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Animal Science Research Centre - Beef Unit Trial Results – 2008 (b)

Evaluation of rapeseed meal and a urea based concentrate for cereal fed beef cattle

Introduction & Objective:

Intensive cereal beef rations are typically formulated to contain 12-14% CP (as fed). Since barley contains 10.4% CP a protein rich feedstuff must therefore be included in the ration. Rapeseed meal contains 34% CP and is commonly used. Some proprietary protein concentrates, which are also usually mineralised, include feed grade urea (287% CP) and formulated to contain 34-80% CP to mix with cereals at 50-100kg/t. Some nutritionists consider that urea is not a suitable protein supplement for cereal finishing bulls. The objective of this experiment was to determine the effect feeding a cereal based ration including either rapeseed meal or urea as the protein source on the performance of intensively finished dairy-bred bulls.

Animals & Timing:

Jan-Feb 2007 born Holstein bulls @ 290kg finished Feb-April 2008.

Rations:

The following rations were formulated to be iso-nitrogenous (13.3% CP as fed) and iso-energetic (12.9 ME MJ/kg DM) and fed *ad lib* with straw offered from racks.

Rape

The rape based ration contained 69% rolled barley @ £155/t, 10% beet pulp £157/t, 14.5% rapeseed meal @ £225/t, 5% molasses @ £95/t, 1.5% minerals @ £275/t. The ration cost was £169/t (July 2007).

Urea

The urea based ration contained 80% rolled barley, 10% beet pulp, 5% Promol 80 (mineralized urea) @ £420/t and 5% molasses. The ration cost was £170/t. Both rations included £5/t for mill and mixing.

Results:

Table 1: Animal performance

	Urea	Rape	Sig
Slaughter wt (kg)	549	541	NS
DLWG from 290kg (kg)	1.31	1.28	NS
Age at slaughter (months)	13.5	13.5	NS

NS = not significant

Table 2: Carcase characteristics

	Urea	Rape	Sig
Carcase wt (kg)	284.4	279.2	NS
Killing out %	51.8	51.6	NS
Carcase DG (kg from start)	0.75	0.73	NS
Carcase grade	-03	-03	NS

Table 3: Feed intakes (kg/bull) feed conversion ratio (FCR) and margins

	Urea	Rape
Feed use from 290kg livewt (kg/bull)	1,740	1,680
FCR (kg feed: kg LWG)	6.7	6.8
Feed cost (£/kg LWG) - July 2007	1.14	1.15
Margin over Feed and store bull costs (£/bull) - April 2008	89	92

Conclusions:

- There were no significant differences between the treatments.
- The FCR's appear to be relatively poor at 6.7-6.8 compared to the target of 5.5:1. It must be noted that the trial did not include the period of growth from 110kg to 290kg. During this rearing phase Holstein bulls at Harper Adams typically record a DLWG of 1.52kg with an FCR of 3.3:1 with an intake of 625kg of feed.
- From the experiment it can be concluded that replacing rapeseed meal with urea does not affect physical or financial performance with 300+kg Holstein bulls.

Note:

Urea is a very concentrated source of non-protein nitrogen that can be used by ruminants to make microbial protein. Urea must be thoroughly mixed into the ration and fed alongside an energy source which is the case with intensive cereal beef rations. Urea must be introduced gradually, should not be fed neat or in restricted trough feeding systems when high levels of concentrates are fed. Urea is not suitable for animals under 3 months old.

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