Supplemental trace minerals (Zn, Cu, and Mn) as sulfates, organic amino acid complexes, or hydroxy trace mineral sources for shipping-stressed calves. A. W. Ryan¹, E. B. Kegley¹, J. Hawley¹ J.A. Hornsby¹, J.L. Reynolds¹, and S. B. Laudert². ¹Dep. of Animal Science, University of Arkansas Div. of Agriculture, Fayetteville, ²Micronutrients, Indianapolis, IN.

The objective of this study was to evaluate the effect of trace mineral supplementation from sulfate, organic amino acid complexes, or hydroxy sources on growth performance, morbidity and immune response to bovine viral diarrhea (BVD) vaccination in newly received stocker cattle. Cross-breed calves (n = 350; average BW = 240 ± 1 kg) were obtained from regional livestock auctions. Within each arrival set (block, n = 4), calves were stratified by BW and sex, and allocated into one of eight pens (10 to 12 calves/pen). Pens were assigned randomly to one of three treatments consisting of supplemental Zn (360 mg/d), Cu (125 mg/d), and Mn (200 mg/d) from sulfate (n = 2 pens/block), organic complexes (Availa4, Zinpro Corp., Eden Prairie, MN; n = 3 pens/block), or hydroxy (IntelliBond, Micronutrients, Indianapolis, IN; n = 3 pens/block) trace mineral sources fed over a 42- (block 4) to 45-d (blocks 1, 2, 3) backgrounding period. Cattle were observed daily for signs of morbidity from bovine respiratory disease (BRD) and treated according to a preplanned protocol if rectal temperature exceeded 40°C. Serum samples for BVD antibody titer analysis were obtained on d -1, 14, 28, and final day from the calves in 2 blocks (n = 175). Data were analyzed using the PROC MIXED of SAS with treatment as a fixed effect, block as a random effect, and pen as the experimental unit. When dead (n = 1) and chronic (n = 6) calves were removed from the dataset, final BW did not differ among treatments (280 ± 4 vs. 283 ± 3 vs. 280 ± 3 kg for sulfate, organic complexes, and hydroxy, respectively; P > 0.55) or ADG (0.94±0.05 vs. 0.99±0.04 vs. 0.93±0.04 kg for sulfate, organic complexes, and hydroxy, respectively; P = 0.51). For all calves, dietary treatments had no effect on the number treated once (P = 0.93), twice (P = 0.71), or three times (P = 0.53) for BRD, or on the number of calves classified as chronic (P = 0.55). Trace mineral source had no effect (P = 0.78) on average medical cost per calf. Antibody titer response to BVD vaccination was not affected by trace mineral source (treatment x day, P = 1.00). Based on results from this experiment, source of trace mineral supplementation did not affect total weight gain, ADG, morbidity, medical costs, or antibody titer response to BVD vaccination during the receiving phase in shipping-stressed calves.

Key Words: beef cattle, trace mineral