EFFECTS OF REDUCED PROTEIN AND DIET COMPLEXITY ON PERFORMANCE AND COST OF NURSERY PIGS

Guilherme Hosotani

Dr. Marcia Carlson Shannon, Thesis Supervisor

Abstract

Two 35-d experiments were conducted to investigate the effect of reducing crude protein by 2.5% and diet complexity with amino acid supplementation on performance and feed cost during the nursery phase. In Exp. 1 and 2, 32 PIC barrows were weaned at 21 d and allotted to one of four diets: 1) corn-soybean meal based diet; 2) diet 1 with inclusion of fishmeal (FM) and spray-dried plasma (SDP) in Exp. 1 or soy protein concentrate (SPC) and spray-dried blood cells (SDBC) in Exp. 2; 3) low crude-protein diet (LCP) with 2.5% reduction; 4) LCP containing FM and SDP in Exp. 1 or SPC and SDBC in Exp. 2. Overall in Exp. 1, pigs fed corn-soybean meal based diet containing higher CP had greater ADG (P = 0.001) than pigs fed LCP diet (0.60 vs. 0.52 kg/d, respectively) and final BW (25.28 vs. 22.95 kg, respectively) (P = 0.002). These data suggest that Val and Ile become the next limiting amino acids in LCP nursery diets. In Exp. 2, there was no effect on overall ADG and final BW. Overall in Exp. 1 and 2, pigs fed LCP diets had lower PUN concentration (P < 0.001). In Exp. 1 and 2, the nursery phase resulted in LCP diets averaging $0.09 or $0.08 more per kg/gain, respectively, compared to typical corn-soybean meal animal protein based diets. In conclusion, LCP diets can be fed to nursery pigs if Val and Ile requirements are met. However, the current cost of synthetic Trp, Val and Ile do not make these diets economical.