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# DoloZest® News

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## The view from above

Many thanks to all those that have placed orders over the last three months - as always, the continued business is greatly appreciated.

Where product has been applied followed by dry weather there will still be a strong response as soon as sufficient rain arrives. The soft carbon content in CalciZest and DoloZest is the habitat for the added beneficial fungi and bacteria and there will be plenty of spore for rapid colonisation to take place as conditions allow.

Following is a photograph of Stuart Pritchard's property taken recently from a helicopter at 2500m. It is a graphic example of pasture being able to utilise both moisture and nutrient more efficiently than pastures to which conventional inputs are applied.

Clients have regularly commented that their own property appears greener than neighbouring ones and often wonder if they are simply seeing what they want to see. In the Feb 2020 DoloZest News a satellite image of the Hill property north of Tauranga was featured, with the boundaries clearly defined, and there are doubtless plenty of other yet to be discovered images of clients' properties.



The reason for the difference in colour is due to a number of factors. Firstly, with a steady increase in soil carbon there are many thousands of litres of extra water able to be stored which can then be used by plants to remain in a growing state as conditions dry. Secondly, due to the rapid improvement in physical soil structures, plant roots are able to penetrate further into the soil extracting moisture from depths unavailable to plants on tight compacted soils.

Phosphorus is an essential element for optimum photosynthesis and an increase in mycorrhizal fungal activity ensures a steady supply of phosphorus is available for plant uptake. Mycorrhizae increase root

zone several times over accessing phosphorus from sites unavailable to roots. This is used to increase plant energy (soluble sugar) production, some of which is then used by the fungi for further harvesting activities.

Nearly all plants, with the exception of brassicas, utilise the action of mycorrhizae, however we have recent reports of significant extra growth in winter brassica crops that have received a base dressing of either CalciZest or DoloZest. The reason for this extra growth will be the result of the activity of both beneficial fungi and bacteria resulting in an increase in nutrient availability.

Soil tests, unless otherwise requested, measure plant available nutrient, usually between 1 – 5% of all held in the soil. Even a small proportion of more tightly held nutrient uptake can, and is likely to, result in extra growth.

The specially selected bacillus in CalciZest and DoloZest are included for their ability to rapidly digest old dung and root matter. As this semi-digested organic matter breaks down there is a release of nutrient for plant uptake.

Extra moisture and nutrient, along with the harvesting power of mycorrhizae does make a genuine difference in crop and pasture yield.

As plant growth increases so too does the energy content. One of the early observations after the application of CalciZest and DoloZest is a change in grazing behaviour. Animals spend less time 'searching' for the tastiest and reconcile themselves to the reality that regardless of where they are in the paddock, feed is uniformly of the same outstanding quality.

Dung and urine become more evenly spread with less concentrated in campsites. This means less replacement nutrient particularly phosphorus and potassium required.

## Potassium

Most of the soil test results from the South Island we've received have shown marginal levels of plant available potassium, whether reported as me/100gm, MAF QT, of Base Saturation %.

The parent material of many of the sites tested throughout the SI contain naturally high levels of potassium, and when a TBK (Total Potassium Extraction) test is requested the results indicate many years supply. In these situations, applied potassium where physical structures are good and beneficial biology is robust will not provide any increase in pasture growth.

Does this mean we are mining reserves? Regular soil testing over the next decade or more will tell the story and should there be a situation where plant growth is restricted by a lack of plant available potassium, sulphate of potassium may be applied.

Sulphate of potassium (SOP) contains 42% potassium and 17% sulphur in the plant available sulphate form, and therefore the obvious choice for South Island soils typically deficient in sulphur. SOP is also a more soil friendly form than muriate of potash, and although more expensive it remains our potassium input of choice.

## Pasture quality

Pasture quality and quantity go hand in hand. When more is grown because plants are more efficiently harvesting nutrient and photosynthesising, plant energy levels lift.

This can be measured using a refractometer in the same way as testing soluble sugar levels in kiwifruit and grapes prior to harvest.

The pastoral observational sign is animals spending more time sitting and ruminating rather than grazing and browsing. A useful measure is the amount of feed consumed to produce milksolids or gain a kilogram of weight.

It has been calculated that dairy cows grazing conventionally fertilised pasture require 27% more feed to produce a kilogram of milksolids.

## Profitability

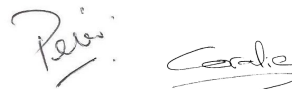
Mark Macintosh of AgFirst Whakatane, in an independently commissioned report comparing the performance of the Berryman property with District Average, showed that the Berryman property Gross Margin in the 2011 - 12 season was an extra \$1621/ha.

The recent Dairy NZ report showed that the Operating Profit (EFS) for the Berryman property for the 2018-19 season was an extra \$2389/ha, and for the 19-20 season an extra \$2225/ha compared to District Average.

For ease of calculation a \$1900/ha surplus per year over the 9 year period from 2011/12 to 2019/20 for the District Average dairy farm of 110ha is an extra \$1.88m.

The district average pasture growth will continue to steadily decline due to loss of soil carbon, while the Berryman property, superbly managed by Danny and Liz Henman, continues to sequester carbon with the margin already enjoyed steadily increasing.

Regards,



## Farm Performance Summary

Farm Business Type	50% SM	Benchmark Group selected by	Whakatane Owner Operator			
Region	Whakatane	Cow LWT	520	Breed	Friesian	
Resin/Olsen P	60/27	Soil pH	6.3	BW / reliability	-20/55	
			2019/20		2018/19	
			Farm	Benchmark	Farm	Benchmark
<b>Financial KPI's (Dairy Business)</b>						
Farm Working Expenses (\$/kgMS)			2.12	2.44	1.86	2.41
Gross Farm Revenue (\$/ha)			6,142	4,606	5,446	4,122
Operating Expenses (\$/ha)			2,943	3,632	2,453	3,518
Operating Profit (EFS) (\$/ha)			3,199	974	2,993	604

**Soil Moisture.** As often stated, the ideal soil moisture content is 25% with air making up a further 25%.

Measuring soil moisture is relatively straightforward. Take a small quantity of soil to a depth of 200mm from a number of sites across a paddock, weigh (using accurate electronic scales), thoroughly dry in the oven or microwave and re-weigh. In our experience, soils containing 15% moisture can look remarkably dry.