0.02	0.01	0.01	0.01

Ws: Water-soluble.
All micro-nutrients are EDTA chelated except B and Mo, all are water-soluble.

INDICATOR	VALUE
Physical State	Powder (Blue Colour)
Colour	Blue
Bulk Density	940-1020 (Kg m^{-3} of water)
pH (10% w/v)	6.2 - 6.4
Solubility	≈ 400 (g L^{-1})

FERTISOL Phosphorus

FERTISOL PHOSPHORUS formulas have a high level of phosphorus complexed with nitrogen and potassium to provide the fundamental amount of nutrients necessary at the early growth of the root system and the development of new tissues.

The SO_3 present is crucial for the demobilisation of the mineral elements in the soil and for an efficient uptake and assimilation of nutrients. The organically protected microelements chelated by EDTA coating adds to the formulas a complete nutritional provision for growth enhancement under high soil pH conditions and for the stimulation of biochemical interactions and activation between different nutrients. The application of FERTISOL PHOSPHORUS products guarantee a healthy root system, which ensures a balanced aboveground system.

FERTISOL PHOSPHORUS	N		P_2O_5	K_2O	SO_3	B	Cu	Fe	Mn	Mo	Zn
	Ureic	Amm.	Ws	Ws	Ws						
NPK 10-52-7 + TE	-	10	52	7	5	0.14	0.01	0.02	0.01	0.01	0.01
NPK 10-40-10 + TE	-	10	40	10	15	0.14	0.01	0.02	0.01	0.01	0.01
NPK 12-36-12 + TE	-	12	36	12	18	0.14	0.01	0.02	0.01	0.01	0.01
NPK 15-30-15 + TE	7	8	30	15	13	0.14	0.01	0.02	0.01	0.01	0.01

Ws: Water-soluble.
All micro-nutrients are EDTA chelated except B and Mo, all are water-soluble.

INDICATOR	VALUE
Physical State	Powder (Orange Colour)
Colour	Orange
Bulk Density	1140-1260 (Kg m^{-3} of water)
pH (10% w/v)	4.4 - 6.3
Solubility	350 - 450 (g L^{-1})

FERTISOL Potassium

FERTISOL POTASSIUM products have the high potash content recommended for fruit set and maturing when higher potassium levels are required to improve yields quality. The nitrogen content in its different forms constitutes a readily mobile and long lasting nutrition to maintain a vigorous plant with an activated metabolism for a healthy growth of all plant organs. The presence of SO_3 prevents sulphur deficiencies and facilitates an efficient uptake and assimilation of nutrients, for the role it plays in the demobilisation of the mineral elements in the soil. The protected microelements with EDTA coating added to the formulas a complete nutritional provision for growth enhancement under high soil pH conditions and for the stimulation of biochemical interactions and activation between different nutrients. FERTISOL POTASSIUM guarantee the best qualitative and quantitative harvest if applied according to the indications reported below.

FERTISOL POTASSIUM	N			P_2O_5	K_2O	SO_3	B	Cu	Fe	Mn	Mo	Zn
	Ureic	Amm.	Nitric	Ws	Ws	Ws						
K 50	-	-	-	-	50	44	-	-	-	-	-	-
NPK 5-10-40 + TE	2	1.5	1.5	10	40	28	0.14	0.01	0.02	0.01	0.01	0.01
NPK 3-37-37 + TE	-	-	3	37	37	-	0.14	0.01	0.02	0.01	0.01	0.01
NPK 12-12-36 + TE	5	1	6	12	36	10	0.14	0.01	0.02	0.01	0.01	0.01
NPK 10-5-35 + TE	2.5	3.5	4	5	35	25	0.14	0.01	0.02	0.01	0.01	0.01
NPK 7-17-34 + TE	1	2.5	3.5	17	34	17	0.14	0.01	0.02	0.01	0.01	0.01
NPK 15-15-30 + TE	8.5	2	4.5	15	30	5	0.14	0.01	0.02	0.01	0.01	0.01

Ws: Water-soluble.
All micro-nutrients are EDTA chelated except B and Mo, all are water-soluble.

INDICATOR	VALUE
Physical State	Powder
Colour	Pink
Bulk Density	1230 - 1480 (Kg m^{-3} of water)
pH (10% w/v)	4 - 6.1
Solubility	130 - 300 (g L^{-1})


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Xtra Biostimulants

THE PURPOSE OF THE BIO-STIMULANT RANGE OF PRODUCTS IS:

- TO PROMOTE THE OVERALL CROP GROWTH AND ELONGATION OF DIFFERENT CROP ORGANS (ROOTS, STEMS, ETC.).
- TO ENHANCE NUTRITION EFFICIENCY UPTAKE, TO DEVELOP NATURAL STRESS TOLERANCE TO BIOTIC AND ABIOTIC FACTORS.
- TO ADD IMPORTANT QUALITY TRAITS TO THE YIELD (IN TERMS OF SIZE, SUGAR CONTENT, COLOUR AND RIPENING, AND POST-HARVEST STORAGE LIFE).
- FREE OF CHEMICAL HORMONES AND OF ANY ANIMAL SOURCE.

To enhance nutrition efficiency uptake

Xtra Root

Bio-stimulant for root growth and expansion

USE | Fertiliser for agricultu re

Mutualistic symbioses between roots, the substrate and the nutrients to generate active, bigger and healthier root systems.

COMPOSITION	CONCENTRATION
Total Nitrogen (N)	5%
Organic Nitrogen (N)	2.5%
Ammoniacal Nitrogen (N)	2.5%
Phosphorus Pentoxide (P_2O_5) soluble in neutral ammonium citrate and water	9%
Water-soluble Phosphorus Pentoxide (P_2O_5)	9%
Water-soluble Zinc (Zn)	13 ppm
Organic Carbon (C)	7%
Total Amino Acids	>15%
C/N Ratio	1.4
pH	6.5
Colour	Dark Brown

A humic extract with high concentration of quality humic and fulvic acids, with water-soluble phosphorus and amino acids to help the formation of structural aggregates and improving the physico-chemical and agronomical characteristics of the soil:

- ✓ IT ACTIVATES THE SOIL BIOLOGICAL ACTIVITY.
- ✓ IT INCREASES SOIL FERTILITY.
- ✓ IT IMPROVES WATER RETENTION AND NUTRIENT USE.
- ✓ IT ENHANCES TOLERANCE TO STRESS RELATED TO PLOUGHING AND TRANSPLANTING.
- ✓ IT HELPS IN ROOT INITIATION, ROOT GROWTH, EXPANSION AND ELONGATION.

Xtra BrixOne

Bio-stimulant for ripening and sugar content improvement

USE | Fertiliser for agriculture

Complete and balanced formula with all elements required for an exceptional fruitage.

COMPOSITION	CONCENTRATION
Total Nitrogen (N)	3%
Organic Nitrogen (N)	1%
Ureic Nitrogen (N)	2%
Water-soluble Potassium Oxide (K_2O)	12%
Water-soluble Magnesium Oxide (MgO)	83 ppm
Organic Carbon (C)	8%
C/N Ratio	2.7
pH	7.2
Colour	Dark Brown

An algal extract for plant bio-stimulation mainly formulated to enhance crop quality traits in particular structure, size and quantity of yields:

- ✓ **IT BOOSTS NUTRITION USE EFFICIENCY BY CROPS.**
- ✓ **IT ENHANCES BIOTIC AND ABIOTIC STRESS TOLERANCE DURING MATURATION. BIO-STIMULATION ACTIVITY ON FURTHER GROWTH OF YIELDS: UNIFORMS AND IMPROVES SIZE.**
- ✓ **IT WORKS ON QUALITY TRAITS OF FRUITS: COLOUR AND SUGAR CONTENT.**

Xtra PowerBio

Bio-stimulant with anti-stress effect for organic agriculture

USE | Fertiliser for agriculture

Complete and balanced formula with all elements required for a healthy growth and development.

