

**ABTEC<sup>®</sup>**

*The Organic People*

**To Reap Rich Harvest**



**We change soil  
friendly**

**ABTEC<sup>®</sup> Bio-Fertilizers**



**AGRO BIO-TECH**

**RESEARCH CENTRE LTD**

DEALERS: RAIDCO, KAIC LTD., SIDCO, Co-Operative Societies

**THE ONLY PRIVATE SECTOR UNIT IN KERALA WITH CENTRAL GOVT. GRANT AND APPROVAL**

As our economy is primarily related to agriculture, fertility of soil and quality of yield is of paramount importance. Considering the special nature of Kerala's soil, the region's geophysical character and climatic conditions, the chemical fertilizer with high contents is bound to create more damage to soil and yield in the long run. Not to speak of the possible health hazards.

But now, here is an option. An option that is so soil-friendly which offers increased yield and high quality. At the same time providing for profitable and sustainable agriculture.

## Bio-Fertilizer in a Nutshell



Bio-Fertilizers are preparations containing numerous beneficial, micro-organisms capable of providing plant nutrients to soil-plant system by their biological actions. **ABTEC** produces bio-fertilizers that enrich the soil Nitrogen and Phosphorus adding fertility to soil besides, boosting up crop yield.

### Just dig more into details...

Bio-fertilizers promote profitable and sustainable agriculture through high yield and quality. Now, take closer look at the varied effects they have on soil and agriculture.

The Common Micro Organisms are classified into two:

1. Nitrogen fixing organisms which include; Rhizobium, Azospirillum and Azatobacter.
2. Phosphorus solubilizing organisms which include: Phosphobacteria and VA-Mycorrhiza.

## ABTEC

### The right input for the best output

Bio-Fertilizers by **ABTEC** act in many ways. Enriching the soil with Nitrogen and phosphorus, they improve the physical, chemical and biological properties of the soil. Saving on cost, they work well without any adverse effect on soil-plant system.

Not just that. While keeping the soil so fertile, they promote sustainable agriculture. The Micro-organisms in the bio-fertilizers help in biological nitrogen fixation, phosphorus solubilization, mineralization and transformation of several essential elements to available forms.

### How do they function?

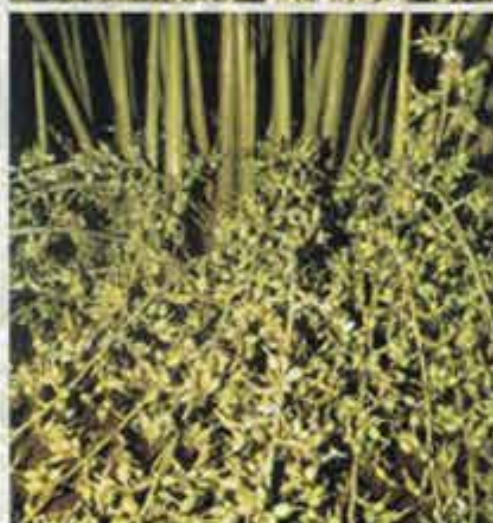
Rhizobium fixes atmospheric Nitrogen in legumes. A minimum of 50Kg. nitrogen per hectare per season is fixed through its actions. This, in turn contributes 10 to 25% yield increase along with mineralization of other nutrients. On the other hand, Azospirillum fixes atmospheric Nitrogen in non-legumes while a minimum of 40 Kg. Nitrogen per hectare per season is fixed. Resulting in 15 to 25% increased yield, it produces several growth promoting substances to stimulate plant growth. Phospho bacteria solubilizes the fixed phosphorous in soil and boost up organic acids and enzymes. This contributes to root growth and development. VA- Mycorrhiza accumulates near root-zone and accelerates root growth. Besides, it increases the efficiency of Rock Phosphate and other P carries.

## Bio Fertilizers and crops Works well for many

Rhizobium works well for all legume crops. This include: Black grams, Green grams, Horse grams, Bengal grams, Groundnut, Cowpea, Beans, Soyabean, Green manures, cover crops like Mucuna, Pueraria, Calapagonium etc. Azospirillum works well for all crops except legume including Rubber, Tea, Coconut, Banana, Rice, Sugarcane, Vegetables, Millets etc. Apart from these, Phosphobacteria and VAM are ideal bio-fertilizers for all crops for phosphorus nutrition.

