Research in Progress

The effect of gestation crude protein level on the metabolic state and subsequent farrowing and lactation performance of primiparous sows. B.A. Belstra, B.T. Richert, and J.W. Frank. Department of Animal Sciences.

Three dietary regimes are being fed to primiparous sows that step up crude protein at different points during gestation, to determine the effect of lysine levels on metabolic status, body weight and backfat change during gestation. Subsequent farrowing and lactation performance will also be measured to evaluate the influence of these dietary treatments on sow reproductive efficiency.

Epidemiology of *Streptococcus suis* meningitis. S. Amass, G. Stevenson, and A. Reed. Departments of Veterinary Clinical Sciences and Veterinary Pathobiology.

A study of the epidemiology of *Streptococcus suis* meningitis in commingled segregated early weaned pigs is in progress.

Effect of high oil and normal corn of the same genetic line on pig performance. B.T. Richert, A.P. Schinckel, and T.R. Cline. Department of Animal Sciences.

A high oil top-cross corn variety and its normal oil parent line are being raised at the Purdue Research and Education Center for evaluation in livestock diets. Both strains of corn will be evaluated in early-weaned and conventional-weaned nursery, grow-finish and lactation swine diets to determine the effect of high oil corn on pig growth performance and carcass characteristics.

Effect of sorghum protein matrix on diet digestibility and pig growth rate. B.T. Richert and R.G. Elkin. Department of Animal Sciences.

Three different lines of sorghum are being raised at Purdue Research and Education Center. The lines differ in their protein matrix and *in vitro* digestibility. All three lines will be evaluated in nursery pigs to test the dry matter, energy, protein, lysine digestibilities, and support of nursery pig growth rate compared to normal corn.

The lysine requirements for stress gene carrier versus stress negative gilts. J.W. Frank, A.P. Schinckel, and B.T. Richert. Department of Animal Sciences.

Four lysine sequences are being fed to stress carrier and stress negative gilts from 50 to 250 lbs. Lysine levels are changed at 50, 100, 150, and 200 lbs. Pigs are being serially scanned at weight changes to calculate growth curves. Carcass measurements will also be taken.

Effects of two sources of L-carnitine on nitrogen and energy balance of growing pigs. J.W. Frank, B.T. Richert, and K.Q. Owen. Department of Animal Sciences and Lonza, Inc.

Carnifeed® (97 to 103% L-carnitine) and Carniking® (50% L-carnitine) were fed to 75 lb pigs for two weeks. Feces, urine, and orts were collected to determine nitrogen and energy balance. Blood serum samples were collected to determine serum levels of carnitine and urea nitrogen.

Genotype by environment interactions for pig growth, carcass composition, and pork quality. J.W. Frank, A.P. Schinckel, B.T. Richert, L.K. Clark, A.L. Grant, and J. Turek. Departments of Animal Sciences, Veterinary Clinical Sciences, and Basic Medical Sciences.

Two genotype by environment interaction trials have been initiated. The first involves the mating of high lean gilts to three sire lines (Newsham XL, UL, and DH) to produce differences in leanness, growth rate, feed intake, and pork quality. The second will involve mating lean Hampshire-Duroc sires to lean females, and mating U.S. Duroc sires (selected for growth) to average U.S. Yorkshire-Landrace females. In each trial, barrows and gilts of each genetic cross will be either early weaned and managed all-in, all-out, or conventionally weaned and reared in continuous flow finishers. Pigs will be evaluated for growth rate, carcass composition, and pork quality. Measures of immune system activation (IL-6, TNFα, AGP) and insulin-like growth factor-1 will be examined.

Growth and characterization of individual backfat layers and their relationship to pork carcass quality. J.M. Eggert, A.P. Schinckel and S.E. Mills. Department of Animal Sciences.

Swine genotypes differ not only in the total amount of backfat, but also in the relative amounts of the three individual backfat layers (outer, middle and inner). While it is apparent that these layers differ in chemical, structural and textural properties, their relative contributions to carcass quality remain unknown. Furthermore, the presence of a well developed (mature) innermost backfat layer is associated with higher levels of intramuscular fat within the *longissimus dorsi*. This suggests that marbling is deposited concurrently with the innermost layer. Thus, the presence of a growing innermost backfat layer may be indicative of a developmental and energy state in which a pig deposits intramuscular fat. Monitoring fat depot development will provide insight into the relationships between individual fat layers and carcass quality.

Coordinated production alternatives for corn belt pork producers. M. Boehlje, C. Hurt, and J. Ray. Department of Agricultural Economics.

The purpose is to describe and assess alternative ways of organizing hog production operations by, though not limited to, ownership, organization, financing, and control. This project will provide Indiana and Midwest pork producers information on the variety of coordinated production alternatives that exist and the relevant characteristics of each.