COMPOSITION	CONCENTRATION
Total Nitrogen (N)	5.7%
Organic Nitrogen (N)	5.7%
Organic Carbon (C)	16%
Total Amino Acids	>32%
Free Amino Acids	6.5%
C/N Ratio	2.8
Water-soluble Iron (Fe) EDTA chelated	1.1%
Water-soluble Manganese (Mn) EDTA chelated	0.4%
Water-soluble Zinc (Zn) EDTA chelated	0.6%
pH	7.2
Colour	Dark Brown

An amino acid based solution for crop bio-stimulation that can be used for organic agriculture:

- ✓ ALLOWED IN ORGANIC FARMING.
- ✓ POSITIVELY INFLUENCES THE PHYSIOLOGICAL ACTIVITIES OF THE PLANT THROUGH THE ACTIVATION OF PROTEIN SYNTHESIS.
- ✓ IMPROVES THE OVERALL NUTRIENT USE EFFICIENCY.
- ✓ ENHANCES TOLERANCE TO ABIOTIC AND BIOTIC STRESS (E.G. EXTREME WEATHER CONDITIONS, AGRICULTURAL PRACTICES AND MANAGEMENT).
- ✓ INCREASES THE GENERAL GROWTH AND DEVELOPMENT.

Xtra Power

Bio-stimulant with anti-stress effect

USE | Fertiliser for agriculture

Complete and balanced formula with all elements required for a healthy growth and development.

COMPOSITION	CONCENTRATION
Total Nitrogen (N)	5.2%
Organic Nitrogen (N)	5.2%
Organic Carbon (C)	21%
Total Amino Acids	>28%
C/N Ratio	4
pH	6
Colour	Dark Brown

An amino acid based solution for crop bio-stimulation with high organic carbon content:

- ✓ **BIO-STIMULANT WITH ANTI-STRESS EFFECT.**
- ✓ **POSITIVELY INFLUENCES THE PHYSIOLOGICAL ACTIVITIES OF THE PLANT THROUGH THE ACTIVATION OF PROTEIN SYNTHESIS.**
- ✓ **IMPROVES THE OVERALL NUTRIENT USE EFFICIENCY.**
- ✓ **ENHANCES TOLERANCE TO ABIOTIC AND BIOTIC STRESS (E.G. EXTREME WEATHER CONDITIONS, AGRICULTURAL PRACTICES AND MANAGEMENT).**
- ✓ **INCREASES THE GENERAL GROWTH AND DEVELOPMENT.**


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Xtra

MICRO-NUTRIENTS

THE MICRO-NUTRIENT RANGE AIMS:

- TO ACTIVATE THE PLANT METABOLIC EFFECTIVENESS TO CREATE THE KIND OF HEALTHY DEVELOPMENT NEEDED IN THE GROWING SEASON.
- TO INCREASE YIELD AND QUALITY, OVERCOMING THE LIMITATIONS OF THE SOIL.
- TO PREVENT AND CORRECT MULTIPLE MICRO DEFICIENCIES.

Fast acting highly soluble formulas

Xtra CALCIUM

'EC FERTILISER'

COMPLEXED WITH AMMONIUM LIGNOSULPHONATE

B

CaO

N

COMPOSITION	CONCENTRATION
Total Nitrogen (N)	8 %
Nitric Nitrogen (N)	8 %
Water-soluble Calcium Oxide (CaO)	15 %
Water-soluble Boron (B)	0.2 %
pH	3-4
Colour	Dark Brown

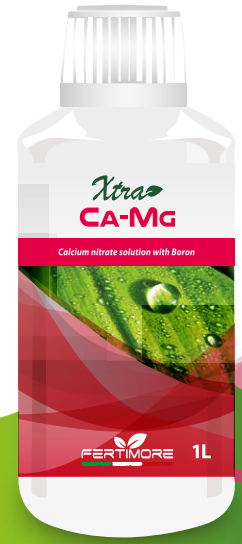
XTRA CALCIUM is a fast-acting liquid formula with high calcium content. It enhances enzymatic activity, with special eects on plant membranes and cell walls for an improved yield quality. The micro-nutrients are complexed with a natural coating agent (Ammonium Lignosulphonate) to make the product more stable and to give a superior performance with foliar application.

- ✓ HIGHER FRUIT QUALITY (SIZE AND COLOUR) AND BETTER TASTE (SUGAR CONTENT).
- ✓ EFFICIENTLY PREVENTS AND CORRECTS SYMPTOMS RELATED TO CALCIUM DEFICIENCY.
- ✓ COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.
- ✓ REDUCES DISTRIBUTION LOSSES AND IMPROVES LEAVES ABSORPTION.

Xtra Ca-Mg

'EC FERTILISER'

COMPLEXED WITH AMMONIUM LIGNOSULPHONATE



COMPOSITION	CONCENTRATION
Total Nitrogen (N)	8 %
Nitric Nitrogen (N)	8 %
Water-soluble Calcium Oxide (CaO)	8 %
Water-soluble Magnesium Oxide (MgO)	4 %
Water-soluble Boron (B)	0.01 %
pH	2.5 - 3.5
Colour	Dark Brown

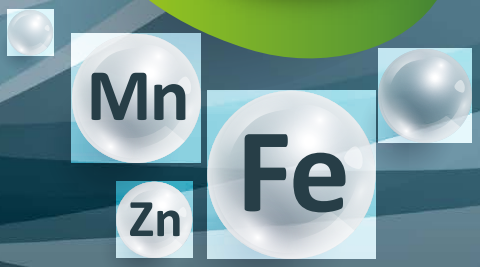
XTRA Ca-Mg is a fast-acting liquid formula with high calcium content to enhance enzymatic activity of the plant, and high magnesium content to improve the physiological and molecular processes. The micro-nutrients are complexed with a natural coating agent (Ammonium Lignosulphonate) to make the product more stable and to give a superior performance with foliar application.

- ✓ **PREVENTS AND CURES MULTIPLE MICRO DEFICIENCIES RELATED TO THE INHIBITION OR ABSENCE OF CALCIUM AND MAGNESIUM.**
- ✓ **COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.**
- ✓ **REDUCES DISTRIBUTION LOSSES AND IMPROVES LEAVES ABSORPTION.**

Xtra IRON

'EC FERTILISER'

COMPLEXED WITH AMMONIUM LIGNOSULPHONATE



COMPOSITION	CONCENTRATION
Water-soluble Iron (Fe)	5 %
Water-soluble Manganese (Mn)	2.2 %
Water-soluble Zinc (Zn)	0.5 %
pH	2 - 3
Colour	Dark Brown

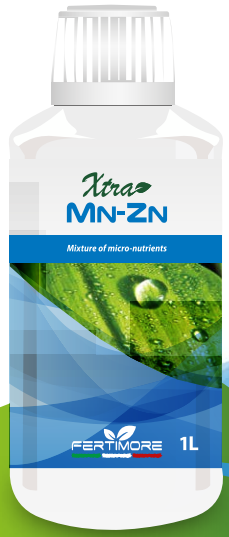
XTRA IRON is a fast-acting, liquid formula of micro-nutrients, with high iron, which is an essential component of two major groups of proteins involved in respiratory and photosynthetic activity of plants. The micro-nutrients are complexed with a natural coating agent (Ammonium Lignosulphonate) to make the product more stable and to give a superior performance with foliar application.

