

Hill country sheep and beef farms

June 2020

There are over 4,500 sheep and beef farms on hill country in New Zealand; this around half of all sheep and beef farms. Of these, around 900 are on 'hard hill country' in the North Island.

Hill country sheep and beef farms are a mixture of flat (11%), rolling (32%) and steep (40%) land¹. Both flat and some of the rolling country can be cultivated to grow feed crops, while steep land is suitable for grazing and over-sowing with improved pasture species. Overall, the development of flat, rolling country is vital to increase productivity within the hill country farm system. In addition, 3% of hill country sheep and beef farms land area is currently used for plantation forestry, and 15% is non-grazed native vegetation. Twenty-four per cent of all New Zealand's native vegetation cover is on sheep and beef farms with well over half of this on hill country sheep and beef farms. The manuka component of this natural vegetation is important, with all honey exports for the 2018 calendar year totaling 348m at FOB.

Since 1990-91, hill country sheep and beef farms have decreased in number by 37% and in total grazed area by 25%. Hard hill country farms have seen a 23% reduction in total grazed area. For all sheep and beef farms, total grazed area has reduced by 34%, due in part to dairy conversion.

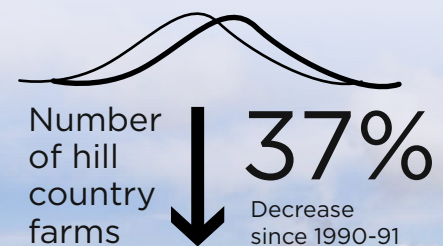
From 1990-91 to 2019-20, stock numbers have reduced across New Zealand. Sheep numbers have dropped from

58 million to 27 million, and beef cattle numbers have reduced from 4.6 million to 3.7 million. With the dairy expansion onto sheep and beef finishing country, hill country farms now provide 52% of prime lambs for export processing, well up from 29% in 1990-91. Hill country farms are also key suppliers of young livestock to finishing farms, who then add further weight and value.

Stocking rates for hill country farms are low. Averaged across New Zealand, hill country farms run 7.5 stock units per grazed hectare; 4.1 of these are sheep stock units and 3.3 are cattle stock units. Grazed hectares exclude forestry and non-grazed land.

Hill country sheep and beef farms use low and appropriate applications of nitrogen fertiliser. Fertiliser provides plants with nutrients that are not readily available in the soil. By meeting these nutrient demands, farmers are able to foster plant growth and health. Hill country sheep and beef farms use on average 12 kg per ha of elemental Nitrogen (N) on pasture compared with 20.6 kg per ha for sheep and beef farms on finishing country. Hill country feed crops make up 2.9% of the effective farm area and N is applied at a rate of 63.4 kg per crop ha. This compares with the more intensive finishing sheep and beef farms where crop makes up 10% of the farm area and N is applied at 79.8 kg per crop ha. In comparison with the UK, non-dairy farms apply N at a rate of 38 kg per ha of pasture and 85 kg per ha of crop area². New Zealand dairy N application in 2015-16 averaged 126 kg per ha in multiple applications.

Hill Country Farm class	Number of hill country farms			Effective hectares (000s) of hill country farms		
	1990-91	2019-20f	% change	1990-91	2019-20f	% change
SI Hill Country	900	620	-31%	1,591	1,150	-28%
NI Hard Hill Country	1,650	920	-44%	1,383	1,068	-23%
NI Hill Country	4,700	3,055	-35%	2,441	1,818	-26%
All hill country	7,250	4,595	-37%	5,416	4,035	-25%



¹ Flat - 0-7°, Rolling 8-20°, Steep 21°+

² UK Department for Environment Food & Rural Affairs, The British Survey of Fertiliser Practice.

³ Earnings before Interest, Tax, Rent and Manager's Salary (EBITRm) - a business measure that standardises farms to a debt-free, freehold and owner-operated basis. This standardisation allows effective comparisons between land uses and individual farms.

Hill country sheep and beef farms apply rates of elemental Phosphate (P) on pasture area similar to finishing sheep and beef farming systems. On average, hill country sheep and beef farms apply 20 kg per ha of P on pasture area, with 58% of pasture area top-dressed per year. Finishing sheep and beef farms apply 21 kg per ha of P on pasture area, with 61% of pasture area top-dressed per year. On average, hill country sheep and beef farms apply 42 kg per ha of P on feed crop areas (2.9% of grazed area), while finishing farms apply 37 kg per ha of P on feed crop areas (10% of their grazed area). Dairy farms apply approximately 30 to 40 kg per ha of P per year. As a further comparison, UK non-dairy farms apply 3.5 kg per ha of P on pasture area and 14.8 kg per ha of P on crop area, due to their older soils and mineral content.

Since 1990-91, the environmental efficiency of sheep and beef farming systems has increased dramatically. Green-house gas emissions have reduced by 41% for the sheepmeat sector and 6% for the beef cattle sector. Sheep numbers have decreased by 53%, but lamb production has only decreased by 9%. This is thanks in part to the average weight of lambs sold increasing by 31%, and the lambing percentage growing from 100% to 127% - essentially producing 27 more lambs per 100 ewes. Steer weight has also improved by 4%. These gains have been made through improved genetics, changes in breeds, and advances in land and animal management practices without increasing intensity. Lamb prices have improved by 228% and prices for beef have improved by 23% (in 2018-19 dollars), due in part to improved marketing and market access.

In contrast, the wool clip per head is down slightly with breeding emphasis on meat production efficiency. In contrast to meat prices, wool prices are down 52% on 1990-91 prices in real terms. Wool in 1990-91 made up 31% of Gross Farm Revenue but only 6% in 2019-20f.

Unsurprisingly, given reduced inputs and improved outputs through productivity and efficiency gains, the profitability of hill country sheep and beef farms has improved since 1990-91.

Sheep and beef farms in 2018-19 generated \$5.3 billion from wool, sheep and cattle sale receipts at the farm gate, and a further \$3.6 billion of value was added beyond the farm gate for export and the local market, a total of \$8.9 billion. This is spent in regional centres buying goods and service to operate farms and by the farm families on their living expenses and those in the service industries. Sheep and beef farms are a significant economic engine driving activity in the regions and the NZ economy.

Hill Country Futures research programme

The scene is changing for New Zealand farmers. Society's expectations around food production transparency, environmental sustainability and climate change obligations are already influential at an on-farm level - and will become increasingly so.

Hill Country Futures is an \$8.1 m programme focused on future proofing the profitability, sustainability and well-being of New Zealand's hill country farmers, farm systems and rural communities.

This five-year programme takes a trans-disciplinary approach to "landscapes" and considers the whole-farm system and communities these systems exist within. The programme incorporates traditional science research, farmer knowledge, social research and citizen science.

B+LNZ's Environment Strategy and action plan sets out work that will further enhance the productivity and sustainability of hill country sheep and beef farms. The strategy focuses on water quality, greenhouse gases, biodiversity and soils, and action will include widespread use of Farm Plans, catchment groups, and gathering data to support improved on-farm action.

Hill Country Farm class	Earnings before Interest, Tax, Rent and Manager's Salary (EBITRm) ³ Real 2019-20 \$ per hectare			Hill Country Sheep and Beef Farm: Farm Profit before Tax Real 2019-20 \$s		
	1990-91	2019-20f	% change	1990-91	2019-20f	% change
SI Hill Country	73.20	209.70	186%	60,900	257,700	323%
NI Hard Hill Country	158.00	289.20	83%	49,600	154,000	210%
NI Hill Country	272.80	433.50	59%	59,100	119,100	101%
All Hill Country	177.10	325.10	84%	57,200	144,800	153%

