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EVALUATION OF HIGH-ENERGY CALF STARTER FOR EARLY-WEANED CALVES

W. H. Carinder, P. G. Reddy, and J. L. Morrill

Summary

An experimental calf-starter diet containing roasted whole soybeans, buffer and dehydrated alfalfa pellets was compared with a conventional calf starter for young calves on an early-weaning program. Overall means for weight gains, dry feed consumption, and fecal scores were similar for the two treatments. However, calves fed the experimental calf starter showed a trend toward higher gains at 4 and 5 wk of age. More fat than necessary in the diet and feeding of prestarter until 8 wk of age may have precluded finding significant benefits with the experimental starter.

Introduction

Whole soybeans processed by roasting have not been evaluated in the early-weaning program. Ground alfalfa has been used as an ingredient in calf starters for many years; however, some dairy producers do not have ground hay available for use. One possible substitute is ground, pelleted, dehydrated alfalfa. Formerly, some dehydrated alfalfa was not palatable for young calves. Currently lower temperatures and less heat are used to dehydrate alfalfa, resulting in a product that is apparently more palatable. In some experiments, adding sodium bicarbonate to calf starters has improved calf growth, but this ingredient has not been used in a starter for an early-weaning system.

Studies are needed to evaluate roasted whole soybeans, dehydrated alfalfa, and sodium bicarbonate in a starter used in an early-weaning system.

Procedures

Thirty Holstein heifer calves (15 per group) were allotted at birth to two treatments: 1) a conventional calf starter, or 2) an experimental calf starter. The ingredient compositions of the calf starters are presented in Table 1. The conventional starter was pelleted (3/16 in diameter). Calves were fed colostrum for 3 days after birth, then milk at 8% of birth weight until weaning. All calves were stimulated to eat dry feed by putting a small amount of prestarter¹ in their milk. Prestarter was available ad libitum until consumption reached 0.5 lb daily, then a small amount of starter was added daily to 0.5 lb prestarter. Starter was increased as consumption increased. Each calf was weaned when consuming 1.5 lb dry feed per day. Chopped prairie hay was available ad libitum. Calves were on experiment for 8 wk. Weekly weight gains; consumption of prestarter, starter, and hay; and fecal scores were recorded.

¹Calf-weena pellets, Merricks, Inc., Union Center, Wisconsin.

Results and Discussion

Results on weight gains; consumption of prestarter, starter, and hay; and fecal scores at different weeks of age and the overall means are presented in Table 2. There were no significant differences between treatments for any of the responses measured. However, calves fed the experimental calf starter tended ($P<.10$) to gain more weight at 4 and 5 wk of age, to have higher ($P<.05$) fecal scores at 3 wk, and to show lower ($P<.05$) hay consumption after 6 wk of age.

More fat than necessary and feeding of prestarter until 8 wk of age may have precluded any significant benefits with the experimental starter. The trend toward higher weight gains at 4 and 5 wk of age could have been due to the buffer and/or roasted soybean meal in the diet. The benefits of including these two ingredients in the starter might be increased by limiting the feeding of prestarter (rich in protein) to 5 or 6 wk of age.

The conventional calf starter was chosen because it has been used, with satisfactory results, in several experiments at KSU. We may conclude from these results that the experimental starter would also be an acceptable starter. Several factors may have reduced benefits from the conventional starter. These include more fat than necessary in the experimental diet, feeding the conventional starter in pelleted form, and feeding of prestarter until 8 wk of age. Further research is needed to evaluate the experimental starter with less fat, in pelleted form, and when the prestarter is limited to 4 or 5 wk of age.

Table 1. Ingredient composition of calf starters

Ingredient	Conventional	Experimental
Corn, rolled	30.0	17.1
Oats, rolled	20.0	29.1
Soybeans, roasted		24.3
Sorghum grain, rolled	7.5	10.3
Alfalfa hay, ground	25.0	
Dehydrated alfalfa, pelleted		9.6
Molasses, dried	5.0	5.0
Soy oil		1.0
Sodium bicarbonate		0.9
Soybean meal	10.0	0.5
Dicalcium phosphate	.70	
Limestone, ground	.30	
Salt	.25	
Salt, trace mineral	.25	
Mineral and vitamin premix		2.2
Vitamin and selenium premix	1.00	

Table 2. Weight gains, feed consumption, and fecal scores of calves fed different calf starters

Item	Treatment ¹	Weeks of Age								Overall Change ²
		1	2	3	4	5	6	7	8	
Weight gains (lb)	1	3.7	0.0	5.3	6.4	5.7	11.0	11.0	12.3	55.2
	2	2.6	0.2	4.8	9.0**	8.8**	11.2	10.8	12.8	60.3
Starter Consumption (lb)	1	0.2	0.4	2.0	4.6	10.1	18.3	26.6	31.9	93.9
	2	0.2	0.4	2.0	5.9	12.8	20.2	25.5	31.0	98.1
Prestarter Consumption (lb)	1	1.5	1.3	2.4	2.2	2.9	2.9	3.1	3.1	19.4
	2	1.3**	1.5**	2.4	2.4	2.9	2.9	2.9	3.1	19.2
Fecal scores	1	1.2	2.2	1.2	1.1	1.1	1.0	1.0	1.0	1.2
	2	1.2	2.1	1.6*	1.2	1.1	1.0	1.0	1.0	1.3
Hay Consumption (lb)	1	.02	.02	.40	.59	1.01	1.32	1.69	1.67	6.82
	2	.04	.04	.15	.48	.62	.75*	1.06*	1.14**	4.4*

¹1=Conventional starter diet, 2=Experimental starter diet.

²Cumulative change for all traits and average of fecal scores from birth to weaning.

*P<.05.

**P<.10.