

Instructions for usage of Effective Micro-organisms (EM)

Preparation and application.

EM (abbreviation) for Effective Micro-organisms contains 80 different sorts of micro-organisms that have been collected from natural sources and grown using a specific technical method. This method and specific unique mixture have been developed by Professor Higa from the University of Ryukyus in Okinawa, Japan. The main strains of micro-organisms in EM are; lactic acid bacteria, photosynthesising bacteria, yeasts and actinomycetes. These micro-organisms have been used medicinally and in food processing for many years. This gives some indication as to how safe EM is and the benefits brought to the health and wellbeing of plants, soil, animals and human beings.

EM-1, EM-A and EM-dilutions.

EM-1 is the name given to the dormant concentrate of Effective Micro-organisms, that EM Limited supplies in plastic bottles of 1 litre and large containers of 10 litres. To apply these Effective Micro-organisms for agricultural use the EM-1 must first be activated. The activation of EM-1 is achieved by adding sugar cane molasses and water which allows the EM to start multiplying. This activated EM is known as EM-Activated (EM-A) and is prepared as follows:

Total:		10 litres EM-A	100 litres EM-A	1000 litres EM-A
EM-1	5%	0.5 litre	5 litre	50 litre
Sugar Cane Molasse	5%	0.5 litre	5 litre	50 litre

This activated EM must be allowed to ‘brew’ for a minimum of 7 days in an airtight fermentation tank which has a warming element. A fermentation process allows the activation of the micro-organisms whereby an optimal amount of beneficial bacteria is obtained.

The EM-A needs to be then diluted with water (1: maximal 100), and can then be used for many different applications. **Once the EM-A has been diluted, the solution must be used within 48 hours. The EM-A before dilution can be kept for a month in an airtight vessel.**

Applications:

The usages for EM-dilutions are widely divers and achieve an increase in the microbial diversity. These dilutions can be used for the following applications:

Soil improvement & 10 Litres EM-A dilution per 100M2.

Plant fertilizer spray or use a watering can to apply 5-6 x per growing season

Compost activation 1 litre EM-A dilution per m3 compost.

Odour control. Agriculture/composting (Contact us for detailed info.)

Seed disinfectant Immerse in 1 litre EM dilution for 30 minutes.
Bulbs and tubers: 1 hour (Infected with Fusarium 6-7 hours)
Potatoes: 30 minutes (Infected with ralstonia solanancearum 2-4 hours)

EM-1 has a shelf-life of 12 months after production. (The production date is printed on the bottle)

Instructions for using the 30, 60, 120 & 220 litre fermentation tanks.

EM Fermentation tanks.

The EM fermenters are ideal to activate the EM-1 with the sugar Cane Molasses and water to an activated EM which is then ready for use after dilution. To 'wake-up' all the organisms in the dormant EM-1 solution the fermentation tanks are easy to use and ensure a complete process.

These activator tanks are available in the following sizes: 30, 60, 120 and 220 litres.

The airlock on the top allows air to escape which is formed in the natural fermentation process but ensures that no air can enter the vessel. The warming element which is supplied with the fermentation tank ensures a constant optimal temperature during the activation process.



Airlock

Fill the outside ring with water.

This allows CO₂ (gas) to escape and prevents oxygen entering.



Tap

When the EM-A is ready it can be easily tapped off via the tap near the base of the activator



Warming element

The warming element ensures a constant temperature in the tank.

A temperature of approx. 35° C is the most effective temperature to multiply the micro-organisms.

Activation is complete after 7 days.