

DIFFERENCES IN THE DISTRIBUTION OF FAT IN THE PRIMAL CUTS OF GRASS-FED AND GRAIN-FED STEERS PREPARED FOR JAPAN

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Australia's beef trade with Japan shows a parallel growth in the grass-fed and grain-fed sectors (Anon 1994) and lot-finishing is now an option for traditional grass feeders. Many scientists have found that cattle finished on a high grain diet deposit fat at lighter fat-free carcass weights than cattle finished on grass (cited by Johnson and Priyanto 1992). If this accelerated development of fat causes differences in its distribution in the untrimmed primal cuts, it could have important quality and yield implications. The aim of this study was to determine whether differences in fat distribution occurred. Twenty-eight Hereford steer sides, 14 each fed grass and grain for the Japanese market, were divided into 15 primal cuts (Table 1) each of which was anatomically dissected. The grass-fed steers had a mean hot carcass weight of 352.6kg (s.d. 25.0) and a total side fatness of 29.8% (SD 3.6) and the corresponding values for the grain-fed steers were 417.0kg (SD 58.1) and 34.8% (SD 3.0).

Table 1. Distribution of fat in the untrimmed primal cuts of beef sides from grass-fed and grain-fed steers

Cut	Significance ^A		Cut	Significance ^A	
	SC	IM		SC	IM
Thin flank	NS	NS	PE brisket	L*	G***
Tenderloin	-	L*	NE brisket	NS	G*
Loin	G**	NS	Shin	NS	NS
Rump	G**	G**	Blade	G*	G***
Thick flank	L***	NS	Rib set	NS	G***
Topside	NS	NS	Chuck	NS	G**
Silverside	NS	G**	Neck + sticking	NS	G***
Shank	G**	NS	Total side cuts	NS	G***

^A Grain-fed relative to grass-fed; SC Subcutaneous; IM Intermuscular; G Greater; L Less; * P<0.05; ** P<0.01; *** P<0.001; NS Not significant.

When the carcasses were compared between diets, as submitted for their respective markets, there were significant differences in fat distribution in the untrimmed primal cuts. The greatest differences were in the IM depot in which significant changes occurred in 9 cuts, 8 (rump, silverside, PE brisket, NE brisket, blade, rib set, chuck and neck + sticking) involving an increased proportion in the grain-fed steers. SC fat proportions were significantly different in 6 of the cuts, 2 (thick flank and PE brisket) having a lower proportion and 4 (loin, rump, shank and blade) a higher proportion in the grain-fed steers. For total side, the proportion of IM fat was significantly greater in the grain-fed steers. When the carcass groups were compared at 30% total carcass fat, there were no significant differences in the distribution of SC or IM fat depots in the cuts, confirming the findings of Belk *et al.* (1991). This indicates that grain feeding of Hereford steers does not alter the inherent distribution patterns between SC and IM fat. It is likely that any beef yield differences emanating from fat trim are attributable to total carcass fatness and the market specifications and not differential fat distribution patterns induced by diet.

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