



ADAPTING TO A CHANGING CLIMATE: CASE STUDY 3

SUSTAINABILITY AND PROFITABILITY

A Rangitaiki Plains dairy farm

THE FARM

- Located in Edgecumbe in the Bay of Plenty.
- Total area is 160 hectares, with 152 hectares effective.
- The balance is made up of races, trees and two drainage canals.
- The milking platform is 420 cows, down from 460 cows before the 2007/08 drought.
- Production for the 2008/09 season was around 440kg of milk solids per cow.

THE FARMER

- David Law is 50:50 sharemilking on the family farm.



David Law's shift to redesign of his farm is ongoing with a focus on building self reliance, capacity to buffer against climate extremes and changes, and maintaining profitability.

MOTIVATION FOR CHANGE

Sustainability and profitability go hand in hand as far as David Law is concerned. "When you look at sustainability, we've got our finger on the pulse and we're going to do more and more of that to make money out of what we're doing."

Driven by concerns about the amount of urea going on the farm, David changed to a biological fertiliser programme five years ago. Since then, the farm has been through the 2004 flood and the 2007/08 drought. The farm's recovery from these events highlighted the benefits of what they were doing and provided impetus for further change.

What has emerged is a redesign of the whole farm operation. "What we're trying to achieve is to be more self reliant and try and keep our costs to a minimum," says David.

A TURNING POINT

Changing weather patterns are definitely an influence on what David is doing. He's getting longer dry periods and more heavy rain. "Rainfall is coming differently from the past," he says. "It comes unevenly. That's why it is important for us to have a system that can handle a long period without wet weather."

About six years ago, David trialled a product called rumenite (a bentonite product with mineral additives) and noticed significant improvements in his pasture, animal health and productivity.

One of his staff mistakenly spread too much of the rumenite and lime mixture in one strip of pasture and noticed that this was the only green patch on the farm when the rest dried up. This experience opened the door to the biological fertiliser programme that David has now had in place for five years.

FOR MORE INFORMATION

- The Sustainable Farming Fund supports rural communities to achieve sustainability. A range of publications including information on *Adaptation of lowland/coastal dairy farming in the Bay of Plenty* are available at www.maf.govt.nz

PASTURE SPECIES

The biggest benefit from the biological programme is deeper rooted pasture species which hold up, and recover better, in dry conditions. Even with this improvement, David is looking at a range of grass species to increase the capacity of the farm to handle hot, dry summer conditions. He has been undersowing with chicory and red clover. "This year was quite a difficult spring and the clover took ages to get going. When it took off everyone else (in the region) was drying off."

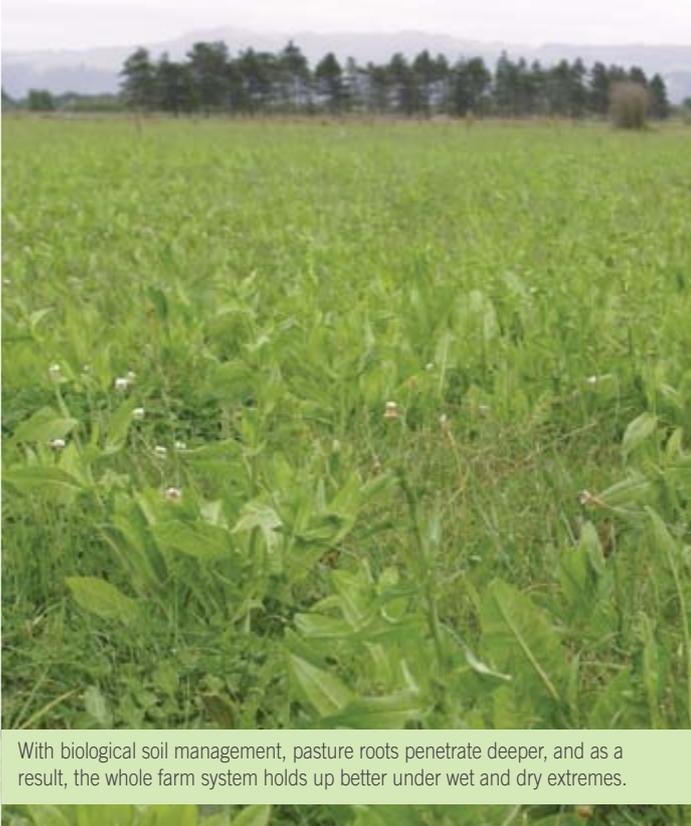
Paspalum is an important part of the farm. "We wouldn't have survived without our paspalum. It's not a weed when you've got nothing else." He manages paspalum growth by having 20-day rotations and topping it to keep it fresh.

Future plans include putting chicory through the whole farm, sowing Ella cocksfoot in drier paddocks and trying some of the older ryegrasses.

