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Bio-Nourishing ERGOFIT

Introduction

ERGOFIT is a liquid azotic (substance containing nitrogen) organo-mineral biofertilizer which provides plants with everything they require when they demand it enzymes, amino-acids, micro-elements, macro-elements, auxins [plant hormones], vitamins, humic acids, fulvic acids, crenic acids, hormone producing substances etc.) enabling them to resist disease and develop at an accelerated rate. Plants' immune systems are stimulated by ERGOFIT to produce more phytoalexins (plant antibiotics) when under attack which enhances their defence dramatically. ERGOFIT accelerates development by providing the optimal nourishing conditions which eliminate the stresses usually encountered. Plants with larger, fleshier, more numerous leaves stimulate a higher quantity and quality of produce. The growth gap of stressed, overworked land can be regained and surpassed in an extremely short period by ERGOFIT.

The use of inorganic products is recommended for a plant affected with a disease. However a systematic, regular application of ERGOFIT will stimulate and cure the plant just as effectively. If it is used continuously you can reduce the prescribed amount of inorganic product by up to 50% and after 2 or 3 seasons stop the use of these compounds altogether. ERGOFIT is completely natural and has been approved by the Biologic Agricolture, a recognized organic classification authority. Since 1990 the use of ERGOFIT has increased in bounds. Here are some applications in countries which have had enormously successful experiences. The common dosages used was 20-30 kg per hectare:

Italy and Spain (vine, fruit trees, oranges, sugar beet, olives, tobacco, vegetables,
mushrooms, melon, watermelon, strawberries, salads etc.)
Brazil (coffee, banana, cotton, sugar cane, rice, tobacco, corn, soya)
Ecuador (banana) **Cuba** (sugar cane, rice).

All the produce generated by plants depend on the chlorophyls' utilization the sun's energy. Photosynthesis transforms carbon dioxide in the atmosphere, water and minerals (azotic compounds, phosphorus, potassium, sulphur, calcium, magnesium, iron, etc.) into living organic material. This process is influenced by the following factors:

- Number of leaves.
- Size of leaves.
- Number of chloroplasts and their efficiency.
- Quantity of chlorophyll.
- Availability and assimilability of the nourishing elements.
- Water availability.
- Temperature.

As ERGOFIT increases the abundance and size of the leaves it directly stimulates the production of chlorophyll which in turn builds up the number of chloroplasts while increasing their efficiency. With a greater surface area exposed to sunlight more energy is captured. This energy is utilized more effectively now because the principle nutrients are available and assimilable and the chlorophyll has its' chloroplasts working at maximum efficiency. In these conditions crops can grow stronger in all aspects, in particular:

- Cells are larger.
- Cuticles are thicker and stronger and so less vulnerable to disease and
- phytophagous (insect) attacks.
- Lymphatic vessels get bigger letting the lymph circulate easier thus consuming
- less energy.
- Plant fibres expand in size due to the increased levels of sugars, cellulose
- fibres, lignin, vitamins, mineral salts, organic acids, etc.

Plants don't produce food to satisfy animals' nutritional needs, but to help propagate their own species. Propagation probabilities are directly related to the quantity, salubrity and vitality of the nourishing reserves that the propagation material (pods, seeds, fruits, spores) have. Building on the assumption that plant seeds have been nurtured to have the maximum probability of succeeding that their 'parents' can offer. We can conclude that plants will produce as many big fruits with as abundant amounts of pulp, sugary content, vitamins, antioxidants and preservatives as they can manage. They will grow as large and as fleshy leaves as they can with what's available. The same principle is valid for bulbs, roots and tubers.

Plants don’t possess a ‘means of transport’, they can’t run away from areas where they experience fungal infections and insect attacks. They have their own incredibly robust, evolved and bio-engineered defence systems. Unifying the best properties in active and passive defences they:

- Strengthen their membranes, which makes them resistant to damage from cryptogamous (plant like organism) attacks.
- Produce antibodies, bactericides
- Manufacture combinations of repellent, noxious and toxic substances for
- fighting phytophagous elements.

Regular use of ERGOFIT creates the conditions where plants can grow and produce to the best of their potential.

Natural Forces

ERGOFIT treated crops are robust, they resist extreme weather such as drought, temperature variance, extreme temperatures, wind, hail and high moisture (air and soil). This prolongs the harvesting period and provides more effective quality control and higher product standards.

Soil Exhaustion

Plants send out explorer roots to identify nourishing soil. They use a capillary element (a root hair) which explores a very small space (micro-habitat) and samples the nutrients available. If there is only enough ‘food’ for one root hair the plant deposits toxins along the exterior surface of this space to stop the occupied area from being explored by other capillary elements.

When the food is finished the plant makes the micro-habitat toxic and sheds off its root hair. This prevents other root hairs from exploring soil which has been exhausted. Through chemical fertilization you can replenish the nutrients in the spaces but if there is not sufficient bacterial activity to detoxify the soil these areas will still be avoided by new roots. This is why it is possible for the efficiency (nutrients absorbed by plant

nutrients applied to land) of chemical fertilizers to be below 15%. ERGOFIT contains the enzymes and bacteria that destroy these toxins and they actually transform the poison back into food for plants. This emulates the properties of non-agricultural land which is full of organic material, high in micro-biological activity and does not get affected by soil tiredness. The same applies to any soil rich in humus. Soil exhaustion does not occur where humus is present.

Cryptogamous Attacks And Bacteriosis

These diseases initiate from situations where imbalances, nutrient deficiencies and soil exhaustion have set in. In other words it is the unavailability, when the plant needs it, of organic and mineral compounds needed to defend against diseases. A healthy plant can endogenously synthesizes anticryptogamic substances and antibodies (i.e phytoalexins). ERGOFIT micro-organisms occupy and dominate spaces in plants and soil. This fact together with all the principles which have been brought forth reveals a synergetic series of physical, chemical and biological reactions that intercept pathogens (agents of disease). This synergy means that the activities of two actions manifest a third, much more potent, one. Thus the power of the crop's immune system rises exponentially and the normal arithmetic sum becomes 2 + 2 = 8 and not 4. In nature we have no free spaces so the strongest element occupies the space. If ERGOFIT's bacterial life occupies a space it vigourously repels pathogens on the bacterial battleground as it is far higher in the competition hierarchy. Where there is ERGOFIT bacteria, there is no space for pathogens.

Phytophagous

ERGOFIT is a concentrated substance with an amazing surface area to product ratio, in fact a kilogram of our product can treat 800 m2 where, contrarily, 10 kilograms of manure can only cover a few square meters. ERGOFIT has a high probability of working where there are active root hairs so plants save the energy they would have spent creating roots to seek new nutrients. Moreover roots in the presence of ERGOFIT have increased lifetimes, further conserving energy which can now be redirected to the aerial parts of the plant (leaves, flowers, fruits). When root hairs die the bacteria quickly detoxifies the micro-habitats. Preparing them for new capillary elements to grow at the exact positions as the previous ones. The fact that new roots don't need to explore for nutrients is a new method of energy saving, it is the latest technology in horticulture. The combination of these systems result in a healthier plant

which can spend more energy defending itself from parasites and making bigger and more beautiful fruits, with more sugar as well. If you use loads of manure, ERGOFIT assists in absorption of its contents by breaking them down into assimilable compounds. The enzymes and bacteria accelerate the transformation of the manure and the organic residues of the soil into humus. The application of 1Kg ERGOFIT is equivalent to 300 - 400 Kg manure.

Negative Effects Experienced Where Humified Organic Material Is Depleted

A deficiency of humic material creates difficulties in absorbing minerals and microelements causing plants to manufacture less sugar, lose greenness and be susceptible to illness which reduces their productivity. The constant use of ERGOFIT with its particular properties, balanced composition and contents eliminates the problems associated with having a depleted humic level in the soil. In sandy soil plants grow very badly even though they are well watered because there is no humus. Sandy soil can be made arable by applying humus but massive amounts are needed.

ERGOFIT humifies agricultural waste material quickly and can be used to manufacture all the humus you require. It is known that phosphorus cannot incorporate itself into soils with low humic levels. ERGOFIT supplies the bacteria and humus which allow the plant to absorb the phosphorus while considerably reducing any azotic or potassium leaching instigated by rain or irrigation.

Quantitative And Qualitative Improvements To Harvest

ERGOFIT fruits are rich in sugars and fibres due to increased photosynthesis. They have higher yields because well nourished plants don’t allow any fecundated fruits (fruits ready to grow seeds) to fall down. Malnourished plants only keep the amount of fruits they are able to feed and make the others fall down. This phenomenon is called CASCOLA.

But the most exciting thing is that the quality increases as well, thanks to an increase of sugars, vitamins, mineral salts and shelf life. In fact the ERGOFIT fruits have unmatched natural preservatives, vitamins A and C (ascorbic acid). Their bigger, thicker peels improve the harvest’s sensitivity to rot attacks. Phenomena like withering and a lack of turgor

(fluid pressure in plant cells) are delayed in fruits which have been treated and thus the robustness during transportation is astounding.

Defence Against Phytophagous Attacks

The plants have the capability of synthesizing large amounts of repellent and toxic compounds to combat phytophagous organisms (particularly salicylic acid). Plants with a high sugar, protein and mineral content are less susceptible to these attacks because the insects find themselves in an adverse environment that is unsuitable for their feeding and reproductive needs. Thus, in order to survive, they have to move on to plants which are more accommodating, ones which are weaker and vulnerable to attacks. ERGOFIT plants combat insects' masticatory damage by quickly converting the sugars in their lymph to alcohol making it toxic to most insects. This is due to the plants having a high Brix (% sugar per unit of mass). Cell membranes and cuticles covering the leaves' epidermis are thicker and stronger, all the plant's parts are tougher and insects can't attack them easily. Exposing the phytophagous insects to these elements prevents their population from exploding and allows their natural enemies to control their propagation. In short, a plant which receives ERGOFIT can intensify its defence system by combining an effective biochemical solution with a robust physical resistance.

Virosis (Diseases Caused By Viruses)

In the case of virosis it has been proven that a side affect of using ERGOFIT is the blocking of viral infection. Viruses can't enter plants through the wounds made by insects as the damage is not invasive. The toxins don't allow the viruses to live long enough to have opportunities to enter the plant.

Absorption Problems

When analysis of the soil and leaves show that the correct micro-elements are present in sufficient amounts and healthy growth is not achieved it means that the plants root structure is not absorbing them. The foliage tends to become yellow, growth is stunted, plant is disease prone, its fruits don't develop and ripen and the farmer doesn't know how to intervene. The micro-elements could even be in the plant's tissue and not be utilized. This is due to having incorrect pH levels or inadequate micro-biological activity in the micro-habitats located around the capillaries (root

hairs). These conditions are caused by a lack of; humic acids, hormone producing substances, amino acids, bio-catalysts, enzymes.

It is really impossible to ascertain where the fundamental problem lies but it is clear that, in the medium term, regular applications of humus will nullify the conditions. In the short term the bio-catalysts inside ERGOFIT will immediately work to 'unlock' the inert micro-elements. As an analogy let us look at human beings. If a human is fed a completely balanced diet (proteins, carbohydrates, minerals, fats, vitamins, etc.) but the food is wrapped in plastic then that person will very quickly be malnourished and suffer starvation. Even if he ate very well, in quantity and quality. Now only the presence of the correct enzymes in the digestive tract, which are able to destroy the synthetic material, will make the food available to the body.

