Goat Note

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Feeding hay and grain can improve carcass quality of Angora kids

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INTRODUCTION

Sales of goats for meat production is an important source of income for mohair producing flocks.. Recent studies of adult Angora wether goats have shown that :

- their carcasses have only moderate levels of carcass fat (16-25%) and should be very suitable for the meat trade,
- that the proportion of the live animal which is the carcass increases with liveweight and
- that body condition scoring is a practical method for assessing carcass fatness. When condition scoring was used with the weight of the carcass they accounted for most of the variation in carcass fat.

However there is no information on :

1. the effect of normal farming practices and
2. the effect of rearing status

on the quality and yield of Angora kid carcasses.

OBJECTIVES OF THE STUDY

To study the effects on the quality and acceptance of kid carcasses of :

- the feeding of cereal grain and hay to pregnant and lactating Angora does
- rearing kids as singles or as twins.

DESIGN OF STUDY

Treatments

A herd of 200 Australian Angora does grazing annual temperate pastures were mated and their pregnancy status was determined by ultrasound at 65 days after mating. From 100 days after mating does were fed :

- grain; either 0, 125, 250, 375 or 500 g of whole grain barley per doe per day and
- pasture; either pasture alone or pasture with lucerne hay (800 g per doe per day).

Each treatment had 2 paddocks each with 1 dry doe, 3 single bearing does and 1 twin bearing doe.

Management

Supplements were fed from 8 weeks before to 8 weeks after kidding. Crushed limestone, Ca(CO3)2 was added at a rate of 1.3% and thoroughly mixed with the grain. Both grain and hay were fed out on the ground according to normal farming practice. Rations were consumed quickly. No accumulation of uneaten hay or grain occurred. In June and July the pastoral conditions were poor and limited hay feeding of pregnant does in the pasture alone treatment became necessary.

At 20 weeks of age kids were slaughtered at a commercial abattoir. Carcass weight, carcass quality and commercial acceptance (determined by a wholesale butcher) were recorded.

RESULTS

Effect of treatments on pasture availability

The seasonal conditions were poor with a very late germination in mid June, pastoral conditions remained poor until late September and the spring finished abruptly in late November.

Under these conditions:

- no effects of hayfeeding on pasture availability were detected in any month
- significant effects on grain feeding were detected on pasture availability in July, September and November with availability of pasture highest when grain feeding was at 375 and 500 g per doe per day.

Effect of liveweight on kid carcass weight and quality

The mean and range of carcass parameters are shown in Table 1 and Figure 1.

Table 1. The mean and the range in liveweight and carcass weight of Angora kids slaughtered at 20 weeks of age after grazing on annual pastures.

Parameter	Mean	Range
Liveweight (kg)	15.0	8.3 - 23.1
Carcass weight (kg)	6.1	2.8 - 11.0
Body condition score	3 minus	1 plus to 4 minus
GR tissue depth (mm)	4.2	2 - 6

The data showed that for each 1 kg increase in liveweight:

- male kids carcass weight increased 488g
- female kids carcass weight increased 549g.

Tissue depth over the 13th rib increased with increasing liveweight. The heavier carcasses had 6 mm of tissue at the GR site, considered ideal by butchers.

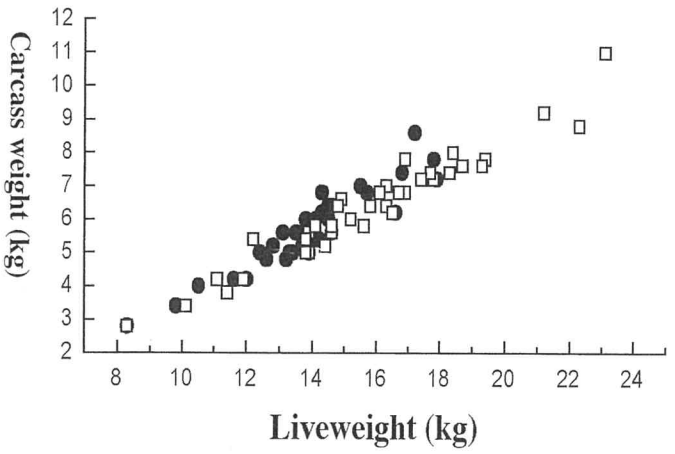

Figure 1. The carcass weight and liveweight of male (❑)and female (●) Angora kids slaughtered at 5 months of age. *Effects of treatments on kid carcass weight*

When **no grain was fed:**

- does which were fed hay had kids which produced heavier carcasses than does which were not fed hay (6.5 kg vs 4.8 kg)
- but hay feeding had no effect when grain was fed.

