The effects of limit-fed creep supplements, with or without trace mineral (TM) fortification, on measures of performance and stress in heifers following weaning were evaluated. Heifers were derived from an experiment involving 30 cow/calf pairs, stratified by birth date and randomly allocated to 1 of 15 pastures (21 pasture). Calves were approximately 5 mo of age at the start of the study. Four treatments were randomly assigned to pastures, including, (1) limit-fed creep fortified with hydroxy-Cu, Zn, and Mn, (2) limit-fed creep fortified with Cu- and Znsulfate and Mn-oxide, (3) limit-fed creep without TM fortification, and (4) no limit-fed creep (n = 3, 3, 4, and 5 pastures, respectively). Creep supplements for treatments 1 and 2 were also fortified with Co carbonate, Na selenite, and I (via EDDI). All cattle were provided access to salt with no TM fortification. Supplements were offered Monday, Wednesday, and Friday (265 g/calf) for 89 d prior to weaning, targeting a maximum intake of 114 gld. At weaning, heifers consuming TM-fortified creep, irrespective of source, had greater (P 5. 0.02) liver Cu concentrations compared to heifers consuming no limit-creep or limit-creep without TM fortification. Following weaning, 15 heifers were individually provided free-choice access to a soybean hull-based feed and ground grass hay for 16 d. The acute phase protein response (APR) was assessed via plasma concentrations of the Cu-dependent protein, ceruloplasmin, on d 0, 2, 5, 9, and 16. Shrunken BW was measured on d 0 and d 17. Total DMI of calves provided TM-fortified, limit-creep supplements, irrespective of TM source, was less (P = 0.03) than calves not provided limit-creep or calves provided limit-creep without TM fortification (1.21 vs. 1.80% BW; SEM = 0.262). This response was mostly the result of less (P = 0.056) grain DMI among heifers provided TM-fortified, limit-creep vs. no limit-creep or limit-creep without TM-fortification (0.45 vs. 0.86% BW, respectively; SEM = 0.320). Heifers provided TM-fortified limit-creep had a greater (P = 0.05) increase in post-weaning plasma ceruloplasmin (8.02 and 5.04 mg/dL, respectively; SEM; 2.354) and less (P = 0.03) BW gain (7.9 vs. 17.6 kg; SEM = 9.26) compared to calves provided no limit-creep or limit-creep without TM-fortification. These results imply that TM-fortified limit-fed creep feed results in increased Cu status of weaned calves which corresponded to a heightened Cu-dependent APR and less post-weaning DMI and BW gain.

Key Words: calves, creep feeding, trace minerals