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Animal Science Research Centre - Beef Unit Trial Results – 2013 (a)

Evaluation of Rosé and Cereal Beef Production for Holstein bulls and Cereal Beef Production for Angus x Holstein bulls

Introduction and Objective:

Approximately 453,000 dairy-bred bull calves were born in Great Britain in 2012 and it was estimated that 55,000 were shot at birth (Debbie Butcher, 2012. Pers. Comm. Ms. D Butcher is the Senior Market Analyst - Sheep and Beef – AHDB/EBLEX). It is also estimated that 91,000 bulls were slaughtered as bobby calves.

The undesirable performance characteristics of Holstein bull calves are well recognized with poor conformation grades (P+/-O), low killing out percentages (50-52%) and poor meat to bone ratios compared to Continental crosses (Kempster *et al*., 1988). However daily live weight gains are comparable to medium-late maturing beef breeds (Southgate *et al*., 1988). It is recognised that the most appropriate beef production system for the 'late maturing' Holstein is the cereal bull beef system. The reason for the slaughter of so many calves at birth is simply due to lack of profitability with rearing these breed types on this system due to high cereal prices (and fixed costs), and historically very low beef prices for P+/-O grade carcasses.

The issue of shooting dairy bulls at birth is currently receiving significant coverage in the media and alternative options being quoted are Rosé Veal and Rosé Beef production (the definition of veal is a beef animal slaughtered under 8 months of age). There is no published data on the performance of dairy bred bulls reared on a Rosé Beef production system in the UK.

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 carcase 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 Angus bloodlines have significantly improved the performance of this breed. There is no published data on the performance of 'modern type' Angus x Holstein bulls reared on an intensive cereal beef system in the UK.

The objective of this experiment was to compare the performance of Holstein bulls finished on either a conventional Cereal Beef system at 13-15 months old against a Rosé Beef system with bulls slaughtered at 11.5 months old. The second objective of this experiment is to compare the performance of Angus x Holstein bulls against Holstein bulls finished on a Cereal Beef system at 13-15 months old.

Animals & Timing:

36 Jan-Mar 2012 born dairy-bred bulls randomized according to live weight and breed to the following treatments @ 3 months old:

Comparison:

Cereal Beef - Angus & Holstein
18 Holstein & Angus x Holstein bulls reared on a conventional cereal beef system and selected for slaughter at a target fat class of 3.

Rosé Beef – Holstein
18 Holstein bulls slaughtered at less than 12 months old.

All of the bulls were fed a*d libitum* 14%CP Wynnstay Primebeef Premium nuts. Straw was offered from racks. The bulls were slaughtered at ABP, Shrewsbury.

Results:

Table 1: Animal performance

Breed	**Angus x Holstein**	**Holstein**		
System	**Cereal**	**Cereal**	**Rosé**	**Sig**
Start wt @ 12 wks old (kg)	110	112	112	NS
Slaughter wt (kg)	562[a]	528[a]	489[b]	**
DLWG from 12 weeks (kg)	1.34[a]	1.22[b]	1.37[a]	**
Age at slaughter (months)	13.8[a]	13.9[a]	11.8[b]	***

Within row, means with the same superscript are not significantly different (*P*>0.05)
NS = not significant, * = P<0.05, ** = P<0.01, *** = P<0.001

Table 2: Carcase characteristics

Breed	**Angus x Holstein**	**Holstein**		
System	**Cereal**	**Cereal**	**Rosé**	**Sig**
Carcase wt (kg)	292[a]	269[b]	246[c]	***
Kill out (%)	52.0[a]	50.9[ab]	50.3[b]	***
Carcase DG (kg)	0.84[a]	0.69[c]	0.75[b]	**
Conformation[1] (1-7)	2.8[a] (O+)	2.0[b] (-O)	1.8[b] (-O)	**
Fat class[1] (1-7)	3.0[a]	2.9[a]	2.4[b]	*

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

Table 3: Feed intakes (kg/bull) and feed conversion ratio (FCR)

Breed	**Angus x Holstein**	**Holstein**	
System	**Cereal**	**Cereal**	**Rosé**
Concentrate intake (kg)	2,361	2,381	1,938
FCR (kg feed: kg gain)	5.22	5.72	5.14
FCR (kg feed: kg carcase gain)	9.80	10.92	9.94

Table 4: Financial performance (£/bull)

Breed	Angus x Holstein	Holstein	
System	Cereal	Cereal	Rosé
Carcase Price (£/kg) - March 2013	3.58	3.45	3.43
Carcase Value (£)	1,045	928	844
Gross Margin/Head	297	269	276
Gross Margin/Bull/Year	258	233	281

See appendix 1 for the full physical and financial results of the bulls.

