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Carcass composition of autumn- and spring-born lambs

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INTRODUCTION

The rationale behind out-of-season (autumn) lambing is the ability to provide heavy weight lambs for slaughter early in the killing season as a component of a year round supply system. The ability to lamb ewes naturally in autumn has been demonstrated in Northland, (Andrewes, 1983; McQueen and Reid, 1988; Reid, *et al.*, 1988) as has the ability to grow the lambs through winter and spring, both in Northland and in Waikato (Andrewes and Taylor, 1986; Cruickshank and Smith, 1989; McQueen, 1986).

Before autumn-lambing can be thoroughly evaluated, comparisons are required of carcass composition of autumn- and spring-born lambs to ensure that levels of fat do not differ markedly in lambs born throughout the year.

EXPERIMENTAL

Two experiments were conducted each using autumn- and spring-born lambs from the Kamo Dorset x Romney autumn lambing flock described previously (McQueen and Reid, 1988; Reid *et al.*, 1988).

Trial 1

In each of two years, 30 weaned autumn-born wether lambs (born May) were slaughtered on each of 3 occasions; *viz*; October, December and February.

In February, 11 (year 1) and 30 (year 2) mixed sex, spring-born (born August/September) lambs were slaughtered along with those born in autumn. These spring-born lambs were the same age as the lambs born autumn and slaughtered in October.

Lambs were weighed fortnightly after a 2—3 hour fast and drenched regularly with anthelmintic.

Trial 2

In each of two years, groups of 24 autumn- and spring-born lambs (born April and August/September respectively) were slaughtered at each of two target live weights, *viz* 35 and 40 kg.

All animals were weighed and drenched regularly with anthelmintic. All were weighed after a 2 - 3 hour fast immediately before transporting to the Ruakura abattoir where they were weighed immediately prior to slaughter.

RESULTS AND DISCUSSION

Trial 1

The autumn-born lambs weighed 25.8 and 29.5 kg in October and December of the first year, 22.4, 28.9 and 33.8 kg in October, December and February of the second year. In the second year, spring-born lambs reached 23.6 kg by February. No live weights were taken in February in year 1.

When compared at similar ages - October for autumn-born, February for spring-born - carcass weights and GR measurements (Table 1) were not significantly different in autumn- and spring-born lambs. As animals grew, carcass weights and generally GR measurements, corrected for carcass weight, increased. However, animals slaughtered in December of year two were leaner at a given carcass weight than others.

Trial 2

Live weights and hence carcass weights were considerably greater on all occasions in this trial than in Trial 1.

Autumn-born lambs reached 34.0 and 34.3 kg by 6 and 13 November in year 1 and 2 respectively

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(target weight 35 kg). By contrast, spring-born lambs were slaughtered at 36.7 and 36.0 kg in late June or late April. Autumn-born lambs reached 40 kg by mid March or late January compared with 22 September or 1 July for these born in spring. Autumn-born lambs were considerably younger at both target slaughter weights than those born in spring (Table 2).

The autumn-born lambs reached carcass weights of 15.8 kg by early November, with GR measurements of 7.5 mm and 8.3 mm in year 1 and year 2 respectively, at 35 kg slaughter weight (Table 2). Carcasses of spring-born lambs were slightly heavier when slaughtered at the 35 kg target weight than those of autumn-born lambs. This reflected their higher live weight. After correcting for carcass weight, these carcasses were fatter than those of lambs born in autumn (Table 2).

When carcass of spring-born lambs were slaughtered at 40 kg, different results were obtained in the two years. In the first year, spring-born lambs - 13 months old - were leaner than those born in autumn (Table 2). In year 2, GR measurements of autumn-born lambs were similar to those of spring-born lambs.

This low GR measurement in lambs slaughtered at over 1 year old - after winter - is similar to the effect observed by Bray and Taylor (1987) and presumably reflects changes in relative fat deposition rate over winter (Kirton *et al.*, 1982). However, these results differ from those of Cruickshank and Smith (1989), who suggested that low growth rates over winter may have been responsible for an increase in GR.

The trials (1 and 2) reported here, provide no basis for expecting GR measurements of autumn-born lambs to differ from those of spring-born lambs of similar weight in any predictable fashion.

The data confirm that heavy weight (>16 kg), lean (GR <8.5 mm) carcasses can be obtained early in the killing season from lambs born in autumn in Northland. At heavier carcass weights, (approximately 20 kg) difference in carcass composition between autumn- and spring-born lambs may disappear. However, it has proved difficult to produce heavy weight lambs in Northland using a spring lambing system. In Northland, autumn-born lambs reach killable live weights at much younger ages than those born in spring. Autumn lambing has now been shown to be a feasible alternative for producing the heavy weight lean carcasses for slaughter before Christmas.

TABLE 1 Weights and fat depths of carcasses of autumn- and spring-born lambs slaughtered in October, December or February. Trial 1.

Carcass weight (kg)	Birth Season	Carcass weight and fat depth (GR)			SED
		October	December	February	
Year 1	Autumn	10.19	12.57	13.91	0.47 ^a
	Spring			10.07	0.68 ^b
Year 2	Autumn	9.86	11.97	15.21	0.60 ^c
	Spring			10.02	
GR (mm)					
Year 1	Autumn	4.55	5.02	4.74	0.41 ^a
	Spring			4.79	0.56 ^b
Year 2	Autumn	4.55	3.73	5.29	0.44 ^c
	Spring			4.02	

^a Comparing autumn-born lambs between slaughter occasions

^b Comparing spring-born with autumn-born lambs

^c Comparing any 2 groups

TABLE 2 Ages at slaughter, carcass weight and fat depth at GR of autumn- and spring-born lambs slaughtered at 35 kg and 40 kg live weight in each of two years. Trial 2.

Carcass weight (kg)	Birth Season	Carcass weight (kg)		SED
		35 kg	40 kg	
Year 1	Autumn	15.97	20.96	0.685
	Spring	17.89	19.20	
Year 2	Autumn	15.69	19.06	0.704
	Spring	16.80	19.27	

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TABLE 3 Fat depths at GR of carcasses of autumn- and spring-born lambs slaughtered at 35 kg and 40 kg live weight in each of two years. (Trial 2).

	Birth Season	35 kg	40 kg	SED	Corrected ^a	SED
<u>Age (days)</u>						
Year 1	Autumn	200	292	3.2		
	Spring	310	397			
Year 2	Autumn	198	272	2.5		
	Spring	233	299			
<u>Carcass Weight (kg)</u>						
Year 1	Autumn	15.97	20.96	0.68		
	Spring	17.89	19.20			
Year 2	Autumn	15.69	19.06	0.70		
	Spring	16.80	19.27			
<u>GR (mm)</u>						
Year 1	Autumn	8.33	16.46	0.99	12.44	0.76*** ^b
	Spring	11.75	9.92		10.79	
Year 2	Autumn	197.46	11.38	1.09	9.81	0.74*** ^b
	Spring	10.17	12.96		11.17	

^a GR corrected to mean carcass weight in each year

^b Differences in GR between seasons of birth significant at *** P<0.001, ** P<0.01, after correcting to mean carcass weight in each year

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