



Technological line for producing
of liquid organic fertilizers
and plant growth stimulators based
on humic and fulvic acids



PROJECT ADVANTAGES

- Construction of a production facility based on the latest achievements of science and engineering in the extraction of humic acids
- Possibility to obtain EU and US organic certification
- Constant guaranteed supply of certified raw materials
- Production and sale of effective organic fertilizer and plant growth stimulator in the domestic and regional markets
- Continuous support by Agronama specialists
- Ability to use TM Fertil Verde.
- The technology developed by the specialists of Agronama allows to produce full range of fertilizers, including organic-mineral mixtures based on fulvic acids, as well as amino acid concentrates
- Unique technology of production allows to produce fertilizers with increased biological efficiency



SPECIFICATION



- Metal constructions
- Water preparation system
- Preparation unit tanks for first and second phase
- Ultrasonic cavitation system
- Storage tank equipped with flow-meter system
- Emulsifier disintegrator
- Decanter centrifuge
- Centrifugal pump
- Mechanical and membrane filter
- Filter platform collector
- Pipes and fittings
- All joints are tic and orbital welded, polished and treated
- Stainless steel Teflon check valves, Pipe tri clamp joints.
- Automatic weight filling machine for gallons.
- Monoblock filling and capping machines
- Automatic packing unit
- Feeding and collecting tables
- Automatic control system with touch screen system.