Healthy Soil

SOIL

Healthy soil manages water like a sponge. Micro-organisms excrete well balanced nutrients which create spaces (aerating soil) enabling water and oxygen to surround root systems.

Ideal soil structure: 45% minerals and other nutrients, 25% air, 25% water and 5% humus. Soil is a living thing and just like all living things it needs to breathe atmospheric oxygen, digest nutrients, and process waste materials.

Macro-organisms and micro-organisms are the life blood of your soil. They contain electrolytes, minerals and more. Each cell within macro-organisms and micro-organisms have negatively and positively charged components, and these electrical charges must remain in correct balance. The use of chemical, toxic substances on your soil causes these organisms to go dormant. As a result soil lacks oxygen and goes anaerobic compromising nutrient absorbability.

Plants absorb oxygen from carbon dioxide and water vapour through their leaves, stems and roots. Earthworms, beneficial-nematodes, bacteria etc. Also need atmospheric oxygen to function. When soil is compacted plant roots are oxygen-deprived and can die. Oxygen deficient soil does not support aerobic life forms.

It becomes anaerobic smelling sour or mouldy. Farm waste processed by anaerobic micro-organisms is embalmed and preserved instead of being decomposed. Anaerobic soil becomes a breeding ground for root and plant diseases, as well as various destructive pests.

All nutrients are made assimilable to roots by water molecules. If soil is compacted (tight) water remains on the surface unable to reach the plants' roots. If all the water is not absorbed at application a high percentage of it is lost to evaporation and run-off. Valuable topsoil is also removed with any water run-off.

Agricultural waste contains carbon, nitrogen, phosphorus, potassium, calcium, and various trace elements. These compounds are held in plant residue in various forms here listed in order of their decomposition rates: sugar, starch, carbohydrates, organic acids, protein, lignin, wax and resin.

Aerobic metabolism is the only way to convert these nutrients into forms that plants and soil can absorb. Fully processed organic material (by aerobic life forms) is called humus and humus is the most potent fertilizer you can get.

ORGANISMS

Micro-organisms: bacteria, fungi, protozoa and algae. Micro-organisms are tiny processors of all types of matter within your soil. They are responsible for breaking down different types of material into nutrients. Essentially an immense army of recyclers they work for our benefit provided that we don't interfere with their life-cycles and activities.

Macro-organisms: such as earthworms, slugs and nematodes collect and process plant residue. Worms eat dead material turning it into nutrientbalanced topsoil and distributing it as deep as they burrow. Humus lines earthworm tunnels and is available as plant food for years. During dry seasons roots grow through the tunnels to find water. The soluble content of worm secretions is considerably higher than nutrient-levels in the original soil and they also distribute a plant growth stimulant. Worm tunnels aerate soil and provide routes for water to penetrate deep into root systems.

All of these organisms interact with one another in a multitude of ways. Soil rich with micro and macro-organism life is self-sustaining and requires less labour and irrigation to thrive.

WATER

Water is the solvent that dissolves and hydrates compounds making them food for microbes. It is the primary means of nutrient-transport to and within your plants. Water molecules are what give a plant its rigidity and robustness against extreme weather.

Life within the plant relies on electrical impulses for intracellular functions. Growth and maturation processes depend on these functions and these functions depend on moisture content.

95% of the water absorbed by plants is evaporated through the leaves. The pores on the surface of leaves must open for photosynthesis. When the moisture escapes it acts as a cooling system for the plant.

PHOTOSYNTHESIS

A chloroplast combines energy from the sun with water vapour and carbon dioxide to create glucose. Consistent moisture supply is fundamental to this food production and is only achieved with healthy, spongy soil. Having spongy soil means that all the soil particles are hydrated which means the crop will have consistent water and nutrient availability.

PLANTS

Sunlight - Photosynthesis produces oxygen and simple sugars. These sugars along with other nutrients are used to make complex sugars, carbohydrates, and proteins.

Water - Transports nutrients through plant depending on where they are required. It is essential to the plant's functions of photosynthesis, respiration and transpiration.

Nutrition - Carbon, hydrogen, oxygen, are the three most essential elements. They make up 95% of what a plant becomes. 80% of the nutrients a plant needs are in the atmosphere, the rest are from soil (nitrogen, potassium, phosphorus, calcium, sulphur, magnesium and various trace nutrients).

Root system - Root growth determines the ability of a plant to take up nutrients and water. It depends on the surface area of the leaves and whether the soil is spongy. Good soil and high leaf surface area equals great root growth

INSECTS

Here's a basic fact about insecticides, they kill good and bad insects. Here's another fact, bad insects mutate and become immune to the poisons quicker than good insects (assassin bugs, damsel bugs, lady beetles, soldier beetles, praying mantis, wasps and spiders). The development of new insecticides to compensate for this immunity in pests is why we have over 40,000 different options for poisoning our crops today.

When it comes to insects finding a natural balance is the key to defence. An excessive amino acid level in plants is what attracts bugs because

most of them can only digest this. A healthy plant has great defences against insect attacks (besides low amino levels). The most sustainable way to combat pests is to inject life into your soil and to give your crop a fully balanced nutrient rich diet.

Fertilizer Regimes

Coffee & Tea	DOSAGE	PRODUCT	DILUTION	WHEN	NOTES
COFFEE					
Soil Preparation	120 KG	ERGOSTART BIO	2000 LITRES	WHILE GROUND IS BEING PREPARED FOR SEEDING	LEAVE PLANT REMAINS ON GROUND AND APPLY. WORK INTO THE TOP 20CM OF THE SOIL 3 DAYS LATER.
1ST APPLICATION	24 KG	ERGOFIT COPPER ZINC	1000 LITRES	EVERY MONTH	APPLY 2 KG PER MONTH. GROUND APPLICATION
TEA					
Soil Preparation	120 KG	ERGOSTART BIO	2000 LITRES	WHILE GROUND IS BEING PREPARED FOR SEEDING	LEAVE PLANT REMAINS ON GROUND AND APPLY. WORK INTO THE TOP 20CM OF THE SOIL 3 DAYS LATER.
1ST APPLICATION	20 KG	ERGOFIT COPPER ZINC	1000 LITRES	EVERY MONTH	APPLY 10 KG OF THIS MIXTURE PER MONTH. GROUND APPLICATION
	100 KG	DIAMONIUM PHOSPHATE			

All Berries

	DOSAGE	PRODUCT	DILUTION	WHEN	NOTES
ALL BERRIES					
Soil Preparation	218 KG	ERGOSTART BIO BERRIES	1000 LITRES	20 DAYS PRIOR TO PLANTING	LEAVE PLANT REMAINS ON GROUND AND APPLY. WORK INTO THE TOP 20CM OF THE SOIL 3 DAYS LATER.
DIPPING APPLICATION	0.5 KG 0.1 KG	ERGOFIT COPPER ZINC ERGOFIT ALGAE	100 LITRES	TRANSPLANTING OF SEEDLINGS	KEEP THE SEEDLINGS' ROOTS IMMERSED IN THIS MIXTURE FOR 10 - 15 MINUTES.
1ST APPLICATION	6 KG 1 KG	ERGOFIT COPPER ZINC ERGOFIT ALGAE	1000 LITRES	AFTER TRANSPLANTING	GROUND APPLICATION.
2ND APPLICATION	4 KG 1 KG	ERGOFIT BORON ERGOFIT ALGAE	1000 LITRES	12 DAYS PRIOR TO PLANT FLOWERING	GROUND APPLICATION
3RD APPLICATION	2 KG 0.5 KG	ERGOFIT BORON ERGOFIT ALGAE	500 LITRES	PRIOR TO FLOWERING WHEN BUDS ARE PINK	FOLIAR APPLICATION
4TH APPLICATION	6 KG	ERGOFIT COPPER ZINC	1000 LITRES	AS FRUIT APPEARS	APPLY 3 KG AT A TIME WITH A PERIOD OF 7 - 10 DAYS BETWEEN APPLICATIONS. FOLIAR APPLICATION
5TH APPLICATION	2 KG 0.5 KG	ERGOFIT UNIVERSAL ERGOFIT ALGAE	1000 LITRES	DURING HARVEST	FOLIAR APPLICATION

Asparagus

	DOSAGE	PRODUCT	DILUTION	WHEN	NOTES
Soil Preparation	218 KG	ERGOSTART BIO ASPARAGUS	2000 LITRES	20 DAYS PRIOR TO	LEAVE PLANT REMAINS ON GROUND AND APPLY. WORK INTO THE TOP 20CM OF THE SOIL 3 DAYS LATER.
1ST APPLICATION	3 KG	ERGOFIT COPPER ZINC	1000 LITRES	IMMEDIATELY AFTER TRANSPLANTING SEEDLINGS	GROUND APPLICATION.
	8 KG	ERGOSTART BIO			
	2 KG	ERGOFIT ALGAE			
	30 KG	AMMONIUM POLYPHOSPHATE			
	5 KG	BORIC ACID			
2ND APPLICATION	6 KG	ERGOFIT COPPER ZINC	1000 LITRES	30 DAYS LATER	GROUND APPLICATION
	8 KG	ERGOSTART BIO			
	2 KG	ERGOFIT ALGAE			
3RD APPLICATION	6 KG	ERGOFIT COPPER ZINC	1000 LITRES	30 DAYS LATER. 60 DAYS AFTER TRANSPLANTING	GROUND APPLICATION
	8 KG	ERGOSTART BIO			
	2 KG	ERGOFIT ALGAE			
4TH APPLICATION	250 KG	ERGOSTART BIO	1000 LITRES	AFTER HARVEST	LEAVE PLANT RESIDUES. THIS TREATMENT WILL PUT HUMUS BACK INTO THE SOIL

Rice

	DOSAGE	PRODUCT	DILUTION	WHEN	NOTES
Soil Preparation	265 KG	ERGOSTART BIO RICE	2000 LITRES	20 DAYS PRIOR TO	LEAVE PLANT REMAINS ON GROUND AND APPLY. WORK INTO THE TOP 20CM OF THE SOIL 3 DAYS LATER.
1ST APPLICATION	3 KG	ERGOFIT COPPER ZINC	1000 LITRES	PLANT IS 30CM IN HIGHT	GROUND APPLICATION.
	10 KG	ERGOSTART BIO			
2ND APPLICATION	3 KG	ERGOFIT COPPER ZINC	1000 LITRES	1 WEEK LATER	GROUND APPLICATION.
	10 KG	ERGOSTART BIO			

