

Production gains from genetic improvement, hybrid vigour, fertiliser and feeding management on a Wairarapa sheep and beef farm

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Farm and history

Helen and I with a single shepherd farm "Glenbrae" a 918 ha hill country property situated on the eastern foothills of the Tararua ranges. Prior to 1978 my father farmed 167 ha, part of the present property. During 1978 I purchased 208 ha 5 km from my father's farm.

Further expansion has been made possible by leasing land, both adjoining and at distance from Glenbrae (up until this year a quarter of the property was leased). Improvement in productivity per ha and per head has also increased our ability to service borrowings necessary for expansion.

Stock carried

Stock numbers have increased from 4130 in 1978 to 10 567 in 1992 (Table 1) with a marked trend away from a dominant sheep system to a mixed **sheep:cattle (56:44)** system.

Production

Production levels were low in 1978 with lambing percentage at 88% and wool production at 4.5 **kg/su**. By 1992 these levels had increased to 125% and 6.4 **kg/su** respectively (Figures 1 and 2).

Cows have been brought in and bred up since 1978. Culling the bottom-end producers in the sheep flock and cow herd has been concentrated on.

Table 1 Stock carried

	1978	1992
Ewes	3000	4000
Hoggets	1300	1850
Rams	40	60
Cows and in calf heifers		406
P-year steers	30	14
Yearlings		200
Bulls		8
SU	4100	9731
SU/ha	11.00	11.5

I will now cover the four factors which I consider have been the main contributors to increased productivity on our property.

Genetic improvement

Emphasis has been placed on purchasing sires of high genetic quality and usually at above-average money. Romney rams are purchased at **\$500-\$800** and bulls at **\$4000-\$8000**.

Rams

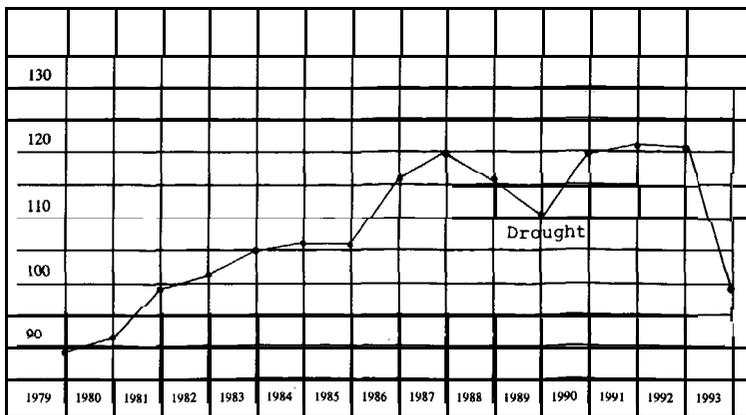
Rams have been purchased mainly from high fertility flocks with emphasis placed on fleece weight rankings (bearing in mind the low wool weights produced in 1978).

Ram fleeces are weighed annually and low producers regardless of cost are either mated with B flock ewes (800 lighter-woolled and retained wet dries) or culled. Production lifts have occurred every 5 or 6 years as genetically superior daughters have made their impact (Figures 1 and 2).

Bulls

When purchasing bulls we have been interested only in the top indexed sires with emphasis on conformation and soundness. We attempt to mate first-season bulls with young cows (2- and 3-year heifers) so that offspring can be visually assessed. Cows are numbered according to the year

Figure 1 Lambing percentages



born. Again sires are sold if they are suspected of poor performance.

Cost

The difference in price between average and top sires is probably 25-35% of the total cost.

"The most heritable part of a sire is his price."

Hybrid vigour

Major gains can be made from cross-breeding if a cross-breeding regime fits the farming pattern and the conditions under which the stock are farmed.

Sheep cross-breeding

Successful sheep cross-breeding regimes have been undertaken usually with a particular aim in mind. For example, criss-crossing Border Leicesters and Romneys can lead to big gains in lambing percentages, but at the expense of thrift and possibly wool production.

On our property Romney rams were mated with Perendale ewes in 1978 with immediate gains in wool production (albeit lifting from a low base). Identifying and culling dry-dry and most wet-dry ewes also made an impact in those early years.

Introduction of English Leicester rams in 1986 when fleece weights had lifted to 6.3 kg/su and lambing percentage to 120% failed to produce any further increases in production. In fact, some undesirable traits, e.g., coarse ropery wool and poor constitution in a number of offspring were introduced.

We have always purchased rams from at least two sources and believe that some degree of heterosis is available through cross-crossing of rams within a breed.

Rams from all sources have their stronger and weaker traits and staying exclusively with one breeder tends to accentuate good and not so good traits.

