

E R G O F I T O I N A C T I O N

Give Nature What Nature Wants

Cacao



ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

CACAO:

The **cocoa bean**, or simply **cocoa**, is the dried and fully fermented fatty seed of *Theobroma cacao*, from which cocoa solids and cocoa butter are extracted. They are the basis of chocolate, as well as many Mesoamerican foods such as mole sauce and tejate.

A cocoa pod (fruit) has a rough and leathery rind about 3 cm (1.2 in) thick (this varies with the origin and variety of pod). It is filled with sweet, mucilaginous pulp (called 'baba de cacao' in South America) enclosing 30 to 50 large seeds that are fairly soft and white to a pale lavender colour. While seeds are usually white, they become violet or reddish brown during the drying process. The exception is rare varieties of white cacao, in which the seeds remain white. Historically, white cacao was cultivated by the Rama people of Nicaragua.

ORCHARDS:

An orchard is an intentional planting of plants, shrubs (such as coffee) or trees that is maintained for food production. Orchards comprise fruit, berry or nut-producing trees that are grown for commercial production.

The general health of the orchard directly translates into its yield, therefore financial income for the farmer. There are many factors that can affect the fruit tree performance in terms of yields. One of the major reasons is the continuous and often increased dosage of chemical fertilisation while often neglecting the vital natural bacteriological balance. Although the types of large plants or fruit trees are numerous, the basics remain the same, the radical apparatus, the photosynthesis; the fruits or berries they bear and the sicknesses they suffer are similar amongst many other common factors.

SAPLINGS:

A healthy sapling will make a great difference when planting.

Saplings, like all plants, require a healthy rhizosphere to thrive. There are numerous media and fertilisation approaches for saplings, but radical health is vital in all cases.

In order to ensure correct beneficial microbial activity at root level, a small dose (2 grams) of **Ergofito Universal Plus** per sapling is advisable. Apply the said dosage every 20 days for five applications or until transplanting

(Please refer to **Ergofito** brochure for listed benefits)

Bio Agent	Quantity	When
Ergofito Universal Plus	2 grams per Plantlet	When Seeding and or Transplanting

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

GROWING & GROWN PLANTS:

Growing plants will benefit from a balanced rhizosphere with the correct beneficial microbial activity.

Yearly application:

Apply once a year on the ground around the tree, in the diameter of the canopy the following:

Bio Agent	Quantity	When
Ergostart Bio	125Kg Per Hectare	Immediately

The above is applied with sufficient water, generally diluted 1:50, (1Kg of product per 50 liters of water). **Ergostart Bio** will immediately start decomposing all inert organic matter into plant food. More important it will de-mineralize any accumulation in the rhizosphere that is and has suffocated the soil. It will start by converting all of the above into humus, thus rejuvenating tired soils and allow normal and healthy roots development.

Bio Agent	Quantity	When
Ergofito Universal Plus	10 Kg per Hectare	15 Days After the Above Application
Ergofito Universal Plus	10 Kg per Hectare	When the Plant Flowers
Ergofito Universal Plus	10 Kg per Hectare	When Buds Appear

The above applications will ensure superior growth and a strong preventive defense against plant sicknesses and parasitic attacks.

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 microhabitat toxic and sheds off its root hair. This prevents other root hairs from exploring soil that has been exhausted. Through chemical fertilisation 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

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

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%.

Ergofito 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 that is full of organic material, high in microbiological 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.

CACAO PLANT SICKNESSES:

Cacao plants sicknesses are divided into four sectors.

