



WMF BENEFICIAL MICROBES APPLICATION AND SEED COATING:

Introduction

Western Mineral Fertilisers microbe technology has come of age in modern agriculture. This technology, incorporating WMF Soil Microbes, organic plant derived polymers (such as Micro-STIX2) and also now the Grow Safe Range® (Microbe Coated Mineral Fertilisers), is being used in all farming sectors.

Application

FOR USE ON : Any soil type and all Plants and commercial crops.

1. Grow Safe Range® - Pre-coated Microbes on Mineral Fertiliser

Beneficial soil microbes (up to 30 different strains) have been coated onto fertiliser using WMF polymer technology. For turf and pasture, the fertiliser should be applied to moist soil or at season break (with some dry or fresh pasture cover). In cropping operations, the fertiliser can be used in down-the-boot seeding (on limited soil moisture or dry seeding). Apply fertiliser within 30 days of delivery. *Store product in dry, covered area.*

2. SEED COATING WITH BENEFICIAL MICROBES:

Western Mineral Fertilisers innovative microbe coating and polymer technology products (including WMF's "Micro-STIX2") are the culmination of extensive research & development over the last 9 years. This product is cutting edge & will lead to better bio-availability & plant-uptake of nutrients, and will further enhance Western Minerals biological/mineral programs.

Seed coating with beneficial microbes is an efficient and cost effective way of precisely inoculating the root zone of plants (where these 'beneficials' are needed most) - at the point where the seed germinates in the ground. This ensures that the beneficial bacteria, fungi and mycorrhiza are readily accessible to the root at the critical "early germination" stages, facilitating early, healthy and rapid development, and improved uptake of plant nutrients.

WMF Soil Microbe blends have up to 30 strains of specially selected microbes - designed to provide an excellent micro-environment that promotes positive effects on seed germination, seedling survival and uniform growth. These strains are selected for their ability to survive in the soil and on the seed. At planting, seed coating enhances uniform emergence. Other major advantages of seed coating with microbes, is to assist in delivering bio-available ingredients at a low dosage level with an improved yield potential. Ideal for reduced till seeding.

WMF Soil Microbes do not effect the flowability of the coated seeds through any agricultural seeders.

WMF Soil Microbes :

- An inexpensive, easy to apply seed coating.
- Increases beneficial microbes in the root zone.
- Encourages more efficient nutrient uptake.

Application of Seed Dressing:

WMF Soil Microbes can be applied as a Seed Dressing in 2 ways:

1. Unactivated in water– sow seed within 24hrs of application; (500-750g powder/tonne of seed):

- Slowly mix powder WHILE STIRRING with enough clean water to form a thick paste.
- Stir in the remaining water. Use 5-10 Litres water per tonne of seed (rates are dependent on seed type).
- Apply to seed immediately prior to planting (if required add Rhizobia at this stage). Sow seed within 24hrs.

2. Unactivated in Micro-STIX2 Polymer – use within 21 days; (500-600g Microbes/tonne of seed):

- Slowly mix the required amount of microbe powder WHILE STIRRING to enough Micro-STIX2 (above 15°C & below 30°C) to form a thick paste, (if required add Rhizobia at this stage – do not add water to this mix).
- Stir in the remainder of the Micro-STIX2. Use a total 4-6 Litres Micro-STIX2 per tonne of seed.
- Apply to seed - the Microbe / Micro-STIX2 mixture must be agitated to prevent microbes from settling out. Sow within 21 days. **NOTE – DO NOT ADD WATER to this MIX!**
- Suitable for dry seeding or seeding with limited soil moisture,

NOTE: When adding Microbe Powder to any liquid, firstly make a slurry or thick paste to dissolve the microbe powder and then add the remainder of the liquid to reach the right concentration. Keep the solution agitated to avoid Microbe solids from settling out of solution. Different seed may require different volumes – ensure seed is lightly coated without sticking together. Seed coating may be done through auger, cement mixer or by hand. Do not mix Microbe seed dressing with other seed coating products. For compatibility – contact WMF.