- ✓ **PREVENTS AND CORRECTS MULTIPLE MICRO DEFICIENCIES RELATED TO THE INHIBITION OR ABSENCE OF IRON.**
- ✓ **COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.**
- ✓ **REDUCES DISTRIBUTION LOSSES AND IMPROVES LEAVES ABSORPTION.**

Xtra Mn-Zn

'EC FERTILISER'

COMPLEXED WITH AMMONIUM LIGNOSULPHONATE



COMPOSITION	CONCENTRATION
Water-soluble Manganese (Mn)	3.5 %
Water-soluble Zinc (Zn)	3.5 %
pH	2.5 - 3.5
Colour	Dark Brown

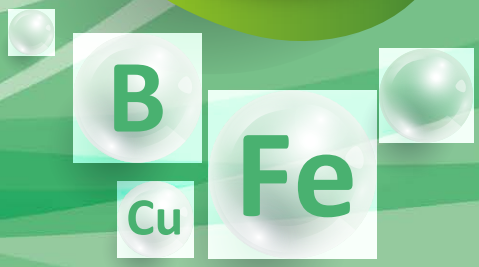
XTRA Mn-Zn is an ideal mix of manganese and zinc, to enhance enzymatic activities within the plants and to prevent and cure multiple micro deciencies related to these elements. The micro-nutrients are complexed with a natural coating agent (Ammonium Lignosulphonate) to make the product more stable and to give a superior performance with foliar application.

- ✓ **PREVENTS AND CORRECTS MULTIPLE MICRO DEFICIENCIES RELATED TO THE INHIBITION OR ABSENCE OF MANGANESE AND ZINC.**
- ✓ **COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.**
- ✓ **REDUCES DISTRIBUTION LOSSES AND IMPROVES LEAVES ABSORPTION.**

Xtra MULTIMIX

COMPLEXED WITH AMMONIUM LIGNOSULPHONATE

'EC FERTILISER'



COMPOSITION	CONCENTRATION
Water-soluble Boron (B)	0.6 %
Water-soluble Copper (Cu)	0.5 %
Water-soluble Iron (Fe)	2 %
Water-soluble Manganese (Mn)	1 %
Water-soluble Molybdenum (Mo)	0.2 %
Water-soluble Zinc (Zn)	1 %
pH	3 - 4
Colour	Dark Brown

XTRA MULTIMIX is a fast-acting liquid formula. a mix of micro-nutrients involved different plant metabolic activities related to development. The micro-nutrients are complexed with a natural coating agent (Ammonium Lignosulphonate) to make the product more stable and to give a superior performance with foliar application.

- ✓ CONFERS A BALANCED AND COMPLETE NUTRITION FOR A HIGHER YIELD AND AN IMPROVED QUALITY.
- ✓ PREVENTS AND CORRECTS MULTIPLE MICRO DEFICIENCIES RELATED TO THE INHIBITION OR ABSENCE OF MICRO-NUTRIENTS.
- ✓ COMPLEXED WITH A NATURAL COATING AGENT: MORE EFFICIENCY IN APPLICATION AND NO RISKS OF CROP TOXICITY.
- ✓ REDUCES DISTRIBUTION LOSSES AND IMPROVES LEAVES ABSORPTION.

NUTRIMAX

NUTRIMAX IS A COMPLETE RANGE OF GRANULAR FERTILISERS CONTAINING MESO AND MICROELEMENTS:

- FOR ALL CROPS AND FOR THE ENTIRE LIFE CYCLE OF THE CROP.
- A RANGE WITH INTENSE NUTRITIONAL PERFORMANCES.
- PRODUCED IN DENSE, HOMOGENOUSLY COMPOSED GRANULES (GRANULOMETRY AT 90%: 2-5 mm).
- EACH GRANULE CONTAINS THE SAME RATIO OF INGREDIENTS.

THE NUTRIENTS ARE COMPLEXED WITH TWO DIFFERENT COATING TECHNIQUES, WHICH:

- CONFERS AN INCREASED STABILITY AND OXIDATION CAPABILITIES.
- ENSURES AN EVEN SPREADING PATTERN.
- IMPROVES THEIR HARDNESS AND HANDLING QUALITY.
- PROGRESSIVE AVAILABILITY OF NUTRIENTS.

FORMULAS INCLUDE DIFFERENT FORMS OF NITROGEN (UREIC AND AMMONIACAL):

- DIRECTLY AVAILABLE NITROGEN.
- SLOWLY ADSORBED BY THE PLANTS.
- REDUCED LOSSES AND EFFICIENT FERTILISATION.

APPLICATION:

- MANUALLY SPREAD (USING PROTECTION FOR SAFETY).
- DISTRIBUTED AUTOMATICALLY USING FERTILISER SPREADERS OR ADDING THE PRODUCT TO THE SEEDERS.
- THE RATES SHOULD BE ADJUSTED ACCORDING TO THE CROP TYPE AND VARIETY, THE NUMBER OF APPLICATIONS INTENDED, THE AGRICULTURAL PRACTICES AND THE SOIL AND WATER CHARACTERISTICS.
- IT IS ALWAYS RECOMMENDED TO DISCUSS THE SPECIFIC CROP AND FIELD CONDITIONS WITH AN AGRONOMIST.

AVAILABILITY:

- NUTRIMAX FORMULAS ARE AVAILABLE IN BULK, IN 600 KG BIG BAGS AND IN 50 KG PE BAGS.
- TAILOR-MADE FORMULAS, FOR A MINIMUM TONNAGE OF 500 TONS.

NUTRIMAX Global

The nitrogen content in its different forms constitutes a readily mobile and long lasting nutrition for a vigorous crop growth, and for essential structural systems (amino acids, enzyms and the chlorophyll molecule). The presence of phosphorus stimulates a healthy root development and potassium is an essential element to increase yields and improve the quality of agricultural produce. Magnesium is added to some formulas for its important role in plant respiration and photosynthesis. Sulphur is an essential component of the formulas for its importance in determining the nutritional quality of the harvest and its role in facilitating nitrogen utilisation in plants.
Micro-nutrients are present in some formulas to enhance plant growth (enzymatic system (Zn) and reproductive system (B) of the plant). This global and complete nutrients' provision improves crop quality and increases the systemic acquired resistance (SAR) of the plant.

NUTRIMAX GLOBAL	N			P_2O_5		K_2O	MgO	SO_3	B	Zn
	Total	Ureic	Amm	NAC+Ws	Ws	Ws	Total	Ws		
NPK 19-6-15 + TE	19	15	4	6	5	15	2	6	0.5	–
NPK 16-16-16 S*	16	10	6	16	14	16	–	16	–	–
NPK 15-15-15 S*	15	6	9	15	13.5	15	–	23	–	–
NPK 15-15-15	15	8.5	6.5	15	13	15	–	6	–	–
NPK 12-12-17 S*	12	4	8	12	11	17	–	18	–	–
NPK 12-12-17 + TE	12	3	9	12	10	17	2	15	0.01	0.01
NPK 12-12-12	12	4	8	12	11	12	–	17	–	–

* SOP Based formula.

