HERBAS ORGANICUM[MR]

PLANT PROTEIN
3 - 2 - 2

Herbas Organicum

ANALYSIS

Total Nitrogen (soluble) 3%
Phosphorus 2%
Potassium (soluble) 2%
Organic Carbon 54%
Organic Matter 85%
PH 4,23 (25,0° C)
Density (20° C, g/ml): 1,1210

Micronutrient	PPM
Ca	32
Mg	1500
B	10
Fe	88
Zn	53
Cu	1
Mn	26
Na	350

¿WHAT IS HERBAS ORGANICUM[MR] PP 3-2-2?

HERBAS ORGANICUM is a 100% liquid fertilizer, obtained from a natural process of thermal hydrolysis of seeds.

It contains a high level of primary and secondary nutrients, excessive concentration of live microorganisms "fungi and bacteria"; a high content of carbon, essential amino acids and organic acids. The organic acids contained in HERBAS ORGANICUM activate de photosynthetic process of plants, directly benefiting the respiration rate, chlorophyll content and increase in the yield and quality of the fruits.

HERBAS ORGANICUM[MR] PP322 Modifies the soil structure and adjusts its PH level. Physiologically stimulates the process of development and enlargement of the root system, consequently increasing the absorption capacity of micro and macro particles of nutrients from the soil.

BENEFITS

*High concentration of live microorganisms
*Great foliar tool for its high content of amino acids, macro and micro nutrients of rapid assimilation.
*Increases cationic exchange
*Instant Organic Matter (live microorganisms)
*Provides 54% Organic Carbon.
*Biofertilizer.
  -Fijación de N
  -P and K solubilization
*Biostimulant y phytofortifier
  -Better root development (PGPR´s)
  -Greater vigor and resistance to stress and diseases.
  -Improves soil structure and recovery of saline soils.
*Organic nutrient base and food grade (no risk of phytotoxicity to plant and root structure).

PHYSICAL
Helps structural development and favors water retention.

CHEMICAL
Increases cation exchange due to the high content of organic matter.

BIOLOGICAL
Stimulates the bacterial and fungus development generating a better symbiosis with the roots.

INGREDIENTS

- Direct soluble portions of soybean, canola, wheat, and yellow corn seeds.
- LIVE microorganisms contained in HERBAS ORGANICUM[MR]:

FUNGUS (UFC/TON)

Trichoderma harzianum.....8.8x10^{8} SPORES/TON
Isaria fumosorosea .....8.8x10^{8} SPORES/TON
Aspergillius sp ..... 6.3x10^{5} SPORES/TON
Penicillium sp ..... 1.5x10^{5} SPORES/TON

BACTERIA (UFC/TON)

Pseudomonas fluorescens ..8.4x10^{8} CFU/TON
Bacillus thuringiensis .....8.8x10^{9} CFU/TON
Bacillus subtilis .....6.4x10^{9} CFU/TON
Azotobacter sp .....3.7x10^{8} CFU/TON

- Concentration of EXTRA LIVE microorganisms used in HERBAS ORGANICUM[MR] PLANT PROTEIN 3-2-2:

FUNGUS (UFC/ML)

Trichoderma harzianum.....6.2x10^{5} SPORES/ML

BACTERIA (UFC/ML)

Azospirillum brasilense..... 6.2x10^{5} CFU/ML
Pseudomonas fluorescens... 6.2x10^{5} CFU/ML
Bacillus subtilis..... 6.2x10^{5} CFU/ML
Bacillus thuringiensis..... 6.2x10^{5} CFU/ML

*CFU (colony-forming bacterial units)

COMPATIBILITY

This product is compatible with all types of fertilizers; however, it is recommended to do compatibility tests before mixing the products.

APPLICATION.

The application of HERBAS ORGANICUM[MR] PP322 will depend on the needs of the soil and the particularities of each agricultural crop.
Unce applied HERBAS ORGANICUM[MR] PP322 and any other fertilizer, it´s very important to wash the irrigation system with the last pulses only with water.
It is vital to wash and clean the filters as often as the irrigation provider has indicated.

INSTRUCTIONS FOR USE

Shake for 45 to 60 seconds before using.
100% water soluble.
It can be applied through any irrigation system.
Zero hours of withdrawal in harvest.

HANDLING AND STORAGE

*Use immediately after mixing
*Store in a dry place away from direct sunlight
*Derived from microbial activity, gases are generated in the interior of the container, do not obstruct the exit of said gases.

