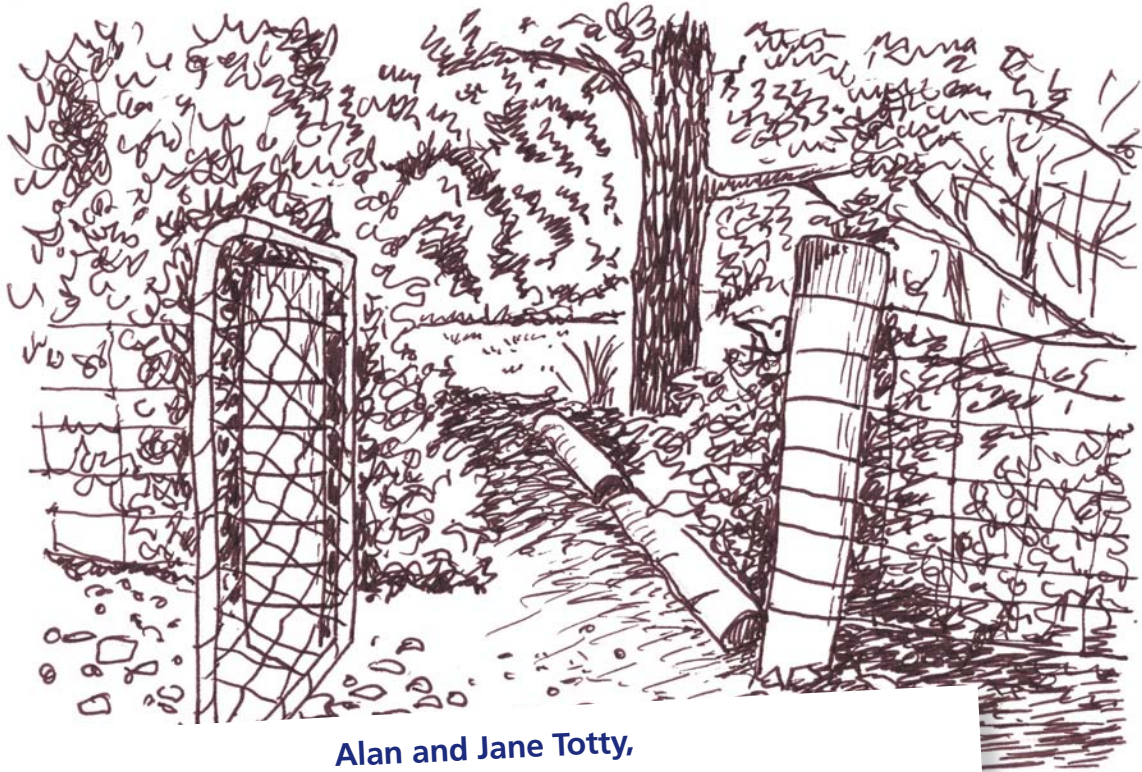


CASE STUDY 10



Alan and Jane Totty,
Winterslow Road, near Alford Forest, Ashburton



**'There is an old saying
about the Canterbury
climate — Canterbury
never lets you down, just
gives you a few frights'
'You have to have faith
in the place'**



Key facts

Farm size and type: 284ha, of which 262ha is effective production land. The difference is made up with riverbed areas, some small reserves, and about 8ha of forestry. The farm is a dryland sheep and cattle farm in the Foothills zone of Canterbury.

Production focus: Production is predominantly sheep (81 percent) with some cattle (8 percent). Alan tries to finish everything on the farm.

Soil type and topography: Stavely stony silt loam (240ha), Stavely silt loam (16ha). It was originally a forest soil, first cleared in about 1870. Topography is flat, with an elevation of 400-440m above sea level.

Climate: 1250mm annual rainfall. Temperature varies between 10°C and 36°C. Darfield was 40°C on New Year's Day 2004; the previous winter they had 50cm of snow in July then another 50cm in September, during lambing. In general, they have a 120-day winter.