Tomatoes	DOSAGE	KG	PRODUCT	DILUTION	WHEN	NOTES
Soil Preparation	218	KG	Ergostart Bio Tomatoes	1000 Litres	20 days prior planting	Leave plant remains on ground and apply. Work into the soil 3 days later.
Dipping Application	0.5	KG	Ergofit Copper Zinc	100 Litres	Transplanting seedlings	Dip all the seedlings for 10 - 15 minutes in this mixture
	0.1	KG	Ergofit Algae			
1st Application	6	KG	Ergofit Copper Zinc	500 Litres	Right after transplanting of seedlings	
	1	KG	Ergofit Algae			
2nd Application	8	KG	Ergofit Universal	500 Litres	Every 10 days, until blooming.	Will be 3 - 6 applications. `stop this application when flower blooms first appear. Each application is approximately 5 Kg
	12	KG	Ergostart Bio			
Final Application	14	KG	Ergofit Universal	500 Litres	Every 10 - 15 days.	Apply this mixture 4 times. The timing can be judged by the farmer according to when he/she expects ripening.
	2	KG	Ergofit Algae			
Salad Tomatoes	Same as for normal tomatoes but do not apply the final application. Instead apply the following from when harvesting begins					
Salad Tomato Application	15	KG	Ergofit Universal	500 Litres	Every week for the rest of the season	About 10 Applications of 1.7 Kg of this mixture.
	2	KG	Ergofit Algae			

WHEAT, MAIZE, CORN & BARLEY	DOSAGE	KG	PRODUCT	DILUTION	WHEN	NOTES
SOIL PREPARATION	265	KG	Ergostart Bio WHEAT	1000 Litres	20 days prior planting	Leave plant remains on ground and apply. Work into the soil 3 days later.
1ST APPLICATION	3	KG	ERGOFIT COPPER ZINC	1000 Litres	As plant reaches 30cm in hight.	If land is very dry then double amount of water for dilution.
	10	KG	ERGOSTART BIO			
2ND APPLICATION	3	KG	ERGOFIT COPPER ZINC	1000 Litres	1 week later	If land is very dry then double amount of water for dilution.
	10	KG	ERGOSTART BIO			

PINEAPPLES

	DOSAGE	KG	PRODUCT	DILUTION	WHEN	NOTES
SOIL PREPARATION	215	KG	Ergostart Bio PINEAPPLES	1000 Litres	20 days prior planting	Leave plant remains on ground and apply. Work into the soil 3 days later.
DIPPING APPLICATION	1	KG	ERGOFIT COPPER ZINC	100 Litres	When transplanting seedlings	Dip plants for 5 to 10 minutes in this mixture
MONTHLY APPLICATIONS	12	KG	ERGOFIT COPPER ZINC	1000 Litres	Every month	Apply a mixture of 1 kg COPPER ZINC and 1 kg UNIVERSAL every month. Also add 250 grams of either ALGAE or STIM. Apply product in the late afternoon if the weather is hot.
	12	KG	ERGOFIT UNIVERSAL			
	2	KG	ERGOFIT ALGAE			
	1	KG	ERGOFIT STIM			

Cane, Jathropa & Alfalfa	DOSAGE	PRODUCT	DILUTION	WHEN
SUGAR CANE				
1st Application	225 kg	Ergostart Bio Sugar	2000 Litres	Soil preparation for planting
2nd Application	21 kg	Micromix Sugar A	1000 Litres	As plant reaches 30 - 50 cm in height
3rd Application	21 kg	Micromix Sugar B	1000 Litres	30 days before harvesting
TOTAL	267 kg			
JATHROPA				
1st Application	6 KG	Ergofit Copper Zinc	2000 Litres	Immediately after planting
2nd Application	6 KG	Ergofit Copper Zinc	2000 Litres	15 days after planting
3rd Application	6 KG	Ergofit Copper Zinc	2000 Litres	4 months after planting
4th Application	6 KG	Ergofit Copper Zinc	2000 Litres	4 months after 3rd application
TOTAL	24 KG			
ALFALFA, DAIRY GRASSES				
1st Application	3 kg	Ergofit Copper Zinc	1000 Litres	Once per cut. After each harvest apply once only.
1st Application	10 kg	Ergostart Bio		

Grapes

	DOSAGE	PRODUCT	DILUTION	WHEN
TABLE GRAPES				
1st Application	263 kg	Ergostart Bio GRAPES	2000 Litres	Soil preparation: Leave plant remains on ground and apply. Work into the soil 3 days later
2nd Application	52 kg	Ergofito ALGAE & Calcium Nitrate	500 Litres	Apply after plant remains have been buried.
3rd Application	50 kg	Magnesium Sulphate	500 Litres	3 days later spread Magnesium
4th Application	9 kg	Ergostart Bio CONCENTRATE	500 Litres	End of winter on foliage when vine is resting.
5th Application	18 kg	Ergofito BORON & Molasses	500 Litres	10-12 days before flowering.
6th Application	6 kg	Ergofito GLUCOSE	500 Litres	On foliage when buds reach 10cm length
7th Application	6 kg	Ergofito GLUCOSE	500 Litres	10 days later
8th Application	9 kg	Ergofito UNIVERSAL & Molasses	500 Litres	Every 20 days once buds change colour. Equally spaced applications up to harvest.
9th Application	9 kg	Ergofito CU/ZN & Molasses	500 Litres	After harvest when leaves are still green.
WINE GRAPES				
1st Application	263 kg	Ergostart Bio GRAPES	2000 Litres	Soil preparation: Leave plant remains on ground and apply.
2nd Application	9 kg	Ergostart Cu/Zn & Molasses	500 Litres	End of winter on foliage when vine is resting.
3rd Application	18 kg	Ergofito BORON & Molasses	500 Litres	10-12 days before flowering.
4th Application	6 kg	Ergofito GLUCOSE	500 Litres	On foliage when buds reach 10cm length
5th Application	9 kg	Ergofito UNIVERSAL & Molasses	500 Litres	Every 20 days once buds change colour.
6th Application	9 kg	Ergofito CU/ZN & Molasses	500 Litres	After harvest when leaves are still green.

Fruit Trees

	DOSAGE	PRODUCT	DILUTION	WHEN
Soil Preparation	162 KG	Ergostart Bio FRUIT	1000 Litres	After pruning leave plant remains on ground and apply. Work into the soil 3 days later. 20-30 cm below surface.
1st Application	3 KG	Ergofito Cu/Zn	500 Litres	As buds appear spray on leaves
2nd Application	3 KG	Ergofito Boron	500 Litres	As flowers transform to fruits spray on leaves.
3rd Application	35 KG	Ergostart Bio & Calcium Nitrate	500 Litres	After transformation to fruit, during fruit growing stage
4th Application	35 KG	Ergostart Bio Magnesium	500 Litres	1 to 2 days after 4th application
5th Application	3.2 KG	Ergofito Calcium & Kelp	500 Litres	Just before fruit changes colour from green.
6th Application	6 KG	Ergofito Glucose	500 Litres	During the phase when the fruit changes colour.
7th Application	25 KG	Magnesium Sulphate	500 Litres	20 days before harvesting apply to the roots
	50 KG	Potasium Sulphate		
	10 KG	Ergostart Bio		
8th Application	3 KG	Ergofito Copper Zinc	500 Litres	After the harvest before the leaves turn yellow and fall

Herbs

	DOSAGE	PRODUCT	DILUTION	WHEN
1ST APPLICATION	30 KG	ERGOSTART BIO	1000 LITRES	Apply to ground 5 to 10 days before sowing. Leave for 3 days and then turn into ground at about 20cm to 30cm deep.
	50 KG	MAGNESIUM SULPHATE		
	50 KG	POTASIUM SULPHATE		
	50 KG	MAP 39		
2ND APPLICATION	6 KG	ERGOFITO COPPER ZINC	1000 LITRES	Once the seedlings are transplanted
	1 KG	ERGOFITO ALGAE		
	10 KG	UREA		
	10 KG	SUGAR		
3RD APPLICATION	30 KG	ERGOSTART BIO	1000 LITRES	7 to 10 days after the first leaves start appearing.
	17 KG	2ND APPLICATION		
	25 KG	CALCIUM NITRATE		
4TH APPLICATION	3 KG	ERGOFITO UNIVERSAL	1000 LITRES	As the first buds flower.
	1 KG	ERGOFITO ALGAE		
	25 KG	CALCIUM NITRATE		
	5 KG	BORIC ACID		
5TH APPLICATION	25 KG	MAGNESIUM SULPHATE	500 LITRES	20 Days before harvest.
	5 KG	ERGOSTART BIO		
	0.5 KG	ERGOFITO ALGAE		
	1.5 KG	ERGOFITO UNIVERSAL		
	5 KG	POTASIUM SULPHATE		
6TH APPLICATION	5 KG	ERGOSTART BIO	500 LITRES	10 Days before harvest.
	0.5 KG	ERGOFITO ALGAE		
	1.5 KG	ERGOFITO UNIVERSAL		
	5 KG	POTASIUM SULPHATE		

Macadamia Nuts	DOSAGE	KG	PRODUCT	DILUTION	WHEN	NOTES
Soil Preparation	365	KG	Ergostart Bio Macadamia	2000 Litres	Once off treatment	This treatment can take place at any stage of the trees development. Preferably when it is first planted.
Normal Applications	30	KG	Ergofit Copper Zinc	Sufficient amount to wet the trees	Every Month	6 Kg of this mixture per month. After the initial soil preparation application this is the only fertilizer needed to maintain healthy development
	30	KG	ErgoJolly BIO			
2nd Year Onwards						
Normal Applications	36	KG	Ergofit Copper Zinc	Sufficient amount to wet the trees	Every Month	6 Kg Copper Zinc & Algae mixture per month.
	36	KG	ErgoJolly BIO			

Nurseries	DOSAGE	PRODUCT	DILUTION	WHEN	NOTES
Soil Preparation	50 Kg	Ergostart Bio - Nurseries	1000 Litres	15 days before planting seeds	The Application will rebalance the soil and initiate micro-organism activity.
1st Application	5 Kg	Ergofit Cu/Zn/Am	1000 Litres	At seeding	This application provides 1000 plants with 5g each of bio-fertilizer. Drip irrigation is best
2nd Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	1 month later	This will provide 1000 plants with 2 grams bio-fertilizer
3rd Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	2 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
4th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	3 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
5th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	4 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
6th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	5 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
7th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	6 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
8th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	7 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
9th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	8 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
10th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	9 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
11th Application	2 Kg	Ergofit Cu/Zn/Am	1000 Litres	10 months later	1000 plants & seedlings get 2 grams each. Drip irrigation
2nd Year Onwards	24 Kg	Ergofit Cu/Zn/Am	12,000 Litres	Every Month	12 applications of 2 kg each. 1000 plants

Photographic References

1 month old seedlings:

Photo 1 & 1a: Lettuce sown in a commonly used substrate. fertilized only with mineral salts. The plants show a fundamental lack of development, few leaves and reduced growth.

Photo 2 & 2a:
Lettuce sown in a substrate consisting of peat from Russia, activated with SEMENSTART and fertilized with 30 mg of ERGOFIT. The plants show a good root development and a greater number of leaves that are larger than the seen 1 - 1st.