### Precautions to be followed

1. Don't apply bio-fertilizers along with other chemical fertilizers.
2. Don't apply bio-fertilizers when the soil is too dry and hot.
3. During seed treatment, treat the seeds only 24 hours after the chemical treatment, if any.
4. Use specific bio-fertilizers to suitable crops.
5. Store bio-fertilizers without any contamination in a cool place away from direct sunlight and heat.



### Methods of Application

#### 1. Seed Treatment

Step-1: 200 gms of bio-fertilizer is mixed with 250 ml. Of jaggery or 'Kanji' and prepare a slurry.

Step-2: Add the seeds required for 1 acre to the above.

Step-3 : Spread the seeds then to dry up in shade on a cloth or paper.

Step-4: Sow the seeds within 24 hours after treatment.

#### 2. Root / Sett Dipping

Step-1: Mix 400 gms of bio-fertilizers with 15L. Of water.

Step-2 : Dip the roots/sets in the slurry for 15 to 30 minutes and transplant.

#### 3. Soil Application

Step-1 : Mix 800 gms- 1 Kgs of bio-fertilizers with 10 Kg. Of compost or 10 Kg of sand/ soil.

Step-2 : Apply the above mixture evenly in the field

#### 4. Pit Application

Apply 20 gms of bio-fertilizer to each pit along with compost while planting.





## **AGRO BIO-TECH** **RESEARCH CENTRE LTD**

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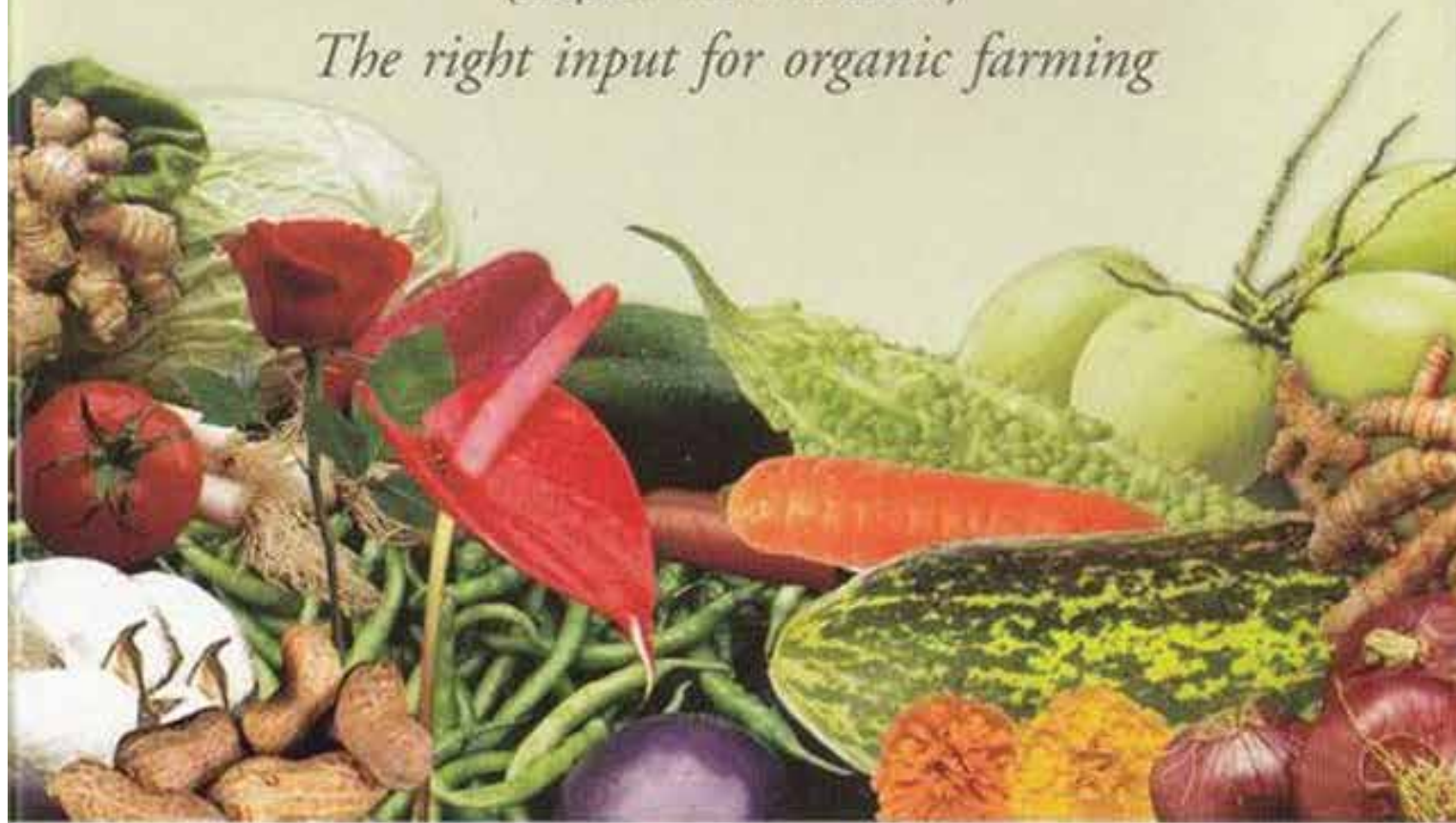


