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GOAT FARMING PRACTICES ON HIGH PRODUCING PASTURES

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Abstract

Few farmers have firm ideas about the long-term aims of their goat enterprises. Since profit is the primary motive, breeding objectives may change rapidly. Goats are generally a small proportion of total stock numbers and are given preferential grazing. Goat grazing improves pastures by increasing clover content and reducing the number of thistles and weed grasses. Although most farmers feed hay there is no indication this is necessary for high animal performance. The most productive goat management systems on high producing pastures have yet to be defined, especially integration with other livestock classes. Preliminary data from mixed goat and sheep grazing trials in Canterbury suggest there are benefits in liveweight gain to sheep, but not necessarily to goats by integrating grazing. Areas for future research are considered.

INTRODUCTION

Intensive pasture management information in temperate zones for goat performance was practically non existent up to the 1980s (Coop 1982) but New Zealand farmers have since gained management experience as goats have become a commercially attractive complement to sheep and cattle.

Reviews have dealt extensively with marketing and the future potential of the goat industry in New Zealand (eg Moorhouse 1986). Recent research with fibre goats on pasture feeding levels and quality has been reviewed by McCall and Lambert (1987) and the husbandry and performance of milk goats reported by Jagusch and Kidd (1982), and Reid and Horton (1982). Comparative physiological studies have shown little difference between goats and sheep in utilising medium to high quality feed (Nicol *et al.* 1987).

The purpose of this paper is to create awareness of some common goat farming practices in Canterbury, especially those on high producing pastures. Detailed discussions were held with seven farmers throughout Canterbury about their goat enterprises and general views of goat farming in the area. Comments on goat management practices from others associated with the industry have also been incorporated. Some areas for future research are identified and attention is drawn to the integration of goats with other livestock, especially sheep. Preliminary results are presented from two integrated sheep/goat grazing trials in Canterbury.

FARMER EXPERIENCE IN CANTERBURY

Stock

Many farmers have flexible stock policies, with medium to long term aims not clearly defined as they are highly dependent on market returns for particular products or fibre types. Breeding objectives may change with current and predicted fibre prices. Dairy goats are a small part of the industry. Meat goats are uncommon, although many farmers feel that the goat meat industry should be expanded as an outlet for surplus fibre goats. A breeding programme for meat goats, selecting on goat liveweights, particularly at weaning and at seven months, is currently underway at Lincoln College (A, S. Familton pers. comm.).

A survey of 106 Canterbury members of the Mohair Producers Association of New Zealand (Pearson & Mackenzie 1986) found a mean flock size of 148 animals, with about half of these breeding does. Flock size varied from less than 20 to over 2000. Most farmers surveyed (88%) also had sheep, but less than half (42%), intergrazed goats with sheep. A

smaller proportion (56%) also ran cattle, but only 8% intergrazed these species, Most farmers (97%) grazed their goats on pasture (A. B. Pearson pers. comm.).

Pasture

Goats graze predominantly perennial ryegrass/white clover pastures. Prairie grass and cocksfoot are readily eaten and some farmers consider these may even be preferred. Clovers and lucerne are also eaten. Farmers felt that more research should be directed at goat production on different pasture species. This will influence the extent that new pasture species are sown.

Goat grazing increases the proportion of clover in a mixed grass/clover pasture (Radcliffe 1985) but few farmers consider this a problem as goats grow well on clover. It is not known what effect grazing by goats alone over several years has on pasture productivity. Goats readily eat most grass seed-heads, except barley grass. Goats are also important for thistle control. Farmers' observations suggest they eat nodding, Scotch and Californian thistles in descending order of preference, especially as flower heads are produced. Management for thistle control varied widely between farmers and many emphasised the need for evaluating the most effective methods of control. Many farmers feed hay throughout the year although there is no evidence for improved animal production. Others feed hay to goats on clovery pastures, considering this to be "hard feed" which prevents scouring. These practices should be investigated to ascertain if they provide significant production benefits.

Grazing management

Farmers grazed goats to leave at least 5 cm residual pasture, more than is left after sheep grazing. They believe this greater residual prevents goats from ingesting worm larvae in the base of pastures. They have also observed that goats eat less than sheep as pasture supply declines. This is supported by the work of Collins and Nicol (1986) and McCall (McCall 8 Lambert 1987).

Goats are rotationally grazed throughout most of the year. If goats form a small proportion of total stock, they tend to be given preference and grazed ahead of other stock classes. Kidding takes place from July to October, depending on climate, pasture growth, and management factors. Goats are generally set-stocked from kidding until weaning 3 to 4 months later, and then rotationally grazed. Does appear to be treated similarly to lambs, getting the best pasture, while wether goats tend to be managed more like ewes, cleaning up roughage over summer and autumn.

Knowledge of pasture allowances and seasonal liveweight targets to achieve specific levels of production, such as kidding percentage or fibre weights, need definition. This information would help farmers develop intensive grazing systems to maximise returns.

Stock management

Internal parasites are of major concern in intensively farmed goats on high producing pastures. Some important gastrointestinal worm species are cross transmitted between sheep and goats (eg *Haemonchus* spp., *Ostertagia* spp., *Trichostrongylus* spp.) but few of the important worm species are common to goats and cattle and cross-transmission is considered to be a minor problem (Bisset 1980). Recommended control is to drench does within 2 weeks of kidding, and thereafter monitor worm burdens by faecal egg counts to establish the need for further drenching. A preventative programme for kids is the same as for lambs: drench at weaning and subsequently twice at 3 week intervals, then twice after 4 week intervals. It is advisable to measure faecal egg counts four weeks after this prevention programme to check on success (A. B. Pearson pers. comm.).