NUTRIMAX Nitrogen

The formulas have high nitrogen content in different forms, an important component for a quick and long lasting crop growth, and involved in many other essential structural compounds in plant cells e.g. amino acids, proteins, nucleic acids, enzymes, and the chlorophyll molecule. Along with nitrogen, phosphorus and potassium are essential elements to simulate a healthy root system, increase stalk and stem strength, improve flower formation and seed production, increment yields and improve the quality of agricultural produce. Magnesium, sulphur and micro-nutrients are essential components of these formulas for the structural role in determining a complete plant nutrition to enhance a healthy crop and amplify the systemic acquired resistance (SAR) of plants to resist biotic and abiotic stress (diseases, insects, and adverse drought and hot conditions).

The range is complemented with an organo-mineral product which adds to the soil a high content of organic carbon (OC), the main source of energy for soil microorganisms, which protects the mineral components improving its assimilation and uptake.

NUTRIMAX NITROGEN	N			P_2O_5		K_2O	CaO	MgO	SO_3	B	Zn
	Total	Ureic	Amm	NAC+Ws	Ws	Ws	Total	Total	Ws		
N 30	30	24	6	–	–	–	–	–	20	–	–
NPK 29-5-5 + TE	29	24	5	5	4	5	–	2	12	–	0.5
NPK 22-8-11 S*	22	16	6	8	7	11	–	–	18	–	–
NPK 21-7-14 + TE	21	15	6	7	6	14	–	–	11	0.1	–
NPK 15-7-6 OM**	15	8	6	7	6	6	2	2	18	–	–

* SOP Based formula.
** Organo-mineral formula.

NUTRIMAX Phosphorus

The formulas have high phosphorus content, an essential element for several key plant structural compounds, and for the role it plays as a catalyst in numerous key biochemical reactions in plants; it stimulates a healthy root development, increases stalk and stem strength, improves flower formation and seed production. The presence of nitrogen in its different forms is important for rapid and long lasting vegetative growth and or structural compounds in plant cells (amino acids, proteins, enzymes and chlorophyll). The presence of potassium is to increase yields and improve the quality of agricultural produce. The addition of magnesium, sulphur and micro-nutrients completes the essential nutritional requirements to accelerate the metabolic systems, which facilitates nutrients utilisation in plants and enhances a vigorous plant growth in order to build up the systemic acquired resistance (SAR) of plants to resist to biotic and abiotic stress (adverse drought, hot conditions, diseases and insects).

The range is complemented with an organo-mineral product which adds to the soil a high content of organic carbon (OC), the main source of energy for soil microorganisms, which protects the mineral components improving its assimilation and uptake.

NUTRIMAX PHOSPHORUS	N			P_2O_5			K_2O	CaO	SO_3
	Total	Ureic	Amm	Total	NAC+Ws	Ws	Ws	Ws	Ws
NPK 11-22-16	11	3	8	22	22	20	16	–	5
Super P 19	–	–	–	19	19	17	–	4	13
NP 10-30	10	–	10	30	30	25	–	4	11
NP 8-18 8	8	4	4	18	18	16	–	7	14
NP 10-30 OM**	10	–	9	30	25	22	–	3	13

** Organo-mineral formula.

NUTRIMAX *Potassium*

The high potash content increases yields and improves the quality of agricultural produce (size, flavour and colour), and enhances the systemic acquired resistance (SAR) of plants to resist diseases, insect attacks, cold and drought stresses and other adverse conditions. In addition, it increases the resistance to various injuries during storage and transportation, thus extending shelf life. The nitrogen content in its different forms constitutes a readily mobile and long lasting nutrition to maintain a vigorous growth of all plant organs. The presence of phosphorus is essential for several key plant structural compounds. Magnesium and sulphur are central components of the formulas for their importance in plant respiration and photosynthesis, in determining the nutritional quality of the harvest, and in facilitating nutrients utilisation in plants. Micro-nutrients are present in some formulas to enhance various processes related to photosynthesis and metabolic systems (enzymatic systems (Zn), carbohydrate chemistry and reproductive system (B).

The range is complemented with an organo-mineral product which adds to the soil a high content of organic carbon (OC), the main source of energy for soil microorganisms, which protects the mineral components improving its assimilation and uptake.

NUTRIMAX NITROGEN	N			P_2O_5		K_2O	CaO	MgO	SO_3	B	Fe	Zn
	Total	Ureic	Amm	NAC+Ws	Ws	Ws		Total	Ws			
NPK 10-5-20	10	3	7	5	4	20	–	–	20	–	–	–
NPK 12-8-18 S*	12	6	6	8	7	18	–	2	26	0.3	–	–
NPK 5-7-14 OM**	5	–	4	7	7	14	4	2	18	–	0.5	–

* SOP Based formula.
** Organo-mineral formula.


FERTIMORE
Thinking green, growing green

A BACKGROUND ON PLANT NUTRITION

Plants need 17 elements for normal growth. These are divided into structural elements that come directly from the air and water. The other elements are chemical elements essential for plant growth and reproduction and they are called plant nutrients, which come from soils (Figure 8).

