

Biodynamic farming and gardening has gained a good deal of attention lately as a reputed means of providing chemical-free produce and humane animal repellents. A high public profile has not been matched by a broad awareness of the history and basis of the biodynamic approach. Despite this, there have been increasing demands for public funding of scientific studies to assess the worth of biodynamics.

The biodynamic approach to farming developed as an offshoot of the Anthroposophical movement of Austrian philosopher Rudolf Steiner. In the 1920s, Steiner applied his theories of a "spiritual science" to agriculture. He and his followers developed a series of preparations aimed at restoring the "vital life-force" to plants and enhancing their growth through utilisation of "planetary forces". It is the use of these preparations and the practice of "peppering" that forms the main distinction between biodynamic followers and the more conventional organic farmers.

Biodynamic Preparation 500, for example, involves packing fresh manure into a cow's horn and burying it over the winter months. The horn is said to reflect planetary forces into the manure, "raying back whatever is life-giving and Astral", according to Steiner. Burying it ensures that "all the radiations that tend to etherialise and astralise are poured into the inner hollow of the horn". This causes the manure to be "quickened" with "all that is Ethereal and life-giving". The manure is then diluted and used as a spray. Preparation 501 uses diluted silica (often powdered quartz) to bestow sense organs upon the

plant, "allowing the totality of outer planetary forces to work".

One Massey University study looked at the differences between soils on seven biodynamically run farms and nine conventionally farmed properties chosen for close proximity so as to match soil types. A range of factors, including bacterial numbers, trace element quantities, organic content and the physical structure of the soil were examined. The biodynamic farms were found to have superior soil quality. However, this was predictable as it is a result of the common organic practices that biodynamic farms undertake, such as green crop manures, composting, soil rotation and the like, rather than being attributable to the "etherialised Cosmic-Astral influences" which biodynamic proponents claim are at work.

There has been little in the way of rigorous scientific testing of biodynamic claims. While biodynamic texts refer to tests done in the 1920-40s, few -- if any -- were conducted in a scientific manner. By far the bulk of evidence supporting biodynamic claims is anecdotal, where keen enthusiasts talk about how well they are doing. This is not to suggest that such proponents are lying, but if we are going to fund and put into place agricultural or pest control practices, it is important to ensure that they are clearly proven to work.

It is all too easy to find people who can make a claim, often sincerely, but that doesn't make them right. After all, millions of people once believed that the Earth was flat! That's why it is so important to do the tests in as independent and

objective a fashion as possible and, ideally, independently repeating "successes" so that we don't end up fooled by our own errors and illusions. This is the foundation of science, and it serves as a form of consumer protection for the many ideas that are mooted.

In 1991, The Forest Research Institute was the first organisation in the world to make a solid scientific study of one core biodynamic practice, that of "peppering". In this, the bodies of unwanted organisms are burnt at a certain time in the lunar cycle. The ashy remains are then diluted down to minute levels and sprayed around a property. This is said to reduce or eliminate the presence of the undesirable organism. Peppering is used by biodynamic followers for everything from clearing land of thistles to repelling possums.

When plans were being made for ridding Rangitoto Island of possums, biodynamic adherents approached the Department of Conservation with the suggestion that 1080 drops be replaced by peppering, citing it as a natural, chemical-free approach which would successfully repel possums and, according to some believers, even sterilise them!

Treated and untreated foods were laid out in bait stations and the behaviour of the possums carefully examined. Five "active" and four placebo treatments were tested. The former were provided by a homeopathic company, the Biodynamic Farming & Gardening Association and a biodynamic farmer. FRI also produced their own solution based on instructions from the association. Treatments were coded to reduce

experimental bias, and multiple series of tests were run.

Biodynamic proponents predicted that the "possums would not go near the treated areas and they would probably be desperate to get out of the cages". In fact, there was no discernible reaction. The results were rejected by the Bio-Dynamic Farming and Gardening Association of New Zealand.

The scientists involved in the study noted that if there'd been *any* evidence that something was going on, they would have gone further and there would have been keen interest in doing so.

As with many pseudo-sciences, peppering has developed its own impressive jargon which can sound reasonable to the non-scientifically literate. In discussing the claim that high diluted ash can sterilise the pests involved, one biodynamic proposal stated:

"The theory holds that the specific preparation methods produce the negative 'energy' of the pest's reproductive force, operating on a vibrational level, not a material one."

This is a meaningless statement on a variety of levels and it is important to challenge this sort of claim - after all, possums represent a very real threat to New Zealand's ecosystem and it is vital that an effective way of dealing with them is identified.

Possum peppering has been pretty clearly demonstrated not to work when tested properly. Given the huge dilutions involved in producing the preparation, about the only way you could deter possums with it is to have a vast amount of the

peppering solution (i.e. water) in a firehose and spray individual possums until they fall off a cliff into the sea!

Proposals to use peppering have regularly come up before regional councils and other bodies looking for a way to deal with pests, including most recently the painted apple moth in Auckland.

It seems to offer a cheap, quick, easy fix, but there is no such thing when it comes to the real world. A balanced ecological system approach has its place in agriculture. The problems are with the aspects which are said to be beyond the realms of physics and chemistry.

Vicki Hyde monitored possum peppering practices as part of her involvement with the Possum Research Bioethics Committee of Landcare Research.

# the new zealand Skeptics guide to Biodynamic Agriculture and Peppering

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Box 29-492, Christchurch

<http://skeptics.org.nz>

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