**140**

Combinations of select menhaden fish meal and spray-dried porcine plasma in the transition diet (fed to pigs from 5 to 7 kg) for the segregated early weaned pigs. J.R. Bergstrom, R.D. Goodband, L.J. Nelson, and T. Sigler, Kansas State University, Manhattan.

A 33 d growth trial, utilizing 200 11-d to 16-d old pigs (PIC, C15 X 326, initially 4.0 ± 0.9 kg), was conducted to determine the degree of menhaden fish meal in the diet (typically fed to pigs from 5 to 7 kg) to obtain optimal growth performance in the segregated early weaned pig. Pigs were randomly allotted to treatment groups. All pigs received the same menhaden fish meal diet 21 to 28 days of age and were formulated to contain 1.55% lysine. Lysopur NC (4%, a buffered liquid propionic acid), Lysopur Salt (4%, a buffered dry propionic acid), humic acid (1.5%), and a combination of Lysopur NC (4%) and humic acid (1.5%) to replace the cornstarch in the diet to provide the additional experimental treatments. From 24 to 28 postweaning, all pigs were fed a common, control-feeding, no added acid diet. From 24 to 28 postweaning, feeding pigs an acidified diet improved (P < 0.01) ADG and ADFI when compared with the control diet. Pigs fed the diet containing Lysopur NC had improved (P < 0.05) ADG when compared with those fed the diet containing a combination of Lysopur NC and humic acid. Pigs fed the Lysopur NC diet had the greatest ADG, which was different (P < 0.05) from those fed either the control diet containing humic acid or the diet containing the combination of Lysopur NC and humic acid. Pigs fed either the control diet or Lysopur Salt diet had intermediate ADFI. Feeding pigs any of the acidified diets improved (P < 0.01) G:F, with no differences in G:F being observed among pigs fed the various acid sources. During phase I (0 to 14 postweaning), ADG was greatest (P < 0.05) for pigs fed acidified diets. There were no differences (P > 0.05) in G:F, but G:F was improved (P < 0.05) by including an acid source in the diet. Among the acid sources, the greatest improvement in G:F resulted from feeding the diet containing humic acid, when compared with pigs fed the diet containing Lysopur Salt (P < 0.05). During phase II (14 to 28 postweaning), when all pigs were fed a common diet without acid, no differences in growth performance were observed between pigs fed the diets containing humic acid and cornstarch. However, both the acidified diets (P < 0.16) tended to be improved by feeding an acidified diet from d 0 to 14. These results suggest that adding organic acids (buffered propionic or humic acid) to a diet containing 20%, 25%, and 30% menhaden fish meal enhances growth performance from d 0 to 14 postweaning.

**141**


A 28 d growth trial was conducted to determine the effects of adding organic acids to a phase I starter diet on pig performance. At weaning, 500 pigs (13 ± 3 d of age and 4.0 ± 0.9 kg) were blocked by weight and allocated to each of five experimental diets, with 10 pigs per pen and six pens per treatment. The five experimental diets were fed from d 0 to 14 postweaning. The control diet was cornstarch-based, contained 20% dried whey, 7.5% spray-dried porcine plasma, and 1.75% sunflower meal, and was formulated to contain 1.55% lysine. Lysopur NC (4%, a buffered liquid propionic acid), Lysopur Salt (4%, a buffered dry propionic acid), humic acid (1.5%), and a combination of Lysopur NC (4%) and humic acid (1.5%) to replace cornstarch in the diet to provide the additional experimental treatments. From 14 to 28 postweaning, all pigs were fed a common, cornstarch-based diet without acid. The diet contained 20% dried whey and 2.5% spray-dried blood meal and was formulated to 1.55% lysine. During d 0 to 14 postweaning, feeding pigs an acidified diet improved (P < 0.01) ADG when compared with the control diet. Pigs fed the diet containing Lysopur NC had improved (P < 0.05) ADG when compared with those fed the diet containing a combination of Lysopur NC and humic acid. Pigs fed the Lysopur NC diet had the greatest ADG, which was different (P < 0.05) from those fed either the control diet containing humic acid or the diet containing the combination of Lysopur NC and humic acid. Pigs fed either the control diet or Lysopur Salt diet had intermediate ADFI. Feeding pigs any of the acidified diets improved (P < 0.01) G:F, with no differences in G:F being observed among pigs fed the various acid sources. During phase I (0 to 14 postweaning), ADG was greatest (P < 0.05) for pigs fed acidified diets. There were no differences (P > 0.05) in G:F, but G:F was improved (P < 0.05) by including an acid source in the diet. Among the acid sources, the greatest improvement in G:F resulted from feeding the diet containing humic acid, when compared with pigs fed the diet containing Lysopur Salt (P < 0.05). During phase II (14 to 28 postweaning), when all pigs were fed a common diet without acid, no differences in growth performance were observed between pigs fed the diets containing humic acid and cornstarch. However, both the acidified diets (P < 0.16) tended to be improved by feeding an acidified diet from d 0 to 14. These results suggest that adding organic acids (buffered propionic or humic acid) to a diet containing 20%, 25%, and 30% menhaden fish meal enhances growth performance from d 0 to 14 postweaning.

