CARRY-OVER EFFECTS ON GROWTH AND INTRAMUSCULAR FAT OF CATTLE BACKGROUNDED ON DIFFERENT GROWTH PATHWAYS

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The profitability of producing cattle to meet specifications based on weight and fatness may be influenced by the effect of prior growth on subsequent growth and body composition. A preliminary analysis by Robinson *et al.* (2001) examined the effect of divergent growth during backgrounding (weaning to commencement of finishing) upon growth during finishing, subcutaneous fat thickness, carcass intramuscular fat percentage (IMF%) of *M. longissimus* and meat yield following finishing either on pasture or a grain based diet to 2 market endpoints. The results presented in this paper summarize the carry-over effects on growth and IMF% of backgrounding on 3 different growth pathways.

Cattle were grazed on temperate perennial pastures on the Northern Tablelands of NSW, Australia (n=150, 345 and 287, respectively for years 1994 to 1996). Angus, Hereford, Murray Grey and Shorthorn steers were grown out either without supplementation (P1) with supplementary feeding of high protein pellets (P2) or with access to a forage crop (P3) to a target live weight (LW, representing the mean of all 3 pathways) of 400 kg. Ayres *et al.* (2001) and Dicker *et al.* (2001) provided details of the grazing systems and the growth pathways. Cattle were finished either on pasture or in the feedlot, for Korean (average LW 520 kg) or Japanese (average LW 600 kg) markets. The statistical model included effects for sire, breed, herd of birth, carcass weight and age.

Table 1. Carcass intramuscular fat (*M. longissimus*, % adjusted for carcass wt) of cattle grown out on pasture plus forage (P3), pasture plus pellets (P2) or pasture only (P1) for Korean and Japanese markets by finish (F, feedlot; P, pasture) and year, plus a combined analysis for all 3 years

		Korean Market				Japanese Market			
Year	Finish	P3	P2	P1	s.e.d	P3	P2	P1	s.e.d.
1994	F	n.a.	n.a.	n.a.	n.a.	6.2	5.3	5.6	0.8
	P	5.8	4.3	4.1	1.7	6.1	5.8	5.6	0.9
1995	F	6.4	6.8	6.8	0.8	7.5	7.4	6.8	0.8
	P	5.5	5.2	5.0	0.8	5.6	5.0	4.6	0.8
1996	F	5.7	5.7	5.5	0.5	9.5	8.5	9.0	0.5
	P	5.2	4.6	4.8	0.5	6.7	5.8	6.0	0.5
Combined	F	6.3	6.1	6.2	-	7.6	7.1	7.1	0.3[A]
analysis	P	5.4	5.1	5.0	-	6.2	5.7	5.5	0.3[A]

n.a. - data not available [A]Average s.e.d. between estimates for each market x finish x growth pathway

In general, mean growth rates during finishing were inversely related to mean growth rates of the different growth pathways during backgrounding. For example, P3 and P2 steers averaged 43 and 19 kg more weight gain during backgrounding than P1 steers, but averaged 20 and 10 kg less weight gain during finishing. Thus the higher mean weight gains of P3 and P2 during backgrounding were partially compensated for by lower mean gains during finishing. Table 1 shows: (i) that method of finish (feedlot or pasture) had the greatest effect on IMF% in all years and (ii) that P3 steers had higher mean IMF% for both feedlot and pasture finished steers at Japanese market weights. Though the differences were not large enough to be statistically significant in any single year, the combined analysis of all 3 years showed that steers from pathway P3 had significantly more IMF% at Japanese market weights than P1 steers. These results indicate that the better nutrition of animals backgrounded on pathway P3 resulted in higher weight gains and more IMF%.

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