

Animal Science Research Centre - Beef Unit Trial Results – 2012 (d)

Evaluation of progeny from Aberdeen Angus bulls with Top 10% and Top 70% Terminal Indexes

Introduction and Objective:

Previous studies at Harper Adams with progeny from Limousin bulls with different Beef Values have shown significant improvements in performance with calves sired by the higher Beef Value bulls (Marsh & Pullar, 2002; Marsh *et al.*, 2007; Marsh *et al.*, 2008). To further the database to confirm that EBVs work it was agreed to conduct an additional study but with Aberdeen Angus sires.

The Aberdeen Angus has traditionally been regarded as an early maturing breed type suited to extensive grass based production systems and if reared on intensive production systems from birth would typically finish at carcass weights of under 270kg at fat class 4L. These slaughter weights are considered to be relatively low especially for the abattoirs supplying the supermarket trade. However, the recent introduction of North American genetics into the majority of the Aberdeen Angus bloodlines have significantly improved the performance of this breed. The objective of this experiment was to evaluate the performance Aberdeen Angus x Holstein bull calves sired by bulls with either a Top 10% or Top 70% Terminal Index with the calves intensively finished and also to assess how the modern day Angus performs within this system of production.

Animals & Timing:

The trial commenced in April 2007 with Holstein cows from the Harper Adams University College dairy herd and a local dairy herd being alternatively inseminated with either a Top 10% or Top 70% Terminal Index Angus bull. The calves were born from January 2008 and were reared through to slaughter on a cereal beef system at Harper Adams.

Comparison:

The following bulls were chosen for comparison from the Genus bull stud:



Lorabar Mighty Prince
(Terminal Index +34 – Top 10%)



Aynho Beck
(TI+20 – Top 70%)

Both bulls have very good Calving Ease Direct EBVs in the Top 1% for the breed. Lorabar Mighty Prince has significantly higher EBVs for Growth and Eye Muscle Area.

Results:

Table 1 Calving characteristics

	Top 10% Sire	Top 70% Sire	s.e.d	Sig
Calving Ease Score ¹ (1-5)	1.54	1.48	0.211	NS
Gestation Length (days)	282.9	281.1	0.777	*
Birth Wt (kg)	39.9	39.2	0.58	NS

NS = not significant, * = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$

¹ Calving Ease Score: 1 = unassisted and 5 = Caesarean.

Table 2 Animal performance and carcass value

	Top 10% Sire	Top 70% Sire	s.e.d	Sig
Slaughter wt (kg)	562	532	8.9	*
Age at slaughter (days)	406	400	22.1	NS
DLWG (birth to slaughter)	1.30	1.24	0.028	*
DLWG (12 weeks to slaughter)	1.46	1.38	0.039	*
Carcass wt (kg)	292.5	277.6	4.50	*
Kill out (%)	52.0	52.2	0.30	NS
Carcass DG from birth (kg)	0.68	0.65	0.016	0.069
Conformation (1-7)	3.08	2.77	0.127	*
Fat class (1-7)	3.54	3.69	0.14	NS
Carcass price (£/kg)*	3.35	3.31	0.017	*
Carcass value (£)	979.44	918.70	15.8	***

¹ EUROP carcass classification: Conformation: P+=1 and E=7, Fat class: 1=1 and 5H=7.

² Carcass price based on July 2012 prices for commercial cattle

Some abattoirs penalise carcasses below 270kg and 15.3% and 22.3% of the carcasses from the Top 10% and Top 70% sire respectively were below 270kg

Discussion & Conclusions:

- Overall performance of the bulls was satisfactory achieving similar carcass weights to the EBLEX targets for intensive cereal finished Holstein bulls of 285kg indicating that the modern day Angus can be reared on an intensive system from birth, especially Angus's bred from High Index sires. Please note however that the market premiums typically available for Angus bred cattle would not usually be available for bulls that are intensively reared on these systems of production.
- The Top 10% sired bulls recorded significantly higher ($P < 0.05$) DLWGs, slaughter and carcass weights and conformation scores. Carcass daily gain was also higher ($P = 0.069$).
- The Top 10% sired bulls recorded significantly higher ($P < 0.05$) carcass price and carcass values ($P < 0.001$) worth an extra £60.74 per bull.
- The calves sired by the Top 70% bull recorded significantly ($P < 0.05$) shorter gestation lengths which is agreement with the bulls respective EBVs.
- 'Terminal Index' is an assessment of the economic genetic merit of an animal. The theoretical difference between the progeny from the sires should have been £7. In this study the increase in value of the carcass was £60.74 per head for the Top 10% sired calves. However the benefit of finishing the bulls sired by the Top

70% sire some 6 days earlier together with the reduction in gestation length of 1.8 days was estimated to be worth £18.59 leaving a net benefit for the Top 10% sired calves worth £42.15 thus exceeding the predicted value by £35.15.

References:

Marsh, S.P. and Pullar, D. 2002 Production and carcass traits of progeny sired by Limousin bulls with high and below average beef values. *Proceedings of the British Society of Animal Science*. Paper 193.

Marsh, S.P., Vickers, M. and Wharton, N. 2007 Evaluation of progeny from beef bulls with either a Top 1% or Top 10% Beef Value. *Proceedings of the British Society of Animal Science*. Paper 152

Marsh, S.P., Vickers, M. and Wharton, N. 2008 Evaluation of progeny from Limousin bulls with either a Top 1% or Bottom 1% Beef Value. *Proceedings of the British Society of Animal Science*. Paper 206

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Simon P. Marsh, Senior Lecturer, Harper Adams University

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