1. Bacterial diseases
2. Fungal diseases
3. Miscellaneous diseases and disorders
4. Nematodes parasitic
5. Viral and Viroid diseases

Fungal diseases	
Anthracnose	<i>Glomerella cingulata</i>
Armillaria root rot	<i>Armillaria mellea</i>
Black pod	<i>Phytophthora capsici</i> <i>Phytophthora citrophthora</i> <i>Phytophthora heveae</i> <i>Phytophthora megakarya</i> <i>Phytophthora palmivora</i>
Black root	<i>Rosellinia bunodes</i> <i>Rosellinia pepo</i>
Brown root	<i>Phellinus noxius</i>
Canker	<i>Phytophthora citrophthora</i> <i>Phytophthora palmivora</i> <i>Ceratocystis fimbriata</i>
Ceratocystis wilt	<i>Ceratocystis cacaofunesta</i> <i>Ceratocystis moniliformis</i> <i>Ceratocystis paradoxa</i>
Collar crack	<i>Armillariella mellea</i> <i>Armillariella tabescens</i>
Collar rot	<i>Ustilina deusta</i>
Cushion gall (green-point gall)	<i>Nectria rigidiuscula</i> <i>Fusarium decemcellulare</i>
Dieback	Physiological, stress induced, more than 80 fungal species associated with this syndrome
Frosty pod	<i>Moniliophthora roreri'</i>
Horse hair blight	<i>Crinipellis sarmentosa</i>
Lasioidiplodia pod rot	<i>Lasioidiplodia theobromae</i> <i>Botryodiplodia theobromae</i>
Leaf anthracnose	<i>Colletotrichum</i> spp.
Macrophoma pod rot	<i>Macrophoma</i> spp.

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

Moniliophthora pod rot	<i>Moniliophthora roreri</i>
Phytophthora pod rot	<i>Phytophthora capsici</i> <i>Phytophthora citrophthora</i> <i>Phytophthora hevae</i> <i>Phytophthora megakarya</i> <i>Phytophthora palmivora</i>
Pink disease	<i>Erythricium salmonicolor</i>
Sudden death	<i>Verticillium dahliae</i> <i>Mycocleptodiscus terrestris</i>
Thread blight	<i>Ceratobasidium koleroga</i>
Trachysphaera pot rot (mealy pod)	<i>Trachysphaera fructigena</i>
Vascular streak die-back	<i>Oncobasidium theobromae</i>
Violet root rot	<i>Nectria mauritiicola</i> <i>Sphaerostilbe repens</i>
Wet root rot	<i>Ganoderma philippii</i>
White root rot	<i>Rigidoporus microporus</i> <i>Rigidoporus lignosus</i>
White thread	<i>Marasmiellus scandens</i>
Witches' broom	<i>Moniliophthora perniciosa</i>

Miscellaneous diseases

Algal disease	<i>Cephaleuros virescens</i>
Cherelle wilt	Physiological, no specific pathogen involved

Nematodes, parasitic

Awl nematode	<i>Dolichodorus</i> spp.
Cyst nematode	<i>Heterodera</i> spp.
Dagger nematode	<i>Xiphinema</i> spp.
Lesion nematode	<i>Pratylenchus</i> spp.
Reniform nematode	<i>Rotylenchulus</i> spp.
Ring nematode	<i>Hoplolaimus</i> spp.
Root-knot nematode	<i>Meloidogyne</i> spp.
Spiral nematode	<i>Helicotylencus</i> spp.
Stubby root nematode	<i>Trichodorus</i> spp.

Viral and viroid diseases

Cacao swollen shoot	Cacao swollen-shoot virus (CSSV)
Cacao yellow mosaic	Cacao yellow mosaic virus (CYMV)
Cacao necrosis	Cacao necrosis virus (CNV)

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

How does Ergofito help the plants combat plant sicknesses?

The multiplication of the beneficial bacteria acts in an antagonistic and repressive way towards the phytopathogenic micro-organisms, particularly present in soils lacking humus. The mechanism of this antagonistic/repressive action towards the phytopathogenic microorganisms can be summarized as follows:

- Micro parasitism: Occurs when the lyses of the cell of fungi and pathogen mildew or nematodes through enzymatic activity are attacked.
- Soil sanitation: Occurs with the entry of toxic metabolites for the pathogen microorganisms, such as phenols, tannins, chlorogenic acid and auxins (biochemical resistance)
- Food competition: This action takes place by the new micro-organisms devouring the existing food source present in the soil thus starving the pathogens.
- Strengthening of the threshold resistance: Promote the structural thickening of the tissues of the epicuticular layers of protection of the leaves and roots that impede penetration into the plant.

