



A COMMERCIAL APPLICATION OF
VIROSOIL™ TECHNOLOGY

CASE STUDY
TRYTON

“The Tryton products we are using ViroGrow™ reagent in have gained significant agronomic benefits. We are now able to market our products for new applications...”



Bio Starter is on the Tryton products containing ViroGrow™ reagent

virotec.com

PROBLEM

Tryton has developed a range of products for the biological treatment of soils to improve the horticultural properties. The marketing of biological fertilisers was somewhat limited without addressing all of the soil problems encountered by the end user.

VIROTEC TOTAL SOLUTION

ViroGrow™ reagent has substantially improved Tryton's product performance by way of the following:

- > Substantially improving pH buffering capacity;
- > Elimination of carbon dioxide production during storage (increasing shelf life);
- > Provision of silica and calcium based micro nutrients;
- > Copper removal (binding) from surrounding soils;
- > Manganese removal (binding) from surrounding soils; and
- > Aluminium removal (binding) from surrounding soils.

The Virotec Total Solution components included research, engineering, product supply and technical support.

BACKGROUND

The Tryton Group combines advanced technology and extensive research and development to the natural age-old process of vermiculture. Tryton utilises a \$6.5 million processing facility in Lismore, NSW, to produce a range of biological liquid and solid soil conditioners and fertilisers.

The range of products are derived from the vermicomposting process, the largest enclosed facility of its kind in the world. Tryton combines advanced technology and extensive research and development to a natural process to produce the highest quality products for sustainable agriculture.



Tryton has the largest vermicomposting enclosed facility of its kind in the world.



Products from Tryton are derived from the vermicomposting process. They have the largest enclosed facility of its kind in the world

TRYTON BIO-REMEDIATION PRODUCTS

Tryton BioStarter plus Silical™ containing ViroGrow™ reagent is a combination of unique fine liquefied vermicast of high organic carbon origin. BioStarter contains calcium and silica, blended to contain phyto-hormones, plant available nutrients, humic and fulvic acid, a diversity of beneficial bacteria, fungi and protozoa.

TREATMENT METHODS

BioStarter plus SiliCal, containing ViroGrow™ reagent, can be applied as foliar spray to apply beneficial organisms to plant above ground

surfaces, so disease causing organisms cannot find infection sites or food resources.

BioStarter plus SiliCal, containing ViroGrow™ reagent, can be applied as a soil drench to develop the biological barrier around roots and/or provide nutrients for plant growth.

When applied as a soil drench BioStarter, containing ViroGrow™ reagent, has the ability to neutralise acidity and reduce toxic levels of heavy metals including copper, manganese and aluminium in the root zone.



Bio Starter is one of the Tryton products containing ViroGrow™ reagent.

Whether used as a spray or drench the Biological barriers of BioStarter:

- > Prevent root disease organisms, reducing pesticide use;
- > Serve to improve nutrient retention (reducing contamination of surface and ground-water);
- > Improve nutrient cycling (reducing fertiliser applications);
- > Allow degradation of toxic materials in the soil (tying up heavy metals, degrading residues and pesticides, etc; and
- > Builds soil aggregate structure, improving water holding capacity, oxygen diffusion into soil and reducing disease problems arising from soil compaction.

Calcium and silicon play a vital role in plant nutrition, disease prevention and nitrogen efficiency. ViroGrow™ reagent provides these essential elements at a particle size of less than 10 microns.

This fineness exposes a massive surface area which allows the fungal oxalate secretions to solubilise the mineral calcium, forming calcium oxalate crystals. These crystals are retained in the fungal hyphal mats where they are resistant to leaching and become available to the plants through a symbiotic relationship with soil fungi.

COMMERCIAL APPLICATIONS

There are a wide range of horticultural uses for Tryton products using ViroGrow™ reagent. Some specific commercial applications include:

- > Macadamia nuts
- > Vineyards
- > Bananas
- > Soya Beans
- > Pastures

Chemical based pesticides, fumigants, herbicides and some fertilisers kill a range of the beneficial micro-organisms that encourage plant growth, while BioStarter plus Silical, using ViroGrow™ reagent improves the life in the soil and the plant surfaces.



Composting piles at Tryton's processing facility in Lismore, NSW, Australia.

Some of the benefits of using Tryton BioStarter plus Silical, incorporating ViroGrow™ reagent, include:

- > Infectious sites on the plant surface are occupied by beneficial organisms so pathogens cannot infect the leaf;
- > Foliar nutrients are used up, so that disease-causing organisms have no food to consume;
- > Nutrients for the plants uptake are present in the product;
- > Food resources for micro-organisms in the product;
- > Micro-organisms are added into soil or onto leaf surfaces, resulting in an increase in retention of nutrients, cycling of nutrients into plant-available forms, and decomposition of plant materials and toxins;
- > Enhancing the nutritional quality of plant produce;
- > Worker exposure to potentially harmful chemicals is normally reduced;
- > Reduction of negative impacts of chemical-based pesticides, herbicides and fertilisers on beneficial micro-organisms in ecosystems;
- > Chemical input and labour costs are reduced; and
- > Plant growth can be improved.

Tryton have been receiving positive feedback from end users using Tryton products containing ViroGrow™ reagent.

CONCLUSION

ViroSoil™ Technology using ViroGrow™ reagent has proven to be successful as an additive in biological fertilisers. The range of applications using biological fertilisers has significantly increased with the use of ViroGrow™ reagent.



There are a wide range of horticultural uses for Tryton products using ViroGrow™ reagent

TESTIMONIAL

“The Tryton products we are using ViroGrow™ reagent in have gained significant agronomic benefits. As a result, we are now able to market our products for new applications including acidic soils and soils containing high levels of copper, manganese and aluminium. We have gained positive feedback from our many customers using products containing ViroGrow™ reagent.

The combination of ViroGrow™ reagent and BioStarter results in a very sound overall chemistry for treating a wide range of soil problems.

ViroGrow™ reagent has proven to be beneficial without disturbing the microbiological portion of our products. We continue to be very happy with the quality of product supplied, including delivery on time and within specification.

The technical support offered by Virotec has been of a high level. Virotec have been able to address all technical questions relating to the use of ViroGrow™ reagent. Additionally, the Virotec staff have been enjoyable to work with.

I look forward to continuing our strong and healthy relationship with Virotec.”

DAVID HUNDT

Chief Executive Officer

Tryton