Organic livestock management and climate resilience, New Zealand

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About the author

Glenn Mead is the retiring chairman of the Organic Dairy and Pastoral Group New Zealand. He has farmed organically for several years, having recently sold his sheep and beef property, and now works for AgriSea New Zealand as an agricultural consultant. He is also chair of the livestock technical committee for organic certifier BioGro New Zealand, and a member of the Biological Producers and Consumers Council of New Zealand. Glenn has also worked with several biocontrol establishment programs within New Zealand. Glenn and partner, Kate Hook would like to buy a smaller farm again at some stage to apply the lessons they have learned.

Description of the farm and its conversion to organic production

The primary challenges faced by all New Zealand sheep farmers at the moment are industry and on-farm debt-levels, climate variability (weather extremes) and compliance costs for certified organic production. This lack of cash-flow is hindering the required personal farm investment in infrastructure and development of techniques to deal with climate variability.

Market returns have been unsustainably low for many years whereas farming and industry practises have been slow to change: many farmers are old and have been reluctant to change their mentality of farming since the removal of government subsidies. Sheep numbers have dropped by 60% since then.

The market returns in organic sheep farming have been variable compared to the conventional market. Both markets use fixed price contracts and floating rate market value. For organic lamb production there is generally a fixed price contract which has been between 10-100 percent higher than the conventional market floating rate. The average price premium is about 20 percent above market price. With beef, on the other hand, prices are mostly floating with a seasonally variable fixed premium. During summer, the price of organic production is generally 0.40 NZD/kg higher than conventional. This rises to 0.50-0.60 NZD/kg during and winter. On average, organic beef prices are 10-15 percent above the conventional market price. Markets for organic wool are currently poor with only limited premiums occasionally available.

Competing land uses have also driven land prices up, especially in dairy production. Consequently, many farmers have made their money from capital gain on sale rather than through truly profitable farming. In the last 10 years, on farm costs have risen dramatically – by approximately 40 percent. The industry has been slow to adapt and there is a huge overcapacity in abattoirs, meaning that competition between companies is increasing.
This study describes operations and best practices for improving the climate resilience of the farming system on 260 ha of certified organic sheep and beef production. 225 ha of land are effectively grazed. The farm is located at an altitude of 150-250 m above sea level. Annual precipitation is about 800 mm of rainfall. 60 percent of the land consists of rolling cultivatable hills, 20 percent are medium hilly areas the other 20 percent are steep hills. Purchased in June 2005, the farm has incorporated sustainable practices and was officially certified as organic in 2007.

The average farm in Otago is about 768 ha with 4,000 stock units. In contrast, this farm has 1,500 breeding ewes of sheep and cattle, as well as 60 to 100 mixed age beef or prime cattle as replacement and 200 to 700 prime lambs wintered during some years. On average 2,500 stock units are wintered.

When the property was purchased, the infrastructure was run down, had poor performing stock and poorly grazed pasture. Six months after the purchase the industry suffered a collapse with returns dropping by 50 percent. This led to immediate financial constraints on farm development. The owners, Glenn Mead and Kate Hook, had a strong interest in organic farming and decided to pursue this management approach.

Land management: Changing practices

One of the most important changes was the adaptation of new grazing strategies. Long rotation, high-density holistic grazing and leaving some lands fallow over time to benefit the soil and improve the quality of pasture were adopted, contributing to a climate resilient low-input system which provided better water retention and minimised the adverse effects of drought.

Over nine years a number of practices have been changed, including infrastructural changes, grazing management, land operations and feeding:

- Use of low-cost electric fencing to give better stock control and pasture management;
- Introduction of a more diverse and climate resilient pasture mix;
- Changing breeds of sheep for suitability to low-input organic farming (Wiltshire breed);
- Adopting new and enhancing existing biocontrols for control of ‘weed and pest’ species (thistles, broom, gorse, clover root weevil, grass grub);
- Creating protected areas of significant native flora and fauna biodiversity and more shelter for animals;
- Increasing volume and variety of conserved fodder for extreme events.

The means of biological control against insects included organic management of the property which naturally enhances the micro-biological balance, meaning that pest species persist in a natural balance without causing major problems. Biocontrols were applied to the thistle, Cirsium arvense, including imported Cassidia rubignosa. To control Ulex europaeus and Cytisus scoparius, the red gorse spider mite, Tetranychus lintearius was used.

The internet has been an important tool for the development and exploration of ideas on grazing and farming, and then assessing the usefulness in each particular situation. Although grazing and climate issues are generally similar, no two farms are the same. Therefore, experiments were conducted on a small scale first to see if things work within the local context.
**Outcomes: Through improved efficiency to sustainability**

One of the key benefits has been the increase in overall efficiency of the operation. Moreover, there is still room to improve considerably. As Glenn Mead explains, “We have improved a bottom 10 percent farm to better than average whilst showing we can operate as a sustainable productive low-input farm. It is extreme weather events [e.g. drought, blizzard] and outside the farm gate costs that put most pressure on our financial sustainability.”

Further benefits of the improved operations on the farm have included:

- Higher resilience to climate issues/extreme events – being able to resist dry periods much longer than neighbouring farms;
- Gross production increase: more lambs finished to higher weights most years (average 2 kg carcass weight gains) and more beef cattle finishing earlier;
- Increase in stock carrying capacity and total production on a lower total effectively grazed area;
- Better stock health;
- Proliferation of biocontrols due to no chemical use.

**Next steps to face the challenges**

The next steps on the farm will include development of water, fencing and pasture to allow further improvement of grazing. This will allow farmers to raise the production performance and efficiency to a higher level. More shelter areas will be planted and larger areas of biodiversity will be protected. These areas also provide habitat for the various biocontrols on the farm. New ways to diversify income streams on farm and improve stock selection and balance for improved low-input efficiency and extract more value in the market place will also be investigated.

Most farms of this size are struggling to be a financially viable business. In the area where the farm is situated most have someone working off-farm to provide an extra income stream for financial support. Until the industry returns to being financially viable as a whole it may be necessary on this farm as well.

**Lessons learnt**

This study demonstrated how the conversion to organic sheep farming led to improved resilience of the system to climate change and better performance in terms of sustainability of the farming system. A number of key lessons can be highlighted:

- More permanent fencing and infrastructure development are important early on;
- Efforts to conserve biodiversity are important;
- Rapid isolation of stock that do not perform well under low-input and organic conditions is necessary;
- Improvement of farm resilience is possible by using simple on-farm management strategies;
- High debt (personal or industry) is a major constraint, even for good farms;
- Planning for extreme weather events/patterns is important;
- Experimenting and trying new things has proven to be a successful method for adopting new sustainable management strategies on the farm.