291 Determining the effects of manganese source and level on growth performance, carcass characteristics, and economics of growing-finishing pigs.

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A total of 1,944 pigs (PIC 337×1050; initially 34.5±0.50 kg) were used in a 107-d growth trial to determine two different manganese source at 3 doses level effects on performance of growing-finishing pigs. Pens (27 pigs) were assigned to treatments in a RCB based on weight with 12 replicates/treatment. Diets were corn-SBM-based and fed in 4 phases. Treatments were arranged in a 2×3 factorial with Mn source (MnSO4 or Mn hydroxychloride: IBM, Micronutrients, Indianapolis, IN) and level (8, 16, or 32 ppm) as main effects. Overall, there was a marginal Mn source×level interaction (quadratic, R=0.057) for G:F, with the lowest and highest level of Mn IBM being best, but G:F improved with increasing Mn from MnSO4. There was no evidence for Mn source differences for ADG or ADFI, but 16 ppm of Mn tended to have the poorest (quadratic, R< 0.097) ADG and final BW (quadratic, R< 0.05) compared to other levels. There was a tendency for Mn source´level interaction (quadratic, R=0.075) for carcass yield, where yield did not change by increasing MnSO4, but was greatest for 16 ppm Mn from IBM. Loin depth increased (source×level, R=0.041) for increasing Mn from MnSO4 but decreased when Mn was increased from IBM. The intermediate level of Mn had the lightest HCW (quadratic, R=0.071) and decreased loin depth (quadratic, R=0.044). No evidence of difference (R >0.10) was observed for concentration of Cu and Zn in the liver. Manganese concentration increased (linear, R=0.015) as Mn supplementation increased and tended to be greater (P=0.075) when Mn was supplied by MnSO4 compared to IBM. These data suggest little difference between source but did show improvements in growth performance for 8 and 32 ppm of Mn compared with 16 ppm. Further research is needed to understand why the poorest performance was observed at the intermediate level of Mn.

Table 1. Effects of Mn source and level on growth performance and carcass characteristics of finishing pigs[1]

	$MnSO_4$			IBM, ppm			
Item	8	16	32	8	16	32	SEM
BW, kg							
d 107	133.6	132.3	134.5	134.8	132.5	134.3	1.19
Overall							
ADG, kg	0.95	0.94	0.96	0.96	0.94	0.95	0.008
ADFI, kg	2.51	2.46	2.49	2.50	2.49	2.48	0.025
G:F[3]	0.377	0.381	0.385	0.384	0.377	0.384	0.0030
Carcass characteristics							
HCW, kg	98.4	96.9	98.4	98.9	98.3	98.6	0.77
Carcass yield, %[4]	73.5	73.3	73.2	73.4	74.2	73.3	0.20
Backfat depth, mm^2	17.0	16.6	16.9	17.0	17.1	17.0	0.31
Loin depth, $mm^{2,5}$	67.7	68.0	69.2	69.2	68.3	68.9	0.45
Lean, %[2]	56.6	56.7	56.8	56.8	56.6	56.8	0.20

[1]Mn sources were Mn sulfate ($MnSO_4$, Erachem, Veracruz, Mexico) or IntelliBond M (IBM, Micronutrients, Indianapolis, IN).
[2]Adjusted using HCW as covariate.
[3]Source×level, $P = 0.057$. Within source of $MnSO_4$, quadratic $P = 0.970$. Within source of IBM, quadratic $P = 0.010$
[4]Source×level, $P = 0.075$. Within source of $MnSO_4$, quadratic $P = 0.790$. Within source of IBM, quadratic $P = 0.030$
[5]Source×level, $P = 0.041$. Within source of $MnSO_4$, linear $P = 0.640$. Within source of IBM, linear $P = 0.020$

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