Livestock Notes

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swine that are native to China. Although over a year has passed since this information became public, Chinese pigs are still on the minds of many individuals — particularly animal scientists. Since most of the controversy concerning Chinese pigs has subsided, research articles now are beginning to appear in scientific literature.

Basically, Chinese pigs are novel research models because they are more prolific and maternally-oriented, but less growth- and carcass-oriented than domestic American breeds and strains. There are four strains of swine native to the Taihu region of China -- Meishan, Fengjing, Jianxing and Erhualian. Gilts attain puberty at earlier ages (73 to 121 days) and considerably lighter weights (30 to 60 pounds) than gilts of American breeds. However, Chinese pigs are considerably slower growing, fatter and have less carcass muscle than American hogs. Therefore, the reproductive advantages gained by using Chinese pigs often are sacrificed due to their poor growth and carcass composition. From a research viewpoint, one would ideally want to capitalize on the litter and puberty traits of Chinese breeds, while improving growth and carcass traits to levels similar to American hogs. Crossbreeding and the use of metabolic modifiers both have the potential to improve the practical usefulness of Chinese pigs in modern swine production regimens.

In a recent report, researchers at the USDA Research Center in Clay Center, NE, used both regimens to evaluate growth and carcass traits of purebred and crossbred pigs. Three groups of swine were compared, 1) Duroc x White composite crossbreds; 2) Meishan x White composite crossbreds; and 3) Meishan purebreds. Meishan purebreds were slower growing, ate less feed, and were less efficient converting feed to gain than either crossbred group. Furthermore, Meishan purebreds had shorter carcasses, lower dressing percentage, smaller loin muscle area, and less carcass muscle than both crossbred groups. Similar relationships existed for the Meishan crossbreds compared with the Duroc crossbreds. Meishan crossbreds were slower growing and less feed efficient, and had smaller loin muscle area and less carcass muscle than the Duroc crossbreds. In all three breed groups, addition of ractopamine, a beta-adrenergic agonist, to the diet increased growth rate, carcass muscle content, and dressing percentage, and improved feed efficiency.

Therefore, dietary supplementation of ractopamine is effective in reducing fat deposition and improving the rate and efficiency of weight gain in three different genetic lines of swine. In the future, it may be possible to capitalize commercially on the reproductive performance of Chinese pigs, while improving growth and carcass characteristics by crossbreeding with domestic American lines and with the use of metabolic modifiers.

Source: Yen et al.,1991, J. Anim. Sci. 69:4810.

FEEDING FAT TO FINISHING PIGS IN HOT WEATHER

Self-fed pigs routinely decrease feed intake in hot weather. To help make up for the lower nutrient intake during a hot summer, many feed manufacturers and swine producers add fat and lysine to diets in order to increase the nutrient density of the feed the pigs do eat.

Kansas State researchers recently studied this practice to determine the effect of added dietary fat and lysine on growth rate, feed efficiency and estimated carcass composition (via ultrasound) in finishing hogs.

A group of 160 finishing pigs averaging 127 pounds were divided into four treatment categories and fed to an average final weight of 230 pounds on one of the following four diets: (1) .61 percent lysine control; (2) .61 percent lysine plus five percent added fat; (3) .81 percent lysine; (4) .81 percent lysine plus five percent added fat. Daily high and low temperatures were recorded during the entire experiment (September 5-November 8, 1991).

During the first 21 days of the trial, the average high temperature was 94 degrees F. In this period, pigs on the high fat diets converted feed to gain more efficiently than those without added fat. During the next two-week period, the average high temperature dropped to less than 85 degrees F, and the advantage in feed efficiency was less evident. Over the entire 63 day trial, however, pigs fed fat were more efficient feed converters, but were no different in measurements of daily gain or feed intake. Increasing lysine level had no effect on gain, feed intake, or feed efficiency.

Ultrasound carcass composition estimates showed some interesting differences. Adding fat to finishing rations increased backfat by .1 inch and slightly decreased loineye area by .15 square inches. Added lysine had no effect on backfat depth, but loineye area was increased by .20 square inches.

Since lysine had no effect on growth rate, feed intake, or efficiency, and little impact on carcass parameters, let's compare the feed savings of the high fat-diet with the increase in backfat if the pigs were sold under Hatfield's system.

If we use corn at $2.85/bu. and vegetable fat at $.15/pound, the control diet would cost about $140/ton vs. $150/ton for the high-fat diet. The feed efficiencies reported in the study were 3.63 and 3.37 pounds of feed/pound of gain for the control and added fat diets respectively. Although pigs fed fat did convert feed more efficiently than controls, the increased diet cost negated most of the savings as total feed costs for the finishing period were reduced by only $.15/head.

If we sold these pigs through a buying station or auction, we could expect to save $.15/head for the extra trouble of adding fat to the diet, but if we sold them under Hatfield's weight and grade program, what would the extra tenth-of-an-inch of backfat and slightly smaller loineye area cost in lost income?

Tenth rib backfat and loineye areas for the study were reported as .79 in., 4.73 sq. in. and .89 in., 4.56 sq. in. for the control and high fat diets, respectively. Plugged into Hatfield's percent lean cuts equation, both groups of pigs were above the average of 56 percent (57.7 percent for the control diet and 56.6 percent for the high fat diet) and would qualify for a bonus.

A rough rule of thumb is that each percent above 56 percent is worth about $.80/carcass cwt. Assuming a 165 lb. carcass, the pigs fed the control diet are worth about $1.45 more/head than the pigs fed the added fat diet. Even when we subtract the feed cost savings of the pigs fed added fat, the control pigs are still worth an average of $1.30/head more.

Summary (1) Increasing lysine levels in finishing swine during hot weather did not affect gain, feed intake, feed efficiency, or backfat, and increased loineye area only slightly (not nearly enough to justify the cost of the additional lysine--even when pigs are sold on a carcass value basis). (2) Adding fat to finishing swine diets improved feed efficiency only if daily temperatures averaged over 85 degrees F, but had no effect on feed intake or gain. (3) Added fat resulted in fatter carcasses and slightly smaller loineye areas. (4) Added fat results in a small savings in feed costs, but probably should not be considered if pigs are to be sold on a carcass value basis.

Source: K.G. Friesen, R. D. Goodband, R. C. Thaler and J. L. Nelssen. Kansas State University Swine Day, 1991.