

## Jeff, Christine & Cyril Brownlie

1,040ha (800ha effective), Wairoa Karamu Stud – South Devon, Alton Vale Stud – Horned Hereford

30 years of dicalcic use

Application (hill country):

Hatuma No.8S (80% Dicalcic Sulphur / 20% Cropfine Lime) 0:3.6:0:8 @ 250kg/ha

**'During the late eighties I bought some terrace country,' recalls Jeff, 'but it never looked right, it was yellow and the stock wouldn't graze it properly. After advice from the local fertiliser rep I hit it with two applications of superphosphate, both 500kg/ha. But that didn't improve anything. I decided to apply Hatuma dicalcic on it instead and within three years I could see a noticeable difference. The dung and other organic matter were breaking down, there was more soil life, a lot more growth, the moss disappeared off the southerly aspect, the grazing became even, and the yellow became green.'**



Our soil's condition has been very important to this operation. We credit our good stock health to it. In winter some of the southerly aspects may only get a couple of hours sun during the day, and we used to deal with all sorts of problems with stock on those areas. Now I feel the soil biology has played a huge role in correcting those issues. We'd spend weeks in the woolshed with daggy ewes that stretched from the crutch to the hocks. We'd fill fadges and fadges of the things. Now the sheep have hardly anything, nothing that can't be dealt with in just a day or two.

With an increase in soil biology, we're now getting better uptake of minerals in the plants. We used to copper all our ewes, but they don't receive anything now, and the cattle don't get as much as they used to either. It's all coming from within the soil. The lambs are noticeably stronger-boned too.'

'Spending less money on drenches is a big economic benefit to having good soil condition,' says Cyril. 'We've found the downside to using the high analysis fertilisers is you're creating stock problems you eventually have to fix.'

'We get a lot of clover on the flats, yet the stock have never had bloat since we began using dicalcic,' says Jeff. 'And we've seemed to have eliminated staggers and milk fever too. They were all problems we'd constantly experience. Many of the farmers here are still wary of the risk and take costly precautions, but we don't need to, they're not an issue anymore.'

We only use artificial nitrogen on the 20ha of cropping, never on the farm itself. On our dry northerly faces, there used to be no clover growing, but now we get it right to the top slopes. The amount that grows here is acquiring all

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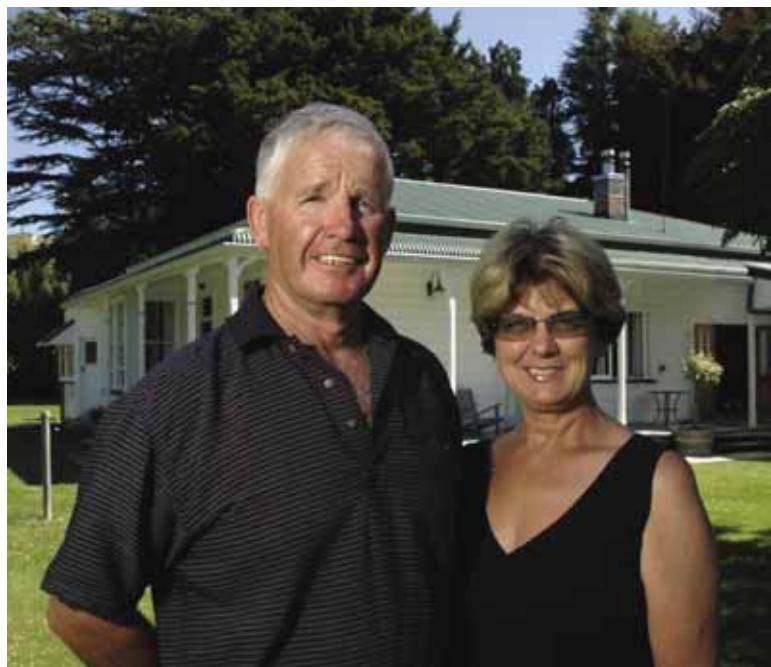
Jeff Brownlie



► the nitrogen it needs from the atmosphere. We know some people rely on urea to give them that effect, but it's a cost we don't have. Establishing and maintaining thick clover and rye is paramount, not only for the savings, but also to provide soil cover from the warm nor-westerlies we get.

