RESEARCHABSTRACT

ANIMAL SCIENCE — Nutritional Efficiency Consortium

Title: Predicting the iodine value of pork carcass fat from the iodine value of dietary fat supplied by different fat sources at different levels of inclusion in the diet – **NPB #10-021**

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Date submitted: July 12, 2012

Scientific abstract: The inclusion of unsaturated fats in pig diets has raised issues related to pork carcass lipid quality. The objective of this experiment was to develop a more comprehensive understanding of how dietary fat affects the composition of body fat during the finishing period and at market. A total of 42 gilts and 21 barrows (PIC 337 X C22/29) with an average initial weight of 77.8±3.06 kg were allotted based on sex and weight to 7 treatments: 3 and 6% of each of tallow (TAL; iodine value (IV)=41.9), choice white grease (CWG; IV=66.5) or corn oil (CO; IV=123.1), and a control (CNTR) corn-soy based diet with no added fat. Pigs were individually housed to allow accurate measurement of individual feed intake and thus daily dietary fat and energy intake. Pigs were weighed and adipose samples were collected from the jowl, belly, and loin on days 0, 18, and 35 and at harvest. Iodine value was determined on diet and carcass lipid samples. Belly weights were recorded at harvest along with a subjective belly firmness score (1-3 with 1 firmest and 3 least firm) 24 h post-mortem. Data were analyzed using PROC MIXED and PROC CORR. Carcass lipid IV was affected by source (TAL=66.8, CWG=70.3, CO=76.3, CNTR=65.4; P<0.0001). Carcass lipid IV for TAL and CWG was not affected by inclusion level; however, carcass lipid was affected by CO level (3%=72.6, 6%=80.0; P<0.0001). Carcass lipid IV was also affected by sex (barrows=69.1, gilts=71.5; P<0.001). The correlation between carcass lipid IV and dietary lipid IV was R^2=0.592. Belly weight was increased by inclusion level (CNRT=8.3 kg, 3%=8.8 kg, 6%=9.4 kg; P<=0.02). Belly firmness score was affected by source (CNTR=1.8, TAL=1.7, CWG=2.0, CO=2.2; P<0.05) and sex (barrows=1.6, gilts=2.3; P<0.0001). ADG was increased by inclusion level (CNTR=0.93 kg, 3%=1.04 kg, 6%=1.10 kg; P<0.02). G:F was also improved by inclusion level (CNTR=0.301, 3%=0.337, 6%=0.358; P<0.01). In conclusion, an increase of dietary fat can improve feed efficiency and performance. Inclusion of a fat source with an IV less than of 66 can be used without repercussions. Inclusion of a fat source with an IV greater than 122 should be limited when possible, this applies to dietary ingredients high in unsaturated fat, such as DDGS, and it's important to know sampling site and procedure used for IV.

These research results were submitted in fulfillment of the Nutritional Efficiency Consortium research projects.
Contributing organizations for 2010 include: AgriSolutions, Inc., DPI Global, Iowa Pork Producers Association, Illinois Corn Marketing Board, Illinois Pork Producers Association, Kansas Pork Association, Missouri Pork Producers Association, Mississippi Pork Producers Association, National Pork Board, Nebraska Corn Board and the Utah Pork Producers Association.

This report is published directly as submitted by the projects principal investigator. This report has not been peer reviewed.

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