

## The effects of sire breed type (Charolais and Aberdeen Angus) on production and carcass quality from an organic continental cross spring calving herd

E. Leavy<sup>1</sup>, B. Swan<sup>2</sup>, R.J. Fallon<sup>1</sup>

<sup>1</sup>Teagasc, Grange Beef Research Centre, Dunsany, Co. Meath, Ireland, <sup>2</sup>Teagasc, Johnstown Castle Research Centre, Co. Wexford, Ireland

Email: elaine.leavy@teagasc.ie

**Introduction** The Irish 'Department of Agriculture Fisheries and Food' Organic Farming Action Plan 2008-2012 stated that the UK imports 4,000 tonnes of organic beef per year. For Ireland to supply the home and UK market it would need three times the amount of organic beef currently produced. The aim of the study located at the Teagasc Johnstown Castle Environmental Research Centre, was to determine the effects of sire breed type (Charolais and Aberdeen Angus) on production and carcass quality in organic beef production.

**Material and methods** A 44-cow continental-cross spring-calving herd made up of Limousin x and Simmental x cows was established to produce cross-bred calves. This herd was maintained by bringing in mature cow replacements of the same breed type. Using a representative group of sires from each breed 50% of the cows were each bred to Aberdeen Angus or Charolais sires, which were ranked similarly within breed for genetic merit. AI was used to the greatest extent possible with two natural service bulls being used to cover repeat matings. This study was carried out on using the progeny born in each of two years (2006 and 2007) and all animals were taken to slaughter. The cow-calf herd followed a rotational grazing system in a designated area of the 60 ha farm. The yearling heifers and steers also had a rotational grazing programme on a different land area of the same land unit. During the winter months animals were accommodated on straw bedded sheds according to organic standards. Animals were slaughtered at 20 or 22 months (heifers) and 22 or 24 months (steers). Data was analysed using the general linear models procedure of the Statistical Analysis Institute (SAS, 2001). Data on live weight, slaughter and carcass traits were analysed as a 2 x 2 x 2 factorial with terms in the model for breed, sex, slaughter date, their interactions and year.

**Results** The Charolais calves were approximately 10 kg heavier at birth than the Aberdeen Angus calves. The male calves in each breed were approximately 4 kg heavier at birth than the female calves (Table 1). The growth advantage from birth to weaning of the steers over the heifers and that of Charolais over Aberdeen Angus (Table 1) was comparable to that achieved in conventional production systems for matings with mature continental cows. The final live weights of the Aberdeen Angus and Charolais heifers and steers was 523, 545, 640 and 641 kg respectively (Table 2) The slaughter data generated showed the difference between Aberdeen Angus and Charolais heifer carcasses was 24 kg in favour of the Charolais sires (Table 2). The corresponding difference for the steers was 11 kg (Table 2).

**Table 1** Effect of sire breed on calf birth weight, weaning weight and live weight gain birth to weaning

	AA		CH		s.e.d
	Female	Male	Female	Male	
Birth wt (kg)	40.6 <sup>a</sup>	44.9 <sup>b</sup>	50.2 <sup>c</sup>	54.6 <sup>d</sup>	1.35
Weaning wt (kg)	255.6 <sup>a</sup>	288.7 <sup>b</sup>	285.9 <sup>b</sup>	302.5 <sup>b</sup>	6.51
Daily live weight gain kg/day	1.04 <sup>a</sup>	1.17 <sup>b</sup>	1.13 <sup>b</sup>	1.19 <sup>b</sup>	0.028

<sup>abcd</sup>Means with different superscripts within rows differ significantly (P<0.05)

**Table 2** Effect of sire breed and sex on carcass characteristics of calves born in spring 2006 and 2007

	AA		CH		s.e.d
	Female	Male	Female	Male	
Birth wt	40.6 <sup>a</sup>	44.9 <sup>b</sup>	50.2 <sup>c</sup>	54.6 <sup>d</sup>	1.35
Final wt	523.3 <sup>a</sup>	639.9 <sup>b</sup>	545.3 <sup>a</sup>	640.5 <sup>b</sup>	10.84
Carcass wt	278.2 <sup>a</sup>	348.8 <sup>b</sup>	301.7 <sup>a</sup>	359.7 <sup>b</sup>	6.51
Carcass birth to slaughter	0.41 <sup>a</sup>	0.47 <sup>c</sup>	0.44 <sup>b</sup>	0.48 <sup>c</sup>	0.009
KO%	53.2 <sup>a</sup>	56.1 <sup>b</sup>	55.2 <sup>ab</sup>	57.4 <sup>b</sup>	0.48
Conformation	2.99 <sup>ab</sup>	2.75 <sup>a</sup>	3.18 <sup>b</sup>	3.05 <sup>b</sup>	0.095
Fat score	3.50 <sup>a</sup>	3.56 <sup>a</sup>	2.86 <sup>b</sup>	2.63 <sup>b</sup>	0.128

<sup>abcd</sup>Means with different superscripts within rows differ significantly (P<0.05)

<sup>1</sup>Conformation score E = 5, U = 4, R = 3, O = 2, P = 1

<sup>2</sup>Fat score 5 = Fattest, 1 = Leanest

There were no interactions

**Conclusion** The results to date, from this contrasting sire breed and sex comparison study, indicates that is possible to achieve animal performance comparable with well managed conventional suckler calf to beef systems (Drennan and McGee, 2009).

### References

Statistical Analysis Systems Institute. 2003. SAS/STAT. The SAS system for windows, Release 9.3.1. SAS Institute Inc., Cary, NC, USA.

Drennan, M.J. and McGee, M. 2009. Performance of Spring-Calving Beef Suckler cows and their progeny to Slaughter on Intensive and Extensive Grassland Management Systems. *Livestock Science*, 120, 1-12.