

# Breeding animals that have younger age at slaughter

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## Summary

- Age at slaughter is a key trait for beef herds to reduce costs and improve environmental efficiency.
- Significant differences exist in genetic potential to reduce age at slaughter within and across breeds.
- Ireland is the first in the world to include age at slaughter in national breeding objectives.

## Improvements in beef breeding

Beef breeding has traditionally focused on selecting fast growing, heavy and well-muscled animals. These traits are important drivers of performance. One trait missing until now was age at slaughter, with younger age (i.e. easily fleshed) being desirable. Cattle that can be slaughtered at a younger age are more efficient as these animals incur less cost (i.e. reduced feed, labour, housing, etc.). Not only is reducing age at slaughter economically beneficial it is also environmentally beneficial.

## Breeding for age at slaughter

Breeding decisions in dairy herds create the genetic products (i.e. calf offspring) that have economic and environmental consequences for the viability of the beef herds that rear and finish the non-replacement dairy herd offspring. Reducing the age at slaughter on beef herds has been identified as a key trait to improve the sustainability of beef herds. Although on-farm decisions and management play a large role in the age cattle are slaughtered at, 30% of the inter-animal variability in age at slaughter is under genetic control. For example, almost 40 days variation in age at slaughter exists between active beef sires that are easy calving (i.e. <4% dairy cow calving difficulty).

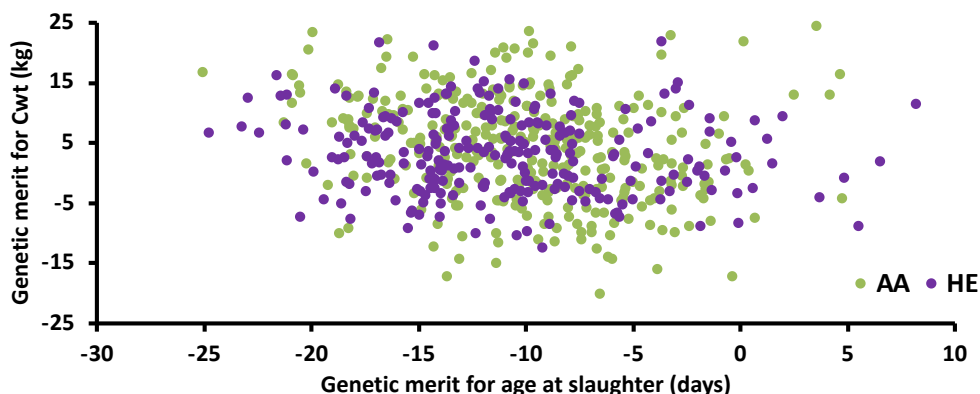
The economic value for age at slaughter is estimated across the year to be €1.35 per day. This includes costs such as maintenance for an additional day, labour, facilities, capital, depreciation and veterinary costs. The difference between selecting the best and worst sire for age at slaughter (difference of 40 days) is worth €54 per animal to the beef finisher on average across the whole year. Nevertheless, these costs vary greatly throughout the year, with costs during winter of approximately €5 per day. At a cost of €5 per day, progeny from the best sire would cost €200 less to slaughter compared to progeny of the worst sire.

## Breed differences

There is a large difference between breeds in age at slaughter. Early maturing breeds (i.e. Angus and Hereford) are, on average, younger at slaughter compared with continental and dairy breeds. Nevertheless, the difference between breeds managed similarly on farm was less than expected. For example, progeny of Belgian Blue sires are expected to be only 13 days older, on average, compared with progeny of Angus sires. There is as much variation within breed as across breed. The progeny of the top 5% of Angus sires for age at slaughter were 16 days younger than the progeny of the bottom 5% of Angus sires. The difference in age at slaughter between the progeny of the top and bottom 5% with the Belgian Blue sires is 10 days. Some continental breed sires produced progeny with younger age at slaughter compared with early maturing sires. These genetic differences are based on the cattle performance on average beef herds. In well managed beef herds, the difference between sires divergent in age at slaughter is much greater.

### Will this reduce carcass weight?

A potential concern with breeding for animals that are younger at slaughter is the possible reduction in carcass weight. In fact, the relationship between age at slaughter and carcass weight is very weak (Figure 1). This weak association means that both traits can be selected for independently of each other. This means age at slaughter and carcass weight traits can be selected for within for breeding objective, and improvements in both traits can be achieved at the same time.



**Figure 1.** The relationship between breeding values for carcass weight (Cwt) and age at slaughter for Angus and Hereford Sires

### How can you breed for age at slaughter?

The Irish Cattle Breeding Federation (ICBF) recently launched age at slaughter breeding values for all animals. These breeding values have been incorporated in to our national breeding objectives: the Economic Breeding Index (EBI) and the Dairy Beef Index (DBI). These are the first breeding objectives in the world to include age at slaughter as a goal trait. The breeding advice for dairy farms is to select dairy sires based on the EBI and DBI, which will both select for genetic improvement in age at slaughter as well as other economically important traits.

### Conclusion

Age at slaughter is increasing in importance due to economic and environmental challenges facing beef herds. Dairy farmers now have the tools to be able to select sires that produce replacement dairy heifers to suit their herd while also producing non-replacement beef calves that are suitable for the beef herd. Selecting sires based on the DBI to generate all non-replacement calves will generate offspring with good carcass potential with early finishing ability, as well as ensuring calving ease for the dairy farmer.