# ABTEC<sup>®</sup>

*The Organic People*

**Bio-Fertilizers & Bio-Pesticides**  
(Liquid Formulation)

*The right input for organic farming*



**AGRO BIO-TECH**  
**RESEARCH CENTRE LTD**

AN ISO 9001 - 2000 CERTIFIED COMPANY

## *Agro Bio-Tech: A Profile*

- ▶ Agro Bio-Tech Research Centre Ltd. was established in 1993.
- ▶ The Pioneers in the manufacture of Bio-Fertilizers and Bio-Pesticides in Kerala.
- ▶ Ours is the only unit in Kerala which received a grant of Rs. 10 lakhs from the Govt. of India for further development of laboratory. This amount is being passed to the farmers by reducing the price of our bio-fertilizers through an agreement signed with the Director of Agriculture.
- ▶ As per the inspection conducted jointly by the Directorate of Agriculture Kerala and Kerala Agricultural University we are having highest production capacity in Kerala.
- ▶ Our bio control agent ABTEC TRICHO (*Trichoderma* spp.) is the only one approved by the Central Insecticides Board (C.I.B.) in Kerala.
- ▶ Ours is the only unit in Kerala which has signed MOU with ICRISAT (International Crop Research Institute for Semi Arid Tropics), Hyderabad. This enables us to produce new bio products adopting latest technologies followed by ICRISAT.
- ▶ Ours is the first ISO 9001-2000 certified Bio-input manufacturing unit in Kerala.
- ▶ We have in house R&D facility headed by eminent scientists for the quality control of our products and for the development of new bio products.
- ▶ As a token of our commitment to our customers, we have started a Mobile-Agri-Clinic whereby the farmers will get free service of well experienced scientists of different branches viz: Soil Science, Agronomy, Microbiology, Entomology, Plant Pathology, etc.
- ▶ By supplying quality products we are able to create a network of satisfied farmers through out India.



## ABTEC Tricho (Trichoderma Sp.)

**Formulation:** ABTEC Tricho is available in liquid form with a high spore count of  $3 \times 10^7$  c.f.u./ml. It is an eco friendly bio fungicide containing spores, different enzymes and antibiotics. They are mainly used for controlling soil-borne plant diseases. Also effective against certain foliar diseases caused by pathogenic fungi.

**Recommended for:** Quick wilt of black pepper, foot rot of betel vine, soft rot of ginger, turmeric, Galinga, safed musli capsule rot of cardamom, clumprot of cardamom, Panama wilt of banana, fusarium wilt of cotton, guava, pigeon pea, vanilla, grapes, etc, damping off of vegetables, wilt of medicinal and ornamental plants, abnormal leaf fall of rubber, etc.

### Methods of application

**Soil application:** Mix 1 litre ABTEC Tricho (for 1 Acre) with 200 kg. organic manure and apply in moist soil/base of trees @ 1 kg./potted plants @ 250 g. Prophylactic application gives better results.

**Seed treatment/seed pelleting:** Treat the seeds with Abtec Tricho @ 10 ml./1kg. seed before sowing in moist soil to control seed decay, damping off and collar rot diseases.

**Foliar spraying:** Mix 250 ml. ABTEC Tricho in 50 litres of water and spray on the foliage during evening hours.

### Mode of action

1. Competition for food with other pathogenic fungi.
2. Antibiosis. It produces antibiotics like Trichodermin, Viridin, Coninjin, etc. which kill the pathogenic fungi.
3. Mycoparasitism.