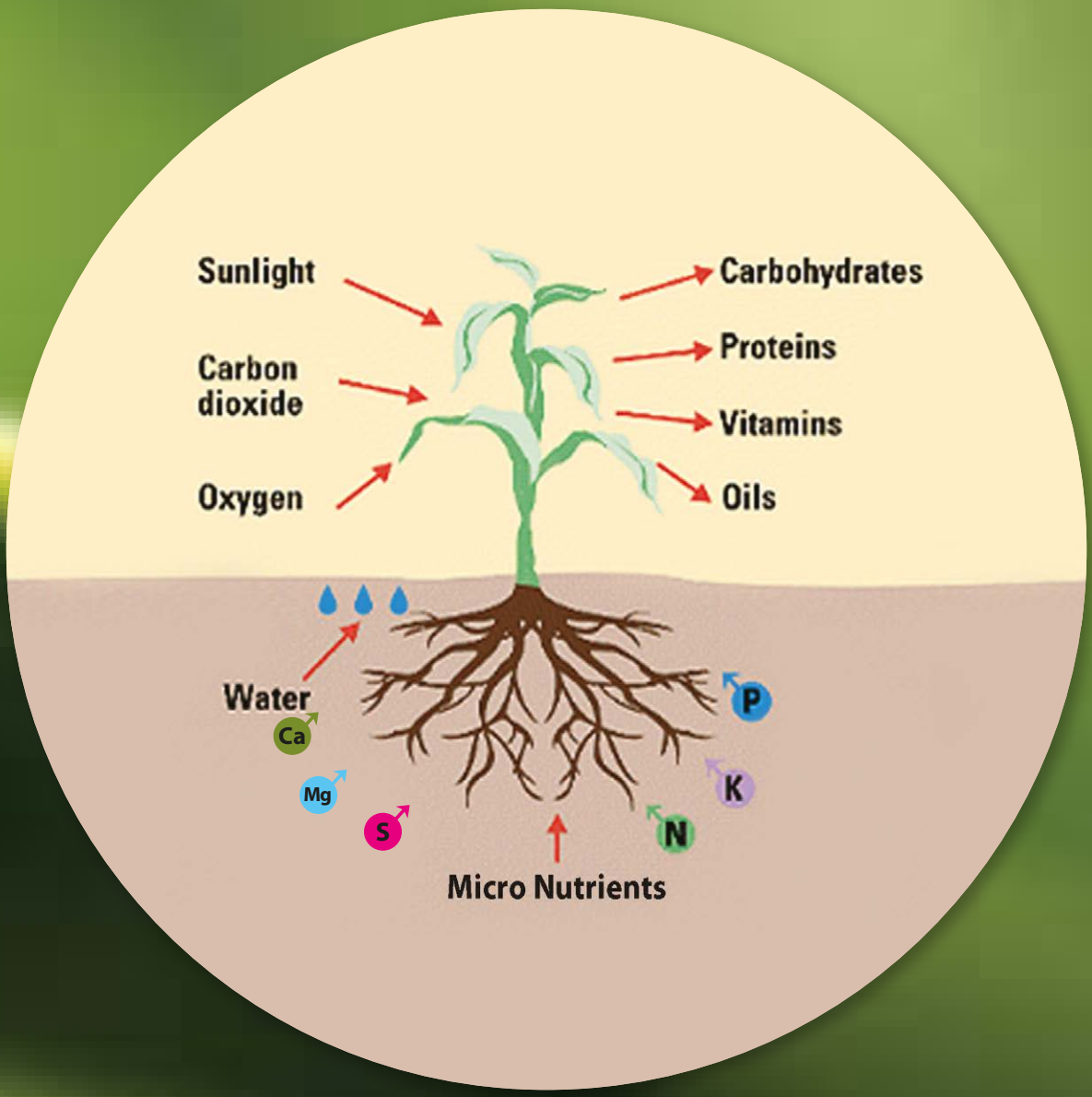


Figure 8: *schematic representation of plant nutrition.*

SOIL IS THE PRINCIPLE SOURCE OF PLANT NUTRIENTS, WHICH COULD BE DIVIDED INTO THREE MAIN CATEGORIES (TABLE 1):

- Primary nutrients (nitrogen, phosphorus, and potassium), used in relatively large amounts by plants, and often are supplemented as fertilisers.
- Secondary nutrients (calcium, magnesium, and sulphur), also used in large amounts but are typically readily available and in adequate supply.
- Micro-nutrients or trace elements, required in very small quantities but are often important for plant, they include iron, zinc, manganese, boron, copper, molybdenum and chlorine. In addition, research has shown that some plants benefit from the presence of cobalt, nickel and silicon as essential components of several enzymes and co-enzymes affecting the growth and metabolism.

Table 1: CATEGORIES OF PLANT NUTRIENTS

STRUCTURAL ELEMENTS	IONS ABSORBED BY PLANTS	[TYPICAL] IN DRY MATTER
Carbon, C	CO_2	42%
Hydrogen, H	H_2O	6%
Oxygen, O	O_2	48%
PRIMARY NUTRIENTS	**IONS ABSORBED BY PLANTS**	**[TYPICAL] IN DRY MATTER**
Nitrogen, N	NO^{-3}, NH^{+4}	1.5%
Phosphorus, P	$H_2PO_4^-$, HPO_4^{-2}	0.1-0.4%
Potassium, K	K^+	1-5%
SECONDARY NUTRIENTS	**IONS ABSORBED BY PLANTS**	**[TYPICAL] IN DRY MATTER**
Calcium, Ca	Ca^{+2}	0.2-1%
Magnesium, Mg	Mg^{+2}	0.1-0.4%
Sodium, Na	Na^+	2-10 µg/g (ppm)
Sulfur, S	SO_4^{-2}	0.1-0.4%
MICRO-NUTRIENTS	**IONS ABSORBED BY PLANTS**	**[TYPICAL] IN DRY MATTER**
Chlorine, Cl	Cl^-	0.2-2%
Iron, Fe	Fe^{+2}, Fe^{+3}	50-500 µg/g (ppm)
Manganese, Mn	Mn^{+2}	20-500 µg/g (ppm)
Zinc, Zn	Zn^{+2}	21-150 µg/g (ppm)
Boron, B	$H_2BO_3^-$	6-60 µg/g (ppm)
Copper, Cu	Cu^{+2}	5-20 µg/g (ppm)
Molybdenum, Mo	MoO_4^{-2}	<1 µg/g (ppm)

ppm: parts per million = mg/kg = µg/g (10,000 ppm = 1%)

Nutrition deficiencies

In the absence of one or more of these elements, crops might suffer sever deficiencies (Figure 9) that could compromise the quantity and the quality of yields as much as they might lead, under sever conditions, to the death of the plant.

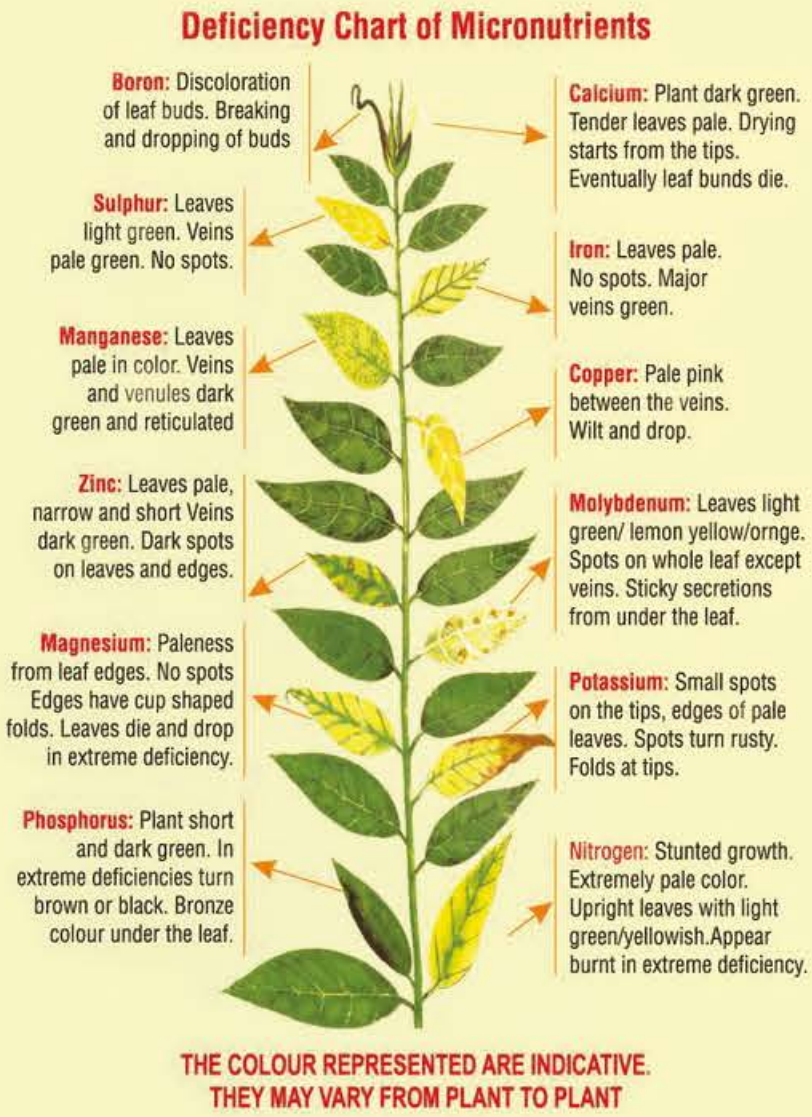
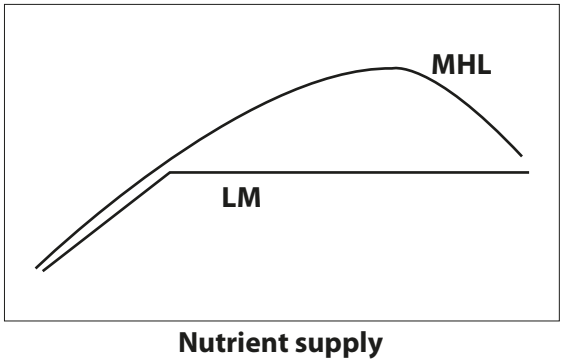


Figure 9: Deficiency chart of some plant nutrients.