Water: Taylors Stream, on the northern boundary of the property, is all allocated for downstream irrigation. Picnic Creek (Alford Forest, Department of Conservation) is the principal source of stock water. They have a water right and easement through Department of Conservation land. There is also underground water, which is shallow and low

flow.

Social: Alan has pretty much worked on the farm on his own. His wife works as a secretary at the local Mt Somers school. They have one son who is currently overseas and plans to return to work on the family farm. They also have a daughter who is a resource planner in Christchurch.

Main climate features and challenges

The climate of Canterbury is characterised by extremes, ranging from snow storms in winter to prolonged droughts. Features of the climate that pose particular challenges to Alan are:

Cold winters: There is little growth from May to September. Feed demand increases with cold winters.

Snow: Access to pasture is a big problem with snow, along with reliance on supplementary feed, loss of amenities, power etc., and material and tree damage.

Droughts: The main challenges with droughts are financial costs for supplementary feeding, extra labour, discounted prices when selling stock.

NW wind: The Canterbury nor'westers can cause damage to buildings, trees, and fences as well as loss of electricity.



The farm is a dryland sheep and cattle farm in the Foothills zone of Canterbury.



Historical development and influence of climate and weather extremes

Period	Production focus and major changes <i>Climate and weather effects</i>
1870	Beech forest.
1930 – 1940	Developed as a dairy farm (one of the biggest in the district), then converted to sheep. Stumps removed, little cultivation.
1940 – 1950	Crossbred sheep, possibly some cattle. Clearance of stumps etc.
1950 – 1960	Crossbred sheep, possibly some cattle. Only 5 percent of the farm developed (a late developing farm).
1960 - 1970	A new owner. Cattle and sheep (Romney). Large-scale development. Land clearance and new pastures – 60 percent of the farm.
1970 - 1980	Alan and Jane bought the farm in 1974. Coopworth sheep; Cattle (100). Land clearance and development. 20 percent new pastures, subdivision.
	<i>Flood, April 1976. Streams of surface water on farm and near house. River broke out into nearby paddocks. Fence damage. Minimal cost.</i>
1980 - 1990	Coopworth sheep; 50 cattle. New pastures. Development, 5 percent, subdivision.
1990 - 2000	Coopworth, East Friesian & Perendale sheep. Lambing hoggets; 50 cattle. New pastures. Development 3 percent. Subdivision, shelter planting.
	<i>Drought, Jan-March 1998. Little grass growth in Jan-Feb. Fed ewes on roadside, grain silage, hay. Sold lambs as stores. Cost \$30,000.</i>
2000 – 2004	Coop, East Friesian, & Texel sheep, 90 cattle. New pastures, development 2 percent. Water supply, subdivision.
	<i>Snow, June 2002. 50cm of snow, covered the ground for a week. Potential to cover the ground for 6 weeks, lucky to have had a nor'west wind to melt it. Loss of condition of stock. Difficulty in feeding stock – machinery not up to it.</i> <i>Also 40cm of snow at lambing time in September 2003.</i>
	<i>Drought, 2003/2004. More vulnerable to summer drought (more so with a later season, as experienced in the foothills). Had to feed out 18T of feed barley and 50 bales of silage. Were grazing ewes on the side of the road for 3 or 4 weeks. The drought broke just before things got really serious.</i>



Adaptations to develop the resilience of the farm

Over a 30-year period Alan has invested considerably in developing the farm in a manner that enables him to cope better with the extremes of the Canterbury climate. The main adaptations he has implemented have been to cope with winter cold (including snow) and the effects of the nor'west winds and drought. Specific measures to cope with snow include investment in a snow plough, snow blower, and four-wheel drive vehicles. Drought-tolerant pasture species have been established. Alan has had a strong focus on shelter planting, which is ongoing and has included establishment of native shelter. The shelter provides benefits during periods of drought and during winter. Maintaining a store of feed grain, silage and straw is essential.

Alan's view for a future with climate change is to continue refining what he has already been doing for the last 30 years. He would be quite happy if winter snow became less of a problem in the future and if warmer conditions give more opportunities to diversify.

