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*Brief communication*

FACTORS RELATING TO LAMB PRODUCTION  
EFFICIENCY ON SOUTHLAND FARMS

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INTRODUCTION

When a new research result becomes available, the adviser's role is to interpret the finding in light of local farming conditions and communicate its meaning and benefits to farmers so appropriate new technology can be applied. These processes could be improved if better information was available from farms on the relative efficiency of their existing lamb production systems. Also by identifying management factors contributing to observed efficiency differences, current advice could be evaluated and extension priorities revised.

For these reasons, a project was started in 1978 to monitor a sample of farms typical of the highly developed intensive sheep farms served by advisers within the Southland region.

METHOD

Details are described by Harbord (1981). In summary, on each of five farms a group of average ewes, managed and fed as usual had full liveweights recorded at mating, mid-winter, pre-lambing and during lactation with condition grades and fleece weights. Lamb weights were recorded at birth and subsequently at three-weekly intervals to weaning.

All sheep were set-stocked during lactation on paddocks where herbage mass (kg DM/ha) was estimated at 7 to 14 day intervals.

To assess efficiency differences between farms, the index *kilograms lamb liveweight gain/hectare/day of lactation* was used. This was calculated for the monitored ewes from ewe stocking rate, lambs suckled per ewe, and average daily growth rate of lambs during lactation.

Since physical factors like climate, sub-division, and soil fertility were more or less uniform between farms, observed differences in lamb production were interpreted as mainly due to the genetic quality of stock and/or the way farmers allocated feed to them.

RESULTS AND DISCUSSION

Details of flocks monitored in 1979 are given in Table 1.

TABLE 1: DETAILS OF FLOCKS (1979)

Farm	Breed *	EWES				LAMBS		Days to Weaning
		Mating LW (kg)		Fleece Wt (kg)		Weaning Wt (kg)		
		Single	Twin	Single	Twin	Single	Twin	
1	C	67	69	4.2	4.1	32	26	81
2	C and R	62	63	4.7	4.4	27	23	82
3	R	62	63	4.5	4.1	27	21	91
4	R	60	63	4.7	4.6	26	22	79
5	R	62	62	3.6	3.4	29	22	88

\* C = Coopworth; R = Romney

† 12 months wool, 2-ths excluded, without belly wool and crutchings

In Table 2 farms have been ranked by efficiency index for 1979 and in Table 3 index rankings relative to Farm 1 are presented for 1978 and 1979. In both years order and index values were similar.

TABLE 2: EFFICIENCY INDEX, AS KG LAMB LIVELWEIGHT GAIN/HA/DAY OF LACTATION (1979)

Farm	Paddock stocking rate ewes/ha	Lambs suckled /ewe	Lamb growth rate g/d	Index
1	14.4	1.83	257	6.8
2	15.3	1.64	242	6.1
3	16.6	1.49	194	4.9
4	14.8	1.35	237	4.8
5	13.7	1.35	232	4.3

TABLE 3: FARMS RANKED BY EFFICIENCY INDEX (FARM 1 = 100) AND PASTURE PRODUCTION DURING LACTATION (1978 AND 1979)

Farm	Efficiency Index		Mean Pasture Yield 1978	kg/DM/ha 1979
	1978	1979		
1	100	100*	1201	1020
2	95	90	1203	1380
3	78	72	1254	1050
4	75	70	959	1970
5	59	63	2496	1427

\*A group of selected elite ewes on Farm 1, 1979.

A large potential for increased efficiency existed between the 'top' farms and other farms surveyed. High fertility and good lamb survival permitting high weaning percentages of lambs growing at an excellent rate made a greater contribution to differences in efficiency than did stocking rate.

In 1979, the value of lamb liveweight weaned per hectare was \$344, \$306, \$285, \$240 and \$239 for farms 1 to 5 respectively (pricing liveweight at 51 c/kg).

An indication of how pasture supply during lactation varied between farms is given in Table 3.

Generally, increasing average pasture yield was associated with increased lamb production efficiency only where pasture quality — especially green leaf and clover — was maintained. Although detailed herbage dissections were not made, factors associated with declining pasture quality, e.g. seed-heads, dead matter and a lack of clover, were observed to be highest on the least efficient farms.

The influence of breed *per se* on efficiency was gauged from Farm 2 where Coopworth and Romney ewes grazed together. In terms of the efficiency index, Coopworth ewes in this flock had about a 5 percent advantage relative to the Romneys. However, the Romneys on Farm 2 were 30 percent more efficient than the average of the Romney ewes on Farms 3, 4 and 5. Thus breed in itself made a relatively small contribution to efficiency. Of more significance was the fact that on Farms 1 and 2 surveyed ewes had been performance selected for fertility, easy lambing, milking ability and wool production whereas on Farms 3, 4 and 5 the approach to selection and breeding was more traditional, being based on some marking of twin-born lambs but mostly on eye appraisal.

Although the surveyed farms were considered typical of the high producing region from which they were drawn, a large potential for increased production and profit was demonstrated.

Some key features of the most efficient farms were identified. In particular these related to sheep selection and breeding, skill of pasture husbandry and optimum allocation of available feed to sheep. On the basis of these findings local extension priorities are being revised.

#### REFERENCES

- Harbord, M. W., 1981. *Proc. Gore Fmrs' Conf.* (in press).