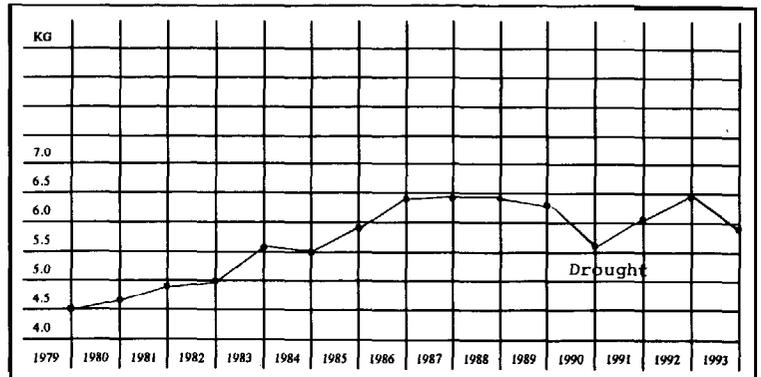
I believe that the strengths and weaknesses of a new breed should be very carefully evaluated before embarking on a sheep cross-breeding programme.

Cattle cross-breeding

In contrast, cattle cross-breeding by and large seems to be generally beneficial to the producer.

Cattle are "single-product" producers. We are really only interested in animals producing meat as quickly as

Figure 2 Wool weights



possible. The only drawback side seems to be sustainability of some breeds under some conditions on the maternal side.

We started in 1979-80 with a small Angus-Hereford cross herd. We believed that genetic improvement within these two breeds was slow and looked to introducing an exotic breed.

Simmentals were chosen in preference to other breeds because of their:

- Good growth rates
- Maternal ability
- Availability (a reasonably large breed society was emerging)
- Popularity (they produce what the buyer wants)

I would estimate that first-cross calves increased in size by 20%. As cattle fatteners experienced superior weight gains from exotic cross cattle they began paying increased premiums for those calves.

By 1988-89 first-cross Simmental heifers were entering the herd. A third cross was then commenced as Charolais were introduced in preference to breeding three-quarter bred Simmentals. Offspring have increased again in size with the top 53, 7-month-old weaner steers averaging 315 kg liveweight (2 days empty) this year, and selling for \$692.00 each. 150 Charolais cross calves were sold in 3 lines in autumn 1993 for an average of \$651.00.

I believe farming exotic cross cows can be compared with farming Border Leicester cross sheep, which are very productive animals, but certainly not as hardy as the average Angus Hereford cow.

A larger **tailend** in replacement 2+3-year-old heifers has to be tolerated but returns are greatly enhanced - at \$15-\$25 per cattle stock unit.

Fertiliser and feed management

Over the last 15 years we have purchased blocks in various states of pasture development.

Regular fertiliser **application**, rotational grazing from mating to lambing and an improved cattle to sheep ratio have improved pasture production in quantity and quality.

Superphosphate was applied at 500 kg/ha in the first year followed by annual dressings of 250 kg/ha. Lime was applied at 2.5 t/ha during the 3-year development period. Soil test levels on average are now pH 5.7 and Olsen P 11.

Cow management

Cows calve August/September on steep hill country, then are break-fed and rotationally grazed on **autumn**-saved pasture.

Cows are used to control and prepare pasture for lamb finishing from November to March, when weaning takes place. The top two-thirds of the steers and bottom 20% of the heifers are sold at this time.

Cows are then grazed behind ewes, cleaning up into the winter, May/June. We graze most cows off-farm for 6-8 weeks during the winter.

Two hundred rising 1-year cattle are grazed with **hoggets** in front of ewes, then are break-fed on saved feed from July until September when 55 are sold. Yearling replacements are mated late October averaging approximately 340 kg.

Fifty to sixty rising 2-year **tailend** heifers and steers are finished on a kale and **swede** crop from May until August.

Rising 2-year steers sold in July 1993 averaged 289 kg. Rising 2-year heifers sold in August 1993 averaged 257 kg.

The benefits of cow grazing cannot be **over**-emphasised. I believe that cows are very efficient grazers and that they are the "hill country farmers' rotary slasher", **topping** pasture at the correct time and preparing it for lambs and to a lesser degree ewes.

Sheep management

Ewes are rotationally grazing from mating (April) to lambing (September), then set-stocked until weaning (December).

Hoggets are grazed in front of the ewes during this period then set-stocked on more exposed paddocks during the spring.

Our ewes are shuffled and set-stocked during summer. Higher body weights are achieved from this settled grazing pattern as opposed to mob stocking ewes over this period. Sheep are more contented and stay that way even in drier seasons with diminishing feed.

"A happy sheep is a wool-growing sheep and also one which is increasing in bodyweight in preparation for **tupping**".

The simple recipe I believe is to feed sheep as well as you can all the time, balancing their needs with periods of high demand.

Conclusion

Significant production gains **cannot** be achieved from any one of the topics covered in this paper in isolation.

Genetic improvement, the use of hybrid vigour, fertiliser and **feed** management are factors contributing collectively and must be worked on at all times.

The skill of the farmer is to tie in all these factors and prioritise correctly the demands of the various classes of livestock on any day of the year, not favouring one at the expense of others.

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