

Gerald, Janne & Hamish Smith

325ha, Paekakariki

40 years of dicalcic use

Application: No.8S (80% Dicalcic Sulphur / 20% Cropfine Lime) 0:3.6:0:8 @ 350kg/ha

'When I got here, I was recommended to use dicalcic by an agent of a local merchant who was a real advocate of putting phosphate on in a non-acidic manner, while applying lime in an affordable manner. Back then he told me to apply it at 4cwt onto 100 acres, which I did. Afterwards that block stood out like a postage stamp, it really was quite dramatic. I had a highly regarded farm supervisor come see it soon after. He'd done all the land settlement in the Waikato, and much in the Wairarapa, and he told me that area was one of the most spectacular responses from fertiliser he'd ever seen. It was enough to convince me the dicalcic was sound. At that time there was a lot of moly-superphosphate being applied on farms which to me only seemed to give a boost of grass that the stock didn't do well on.'



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Gerald Smith



Over the years I’ve had all sorts of advice from experts that I should be using some other product rather than dicalcic, MAF were adamant I was wasting my time. To add to the difficulty, back then the lime content wasn’t subsidised either. I persisted with it though, based on what I was experiencing, and now, interestingly enough, some of those advisors are swearing by the product.

Professor Jim Pollock from my Massey University days had often expressed the benefits of reverted lime. He’d always said that superphosphate by itself acidified the soil, that it was unsustainable, and that it led to animal health problems. These were the things I felt confident dicalcic certainly didn’t do. Years later, I still do.

In this harsh environment, we’re happy running around 8su/ha. Regardless of how many times I’ve been recommended to use it, I’ve never applied DAP, and I’ve never been short in lambing time. In early December we sold 40% of our wether lambs at just under 28kg. My lambing percentage ranges between 110% and 120%, which I’m very happy with on this country.

We are farming on a shoe-string compared to many other farms. I’m astonished when I see some of the money being spent on these places, putting themselves on a treadmill where they’re locked into a work routine they can’t get off, committed to the inputs they’ve got. They are enthusiastic intelligent young farmers, and when I look back at myself when I was that age, it’s the same sort of system I got hooked into as well. But one of the things that helped me break from it was this place. To intensify the farm to maximise pasture utilisation meant I needed to sub-divide my paddocks, put in extra water supply, apply capital expenditure that required heavy maintenance ... particularly being on the coast, where one of the major problems is the corrosion of our fences, and to redo the extra quantity every few years just wouldn’t have been economic. What I found though, was that I could avoid all that by applying dicalcic and watching the stock spread out in the one paddock to obtain complete pasture utilisation, without ever forcing them. That is by far a much cheaper and simpler system in my opinion.

In the eighties during farming’s downturn, I stopped the dicalcic for three years, and things went backwards quickly.

I eventually got the plane working again, and I remember 40-odd hectares with 600 hoggets in it that needed to be shifted. I went out and opened the gate, but got called away before I had a chance to move them through. Two days later I went out expecting to find they’d shifted themselves, but virtually not one had left. They knew where that gate was, and if they were under pressure they wouldn’t have hung around, yet here they were, still content. Still utilising the pasture. And it’s the same story today, we are currently leasing a block of land out the back that’s had a very poor history of topdressing. Initially when we put the stock on, they’d move out to the corners wanting to go back to the home farm. Now the stock go in and spread out enjoying the pasture. All the rubbish pasture has been cleaned up by simply using the dicalcic.

The stock health here has always been very good. During the seventies when rye-grass staggers used to be a huge problem I never seemed to have any. Farmers couldn’t muster their sheep and they were losing stock off bluffs. Another dicalcic user called me and asked if I had a stagger problem. I didn’t. He said he was experiencing the same trend. ‘You think what we’re doing what no one else does,’ he said. Later there was a special farm field day on the Wairarapa coast dedicated to discussing this issue. After listening to the proposed theories, and feeling I had something to contribute because the host property’s geography wasn’t too dissimilar to mine, I tentatively put my hand up and told the delegation about my current stagger-free experience, including the fact that I use dicalcic phosphate. I told them I couldn’t give answers, just that staggers wasn’t a problem on my property. Afterwards, each expert present stood up to belittle the dicalcic, accusing it of all manner of things, even going as far to say that it was an ‘old wives’ tale’. I couldn’t believe what they were saying. To me that was the most disappointing aspect, them not *wanting* to know.

