Liveweight Gain and Carcass Characteristics of Lambs Grazing Two Rape Varieties

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SUMMARY: Lambs confined to individual plots of the two rape varieties (Rangi vs Arran) at the same stocking rate had growth rates over an initial and subsequent regrazing period of 205 vs 216 g/d and 95 vs 120 g/d respectively. The observed preference of lambs for Rangi rape was not reflected in a significantly faster growth rate or in carcass characteristics. Arran produced more herbage this being reflected by the growth rates of the lambs. Arran rape has the potential to increase animal production provided there are sufficient stock available to utilize the extra feed.

INTRODUCTION: It has been clearly demonstrated that lambs grazing on rape (*Brassica napus*) have significantly faster growth rates than those on pasture over the summer-autumn period (FITZGERALD, 1985). The high crude protein content (JUNG et al., 1986) and organic matter digestibility (BOYLE et al., 1990) of brassicas explain the elevation in performance although the levels achieved are below theoretical potential (LAMBERT et al., 1987).

There have been several new varieties of brassicas released for commercial use in Australia in recent times amidst claims of improved animal performance. One of these is a rape variety called Arran. The improved herbage production of Arran has been observed in local trials, but the conversion of this increased feed into animal product is in question as this variety is less palatable to sheep than the widely grown variety Rangi (D.E. JOHNSON unpublished data).

In this paper liveweight gain of lambs grazing the two varieties is detailed in association with their carcass characteristics.

MATERIALS AND METHODS: Two 0.4 ha plots were cultivated and sown with either Arran or Rangi rape on 9 November 1989. Arran rape was sown at 3.5 kg/ha and Rangi at 3.0 kg/ha to give 84 viable seeds/m^2 for each variety. The plots were fertilized at sowing with 23 kg phosphorus, 1.75 kg boron and 60g molybdenum per hectare supplied as single superphosphate, boric acid and sodium molybdate respectively. Irrigation was used to maintain crop growth through our normally dry summer.

Herbage yield of the crops was estimated prior to grazing. Quadrat samples of green leaf and petiole, but not stem or senescing leaves, were harvested and oven dried to assess available dry matter.

Twenty weaned mixed-sex lambs born to Merino and Polwarth ewes and sired by either Suffolk or Poll Dorset rams were randomly assigned to each plot based on stratified liveweight. They were the lightest lambs from a mob of approximately 300. Further management details of the lambs prior to selection for the experiment are described by HOPKINS et al. (1991). The first grazing period was for 54 days after which all of the available feed had been utilized. For a week prior to slaughter the lambs were run on a ryegrass, cocksfoot and subterranean clover pasture. One lamb died during this week and five

others were not slaughtered because of low liveweights. After 21 days regrowth the crop was grazed by 19 lambs per variety for 35 days until slaughter. These lambs were from the same source as used in the first period.

Throughout both grazing periods all lambs were weighed weekly. All were drenched prior to treatment allocations.

All lambs were slaughtered in a commercial abattoir and trimmed according to the specifications of AUS-MEAT (ANON, 1987). Hot carcass weights were recorded and the hot GR (tissue depth over the 12th rib 110mm from the midline) measured using a GR knife. A t-test was used to detect significant differences between variables for treatment groups within grazing periods.

RESULTS: Available herbage prior to the first grazing was 2450 kg/ha and 2690 kg/ha for Rangi and Arran respectively. After a period of regrowth prior to the second grazing the yields were 1180 kg/ha and 1510 kg/ha respectively.

The liveweight change and carcass characteristics of lambs for the two grazing periods are indicated in Table 1.

Table 1. Mean (± S.D.) liveweight change and carcass characteristics of lambs grazing Rangi or Arran rape for two grazing periods.

	First Grazing		Second Grazing	
	Rangi	Arran	Rangi	Arran
Initial liveweight (kg)	22.5 ± 1.48	22.7 ± 1.47	31.4 ± 2.35	31.0 ± 2.88
Final liveweight (kg)	33.5 ± 2.85	34.3 ± 2.61	34.7 ± 2.44	35.2 ± 3.34
Growth rate (g/d)	205 ± 41.2	216 ± 46.5	95 ± 41.8	120 ± 50.4
Hot carcass weight (kg)	14.5 ± 0.94	14.9 ± 1.22	15.7 ± 1.26	16.1 ± 1.65
GR (mm)	8.4 ± 1.58	8.4 ± 1.70	9.6 ± 2.81	10.0 ± 2.86

Carcass data was only obtained for 17 of the 20 lambs per variety from the first grazing period (3 not slaughtered).

For both grazing periods there were no significant differences ($P > 0.05$) in liveweight gain or carcass characteristics of lambs grazing the two rape varieties.

DISCUSSION: Lambs in this study grew faster during the first grazing period irrespective of variety than reported elsewhere for lambs on rape (FITZGERALD, 1985; THOMAS et al., 1990). A comparison of results is difficult however because dry matter allowance, age, sex, breed and the liveweight of the lambs will influence their growth rate. This was demonstrated in the present work by comparing the growth response of the lambs between grazing periods. For the second grazing period the dry matter allowance was less and the lambs were much further advanced towards maturity.

Of particular interest was the similar performance of lambs on both rape varieties. Despite observations that sheep find Arran less palatable than Rangi (D.E. JOHNSON unpublished data) similar growth rates were observed when lambs were confined to plots of the two varieties. In fact there was a tendency for the lambs grazing Arran to grow faster although the small sample size prevented the detection of a significant effect. The faster growth is likely related to the greater allowance of dry matter. If the stocking rate was set to more accurately reflect the available dry matter a difference in growth rate would not be expected. However the greater herbage production of Arran, also observed in previous trials, means animal production can be potentially increased off a set area of land where there are sufficient stock available to utilize the extra feed.

The elevated growth of lambs grazing brassicas compared to those grazing pasture or hay and grain (FITZGERALD, 1985; KOCH et al., 1987) is an important response in terms of growing lambs during the summer-autumn months. Lambs in this study grew faster than contemporaries grazing pasture based on growth rates reported by HOPKINS et al. (1991) for the latter group. It is this potential that makes rape a useful crop for the turn-off of lambs during a period when pasture quality is poor. More specifically there exists scope to supply the developing market for heavy lean lambs in Australia (POLLARD, 1990) over an extended period. However, whether lambs grazed for the long periods needed to reach heavy weights will suffer from the anaemia factor (SHARMAN and LAWSON, 1981) remains to be proven. Additionally excess deposition of fat may also be a problem in view of the elevated growth rates, the high energy to protein ratio of the crop and the approach of maturation. Adoption of management strategies such as non-castration may be necessary.

It is evident that the apparent potential of Arran rape to increase animal production requires a more exhaustive study so practical recommendations can be made for its wider use.

ACKNOWLEDGMENTS: Thanks are due to Mr M.A. Fenton, Mr M.A. Tate and Ms A.G. Bailey for their care and supervision of the lambs. Mr R. Williams is thanked for his care of the crop and herbage sampling. The authors are indebted to Mrs K.L. Pirlot, Miss T. Fumo, Mr J.R. Knox, Mr P.J. O'May and Mr A.H.K. Roberts for assistance with the collection of slaughter data.

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