USE OF SMARTAMINE IN RECEIVING RATIONS: EFFECTS ON PERFORMANCE OF LIGHT WEIGHT STOCKER CALVES

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Story in Brief

Fifty-four cross-bred spring born calves were early weaned in two weaning replications (May 5 and June 6, 1995) at an average age of 71 days of age. These calves were utilized to examine the effects of smartamine on calf performance during the receiving period (30 days) prior to grazing. All calves were placed in a drylot at the time of weaning and assigned by weight in a 2x2x3 factorial arrangement to one of two total mixed rations: 1) Control (CON) or 2) same control with the addition of 2 gr Smartamine M (70% DL-methionine) and 3 gr of Smartamine M+L (15% DL-Methionine, 50% Lysine, collectively, SMART). The basal diet consisted mainly of corn, cotton seed hulls and soybean meal was and formulated to provide 16% CP, .85 Mcals of Nem/lb, and .52 Mcals of NEg/lb on a DM basis. All weights were taken after a 14-hr shrink without feed or water. Animals were maintained by weight block and feed was offered twice daily with approximately 60% of the feed being offered at 0730 and the remainder at 1300 hours. Calves were monitored for health and no apparent sickness was observed in any treatment during the 30 day trial. Calves weighed approximately 206 lb at the beginning of the receiving period. Average daily gain over the 30-day receiving period tended to favor addition of SMART (2.02 lb/day) compared with CON (1.79 lb/day). Total feed intake and was similar for SMART and CON calves (6.54 vs 6.62 lb). Feed to gain was numerically smaller for SMART compared with CON calves (3.24 vs 3.74 lb feed:lb gain). Overall the use of SMART in receiving rations tended increase ADG and numerically increased the efficiency of that gain in the receiving cattle diet.

(Key Words: Stocker Calves, Receiving Period, Smartamine.)

Introduction

Industry demand for lighter calves going directly into the feedlot may require that stocker operators purchase lighter weight stocker calves. Developmental practices utilizing harvested forages and supplements may be adequate for a typical 500 lb stocker calf. However, gains of light weight calves may not be acceptable (Purvis and Lusby, 1995). Rations utilized during the receiving period must be palatable and contain enough nutrients to maintain

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growth in freshly weaned calves. Considering the limitation of dry matter intake, nutrient dense rations may be utilized to acquire efficient gain in the light weight stocker calves. The objective of this study was to evaluate the use of a total mix rarion (TMR) with or without the addition of Smartamine M and Smartamine M+L on receiving performance of the light weight stocker calves.

Materials and Methods

Animals and Treatments. Fifty-five spring born spring calves were early weaned in two weaning replications 30 days apart (May 5 n=33, or June 1, 1995 n=22), with an average age of 71 days. Calves at the time of weaning were weighed following an overnight shrink and assigned by weight to one of two experimental diets. Additionally, calves were blocked by weight into heavy (H; 245 lb), medium (M; 205 lb) and light (L; 166 lb) replications. Treatments were 1) control (CON) or 2) same as control with the addition of 2 gr of Smartamine M and 3 gr Smartamine M+L (SMART) (Table 1)). The basal diet was formulated to provide 16% CP, .85 Mcals of Nem/lb, and .52 Mcals of NEg/lb on a DM basis. Calves were maintained within a drylot pen, sorted by weight block and had free access to water.

Animal Feeding and Management. Bunks were managed so ad libitum intake was met within a 24-hr period and very little feed remained in the bunks the following morning. All pens were fed at approximately 0730 daily (60% of daily feed) and again at 1300 (40% of daily feed). Calves were on full feed within eight days following weaning. No feed refusals were noted and the ration appeared to be very palatable. All weights were taken following a 14-hr withdrawal from feed and water.

Statistical Analysis. All data were analyzed as a 2x2x3 factorial design utilizing the general linear models of SAS (1985). The initial model included weaning replication, treatment, weight block, and all two and three way interactions as independent variables. There was no weaning replication x treatment interaction for any parameter, therefore means reported herein are pooled treatment means. The final analysis utilized treatment and weight block. Means were separated using paired *t*-test.

Results and Discussion

Calves weighed 206 lb at the initiation of the trial. Calves in weaning replication 1 weighed 193 lb compared with 217 lb for weaning replication 2 ($P<.05$). Weight differences between the two weaning replications were similar to a previous study (Purvis, unpublished data) in which time of weaning significantly affected initial weight of calves at a similar age. This difference is probably due to the increased forage quality during the early spring. Cows with

calves that were early weaned during the second weaning replication had access to higher quality forage which would increase milk production.

Average daily gain tended (P=.07) to be greater for the SMART treatment compared with CON (2.02 vs 1.77 lb; Table 2). Weight block or initial weight of the calf tended (P=.09) to affect ADG independent of treatment. The H and M calves tended to gain faster compared with L calves (2.04, 1.89, vs 1.75 lb; P=.11, Table 3). Overall weight gains were greater (P=.07) for the SMART treatment compared with CON.

Daily dry matter intake was not significantly affected by treatment (SMART, 6.62 vs CON 6.54 lb/day). Additionally, efficiency of gain tended (P<.10) to favor the addition of Smartamine in the ration (SMART 3.24 vs CON, 3.74 lb feed/lb gain).

The addition of Smartamine increased average daily gain by 14% (P=.07). The efficiency of that gain was higher (P<.10) for SMART treated calves compared with controls. The observation that heavier, older calves gain faster than their younger lighter counterparts warrants further review. It appears that lighter calves may not be able to attain similar weight gains in the current management scheme. This may be due to limited intake or nutrient deficiencies with this diet for this weight of calf. The use of Smartamine in a receiving diet may increase weight gain of the light weight stocker calfs.

Literature Cited

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Table 1. Composition of diets.

Item	Control	Smartamine
Cottonseed hulls	14.7	14.6
Alfalfa pellets	14.9	14.9
Corn (rolled)	49.2	49.3
Soybean meal (47%)	14.6	14.6
Cane molasses	4.7	4.6
Limestone 38%	.09	.09
Dical	.05	.05
Vitamin E (50%)	.002	.002
Vitamin A	.0015	.0015
Deccox (grams/ton)	20.4	20.4
Smartamine M, grams[a]	0	2
Smartamine M+L, grams[b]	0	3

[a] Smartamine M is 70% DL-methionine by weight.

[b] Smartamine M+L is 15% DL-methionine and 50% Lysine by weight.

Table 2. Effects of Smartamine on light-weight calves during a 29-day receiving period.

Item	Control	Smartamine	P value
Beginning weight (lb)	207	204	.61
Ending weight (lb)	258	263	.43
Total gain	51.5	58.9	.07
ADG (30 day period)	1.77	2.02	.07
Average feed intake	6.62	6.54	.42
Feed:Gain	3.74	3.24	.38

Table 3. Effects of weight block on liveweight gain of light weight stockers during a 30 day receiving period.

Item	Weight replications[a]			P value
	H	M	L	
Beginning weight (lb)	245	205	166	N/A[b]
Ending weight (lb)	306	261	218	N/A
Total gain	61.2	57.1	52.5	.11
ADG (30 day period)	2.04	1.89	1.75	.13

[a] Weight replications: H =245, M = 205, L = 166 lb initial weight.
[b] Initial and ending weights by weight block were not analyzed.