**142**


Two growth trials were conducted to compare Norse LT-94 (herring meal) to other protein sources in starter pig diets. In Exp. 1, 270 weaning pigs (initially 6.2 kg and 20 d of age) were used to compare Norse LT-94, select menhaden fish meal, and spray-dried blood meal as protein sources in the phase II diet. Pigs were blocked by weight with 6 replications of three treatments and 13 pigs per pen per treatment. In Exp. 2, 230 pigs (initially 8.5 kg and 21 d of age) were used to examine the influence of various combinations of spray-dried porcine plasma and Norse LT-94 on starter pig performance. Pigs were allotted by weight to six replicates of five treatments with 6 pigs per pen per treatment. Pigs were assigned to one of five dietary treatments with 0, 15, 30, 45, or 60% of the spray-dried porcine plasma and Norse LT-94 on an equal basis. Therefore, diets contained 1.0, 1.5, 2.0, 3.0, or 4.0% of the spray-dried porcine plasma and Norse LT-94, respectively. All phase I diets were formulated to contain 20% dried whey, 1.5% lysine, and 3.2% methionine. These data suggest that a diet containing 21% dried whey and 2.5% spray-dried blood meal which was formulated to 1.25% lysine and 3.4% methionine. The present control diet contained 2.5% spray-dried blood meal. Norse LT-94 contained 20% menhaden fish meal and was formulated to contain 21% dried whey and 2.5% spray-dried blood meal on an equal lysine basis to form the other experimental diets. There were no differences in pig performance between phase I diets. In phase I, pigs were fed a diet containing 15% spray-dried porcine plasma and Norse LT-94, spray-dried blood meal, and select menhaden fish meal as interchangeable as protein sources when substituted on an equal lysine basis. In Exp. 2, 230 pigs (initially 8.5 kg and 21 d of age) were used to examine the influence of various combinations of spray-dried porcine plasma and Norse LT-94 on starter pig performance. Pigs were allotted by weight to six replicates of five treatments with 6 pigs per pen per treatment. Pigs were assigned to one of five dietary treatments with 0, 15, 30, 45, or 60% of the spray-dried porcine plasma and Norse LT-94, respectively. All phase I diets were formulated to contain 20% dried whey, 1.5% lysine, and 3.2% methionine. These data suggest that a diet containing 21% dried whey and 2.5% spray-dried blood meal which was formulated to 1.25% lysine and 3.4% methionine. The present control diet contained 2.5% spray-dried blood meal. Norse LT-94 contained 20% menhaden fish meal and was formulated to contain 21% dried whey and 2.5% spray-dried blood meal on an equal lysine basis to form the other experimental diets. There were no differences in pig performance between phase I diets. In phase I, pigs were fed a diet containing 15% spray-dried porcine plasma and Norse LT-94, spray-dried blood meal, and select menhaden fish meal as interchangeable as protein sources when substituted on an equal lysine basis.