



EXTENSION

BEEF CATTLE RESEARCH UPDATE

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Effects of Intake of Monensin during the Stocker Phase and Subsequent Finishing Phase

The supplementation with ionophores, such as monensin, is a cost-effective and efficient way to increase the body weight and average daily gain of forage-fed calves. In addition, feeding monensin to growing/finishing cattle improves feed efficiency. A 2012 meta-analysis of 169 feedlot trials (published from 1972 to 2010) showed that feeding monensin across all the trials improved feed efficiency by 6.4%.¹ However, the improvement in feed efficiency was only 2.3 to 3.5% over the last 20 years of this dataset (1990 to 2010). This analysis also showed that monensin reduced dry matter intake (DMI) by 3.1% and increased average daily gain (ADG) by 2.5%. A 2016 survey of consulting feedlot nutritionists showed that 92.3% of their clients fed an ionophore in receiving cattle diets (77.3% fed monensin and 22.7% fed laslaocid) and 97.3% of their clients used ionophores in finishing cattle diets (100% fed monensin).²

Researchers from Arkansas, Oklahoma and Texas conducted an experiment to determine the effect of monensin offered during a stocker phase on performance and carcass characteristics of beef steers during the subsequent finishing phase.³ In this study, steers were fed hay or grazed cool-season annuals (wheat) or bermudagrass in Arkansas during a stocker phase (613 lb average initial weight). During the stocker phase, the calves were offered a free-choice loose mineral containing 0, 882, or 1,764 grams/ton of monensin designed to supply a daily dose of 0, 100, or 200 mg of monensin per day at the targeted mineral consumption of 0.25 lb (4 oz). For more details on this phase of the study, see the January, 2021 Beef Cattle Research Update. Following the stocker phase, the steers were transported either to the West Texas A&M University Research Feedlot located near Canyon, Texas, or to the Oklahoma State University Willard Sparks Beef Research Center in Stillwater, Oklahoma for finishing. During the finishing phase, the steers were fed rations containing no monensin or 34 grams/ton of diet dry matter of monensin. These researchers hypothesized that supplementing growing calves with monensin during the pre-finishing stocker phase would diminish performance and efficiency responses later in production, when cattle were placed in a feedlot.

These researchers reported that there were no stocker × finishing treatment interactions observed ($P \geq 0.49$) for finishing performance and efficiency data. There was no carryover effect on overall finishing performance or efficiency. The initial feedlot weight was greater for cattle previously fed monensin during the stocker phase. Cattle previously fed mineral with either 882 or 1,764 grams/ton of monensin were 27.8 and 20.5 lb heavier ($P < 0.01$), respectively, compared with feeding the mineral without monensin. This difference was explained by the 9% improvement in growth rate from supplementing monensin observed during the stocker phase, which resulted in heavier steers from the monensin mineral treatments being placed into the feedlot.

During the finishing phase, cattle fed monensin consumed ~5% less dry matter (1.3 lb/day) than cattle not fed monensin (25.6 vs. 24.3 lb/day for no monensin vs. monensin; $P < 0.01$). Average daily gain during finishing did not differ due to feeding monensin (4.10 vs. 4.17 lb/day for no monensin vs. monensin; $P = 0.58$). As a result, feeding monensin resulted in a

6.9% improvement in feed efficiency (Gain:Feed ratio; 0.17 vs. 0.16; $P < 0.01$). Feeding monensin during finishing did not affect most carcass traits, except for an increase in fat thickness at harvest (0.47 vs. 0.51 inches for no monensin vs. monensin; $P = 0.03$).

These authors concluded that supplementation of monensin to stocker cattle before finishing has no long-term effects on the gain, feed intake, or feed efficiency responses to feeding monensin during finishing. This research also illustrates that feed monensin during finishing still decreases dry matter intake and improves feed efficiency with improvements in feed efficiency being the primary benefit.

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- ¹ Duffield, T. F., J. K. Merrill and R. N. Bagg. 2012. Meta-analysis of the effects of monensin in beef cattle on feed efficiency, body weight gain, and dry matter intake. *J. Anim. Sci.* 90: 4583-4592.
 - ² Samuelson, K. L., M. E. Hubbert, M. L. Galyean, and C. A. Löest. 2016. Nutritional recommendations of feedlot consulting nutritionists: The 2015 New Mexico State and Texas Tech University survey. *J. Anim. Sci.* 94: 2648-2663.
 - ³ Weiss, C. P., P. A. Beck, M. S. Gadberry, J. T. Richeson, B. K. Wilson, C. A. Robinson, J. Zhao, T. Hess and D. Hubbell, III. 2020. Effects of intake of monensin during the stocker phase and subsequent finishing phase on performance and carcass characteristics of finishing beef steers. *Appl. Anim. Sci.* 36: 668-676.

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