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Today's swine industry has shifted from producing hog to producing pork, as producers are compensated for leaner pigs. A dependable and economical source of feed is the backbone of a profitable swine operation. Low income and rural swine producers are limited by today's high feed cost and are looking for a more sustainable pork production system. This study was to determine the effect of grazing systems on meat quality, carcass traits and on lipid metabolism gene expressions. Control pigs were fed 100% commercial diet. Fifty/ fifty (50/50) group was placed on 50% of the diet consumed by the control group plus free access to ryegrass-clover pasture. The twenty-five/seventy-five (25/75) group was fed 25% of the diet consumed by the control plus access to free pasture. The overall meat quality (flavor, overall acceptability and carcass traits (marbling, color) scored significantly higher (P<0.05) in the 25/75 group than in the control or 50/50 group. Back-fat was lower in 25/75 group (P<0.05) than in the control or 50/50 group. No differences were observed between the control and 50/50 in meat and carcass qualities. Real-time PCR revealed that peroxisome proliferator-activated receptor (PPAR $\alpha$ ), peroxisome proliferator-activated receptor (PPAR $\gamma$ ), lipoprotein lipase (LPL) and sterol-regulatory-element-binding protein 2 (SREBP-2) responded differently in muscle and adipose tissues. The results indicated that pasture-based pork production could upregulate lipid metabolism genes in muscle and adipose tissue important in reducing all production inputs, improving carcass traits and meat quality measures.

### Biography

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