Effects of trace mineral-fortified, limit-fed creep supplements on performance of beef calves (pre-weaning). A. Saran Neto¹, L. S. Caramalac², P. G. M. D. A. Martins³, P. Moriel², H. J. Fernandes³, and J. D. Arthington*², ¹University of São Paulo, Pirassununga, Brazil, ²UF/IFAS Range Cattle Research and Education Center, Ona, FL, ³State University of Mato Grosso do Sul, Aquidauana, Brazil.

To assess the effects of limit-fed creep supplements, with or without trace mineral (TM) fortification, 30 cow/calf pairs were stratified by birth date and randomly allocated to 1 of 15 bahiagrass pastures (1 heifer and 1 steer cow-calf pair/pasture). Calves were approximately 5 mo of age at the start of 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 Zn-sulfate and Mn-oxide (sulfate/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 pastures were provided free-choice access to salt with no mineral fortification. Supplements were offered 3 times weekly for 89 d (256 g/calf on Monday, Wednesday, and Friday) which targeted a maximum intake of 114 g/d. Calf BW was measured on d 0, 45 and 89 (weaning). Calf TM status was assessed in liver biopsy samples collected at weaning. Limit-creep intake increased over time (P < 0.001) and total limit-creep intake tended to be greater (P = 0.10) for hydroxyl- vs. sulfate/oxide-formulated supplements (7.6 and 5.1 kg; SEM = 0.97). Limit-creep had no effect (P = 0.22) on pre-weaning BW gain (80.0 and 73.5 kg for limit-creep and no limit-creep, respectively; SEM = 5.44); however, BW gain tended (P = 0.09) to be greater for calves consuming hydroxyl- vs. sulfate/oxide-formulated supplements (87.1 and 74.4 kg, respectively; SEM = 5.44). Efficiency of added BW gain did not differ (P ≥ 0.13) among treatments (G:F = 1.94, 0.64, and 1.60 kg/kg for hydroxyl, sulfate/oxide, and no TM fortification limit-creep feed, respectively; SEM = 0.850). The cost of added calf gain was $0.27, $1.98, and $0.60/kg for hydroxyl-, sulfate/oxide-, and no-TM fortification limit-creep, respectively. Calves consuming TM-fortified, limit-creep, irrespective of source, had greater (P ≤ 0.02) liver concentrations of Co, Cu, and Se compared to calves consuming no limit-creep or limit-creep without TM fortification. These results imply that the consumption of TM-fortified limit-creep increases the mineral status of calves and the use of hydroxyl sources of Cu, Zn, and Mn may result in greater intake acceptability with a favorable cost of gain compared to sulfate/oxide alternatives.

Key Words: calves, creep feeding, trace minerals