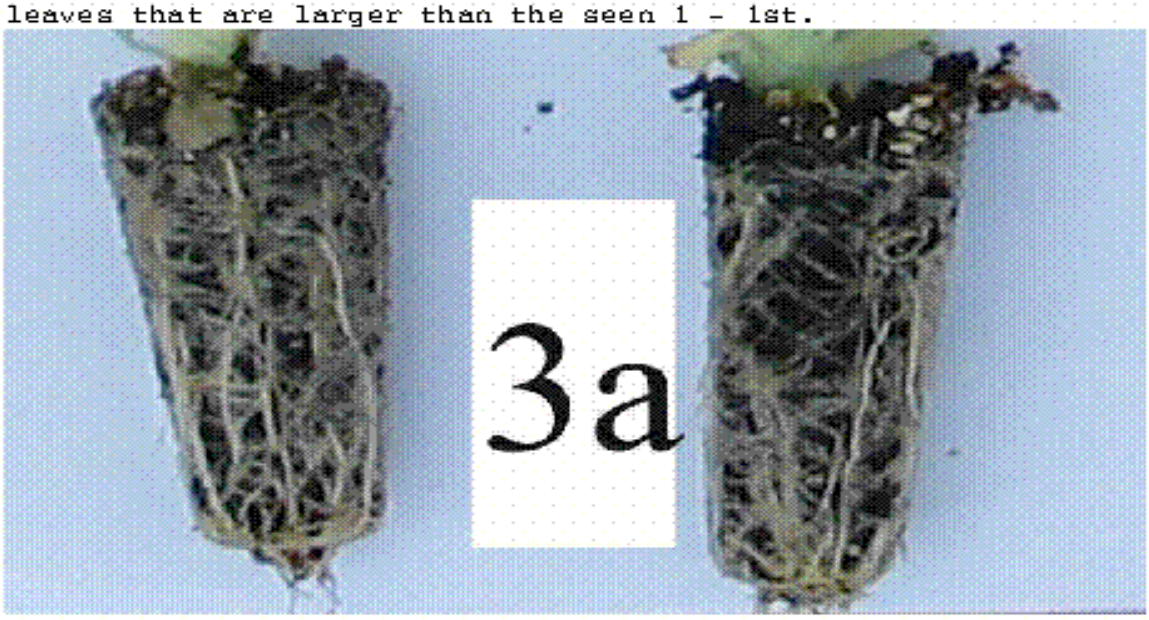


Photo 3 & 3a:
Lettuce in peat with SEMENSTART and fertilized with 40 mg of ERGOFIT. The plants show a well developed root system, rich in capillaries and a developing taproot. The leaves are in greater number and are more developed and thicker.

PEAR TREES CURED BY ERGOFIT TREATMENT. (COUP FUACO)

PEAR TREES CURED BY ERGOFIT TREATMENT. (COUP FUACO)

Pictures 1,2 and 3 show pear trees affected by the "heat stroke" in recovery phase after 3 treatments with ERGOFITO. Photo 4 shows a tree not treated with ERGOFITO that did not survive.

PEAR TREES CURED BY ERGOFIT TREATMENT. (COUP FUACO)

Photos 5 and 6 show vigourous growth of new vegetation on plants that have passed the "heat stroke" after 6 treatments with ERGOFIT.

PEAR TREES CURED BY ERGOFIT TREATMENT. (COUP FUACO)

Photo 1 – plants removed 15 days after transplant
Plant **A** received 40mg of ERGOFIT 4 times in the nursery; after transplantation it was treated with 6Kg/ha of ERGOFIT. Plant **B** was fed with mineral fertilizers. Greater development of the leaf and root was clear when comparing **A** and **B**.

Photos 2-5: 40 days after transplanting
In Photo 2 there is a greater growth of radish that has been treated in the nursery with ERGOFIT compared with that of photo 3 which is fed with mineral fertilizers. Photo 4 shows that radish leaves treated with ERGOFIT tend to close the passage, which remains open and well visible in photo 5 radish fed with mineral fertilizers.

Foto 2 Foto 3 Foto 4 Foto 5

Photos 6, 7, 8, 9 - 40 days after transplanting
Photos 6 and 7 - radish treated with ERGOFIT
sizes are larger and homogeneous. The leaf mass completely covers the soil.
Photo 8 and 9 - radish treated with mineral fertilizer.
Sizes are small and uneven. The lower leaf mass leaves the soil uncovered.

Foto 6

Foto 7

Foto 8

Foto 9

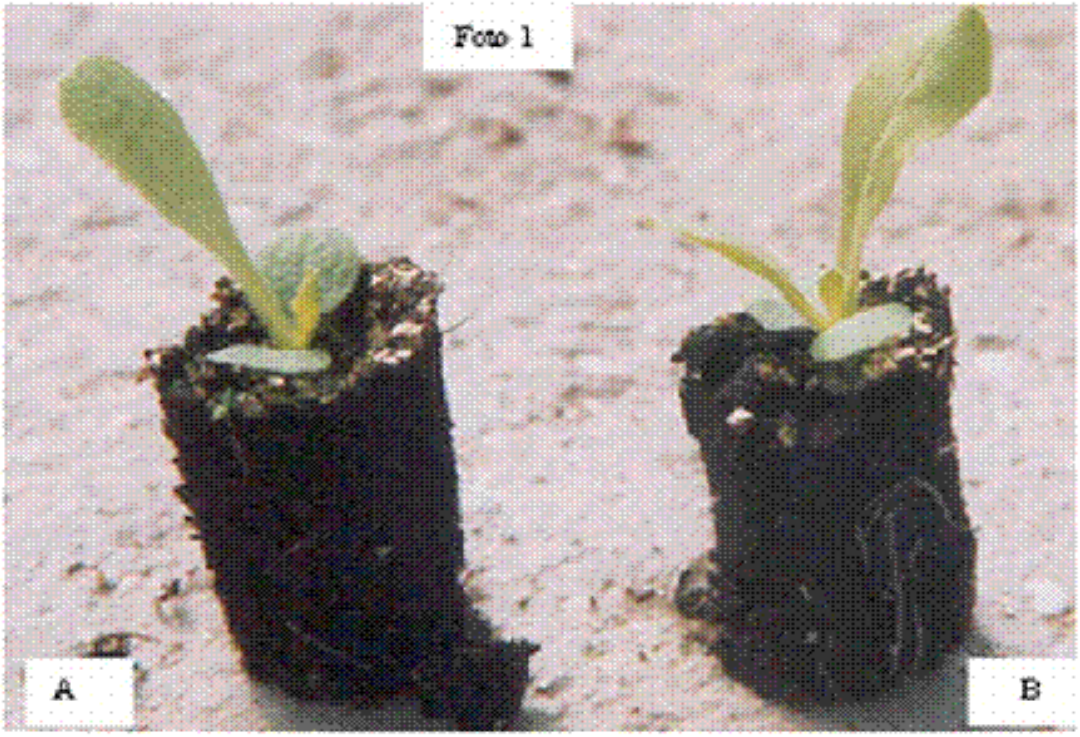
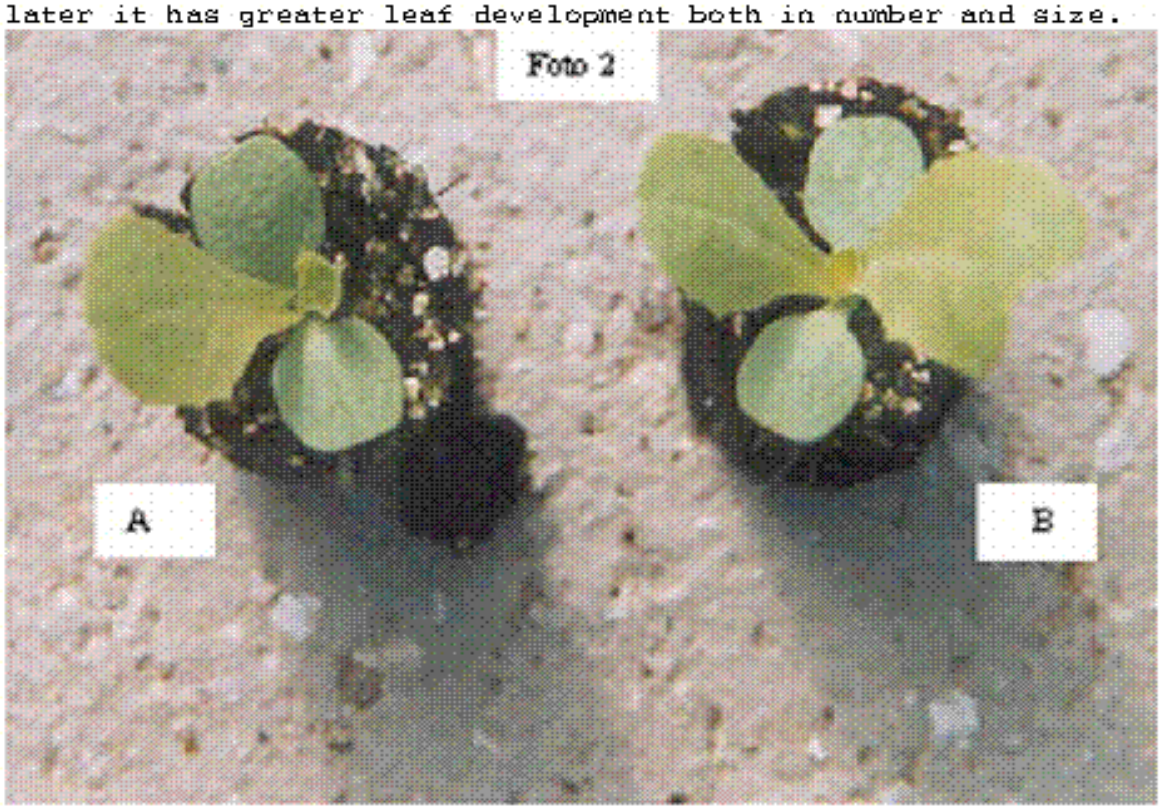


Photo 1 & 2 Plant A was nourished with mineral fertilizers. Plant B was fed with 40 mg of ERGOFIT and although it was sown 2 days later it has greater leaf development both in number and size.