PROJECT REQUIREMENTS

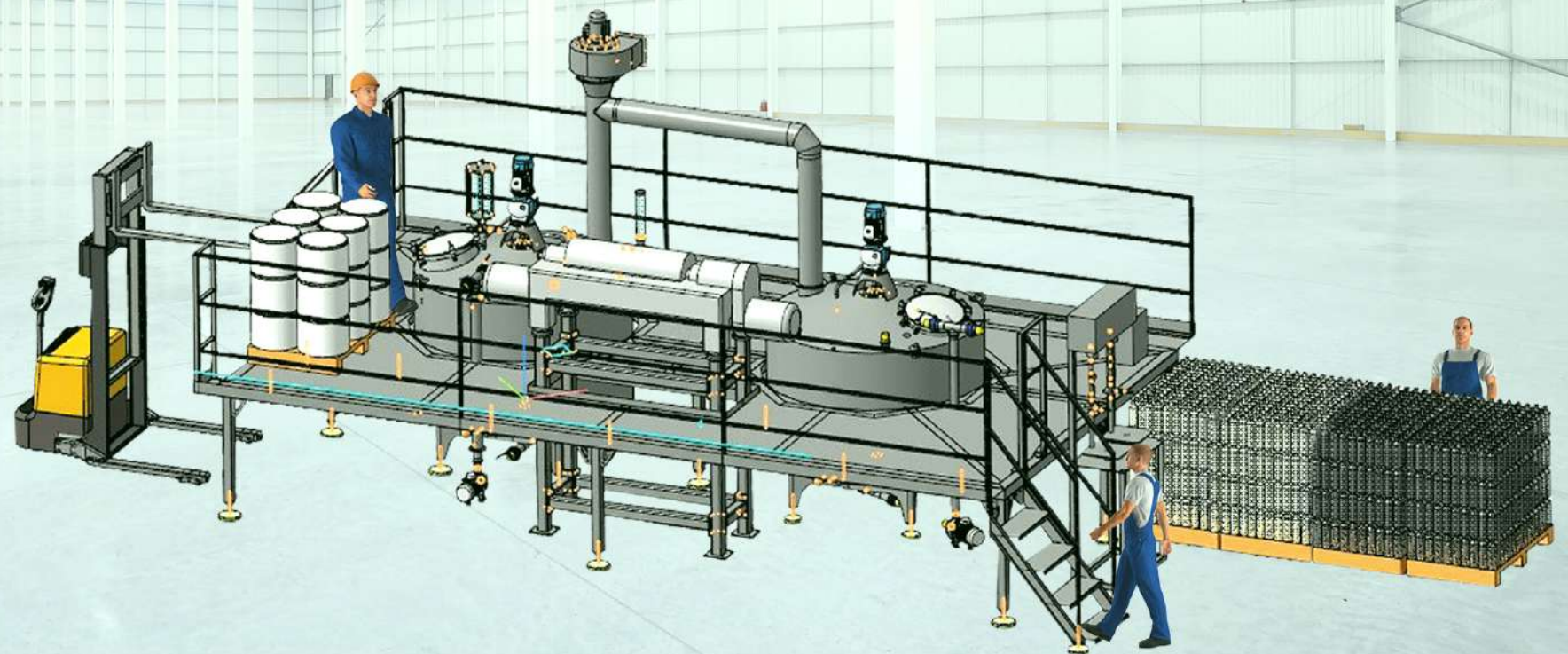
1500 sq. meters
required area

6 meters
ceiling height

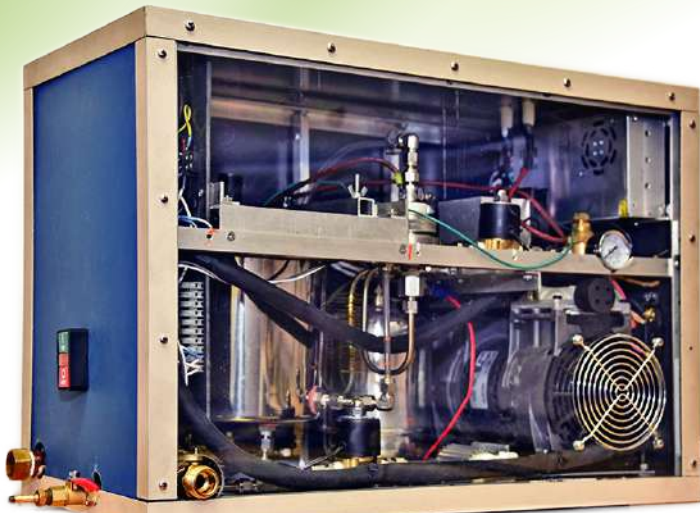
30 kWt
electricity supply

1 m³ per hour
water supply

6 persons
workers



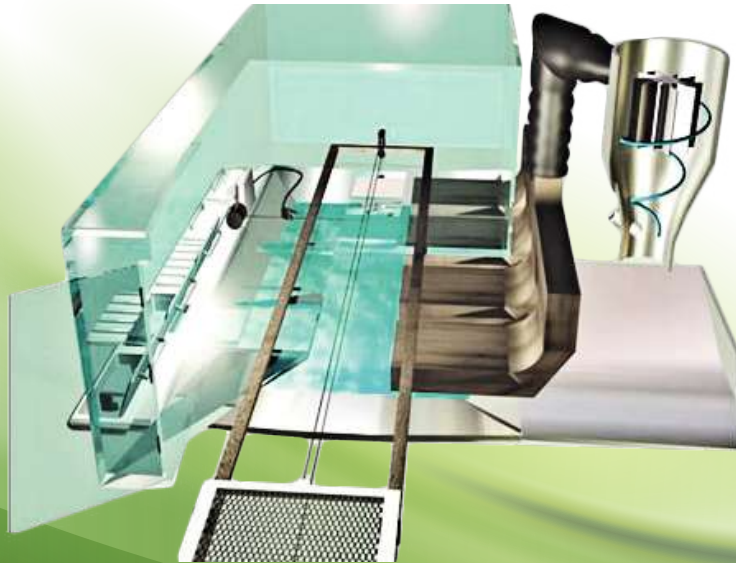
WATER PREPARATION SYSTEM



The technology of water preparation using cold plasma initiate various physicochemical processes in aqueous solutions:

- the destruction of pathogenic microorganisms, including bacteria and their disputes, mushrooms, viruses and prions;
- the formation of insoluble compounds with almost all ions of heavy metals (with the exception of alkaline) and precipitate them;
- decomposition of various types of persistent pollutants, destruction of dissolved resistant organic substances like pesticides, phenols, anilines, various dyes, toxic chemicals, etc.;
- Synthesis of ultrafine particles with unique properties - increased sorption and catalytic activity;
- Activation and structuring of water

DESCRIPTION OF TECHNOLOGY



A gas discharge (plasma) is initiated via a plasma power supply in an oxygen and nitrogen containing gas flow. This ionizes the gas flow, creating ions, radicals and reactive species. This discharge will provide a number of key chemical processes:

- The plasmachemical production of NO and NO_x.
- The plasmachemical production of ozone.
- The plasmachemical production of reactive species including (but not limited to) OH, HO₂, and O(³P).

