

# Micro Plus

Platform for biological agriculture



MICROBIAL  
ACTIVITY  
& DIVERSITY

- **Activates plant nutrient uptake**
- **Improves drought tolerance**
- **Suitable after fumigation**
- **Dissolves hard to capture nutrients**
- **Microbes out compete pathogens & improve root health**

MicroPlus microbes colonise the root zone providing phosphorus solubilisation, nitrogen fixing, activation of nutrient uptake, root health, drought tolerance and humus production.

Range of beneficial microbes including

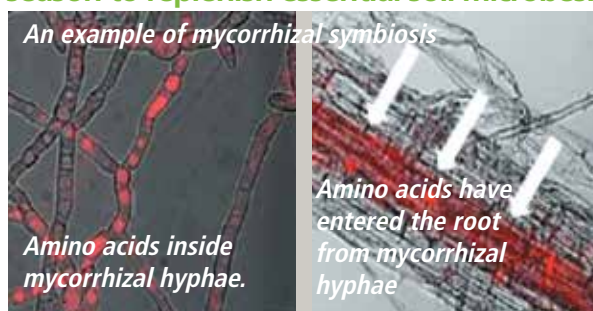
- Mycorrhiza (4 species of endo)
- Trichoderma (2 species)
- Bacillus (2 species)
- Streptomyces sp
- Pseudomonas (2 species)
- Nitrogen fixing bacteria (3 species)

## Modern agriculture depletes soil microbes

Many activities in modern agriculture deplete soil microbes.

- Annual broad-acre crops - microbes soon die once crops are harvested and they are without the presence of living roots.
- Vegetable production - soils are cultivated & fumigated, destroying roots and beneficial microbes.
- Orchards and vineyards – spraying weeds with herbicides causes plant roots and beneficial microbes to die.

**We recommend MicroPlus at the start of the season to replenish essential soil microbes.**



An example of mycorrhizal symbiosis

Amino acids inside mycorrhizal hyphae.

Amino acids have entered the root from mycorrhizal hyphae

## Why Mycorrhizal fungi are essential

80 - 90% of plants in their natural environment depend on the symbiotic relationship with mycorrhizal fungi to attain nutrients and water.

Mycorrhizal fungi consists of microscopic filaments called hyphae which are far thinner than roots or root hairs and are able to penetrate the tiniest pores and fissures in the soil. Hyphae grow from within the root cells of the host plant, spreading out into the surrounding soil, greatly increasing the surface area of the root system. Just a teaspoon of healthy soil can contain thousands of metres of fungal hyphae.

### Fertiliser Efficiency

Research confirms that mycorrhizae are particularly important in mobilising phosphorus, nitrogen, zinc, iron, calcium, magnesium, manganese, sulfur, and other tightly bound soil nutrients. They act by enzymatic release of nutrients from soils and transporting them back to the plant.

### Disease Suppression

MicroPlus contains defensive microbes that colonise the root system and release suppressive exudates such as antibiotics that inhibit infection by fungal root pathogens such as phytophthora, fusarium, phythium and rhizoctonia. Mycorrhizal fungi also defend root systems by forming a physical barrier (Chitin) to deter invasion by soil pathogens.

### Moisture Retention

The expanded and enormous absorptive area connected to the roots by mycorrhizal fungi ensures that nearly all moisture in plant's surrounding soil is accessed. In addition a shared organ called a vesicle grows inside the root cell. This vesicle is essentially a storage container for water and dissolved nutrients that can be utilised in times of deficiencies such as drought periods.

### Mycorrhizal Fungi need to be replenished

These beneficial fungi cannot survive for extended duration without the presence of living roots so they need to be replenished each year.

There is an entire journal devoted to Mycorrhiza!

*Photo left from Australian Farm Journal 2011.*

# Beneficial Microbes = healthy roots

## SUITABLE FOR USE IN:

Vegetables - potatoes, onions, tomatoes, lettuce & others.  
Fruit, nuts and vines - strawberries, melons, bananas, grapes.  
Broad-acre crops and pastures – cereals, cotton, sorghum, rhodes grass, legumes.