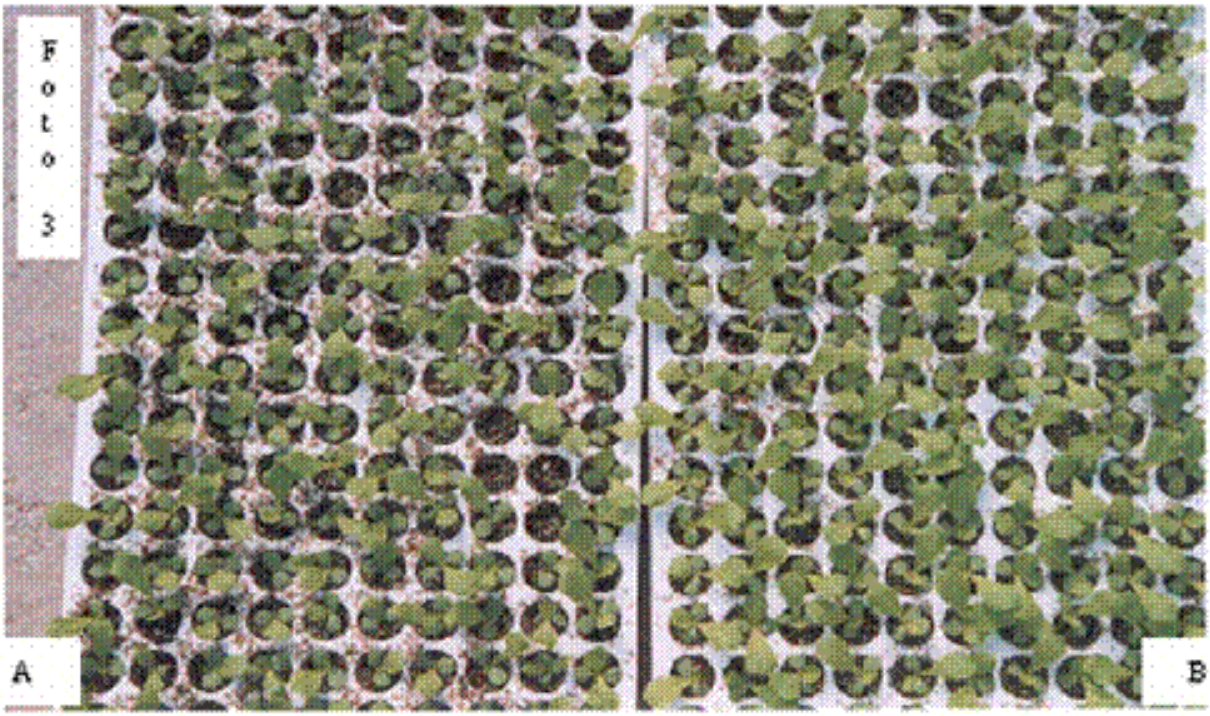


Photo 3
Tray **A** was fed with mineral fertilizers. Tray **B** was fed with 40 mg of ERGOFIT and although they were sown 2 days later their foliage cover is greater.

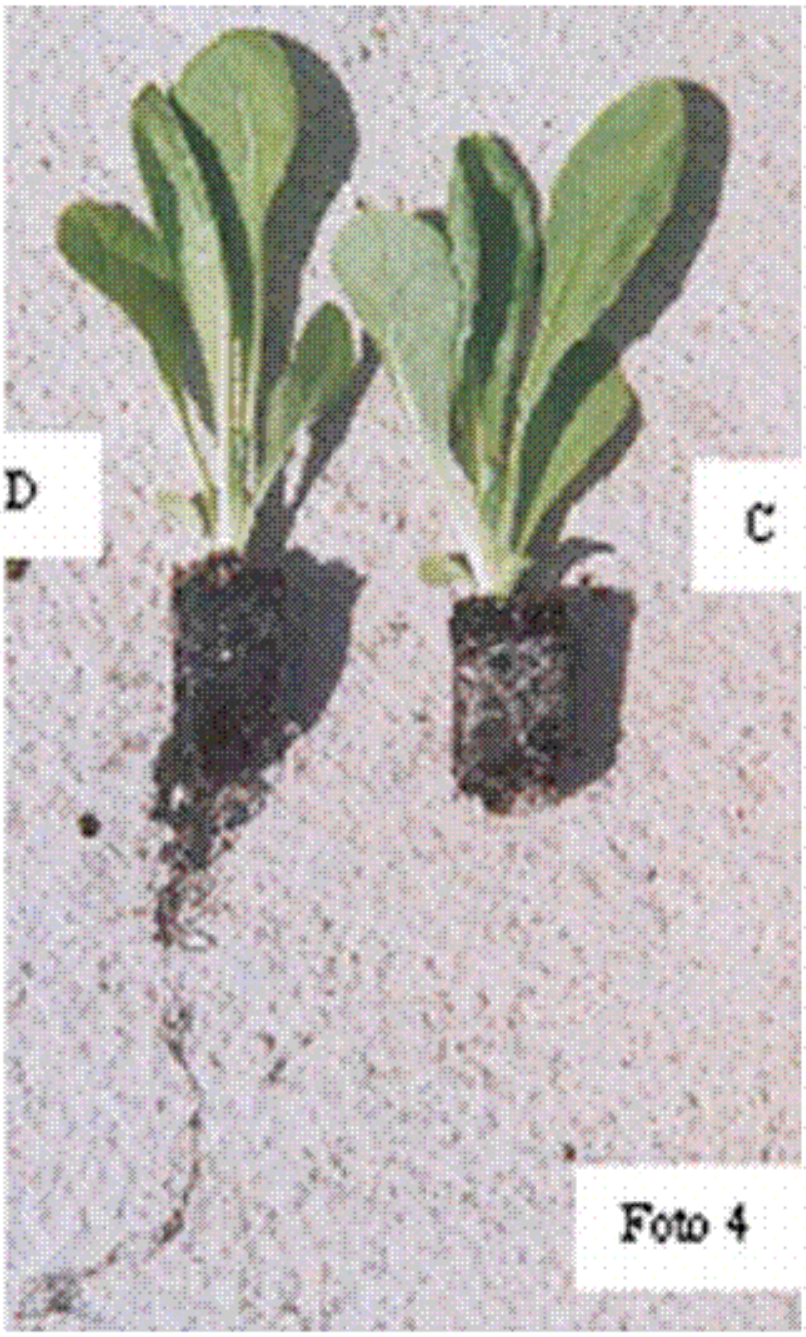


Photo 4
Plant D was fed with 40 mg of ERGOFIT and has a more extensive root system with greater leaf growth.

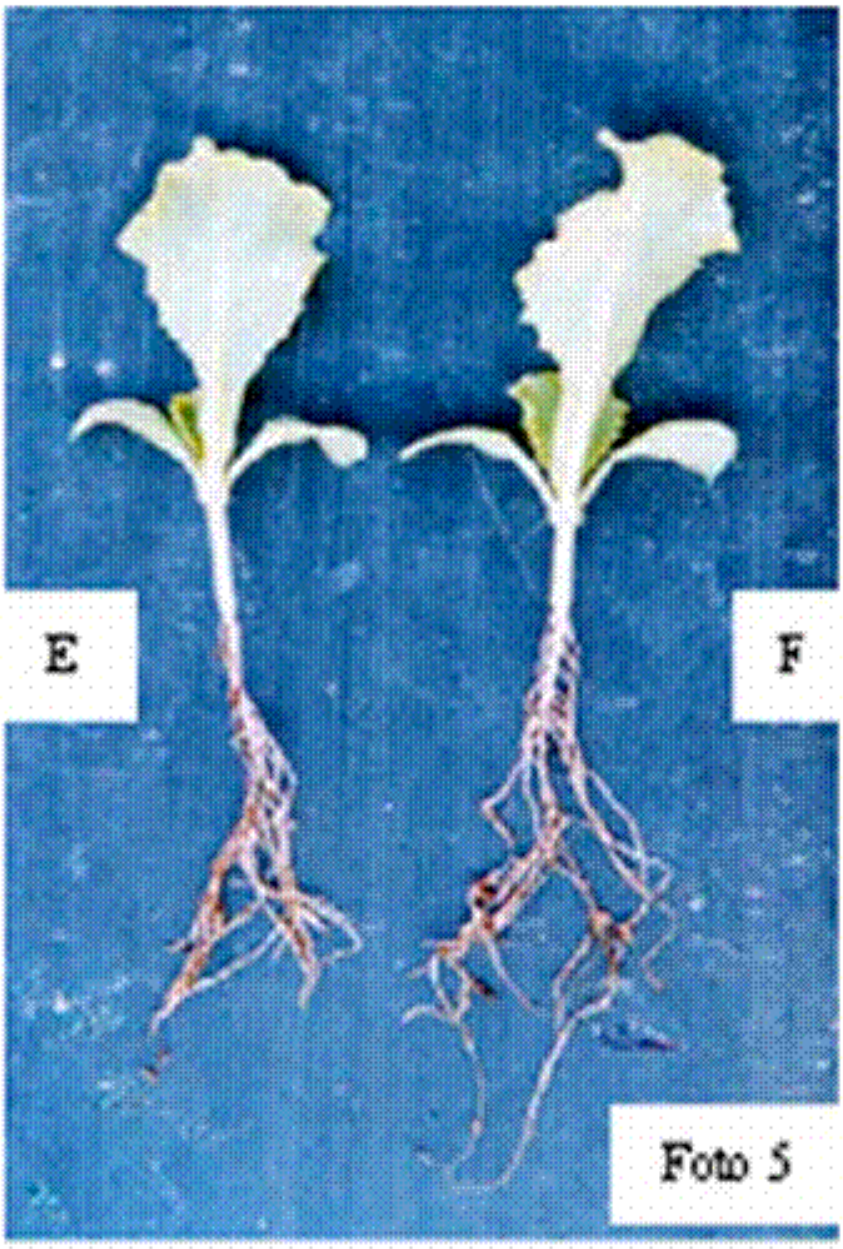


Photo 5
E was fed with mineral fertilizers. **F** was sown 2 days later and fed with 40 mg of ERGOFIT. It has a far more developed root structure.

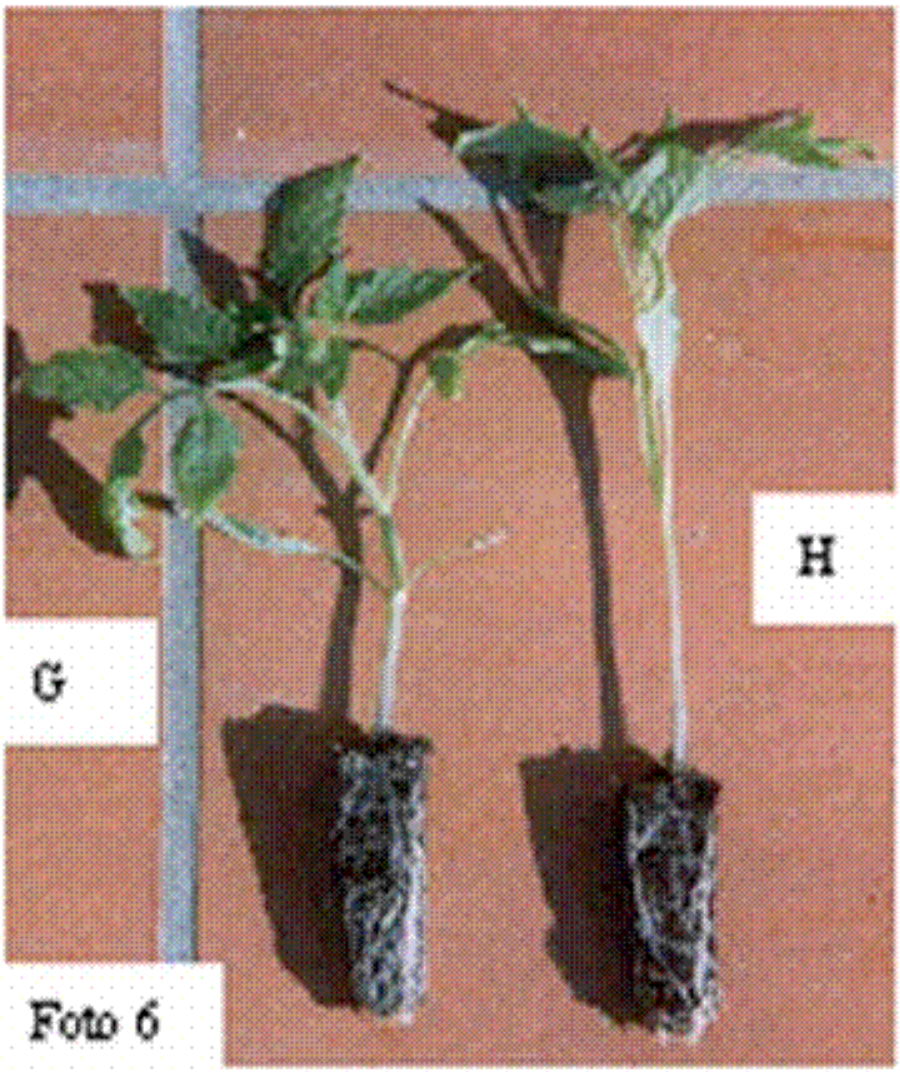


Photo 6
Tomato seedling **G** was fed with 50 mg of ERGOFIT. It has closer inter-nodal distance than **H**; Thicker stem and greater leaf surface area.