PRESENTATIONS:

264 GAL / 52.83 GAL / 5.28 GAL / 0.26 GAL

AMINOGRAM

Aminoacid contents	Quantity	Units
Glicine (Gly)	79,41	mg/100g
Alanine (Ala)	460,60	mg/100g
Serine (Ser)	20,68	mg/100g
Proline (Pro)	1388,68	mg/100g
Valine (Val)	711,61	mg/100g
Threonine (Thr)	640,01	mg/100g
Isoleucine (IIE)	3668,00	mg/100g
Leucine (Leu)	292,83	mg/100g
Aspartic Acid (Asp)	231,83	mg/100g
Lysine (Lys)	84,15	mg/100g
Glutamic Acid (Glu)	1569,62	mg/100g
Histidine (His)	68,03	mg/100g
Phenylalanine (Phe)	356,50	mg/100g
Arginine (Arg)	216,55	mg/100g
Tyrosine (Tyr)	332,26	mg/100g
Asparragine (Asn)	20,30	mg/100g
Glutamine (Gln)	21,80	mg/100g

Observations:
The decimal sign is a comma "," on the line according to the standard NOM-008-SCFI-2002

TYPE OF CROP		DOSES GALLONS PER ACRE RECOMENDED
SOLANACEAE		2.5-5 gal/acre per week until de end of the production cycle. Foliar from 5 to 10% every 15 to 20 days.
BERRIES		2.5-4 gal/acre a day after transplant until the end of the production cycle. Foliar from 5 to 10% every 15 to 20 days.
CUCURBITACEAE		2.5-5 gal/acre per week until de end of the production cycle. Foliar from 5 to 10% every 15 to 20 days.
FRUITS		6.5-8 gal/acre per month Foliar from 5 to 10% every 15 to 20 days.
OTHER CROPS		2.5-5 gal/acre per week until de end of the production cycle. Foliar from 5 to 10% every 15 to 20 days.
CANNABIS		2.5-4 gal/acre per day after transplant until the end of the production cycle. Foliar from 5 to 10% every 15 to 20 days.
AGAVE TEQUILANA WEBER BLUE VARIETY		5 to 10% via drench every 15 days until de end of the production cycle. Foliar from 10 to 30% every 15 to 20 days.
AVOCADO		5 gal/acre per irrigation until the end of the production cycle. Foliar from 6 to 12% every 15 to 20 days.
COCONUT		5 gal/acre per irrigation during its plantation and until the end of the production cycle. Foliar from 6 to 12% every 15 to 20 days.

SPECIFIC FUNCTION OF EACH AMINO ACID

GLICINE 79,41 mg/100g	• Intervenes in the porphyrins synthesis • Fundamental structure pillars of chlorophyll and cytochromes • Main aminoacid with chelating action • Favors the formation of new shoots. • Together with lysine, participates in the resistance systems of the plant • Improves pollination and fertilization • Leaf tissue formation
ALANINE 460,60 mg/100g	• Enhances chlorophyll synthesis • Increases Photosynthetic activity.
SERINE 20,68 mg/100g	•Intervenes in resistance mechanisms, under adverse environmental conditions.
PROLINE 1388,68 mg/100g	• Fundamental aminoacid for the hydric plant balance • Keeps the photosynthesis in the presence of adverse conditions • It accumulates considerably under environmental stresses, being able to increase up to 25 times of normal, lowering arginine and serine. • Increases the germination rate of pollen grains even facing adverse conditions be present • Promotes stomatal opening.
VALINE 711,61 mg/100g	• Under adverse conditions, they intervene in resistance mechanisms • Promotes sed germination.
THREONINE 640,01 mg/100g	• Important for the start and growth of the plant. • It is involved in all cell division processes. • Power source for the plant.
ISOLEUCINE 3668,00 mg/100g	• Helps improve plant tissues • Prevents plant anomalies • Ensures correct operation • Energy producer
LEUCINE 292,83 mg/100g	• Increases production improving fertilization and fruit strengh • Improves fruit quality.
ASPARTIC ACID 231,83 mg/100g	• Intervenes in all metabolic process of the plant
LYSINE 84,15 mg/100g	• It is involved in mechanisms of resistance to external stresses and enhances, like alanine, the synthesis of chlorophyll. • It is essential for pollen germination and pollen tube elongation, in turn increasing fruit set.

Observations: The decimal sign is a comma "," on the line according to the standard NOM-008-SCFI-2002

