

IMPROVED PERFORMANCE AND SALEABLE MEAT YIELD OF EURO AND CROSSBRED-SIRED GRAIN-FED HEIFERS TREATED WITH REVALOR H

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The increasing availability of later-maturing bulls used as terminal sires will probably result in the slaughter of more heifer progeny better suited to the market. It is generally accepted that heifers have slightly lower yields of saleable beef and can be over-fat at slaughter, particularly when grain-fed. The use of "Euro" breeds and hormonal growth promotants (HGP) are possible tools to manage these shortcomings. This study measured the performance, fat deposition, carcass characteristics and saleable meat yield of 60 late maturing heifers sired by Blonde d'Aquitaine (BA), Limousin (LL) or Wokalup composite (WK) bulls. Half the heifers (n = 30) were implanted with the HGP (Revalor H).

The heifers were weaned from their Hereford or Angus x Friesian dams in late December and introduced to the feedlot in January at an average liveweight of 270 ± 3.5 kg (mean \pm SE, range 214 - 334 kg). Hay (average of 24% of ration) and gram (barley/lupin/urea) were fed separately *ad libitum* for an average of 113 days with virginiamycin included in the grain mix to prevent acidosis. Heifers were slaughtered at an average age of 390 ± 3.7 days (335 - 450 days) after a feedlot growth rate of 1.45 ± 0.029 kg/day (range 0.97 - 2.23 kg/day). Carcass and chiller assessment data were collected. One day after slaughter the carcasses were broken down into primal cuts, fat, bone and trim (Woolworth's standard) and components weighed.

Eighty per cent of the heifers were slaughtered in the P8 fat range 5 - 8 mm, the remainder within 4 - 10 mm (mean \pm SE was 6.8 ± 0.21 mm). Average Hot Standard Carcass Weight (HSCW) was 224.0 ± 3.03 kg (range 173.6 - 266.6 kg) and meat yield varied between 70.0 and 79.2% (mean \pm SE $75.8 \pm 0.29\%$). There was a 58 c/kg variation in Woolworth's wholesale carcass value (range 344 - 402 c/kg).

Effects of sire breed, dam breed and HGP on meat yield %, primal %, trim %, fat trim % and bone % were analysed to determine production effects. HGP increased meat yield ($P < 0.1$) from $75.9 \pm 0.48\%$ to $76.5 \pm 0.42\%$ and reduced fat trim % ($P < 0.001$) from $6.8 \pm 0.36\%$ to $5.9 \pm 0.41\%$. The primal cut yield was increased ($P < 0.004$) by HGP from $53.1 \pm 0.35\%$ to $54.0 \pm 0.33\%$. When primal cuts were categorised into high ($> \$10$), medium ($\$4 - \10) and low ($< \4) Woolworth's wholesale value, "Euro" sires had a significantly ($P < 0.001$) higher proportion of high and medium value cuts (high: $9.5 \pm 0.09\%$ for BA and LL vs $9.2 \pm 0.08\%$ for WK; medium: $29.3 \pm 0.19\%$ LL, $29.0 \pm 0.18\%$ BA and $28.2 \pm 0.15\%$ WK). HGP increased the percentage of both medium ($P < 0.003$) and low ($P < 0.001$) value cuts (medium: $28.4 \pm 0.16\%$ vs $29.1 \pm 0.15\%$; low: $13.3 \pm 0.24\%$ vs $14.5 \pm 0.23\%$).

Table 1. Significant relationships between production factors and chiller assessments

Measure	Sig.	Sire Breed			Sig.	HGP	
		Limousin	Blonde	Wokalup		Treated	Control
CCW kg	$P < 0.001$	231 ± 4.2	238 ± 3.9	203 ± 3.4	$P < 0.01$	229 ± 3.9	213 ± 4.1
EMA cm ²	$P < 0.001$	77.9 ± 2.25	78.6 ± 2.12	66.0 ± 1.82	$P < 0.01$	76.5 ± 1.81	69.1 ± 1.99
P8 fat mm	$P < 0.01$	6.4 ± 0.37	6.1 ± 0.34	7.5 ± 0.30	$P < 0.05$	6.4 ± 0.28	7.2 ± 0.30

Production factors were tested for their association with cold carcass weight (CCW), eye muscle area (EMA) and P8 fat depth measured after a standard time (1 day) in the chiller. HSCW/CCW and EMA were the most important chiller assessable influences on meat yield ($P < 0.05$ and $P < 0.001$ respectively). In combination with P8 fat depth meat yield was predicted as:

$$\text{Meat yield (\%)} = 59.84 + 0.038(\text{CCW kg}) + 0.089(\text{EMA cm}^2) + 0.181(\text{fat depth mm}) \quad r^2 = 0.54$$

$$\text{Meat yield (kg)} = -29.0 + 0.798(\text{HSCW kg}) + 0.235(\text{EMA cm}^2) + 0.0194(\text{fat depth mm}) \quad r^2 = 0.97$$

Use of "Euro" sires increased meat yield, particularly higher value cuts, and HGP reduced fat deposition and increased meat yield, primarily the lower value cuts, in heifers finished on grain diets.