Effect of Plasma Activated Water

- Increase rooting speed
- Reduce water consumption
- Enhance seed germination
- Stimulate plant growth
- Prevent pests

ULTRASOUND EXTRACTION



Ultrasonic extraction technology increases the yield of the extracted components and shortens the extraction time.

Ultrasonic extraction technology is used in technological scheme, which uses ultrasonic assisted solvent for extraction.

The high speed and strong cavitation effect and stirring effect produced by sound waves can maximize efficient of pure active components extraction.

Also ultrasonic extraction technology in the extraction process does not need heating so it has no harmful influence on organic heat-sensitive molecules, so as to affect the quality of the extracted components.

Advantages of Ultrasonic extraction technology

Implementation of this new method of extraction and separation preparation, and improves the tedious traditional extraction process as well as:

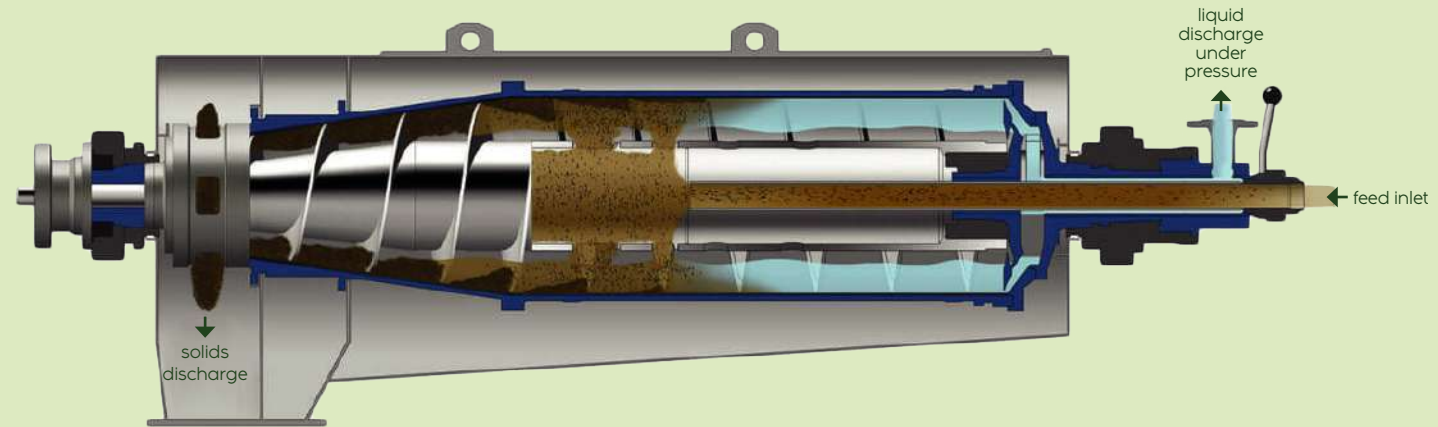
- shortens the extraction time
- increases the yield of the extracted components
- improves the quality of the extracted components
- improves the production speed
- reduce the production cost
- improve the economic benefit of the enterprise

Ultrasonic extraction technology extracts the required components, and the effective components in the extract content are high, which is conducive to further preparation and separation stages.

SEPARATION SYSTEM

Effective separation of solid parts from liquid solution is reached by high effective centrifugal system.

Subject to centrifugal forces, the denser solid particles are pressed outwards against a rotating bowl wall, while the less dense liquid phase forms a concentric inner layer in a decanter centrifuge. Different dam plates are used to vary the depth of the liquid — the so-called pond — as required.



The sediment formed by the solid particles is continuously removed by the screw conveyor, which rotates at a different speed than the bowl.

The centrifugal force compacts the solids and expels the surplus liquid. The dried solids then discharge from the bowl. The clarified liquid phase or phases overflow the dam plates situated at the opposite end of the bowl.

Baffles within the centrifuge casing direct the separated phases into the correct flow path and prevent any risk of cross-contamination.

TANKS AND PLATFORMS

All units within production line are produced from high quality stainless steel



Corrosion resistance

All stainless steels units have a high resistance to corrosion. Low alloyed grades resist corrosion in atmospheric conditions; highly alloyed grades can resist corrosion in most acids, alkaline solutions, and chloride bearing environments, even at elevated temperatures and pressures.

