

How effective microorganisms can save the world – lessons from Thailand

By Bronwen Evans

To harness the abundance of the tropics, the soil needs humus, lots of it. I was thrilled, therefore, when I discovered piles of palm flower heads for sale at a nearby mushroom farm and took home a truckload.

My sister-in-law Sula, who manages the place, wasn't impressed. "Look at these snails!" She held out one, which almost filled her palm.

And look here!" She lifted up a palm head to reveal a muddy scab of dust and scampering lice. "Termites! Don't buy those palms any more," she huffed. As for cow manure, the other option I proposed – "too smelly! The guests won't like it."

So I had a problem. Fortunately a New Zealander, Trish Allen of Rainbow Valley Farm, gave me a solution - Effective Micro-organisms or EM. She had come to Thailand to attend a workshop about this system which is a natural way of increasing the fertility of the soil while managing pests and diseases.

EM is a mixed culture of micro organisms, in three categories: photosynthetic bacteria, lactobacillus and yeasts. In layman's terms photosynthetic bacteria fix the sun's energy into useful acids, sugars and metabolites, lactobacillus helps suppress some disease inducing microorganisms and pest populations and yeasts promote cell and root division.

The principles of EM were laid down by Mokichi Okada, the founder of Nature Farming or Kyushei in Japanese, which means "save the world." In addition to helping individual farmers, it would enhance human health and well-being, create sufficient production to feed an increasing population in a sustainable way and help to conserve the environment. Mokichi Okada died in 1955 but his mantle was assumed by Professor Teruo Higa of the Agricultural University of Okinawa. Professor Higa developed and trademarked Effective Microorganisms, or EM, and in 1989 the Asia Pacific Natural Agricultural Network (APNAN) was born in Thailand.

Thanks to APNAN, local Thai farmers began using EM on their crops, in animal husbandry and aquaculture. The government used it for waste management, water and soil pollution control and even to reduce the smells of corpses after the 2004 Tsunami.

My EM experiment began with a truckload of rice straw, piles of leaves, bags of cow manure, EM and molasses that I bought from APNAN, a 100 litre drum and Pon, my husband's 20-something nephew who had learnt about making EM in school.

We made bokashi, a special EM compost that doesn't generate as much heat as regular compost and is ready for the garden within days. This was for my new vegetable garden. My beans, which I had soaked in EM before planting in the bokashi, shot up like triflids waving their tendrils in the sky. Before long the housemaids were asking me for bean seeds to plant in their own gardens.

I also began making EM tea following the same recipe of EM, molasses and water. It needs to be left for 7-10 days to ferment and then it can be diluted with water and sprinkled on the garden. The water by the way must be pure, not chlorinated.

The first point to remember when making EM tea, otherwise known as secondary EM, is to use your nose. Primary EM from APNAN has a sweet-sour smell, somewhat like fermented kikoman sauce. This is what you are aiming for with your secondary EM.

Everything must be kept clean – so scrub out the drum each time. Left too long and the brew smells like an over-ripe Chardonnay. If there are bacterial residues in the drum, it pongs like a grubby Bordeaux. Since the effectiveness of EM is reliant on the balance of the micro organisms, APNAN advises you to throw it away if it doesn't have the correct sweet-sour smell.

EM for pest control

To tackle pests such as termites, snails and ants I make a natural pesticide, which is a brew of bitter or insect-repelling herbs such as neem, citronella, chiretta and marigolds mixed with EM tea. This has a dual benefit, as the more fertile the garden becomes, the more it will attract natural predators such as birds, fish, frogs and lizards. The wildlife also helps to keep down the mosquitoes which pleases us and our guests.

Since I began using EM the garden has become more lush, the flowers more prolific. Little sunbirds dart in and out of the bushes to make nests while butterflies sip the nectar. Encouraged by such success, I have expanded the initial weekly drum of EM to two, then three, the EM trail around the garden marked out by piles of worm casings.

We tip EM down the drains to keep them clean and disinfect our grey water tank and flush it in the toilets for our septic tanks. The hibiscus flowers, which are watered from the grey water tank, have never looked better. I clean out the cage of my pet lorikeet with EM and regularly add a splash to his bath water - his exuberant health and glossy feathers, a sign of its goodness.

The EM message is spreading around the world. It is a boon for poorer countries such as Cambodia, Myanmar and Laos as farmers can produce more with less. It is also gaining a following in wealthier countries such as Australia, the United States and New Zealand. A New Zealand Nature Farming Society has been set up in Christchurch, Lincoln University is conducting EM trials and there are many distributors of EM and bokashi kits around the country, with Neville Burt of Bokashi NZ and Trish Allen of Rainbow Valley Farm keen advocates for the system.

For me, EM has become an addiction. It is not just that it produces quick and dramatic results, as it did with the beans. But even more deeply satisfying is seeing the steady transformation of the soil and the abundance of life that flows from the invigorated earth.

Websites:

www.emnz.com

www.apnan.org

www.rainbowvalleyfarm.co.nz

www.bokashi.co.nz

www.faasai.com

www.wildasia.net

Our bokashi recipe

Mix up a tea of 500 millilitres of EM, 500 millilitres of molasses and 50 litres of water. Sprinkle this over the other materials such as straw, manure and leaves, which you have also

mixed up until they are nicely damp, leave it in a pile and within a few days or weeks you will have black and friable bokashi, ready for the garden.

Benefits of EM

EM promotes germination, growth, flowering, fruiting and ripening of crops

EM enhances the photosynthetic capacity of plants

EM enhances the efficacy of organic matter or fertilizer

EM develops resistance of plants to pests and diseases

EM improves the efficacy of organic matter as fertilizer

EM improves the physical, chemical and biological environment of the soil

EM suppresses soil borne pathogens and pests

About the author

New Zealander Bronwen Evans, is a former journalist with Radio New Zealand. She now lives in Thailand with her Thai husband Surin Laopha, and is the owner of Faasai Resort and Spa, an eco-resort in Chanthaburi, Thailand. The resort has three and a half acres of gardens and is a finalist in Wild Asia's 2008 Responsible Tourism Awards. Their organic gardening effort was one of the factors considered by the judging panel when choosing finalists for the awards.