Grain feeding affected carcass weight;

- particularly of single reared kids,
- with carcass weights being heaviest when 375g of grain was fed per day (Figure 2).

These effects correspond with changes in kid liveweight.

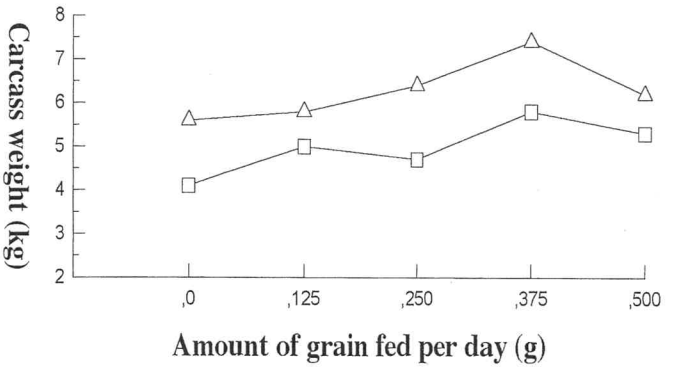

Figure 2. The effect of feeding barley grain from 8 weeks before kidding to 8 weeks after kidding to does grazing pasture and the effect of rearing status on carcass weight of Angora kids slaughtered at 5 months of age. Rearing status : single ▲ ; twin

The effect of treatment and rearing status on commercial acceptance of kid carcasses

Grain feeding affected the proportion of carcasses acceptable to the commercial kid meat market in Melbourne. The numbers of kids assessed as unsuitable with either low carcass weight or low body condition score are given in Table 2.

Table 2. The effect of feeding whole barley grain and of feeding hay on the commercial acceptability of carcasses of Angora kids slaughtered at 20 weeks of age. The percentage of carcasses assessed by a wholesale butcher as being too light or too low in body condition are shown.

	Level of barley grain (g per doe per day)					Mean Total % unacceptable
	0	125	250	375	500	
Pasture only	40	60	20	10	20	30
Pasture and Hay	50	40	50	0	30	34
Total % unacceptable	45	50	35	5	25	32

These results showed that:

- twin kids were the major contributor to the number of unsuitable kids (_60%),
- more than half the twin kids in the experiment had carcasses which were unsuitable for the kid meat market at 20 weeks of age,
- at the higher levels of grain feeding twin kids represented most of the unsuitable kids.

DISCUSSION

This study provides a number of significant commercial observations that should improve the management and commercial returns of goat breeders and meat wholesalers:

- Treatments that increased liveweight increased carcass weight.
- The feeding of hay only increased kid carcass weight when no grain was fed even under very poor grazing conditions.
- Provision of barley grain at 375 g/day maximised carcass weight and acceptability.
- When 0 and 125 g of barley per doe per day were fed only half the kids had carcasses which were acceptable.
- The heavier carcasses in this study had tissue depths of 6 mm and were considered ideal for commercial meat markets.
- Kids reared as twins provided 60% of the unacceptable carcasses.

The results suggest that if kids are being sold for meat production then the feeding or selling strategy of kids reared as twins needs to be significantly different to the strategies used for kids reared as singles.

Clearly the practical application of the results will depend on seasonal and environmental conditions and on obtaining higher prices for premium carcasses. The data will allow farmers and advisers to make more informed decisions on the likely liveweight and carcass weight responses when considering whether to feed cereal grain and hay supplements to flocks of grazing reproducing does.

CONCLUSIONS

- **increasing liveweight increased carcass production and quality**
- **carcass production and market acceptance was highest when 375g/day of barley grain was fed**
- **carcass production and market acceptance was lowest when 0 or 125 g/day of barley was fed**
- **feeding hay only increased carcass production when no grain was fed**
- **the feeding or selling strategy for kids reared as twins must be different to that used for kids reared as singles**

ACKNOWLEDGMENTS

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REFERENCES

The full report of this experiment can be found in McGregor, B.A. (1996). Proc. Aust. Soc. Anim. Prod. 21: 135-138.