The farm’s soil condition has always been paramount. If it didn’t have the earthworms and a good balance in general, then I wouldn’t have healthy grass and the healthy stock I’m experiencing. I don’t claim that it necessarily gets the quantity, but it certainly gives the quality. My belief is that without the soil condition I would never have achieved the

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► palatability. The phosphate I'm putting on in the dicalcic is fully available, so I can get away with only applying supposedly half the amount. Whereas, without the liming element, there would be a proportion of phosphate that would be lost or locked up. I think this place has traditionally held its green colour in comparison to adjoining properties, especially in the drier periods. The original advice given to me was that if I stuck lime on the property, I would get through droughts when others wouldn't.

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I believe what I'm doing is sustainable, that's what gives me confidence to not alter it.

Hatuma has been excellent to deal with over the years. Roger Gray has always answered any questions I've had and supported me. I think dicalcic has got a big future, especially with the stark reality of nutrient run-off, because any dicalcic-user is not involved. They've all got sustainable enterprises at whatever level they're farming at, so they're in the position of not having to re-evaluate their future fertiliser. I'm confident that my history of dicalcic has put this farm in good stead for the future.'



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Gerald Smith

Soil Report

Smith Farm, Paekakariki, 325ha
No.8S (0:3.6:0:8) @ 350kg/ha

Maintaining a biologically-active soil has been the key to Gerald Smith’s success in farming the cold, windy, steep greywacke hill country above Paekakariki for more than 30 years. Despite the naturally shallow bony parent material, the Visual Soil Assessment scores a near-perfect 45.5 out of 46 for hill country. Soil structure and porosity are excellent, providing good aeration and a good rooting medium, easy rainfall penetration with little runoff or surface erosion, and high moisture retention.

The most outstanding feature of the topsoil is its 15.5 percent organic matter content, with a carbon:nitrogen ratio of 10:1. This massive carbon store is the key to providing the necessary energy for the biological system, which in turn provides the plant nutrients in the appropriate balance. Annual applications of lime (calcium carbonate) and dicalcic phosphate for 40 years have ensured a continual supply of extra carbon through the release of carbon dioxide. This increases the rate of photosynthesis and plant growth, releasing more carbohydrates through the roots to feed the soil bacteria,

fungi and larger organisms. With a large steady source of carbohydrates, the soil biology is active, continually recycling and releasing nutrients for the plants.

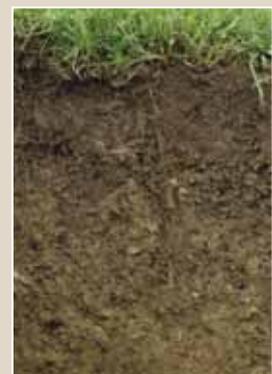
Microbial test results show excellent levels of bacterial and fungal biomass (433ug/g and 536ug/g), in a good ratio for pasture (1.24). There is a community of disease suppressant fungi present (hyphal diameter 3.0um). Mycorrhizal colonization of the roots is excellent, ranging from 72 to 84%, and there is good nutrient cycling and availability, particularly in the top litter layer. The plant-available nitrogen supply from soil predators is excellent, at 200+ kg/ha. Chemical tests also show high levels of available nitrogen (related to soil organic matter) at 272 kg/ha. In such a biologically-active system, supplementation with synthetic nitrogen is completely unnecessary.

The high organic matter content also produces a relatively high cation exchange capacity (27 me/100g), which assists in providing a balance of essential nutrients to the plants and optimal efficiency. Herbage tests for both mixed pasture and clover-only show

medium to high levels, in good ratios, of all the major nutrients; phosphorus, potassium, sulphur, calcium, magnesium and sodium, with phosphorus at 0.48%. Micro-nutrients are also all in the medium to high range, with no deficiencies. The plant digestibility is 75.1% and metabolisable energy 12.2 MJ/kg, providing excellent palatability and digestibility ensuring healthy and productive livestock.



Steep bony parent rocks support rich soil and pasture



Living soil



Excellent crumb soil structure