Containing goats presents no problems, providing animals have been trained to respect fences and are not put under undue pressure. Uncontrollable animals are best culled. Fences of 3 electric strands to 8 wires (alternating electrified and non-electrified) and all variations between, are used. An electric outrigger 30 cm from the ground attached to a conventional fence appears particularly effective.

Shelter is essential after kidding and shearing. At these times, improved feed supplies should be considered, since goats need more energy for maintenance per unit liveweight than sheep (Nicol *eta/.* 1987). Goats, unlike sheep, will seek shelter from trees and buildings, Hay bales, rocks and drainpipes can provide shelter for kids.

A common concern of farmers is trace element requirements, as toxic and deficient levels in blood may differ between sheep and goats. Current work at Wallaceville Research Centre will define appropriate levels (K. Millar pers. comm.).

INTEGRATION OF GOATS WITH OTHER STOCK

Goats have been successfully integrated with cattle, sheep and deer on New Zealand farms. Sheep and goats are complementary to the extent that animals grazing the same pasture select different diets, goats readily consuming grass seed-heads and stems, while sheep tend to eat more clover (Collins & Nicol 1987). Both need green nutritious herbage to grow well, so some competition for this component is inevitable.

On summer-dry pastures in Australia, goat grazing increased subterranean clover content, and Merino wether sheep produced 10% more wool per animal when grazed in a one to one combination with wether goats (McGregor 1985).

It is well known that goat grazing can result in a clover-dominant sward (Radcliffe 1985) and that clover diets promote high sheep growth (Ulyatt 1981) but the mangement required to use these effects for optimal animal production, is largely unresearched.

MAF GOAT/SHEEP GRAZING TRIALS IN CANTERBURY (1986/87)

Templeton Research Station

Goat and sheep performance under separate and mixed (1 doe:1 ewe) grazing is being examined on irrigated perennial ryegrass/white clover pastures at 2 stocking rates which in 1986/87 were: 16 adults with 18 lambs or 24 kids per hectare, and 22 adults with 25 lambs or 34 kids per hectare. Adult liveweight changes were monitored from October, when does weighed 34 kg and ewes 55 kg, until March. Liveweight gains of lambs and kids were measured until weaning in December at 14 and 17 weeks of age respectively.

Does were disadvantaged in mixed grazing at the higher stocking rate (Table 1). Kids were not disadvantaged by mixed grazing. Ewes grew best under mixed grazing, especially at the lower rate. Lambs grew so well under mixed grazing that their growth at the high stocking rate was similar to that under separate grazing at the lower rate. Competition for feed clearly exists and this will be better defined as the trial continues.

Winchmore Research Station

In spring 1986, goat treatments were included in a trial using ewe and lamb grazing to examine the effect of spring herbage mass on summer and autumn lamb growth. Crossbred wether goats were set-stocked alone or with dry ewes (3 goats: 2 sheep) from mid-September until early December. Stocking rate was continually adjusted to maintain herbage mass around 1800 kg DM/ha. At the end of this period, clover yield was considerably greater on goat-only pastures than on sheep only or mixed sheep/goat pastures (Table 2).

From weaning in December, Coopworth lambs rotationally grazing pastures conditioned by goats grew faster than those grazing previous sheep only pastures, with mixed sheep/goat pastures intermediate (Table 2). The difference was greatest in the first four weeks after weaning. Once lambs returned to pastures they had previously grazed, the margin between treatments declined. After ten weeks of grazing, when pastures were topped and lambs re-randomised to paddocks, no residual effects of the treatments on lamb growth were measured (Table 2). This suggests that goats must continue to condition pastures if an advantage in lamb growth is to be maintained. Work is continuing on the integration of goat and sheep grazing and the benefits to lamb growth in summer and autumn,

Table 1: Liveweight gains (g/d) of sheep and *goats under separate and* mixed grazing *on irrigated* pastures

Grazing	Adults /ha	Adults Goats	Adults Sheep	Young Goats	Young Sheep
separate	16	47	126	126	247
	22	39	121	92	206
Mixed	16	46	179	107	292
	22	18	154	97	255
lsd ($p < 0.05$)		13	21	25	31

Table 2: Clover yield (kgDM/ha) and percentage of total sward at weaning and post-weaning lamb growth rates (g/d)

Treatment	Clover Yield	Clover Percent	Lamb growth rates (weeks after weaning) o-4	4-10	10-22
Sheep only	240	10	126	142	161
Goats/sheep	340	16	150	149	163
Goats only	810	29	158	160	162
lsd ($p < 0.05$)	306	7	26	24	14

FUTUREAREASOFRESEARCH

From discussions with Canterbury farmers and others associated with the goat industry, it is felt that the following management areas deserve attention on high producing pastures.

(1) Seasonal liveweight targets for goats in various production systems.

(2) Growth rates of goats on different pasture species and at different allowances.

(3) Effects on goat production of hay, grain or silage supplements.

(4) The integration of other livestock with goats, especially in relation to grazing management, internal parasite control and trace elements.

(5) The best goat management for thistle control.

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