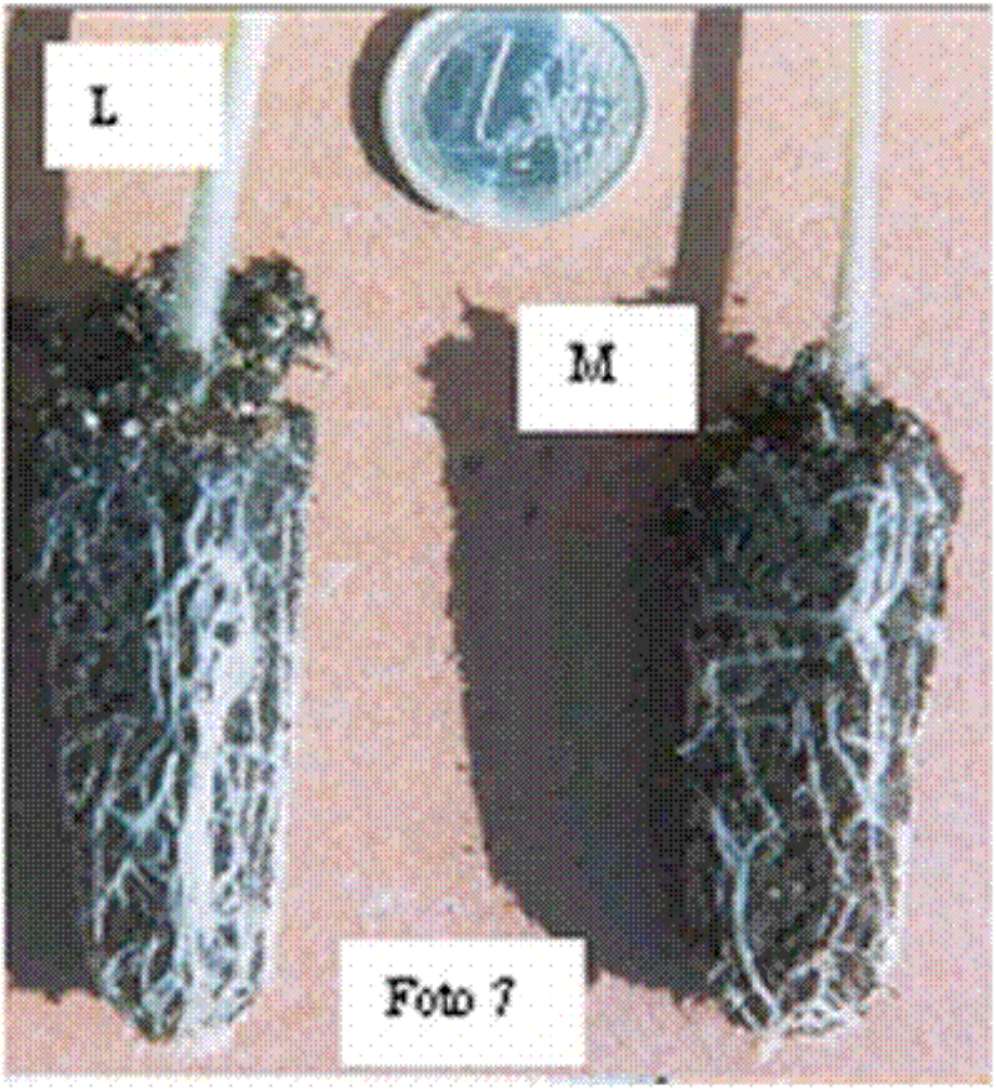
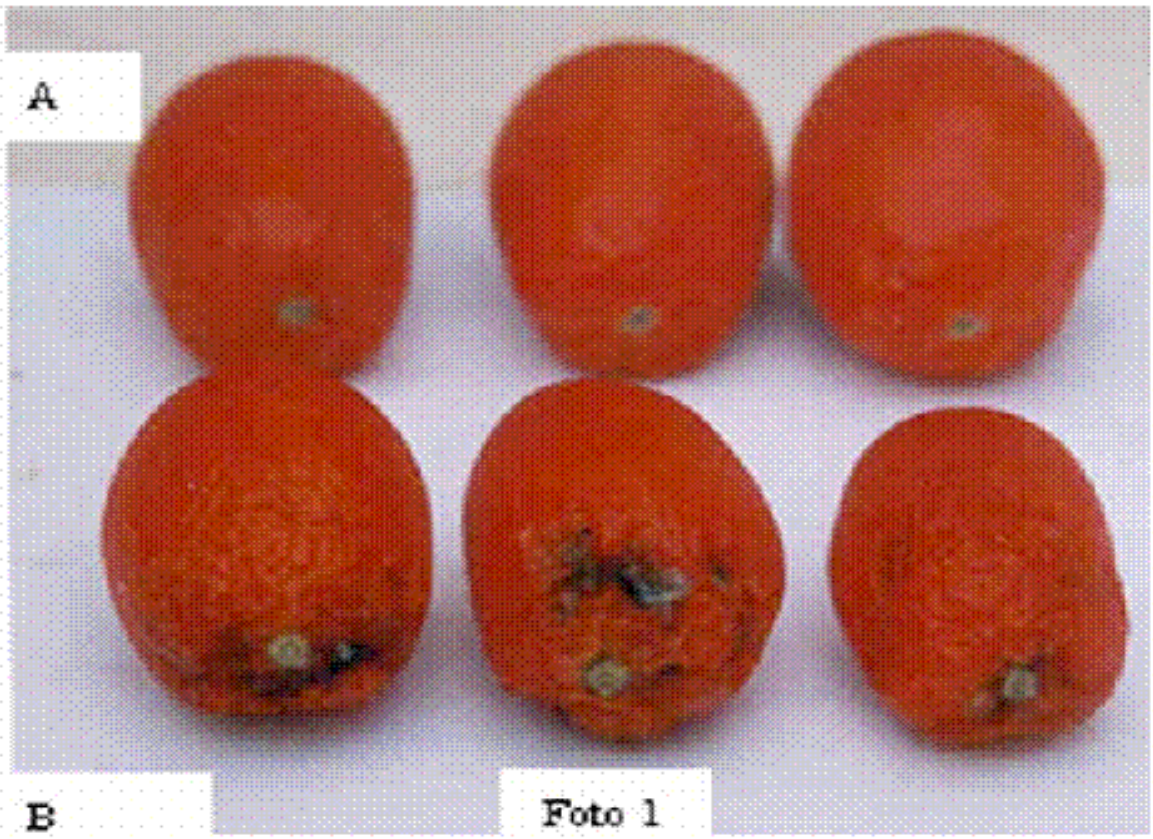


Photo 7
The tomato seedling **L** fed with ERGOFIT has more developed roots and stem than **M** that was fed with mineral fertilizers.



