

21st March 2022

DoloZest® News

0800 843 809
peter@functionalfertiliser.co.nz
or coralie@esi.org.nz

Functional Fertiliser Ltd

www.functionalfertiliser.co.nz



The role of Bacillus – why digestion always comes before growth.

The propriety microbe mix in both CalciZest and DoloZest contains large numbers of bacillus - designed primarily to breakdown old organic matter to form highly stable and drought resistant humus.

Soil microbes always have first call on available energy and until that demand is met, above ground growth is limited. This is the reason for growth after a dry spell being slow until after the second rain arrives, normally 10 – 14 days after the first.

During that time there is a rapid increase in both fungal and bacterial populations. It is not until they begin to die, after reaching maximum numbers, that sufficient nutrient is made available for strong plant growth.

Throughout the growing season there is a steady build-up of dung, old leaves and dead roots and the distinctive smell after the first rain following a summer dry is the sign of rapid decay.



When a plant is grazed some root matter is lost, a process known as root pruning, and prior to spring old material must also be digested before optimum spring growth occurs.

Applying synthetic N in autumn destroys carbon, attacking the softest most available (labile) first. Immediate rapid growth results however less humus is formed and where repeated applications take place more carbon may be burned than retained.

This is the reason for the first application of urea giving the greatest response, thereafter performance declines and to compensate heavier rates are often applied.

The amount of humus, a term that has fallen from scientific favour, largely determines the amount of nutrient and moisture stored in the soil.

Soils rich in humus usually also contain a large amount of soil crumb - essential for the percolation of water downwards and gasses upwards.

Glomalin, a large component of tread resistant crumb and is the name given to **exudate from mycorrhizal fungi**. Mycorrhizal fungi extend root zone by up to 9 times, harvesting phosphorus and moisture from sites unavailable to even the finest root hairs, and Australian CSIRO research shows that their effectiveness is impaired when synthetic N is applied.

On a number of occasions, we've been asked for input on ex crop paddocks because growth has been disappointingly slow. A quick dig with a spade has always shown old root, some of which has hardly decayed, and a lack of pore space.

Out of sight may be out of mind however until full digestion has taken place and crumb has been formed growth will continue to be disappointing.

Fertiliser pricing

All imported fertiliser products, notably **urea, DAP and potassium sulphate have risen steeply** of late due to increased fuel prices and the likelihood is that they will remain strongly elevated.

The cost of CalciZest and DoloZest has risen slightly due to increases in the cartage and handing component. We're always looking for efficiencies however the price of fuel impacts in every aspect and some increase is inevitable.

Price v Value

During recent years price has replaced value to a large degree in people's minds, understandable when quality is reasonably uniform.

Autumn is the ideal time for fertiliser applications

Price is what is paid, value is what is received, and it is only over time that the benefits of superior performance resulting from quality inputs become apparent.

The price of Toyota utes, particularly well-serviced high milage ones, is usually significantly higher than those of other makes, yet they sell quickly due their longevity and perceived value.

One aspect of the value of CalciZest and DoloZest is shown in the lesser inputs of other nutrients required to maximise plant, tree, and pasture performance.

The ability to sequester carbon means more nutrient is stored in a readily plant-available form.

Soil tests

Soil tests measure only what is plant available, often 2 – 5% of total soil held nutrient, and therefore doesn't provide a picture of overall fertility.

A TBK test may requested to ascertain the total potassium held in the soil, and Total P provides an insight into historic phosphorus inputs.

MAF research over many years shows that maximum pasture performance is available with an **Olsen P figure of 10.**

It is the speed at which nutrient is cycled that is equally as important as the levels found in soil tests and we've received a number of calls of late from long-term farmers with excellent soil test results, due to higher than maintenance historical inputs, but steadily declining annual pasture growth.

The increase in desired levels over time, in some soils now 20+, is in our view a result of soils becoming increasingly compacted and inert therefore requiring higher levels of P for reasonable performance.

CalciZest and DoloZest were formulated to improve physical soil conditions and **increase the rate of nutrient cycling** and have proved extremely successful as the base of total nutrient programmes.

Less phosphorus and potassium are required due to improved efficiency of both elements. The

higher calcium inputs provide the environment that favour both clover and beneficial soil life.

The **result is always**, all other aspects remaining equal, **increased production, improved quality, with less disease and pest pressure.**

Benefits of deeper rooting

Pasture pulling is due to soil being too hard for roots to easily penetrate. The obvious sign of compacted soil is plants sitting with their crowns above the soil, and they may often be removed by hand.

Although not so obvious in crops, shallow rooting means trees and plants are vulnerable to dry weather and ill health due to the rapidly changing environment in the area where most of their roots are feeding.

Calcium and magnesium remain the foundation of all healthy growing plants.

Calcium provides strength and when the balance with magnesium is somewhere close to ideal a strong resilient structure results.

The shape above the ground is normally reflected in the root structure below. Trees and plants with an upright structure require a strong deep root system. That can only be achieved in soils where they are able to penetrate without great resistance.

Regular applications of water-soluble nutrient encourages shallow rooting and if immediately plant available nutrient is the best option, applying with DoloZest and CalciZest reduces the amount required and provides a steady rather than immediate release.

Where strategic inputs of nitrogen are deemed desirable, applying as a foliar application at a rate one fifth of that which would normally be applied in a solid dressing works well.

Adding a little fish or seaweed to stimulate the fungi and bacteria on the surface of the leaf encourages plant uptake with late afternoon or early evening being the optimum time to apply.

Apply DoloZest and CalciZest now to lay the foundation for spring, and beat the price rises.

Regards,

