

"EM" stands for Effective Microorganisms. EM is an amazing technology developed by Dr. Teruo Higa from Japan in the 1980's. It has gained rapid recognition and is now used in more than 140 countries around the world.



### How Does EM1 Garden Work?

EM1 will help the decomposition process of organic materials, and during fermentation, will produce normally unavailable organics acids, such as: lactic acid, acetic acid, amino acids, malic acid and bioactive substances and vitamins. A key ingredient in this process is organic matter which is supplied by recycling crop residues, green manures and animal manure. This process leads to increased humus in the soil.

Lactic acid bacteria which are a major ingredient in EM will suppress pathogenic microbes both directly, and indirectly, through the production of actinomycetes. EM produces an antioxidant effect which improves the immune system of plants.

### Benefits of Using EM in your Garden

EM's strength is its diverse combination of microbes; initially developed as a soil and crop enhancer it now has a huge range of uses. EM can enhance soil and crops through:

- Improving root structures
- Enhancing fertiliser inputs
- Improving organic matter breakdown
- Speeding up composting processes
- Increasing soil fertility
- Improving yields and flower bloom
- Decreasing disease and pest resistance
- Reducing odours



### Maintaining the Quality of your EM

EM is a "living culture" of microorganisms, to maximize its life, follow these instructions:

- Keep airtight and out of direct sunlight
- Store at room temperature
- Keep away from chemicals

Quality can be checked by testing pH which should be between pH3.4 and pH3.9

### Making EM Ready to Use (RTU) - Expanded EM from EM1 Garden

You will need:

- A plastic bottle with lid
- A warm box, or the means to keep bottle warm 25-35°C



Always clean equipment and use chlorine free water. We recommend a 5% addition of EM1 with 5% molasses to water. To make 1 litre of EM Ready to Use, use the following process:

1. Add your molasses (50ml) to your bottle
2. Add about 30% of your water using hot or boiled water, then stir the solution to dissolve the molasses
3. Add EM (50ml); it can be added before you top up the bottle with water
4. Seal the bottle with a lid or plastic glad wrap, an airlock is ideal. You will need to release the gas by loosening the lid every day, or keep the lid slightly loose so the gas can escape.
5. Keep warm for 7 days. Use of a warm box or hot water cupboard is OK (an incubator can be easily made - ask us for details)
6. The EM-RTU is ready in 7 days and will resemble the appearance and smell of EM1. If you have access to a pH tester, the pH should be ideally around pH 3.4-3.9. This will indicate good quality.

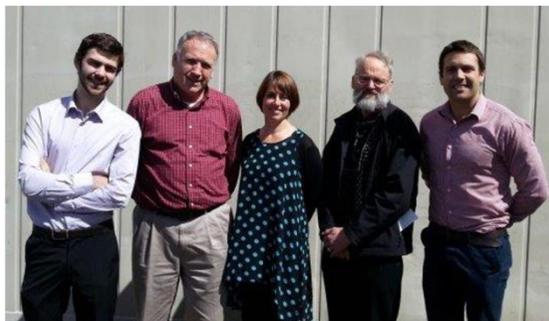
## How to use EM1 Garden

EM1 Garden can be enhanced and expanded by a secondary process using equal parts of molasses or raw sugar and water. This process will expand EM1 20 times making it very cost effective. See the opposite page for further details.

- Apply EM regularly to all vegetables and flowers. For great results applications can be repeated as often as weekly
- A watering can is a great way to apply EM, just dilute with water 1:1000 (2 capfuls in a 10 litre watering can) and give a thorough drenching of the plants and soil
- Foliar applications will boost plant growth and protect against diseases. Use EM at a 1:100 dilution in a sprayer
- Add EM to compost at 3 litres per cubic metre, or spray regularly at dilution of 1:100 over the compost to reduce flies and improve the compost
- When you weed or hoe your garden, leave the weeds on the soil surface and spray them with EM at 1:100 dilutions. This encourages breakdown and in situ composting
- Add EM at 5% to your foliar fertilizers to give increased uptake and utilization whilst improving effect and reducing the rate of fertilizer applied by 50%
- Apply EM to any areas with odour problems

## About EMNZ

EMNZ is a company focused on developing products for sustainable living in New Zealand, selling products to the agriculture, viticulture, and waste industries. Our products are based on natural ingredients, and are certified organic\*. Our philosophy is to promote natural chemical free systems for growing food and processing waste. However, we can also work with existing chemical based systems, by substituting chemicals where possible with our natural microbial solutions to enhance, rather than negatively impact, the environment.



## How to order EM

**Website:** [www.emnz.co.nz](http://www.emnz.co.nz)  
**Phone:** (03) 374-6323  
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\*BIO GRO Certified input BG2924



## EM1® Garden

EM works by getting the natural processes to function the way nature intended by stimulating biological activity in the soil and plant. Using EM will improve yields, improve soil fertility and enhance fertiliser performance.

## What is EM?

EM consists of mixed cultures of beneficial microorganisms that can be applied to increase the microbial diversity of soils and plants. EM contains four main families:

- Lactic acid bacteria
- Yeast
- Photosynthetic bacteria
- Actinomycetes and other microbes