## STORAGE:

Store in a cool dry place in original container less than 20°C, ideally at 10°C.  
Do not freeze.

## DIRECTIONS FOR USE:

Ideally should average approximately 1kg per hectare per season. MicroPlus is compatible with a range of fertilisers and chemicals. Check with OFS for details. May be used via irrigation with filters that allow passage of 200 microns. Mix well and keep agitated.  
Dilutions Rate 1 : 100 in water.  
Not recommended for use in drip irrigation. MicroPlus includes a clay carrier and should be mixed with good agitation. If the clay particles form a residue, they can be discarded. The microbes are in the solution and the clay can separate out.

### Vegetables:

1kg per hectare at planting; dip or drench seedling roots during transplant, or as a soil drench or via irrigation. Seed potato –500g-1kg/tonne seed; apply as dust or slurry. Ideal after fumigation.

### Orchards & Vines:

Established orchards and vineyards - 1kg per hectare, via irrigation or as soil drench.  
New orchards and vineyards - soak plant root systems (500g/50L water) for up to 3 hours prior to transplanting or water-in as a soil drench (1-2g/tree).

### Broad-acre:

Maintenance: 50 - 200g per ha as seed coat.  
Rehabilitation: 200 - 500g per ha as seed coat.  
Apply as a dry mix or slurry. Mix with an auger for an even distribution on the seed.

### Nurseries:

MicroPlus can be mixed in planting soil before or during filling cells, pots and trays. Use 250 gram to 500 grams per cubic metre, depending on cell size (higher rate for smaller cells).

### Turf:

1 kg will treat 100 square metres. Water in thoroughly after application. For new plantings, use 1kg MicroPlus per ha; as a soil drench.

Use all mixture in spray and irrigation tanks; purge tanks and lines with clean water.

## PACK SIZES:

1kg, 10kg, 0.5tonne

## MYCORRHIZAL PLANTS:

Mycorrhizal fungi are an important component of MicroPlus. It is estimated 90% of plants form a symbiotic relationship with mycorrhizal fungi. We have summarised which plants do and do not use mycorrhizal fungi. Contact us for a more complete list.

### Crucial for 90% of plants including:

- Vegetables - potatoes, onions, tomatoes, lettuce & others;
- Fruit, nuts and vines - strawberries, melons, bananas, grapes.
- Broad-acre crops and pastures - cereals, cotton, sorghum, rhodes grass, legumes.

### 10% of plants do not host mycorrhiza including:

- Brassica crops - cabbage, broccoli, cauliflower, radish, turnips, canola, etc;
- Amaranthaceae crops - beets, spinach, chard etc;
- Polygonaceae crops - rhubarb, buck wheat

Virtually all other crop plants worldwide grow better with mycorrhiza. Contact us for a complete list.

## FUNGICIDE USE WITH MICROPLUS:

- Non-systemic fungicides can normally be used as a foliar spray with MicroPlus at any time.
- Soil drenching fungicides should be avoided close to the time of MicroPlus inoculation; ie two weeks before treatment (longer if systemic) & four weeks after treatment.
- Seed treatment fungicides are generally safe with MicroPlus, as they are used at low rates and are rapidly dissipated in the soil and roots.
- Foliar or soil applications of systemic fungicides can lead to accumulation of fungicide in the root tissue which have a negative impact on MicroPlus fungi. Roots of plants treated with systemic fungicide cannot be colonised by MicroPlus (mycorrhizal) fungi for up to 3 weeks after fungicide treatment.
- It is worth remembering that no fungicides eradicate either target fungi or beneficial mycorrhiza and trichoderma in MicroPlus; they only reduce development for a short period of time after application. The duration is determined by the persistence of the chemical in the environment.

Contact us for a more detailed list of compatibility.



Tel: 08 9384 3789  
Tel: 03 9008 6352  
info@organicfarming.com.au  
www.organicfarming.com.au  
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