## ABTEC Beauvaria (Beauvaria bassiana)

**Formulation:** ABTEC Beauvaria is available in liquid form with a high spore count of  $3 \times 10^8$  c.f.u./ml. It is an entomopathogenic fungus used for controlling insect pests world wide. Also known as white muscardine fungus with more than 700 host species.

**Recommended crop pests:** Pests belonging to Lepidoptera, coleoptera, Hemiptera, Hymenoptera and Diptera. (Leaf eating caterpillars of rice, vegetables, vanilla, cotton, tobacco etc, aphids and whiteflies in cardamom, banana, vegetables, jasmine, grapes, etc., Berry borer in coffee, rice hispa, Root grubs of cardamom, sugarcane, vegetables, coconut, arecanut, etc., pollu beetle of black pepper, etc.)

### Methods of application

**Foliar spraying:** Mix 250 ml. ABTEC Beauvaria in 50 litres of water, and spray on the foliage during evening hours.

**Soil application:** Mix 1 litre ABTEC Beauvaria with 200 kg. organic manure and apply uniformly to moist soil (1 acre) For tree crops mix 5 ml. with 1 kg. organic manure and apply at the base.



## Mode of Action

Whitish mycelia of the fungus grow over the host body and kill it by producing a toxin called Beauvericin. The disease caused by the fungus is called "white muscardine disease".

### ABTEC Verticillium (*Verticillium lecanii*)

**Formulation:** ABTEC verticillium is available in liquid form with a high spore count of  $2 \times 10^9$  c.f.u./ml. It is an entomopathogenic fungus with mycoparasitic action on rust and powdery mildew fungi.

**Recommended crop pests:** Aphids, scales, whiteflies, thrips, red spider mites, nematodes, etc.

### Methods of application

**Foliar spraying:** Mix 250 ml. ABTEC Verticillium in 50 liters of water and spray on the foliage during evening time. Very effective against coffee green scales.

**Soil application:** Mix 1 litre ABTEC Verticillium with 200 kg. organic manure. Then apply to moist soil/1 acre.



### ABTEC Hirsutella (*Hirsutella thompsonii*)

**Formulation:** ABTEC Hirsutella is available in liquid form with a high spore count of  $2 \times 10^9$  c.f.u./ml. It is an acaropathogenic fungus which can kill several eriophyid mites including the coconut mites.

**Recommended crop pests:** Coconut eriophyid mites (*Aceria guerreronis*) and other mites of vegetable and fruit crops.

### Method of application

Mix 250 ml. ABTEC Hirsutella in 50 litres of water and spray on the coconut bunches at bimonthly intervals. The same dose may be used for controlling mites on vegetables and fruit crops.

### Mode of action

By pathogenic over growth of the fungus on the host surface and within the body.



### ABTEC BACILLUS (*Bacillus Subtilis*) (BCB 19 - ICRISAT)

**Formulation:** ABTEC Bacillus is available in liquid formulation with high spore count of  $2 \times 10^9$  c.f.u./ml. It is an aerobic spore forming bacteria. It survive high temperature and therefore remain viable on leaf surface long after it has been sprayed.

**Recommended Crops:** Cardamom, pepper, vanilla, vegetable, mulberry, coffee, tea, ornamentals, cotton, grape, potato, tomato, cucurbite, etc.

### Mode of Action

It controls the growth of certain harmful bacteria and fungi, presumably by competing for nutrients, growth sites on plants, and by directly colonizing and attaching to fungal pathogens.





## Methods of application

**Foliar spraying:** Mix 250 ml. ABTEC Bacillus in 50 litres of water, and spray on the foliage during evening hours.

**Soil application:** Mix 1 litre ABTEC Bacillus with 200 kg. organic manure and apply uniformly to moist soil (acre). For tree crops mix 5 ml. with one kg organic manure and apply at the base.

## ABTEC PAECILOMYCES (*Paecilomyces lilacinus*)

ABTEC Paecilomyces is available in liquid form with a high spore count of  $2 \times 10^9$  c.f.u./ml. It is a soil inhabiting fungi, pathogenic to several root parasitising nematodes (Nematopathogenic fungi). They are pathogenic to root knot nematodes of Jasmine, Potato, tomato, chillies, brinjal, bhindi, cowpea, cucurbits, cardamom, pepper, rice cyst nematode, lesion nematodes of cocunut, arecanut, banana, pepper, etc. Attack both the egg masses and cysts of these nematodes.

