

# Insights into the sexual development of cattle

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The costs involved in producing a young bull or heifer replacement necessitate that both genders are eligible for breeding as soon as possible and are subsequently sustained within the herd.

Bio-economic studies conducted by Teagasc show that heifers that are bred at the start of their first breeding season and subsequently calve at 24 months of age are much more profitable and produce lower greenhouse gas emissions than their later-calving contemporaries.

Despite its importance, age at puberty is a trait that has received relatively little research attention and is not routinely measured at farm level.

In a series of studies led by Teagasc and funded by both Science Foundation Ireland and the Department of Agriculture, Food and the Marine, we investigated the underlying biology

of sexual development in both bull and heifer calves, including the influence of diet and genetics.

We offered both male and female calves either a high or moderate feed allocation at various stages of development from shortly after birth onwards.

Age at puberty onset was measured in both genders together with other fertility-related traits.

## Results

The results indicate that nutrition and rate of bodyweight gain during the first six months of a calf's life has a much greater effect on the age at which either bull or heifer calves reach puberty, and thus are eligible for breeding, than diet or performance thereafter.

The work has also provided novel insights into the underlying biological mechanisms and some of the key genes affecting sexual development in cattle, which, following further validation, could be utilised as part of future national cattle breeding programmes.



## Native grains and proteins

There is growing interest in exploiting locally-produced cereal and legume protein crops, particularly to reduce reliance on imported feedstuffs.

Two recent experiments at Teagasc Grange compared intake, growth and carcass traits of steers that were offered grass silage and contrasting cereal grain types supplemented with flaked beans, flaked peas or maize by-products.

In experiment one, the feeding value of oats was equal to barley, and beans were superior to peas.

In experiment two, the feeding value of barley was equivalent to maize meal, and beans or peas were equivalent to maize dried distillers' grains or corn gluten feed.

—Mark McGee, Rian Kennedy, Edward O'Riordan, Aidan Moloney

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