High and low temperature resistance

Some grades will resist scaling and maintain high strength at very high temperatures, while others show exceptional toughness at cryogenic temperatures.

Strength

The cold work hardening properties of many stainless steels can be used in design to reduce material thicknesses and reduce weight and costs. Other stainless steels may be heat treated to make very high strength components.

Aesthetic appeal

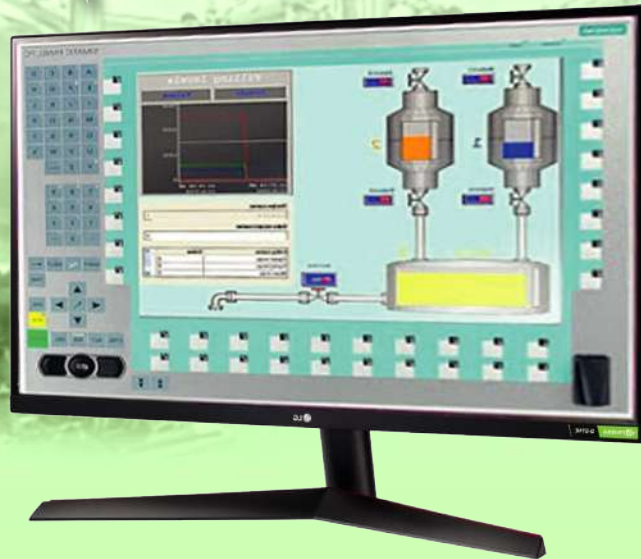
Stainless steel units has high quality surface finishing and pleasing appearance.

Hygienic properties

Stainless steel units has high cleanability characteristics

AUTOMATIC CONTROL SYSTEM

**All indicators are displayed
on computer system monitors**



Our automation systems provide reliable status feedback throughout the production cycle, operative monitoring and control of main production indicators.

Our control units provide exceptional surveillance and control of the fertilizers production process.

The control units have well-proven features designed to ensure maximum safety during production, regardless of conditions.



PACKING

The automatic packaging line allows to pack final products in bottles and canisters from 0.5 to 20 liters

