

# Injectable Mineral Supplementation



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**T**race mineral supplementation through injectable solutions may be beneficial in some management and environment situations. Numerous research studies have examined the effect of injectable trace minerals on beef calf performance and

health as well as on reproduction in beef cows.

The benefit of injectable minerals has been studied in calves retained on-farm and purchased calves received into stocker or backgrounding management programs. Research at the University of Arkansas found that newly received calves given an injectable mineral solution gained 21 percent more weight per day than calves that were not given an injectable mineral. Morbidity was lower in the calves given the injectable mineral, which likely attributed to those cattle gaining more weight, and repeat treatments were fewer in calves supplemented with injectable mineral. In another receiving calf study conducted at Oklahoma State University, calves given an injectable mineral expressed a tendency toward greater weight gains and reduced sickness. However, a study in Tennessee reported no weight gain difference between calves receiving mineral injection and those not receiving mineral injection.

Unlike the studies with receiving cattle, studies involving calves supplemented on-farm have not demonstrated improvements in performance. In a second University of Arkansas study, calves given an injectable mineral 28 days before weaning did not exhibit improvements in weight gain or hair coat scores. The calves in this study were provided access to a complete mineral supplement that contained a high concentration of trace minerals. In addition to this preweaned calf supplementation study, two recent University of Arkansas producer-farm demonstrations examined the benefit of cows and calves given an injectable mineral supplement. At one location, calves only exposed to salt mineral supplementation did not exhibit a significant improvement in weight gain when either their dams had received injectable mineral prior to calving or the calves themselves had received the injectable mineral at 90 days of age processing. At the second location, calves did not have access to any loose or block form mineral supplements and were given injectable mineral at 90 days of age processing and a follow-up injection at weaning. Neither the initial or follow-up injection improved weight gain. In addition, blood serum did not show any differences in titers for BVD. Based on these studies, it appears that injectable minerals may be

beneficial to cattle that are procured from auction markets and possibly experiencing the combined stressors of weaning, marketing and co-mingling. Current research and demonstrations with calves that are treated on-farm and remain on-farm through a retained ownership program do not appear to benefit from injectable forms of mineral supplementation.

Cattle producers are also interested in the benefits of injectable minerals for mature cows. Research at Kansas State University observed no differences in cow body weight change from pre- and postpartum injections of trace minerals. However, body condition gain from parturition to AI breeding was greater in supplemented cows. Pregnancy rate to timed AI was greater in supplemented cows, but overall pregnancy rate did not differ. In a Texas study, there was no difference in conception rate or postpartum interval between supplemented and nonsupplemented cows. A recent University of Arkansas producer-farm demonstration found that cows that received injectable trace mineral supplementation prebreeding tended to have greater body condition at 90 days of age calf processing. Body condition, however, did not differ at any other point in the study. Pregnancy rate was not affected by supplementation. Among these studies, it appears that benefits of injectable mineral may not be easily detectable in natural mating systems. Benefits may, however, exist in artificial insemination breeding programs. Although overall pregnancy rate did not differ in the timed AI study, if more cows conceive early in the breeding season to timed AI, the benefit of more calves born early in the calving season may carry over into more pounds weaned.

The variation in results among studies may be affected by differences in forage type (native range or improved pasture) or receiving ration fortification, oral mineral supplementation history and breed differences. As a result, recommendations for injectable mineral supplementation will improve in time with research that encompasses more environments. Based on the currently available research, it appears that the type of cattle that benefit the most from injectable trace mineral solutions are receiving cattle and cows in more intensive reproductive management programs than natural service.

There is also research at the University of Arkansas that has shown improved semen characteristics for bulls receiving injectable mineral; however, data is lacking as to whether or not this carries over into improved reproductive rates in the cow herd.  $\Delta$

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