Discussion & Conclusions:

- Compared to the Cereal fed Holstein bulls, the Rosé Holstein bulls recorded higher (P<0.01) DLWGs and were slaughtered at significantly lower (P<0.01) slaughter and carcase weights with a lower (P<0.05) fat classification. The FCR (kg feed: kg LW gain) of the Rosé bulls was improved from 5.72 to 5.14 with total concentrate feed intakes reduced by 443kg/bull. The gross margins per bull were similar however with the earlier slaughter of the Rosé bulls the margin per 'bull place' was improved by £48.
- A market outlet should be secured before entering into Rosé Beef production. Following recent labeling law changes, abattoirs can now only take bulls at 12 months and 1 day old as otherwise they must be labeled as veal.
- The Angus x Holstein bulls recorded a carcase weight of 292kg at 13.8 months old. The EBLEX (2012) target for intensive cereal finished Holstein bulls is a carcase weight of 270-300kg at 13 to 15 months old 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.
- When the performance of the Angus bulls is compared to the Cereal fed Holstein bulls, the Angus bulls recorded significantly higher (P<0.01) carcase weights, DLWG, carcase daily gain, conformation score with an improved FCR and a £28 higher gross margin per bull.

Acknowledgement:

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References:

Kempster, A.J, Cook, G.L. and Southgate, J. R. 1988 Evaluation of British Friesian, Canadian Holstein and beef bred x British Friesian steers slaughtered over a commercial range of fatness from 16 month and 24 month beef production systems. Carcass characteristics, and rate and efficiency of lean gain. *Animal Production,* 46:365-378

Southgate, J. R, Cook, G.L and Kempster, A.J. (1988) Evaluation of British Friesian, Canadian Holstein and beef bred x British Friesian steers slaughtered over a commercial range of fatness from 16 month and 24 month beef production systems. Live-weight gain and efficiency of food utilisation. *Animal Production,* 46:353-364

Appendix 1

Physical and Financial Performance

	Angus x Holstein	Holstein	
Financial performance (£/bull)	**Cereal**	**Cereal**	**Rosé**
Output			
Sales	1,045	928	844
Less calf purchase	141	46	46
Total Output	**904**	**882**	**798**
Variable Costs			
Calf rearing costs to 3 months	102	102	102
Finishing concentrates	475	479	390
Vet & medicines	7	7	7
Bedding & other costs	24	25	23
Total Variable Costs	**608**	**613**	**522**
Gross Margin/Head	**297**	**269**	**276**
Gross Margin/Head/Year	**258**	**233**	**281**
Physical Performance			
Age at slaughter (months)	13.8	13.9	11.8
Birth wt (kg)	39	41	41
Slaughter wt (kg)	562	528	489
DLWG (kg from birth)	1.24	1.15	1.24
DLWG (kg from 12 wks old)	1.34	1.22	1.37
Carcase wt (kg)	292	269	246
Daily carcase gain (kg from birth)	0.65	0.58	0.63
Daily carcase gain (kg from 12 weeks)	0.72	0.64	0.70
Killing out %[1]	52.0	50.9	50.3
Carcase classification	O+3	-O3	-O2/3
Feeds (kg)			
Milk replacer @ £1,570/t	23	23	23
Calf concentrates @ £296/t	124	124	124
Finishing concentrates @ £201/t	2,361	2,381	1,938
FCR (kg feed/kg gain)	4.80	5.19	4.65
FCR (12 wks - slaughter)	5.22	5.72	5.14
Prices			
Sale price (£/kg live weight)	1.86	1.76	1.73
Sale price (£/kg carcase weight)	3.58	3.45	3.43

Notes:

[1] Killing out percentage appears relatively low however it must be noted that the bulls were weighed 'gut full' prior to slaughter and the bulls were dressed using the UK dressing specification