The mechanism:

The stimulation of the bacterial activity allows the beneficial (**Ergofito**) micro-organisms to occupy spaces in the plant and the surrounding soil in a complex series of physical, chemical and biological reactions that act against the agent that cause plant diseases.

- Reduction of the spaces which are normally occupied by pathogens creation of biological antagonistic control of pathogens
- Accentuation in the reaction of the plant's immune system
- Stimulation of the production Phytoalexin

ERGOFITO ACTION IN PREVENTIVE AND CURATIVE SITUATIONS:

- More efficient defense against parasitic insects due to the plant strengthening
- Fungal preventive action to confront the infections due to Mycogone and Verticillium
- Rot control in seedbeds caused by Pythium & Phytophthora.
- Basal rot control of vegetable crops, agricultural and ornamental due to Phycomycete and Rizoctomia, Sclerotium, Sclerotinia, Botrytis etc.

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

- Reduction in the incidence of vascular diseases responsible for the withering caused by Fusarium and Verticillium.
- Preventive and curative action in the arboreal cultures (orchards, urban greenery, citrus etc.) as well as forestal fragrances towards the responsible agents for branch cancer (Nectria, Cytospora, Phopsis etc.). Also towards radical attacks due to Basidiomycetes (Armillaria, Fomes, Stereum, etc.) It will also protect leaves cuts from been penetrated by pathogenic fungi.

TREATING FUNGAL DISEASES:

Over and above the recommended **Ergofito** Fertilization, apply the following for bacterial diseases:

FIRST APPLICATION RADICAL:

Bio Agent	Quantity	When
Ergofito Coffea Fungal (A)	31 Kg Per Hectare	Immediately

SECOND THIRD AND FOURTH APPLICATION FOLIAR:

Bio Agent	Quantity	When
Ergofito Coffea Fungal (B)	11 Kg Per Hectare	10 Days Later
Ergofito Coffea Fungal (B)	11 Kg Per Hectare	10 Days Later
Ergofito Coffea Fungal (B)	11 Kg Per Hectare	10 Days Later

TREATING NEMATODES/ PARASITIC DISEASES:

Over and above the recommended Ergofito Fertilization, apply the following for bacterial diseases:

ALL APPLICATIONS RADICAL:

Bio Agent	Quantity	When
Ergofito Nemacontrol (A)	105Kg Per Hectare	Immediately
Ergofito Nemacontrol (A)	5Kg Per Hectare	10 Days Later

ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net

TREATING VIRAL DISEASES:

Over and above the recommended Ergofito Fertilization, apply the following for bacterial diseases:

FIRST APPLICATION RADICAL:

Bio Agent	Quantity	When
Ergofito Viral (A)	31 Kg Per Hectare	Immediately

SECOND THIRD AND FOURTH APPLICATION FOLIAR:

Bio Agent	Quantity	When
Ergofito Viral (B)	11 Kg Per Hectare	10 Days Later
Ergofito Viral (B)	11 Kg Per Hectare	10 Days Later
Ergofito Viral (B)	11 Kg Per Hectare	10 Days Later

MISCELLANEOUS DISEASES AND DISORDERS:

RADICAL APPLICATION:

Bio Agent	Quantity	When
Ergofito Defense	4 Kg Per Hectare	Immediately
Ergofito Defense	4 Kg Per Hectare	10 Days Later
Ergofito Defense	4 Kg Per Hectare	10 Days Later
Ergofito Defense	4 Kg Per Hectare	10 Days Later



ERGOFITO

www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: ergofito@telkomsa.net