

Using Beneficial Biology in Field Lettuce

DPI Tasmania & Serve-Ag - Tasmania

OziVerm, GranoVerm and Compost Tea (Soil & Plant Tonic) can help to increase quality and yields in Iceberg Lettuce – this was one of the findings from a trial conducted by Serve-Ag Research and the Tasmanian Department of Primary Industries, Water & Environment (DPIWE).

The aim of the trial was to determine if the treatment of transplant plugs was an effective way of introducing beneficial organisms into the soil environment. A range of biological products were used including 2 *Bacillus Subtilis* and 5 *Trichoderma* strains, compost tea (SPT), OziVerm, GranoVerm and 2 proprietary microbial products.

Project leader Dr Rachael Walker says that there have been a number of biological products released in recent years claiming to offer disease protection properties and yield benefits. Many of these products have proved to be less than successful when introduced into the field, Dr Walker believed that it may well be more successful to inoculate the seedlings and allow the microbial populations to establish before introducing them to the natural soil biota in the field.

Treatments were carried out on a commercial transplant nursery with liquid products introduced at seedling and the granular products incorporated in the planting media.

At harvest the lettuce (Magnum) were assessed for yield and head size, and were rated for firmness, shape and colour. Among the treatments which stood out were the OziVerm, GranoVerm and compost tea (Soil & Plant Tonic) products. The treated plants were compared with a control plot which had been grown under normal commercial practice.

Ranking of treatments at harvest

Treatment	Mean vigour	Mean head weight	Mean head size	Mean head firmness	Mean head shape	Mean rank overall
Sumisclx	2	4	8	5	11	9
Biocontrol mix	5	9	3	3	2	5
Trichoderma E	2	5	6	8	5	7
OziVerm	1	2	2	2	7	1
GranoVerm	1	8	2	2	3	4
Trichoderma D	3	9	5	6	8	10
Trichoderma C	3	8	6	2	10	8
Bacillus subtilis B	4	7	9	3	6	8
Trichoderma B	2	9	5	9	4	8
Trichoderma A	2	1	3	7	9	5
Compost tea (SPT)	1	4	1	1	8	2
Bacillus subtilis A	3	7	4	4	1	4
Beneficial micro-organisms	6	3	7	5	4	6
Control	2	6	2	2	6	3

Note that no differences were observed in the colour of the various treatments.

The field trial was also run in conjunction with a greenhouse disease trial which involved seedlings being purposefully inoculated with *sclerotinia minor*, so that the efficacy of the various treatments could be compared with the standard treatment (Sumisclx).

Assessments showed some clear differences between plots. Obvious differences in crop yield correspond with yield measurements. Plots treated with Compost Tea (SPT) and both OziVerm and GranoVerm looked good in the paddock and this was confirmed by the increase in measured yields from these plots. Subjective ratings for firmness and shape indicated that lettuce from the plots treated with Compost Tea and OziVerm and GranoVerm were of excellent quality.

Vigour assessments across both the field and plot trials were consistent, with the Compost Tea (SPT) and OziVerm proving to be the best treatments.

Soilsmart products and technical services are specifically designed to help manage one of the most complex and diverse eco-systems on earth - the interface between the soil and the plants we grow.

Soilsmart products will help you to build a strong and balanced biological soil ecosystem, maintain aerobic soil conditions and develop a disease suppressive environment in the root zone.

Biological Diversity

The plants we rely on to grow quality crops, turf surfaces and landscapes all evolved in the presence of, and rely on, a strong and symbiotic relationship with beneficial soil organisms which play a significant role in regulating the health of the entire plant/soil eco-system.

The key to success however is diversity - nature is built on it — consequently we have developed a range of products and programs that have a broad bio-diversity and offer long term benefit. They are also based around indigenous Australian biological species which are suited to our climatic and soil conditions.

Even small changes to your existing programs can improve biology and quickly translate into improved aerobic soil conditions and healthier and more resilient plants. These advances also result in more extensive and vigorous root systems and an increase in water use efficiency. Maintaining bio-diversity and balance also encourages the conversion and retention of minerals, increasing fertilizer efficiency and minimising the need for repeated applications.

Soilsmart products and programs allow you to stay ahead of pests and disease and offer a truly preventative approach to soil and plant health by:

- Building Organic Carbon reserves in your soil.
- Establishing a natural defensive network against disease and pests.
- Strengthening plant health and stress tolerance.
- Increasing fertilizer efficiency.
- Sustaining soil Oxygen levels.
- Reducing costs and improving risk management.

The science that enables us to measure and manipulate the soils' biological properties has advanced rapidly in the past decade, bringing about a much better understanding of how we can influence this very complex bio-system to our advantage. Soilsmart have maintained an association with and are accreditation with organisations like The Soil Foodweb Institute USA, who are at the forefront of research and technology development in this important area of environmental management.