We're comfortable knowing that the phosphate being applied in the dicalcic form is getting used, as well as encouraging the soil biology to maximise it. Phosphate by itself isn't sustainable, but with the lime component of the dicalcic I believe it is. And it's a cheaper option too. I've always looked at the stock to measure the soil's performance, and I quickly learnt phosphate levels and soil testing don't mean much at all once you get the organic system working for you. It's great, because it's not costing us anything extra.'

'In winter we carry around 9.5su/ha. This is made up of 990 cattle, 3800 ewes, 1,000 hoggets, and 100 deer,' says Cyril. 'We fatten between 3,000 – 4,000 lambs here, and often bring more in. We had cases of pugging recently due to the wet winter, but the recovery was very good. I put this down to the good earthworm activity smoothing the soil out. When using water soluble fertilisers the plant's roots don't have to forage deep to get fed, so they become



lazy. Dicalcic doesn't have this effect. The good root depth we have here helps store the moisture. This means the grass isn't relying on fertilisers as much to grow, it's feeding itself the nutrients it requires.'

'People often ask me why the place looks so green, and I put that down to the dicalcic. I think a few people around here are now using it because of what they've seen here,' says Jeff. 'Bill Nicholson has been very good to deal with. He passes his knowledge on well and makes sure we never forget. He's very passionate about the dicalcic and soil health.'

'Every time you pick up a paper these days you're reading something about soil health not being up to scratch. In some parts of the country it's deteriorating rapidly, and any acid fertiliser isn't going to help. I'd imagine more and more people will head towards dicalcic as they start looking for alternatives.'

'It's got to be one of the leading products for the future,' says Cyril. 'As the end consumers of meat and crops we rely on the soil being healthy, and I doubt the main fertilisers are contributing much to this. You've got to understand how dicalcic works to appreciate what it really does. You see the benefits with your eyes and in the bottom line.'

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## Soil Report

**Karamu Stud & Alton Vale Stud, Wairoa, 1,040ha  
(800ha effective) No.8S 0:3.6:0:8 @ 250kg/ha**

The most striking visual soil features of the Brownlie's Wairoa hill country farm are the deep friable 58+ cm topsoil, deep worm mixing and the thick branched rooting system extending down beyond a metre in the soil profile. The ability of the pasture to access nutrients and soil moisture to such depth is the key to the rich green colour of these pastures, and their ability to continue producing through the seasons. Good soil condition is also the key to the performance of the Karamu South Devon stud.

The Visual Assessment Scores are excellent, at 45 out of 46 for soil indicators and 39.5 out of 40 for plant indicators on hill country. There is a high proportion of clover in the pasture, including right up the north-facing slopes. Available nitrogen levels are medium to high, at 185 to 350 kg/ha.

The topsoil has a strongly-developed and friable structure, and rich and dark colour, with high organic matter content ranging from 9 to 12.4%. This high energy source, combined with a favourable pH of 6.0, supports an active microbial population. There are excellent levels of bacterial and fungal biomass, (524 – 745ug/g and 277 – 480ug/g) and a community of disease suppressant fungi present (hyphal diameter 3.0um). There are good protozoa numbers (66 – 70,000 flagellates and 40 – 42,000 amoebae), with very good levels of nutrient cycling and availability. The plant-available nitrogen supply from predators is high at 200+kg/ha /3 month period

Herbage tests show good levels of both macro- and micro-nutrients (except selenium), and the plant digestibility is high at 74.2%,

with a high metabolisable energy of 12.1 MJ/kg. The excellent pasture quality is a result of the interactions between high levels of organic matter giving energy for the microbiology, which recycles and releases a full range of nutrients for plant uptake. Rapid organic cycling results in a continual supply of nutrients. The rapid manufacture of humus from the surface layer of litter, dung and urine makes nutrients available in colloidal form, which allows plant uptake in a balanced and safe manner, with no toxic residues. This ensures quality pasture, providing easily-metabolised nutrients, good digestibility and a high energy source for the animal. This, in turn, results in healthy animals whose systems are not placed under stress, and so are able to put their energy into growing.



Deep rich topsoil



Dense rooting to 1m+