

The FIRST UK allotment trial of Effective Micro-organisms

2

Stoking up the engine room

More roots will mean more food going into the plant – and larger, healthier crops.



Andrew Seall gets set to enlist an army of microscopic helpers on his plot.

I don't want to become a weather bore, but it is driving me mad, I can't seem to judge it right just at the moment. I'd hoped to have had some trenches covered with black plastic and filled with kitchen waste by now, to get the ground warming up ready for planting, but it so sticky I can't get on to start.

Did you check to see where your rain water drained, as I suggested last month? I did, and was surprised. With the shape and location of my plot I thought it would drain south – it didn't, it drained north-east. So I now know that where I intended to place my bean wheel is the best position.

My plot neighbour, Ron, who has been on these allotments for 50 years, said that last year all the beans at the bottom of his rows were much better than those at the top. We now know why – because the north-east corner of my plot drains onto the bottom of his. We have decided to share the run off, maybe even make a well, but more of that at a later date.

I noticed my shed was getting very mucky because I was spending so much time in there reading about EM, which I said I would tell you about in this issue. So, here goes.

We all are aware of the positive health benefits of eating



Andrew's plot...still too 'poggy' for serious work.

yoghurt and I like to think of EM as 'yoghurt for the garden', adding beneficial organisms to the soil. Therefore, if I can feed EM, which stands for 'effective micro-organisms', to my plot it will become healthier and I can get more of what I want out of it.

EM increases the micro-flora and fauna in the soil, which then makes more nutrient available to be taken up, which in turn improves the strength and immune system of the plants. The importance of micro-organisms is demonstrated by the fact that four billion of them live in as little as a teaspoon of healthy soil.

Now for the scientific bit, so bear with me.

The principal micro-organisms in EM are firstly Photosynthetic bacteria or Phototropic bacteria, which are a group of independent, self-supporting microbes. These bacteria

synthesise (or combine into a coherent whole) with essential substances for plants, such as amino acids, nucleic acids, bioactive substances and sugars from secretions of roots, organic matter and/or harmful gases such as hydrogen sulphide, by using sunlight and the heat of the soil as energy sources.

Second are the Lactic acid bacteria which produce lactic acid from sugars and other carbohydrates, developed by Photosynthetic bacteria and yeast. These are the 'yoghurt' makers. Lactic acid is also a strong sterilising compound that suppresses harmful organisms. Moreover, lactic acid bacteria enhances the decomposition of organic matter and promotes the decomposition of lignin and cellulose by fermentation,

thereby removing the undesirable elements of undecomposed organic matter.

They also reduce nematode populations, like roundworms, for example.

So I now

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understand why sometimes my Percy Thrower-style hotbed of kitchen waste does not always rot down completely: not enough of the right bacteria for fermentation in that part of the soil.

Lastly, the yeasts synthesise anti-microbial substances (like antioxidants) and others from amino acids and sugars secreted by Photosynthetic bacteria, organic matter and plant roots. The key to the whole process seems to be the bioactive substances such as hormones, and most importantly enzymes, produced by yeasts to promote active cell and root division.

The Photosynthetic bacteria seem to be the engine room of EM. The Lactic acid bacteria are the plant medics and the yeasts, in part, are bodyguards, protecting the plants from damage caused by free radicals. Free radical molecules in plants result from stress caused by drought, heat, ultraviolet light and herbicide use.

What EM sets out to achieve is an abundant micro-flora in the soil which will develop a well-balanced micro-organism system. In this situation many harmful microbes are suppressed, which reduces the chances of soil-borne diseases. Therefore, plants can take up more available nutrients via the extra enzyme population and thrive.

As you realise by now, EM is a totally natural organic liquid soil feed which enables plant growth, but in a different way from chemical fertilisers. The main differences are that most