Forestry/trees: Possibly 10 percent of the farm is in trees with forestry/shelter making up about 4 percent (there is approximately 10km of shelter, of which about 2km is natives) and biodiversity (natives), 5 percent. The other 1 percent is made up of a woodlot and a QEII covenant area. Shelter is mainly Douglas fir. Alan wanted to give natives a go as shelter trees, with 20 percent of his total shelter now in natives. He starts with broadleaves (*P. tenuifolium* and *Olearia*) then plants beech trees after about five years. The woodlot covers 8ha with a mix of Douglas fir and macrocarpa. The covenanted area contains clusters of regenerating beech.

For the future - Planning more biodiversity

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planting and more shelterbelts. NW shelter, there is potential to put up another 7-8 km of shelter (another 1-2 percent of the farm). Plant poplar trees for fodder in droughts.

Benefits: Trees are planted on farm principally for shelter and shade – drought relief in summer and protection in winter months. It takes 10 years before you get the benefits, 15-20 years before you get benefits from natives.

Information/support: The local Farm Forestry branch has been quiet, but is becoming more active. The Landcare group goes in cycles.

Constraints: The covenanted area is a productive area of the farm that contains clusters of native bush. Alan can't plant exotics in the covenanted area.

Water: There is a new, gravity-fed, water scheme out of Picnic Creek. There has been a focus on installing troughs over most of the farm, with a few areas still to do.

Water is secure as things are. As a backup, water can be pumped out of the spring.

Diversification: Diversification through tree plantings. Basically the same stock.

Experimenting with summer brassica crops (a forage turnip – drill October, graze 6-8 weeks later).



For the future -- Specialise in lamb meat. If 1°C warmer, cropping would be a possibility.

Soil: Soil testing, direct drilling. Alan has used RPR for the last four years, the benefit being that it is a slower release fertiliser. He has soil tests done every year and is happy with the soil. The plan is to do more herbage analysis.

For the future -- More herbage analysis and continue soil testing. Direct drilling of pasture species. Possibly look at the soil biology picture. Look at fallowing for soil organic matter build-up (a negative of fallowing is that you get changes in pasture composition).

Pasture management: Rotational grazing, new species, quite a bit of Tall Fescue, using mainly Impact rye grass (ARI endophyte), weeds – sheep will control ragwort, Californian thistle, new weeds coming all the time.

New pasture species have more drought resistance than old species, they hang on a lot better. He will always have some Tall Fescue as it is more drought tolerant.

Information: Seed companies.

Stock management: Faster lamb growth. Trying to breed better sheep, to move through quicker and give more flexibility for droughts.

For the future -- Adopt new technology. This is evolving anyway, but there is still a lot of potential. Alan would look off-farm for information/support. He is continually looking at how things can be improved.

Benefits: Flexibility is the key.

Information/support: Read newspapers, advice from stud breeders and lamb drafter.



Part of the farm is a QEII Trust covenant.

Meso connections

Alan has good relationships with immediate neighbours. There are problems with sycamore seed washing from up the valley and becoming a weed on the river boundary of the property. The Department of Conservation (Alford Forest neighbour) held up Alan's water right application for a long time. Otherwise there isn't much impact from above the farm. The only problem is with weeds.

The local community works together positively, for example through the local Landcare group. Their group began due to a Tb outbreak (the first focus was on animal pests including possums, ferrets, stoats).

Alan has mixed feelings about Environment Canterbury. There is a positive attitude towards the 'Living Streams' project. On the other hand, there is an overall concern about high charges for resource consents and the need to be very careful not to put a step wrong. On-farm, there has been little support from the Regional Council for initiatives taken by Alan, in particular the development of a more efficient (water conserving) water-reticulation system.

As part of the wider picture Alan is working to quality assurance guidelines with Canterbury Meat Packers. They supply to Waitrose and Tesco supermarkets in the UK. Their farm is independently audited every 2-3 years.

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