1st May 2019

DoloZest® News

0800 843 809
peter@dolomite.co.nz
or coralie@esi.org.nz
www.esi.org.nz
Functional Fertiliser Ltd

Ahead of the game

In a Radio NZ interview (July 2014), available via the Functional Fertiliser website, Dr Jacqueline Rowarth, then Professor of Agri-business at Waikato University discussed the canning of research on pasture grass growth using lower nitrogen inputs.

She described the work by scientists Tony Parsons and Suzanne Rasmussen as the "holy grail" of research in this country, as it would allow for the continuation of pastoral farming with less nitrate leaching and therefore lower environmental pressure.

The research was 'proof of concept' work based on gene identification and selected breeding of plants that contain less nitrate. At the time funding for the work ceased it had not progressed to field trials.

The pasture growth work carried out by FF over the last 16 years shows that CalciZest/DoloZest based nutrient programmes grow **more** feed over a twelve month period than any nitrogen driven conventional programme.

Independent analysis shows an increase of around 30% is possible, and as the cost is no more than a conventional urea driven programme the increase in profitability is significant.

A question often asked is, "if little or no N is applied where does the nitrogen come from?"

Nitrogen is an essential requirement for plant growth and pastoral soils naturally contain between 5,000 – 15,000kgN/ha within in the root zone of pasture plants. As with all other required nutrients it is the plant availability that is the most important aspect.

With only 2- 5% of soil held nutrient available for plant uptake at any point in time, the speed at which nutrient is cycled is the key to maximising growth at all times.

For nutrient taken up by plants to be rapidly replaced requires soils to be well structured. Soils in an ideal state contain 50% air and moisture, equal amounts of both.

For this to be maintained soils must quickly regain their structure after the pressure exerted by animals' feet at the time of grazing. Soils naturally compress under the weight of animals, it's when they don't rapidly recover that compaction has resulted.

The quantity of crumb in top soil dictates overall structure and the most important component of crumb-dominant soil is glomalin. Glomalin is a glycoprotein exuded by mycorrhizal fungi, and soil receiving regular inputs of nitrogen contains less air due to reduced crumb.

Soils under FF programmes are steadily sequestering carbon, the reason for the on-going increase in annual pasture growth. With more carbon there is an increase in total nitrogen held, with the extra coming from nitrogen fixed primarily, but not exclusively, by clover.

Recent independent soil tests from the Berryman property, an intensive dairy farm near Edgecumbe, show near ideal levels of plant available nitrogen. The three samples showed available N sufficiently close to the desired level for no autumn N to be recommended.
It's important to bear in mind that applied nitrogen simply brings forward production, at the expense of soil carbon and future growth.

The following photo from the Berryman property and neighbours clearly shows the effect of 30 years of a urea dependent system compared to 13 years of a Functional Fertiliser programme.

It is not only the unique mix of microbes in CalciZest and DoloZest, it is also the extra calcium applied that changes the soil environment sufficiently for their growth and persistence, with an increase in pasture growth taking place almost immediately after application.

the Magic of Microbes

Functional Fertiliser Ltd
Phone 0800 843 809
peter@dolomite.co.nz
coralie@esi.org.nz

1st May 2019

Functional Fertiliser microbes

The selected fungi and bacteria added to CalciZest and DoloZest are chosen for the range of functions they perform.

Listed below are some of the microbes along with their functions:-
Bacillus & Actinobacteria for the initial decomposition of organic matter. People often observe the rapid breakdown of dung soon after application.

Azotobacter for their ability to fix nitrogen directly from the air. Clovers fix most of the N required by plants, however azotobacter also contribute.

Trichoderma for protection from pathogenic fungi and bacteria. Dr Robert Hill (a NZ scientist) developed the strain that is used. Trichoderma are a natural predator of the fusarium fungi which attack and weaken clover plants.

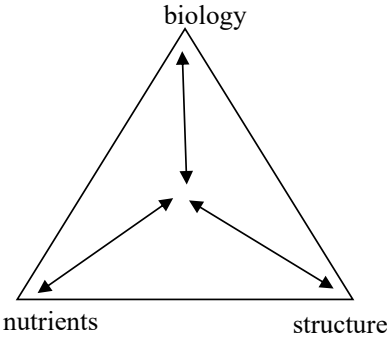
Mycorrhizae to increase the ability of plant roots to extract moisture and phosphorus.
Mycorrhizae can cover up to 700x more soil area than the plants' own roots. The extra moisture and nutrient harvested increases the energy formed in the leaf, some of which is transferred to the roots to sustain the mycorrhizae. [YouTube clip (1 min) https://www.youtube.com/watch?v=v88gbtKBTv4]
Mycorrhizae exude glomalin which promotes fine granular aggregate (soil crumb).

The rumen and the soil are both big digesters – they are full of microbes, when both are working well and the feed managed well everything cycles and recycles rapidly, increasing plant growth and creating more humus.

Soil fertility is a balance of nutrients, physical soil structures, and biological function.

By ensuring the requirements of each aspect are met, more feed of higher quality is grown and greater total production achieved at a lower cost.

Functional Fertiliser products and programmes ensure that all three of the key components of a healthy sustainable growing system are met.



"The continued decomposition of organic matter, its incorporation into the soil system, and the formation of granular aggregates by micro-organisms are equally as important to high fertility as an adequate supply of mineral nutrients. Yet the biological and physical processes are largely uncontrolled, and in many soils they need the assistance comparable with that supplied to nutrients by fertilisers. In some soils the assistance may be combined with the action of the fertilisers, in others separate treatment may be required."
[p 127, Soils of NZ, Part 1 Soil Bureau Bulletin 26 (1) NZ DSIR 1968]