

EFFECTIVE MICROORGANISMS

Key points:

- EM stands for effective microorganisms.
- A brew of EM contains selected species of microorganisms such as lactic acid bacteria and yeasts.
- When added as an inoculant to the soil/plant ecosystem EM has many significant beneficial impacts: it promotes germination, growth, flowering, fruiting and ripening in crop plants; enhances the photosynthetic capacity of plants; increases the breakdown of organic material and release of nutrients; increases the efficiency of fertiliser use; develops resistance of plants to pests and diseases; improves the physical, chemical and biological environments of the soil; and suppresses soil borne pathogens and pests.

Mike Daly spoke to the Canterbury Organic Growers group on the benefits of incorporating the use of EM into organic farming practices. EM stands for effective microorganisms. It contains selected species of microorganisms, mainly populations of lactic acid bacteria and yeasts, and smaller numbers of photosynthetic bacteria, actinomycetes and other types of organisms. All of these are mutually compatible and coexist in liquid culture.

This brew of naturally occurring organisms can be applied as an inoculant to increase the microbiological diversity of soils and plants. Its use can improve soil quality, soil health and the growth, yield and quality of crops, and can enhance the beneficial effects of soil and crop management practices such as the use of organic fertilisers. EM is also successfully used in waste management and for odour control in landfills and intensive animal raising operations.

In a farming situation, EM is not a substitute for other management practices but is an added dimension to optimise soil and crop management practices such as crop rotation, use of organic matter, conservation tillage, crop residue recycling, and bio-control of pests. EM can significantly enhance the beneficial effects of these practices.

EM should be stored in a container with a tight lid and out of direct sunlight. The microorganisms should survive in these conditions. To check if the batch is still viable, measure the pH – it should be in the range 3.5-4.

Bokashi is a Japanese term for fermented organic material. It is a fermented product that looks like bran. In New Zealand it is made from wheat broil or sawdust mixed with EM. It can be added to any type of solid organic matter to speed up the process of breakdown of organic matter and release of nutrients.

How to use EM

On cropping farms and horticultural properties: Use weekly on onion crops during the growing season to improve crop quality and enhance keeping properties.

Spray activated EM on to crop residues as you cultivate or turn them in. This will improve breakdown and enhance the fertilising activity of the residues.

Combine EM with fertilisers – EM will act as a bio-stimulant and increase the efficiency of fertiliser. Consider reducing the rate of fertiliser when using in conjunction with EM.

On pastoral farms: In autumn, fungal toxins can build up and cause poor animal growth rates and dead organic matter accumulates causing thatching. Spraying EM onto pasture will reduce thatching, compete against fungal toxins and enhance pasture growth and subsequently animal growth rates. An increase in clover content of pasture has been observed after applications to pasture.

In intensive animal systems, such as pig, chicken and calf rearing sheds, an integrated approach spraying EM on bedding areas and introducing EM into the feed as bokashi, or in the drinking water, can solve smell problems, improve animal growth rates, and reduce mortality rates.

*For more information on EM, see www.emnz.com, and the paper: Daly, M.J., Stewart, D.P.C. 1999. Influence of “effective microorganisms” (EM) on vegetable production and carbon mineralization – a preliminary investigation. *Journal of Sustainable Agriculture Vol. 14(2/3): 15-25.**

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