BEEF CATTLE RESEARCH UPDATE

Britt Hicks, Ph.D., PAS
Area Extension Livestock Specialist
Oklahoma Panhandle Research & Extension Center

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Evaluation of Salt and Trace Mineral Sources and Growth Implants on Performance of Stocker Cattle

Forage surveys suggest that nearly all forages are deficient in one or more minerals and that there is a widespread occurrence of deficient levels of copper and zinc for beef cattle grazing forages. Thus, adequate minerals should always be available in any operation. Recent Kansas State University (KSU) research determined the efficacy of providing salt alone or with injectable trace minerals compared to a complete mineral supplement and growth implants for improving the growth of stocker calves grazing native grass pastures (May – July, 90 days) in the Flint Hills region of Kansas.[1]

In this study, 248 crossbred steers (698 lb) were randomized by initial weight across 15 pastures. The pastures were randomly assigned to three different treatment groups: (1) Salt block only; (2) Salt block and Multimin 90 (MultiMin USA, Inc., Fort Collins, CO) and (3) a KSU complete mineral formulated for 3 oz/day daily consumption. Multimin 90 is an injectable chelated aqueous supplemental source of trace minerals administered at 1 mL/100 lb body weight (1 mL contains 60, 10, 5, and 15 mg of zinc, manganese, selenium, and copper, respectively. The KSU mineral contained 11.9% calcium, 3.9% phosphorus, 32.5% salt, 1278 ppm copper, and 7812 ppm zinc. Within each pasture treatment group, equal number of steers were randomly given either: Ralgro (36 mg zeranol; Merck Animal Health, Madison, NJ) or Revalor-G implants (40 mg of trenbolone acetate and 8 mg estradiol; Merck Animal Health), or no implant.

These researchers reported that there was no growth response to salt block and injectable trace mineral supplementation when compared to a complete mineral supplementation. The average daily gains (ADG) for the three treatment groups were 1.63, 1.61, and 1.73 lb/day, respectively, for salt only, salt + Multimin, and the complete mineral (Table 1).

Table 1. Effects of mineral supplementation on stocker performance.

Item	Salt Block	Salt Block + Multimin	Complete Mineral
Number of pastures	5	5	5
Initial Weight, lb	698	685	700
Day 90 weight, lb	847	838	856
ADG, lb/day	1.63	1.61	1.73

Source: Weibert et al., 2018.

The average block salt intake was approximately 1.43 oz/head daily while the daily intake of the KSU complete mineral was 3.3 oz/head. It was noted that salt and complete mineral intakes of the stockers were fairly consistent throughout the 13-week trial, with greater usage rates associated with periods of high precipitation (Figure 1).

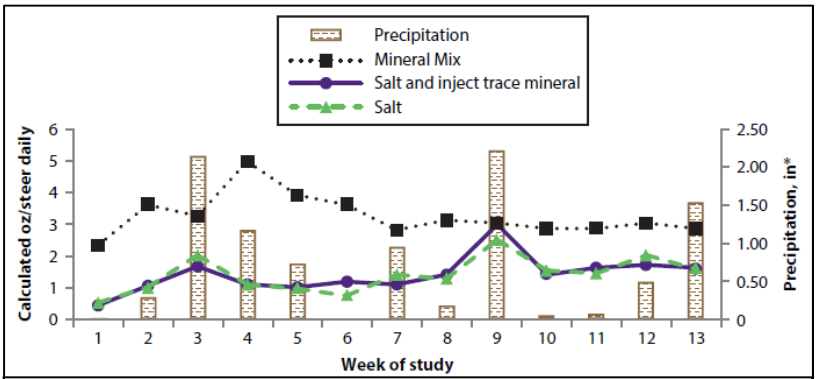

Figure 1. Calculated intake of salt and mineral provided to steers. * = Estimated values obtained from Climate Fieldview. Adapted from Weibert et al.,

These researchers also reported that calves implanted with either Ralgro or Revalor-G gained significantly faster than non-implanted calves (average of 12.7% faster; P=0.02). The ADG for the three treatment were 1.53, 1.75, and 1.70 lb/day, respectively, for no implant, Ralgro, and Revalor-G (Table 2). Implanted calves gained an average of nearly 19 lb more over the 90 day trial. These responses are similar to that reported in a 1997 review of research trials that evaluated the effectiveness of implanting stocker cattle. This review showed that a single implant will increase weight gain 8 to 18 percent, or 15 to 40 pounds, during the grazing season.[2]

Table 2. . Effects of implant on stocker performance.

Item	No Implant	Ralgro	Revalor-G
Number of steers	82	82	81
Initial Weight, lb	693	699	702
Day 90 weight, lb	830	857	855
ADG, lb/day	1.53[a]	1.75[b]	1.70[c]

[a,b,c]Means within a row with uncommon superscripts differ (P<0.05).
Source: Weibert et al., 2018.

[1] Weibert, C. S., T. J. Spore, M. A. Johnson, F. K. Brazle, G. L. Kuhl, W. R. Hollenbeck, R. N. Wahl, and D. A. Blasi. 2018. Evaluation of Salt, Trace Mineral Sources, and Growth Implants on Performance of Stocker Cattle Grazing Native Flint Hills Pasture. Kansas State Univ. Beef Cattlemen's Day Beef Cattle Research Kansas Agricultural Experiment Station Research Reports: Vol. 4: Iss. 1: 34-39.

[2] Kuhl, Gerry L. 1997. Stocker cattle responses to implants. p. 51-62. in: Symposium: Impact of Implants on Performance and Carcass Value of Beef Cattle. Okla. Agric. Exp. Sta. P-957, Oklahoma State University, Stillwater.