

Animal Science Research Centre - Beef Unit Trial Results – 2012 (b)

Effect of feeding a Yeast Culture (Diamond V XPLs) on the performance of intensively finished bulls

Introduction:

Yeast cultures, such as Diamond V XPLs (XPLs Yeast Culture: Diamond V, Cedar Rapids, IA, USA) are pre-fermented products containing the metabolites produced from *Saccharomyces cerevisiae* yeast fermentation, dead yeast cells and the growth media. This yeast culture is incubated and dried in a manner that preserves all the fermentation metabolites. Previous work with yeast culture supplements would suggest that production responses, as a result of supplementing ruminants with yeast cultures may be related to their stimulatory effects on specific groups of micro-organisms in the rumen.

The objective of this experiment was to determine the effect of feeding a yeast culture (XPLs) on the performance of intensively finished dairy-bred bulls fed *ad libitum* cereals through to slaughter.

Materials & Method:

36 Jan-Feb 2011 born dairy-bred bulls weighing 320kg @ 7 months old. There were 26 Holstein and 10 Continental x Holstein bulls. Slaughtered Feb-April 2012. Bulls randomized to the following treatments formulated to contain 12% CP 'as fed':

Control

Ad lib barley mix containing 84.5% rolled barley, 4% soyabean meal, 4% rapeseed meal, 5% molasses and 2.5% minerals.

XPLs Yeast Culture

Ad lib barley Mix containing 84.1% rolled barley, 4% soyabean meal, 4% rapeseed meal, 5% molasses, 2.5% minerals and 0.4% XPLs.

Straw was offered *ad lib* from racks. The Barley and XPLs Mixes cost £172.81 and £178.40/t respectively. Costings were based on the following feed prices: rolled barley @ £152/t, soyabean meal @ £288/t, rapeseed meal @ £190/t, molasses @ £130/t, minerals @ £350/t, XPLs @ £1,550/t.

Results:

Table 1: Animal performance

(Kg/bull)	Control	XPLs	Sig
Start wt	318	319	NS
Slaughter wt	570	581	NS
Days to slaughter	204	198	NS
DLWG	1.23	1.32	*

NS = not significant, * = P<0.05

Overall bull performance was good with the Holsteins recording slaughter weights of 555kg at 13.4 months old compared to the EBLEX target for intensively finished cereal fed Holstein bulls of 540kg at 13 months old. The Continental cross Holstein bulls were slaughtered at 619kg at 13.7 months old compared to the target of 570kg at 14 months.

Table 2: Carcase characteristics

	Control	XPLs	Sig
Carcase wt (kg)	300	311	NS
Kill out (%)	52.5	53.3	NS
Carcase daily gain (kg)	0.74	0.81	*
Conformation¹ (1-7)	2.5	2.5	NS
Fat class¹ (1-7)	2.7	2.9	NS
Liver score² (1-5)	1.06	1.13	NS

¹ EUROP carcase classification: Conformation: P+=1 and E=7, Fat class: 1=1 and 5H=7.

² Liver assessment: 1= Healthy liver and 5 = Severe abscesses

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

	Control	XPLs
Total concentrate intake	1,719	1,792
Daily concentrate intake	8.43	9.05
FCR (kg feed: kg gain)	6.82	6.84
FCR (kg feed: kg carcase gain)	11.39	11.17

The FCR's appears relatively high for the bulls compared to the EBLEX target of 5.4:1 but it must be taken into consideration that the trial did not include the period of growth from 110kg to 320kg. During this rearing phase dairy-bred bulls at Harper Adams typically record a DLWG of 1.52kg with an intake of 720kg of feed with an FCR of 3.4:1.

Table 4: Financial performance

	Control	XPLs
Carcase value (£)	959	993
Feed costs (£/bull)	297	319
Margin over Feed (£/bull)	662	674

Discussion & Conclusions:

- Overall performance of the bulls was good, both achieving and exceeding the EBLEX targets for intensive cereal beef production.
- The XPLs fed bulls recorded significantly higher ($P<0.05$) DLWG and carcase daily gains.
- There were no significant differences in carcase classification or liver scores. Liver damage is associated with acidosis.
- The XPLs fed bulls recorded an increased feed intake consuming 0.58kg more feed per day and overall some 73kg more. The XPLs fed bulls recorded an improved FCR per kg carcase gain
- Based on the costs prevailing at the time of the study the highest margin over feed was recorded with the XPLs fed bulls which was increased by £12. The margin over feed would be significantly higher if the bulls were fed on XPLs from 3 months old.
- The XPLs bulls were slaughtered some 6 days sooner than the Control bulls. If other costs such as machinery, water and electricity are costed at 15p/day this is worth an additional £0.90 per bull resulting in an overall increase of £13 per bull.
- From birth to slaughter the Control and XPLs bulls recorded gross margins of £312 and £325 per head respectively. An improvement in gross margin of £13 by feeding XPLs yeast represents an increase of 4.2%.

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