

ADAPTING TO A CHANGING CLIMATE: CASE STUDY 1

DRYLAND FARMING A Marlborough family's journey

THE FARM

- 1100 hectares of flats and rolling hill country, 1000 hectares of effective grazing including 400 hectares of cultivatable land
- East Coast, north of Ward in South Marlborough's Starborough-Flaxbourne district
- · Mixed sheep and beef, plus lucerne seed
- In March 2009 ran some 2300 ewes, 600 hoggets, 135 cows and their calves, 25 in-calf 18-month heifers, 55 18-month steers, and 50 18-month bulls as well as breeding rams and bulls
- Average district rainfall is 573mm, with very high evapotranspiration due to exposure to north west winds

THE FAMILY

• Fraser, Shelley, Wendy and Doug Avery, holding Oliver.



Farming through a prolonged drought, Doug Avery realised that his family's South Marlborough farm was no longer financially, environmentally or socially sustainable. Since then, the Averys have embarked on a journey that's seen the farm's profitability and production curve trend ever upwards.

RESPONDING TO A CLIMATE CHANGE THREAT

Profits continue their upward trend on a coastal Marlborough property where farming systems were revolutionised to withstand drought, then immediately tested with a record rainfall year.

The Starborough-Flaxbourne district has always been drought-prone, but year after year of rainfall well below the 573mm district average was taking its toll on local land and those farming it. Doug Avery of Bonavaree saw that the farm's financial, environmental and social viability was under threat.

Today, it's a different story. Doug is energised and inspired by what he describes as the family's "journey" towards farming to the property's natural strengths and making the most of what the climate offers.

Between 2004–2008, profitability on the Avery farm improved by more than 50 percent, despite 12 years of below-average rainfall on their property. Then came 400mm of rain in two storms – one in late July and the other towards the end of August. The heavy rain falls resulted in significant lamb losses.

Dairy grazers were immediately bought in and within four or five months had restored the potential loss of profit. Wet conditions meant lambs, steers and bulls got off to a slow start, then "grew like mushrooms," says Doug.

Extreme rainfall as well as extended drought, is part of the climate change picture.

"I don't know what causes climate change, but I do know that if people don't think, adjust and adapt, it will get them," says Doug.

"Adaptation is an interesting process. You don't know how good it is until you get there."

"I don't believe drought is just about the lack of water. It is about scale, and having options; systems that can make up for the damage if something goes wrong." Doug Avery

A return to sustainability

The key to maintaining sustainability at Bonavaree has been applying new thinking to old tools, especially lucerne and fodder crops.

LUCERNE

"Lucerne is a survivor," says Doug. "Even after the longest dry period, it recovers. It bounces back rapidly after rain and provides lots of quality feed when most needed."

Bonavaree has a long history of growing quality lucerne for hay and seed. When Doug saw this legume thrive where ryegrass and clover had failed, he looked at the plant with renewed respect.

Lucerne is now direct-grazed, resulting in ewe scanning rates, lambing percentages and growth rates that were never achieved on ryegrass and white clover pastures. Ewes are mated on lucerne then return with lambs at foot. Ewe hoggets are flushed on lucerne or Omaka barley – whichever is available.

In 2008, ewes scanned 172 percent but weaned only 127 percent due to winter storms. Mated on lucerne, the two-tooths scanned 179 percent and the hoggets 147 percent with 107 percent weaned.

High growth rates mean about 80 percent of lambs are finished and off the property before the end of December when summer dry sets in, with the added bonus of early market premiums.

Yearling bulls or steers follow ewes and lambs onto the lucerne paddocks, and 18-month cattle are finished here in late spring/early summer.

The lucerne area has been increased from 50 to about 280 hectares, with plans to convert one-third of the farm. Half is the Wairau variety



Grasslands' conference delegates check out saltbush, which was planted to conserve eroded soil while providing fodder for stock. The valley floors have been sprayed off, awaiting direct drilling in lucerne.

traditionally grown on the farm, with other varieties such as Torlesse® and winter-active SuperSonic® spreading feed availability.

BARLEY TO FALLOW

Bonavaree follows a cropping rotation, of fallow to barley/annual grass, to fallow, to barley/annual grass, to a permanent crop of lucerne. In February 2009, 42 hectares were prepared for planting in barley.

The area to be planted is sprayed out in late spring, left fallow over summer and direct drilled in mid February. Even in the hottest summer, sufficient moisture is retained in the soil for the grains to germinate. Initial growth can be quite poor, but once autumn rains fall and the nights become cooler, the barley comes away.

"Fallowing enables us to borrow some spring and any summer rainfall and take it through to autumn," Doug explains. "Autumn rains then stimulate growth, on time for flushing or pre-winter grazing."

Omaka barley fills the autumn, winter, and early spring feed gap then runs out in September. It is typically grown in paddocks where lucerne will be planted in spring. Tama annual grass peaks in late winter/spring.

