

Nigel, Di & Bernie Payne

70ha, Rerewhakaaitu

180 cows 2.6 cows/ha, 930ms/ha (av)

12 years of dicalcic use

Autumn Dressing No 410 % Salt (0:3:0:4) @ 400kg/ha

Spring Dressing Dicalcic (0:4:0:6) @ 300kg/ha + Cropfine @ 150kg/ha

‘Our appreciation for dicalcic stemmed from a desire for improved stock health. We weren’t comfortable with the effect high analysis fertilisers seemed to be having on the stock, so that’s when we began dealing with Hatuma.





The results in the first 12-18 months were outstanding. We could see the change happening in the pasture's colour and the improved soil condition,' says Nigel.

'It became a lot more friable once we shifted away from the acidic fertilisers. It was like the earthworms arrived with the dicalcic,' says Bernie.

'The soil's condition is absolutely paramount to our business,' says Nigel, 'even more so as farmers become increasingly regulated with fertiliser practices. With the local lake here, and the market demand for more chemical-free produce, whatever is grown off this farm, its success lies within the agronomy of the soil and how we treat it. It begins and ends there.'

The improvement in the natural soil fertility has meant pugging has been reduced to a point where if it does, the recovery is very quick. I now find I can leave stock longer on the heavier parts of the farm during the wet winter conditions.'

'We've also noticed less run-off when it rains, it just seems to soak it all in,' says Bernie. 'In winter the entire farm just works like a sponge, it absorbs a horrific amount of water. It would have to be an exceptional amount of rain for water to run off this property. Because of this, we also know any litter from the stock is absorbed and processed before it can become a pollutant.'

'We've learnt it's much simpler to increase the efficiencies of the soil and apply fewer nutrients, than rely on a series of fertiliser applications to get us there', says Nigel. 'This shows in the soil tests where a lot of the elements, like potash, are still there. By applying a soil-friendly product, it's encouraging the earthworms and the rest of the soil life to do the work for us. We can see the cycle is obviously working, the nutrients that are being taken up by the plant and are being put back by the cows. So there's less and less to replace all the time. We don't normally use artificial nitrogen, but we've used about 25 units on half the farm over the last two cold autumns. We have plenty of clover

on the property, so we know a lot of nitrogen is coming from that. Despite the amount grown, bloat is kept to a minimum, and we've yet to see any effects of the clover root weevil. We take 3,000 bales of hay off the property as well.

The best thing about having a good soil condition is low-stress farming. The increase in soil health has shown in the increase in the herd's health. Healthy soil, healthy stock. Normally we'd be sitting around 7 - 8% dries. Apart from helping with this, dicalcic's biggest benefit is the utilisation of feed. It doesn't get much better than what we're experiencing here.'

'You don't get the urine patches like a lot of others do, which shows everything is remaining palatable. The grass is so soft if you grab it with your hand, it just breaks way, and that helps with recovery if the climate gives it a shock,' says Bernie.

'We're part of the group that is monitoring any effects of farming on Lake Rerewhakaaitu water quality' says Nigel. 'This farm boundary the main creek that runs into the lake, so we are very mindful of what we do here is going to affect down there.'

Consistency has been our focus to remaining sustainable and productive. Sticking with it, sticking with what we originally set out to do. And trying not to look over the fence too long to see what other people are doing!

The 21st century farmer has got their work cut out to bring their systems to this ideal way of farming, one that's productive, with less reliance on chemicals, while caring for the environment. I think Hatuma is going to be at the front steps of that movement because they've remained consistent to their message for a very long time. Public demand for clean, green produce is growing at such a pace, I believe farming in general is two steps behind that demand. But we're very relaxed here, knowing we're already farming that ideal. And as regulations get tighter and tighter, we know we won't have to change a thing. We're already achieving sustainable farming.'

Continued over ►

‘The soil’s condition is absolutely paramount to our business, even more so as farmers become increasingly regulated with fertiliser practices.’

Nigel Payne

Soil Report

Payne Farm Rerewhakaaitu, 70ha

Autumn Dressing No 410 / Salt (0:3:0:4) @ 400kg/ha

Spring Dressing Dicalcic (0:4:0:6) @ 300kg/ha + Cropfine @ 150kg/ha

Bordering Lake Rerewhakaaitu, the Payne's successfully balance productive dairy farming with low environmental impacts. They achieve this primarily through promoting an active soil biology, with rapid nutrient recycling that utilises the nutrients on-farm and prevents leakage from the farm system.

Consistent applications of lime and dicalcic phosphate have resulted in a biologically-supportive pH of 6.4. Topsoil is at least 30cm deep, with good structure and rooting and very good Visual Soil Assessment scores (36.5 out of 38 for soil indicators and 35 out of 38 for plant indicators). There is a high proportion of clover, with strong dense clover roots and good nodulation.

The worms are huge, and recycling of litter and dung is rapid, with cow pats completely disappearing within three weeks. The worms prevent any build-

up of root matting or litter thatch, allowing good moisture penetration and improving aeration, heat exchange and growing season, resulting in faster growth and healthier more stress-resistant plants. The rapid decomposition of dead leaves and roots and manure makes nutrients available sooner to growing plants.

Organic matter levels measured at standard depth are high at 10.2%, cation exchange capacity is 24 me/100g, base saturation 83% and calcium base saturation is 70%. The levels in the surface 10mm are also high, with pH at 6.6, organic matter at 9.8%, cation exchange capacity 22 me/100g, base saturation 90% and calcium base saturation 72%. Microbial tests in the top layers show high levels of active bacteria (28.1ug/g), excellent levels of mycorrhizal colonization of roots (90%) and good nutrient cycling.

The plant available nitrogen supply from predators is around 150kg/ha, and 219 kg/ha available nitrogen in the soil. The amount of nitrogen provided by natural processes is regulated by the carbon, with only sufficient being fixed to meet the plant growth requirements. This, combined with the high humus levels which act as a sponge, prevent leaching of excess nitrogen.

The excellent organic matter levels, biological activity and nutrient cycling ensure balanced uptake of nutrients in the pasture. The mixed pasture and clover-only herbage tests show medium to high levels of all macro-nutrients, in good ratios, and medium levels of all trace elements, again in good ratios. There are no deficiencies. Digestibility is good at 79% and metabolisable energy is high at 13 MJ/kg, ensuring efficient uptake and low stress on the cow.



Large abundant worms



Organic-rich topsoil



Rapid recycling of dung