3. Foliar Applications

Commercial Application of WMF Microbe blends

Note : WMF Soil Microbe blends contain all the necessary microbe food (i.e. no requirement to add other nutrients such as fish or molasses). The Microbes are also designed to be used with or without WMF's Micro-STIX2.

METHOD	PROCEDURE
FOLIAR FEEDING (Cereals & Pasture)	100-150 grams Microbes per/ha <i>Activate microbes</i> in water and <i>filter prior to application</i> (see method below)**. Filter <i>Activated concentrate</i> and add to tank at 1 to 1.5 litres/ha dependent on application rate - with a minimum of 40 litres/ha of clean water. Best sprayed morning, evening, night or even when there is light rain. The dilution can be as high as 1 part concentrate – 750 parts water.
Horticulture	Apply filtered <i>Activated Concentrate</i> at between 1.5 to 2.5 litres/ha in approx 400 litres clean water. Do not apply in hot or dry conditions.

Activating The Microbes** (making <i>Activated Concentrate</i>) PRE-ACTIVATED MICROBES MUST BE USE WITHIN 2 DAYS	<ul style="list-style-type: none">To make the WMF Microbe <i>Concentrate</i> for foliar, fertigation or activated seed dressing, use the required concentration of microbe blend (around 150g powder per 1 litre of clean water).Firstly make a slurry or thick paste to dissolve the microbe powder and then add the remainder of the liquid to reach the right concentration.Stir the <i>Concentrate</i> mixture and allow to stand in a warm place (best at between 20 to 30°C) for at least 48 hours stirring occasionally.Use the mixture within 48 hours of activating. <p>For foliar or fertigation application, filter through 100um mesh filter bag immediately prior to tank mixing.</p> <p>*Note – very important that the spray equipment and tanks are clean of residual synthetic chemicals and fungicides before using WMF Microbes. When using an aerator or mister, avoid “frothing” the <i>concentrate</i> mixture. Do not exceed 30°C, as this may harm the microbes.</p>
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4. Domestic Application of WMF Microbe blends

- Watering in – Root or Soil Drench:**
 - Mix the Microbe powder with clean water at the rate of a teaspoon (approx 5g) per 10Litres water. Stir well and apply to approximately 2 square metres.
 - Use immediately. Initially drench soil around plants, & then lightly water after 30mins. Repeat in 24-30d.
 - Foliar Spaying or Fertigation:**
 - Activate the Microbe powder in clean water at the rate of a 1/3 to 2/3 cup (approx 150 to 250g) per 10Litres water for approx 24hrs (best at between 20 to 30°C). Stir occasionally. This Concentrate will be enough to cover approximately 1ha.
 - Dilute the activated Concentrate with clean water and apply using a spray pack. Repeat in 24 - 30days.
 - Spray underside of leaves as well – best applied early morning or late afternoon.
 - Use nozzles larger than 100um. Activated Concentrate can be filtered through nylon stockings.
 - If equipment previously used for chemicals/pesticide/fungicides, clean thoroughly & triple rinse.
 - Wash equipment after use.
- USE PRE-ACTIVATED MICROBES WITHIN 2 DAYS.**

Storage :

Micro-STIX2 should be stored in a dark place (above 15°C and below 30°C). Do NOT freeze. Best to use Micro-STIX2 at room temperature (above 15°C and below 30°C).

WMF Soil Microbe blends are delivered as a dry powder. Store powder in a sealed container (away from atmospheric moisture). Store contents in a dry and cool area. Do not expose dry powder to moisture, freezing temperatures or direct sunlight.

- Do not store in diluted form.
- Not to be taken.
- The user is referred to Material Safety Data Sheets available from Western Mineral Fertilisers.

Note: The information in this document is provided to the user in good faith and represents knowledge of the product and processes at the date of printing. Every care is taken during manufacture and handling of this product and the preparation of recommendations pertaining thereto. The manufacturer or their agents accepts no responsibility for damage arising from misuse or non-adherence to current recommendations.

