Breeding more efficient beef cattle – a summary for breeders

The Beef Feed Efficiency Programme (BFEP) launched in 2015 with a major project worth £1.75 million funded by Defra and the Agriculture and Horticulture Development Board (AHDB Beef and Lamb). In the first instance breeding values will be generated for one breed to demonstrate the approach using commercial growing cattle recorded for feed intake on commercial farms, with the data linked back to the pedigree herd.

The funded project has established industry standards for recording of feed intake and will determine an agreed measure of feed efficiency to be included in selection indices. At the end of the funded project, the programme will continue through the ongoing availability of the feed recording facilities, which will be available to breed societies and breeders who wish to generate breeding values for their breed.

To facilitate consideration of how breeds can engage with the programme, this note summarises the main elements of any breeding programme for feed efficiency.

Commercial feed recording units

Commercial data recording units have been established in Dorset, North Wales and County Durham. The Dorset farm has capacity for batches of around 120 cattle in 3 pens of 40 head. Both of the other units have capacity for 60 cattle in a batch. In parallel Scottish Government has, with industry partners, established a unit in Scotland which has capacity for batches of 160 cattle.

GrowSafe feed recording troughs and associated software have been installed on these units. These specially developed feed bins continuously measure the weight of feed in the trough and record cattle identification as feeding takes place.

Commercial significance

Research across the world has demonstrated the commercial significance of breeding for feed efficiency and the following results have been reported

- ↓ maintenance requirements of suckler herd by 9-10%
- ↓ feed intake by 10 -12%
- → average daily gain or mature size
- ↑ feed conversion ratio by 9 -15 %
- ↓ methane emissions by 25 -30%
- ↓ manure N, P, K by 15 -17%

Sample size to establish genetic parameters

In order to establish the required genetic parameters for any breed (heritability, genetic correlations, genetic variance etc), approximately 1000 cattle with known parentage have to be measured for feed intake through the units. This assumes that progeny from 125 bulls will be tested, on the basis of 8 progeny per bull.

Note: These figures are dependent on the population structure of the breed, including genetic connections between animals and herds and potential to incorporate associated trait information.

Criteria for cattle to be tested

For the initial establishment of breeding values cattle tested must meet a strict set of criteria:

- Known pure-bred (ideally pedigree registered) sire
- Progeny DNA parentage verified
- Ideally known dam status (heifer or cow)
- No animals to have been product of multiple births (twins etc)
- 5-12 progeny per sire included in test
- Minimise number of farms supplying each test batch
- Animals on test to be steers ideally aged 7-8 months
- Maximum 60 days spread of age in a batch
- Known management prior to testing
- Adherence to agreed health protocol

Ongoing measurement for generation of breeding values

In order to generate breeding values for new sires after the initial establishment phase for any breed, each sire would need a group of approximately 8 progeny to be submitted for feed intake recording.

To maintain the relevance of the EBVs and provide values for young sires ongoing measurement is important.

Business models

The BFEP consortium is keen to explore possible business models that could facilitate the ongoing production of breeding values for feed efficiency across the beef industry.

The Beef Feed Efficiency Programme team invite anyone interested in recording the genetic merit of their cattle for feed efficiency to make contact and they will willingly investigate the potential options available.

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