The law of fertiliser use

Traditionally, fertiliser use has followed Sprengel's law of the minimum, which states that plant growth is limited by a single resource at any one time. Only after the availability of that resource increases to the point of sufficiency can another resource enhance plant growth (Figure 10).



1a: Theoretical models of plant growth responses to increasing resource availability, showing predictions of the multiple limitation hypothesis (MLH) and the law of the minimum (LM).

1b: Illustration of plant growth responses to the limiting factors.

Figure 10: Theoretical model (1a) and illustration (1b) of the low of the minimum.

NUTRITION MANAGEMENT

The demand for nutrients changes according to soil texture and through the season due to changes in the development of the crop. The ability of the soil to supply nutrients also changes throughout the season due to variations in moisture, temperature, and other factors. Impact of deficiencies also changes with stage of growth (Figure 11 and Figure 12). Knowing how the crop develops and which nutrients are in greatest demand at each stage is an important part of understanding how to manage nutrients for optimum yield.

Timing and placement of fertiliser is a key of an optimal management plan, which must include all of these considerations. Understanding how the crop grows and how physical, biological, chemical and weather conditions affect each nutrient's availability is important for maximum efficiency.

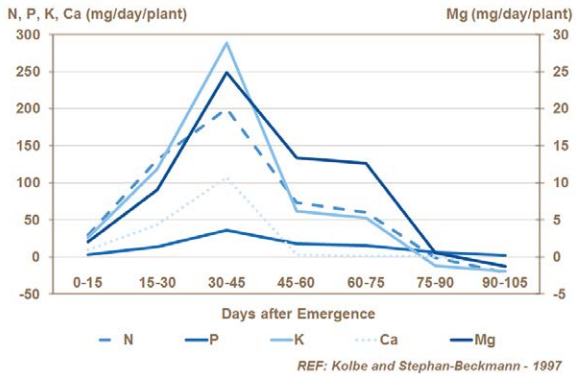


Figure 11: Nutrients uptake in different growth stages.

Figure 12: Micro-nutrients' needs in each growth stage.

Nutrition in different soil types

Soils provide the place for roots to anchor and grow. It holds the water in which the soil nutrients are changed into ions, which is the form that the plant can use. They hold the air that prevents the plants from becoming waterlogged, and the chemicals that determine soils pH, salinity and dispersivity.

Soil composition determines soil characteristics, which affects plant growth. Therefore, if plants are to grow to their potential, the soil must provide a satisfactory environment for plant growth.

Inorganic particles

The inorganic portion of soil determines its texture (figure 13) made up from the combination of small chemical compounds. Soil texture defines the pore size, which controls water and air storage and release, thus, nutrients movement (figure 14):

- **Well-structured soil (Clay loam, loam): characterised with large pores, drains well but water remains in soil, therefore, nutrients remain in the soil.**
- **Poorly structured soil (Sand, loamy sand): with very small pores, drains quickly so the soil is dry and nutrients are leached from the soil.**

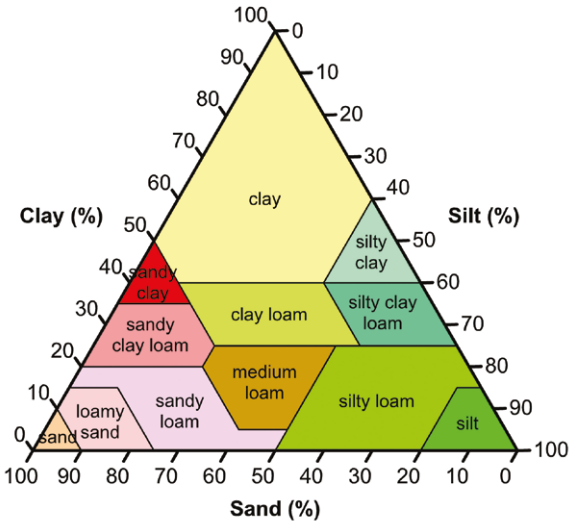


Figure 13: Soil texture triangle.

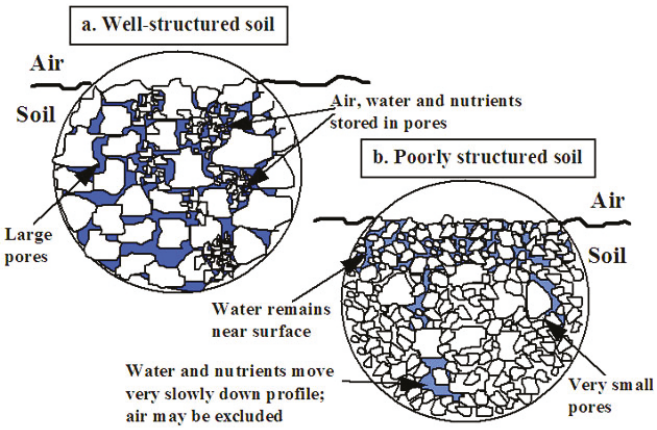


Figure 14: Air and water storage in different soils.

Organic matter

The major roles of organic matter in soil are:

- **Adding nutrients.**
- **Improving the soil's structure (pH and living organisms) (Figure 15).**
- **Improving water-holding capacity.**

Therefore, soils with low organic matter have 'poor' structure, hold little water, and erode or leach nutrients easily. Soils with high organic matter levels have 'good' structure, good water-holding capacity, and reduced erosion and nutrient leaching (Figure 16).

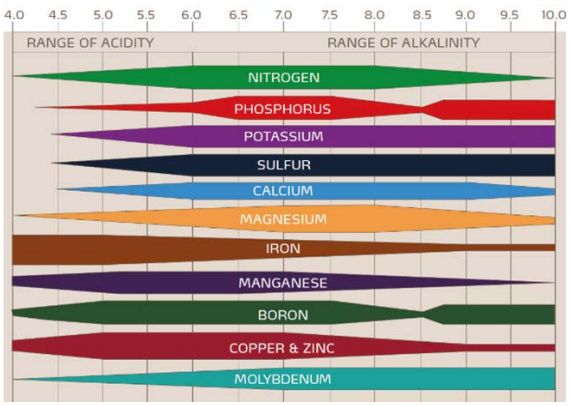


Figure 15: The influence of soil pH on nutrient availability.

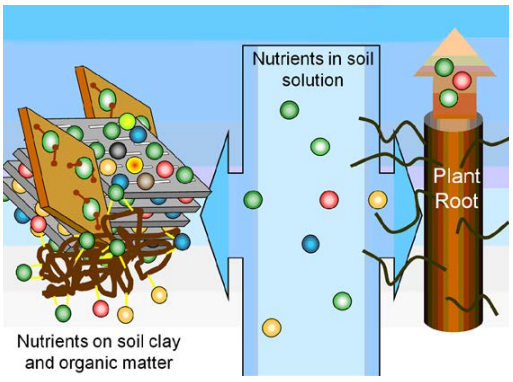


Figure 16: Moving nutrients from soil to plants.

