

EFFECT OF YEAST CULTURE ON APPARENT DIGESTIBILITY AND NITROGEN BALANCE IN HORSES

Summary

(Richard Godbee, Clemson University, Clemson, SC - 1983)

Four three-year old Quarterhorse geldings, averaging approximately 1,000 pounds, were randomly assigned to one of four initial diets to determine apparent digestibility and nitrogen balance. The four diets consisted of 70% roughage or 50% roughage, with or without supplemental Yeast Culture (Diamond V Yeast Culture). Dry matter intake was approximately 17.5 pounds per head per day, and a twice daily feeding schedule was observed. Experimental diets are presented in Table 1. A 4 x 4 latin square design was used, with a 14-day dietary adjustment period between treatment changes, followed by a 6-day total fecal and urinary collection period. Daily aliquots of 2% and 5% for total feces and urine, respectively, were composited for analyses. A three-day rest period followed each collection period. Table 2 shows the results of apparent digestibility for each treatment diet, plus the Yeast Culture pooled effect. It also shows the nitrogen balance data for each treatment.

Table 1: Experimental Diets

Feedstuff	70% Roughage		50% Roughage	
	Control	Yeast Culture	Control	Yeast Culture
Coastal Bermuda Pellets	70.00	70.00	50.00	50.00
Corn	21.95	21.00	37.20	39.61
Soybean Meal	1.90	1.65	—	—
Molasses	5.00	5.00	4.00	4.00
Limestone	0.05	0.10	0.30	0.28
Defluorinated Phosphate	0.10	—	—	—
Vitamin Premix	0.50	0.50	0.50	0.50
Trace Mineralized Salt	0.50	0.50	0.50	0.50
Yeast Culture	—	1.25	—	1.25
Oats	—	—	7.50	3.86

NOTE: Yeast Culture intake was approximately 4 oz./day.

Table 2: Apparent Digestibility and Nitrogen Balance

Item	Roughage X Yeast Culture		70% Roughage		50% Roughage		YC Effect Pooled		
	C ^A	YC ^A	C	YC	C	YC	C	YC	
	-----Percent Apparent Digestibility-----								
Dry Matter	48.0	49.0	54.7	55.5	51.3	52.3			
Crude Protein	48.2	47.0	44.7	49.9	46.5	48.5			
Ash	1.8	8.4	9.0	2.5	5.4	5.5			
Calcium	-5.4	13.9	5.9	7.2	-0.3	10.6			
Phosphorus	-12.9	-2.3	-5.5	5.3	-9.2	1.5			
Acid Detergent Fiber	22.5	25.6	21.5	20.5	22.0	23.1			
Neutral Detergent Fiber	34.6	37.0	37.4	38.2	36.0	37.6			
Hemicellulose	46.5	48.3	50.4	53.0	48.5	50.3			
Nitrogen Balance									
N Intake (g/d)	116.8	109.2	101.2	111.6	109.0	110.4			
Fecal N (g/d)	60.8	58.0	55.2	56.0	58.0	57.0			
Urinary N (g/d)	45.7	41.0	46.5	44.2	46.1	42.6			
Retained N (g/d)	10.3	10.2	-0.5	11.4	4.9	10.8			
Retained N (% Intake)	8.9	9.2	-4.2	10.1	4.5	9.8			

^ANOTE: C = Control; YC = Yeast Culture