

CARCASE QUALITY TRAITS OF PURE, FIRST- AND SECOND-CROSS SHEEP BREEDS SLAUGHTERED AT LAMB AND YEARLING STAGES

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Data generated from the Australian Sheep Industry CRC resource flock were used to study the importance of breed selection and age of animal in muscle and fat development and meat quality. Previously, production traits in crossbreds and pure Merinos were evaluated in lambs slaughtered at sucker stage (4 months) (Ponnampalam *et al.* 2004). The present study compares the differences in carcass traits between first-cross, second-cross and pure breeds slaughtered at lamb (8 months) and yearling (14 months) ages. The genotypes compared were Merino x Merino (MM), Border Leicester x Merino (BLM), Poll Dorset_{growth} x Merino (PDgM), Poll Dorset_{muscle} x Merino (PDmM) and Poll Dorset_{growth} x [Border Leicester x Merino] (PDgBLM). There were approximately 150 mixed sex animals at each age. Hot carcass weight (HCW), GR (total tissue depth over the 12th rib, 110 mm from the mid line), loin muscle weight, eye muscle area (EMA) and *semitendinosus* (ST) muscle weight were analysed using a REML procedure. Genotype, sex, slaughter day, slaughter time and appropriate interactions were used as fixed effects. Sire and ewe were included as random effects.

At both ages, second-cross lambs had the highest hot carcass weight, pure Merino the lowest and the first cross intermediate. Differences in carcass fatness, indicated by GR, at the lamb age were similar to those for HCW but at the yearling age GR was highest in BLM and PDgBLM, intermediate in PDgM and PDmM and lowest in MM lambs. Loin weight and EMA at lamb age were significantly different in an ascending order from MM to BLM to PDM crosses to PDgBLM, but at yearling stage there were no differences between first-cross PDgM, PDmM and second-cross PDgBLM groups. At both ages, ST muscle weight was similar between first crosses (BLM, PDgM vs PDmM), which was higher than MM and lower than the PDgBLM group.

Table 1. Carcass quality traits of sheep from different genotypes slaughtered at lamb and yearling stages

Variable	MM	BLM	PDgM	PDmM	PDgBLM	Max-SED ^X	P-value ^Y
Lamb (8 months)							
Hot carcass weight (Kg)	18.1	22.3	24.1	23.1	27.5	0.79	***
GR (mm)-square root transformed (back-transformed)	(10.7)	(15.1)	(14.3)	(15.2)	(16.9)	0.23	***
Loin weight (g)	439	532	627	615	683	24.5	***
Eye muscle area (cm ²)	11.3	13.4	15.3	15.3	16.5	0.62	***
Semitendinosus weight (g)	96	112	126	123	137	7.3	***
Yearling (14 months)							
Hot carcass weight (Kg)	27.3	33.7	34.7	32.4	38.5	1.29	***
GR (mm)-square root transformed (back-transformed)	(19.6)	(27.2)	(23.8)	(26.1)	(27.2)	0.18	**
Loin weight (g)	685	752	853	803	878	43.7	**
Eye muscle area (cm ²)	18.4	18.8	20.6	21.0	21.2	0.89	***
Semitendinosus weight (g)	151	166	172	166	177	9.2	*

*** P<0.001; ** P<0.01 and * P<0.08. ^XMax-SED = Maximum SED. ^YP-value = Breed P-value.

Carcass traits did not differ (P>0.1) between PDgM and PDmM genotypes at both ages. Traits such as HCW, GR, EMA and loin weight were greater in the PDgBLM genotype than in the PDgM genotype. As it aged, the BLM genotype deposited more fat in the carcass than the other first cross animals as found previously Fogarty *et al.* (2000). Merino had less fat and less muscle at the same slaughter age compared with other breeds.

FOGARTY, N.M., HOPKINS, D.L. and van de VEN, R. (2000). *Anim. Sci.* **70**: 147–56.

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