### Method of Application

Used only for soil application. Mix 1 litre ABTEC Paecilomyces with 200 kg. organic manure. Add enough water and again mix well to get 30% moisture. Apply in moist soil before planting or at the base of the plants after planting. Application twice a year give better results.

## ABTEC PSEUDO (*Pseudomonas fluorescence*)

ABTEC Pseudo is available in liquid form with a high count of  $2 \times 10^9$  c.f.u./ml. They are a group of gram negative rod shaped, soil inhabiting bacteria coming under PGPR/plant growth promoting Rhizobacteria group. They are characterised by their twin properties, i.e. disease suppression and plant growth promotion. They are antagonistic to several root pathogenic fungi, bacteria, nematodes and several foliar fungal and bacterial pathogens.

**Recommended for:** Quick wilt and pollu disease of Black pepper, soft rot of ginger, turmeric, rot diseases of vanilla, foot rot, leaf spot of betelvine, sheath blight, sheath rot and blast of paddy, capsule rot and chenthal diseases of cardamom, shoot tip rot of rubber seedlings, fungal viral diseases of vegetables, etc.

### Methods of application

**Soil application:** Mix 1 litre ABTEC Pseudo (for 1 Acre) with 200 kg. organic manure and apply in moist soil/base of trees @ 1 kg./potted plants @ 250 g.

**Seed treatment/seed pelleting:** Treat the seeds with ABTEC Pseudo @ 10 ml./1kg. seed before sowing in moist soil to control seed decay, damping off and collar rot diseases.

**Foliar spraying:** Mix 250 ml. ABTEC Pseudo in 50 litre of water and spray on the foliage during evening hours.



## ABTEC Azospirillum

**Formulation:** ABTEC Azospirillum is available in liquid formulation with a high cell count of  $2 \times 10^9$  c.f.u./ml. The bacterium lives in close association with and within the root system of crop plants and has high Nitrogen fixing capacity.

**Recommended crops:** Graminae crops like rice, wheat, maize, barley, ragi, other minor millets, fodder grass, sugarcane, rubber, tea, coffee, coconut, cardamom, pepper, cotton, grapes, turmeric, ginger, banana, vegetables, fruit plants, flowering plants, vanilla, etc.

### Methods of application

**Seed Treatment:** Mix 100 ml. ABTEC Azospirillum with 1000 ml. of clean water, mix 20 - 30 kg. seeds in the solution by gentle agitation. Dry the seeds in shade for 30 min. before sowing.

**Seedling Dip:** Mix 100 ml. of ABTEC Azospirillum in 20 litres of water. Dip the root system of seedling for 20 min. in the solution before transplanting.

**Soil Application:** Mix 5 ml. of ABTEC Azospirillum with 1 kg. organic manure and apply at the base. For main field/ nursery application, (1 acre) mix 1 litre of ABTEC Azospirillum with 200 kg. organic manure and broadcast when the soil is just wet. For potted plants also ABTEC Azospirillum is very effective.

### Mode of Action

It is an associative N-fixing bacterium which colonize on the root surface as well as internal cortical tissues of the roots.

### Benefits of ABTEC Azospirillum

1. Better crop growth and seedling establishment
2. Helps to fix 15 - 20 kg. N/acre/year.
3. Increases crop yield by 15 - 20 %
4. Helps to reduce N. fertilizer by 20 - 30 %
5. Produces significant quantities of growth hormones like gibberellins, cytokinins, Indole Acetic Acid (IAA), etc.



## ABTEC Phospho bacteria

**Formulation:** ABTEC Phospho bacterium is available in liquid formulation with a high cell count of  $2 \times 10^9$  c.f.u./ml. It is a free living bacterium in soil which helps to convert the insoluble inorganic form of phosphates to simple soluble form.

**Recommended Crops:** ABTEC Phospho bacteria is recommended for all crops. Make it a practice of using this biofertilizer wherever rock phosphates are used for phosphorus nutrition of crop plants.

### Method of Application

**Seedling dip:** Mix 100 ml. ABTEC Phospho bacteria in 20 litres of clean water. Dip the roots of the seedlings for 20 min. in the slurry before transplanting/planting.

