Research Notes B-84

Arm & Hammer Animal and Food Production

Supplementation with CELMANAX in heat-stressed finishing feedlot cattle boosted efficiency and performance.

STUDY OVERVIEW

- This trial[1] was conducted in finishing feedlot cattle to determine the effect of CELMANAX™ on growth performance, dietary energetic and carcass characteristics.
- 80 crossbred steers were used in a 229-day trial and randomly assigned to 5 steers/pen and 4 pens/treatment. There were 4 treatments tested:
  - Control diet (82.5% concentrate finishing diet, Table 1)
  - Control diet plus 1 g/head/day of CELMANAX SCP
  - Control diet plus 2 g/head/day of CELMANAX SCP
  - Control diet plus 3 g/head/day of CELMANAX SCP
- A standard steam-flaked corn-based finishing diet supplemented with Rumensin® was fed. Cattle were implanted with Revalor®-IS at receiving and re-implanted with Revalor-S at day 112.

RESULTS

- There were no effects of CELMANAX during the first 84 days of supplementation
- From day 84 to finishing, CELMANAX supplementation tended to improve average daily gain (ADG) (*P*=0.08) and feed conversion (*P*=0.09, Figs. 1&2).

TABLE 1	Basal Diet % (DM Basis)
Item	**Control**
DDG	20.0
Flaked Corn	57.7
Limestone	1.6
TM Salt	0.4
Magnesium Oxide	0.1
Urea	0.85
CELMANAX, g	0.0
Rumensin, 90 g	6.77
Yellow Grease	2.3
Cane Molasses	5.0
Sudangrass Hay	12.0

FIGURE 1: Average Daily Gain during Heat Stress[1]

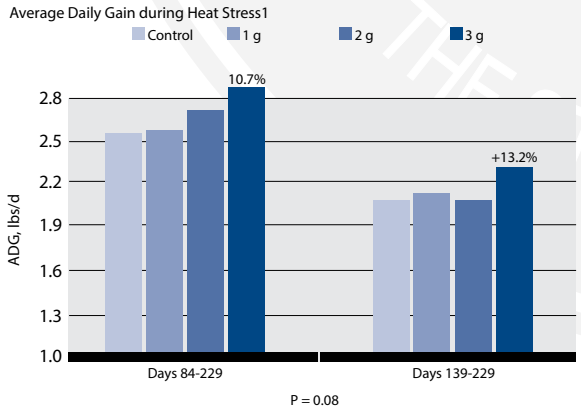
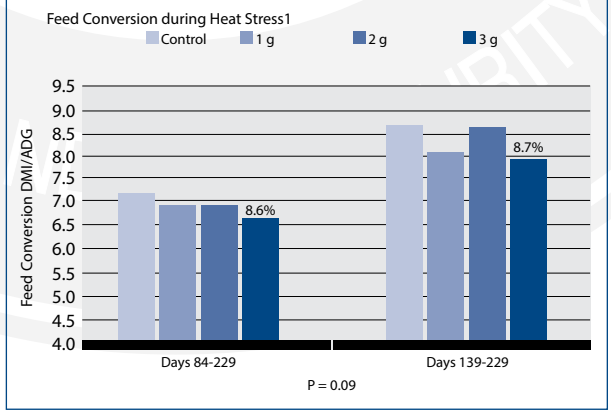


FIGURE 2: Feed Conversion during Heat Stress[1]



- From day 139 to finishing, CELMANAX™ increased ADG (*P*=0.05) and dry matter intake (DMI, *P*=0.03) (Figs. 1&2).
- ADG and feed conversion were enhanced during an intense heat stress period at the end of the finishing phase, indicating that supplementation with CELMANAX could have a beneficial effect under heat stress conditions.

TABLE 2	Growth Performance CELMANAX SCP Levels, g/hd/d					
Item	**Control**	**1**	**2**	**3**	***P*-value**	**Diff**
Initial Wt, lbs.	517.0	514.6	517.0	515.9		
84 d Wt, lbs.	838.0	818.4	812.5	826.8		
Final Wt, lbs.	1210.4	1199.4	1206.5	1245.9		35.5 lbs.
ADG lbs/d						
1-84 d	3.83	3.61	3.52	3.70	NS	
84-229 d	2.57	2.62	2.73	2.88	0.09	10.7%
139-229 d	2.02	2.16	2.13	2.33	0.05	13.2%
1-229 d	3.04	2.99	3.01	3.19	NS	
DMI, lbs/d						
1-84 d	15.22	15.27	14.50	15.05	NS	
84-229 d	18.46	18.26	18.83	19.03	NS	3.0%
139-229 d	17.62	17.56	18.44	18.48	0.03	4.8%
1-229 d	17.27	17.16	17.25	17.58	NS	
DMI/ADG						
1-84 d	3.98	4.22	4.12	4.07	NS	
84-229 d	7.19	6.94	6.94	6.58	0.09	8.5%
139-229 d	8.70	8.13	8.62	7.94	NS	8.7%
1-229 d	5.71	5.75	5.81	5.52	NS	
Carcass Wt, lbs.	790.2	786.9	779.2	803.0	NS	12.8 lbs.
Dressing %	65.3	65.6	64.6	64.5	NS	
KPH, %	2.56	2.71	2.86	2.58	0.05	
Fat Thickness, in	0.57	0.54	0.52	0.49	NS	
Rib Eye Area, In²	13.2	13.1	12.6	12.5	NS	
Retail Yield, %	49.3	49.3	49.1	49.1	NS	

- There was a $50/head advantage to using 3 g/head/day of CELMANAX™ over the 145-day heat stress period.

ECONOMIC BENEFIT WORKSHEET EFFECTS OF DIETARY SUPPLEMENTATION OF CELMANAX SCP ON PERFORMANCE OF HEAT-STRESSED FEEDLOT STEERS (DAYS 84-229)			
STUDY DATES		**START**	**FINISH**
		2/15/2012	10/1/2012
Average Days of Heat Stress		145	
No. Cattle/TMT		20	
Beef Price, $/lb		$1.25	
Performance		**Control**	**CELMANAX SCP, 3 g**
84 d Wt, lbs.		838.0	826.8
Final Wt, lbs.		1210.4	1245.9
Gain, lbs.		372.4	419.1
	Difference, lbs.		**46.7**
Profit			
Performance Profit, $/hd			$58.37
Gross Profit, $/hd			**$58.37**
Cost			
145 d CELMANAX Est. Cost $/hd			$7.67
		Net Profit, $/hd	**$50.70**
		ROI	**6.6 TO 1**

Calculations based on price of beef, diet and product cost in 2012.

CONCLUSIONS

- Feedlot cattle supplemented with CELMANAX during the finishing period demonstrated improvements in performance during periods of intense heat stress.
- Cattle showed an 8.6% improvement in feed conversion rates and a 10.7% increase in gain (84 – 229 d), likely due to better feed absorption and utilization in the gut.

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[1] Adapted from the data of: Montano M, Plascencia A, Torrentera N, Ware R, Zinn R. Influence of feeding yeast cell wall extract on growth performance of feedlot cattle during periods of elevated ambient temperature. *J Anim Sci* 2013;91,E-Suppl. 2,T15.

This research was conducted under the brand name TRUMAX.