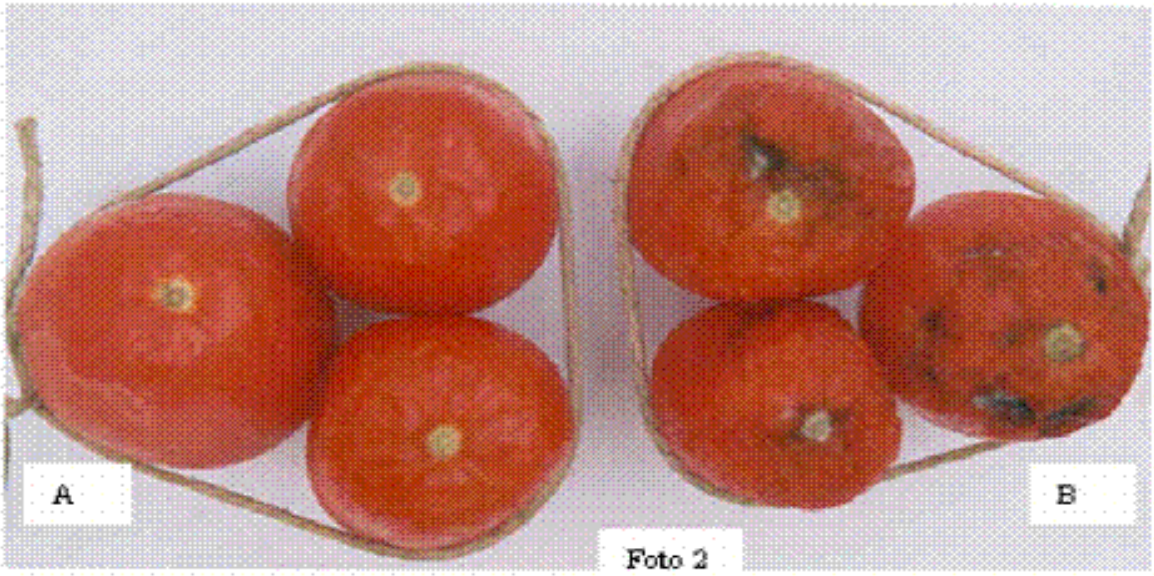
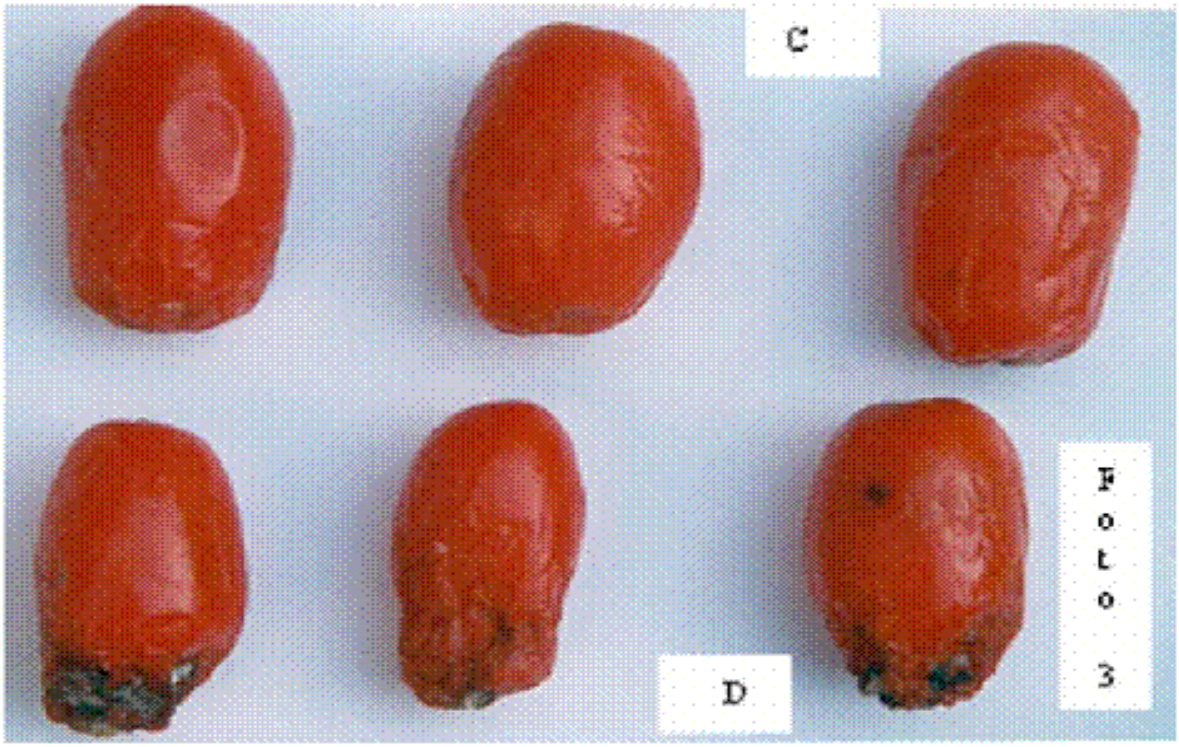
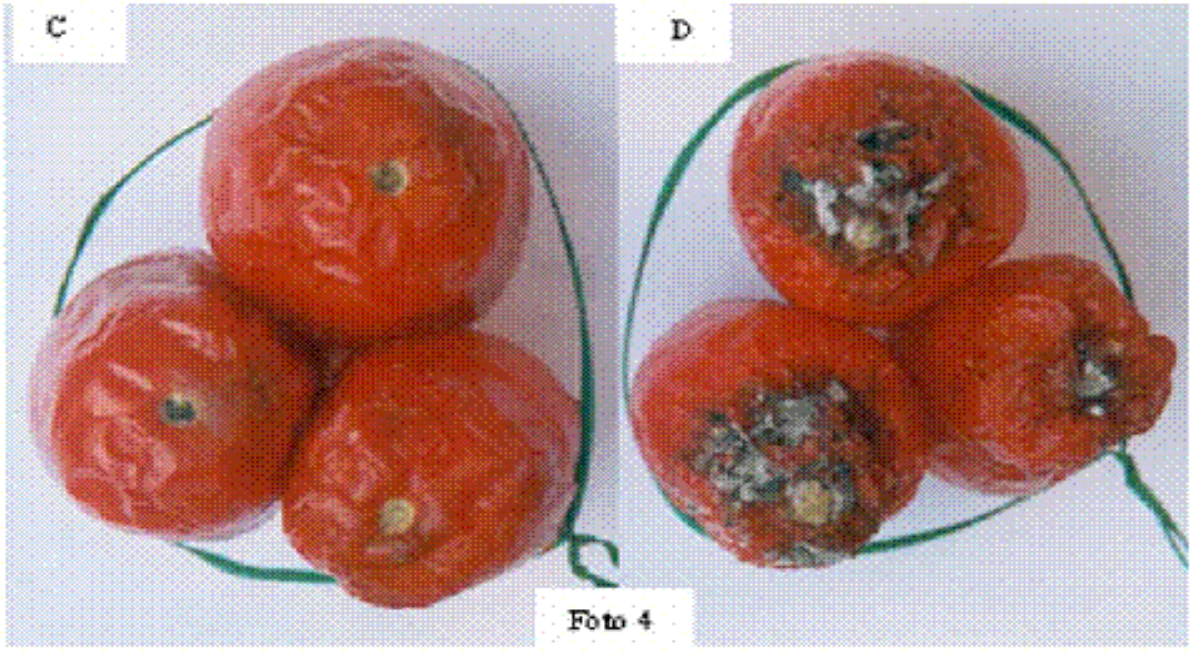


Photo 1 & 2: (Pictures taken 21 days after harvest)
Tomatoes **A** were grown with ERGOFIT and with their higher sugar content and antioxidants they are more robust (longer shelf life) than **B**.





Photos 3 & 4: (33 days after harvest)
Both batches of tomatoes were placed in the same container. 5 days at ambient temperature and the rest spent refrigerated. 12 days after photos 1 & 2 were taken we can see that tomatoes **C** continue to lose water, but are not attacked by mould while the **D** tomatoes deteriorate quickly due to the rapid spread of mould.

Photo 5
The tomatoes in row **G** are the ones from row **C** in photo 3. They have been sliced in half so you can see their entire circumference. The difference in shelf life and robustness is quite clear.

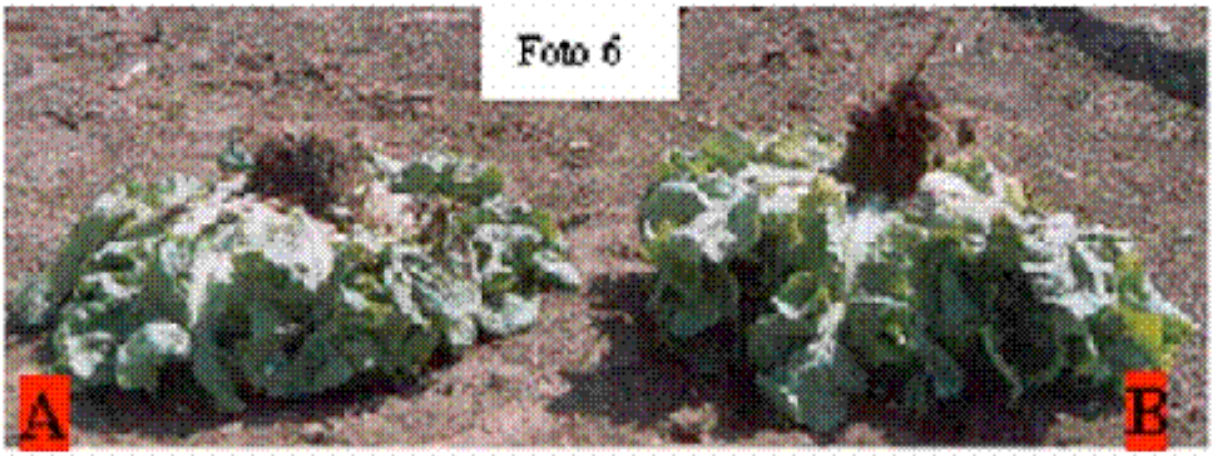
Photo 1
Lettuce treated in the nursery once and in the field twice with ERGOFIT. Photo taken at harvest time. 63 days after transplant.

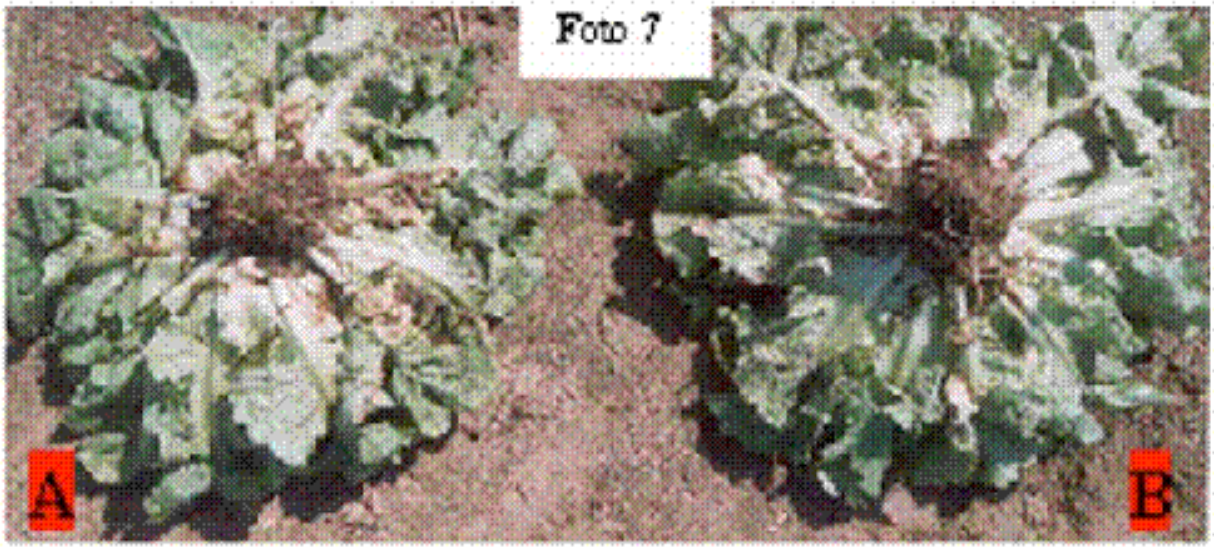
Photo 2
Lettuce not treated with ERGOFIT. Taken at harvest 70 days from transplant.

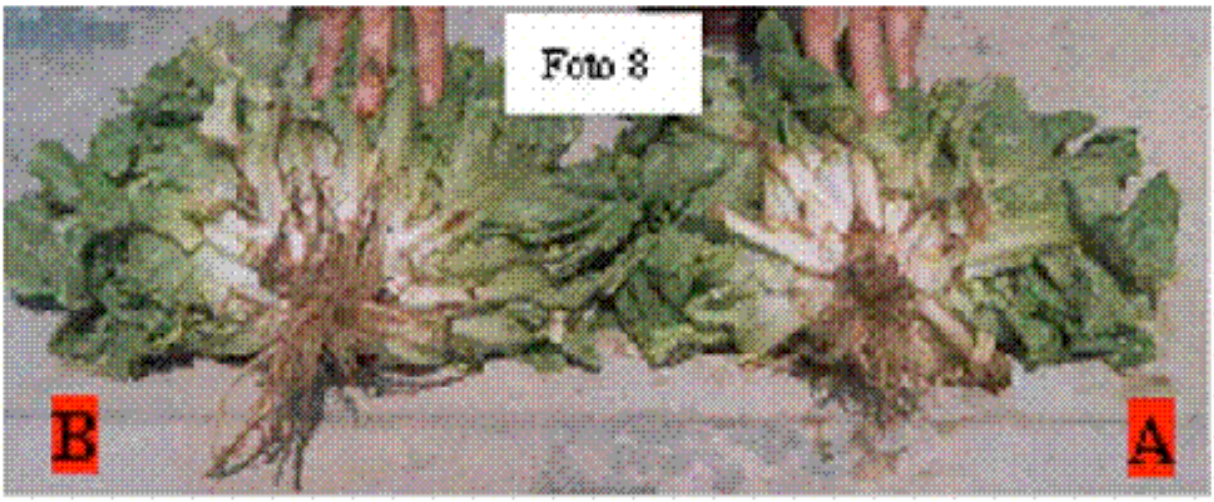
Photo 3
A rows were not treated with ERGOFIT. **B** rows were dealt with in the nursery seedbed and in the field with two treatments of ERGOFIT.

Photo 4 (close up of **A** rows)
Untreated with ERGO. Row **A** plants are smaller and consequently more of a space between them.