LIVESTOCK

The Averys are breeding towards a fertile and fast-finishing composite sheep flock. From a Corriedale base, they have added Highlander then Finn Texel bloodlines. With prices at an all-time low, wool no longer has any priority.



VARIATION FROM THE AVERAGE ANNUAL RAINFALL AT GRASSMERE (%)

From 1996 to 2007 rainfall at Grassmere was below the district average of 573 mm, with some years especially dry.

"Our mission is far grander than just saltbush, troubled hills or valley floors. It's about moving thinking, changing old attitudes, preserving our natural capital, and moving our farming systems to long-term sustainability; not just sitting around waiting for rain, but learning to live in harmony with the conditions we have." Doug Avery

Flexibility is paramount in the farming system. This year, the family's taken advantage of an especially strong season with cattle numbers, and thus income, trending strongly upwards. "And sheep income too," says Doug.

RISK, REVENUE AND RECOVERY

The Averys earn most of their income when pasture growth and quality peaks, from August until late November. Making the most of this reliable revenue period means letting pastures and stock recover from March until June.

In the summer season, pasture growth is unreliable making this a high-risk time for income generation. This can be the ideal time to shut up shop and take a holiday.

Key points

- **1** Repeated drought meant farming Bonavaree was no longer financially, environmentally or socially sustainable.
- 2 The key to improving profits has been re-looking at old tools, especially lucerne. One-third of the farm will be converted to this legume, through an annual fallow to barley/annual grass to fallow to barley/annual grass and finally lucerne rotation.
- **3** Revenue, risk and recovery periods are identified and farmed to.
- 4 Improved profitability means there's money to invest in healing eroded hill country by planting saltbush and tagasaste, and protecting remnants of native vegetation.
- 5 The family now farms to the property's natural strengths, making the most of what the climate offers.
- 6 Bonavaree's journey has been shared with the local and farming community, through being the focus of a soil conservation project then hosting a public field day in 2008.







Valley floor plantings of lucerne take advantage of the deepest soils and capture rainfall run-off from the hillsides.

FOR MORE INFORMATION

• Beyond Reasonable Drought; Adapting Dryland Farming to Climate Change, Starborough Flaxbourne Soil Conservation Group. Published by the New Zealand Landcare Trust August, 2008.

Available at www.marlborough.govt.nz/enviromonitoring/land.cfm and www.maf.govt.nz/sff/about-projects/search/05-132/index.htm

Starborough Flaxbourne Soil Conservation Group reports are available online: www.maf.govt.nz/sff/

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A SUSTAINABLE ENVIRONMENT

With productive parts of the farm pumping, profits can be invested in healing hillsides and protecting native vegetation.

Wind, rain, grazing and drought have bared off soils on north-west facing hills at Bonavaree, leading to sheet, rill and gully erosion. The first step to healing the damage has been planting high quality forage on the flats. This reduces grazing pressure on the hills encouraging reseeding and pasture recovery.

The Averys are experimenting with planting drought-resistant saltbush and tree lucerne (tagasaste), to heal eroded slopes. Plants are expensive, so Doug has experimented with throwing seed around on bare ground, with promising results.

"We are still two ticks short of the answer, but Mediterranean saltbush (*Atriplex halimus*) is the one to work with. It's drought tolerant, grows reasonably fast on these difficult soils and the stock love it, especially lambs."

Tagasaste has the added advantage of attracting bumblebees which pollinate lucerne, helping ensure a good seed-set.

Regeneration of native bush in a gully now protected through the Marlborough District Council is getting a helping hand, with the planting of 3000 trees. A wetland has also been fenced and protected.

THIS IS ONE IN A SERIES OF CASE STUDIES CALLED ADAPTING TO A CHANGING CLIMATE THAT CAN BE FOUND AT WWW.MAF.GOVT.NZ/CLIMATE CHANGE

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SOCIAL SUSTAINABILITY

The Avery family has invited the New Zealand farming community along on their journey towards farming sustainably through climate change.

Bonavaree was the key property in a Starborough Flaxbourne Soil Conservation Group project, which brought together local farmers and a team of experts to investigate how resilience to climate could be built into the district's dryland farms. Supported by the New Zealand Landcare Trust and the Ministry of Agriculture and Forestry's Sustainable Farming Fund, the project culminated with a national "Beyond Reasonable Drought" field day which saw 420 people converge on the farm in May, 2008 to share experiences of farming through climate change.

In 2008, the Starborough Flaxbourne Soil Conservation Group won a Ministry for the Environment, Green Ribbon Award for this project.



Ewe hoggets finish off a lucerne stand in the summer dry.



The key to maintaining sustainability at Bonavaree has been applying new thinking to old tools, especially lucerne and fodder crops.



As Bonavaree's profitability has improved, more money has been available to invest in protecting remnants of native vegetation.