

## Indicators of Slow Growing Pigs

*Yuzhi Li, Swine Scientist*

Slow growing pigs are defined as pigs that are significantly lighter than penmate of the same age. These pigs are problematic because they are more likely to die before slaughter age. If they survive and reach slaughter age, they are much lighter than the average bodyweight of the group, and of much lower market value. There is evidence that pork producers usually make money on fast growing pigs, but lose money on slow growing pigs. Early identification of slow growing pigs will help producers make management decisions that provide special care for these pigs. Unfortunately, we usually do not know which pigs are slow growing pigs until they are close to slaughter age.

Pigs that are lighter at birth may be at risk of becoming slow growing pigs. Our previous study indicated that pigs with light birth weight grew slower and had higher mortality rates while nursing their mothers than pigs with heavy birth weight. Consequently, pigs with low birth weight are usually weaned at lighter weight than pigs that are heavy at birth. Light weaning weight may persist into the grow-finish period, resulting in light slaughter weight. One of the reasons for slow growing pigs during the nursing period is that they are less competitive at the udder during nursing so that they do not get enough milk. This suggests that pigs that are less competitive in a group might be at risk of becoming slow growing pigs. In addition, efficiency of nutrient utilization and their immune system may also contribute to slow growth in pigs.

To identify indicators of slow growing pigs at an early age, we are conducting a study at the WCROC. The study aims to investigate characteristics of slowing growing pigs related to performance, behavior, physiology, and immunology. In the study, we track growth performance of 440 individual pigs from birth to slaughter age. All pigs are born in the WCROC swine unit and weaned at 4 weeks of age. Pigs are housed in the nursery barn for 5 weeks until they are 9-week old. During the nursery period, pigs are housed in pens with two feeder-space treatments: 2 feeder-spaces per 8 pigs or 5 feeder-spaces per 8 pigs. The modification of feeder-space will help us understand the difference in competitive ability at the feeder between slow and fast growing pigs. Pigs in 24 pens (12 pens of each treatment) are individually marked and video-recorded when they enter the nursery barn, and again at 7 weeks of age. From the video recordings, we will analyze behavioral activities for individual pigs, such as eating, drinking, standing, lying, and belly-nosing. Competitive ability to access feed will be assessed by the frequency of feeder displacement (pigs removing other pigs or being removed by other pigs from the feeder while eating). In addition to video recording, we measure the maximal eating speed of 96 focal pigs at the age of 9 weeks. These focal pigs include 48 lightweight (slow growing) pigs and 48 heavy (fast growing) pigs. This will help us understand whether eating speed contributes to slow growth in pigs. To investigate whether there are differences in physiological and immunological functions between slow and fast growing pigs, we are collecting blood samples from 48 focal

pigs that are used for eating speed test to analyze hormones, metabolites, and antibodies which are associated with growth. The animal trials of this study started in February and will end in December, 2013. We look forward to reporting our results in mid 2014.