Automatic labeling machine can be added to production line

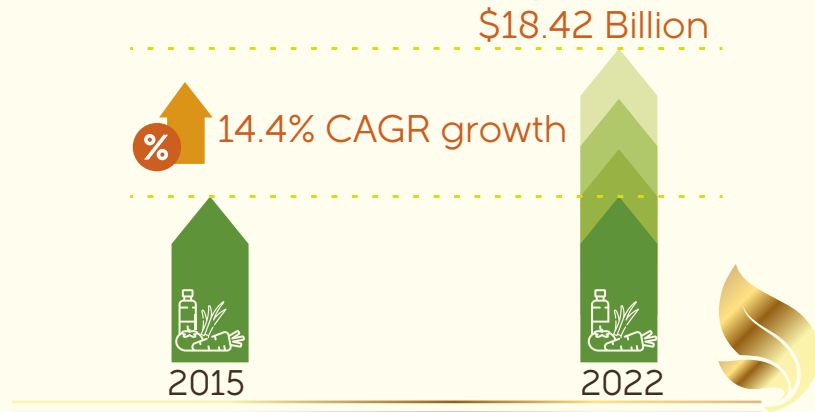




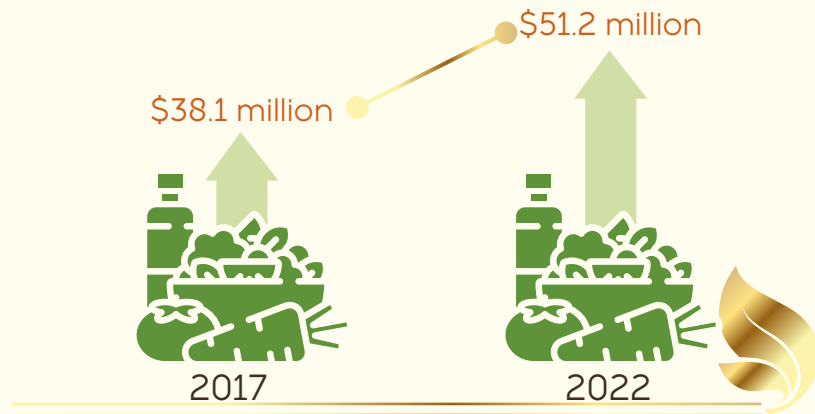
Humic and fulvic acids in agriculture



ORGANIC F&B MARKET IN MIDDLE EAST



ORGANIC F&B CONSUMPTION IN UAE



AREA UNDER ORGANIC FARMS IN UAE



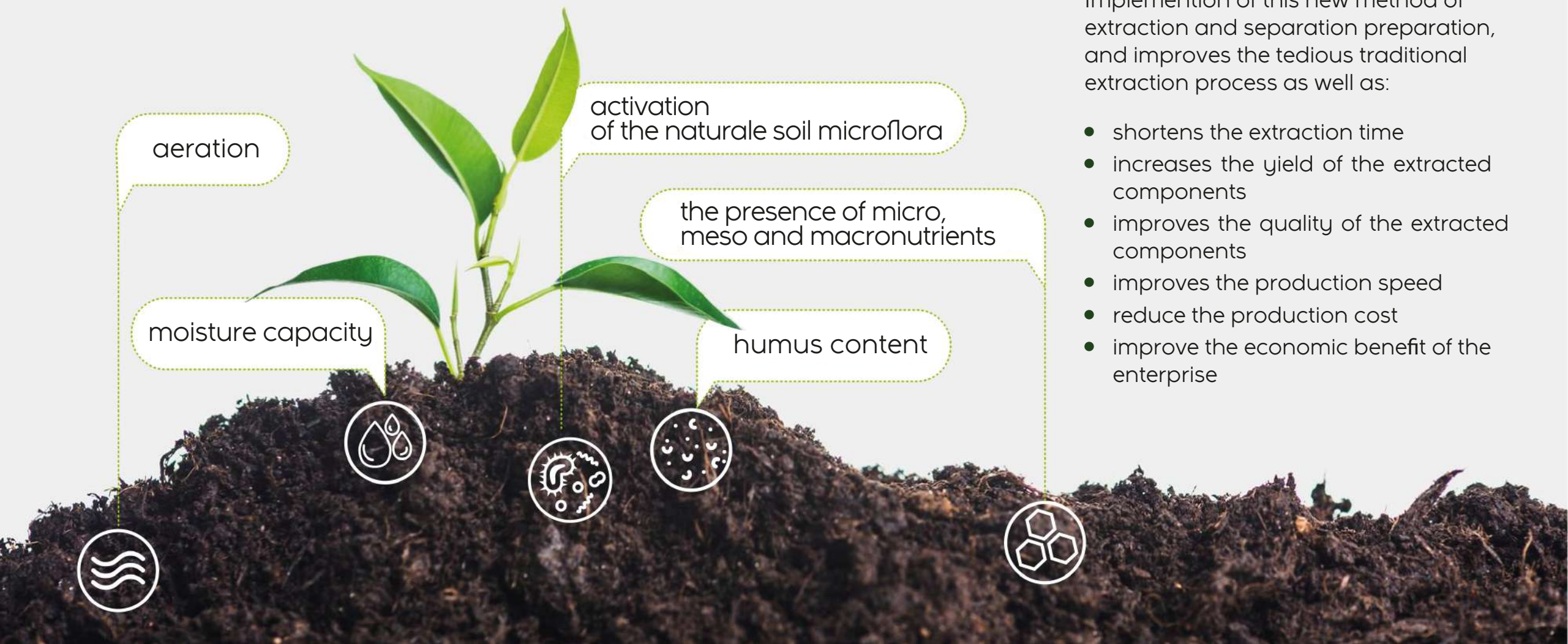
1.8 millions sq meters

REGIONAL GREEN AND ORGANIC PROGRAMS

- National Food Security Strategy 2051 (UAE)
- Food security national program UAE
- The Saudi and Middle East Green Initiative
- Organic Farming Action Plan (Saudi Arabia)



