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THE GROWTH AND CARCASS CHARACTERISTICS OF ENTIRE AND CASTRATE RED STAGS

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SUMMARY

Growth rate and differences in carcass composition between castrate and entire red stags were investigated with animals slaughtered at 16 and 27 months of age. Castrate stags grew more slowly and had more fat than entire animals at equal carcass weight.

INTRODUCTION

It has been clearly shown that castrated sheep and cattle have a depressed rate of growth, a poorer conversion of feed to carcass gain and a greater deposition of fat in the carcass than entire males (Everitt and Jury, 1966; Robertson *et al.*, 1967; Rhodes, 1969). Since the commencement of deer farming there have been several enquiries for information about the consequences of castrating stags at or shortly after weaning. An experiment was conducted at Invermay to provide information on this subject.

EXPERIMENTAL

In 1975, 11 male red deer calves were castrated at 5 months of age (2 months after weaning). They were then run with 12 entire animals of the same age on ryegrass-white clover pasture and fed hay *ad libitum* in each winter.

During the trial two entire animals died and their data were discarded. Five of each sex group were slaughtered at 16 months and the remainder at 27 months of age. Carcasses from all animals were weighed, halved and one side minced. Chemical analysis was carried out on subsamples of the mince.

RESULTS AND DISCUSSION

The seasonal nature of growth in deer grazing pasture can be seen in Table 1. From March until August, growth rates were in the range of -40 to $+40$ g/day and there were no differences between sex groups. The low winter growth rates probably have both a feed quality and an environmental component since stags in a feedlot fed a grain diet grew somewhat better over this period. Significant differences between castrates and entire stags were found during the first spring and summer but the differ-

TABLE 1: GROWTH RATES (g/day \pm S.E.) OF ENTIRE AND CASTRATED MALE RED DEER FROM WEANING TO 27 MONTHS OF AGE

	Days	Entires (n)	Castrates (n)	Diff.
Weaning — Sep.	168	46 \pm 5 (10)	43 \pm 4 (11)	NS
Sep.-Dec.	87	296 \pm 18 (10)	262 \pm 9 (11)	NS
Dec.-Feb.	84	202 \pm 15 (10)	159 \pm 12 (11)	*
Feb.-Apr.	52	31 \pm 15 (10)	22 \pm 14 (11)	NS
Apr.-Sep.	157	—47 \pm 7 (5)	—38 \pm 9 (6)	NS
Sep.-Dec.	91	266 \pm 19 (5)	201 \pm 13 (6)	*
Dec.-Mar.	82	215 \pm 26 (5)	122 \pm 13 (6)	*

ences in favour of entire animals were more pronounced during the second spring and summer.

Table 2 summarizes the liveweight and carcass weight for the two sex groups at weaning, 16 months and 27 months of age. At 16 and 27 months the castrates were 9% and 16% lighter, respectively, than the entire stags. Blaxter *et al.* (1974) have reported a Scottish experiment in which a castrate was compared with an entire stag when both were fed a 90% barley diet *ad libitum* for about two years. The Scottish animals at 16 months of age were 120 kg and 95 kg for the entire and castrate, respectively, and these weights are very similar to those from the Invermay pasture-fed sex groups, although the latter did not reach those weights until aged 27 months.

The Scottish and Invermay experiments agree closely that the penalty in both liveweight and carcass weight for castration in stags when compared with the entire animal is 17 to 20% at the stage of maturity where the entire stag weighs about 120 kg or is about two-thirds mature size. Everitt and Jury (1966) slaughtered castrate and entire rams at various ages. When slaughtered at 28 weeks, the castrate carcasses were 17% lighter than those from rams of the same age. Similar, if somewhat

TABLE 2: LIVE ANIMAL AND CARCASS MEAN WEIGHTS (kg) AT 16 AND 27 MONTHS OF AGE

	Entires (n)	Castrates (n)
Liveweight:		
Weaning (3 mo. age)	31.7 (10)	31.6 (11)
16 mo.	83.8 (10)	76.1 (11)
27 mo.	118.1 (5)	98.4 (6)
Carcass weight:		
16 mo.	43.8 (10)	40.6 (11)
27 mo.	67.6 (5)	55.8 (6)

TABLE 3: REGRESSION EQUATIONS RELATING CARCASS COMPOSITION (%) TO CARCASS WEIGHT (kg)

Component	Sex Status	Intercept (\pm SE)	Coefficient (\pm SE)
Fat (%)	Entire	-3.56 \pm 1.27	0.258 \pm 0.022
	Castrate	0.243** \pm 2.20	0.202 \pm 0.046
Water (%)	Entire	73.23 \pm 1.43	-0.167 \pm 0.024
	Castrate	71.72** \pm 1.51	-0.173 \pm 0.031
Protein (%)	Common ¹	22.28 \pm 0.50	-0.0309 \pm 0.0093
Ash (%)	Common ¹	7.08 \pm 0.47	-0.0243 \pm 0.0087

¹ As there were no significant differences between sex classes in either slope or intercept, a common regression was computed.

variable data have been reported for beef cattle (see Rhodes, 1969).

One of the important features of castration in sheep and cattle is the increase in fatness following castration when compared with animals left entire.

Table 3 presents equations which predict carcass composition in deer from carcass weight. Although the slopes of the lines did not differ there were highly significant differences in intercept for fat and water. At a carcass weight of 70 kg, the castrated stags had 10% more fat and 3% less water than entire stag carcasses.

Most deer farmers today have a background of farming sheep and cattle and by tradition they castrate the males scheduled for slaughter. With the increasing emphasis today on leanness and efficiency in converting food to meat a fresh look is being given to ram lambs and bull beef. Farmed venison meat will be a new "fat-free" product to market and it will be possible to promote the meat from entire stags as the "standard product". The current high prices being paid for antler velvet will certainly assist this objective, as an animal castrated before puberty does not grow antlers. In the long term, the venison industry could steal a march on the sheep and cattle industry for efficient lean meat production by making non-castration the rule rather than the exception.

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