



Evaluating Pig Performance, Carcass Merit and Processed Pork Quality when Chestnuts and Acorns are fed to Duroc-Influenced Pig Genetics During Late Finishing

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Objectives

The objective of this study was to determine the effects of feeding chestnuts and acorns on growth performance, carcass quality and further processed products of Duroc/Duroc crossbred finishing barrows.

Materials and Methods

Barrows ($n = 30$) were individually housed in pens, blocked by body weight and randomly assigned to one of three treatments: control ($n = 10$), inclusion of acorns at 15% of the diet ($n = 7$), inclusion of chestnuts at 15% of the diet ($n = 13$). Pigs were fed ad libitum for 28 d prior to harvest. Feed refusal and individual pig weights were collected every 7 d and used to calculate average daily gain (ADG), gain-to-feed (G:F), and average daily feed intake (ADFi). Following harvest, carcass quality was determined by objective color (L^* , a^* and b^*), fat composition and marbling scores. Fat samples were removed from four fat depots (backfat, seam, jowl, kidney and pelvic) and analyzed for fatty acid composition. Sample chops were removed between the 10th and 11th rib of the left side of each carcass and analyzed for fatty acid composition, moisture and fat content. Bellies were removed from the left side of each carcass, further processed into bacon slabs and analyzed for slice quality, fatty acid composition, moisture and fat content. Carcass characteristics and bacon quality were analyzed using GLM procedure of SAS. Growth performance and fatty acid composition were analyzed using MIXED procedure of SAS. Significance was determined at P -value < 0.05 .

Results

No differences were detected for ADG and ADFi across treatments ($P > 0.05$). Barrows fed chestnut diets

had a greater G:F when compared to control ($P < 0.05$) or acorn fed barrows ($P < 0.05$). Dietary treatments did not impact ($P > 0.05$) carcass characteristics or carcass quality. Inclusion of chestnuts or acorns within the diet did not impact ($P > 0.05$) moisture and fat content of chops and bacon slices ($P > 0.05$). Moreover, feeding acorns led to similar concentrations ($P > 0.05$) of palmitoleic acid (16:1) and linoleic acid (18:2n6c) when compared to the control diet. However, feeding diets containing acorns led to greater proportions ($P < 0.01$) of palmitoleic acid and linoleic acid similar to barrows fed diets containing chestnuts. No difference ($P > 0.05$) for stearic acid (18:0) were observed between control and chestnut treatments, however, both were found to have greater amounts ($P < 0.01$) of stearic acid when compared to the acorn treatment. Acorns increased ($P < 0.01$) the total concentration of omega-6 fatty acids (n-6) when compared to chestnut diets, but no differences ($P > 0.05$) were observed between acorn and control diets. Inclusion of acorns reduced ($P < 0.05$) total saturated fatty acids (SFA) when compared to control and chestnut treatments; however total polyunsaturated fatty acids (PUFA) were increased ($P < 0.05$) when acorns were included in the diet. When evaluating PUFA:SFA ratio, no differences ($P > 0.05$) were found between control and chestnut diets. Including acorns in the diet, resulted in an increased ($P < 0.05$) PUFA:SFA ratio.

Conclusion

Inclusion of acorns and chestnuts did not negatively impact carcass characteristics, carcass quality or bacon quality, nevertheless, including acorns altered overall fatty acid composition while minimal differences were observed between diets containing chestnuts and the control.