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Mitscherlich EA; (1909). Das Gesetz des Minimums und das Gesetz des abnehmenden Bodenertrages. Landwirtschaftliches Jahrbuch der Schweiz 38: 537-552.

PRODUCTION LINES

Fertiliser production is a complete set of equipment from raw materials collection to the fertiliser packing, including different production technologies to transform the diverse raw materials into packed quality fertilisers that meet our expectations and satisfy our customers. A simplified production line is represented in the picture below (Figure 1).

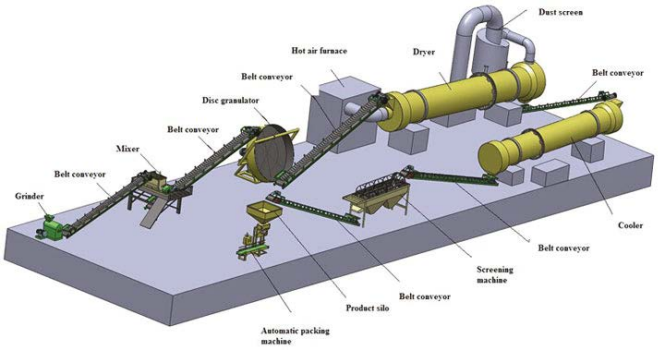

Figure 1: Fertiliser production steps from raw materials to the fertiliser.

THIS PRODUCTION LINE INCLUDES THE MAIN STEPS IN ANY FERTILISER PRODUCTION PROCESS:

MIXING | The production line begins by mixing all the nutrients together at defined amounts.

CRUSHING | Mixing is normally followed by grinding the mixed materials before the granulation process.

DRYING | When granulating, the moisture of fertiliser raw materials should be less than 25%, so drying takes place at this stage to prepare the mix to granulation.

GRANULATING | Granulation is the core step in the production line as it set the quality of the final product according to the quality standards. At this step, a rotary stirring force is used to granulate the powdery raw materials into homogeneous and smooth fertiliser granules.

COOLING | After granulation, cooling makes fertiliser particles stronger and more resistant.

SCREENING | At this stage, the granules are separated from the large particles, which need to be returned for the second crushing and granulating.

COATING | This step is used first to give a protection to fertiliser and to prevent the granules from sticking together.

PACKING | the last process is to pack bags quantitatively and automatically and prepare them for delivery.

RAW MATERIAL

Different products have different origins of raw material and follow different cycles to become minerals available for crops. However, two major factors define the selection of our raw materials: The purity and the title of nutritive element. Therefore, the selection of the origin is of primordial importance.

Nitrogen

Ammonia, which is the reaction of nitrogen from the air with hydrogen at high pressure and temperature, is the principle element for producing virtually all other forms of nitrogen-based fertilisers. Ammonia is produced in many countries of the world and is used in chemical processes for the production of a wide variety of finished nitrogen fertilisers.

The nitrogen cycle (Figure 2) explains how the diversity of N products facilitates site-specific conditions and helps an optimal plant nutrition e.g. Ammonium nitrate is readily available for crops while urea, due to its composition process, has longer availability over time (Figure 3).

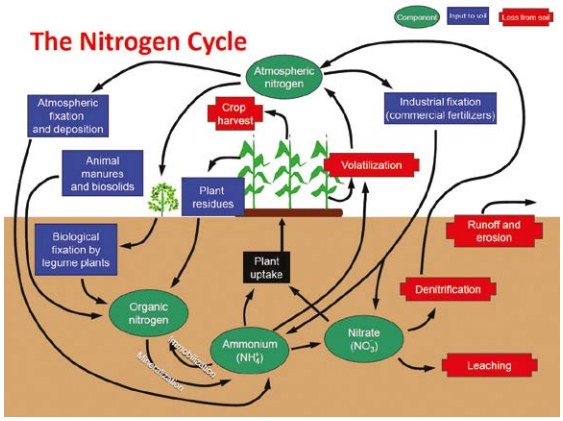

Figure 2: The nitrogen cycle.

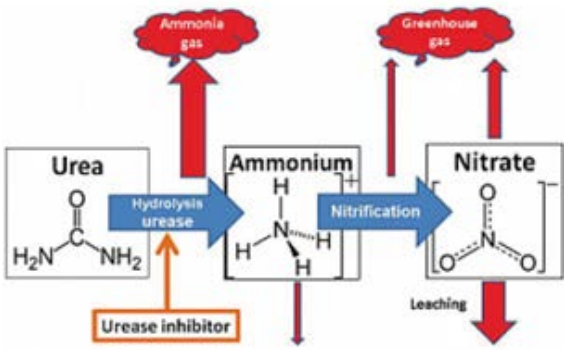

Figure 3: The urea decomposition process.

Phosphorus

Phosphorus occurs in natural geological deposits of phosphate rock, which is mainly mined from North Africa, China, India, the United States, Brazil, Australia and Russia. Most phosphate require a special treatment, which entails washing, crushing, sizing and flotation before the material is pure enough to be used as a raw material for further chemical processing.

The phosphate rock is then digested with sulfuric acid to make the phosphorus soluble and available to plants. The reaction produces phosphoric acid, an intermediate product to make different kinds of phosphate fertilisers.

Phosphorus is utilised in the fully oxidised and hydrated form as orthophosphate. Plants typically absorb either H_2PO_4 or HPO_4^{-2}, depending on the pH of the growing medium (Figure 4). However, under certain conditions plants might absorb soluble organic phosphates, including nucleic acids. A portion of absorbed inorganic phosphorus is quickly combined into organic molecules upon entry into the roots or after it is transported into the shoot.

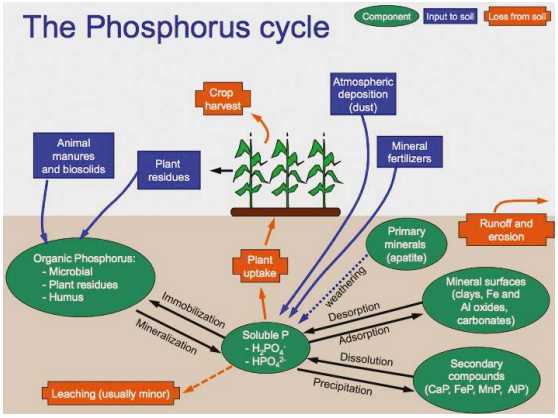

Figure 4: The phosphorus cycle.

Potassium

Potassium salts (known as Potash) are naturally mined as salts of chlorine or sulphate from sedimentary basins. The mined salts are then purified and the potassium chloride is separated to produce fertilisers. The major mining countries are Canada, Russia, Belarus, Germany, Israel and Jordan. The potassium salts liberate potassium ions which circulate from roots to upper plant parts (Figure 5).