Photo 5 (Close up: row **B**)
Row **B** plants are larger and therefore have less of a distance between each other.







photos 6 to 9
Series of pics showing the root structures. B is the ERGOFIT roots

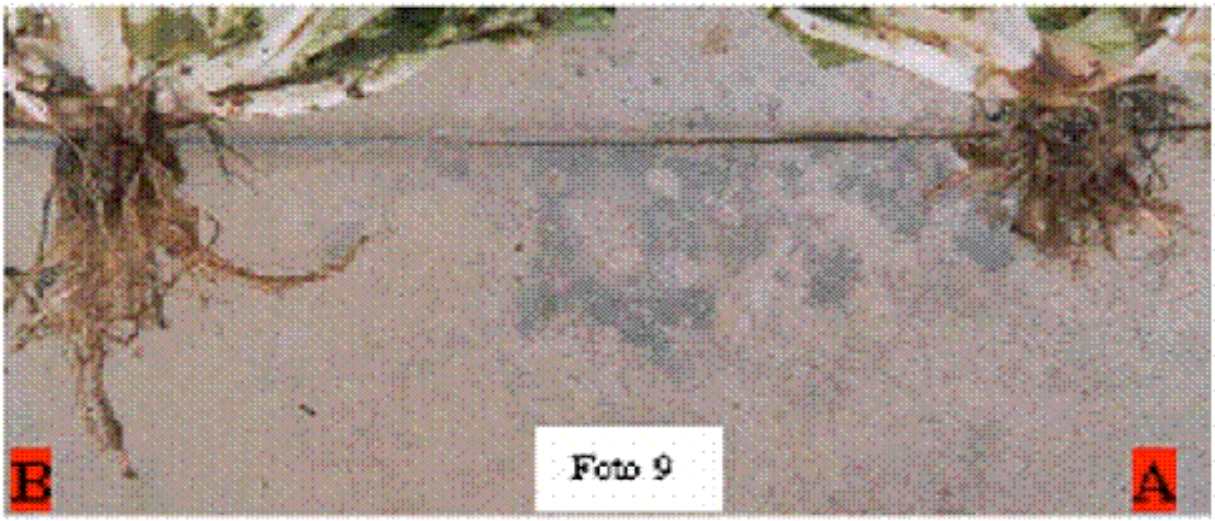


Photo 10
Chicory that is ERGOFIT treated (nursery and field).

Photo 11
Chicory not ERGOFIT treated.

Composting

PREAMBLE

Composting comprises all the complex biological reactions which make up the decomposition of the organic material in aerobic conditions (living micro-organisms coming into contact with the air). The ideal components to make up compost can be of - animal origin, (solid and liquid defecation, leftovers from the butchery, tannery, fishing industries etc.), - vegetable origin, (dry sticks, grass cuts, dried vine fruits, wine residue, algae, olive press residue, vegetable and fruit leftovers, remains from distilleries, bottling plants, etc.) - mixed in origin,(urban waste, remains from food industries, etc.).

During the decomposing process, the injected micro-organisms alter, following the appropriate reactions, the organic substances, and in so doing, transform unstable substances into more stable composts which contain a slow energy release, (humus substances), to a very high energy content ready-for-use (proteins, sugars, cellulose, fats). The above-mentioned components, appropriately bio-elaborated, supply a humic substance which processes a significant amount of organic material in the soil which mineralizes every year.

TECHNIQUE

The processes in bio-transformation occur in less time when the components are placed in heaps. To prepare these heaps one must aim to aid the physical/chemical, and enzymatic/micro-biological processes which change the mass into a homogenous material rich in fertilizing value. To reach this objective within reasonable time, (3 to 4 months), it is vital to utilize an injection which contains selected enzymes and bacteria; and for this purpose, BEA, has launched a specific product with the commercial name of BIOZIMOSTART, which specifically spear-heads the process at hand.

The necessary procedure is as follows:

• One must come up with an equilibrium between the geometric size of the granules which make up the heaps. They need to be adequately small to maximize the contact surface area, (for the purpose of enzyme/bacteria attack), as well as large enough to allow air circulation (oxygen is essential to maintain the high speed of bio-transformation);

• The heaps require a height that avoid compression, avoid going over a height of 2.5 meters, with a base of 3 to 4 meters, and a length at will;

• For the first 30 days of fermentation, the bio- mass of the heaps must have a humidity between 60 and 75%, and a ratio of 25 to 30 for carbon/nitrogen;

• The carbon needs to be present in the form of sugars, starch, cellulose, lignin, with a ratio that is balanced to avoid nitrogen losses and to obtain a well fermented final product, which is crumbly, slow in mineralization with a high fertilizing potential;

• The temperature, during the first 15 to 20 days, at the center of the heap must not go below 55 degrees C;

• Other than temperature it is imperative to ensure: there is sufficient aeration, carbon/nitrogen ratio maintained at correct levels and that the humidity is within the recommended levels;

• Throughout the time taken to prepare the heap there must be no escape of an ammonia odour which means there is more nitrogen with respect to carbon, or that carbon is not available;

• The pH needs to be controlled and maintained between 6,5 and 7,5;

• Within the first 30 days mulching every 5 to 7 days in order to ensure that the heaps are oxygenated and homogenized, and in the following 2 to 3 months in succession, mulching every 15 to 20 days;

• So as to reach a point that the heaps are ready, they can go to 3 meters in height with a base of 6 to 8 meters from the 31st to the 60th day;

• From the 61st to the 90th to 120th day, the height can reach 4 to 6 meters without any limits to the base.

COMPOST STARTING AND ITS HEAT CONDUCTION

A proper start to composting requires, 0,5 to 1 kg BIOZIMOSTART diluted in a quantity of water which permits uniform distribution. It may be necessary after a week to add urea and/or saccharin substances to the compost heap to create conditions which start the fermentation processes. For example if ammonia is expelled it is necessary to add molasses or other substances riche in sugars to avoid nitrogen losses. If the carbon readily available has been consumed by the bacteria it is

necessary to add urea to avoid slowing down the process and avoid carbon losses in the form of carbon dioxide.
In order to maintain humidity within the optimal range, water must be introduced before it falls below the minimum value, by way of sprinkling and taking care that it permeates through the bio mass and does not run off the sides. Should the pH radically fluctuate from the optimal values the following corrective measures can be implemented:

- If the pH falls below 5,5 add calcium carbonate or hydrated lime;
- If it rises above 8 add mineral phosphates or saccharine substances;

CONCLUSIONS

- The compost obtained in this way is of a superior quality than that found commercially. It is high in agronomic worth because it is void of phyto-toxins with a high quantity of organic material, humus and micro-organisms;
- Furthermore it is odourless and absent of invading plant species. The recycling of stabilized residue in agriculture by way of precise composting affords economic, energy, and material savings. Companies see a real saving because they require 30 to 70% less synthetic fertilizers and 60 to 90% less micro-elements;
- Plants are more resilient and require less treatment with Pesticides/Herbicides. There is a progressive decrease in the need to work the land lesser use of mechanical implements accompanied by a lesser consumption of energy. The ecosystem benefits clearly from a lesser use of gasolines, chemical fertilizers, and phyto-pharmaceuticals. Organic humus substances returned to the soil begets a real quality to quantity ratio of improvement for the agricultural produce.

Making Humus

Carbon Material + Nitrogen Material + Moisture + Air = Compost

The secret ingredient in this recipe is the microlife-bacteria, fungi and other tiny organisms that inhabit the surfaces of organic material. Acting as an elaborate food chain within a pile of yard and garden waste, they decompose it as they eat and reproduce. Pile some moist carbon material (dried brown materials such as fallen leaves or straw) either alone or with a much smaller proportion of nitrogen material (moist, green stuff such as vegetable peelings, fresh weeds or grass clippings), and let it happen. With sufficient air the organisms thrive, generating heat within the pile. Eventually, the assembled yard waste is reduced to soft, dark humus.

Encourage even more feverish microbial activity by shredding the material before piling it, turning or stirring the pile more often, or adding more organisms such as worms.

Here are some sources of humus available to gardeners:

- leaves (chopped or shredded)
- prunings (grass clippings)
- leaf mold (semi-composted leaves)
- non meat related kitchen waste
- sawdust (from non treated woods)
- weeds, dead plants (disease and seed free)
- wood chips
- bark products
- topsoil
- mushroom soil
- peat moss
- manures (dried)
- farm crop residues
- straw

Tree Cuttings

THE PRODUCTION OF COMPOST USING CHOPPED TREE CUTTINGS

By composting, we mean a biochemical process which through thermophilic bio-oxidization in an anaerobic environment leads to the transformation of diverse and complex organic materials into more stable compounds than those prior to the process. Such a process is mainly implemented through mesophilic and thermophylous micro-organisms, that is, having a preference for medium or high temperatures, firstly attack and degrade the organic fraction that is more easily assimilable, essentially compounds from relatively simple molecules such as carbohydrates, lipids, amino acids and proteins, and afterwards the more complex compounds such as cellulose substances and green lignin, and then, finally, wood.

At the above-mentioned degradation phase, a phase of polymerisation of the obtained molecules follows with the formation of humic compounds.

- Acacia wood

The trunks, branches and roots should to be ground up as finely as possible (the chips should not exceed the dimensions of $1cm^3$ and should have a level of humidity between and including 65 and 75%); each ton of material must be inoculated with 1000g of BIOSAN, in order to render the action of the micro-organisms more efficient. In addition, for every ton of material 10kg of urea with 40kg of molasses, 5kg of superphosphate (18-20% P_20_5), 5kg of micronized zeolite and 5kg of calcium carbonate in powder form (the type that is used in feed-stuff production activity) or where there is a lack of gypsum. All of this must be mixed homogenously.

The molasses, the urea and the 18-20% P_20_5 superphosphate and the BIOSAN must be dissolved in 50-70 litres of water, the calcium carbonate or gypsum and the zeolite added. Pour the mixture onto the chips and mix so that it comes into contact that most of them.

With the integrated and inoculated materials, heaps with an initial height of not more than 3-3.5 metres and a length as long as needed). To prepare a heap, one needs at least 2-3 tons to have sufficient mass to avoid rapid thermal dispersal that would impede heating).

After 5-7 days from the time of preparation, the heaps must be mixed again and oxygenated. This operation must be repeated after another 7-10 days. Afterwards this is done again every 15 days for two operations, then every 20 days until the heaps being to cool down (70-80 days). From the beginning of the process, a period of 100-120 days elapses and an indication that the work has been correctly carried out will be the characteristic odour of earth and from the presence of mould on the outside surface and inwards to a depth of some centimetres. At this point, the compost is ready to be distributed at a rate of 2-3 tons per hectare.

From the third day and for the first 30 days, the internal temperature of the heaps should be above 50° C and the humidity should not be less than 60%. If necessary, one would need to irrigate. In order to avoid incidents relating to suffocation, the humidity should not exceed 75%.

During the maturation period, from the 45th to the 60th day and from then on, one proceeds with the finalisation of the product, during which one should verify a slow dehydration, at which point one should no longer irrigate the heaps.

The heaps should be covered with plastic sheets to avoid any rainfall which would increase the percentage of water excessively, particularly in the initial phase. A mechanical arm and or mechanical pole should be sufficient.