Low Cost Liquid Option for Higher Returns

Microbial Liquid Injection Trail Results

There are a growing number of innovative farmers throughout Australia integrating microbial liquid injection into their cropping regime.

The biological aspects of a broadacre soil in relation to fertility and crop production have traditionally received little attention, even though they are obviously a vital component of soil health and the economics of cereal crop production. The three main drawbacks of conventional fertilisation are nutrient tie up, nutrient leaching and nutrient evaporation, costing the farmer thousands of dollars in fertilisers that are not being utilized by the plant, as well as contributing to Green House Gas Emissions.

BioTX 500 is an extracted compost tea that is applied as liquid injection at sowing. This practice injects living organisms around the seed, having a profound effect on fertility factors such as nutrient cycling, phosphorus and zinc availability, nitrogen fixation, tilth, hormonal and enzymatic influences and disease prevention.

A three year trial (2007 - 2009) is been run by Dr Maarten Stapper at 'Knowldale' Young using BioTX 500 as a microbial liquid inject. The idea is to develop a fertilising strategy that delivers growers a greater dollar return per hectare via the adoption of biological principles; increasing yield, quality, crop water efficiency and soil fertility. Applied at the rate of 100 litres per hectare and costing $24 per hectare this a cost effective option to either, use alone, or combined with granular down the tube fertilisers.

In wheat sown in 2007 the gross margin return was $720 per ha for BioTX 500 compared to $747 per ha for the control using 100 kg MAP. In 2008 (Lupins) the BioTX 500 treatment returned the highest gross margin of $501/ha compared to $478/ha on the control using 80kg/ha MAP.

This year the trial has been sown with Lincoln wheat and the BioTX 500 treatment showing less moisture stress and good yield potential. Leaf tissue tests have revealed similar nutrient levels compared to the control of 80kg MAP despite no application of granular fertiliser for the past three years. BioTX 500 delivers only small amounts of nutrients (0.3 kg N, 0.25 kg P) however the real benefit comes from the diverse suite of microbiology, humic and fulvic substances, enzymes and plant hormones.

Treatment 2 Liquid Fertilisers only (BioTX 500) Gross Margin - $830 /ha	**Control 1** 80 kg MAP Gross Margin - $798/ha

Humic and fulvic substances contained in the BioTX 500 enhance plant growth directly through physiological and nutritional effects. Some of these substances function as natural plant hormones (auxins and gibberellins) and are capable of improving seed germination, root initiation, uptake of plant nutrients and can serve as sources of N, P and S. 'Indirectly, they may affect plant growth through modifications of physical, chemical and biological properties of the soil, for example, enhanced soil water holding capacity and CEC, and improved tilth and aeration through good soil structure.' (Stevenson)

Microbial Liquid Injection Trail Results

+

Compost Tea Extraction is a process performed by the Aeromaster TE500 or TE250 Extraction Unit, extracting the valuable microbial and non-microbial contents from high quality humus compost and places it into a water suspension, containing diverse microbes, enzymes, and organic matter.

As with any new process farmers always ask about the practicality of introducing liquid fertilisers into their conventional system. Bill Daly of YLAD & Co said, 'The Aeromaster TE500 extraction unit gives me the ability to extract compost tea in large quantities for use in my broadacre operation with ease, only taking 30 minutes for 2000 litres to be extracted and this can be stored for up to 2-3 weeks prior to activation and use."

Extracted compost tea (BioTX 500) has been used in Bill Daly's 800 hectare cropping regime over the past five years. Bill said 'the liquid injection system is something that has benefited cropping production in the past five years, particularly shining in drought conditions and soils with low carbon.

BioTX 500 improves the link between microbes and plants based on the efficient uptake of plant nutrients by plant roots. The most powerful piece of evidence highlighting the importance of microbes to plants comes from the plant itself. 40 % of the plants energy derived from photosynthesis is diverted to feeding the microbial populations in the rhizosphere.

Microlife, supplied and nurtured by BioTX 500, in the root rhizosphere assist the plant in extracting vital nutrients that are, in turn, dissolved in the plant's sap for distribution to the leaves. The greater the microbial population in the rhizosphere, the greater the nutrient extraction by the plant. The microbes ensure that the nutrients enter the plant in a balanced plant friendly form which raises the Brix levels and leads to reduced insect pressure.

The three year trial has shown that farmers can reduce nitrogen and phosphorus inputs and fix free atmospheric nitrogen and solubolise 'locked-up' phosphorus when using microbial liquid injection.

Increasing the diversity of beneficial microbes in the rhizosphere produces a healthier plant reducing the incidence of disease and insect attack.

The adoption of a liquid injection- no-till system gives great hope to farmers to retreat from the roundabout of ever increasing costs of high analysis products, and return to a healthier more natural farming system, utilising our greatest asset, a living breathing soil.