

Effectiveness of estimated breeding values

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The benefits of selecting bulls based on their estimated breeding values (EBVs) has been demonstrated by a trial conducted at Harper Adams University.

The trial was established on a commercial autumn-calving suckler herd in Nottinghamshire, which consisted of 90 cows of predominantly Simmental-cross-British Blue breeding. The cows were artificially inseminated with either a top 1% or top 10% terminal index Simmental bull.

EBVs are predictions of a bull's genetic merit and they enable producers to forecast how its progeny will perform. Selecting a bull with the right combination of EBVs will help achieve herd goals, whether selling finished cattle, stores or breeding herd replacements.

Some of the main EBVs for the two bulls involved in the trial are shown in Table 1.

Table 1: EBVs of the Simmental bulls involved in the trial (January 2017, blup)

	Dirnanean Bradley (Top 1%)		Omorga Volvo (Top 10%)		Breed average for 2015
	EBV	Percentile band	EBV	Percentile band	
Calving ease direct (1%)	+7.2	Top 1%	-5.7	Top 90%	-0.6
200 day weight (kg)	+57	Top value	+38	Top 10%	+31
400 day weight (kg)	+97	Top 1%	+75	Top 5%	+57
Eye muscle area (sq cm)	+5.5	Top 1%	+5.9	Top 1%	+3.3
Fat depth (mm)	-1.2	Top 99%	0.0	Top 45%	+0.0
Terminal index (GBP)	+137	Top value	+93	Top 10%	+67

The cows were artificially inseminated in the winter of 2014 and calves were born in autumn 2015. Cows were managed so that they calved at a body condition of 2.5. The performance of the progeny was monitored throughout the trial, with the bull calves finished intensively at just over one year old. Heifers were either kept as replacements or sold as embryo transfer recipients to a pedigree breeder.

Calf performance of both bull calves and heifers, from birth to 200 days of age, was very similar at 1.44kg/day and 1.48kg/day for the top 1% and top 10% bulls respectively.

The bull calves were weaned in April and intensively finished on maize silage and blend. The blend was formulated with barley, sugarbeet pulp, biscuit meal, wheat distillers, hipro soya, maize gluten, molasses and minerals. The ration analysed at 57% dry matter (DM), 12.6 ME (MJ/kg DM), 16.5% crude protein in DM and 29% starch in DM.

At an average of 379 days of age, the bulls were sold deadweight to a local beef processor. The performance of the animals to slaughter and the resultant carcass data is shown in Table 2.

Table 2: Slaughter performance and carcass grades of bull calves involved in the trial

	Sire	
	Dirnanean Bradley (Top 1%)	Omorga Volvo (Top 10%)
Slaughter age (days)	380	378
Slaughter weight (kg)	689	667
LWG from birth to slaughter (kg)	1.69	1.64
DLWG from weaning to slaughter (kg)	1.82	1.63
Carcass weight (kg)	394.7	382.0
Carcass daily gain from birth to slaughter (kg/day)	1.04	1.01
Conformation score (1-15)*	10.4 (U-/U=)	10.2 (U-)
Fat score (1-15)*	8.2 (3=)	9.4 (3+/4-)
Carcass value (£)	1,385	1,340

*EUROP carcass classification: Conformation: P=-1 and E+=15. Fat class: 1=-1 and 5+=15

The finishing performance of the bulls mirrored the EBVs of the sires. Dirnanean Bradley had significantly higher 400-day weight EBVs and his sons recorded higher daily liveweight gains from weaning to slaughter (+0.19kg). The calves from Dirnanean Bradley also recorded lower fat classification which is reflected in the EBVs since the bull has a Fat Depth EBV of -1.2mm compared to Omorga Volvo's 0.0mm.

It is clear from this work that selecting a bull is not something that can be left to the stockman's eye alone, no matter how experienced that eye may be. Producers must identify the traits that will have the greatest economic impact on their herd and select bulls with appropriate EBVs.

For more information on selecting bulls, see the BRP manual [Choosing Bulls to Breed for Better Returns](#). You can also listen to the Bull Selection teleconference on the AHDB Beef & Lamb YouTube channel, [Beef & Lamb TV](#).