Industry Summary

Poor sow longevity has both economic and welfare ramifications for the commercial swine industry. On the basis of PigCHAMP™ reports, between years 1998 and 2007, the average culling frequency of breeding herd females in U.S. commercial swine herds has averaged approximately 45% and sow mortality rate has risen to just under 8%. In some cases, individual herds have experienced culling and mortality rates above 50 and 15 percent, respectively. Since reproductive failure and leg problems are the primary culling reasons for young sows, maintaining acceptable reproduction rates in younger females and selecting structurally sound replacement gilts are important factors in increasing sow productive lifetime. Lower replacement rates would not only improve the outlook of the swine industry, but also increase the profitability of pork producers in terms of reduced replacement costs. Furthermore, reduced number of gilt litters would improve herd productivity, since gilt litters tend to be smaller, and their offspring experience greater mortality and poorer average daily gain throughout the nursery and grow – finish phases of production.

The objective of this study was to estimate the genetic parameters (the degree in which a trait is controlled by the genetics of the animal and the genetic relationships between traits) of body composition, structural soundness, reproduction and longevity traits (longevity defined as the ability to complete the first parity including rebreeding for the second parity). The long term goal of this ongoing project is to follow the females at a commercial farm until culling at the end of their productive life (defined as the end of the 5th parity), in order to determine the factors measured or evaluated early in life that are associated with superior sow longevity or sow productive lifetime.

The study involved 1449 crossbred gilts from two genetic lines. Gilts were on average 190 days of age and 124 kg body weight at the time of body composition and structural evaluation. Evaluated body composition traits included body weight, loin muscle area, last rib backfat and 10th rib backfat. Soundness traits consisted of six body structure traits; body size (length, depth, width) and body shape (hip structure, rib shape, top line), five leg structure traits per leg pair; front legs (legs turned, buck knees, pastern posture, foot size, uneven toes) and rear legs (legs turned, weak/upright legs, pastern posture, foot size, uneven toes) and overall leg action. Two experienced scorers, using a nine point scale, independently evaluated all structural soundness traits. Studied reproduction traits included total number of piglets born, number of piglets born alive, litter weight at birth (live born piglets), number of piglets weaned and litter weaning weight. In addition, the same body composition traits, which were evaluated as gilts entered the farm, were also measured at farrowing and weaning.