With biological soil management, pasture roots penetrate deeper, and as a result, the whole farm system holds up better under wet and dry extremes.

FEED MANAGEMENT

Since the 2007/08 drought, David's team have been working on getting as much control over feed supply as possible. "You lose control of costs if you're leasing land and the same happens if you're buying in feed during a drought," says David. He chose an all-grass system but has modified that as a result of giving up the lease of the runoff. He's bought palm kernel in the short-term because of its cheaper price.



With biological soil management, pasture roots penetrate deeper, and as a result, the whole farm system holds up better under wet and dry extremes.

"When you've got a new system which is unconventional you can't go to conventional people for information. You step outside the square and you're on your own. But there is growth steadily in this direction, so more support is becoming available."

Pasture is managed to maintain a high residual pasture cover through the summer months. Feeding some palm kernel and meal to the cows helped achieve this through the 2008/09 summer. They're very strict to manage the grass by giving the cows only what they need. In the heat of summer, David manages grazing to ensure the cows get most of their feed before the heat of the day.

"All of the silage this year has come from runoffs. It used to be that you'd put aside some pasture for silage. What people seem to be doing is pushing their milking platforms to the limit. In the old days, all of the barns used to be full of hay. Now, they're empty."

David is working to reduce dependence on bought-in feed. He put in five hectares of maize this year and is looking at 10 hectares next year. He is also looking at investing in a barley crusher so he can buy in and process his own barley.

WATER MANAGEMENT

There are two drainage canals that run through the farm, the Reid Central Canal and Putiki Canal. The farm is only four to five km from the coast, so the canals are tidal and water flows are managed with flood gates. When the farm gets heavy rain or a flood, and the Reid Central Canal is high, the farm will drain only when the tide is going out. In the summer, David manually opens the flood gate and leaves it open so water can run back up the drains.

David feels that he could manage a half metre rise in sea level with the existing drainage system. In the short-term, he has been digging drains to get better drainage off the farm.

Over the 2008/09 summer he experimented with irrigation on 30 hectares of the farm, drawing water from the canal. The plan now is to move towards irrigating the half of the farm that has canals running through it.

DEALING WITH HEAT STRESS

Heat stress is a factor for the cows and could be more so with climate change. To deal with this, David has been looking at ways to have trees growing on the farm. He aims to use deciduous trees, possibly the poplar species that already grow well on the farm. At present he's still working through options, which include having tree shade paddocks or just having trees scattered across the farm. The idea is to have a system in place to enable the cows to have shade in the heat of the day.

Key points

BENEFITS OF THE NEW SYSTEM

With the biological fertiliser programme, pasture roots penetrate deeper, and as a result, the grass species can handle the heat and the farm drains a lot better than it used to. Cow health is better, with good mating, reduced worm burdens and fewer eczema problems.

The farm reduced stock numbers after the 2007/08 drought to lessen its dependence on bought-in feed. Cow numbers have since been dropped to 420 and are on target to do their best production ever. David explains: "We dropped the cow numbers because the weather is too inconsistent. We can't rely on consistent rain when we need it." Grass species are being changed on the drier parts of the farm and he is looking to put in trees to manage heat stress in the cows during summer.

FOSTERING CHANGE

The sort of approach that David takes is presently outside the square for most farmers, but he believes that in 10 years' time everyone will be doing things differently. "You've got to have farmers searching for something better. There's more biological farming coming in, it's a wave that will get bigger." At present he sees three barriers that stop people from doing things differently:

- Lack of education.
- Fear of a new system.
- Battling conflicting advice from experts.

THIS IS ONE IN A SERIES OF CASE STUDIES CALLED ADAPTING TO A CHANGING CLIMATE

Published by Ministry of Agriculture and Forestry
PO Box 2526, Wellington 6140.

Freephone: 0800 008 333

Web: www.maf.govt.nz

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- 1** The focus is to be as profitable as possible by being as sustainable as possible.
- 2** Changing weather patterns have influenced David's objective to develop greater self reliance.
- 3** Increased self reliance and resilience is being achieved through reduced stock numbers, changes in pasture species, more control over feed, irrigation on part of the farm, and exploring options for using trees as stock shelter.
- 4** A shift to biological farming came about through a desire to stop using urea.
- 5** Pasture roots are penetrating deeper, and as a result, the whole farm system holds up better under wet and dry extremes.
- 6** Doing things differently means you have to be prepared to be out on your own, but David firmly believes that biological farming is the way of the future.

"If you're skating along by the skin of your teeth, as many are, and get in trouble, then you have to buy expensive feed in, because the price goes up with higher demand. So you've got to be more sustainable to be able to handle your own situation."



In summer the flood gate is manually opened and left so water can run back up the drains.