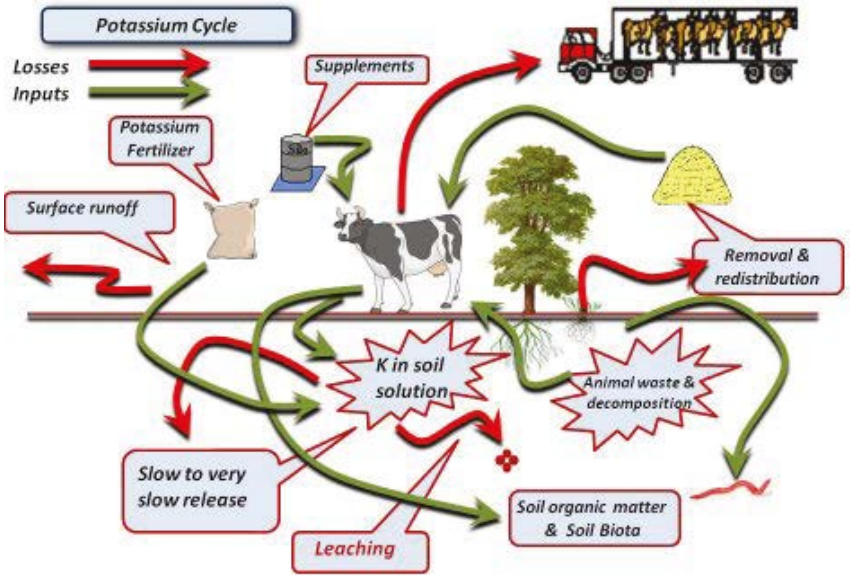

Figure 5: The potassium cycle.

BIOSTIMULATION

A plant biostimulant is any substance or microorganism applied to plants with the aim to enhance nutrition efficiency, abiotic stress tolerance and/or crop quality traits, regardless of its nutrients content. By extension, plant biostimulants also designate commercial products containing mixtures of such substances and/or microorganisms. Despite recent efforts to clarify the regulatory status of biostimulants, there is no legal or regulatory definition of plant biostimulants anywhere in the world, including in the European Union and in the United States. Despite this, some major categories are widely recognised, covering both substances and microorganisms:

- **HUMIC AND FULVIC ACIDS**
- **PROTEIN HYDROLYSATES AND OTHER N-CONTAINING COMPOUNDS**
- **SEAWEED EXTRACTS AND BOTANICALS**
- **CHITOSAN AND OTHER BIOPOLYMERS**
- **INORGANIC COMPOUNDS**
- **BENEFICIAL FUNGI AND BACTERIA**

The quality of biostimulants resides in the origin of raw material, the methods of extraction and content of the final product. For example, the amino acids are of different types (proteinogenic or non-proteinogenic). The proteinogenic amino acids could be essential (also called free amino acids), semi-essential or non-essential. There also exist three different structures of amino acids (L- structure, D- structure and mixed DL- structure), only the L- structure is of high importance for the simulation role because it is the only one natural to the crop metabolism. The extraction method determines the structure of amino acids in the extract.
Our products all have vegetable origin, are free from hormones and free from animal origin. The extraction methods are selected to guarantee the best stability and structure on the market.

PRODUCTION TECHNOLOGY

Following the introduction of an updated Fertiliser Quality Control System (FQCS), many of the production line steps and processes have been recently modernised and new technologies have been introduced (i.e. stocking silos, weighing, screening, packing). The major production technologies used in both plants for these steps are:

CONTROLLED RELEASE TECHNOLOGIES: two different technologies are used for this purpose; the first consists on melting the nitrogenous matrix (Urea), then mixing with sulphuric acid and injecting in the granulating solid at defined physical conditions. The technology confers an added protection to the fertilisers' granules (harder, less dust and more homogeneous), which allows a controlled and progressive availability of nitrogen (Figure 6). It also adds qualitative aspects to the product preventing packing and agglomeration problems.

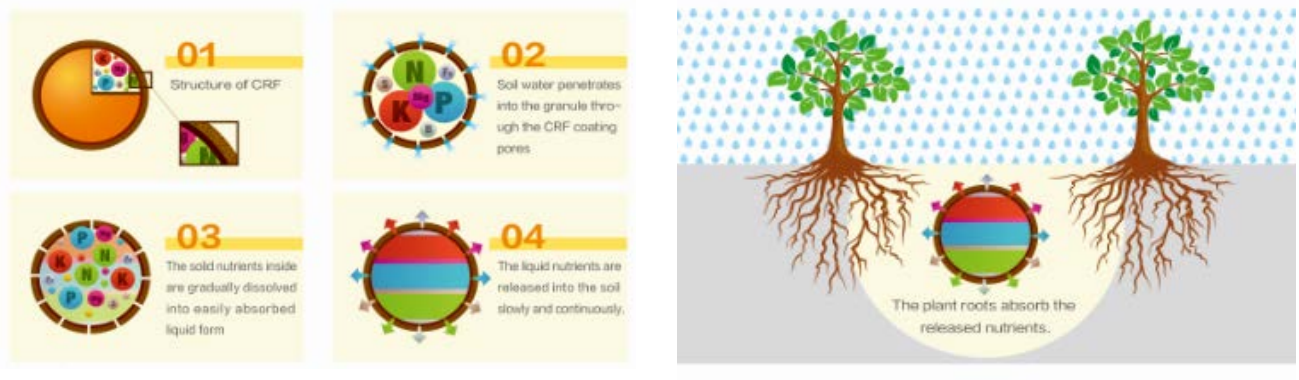

Figure 6: The release mechanism of controlled release fertiliser (CRF).

The second technology is used on products with high ureic nitrogen content. It is based on reacting urea with sulphuric acid and a chemical composition to form calcium sulphate adduct with reduced hygroscopicity and delayed release action. The technology avoids also impurities in the final product and adds minerals important to plant nutrition such as sulphur and calcium, conferring to the granules a high resistance to environmental conditions.

CHELATION | Micro-nutrients are one of the environmental factors essential for crop growth and development, but they are very unstable thus easily lost by oxidation or precipitation in soils (Positively charged metal ions, such as Zn^{+2}, Mn^{+2}, Cu^{+2} and Fe^{+2}, readily react with negatively charged hydroxide ions (OH^{-}). Chelation is a technology to protect and increase the use efficiency of micro-nutrients, encircling them by larger organic and/or mineral molecules called chelators (Figure 7).

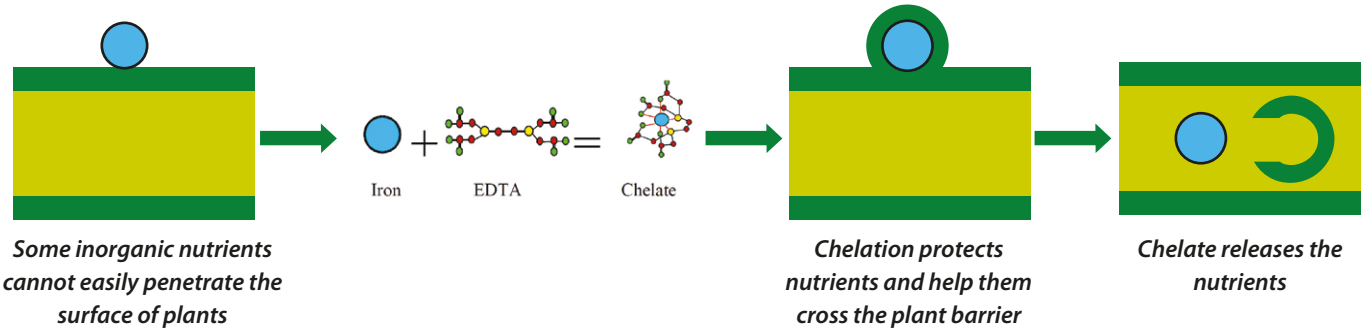

Figure 7: EDTA chelation technology.

TECNIUM TECHNOLOGY | a much automated technology for handling and treatment of pollutants emitted from some nitrogen, sulphur and carbon derivate susceptible to be oxidised or absorbed in the air, water and soil resources.

Many other technologies have been introduced to our laboratories to increase both safety and the quality of analysis performed, in order to rise the reliability of our reporting and certificates.

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