RESULT OF IMPLEMENTATION OF THIS NEW METHOD

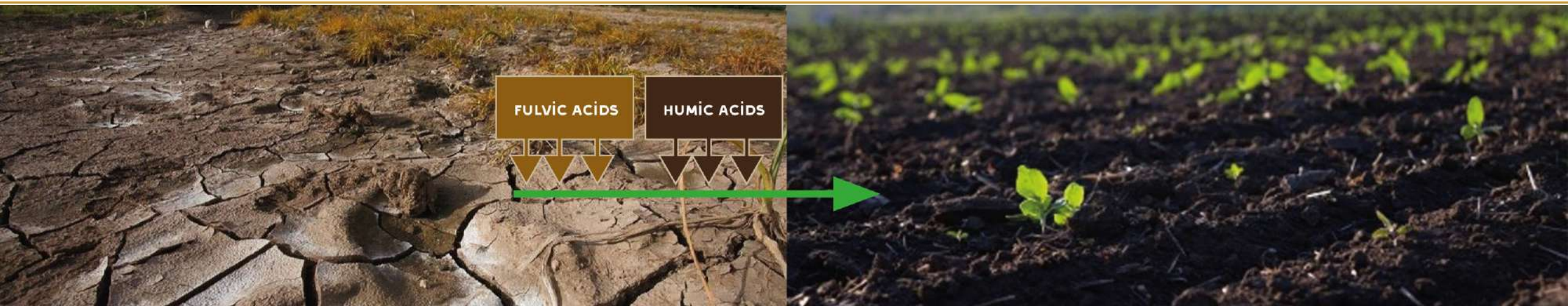


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THE PHYSICAL BENEFITS

- enhancing the soil structure and preventing the high water and nutrient loss in sunlight and sand soils
- helps in converting the sand soils into fertile soils by decomposition
- prevents soil cracking, surface water runoff, and soil erosion
- helps loosen and crumble the soil
- increases the aeration and workability of the soil
- resist drought and darken the color of the soil which help in the absorption of solar energy



THE CHEMICAL BENEFITS

- neutralization of acid and alkaline salts and regulate pH value
- improves the absorption of both organic and mineral substances
- retains water-soluble inorganic fertilizers
- increase the uptake of nitrogen and nutrients
- high cation-exchange capacities of humic acid promote the conversion of nutrient elements such as Nitrogen, Phosphorous, Potassium, Ferrous, and Zinc, along with other trace elements
- stimulates the plant enzymes, organic catalysts, proliferation of desirable micro-organisms, root respiration, and root formation
- improves the plants' natural resistance against disease and pest and enable better uptake of nutrients by 40%
- promotes chlorophyll generation as well as sugars and amino acids in plants to support photosynthesis



NUTRITION COMPLEX

Technological line for producing of liquid organic fertilizers and plant growth stimulators based on humic and fulvic acids allows to produce full complex of nutrients essential for plants growing



DOSAGE OF FERTIL VERDE NUTRIENTS

Main plant nutrients FERTIL VERDE VEGA and FERTIL VERDE FLORA are innovated complexes of all essential macro and microelements which are necessary for plants on vegetative and flowering stage.

FERTIL VERDE HUMIC and FERTIL VERDE FULVIC are unique plant growth regulator, based on extract of humic and fulvic acids from high quality leonardite.

FERTIL VERDE HUMIC	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	2,0	2,0	1,5	1,5	1,0-1,5	1,5	1,0-1,5	10l/90l
FERTIL VERDE FULVIC	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	0,7	2,0
FERTIL VERDE VEGA		2,0-2,5	1,5-2,0		1,5-2,0	2,0-2,5	3,5			3,5	3,5		3,0-3,5	3,0-3,5			
FERTIL VERDE FLORA	3,0-3,5			3,5		2,0-2,5	2,0-2,5	3,5	3,5			4,0					
FERTIL VERDE AMINO+	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
	Tomato, pepper, eggplant, cucumber	Pumpkin, onion, early cabbage, cauliflower	Garlic, radishes, parsley, celery, parsnips	Melon, watermelon	Dill, lettuce, asparagus, spinach, basil	Strawberries, raspberries, currants, blueberries and other berry crops	Apple, pear, plum, cherry, sweet cherry, apricot, peach, plum, walnut	Potatoes, carrots, beets, radishes, late cabbage	Beans, peas	Buckwheat, rye, wheat, oats, barley	Corn, sunflower, canola, soybeans, rice, cotton	Grapes	Grass (lawns)	Flowers	Decorative, including coniferous, green hedges	Spraying	Seeds and seedlings treatment/ cloning

● per 1000 kg of seeds