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DoloZest® News

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Building resilience

The arrival of Covid 19 and the consequences were not foreseeable, and we'd be unwise to think it will be over any time soon.

There will almost certainly be other viruses that pose a genuine threat to our wellbeing, and there's no way of knowing when the next more virulent one might arrive.

Our best defence is ensuring that on a personal level our immune system is operating somewhere close to optimum and to achieve that what we eat requires careful attention.

Dr Arden Andersen in his human health lectures here spoke of his work as a doctor treating illnesses in children and young people that in past generations were only found in the aged.

At least part of the reason for that has been attributed to a lower mineral content in food grown today compared to that of 50 years ago, and there's little doubt that the nutrient density of food has steadily declined.

Cobalt, when we started 30 years ago, was added only to mixes being applied to pumice based country whereas it is a routine input on all soils today.

Pastoral soils weather as a result of rainfall and treading. Plant roots exude enzymes that release minerals from the soil steadily depleting reserves. Unless these are replaced plant growth steadily declines and lower fertility species become increasingly prevalent.

Many of the necessary minerals are required in small amounts and are therefore known as trace minerals. Spreading them evenly when only a few grams/ha is required is near impossible even if we were able to accurately identify all that are required.

Over time the minerals dissolved in groundwater find their way to the ocean and after millions of years become concentrated in areas. Natural land movements result in some of these deposits

becoming part of land masses that are then mined and spread back on the land.

Golden Bay dolomite, in DoloZest, and the lime in CalciZest were once seabed deposits providing the required magnesium and calcium for optimum pasture growth.

Sechura RPR was once a seabed deposit, now an inland desert in Peru. Because it's not crushed it's common to find tiny teeth of ancient sea dwellers.

Part of the success of the FF nutrient programmes is attributable to these mineral rich resources, and knowing the amounts necessary to maintain optimum soil levels takes many years.

As with phosphorus there's a pool of nutrient in the soil some of which will initially have been deposited many years ago and remain because it hasn't been removed in milk, meat, bone, or wool. Some will be from the last nutrient application.

When the pool of nutrient is greater than that required for immediate growth it doesn't matter whether it's currently plant available or in the process of being released from more tightly held sites.

Provided the release is more rapid than the immediate demand there is no benefit in applying nutrient in a water-soluble form.

The key to maintaining adequate supply for plant uptake is ensuring that nutrient is being cycled sufficiently rapidly, and this is where the microbial inputs in CalciZest and DoloZest play a vital role.

The role of fungi, bacteria, and all the other beneficial soil dwellers has been well known for many years. DSIR scientists in the 1940's 50's and 60's identified soil life and its function, counted and photographed all the important ones and the books containing that information are part of our library.

The following quote is a cornerstone of the development of DoloZest and CalciZest.
“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 fertilisers, in others separate treatment may be required.”

[p 127, Soils of NZ, Part 1 Soil Bureau Bulletin 26 (1) NZ DSIR 1968]

The dolomite in DoloZest and lime in CalciZest create the soil environment that favours the activity of the selected beneficial microbes allowing them to colonise and proliferate ensuring both increased total growth and higher quality feed.

Recent Country Calendar

One of the philosophies of the multi species pastures movement is that with the right mix of plants all essential nutrients will be provided and the system will essentially be self-sustaining. Should that be the case we’ll be the first to endorse.

The greatest challenge facing this movement is ensuring sufficient nitrogen is available for the rapid decomposition of the high levels of fibrous organic matter/carbon left on the soil surface after grazing.

Over time the carbon/nitrogen ratio required for strong pasture growth will be achieved naturally as excess carbon is released in the form of CO₂, however one of the aims of regenerative agriculture is reducing CO₂ emissions.

Without additional nitrogen to balance the extra carbon, regrowth will steadily slow and by the end of the Year 3 lower fertility species will become apparent and by Year 5 it may be time to spray out and start again.



The required nitrogen is available from 2 sources, applied fertiliser (urea) or that fixed from the atmosphere by clover.

Encouraging strong clover growth works against species that grow as tall as fences because insufficient sunlight is able to penetrate to the lower levels where clover grows.

Multi species mixes are not new to NZ agriculture. *Grasslands of New Zealand* by Bruce E Levy first printed in 1951 listed over 40 different pasture plants.

The mixes recommended for sowing differed depending on natural soil fertility and climate, however they all contained 2 and often 3 different clovers, both red and white.

Clover remains the basis of our permanent grazed pastures and becomes increasingly important as environmental regulations are enacted to ensure water quality is preserved, and even enhanced.

Graham Sparling of Landcare Research stated in his 2004 Norman Taylor Lecture, Broader shoulders and smaller feet, *“Soil biology may be able to help us clean our wastes and protect our streams and rivers. The soil biological process of denitrification is the only process whereby we can get reactive nitrogen from soil and water back into benign nitrogen gas. But at present we seem to be headed in the opposite direction, adding even more nitrogen and phosphorus to our soils.”*

Nitrogen fixed by clover is a highly efficient and effective means of making sufficient available for maximum pasture growth with insignificant losses to groundwater.

Pasture management based on rotational grazing using Functional Fertiliser total nutrient mixes is the only complete programme currently available.

Pasture growth has been measured monthly for over 15 years, however it’s clients that have been with us since 2004 that are the true measure of success.