

## Crimped maize grain for finishing beef cattle

Maize silage is widely regarded as an ideal forage for finishing beef cattle. However, there is growing interest in feeding maize grain to cattle due to its high energy (14.3 metabolisable energy (ME) MJ/kg dry matter (DM)) and starch (71% DM) content, as shown in Table 1.

Table 1: Average nutrient composition of maize grain and maize silage

	DM (%)	ME (MJ/kg DM)	Crude Protein (CP) (%)	Neutral Detergent Fibre (NDF) (%)	Oil (%)	Starch (%)	Sugars (%)
Maize grain	86	14.3	8.5	12.1	4.3	71.0	2.0
Maize silage	30	11.2	8.5	40-55	2.9	20-35	0.5

A study carried out by Harper Adams University, funded by AHDB Beef & Lamb, investigated the effect of feeding crimped maize compared to barley to intensively finished dairy-bred bulls through to slaughter.

### Methodology

36 Holstein and beef-cross Holstein-bred bulls, weighing 360kg, were reared through to slaughter and fed rations based on either *ad libitum* (*ad lib*) rolled barley or crimped maize grain. Both rations were formulated to contain 140g crude protein(CP)/kg DM (Table 2).

The maize grain (variety:Benicia) was grown under plastic mulch and harvested on the 19 October 2009, with a dry matter content of 620g/kg. It was crimped and ensiled with 4l/t inoculant (Pioneer 11A44).

### Results

Feeding crimped maize grain resulted in significantly higher daily liveweight gains (1.51 vs 1.34kg), with bulls being slaughtered 12.9 days earlier than those cattle finished on the traditional rolled barley mix. There was no significant difference in carcase weight and killing-out percentage.

Livers were assessed at the abattoir, and there was a trend for the crimped maize grain-fed bulls to record lower liver damage scores. Liver abscesses are associated with acidosis from feeding high starch-based diets, so this result suggests that cattle fed maize grain had lower levels of rumen acidosis due to the higher proportion of by-pass starch in crimped maize.

Total intakes on a fresh weight basis were relatively similar, however, due to the lower dry matter content of the crimped maize mix (66% vs 84%), daily and total dry matter intakes were markedly lower for the crimped maize-fed bulls. Those bulls recorded a 27% better feed conversion ratio (8.2 vs 11.3kg DMI/kg carcase gain) than barley fed bulls.

Crimped maize grain offers significant potential to improve cattle performance, reduce feed costs and increase margins compared to barley, provided good crops of crimped maize can be grown (10t/ha at 65%DM).

Table 2: Ration composition (kg/tonne as fed)

Feeds	Barley Mix	Crimped Maize
Rolled barley	845	0
Crimped maize	0	859
Rapeseed meal	40	61
Soya bean meal	40	61
Molasses	50	0
Minerals	25	19

More information on feeding maize can be found in the Better Returns Programme Manual [Growing and Feeding Maize Silage for Better Returns](#), and in the [Cereals Directory](#).