



The growing season is about to begin

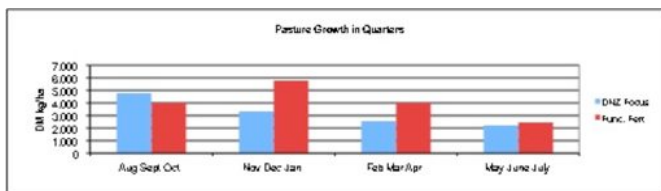
The following graphs clearly demonstrate where the advantage in total pasture production under a Functional Fertiliser programme is gained.

Conventional nitrogen fertiliser driven systems have a small advantage during the cooler period of the year. During that time the cycling of nutrient is slower, less is available for plant uptake and pasture plants, particularly grasses, respond to applied nitrogen.

In the case of the two farms featured, soil temperatures reach 20°C early in November sending grasses into a reproductive state. Stalk carrying a seed head rapidly forms, vegetative growth slows and digestibility and palatability declines.

With continued nitrogen applications, clover is dissuaded due in part to continued shading.

Without nitrogen being applied grasses grow less and clover becomes increasingly dominant. This graph for the 2008/09 season clearly illustrates that effect.



During the Aug-Sept-Oct period the conventional property grew an extra 810kg DM/ha, an average of 9kgDM/day more. However from November through to January, the advantage was reversed with the Functional Fertiliser property averaging 27kgDM/day more, an extra 2,450kgDM/ha.

As impressive as that is, there are other advantages. Clover during this period is highly digestible which means more is eaten in the allotted grazing time resulting in higher milk solid production, and increased growth rates or less weight loss.

Clover, containing 3 to 4 times the amount of calcium, also promotes rapid body growth of

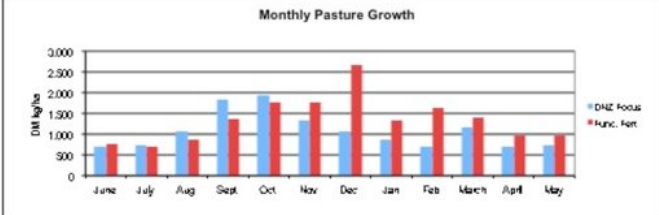
young animals, along with increased milk production.

Even when in full seed production clover remains very palatable and nearly always has a higher brix reading. Brix measures soluble sugars and high brix readings are generally only obtained when plants are photosynthesising efficiently.

Grazing intervals are able to be lengthened with no appreciable loss of quality allowing more feed to be stored ahead, and with greater total leaf surface area more of the sun's energy is able to be converted and stored.

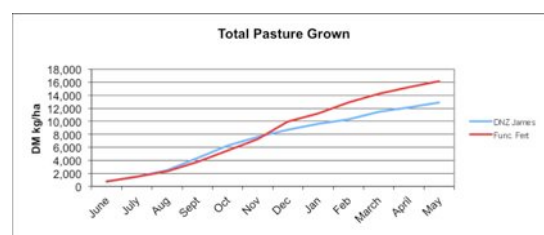
Frequently these days it seems the word **drought** is heard. It's highly emotive and evokes images of brown parched land and hungry animals. One wonders to what degree are the so-called 'droughts' induced through the over use of N?

The next graph highlights the opportunity available for production in December when soils are well-structured allowing plants to access moisture from well below 15cm.



With growth in excess of animal demand there's the ability to extend the time between grazing to a genuine 30-day interval. This means that over January and February a maximum of 2 grazings take place, and in most seasons there is the ability to make hay.

The time when the pasture production lines for the two properties cross over is late Nov/early



December. From that point onward through until the end of May the production gap steadily widens.

Management plays a key role in maximising the advantages of clover-based production from November until the end of April, a period of 180 days.

By allowing clover to fully express its growth potential, sufficient nitrogen can be fixed free of

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Moving from lower to higher fertility species

One of the key differences seen is the movement over time from lower to higher fertility plants. Brown top, and other low producing pasture species become less invasive as clover becomes bigger leafed and longer stemmed, reducing the requirement for regular pasture renewal.

Last season (2015-16) total growth of the featured property receiving Functional Fertiliser inputs was 20,600 kg DM/ha. DoloZest was first applied to the property in August 2004.

Lucerne requirements

It is accepted that lucerne requires a higher pH than pasture to grow strongly. The pasture programmes provided by Functional Fertiliser are higher in calcium than conventional and just as well suited to the production of high quality lucerne.

Tall strong stems require a plentiful supply of calcium and when soils are biologically active the stems of both lucerne and clover become increasingly solid reducing the likelihood of pest and disease attack.

How important to DoloZest & CalciZest are the introduced microbes?

20 years experience has shown them to be essential.

Bacteria grown specifically for the breakdown of dung, dead grasses, and old root matter start the digestion process. New to our system properties often respond almost immediately due to the large amount of semi-digested organic matter available.

Higher than usual calcium inputs create the environment under which introduced microbes thrive, and over time a portion of that organic

charge for the strong performance of grasses throughout the remainder of the year. It's a natural process that simply requires sound soil fertility inputs and sympathetic management.

Not all seasons will play ball and provide the conditions necessary for outstanding summer growth. In most regions genuine droughts occur infrequently, and in regions where summer dry is the norm, lucerne is a real option.

matter becomes humus, the highly stable soil-fraction that increases both nutrient and moisture storage capacity.

We recently received a report that soil in an area of a property first receiving DoloZest last autumn, smelt different to the area that it wasn't applied to. It was described as a natural earthy and pleasant smell compared to the non-applied area. Smell is an important measure with people immediately identifying the difference between a biologically active soil rich in humus compared to the that of a more sterile and anaerobic soil.

Mycorrhizal fungi are one of the added fungi and it is their activity that allows plants access to both nutrient and moisture from greater than usual depth. Tests taken late last year from client properties showed excellent mycorrhizal colonisation with large hyphae in the root mass.

Our understanding is that it is largely mycorrhizal fungi activity that is responsible for the formation of glomalin, the 'glue' that promotes strong crumb structure, which allows soils to rapidly regain structure after heavy treading.

How often should DoloZest or CalciZest be applied?

Excess wet and prolonged dry conditions reduce the activity of beneficial soil dwellers and an application at least once a year is recommended.

Given the low cost, twice a year for intensive dairy is recommended, as it is the activity of these soil dwellers that allows properties to regularly grow in excess of 18 tonne of DM/ha annually, given favourable conditions, without reliance on fertiliser N.

Regards,



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