SPECIFIC FUNCTION OF EACH AMINO ACID

GLUTAMIC ACID. 1569,62 mg/100g	• Stimulates plant growing • Stimulates phisiological process of new born and young plant leaves • Increases the germination rate of pollen grains and the elongation of pollen conduct. • The foliar pathway helps the plant to synthesize the amino acids that it requires at that time.
HISTIDINE 68,03 mg/100g	• Protects plants from harmful radiation. • Maintains healthy tissues. • It is involved in the synthesis of tryptophan.
PHENYLALANINE 356,50 mg/100g	• It plays an essential role, acting as a precursor of both proteins and the synthesis of phenylpropanoids. The importance of the synthesis of Phenylalanine is such that it´s estimated that more than 30% of the CO2 fixed by plants in photosynthesis is finally diverted towards the synthesis of this amino acid, and from there towards the biosynthesis of phenylpropanoids, more particularly lignins, one of the fundamental components of the secondary cell walls of plants.
ARGININE 216,55 mg/100g	• Main source of storage and transport of nitrogen that the plant has to initiate its growth. • Induces the synthesis of fruit and flower hormones. • Important for overcoming stress conditions. • Helps to increase the number and length of the roots. • Improves the solubility and assimilation of nutrients. • Has a rejuvenating action on the plant. • Main Amino Acid of translocation in the phloem. • One of the main Amino Acids in the rhizosphere along with glutamic acid and aspartic acid.
TYROSINE 332,26 mg/100g	• Alkaloid precursors against pathogens and herbivores. • Helps and improves pigment problems in the plant.
ASPARRAGINE 20,3 mg/100g	• Transports nitrogen to all plant systems
GLUTAMINE 21,8 mg/100g	• Intervenes in all nitrogen asimillation process of the plant In plant tissues, practically all of the nitrogen is assimilated by a reaction catalyzed by the enzyme glutamine, followed by another reaction catalyzed by glutamate synthetase and an aminotransferase.

Observations: The decimal sign is a comma "," on the line according to the standard NOM-008-SCFI-2002

Contribution of organic carbon in HERBAS ORGANICUM[MR]

The organic carbon contained in HERBAS ORGANICUM[MR] favors the aggregation of the soil or substrate and consequently intervenes in the distribution of the porous space of the soil or substrate, benefiting various physical properties, such as usable humidity, air capacity and movement of water and gases in the soil. In addition, organic carbon, formed by compounds of diverse chemical nature and state of decomposition, intervenes in the chemical properties of the soil, increases CEC (Cation Exchange Capacity) and Buffer capacity on the reaction of the soil (pH), it also intervenes in the mineralization of organic matter, various nutrients are released for plants, many of which are provided in form deficient by soil minerals. Soil organic carbon intervenes in biological properties, basically acting as an energy source for heterotrophs organisms in the soil. The SOC, through the effects on the physical, chemical and biological properties of soil has turned out to be the main determinant of its productivity.

Losses in soil biodiversity have been shown to affect multiple ecosystem functions, including SOC decomposition, nutrient retention and the nutrients cycle (FAO and ITPS, 2015) Poor land management practices and environmental changes are affecting underground communities globally, and the decreases resulting from soil biodiversity reduce and impair these benefits (figure 3) (Wall et al.; 2015).

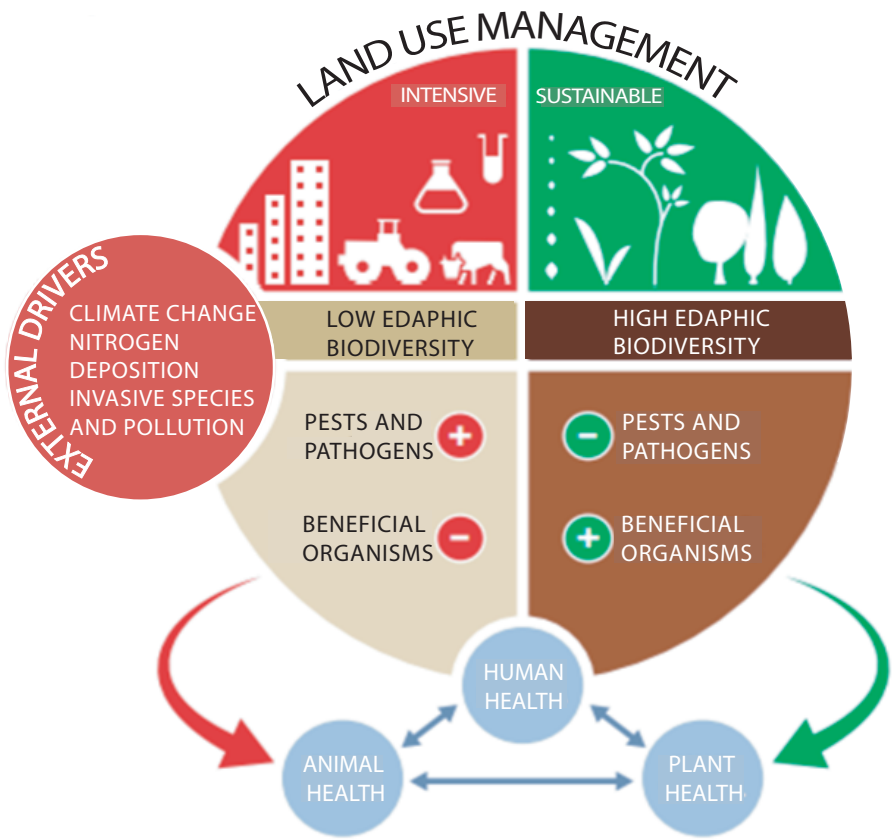

FIGURE 3. impact of land management on soil biodiversity

Modified by Wall et al., 2015