

Wholecrop wheat for finishing beef cattle

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Simon Marsh carried out a project looking at the effect of feeding either fermented wholecrop (FWC) or cracked head-cut or low-cut urea treated wholecrop wheat (alkalage) in comparison to *ad libitum* (ad lib) cereals, on the performance of continental crossbred suckler steers.



Method

The trial was carried out in 2003, each of the wholecrop forages were made from the same field of winter wheat, and the crop had a standing height of 75cm at harvest.

The treatments for each forage type were:

- **FWC:** cut at a stubble height of 30cm and treated with an inoculant, producing a yield of 13.8t/ha dry matter (DM)
- **Low cut alkalage:** Cut at a stubble height of 30cm with a forage harvester fitted with a primary processing mill and treated with 40kg/tonne Home n' Dry. The crop produced a yield of 14.2t/ha DM
- **Head-cut alkalage:** Cut at a stubble height of 50cm with a forage harvester fitted with a primary processing mill and treated with 40kg/tonne Home n' Dry. The crop produced a yield of 12.1t/ha DM

54, ten month old weaned $\frac{3}{4}$ bred Limousin suckler steers were fed on the diets shown in Table 1.

Diet	Description
Cereals	13% crude protein (CP) barley mix* plus straw from racks
FWC2	Fermented wholecrop plus 2.0kg 20% CP concentrates**
FWC4	Fermented wholecrop plus 4.0kg 20% CP concentrates
HCA	Head-cut alkalage plus 100g minerals
HCA + L	Head-cut alkalage plus 500g ⁺ Lactofeed plus minerals
LCA + L	Low-cut alkalage plus 500g ⁺ Lactofeed plus minerals

Table 1: Details of the different diets fed

* 85% rolled barley, 8% soyabean meal, 5% molasses, 2% minerals

** 67% rolled barley, 14% rapeseed meal, 14% soyabean meal, 5% molasses

⁺ Lactofeed (lactose) utilises the ammonia within alkalage to create microbial protein.

Results

The results showed that the steers slaughter weight, days to slaughter and daily liveweight gain were all significantly affected by diet. Steers produced the fastest daily liveweight gains when fed the cereal ration (1.42 kg/day), whereas the lowest liveweight gains were seen when the cattle were fed the low cut alkalage plus Lactofeed ration (1.01 kg/day). The head cut alkalage was found to have a similar liveweight gain to the cereal diet (1.37 kg/day) (Table 2).

	Cereals	FWC2	FWC4	HCA	HCA+L	LCA+L
Start weight (kg)	264	265	266	268	266	266
Slaughter weight (kg)	505	494	513	517	525	483
Days to slaughter	170	202	192	194	190	209
Daily liveweight gain (kg)	1.42	1.12	1.29	1.23	1.37	1.01

Table 2: The effects of diet on animal performance

The cereals and HCA+L diets would be appropriate for bull beef finishing systems. The fermented wholecrop, HCA and LCA+L rations are appropriate diets for steers and heifers finishing on semi-intensive systems.

Gross margins per head were calculated for each of the rations, based on a 365 day feeding period. Fermented wholecrop plus 2kg concentrates and head cut Alkalage produced the lowest feed costs per kg gain (38p), in contrast, cereals produced the highest feed cost per kg gain (48p). The highest gross margin per head was achieved by the head cut Alkalage (£122/head), which was greater than the cereal ration at £103/head (Table 2).

	Cereals	FWC2	FWC4	HCA	HCA+L	LCA+L
Feed conversion ratio (kg feed DM: kg gain)	5.51	5.90	5.86	5.79	5.84	5.76
Feed cost per kg gain (p)	48	38	44	38	46	45
Gross margin / head (£)	103	110	105	122	107	85
Stocking rate (cattle/ha)	3.15	5.26	4.38	4.74	4.48	6.94
Gross margin/ ha (£)	695	1,047	875	1,089	922	1,036

Table 2: The financial implications of feeding the different diets

Feed costs and finished beef prices based on those prevailing at the time of the study in 2003

All of the wholecrop systems had significantly higher margins per hectare compared to the cereal diet, which could be attributed to the higher stocking rates attainable with the wholecrop system.

This study highlighted that head cut whole crop wheat could offer beef finishers the opportunity to achieve high levels of animal performance and reduce feed costs per kg gain when compared to diets based on rolled barley. However, for a beef producer to change over from a cereal beef system to wholecrop may require investment in feed storage and handling facilities.