**Soil Application:** Mix 5 ml. of ABTEC Phospho bacteria with 1 kg. of organic manure and apply at the base.



For main field/Nursery application (one acre) mix 1 litre of ABTEC Phospho bacteria with 200 kg. organic manure and broadcast when the soil is just moist.

### Mode of Action

The bacterium secretes certain organic acids like fumaric acid, succinic acid, acetic acid, gluconic acid, lactic acid, etc. These organic acids help to solubilize the insoluble tricalcium phosphate and rock phosphate in soil and makes it available to crop plants.

### Benefits

1. Ensures better root development.
2. Better nutrient uptake and thereby vigorous crop growth.
3. Efficient utilization of chemical fertilizers and a saving of 15 - 20% in fertilizer cost.
4. Increase crop yield by 15 - 25 %.

### ABTEC Bio-Potash (*Frateuria aurantia*)

**Formulation:** ABTEC Bio- potash is available in liquid formulation with high cell counts of  $2 \times 10^9$  c.f.u./ml. It can tolerate a wide range of soil pH (3.5 - 8.5) and temperature (15 - 42°C). The bacteria help to mobilize the insoluble form of potassium for crop growth at a faster rate. Seventy percent of insoluble potassium is made available to the crop plants within 25 days of bio-potash application in soil.

**Recommended crops:** For all crops in all agro-climatic zones.

### Methods of application

**Soil application:** Mix 5 ml. bio-potash with 1 kg. organic manure and apply at the base, when the soil is just wet. For main field/Nursery application (one acre) mix 1 litre bio-potash with 200 kg. organic manure and broadcast when the soil is just wet.

### Mode of action

It is a potassium mobilizing bacterium which colonize in the rhizosphere.

**Advantages of ABTEC Bio-Potash**

1. Reduces cost of potash application by 50-60 %
2. Improves resistance of crop plants
3. Resistant to a wide range of soil pH and temperature.
4. Suitable to apply for all crops.
5. Improves crop growth and yield by 20-30%
6. Compatible with other bio-fertilizers



**Ecosafety:** ABTEC Biofertilizers and Bio-Pesticides are totally safe to the environment and to all living organisms.

**Shelf Life:** One year from the date of manufacture at room temperature.

**Precautions**

1. Use before the expiry date
2. Better to use the entire liquid at a time
3. Shake well before use
4. Keep it in a cool & dry place and keep away from children
5. Do not mix with chemical fertilizers and Pesticides



# **AGRO BIO-TECH**

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## **RESEARCH CENTRE LTD**

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**AN ISO 9001 - 2000 CERTIFIED COMPANY**



# VAM

ABTEC VAM is concentrated form of Vesicular Arbuscular Mycorrhiza (VAM)

## CONTENTS

Glomus fasciculatum- 1000 spores/ml

## ADVANTAGES

1. ABTEC VAM facilitates the uptake of phosphorus, potash and other micronutrients such as Zinc, Manganese, Iron, Copper, Cobalt, Molybdenum, etc to the plants.
2. ABTEC VAM increases tolerance of the host to certain soil borne pathogens.
3. ABTEC VAM helps excellent growth and girth formation in timber, pulp wood and fuel tree species from nursery stage.
4. ABTEC VAM helps to improve the growth of grasses especially turf grass and in lawns.
5. ABTEC VAM also improves water holding capacity.
6. ABTEC VAM helps to reduce nearly 25% of inorganic nitrate and phosphate fertilizer.
7. ABTEC VAM helps to increase the yield by 10% to 25%.
8. ABTEC VAM improves soil nature & fertility.

## APPLICATION

### 1. SEED TREATMENT

Mix 1kg of ABTEC VAM with 250 ml of cooled rice gruel or 5% jaggery solution.

Mix the seeds required for an acre with this solution to have a uniform coating of the ABTEC VAM over the seeds. Dry the seeds in shade for 30 minutes. Sow the treated seeds within 24 hours.

### 2. FIELD APPLICATION

Mix 1 to 2 kg of ABTEC VAM with 100 to 200kgs of Abtec organic or dried farm yard manure and broadcast in the main field just before sowing/transplanting or apply in standing crop by row or spot or broadcasting method.

### 3. SPRAYING-FOR LAWNS

Dilute 4 kg of ABTEC VAM in 200 litres of water per acre, stir well to form a solution and spray thoroughly with a sprayer. Spray during evening hours.

RECOMMENDED FOR ALL CROPS



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