

105 The importance of implementing a by-product withdraw strategy prior to slaughter in finishing pigs: A review of strategies that mitigate the negative impact on carcass yield. K. F. Coble*, J. M. DeRouchey, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. C. Woodworth, *Kansas State University, Manhattan.*

Ingredients such as dried distillers grains with solubles (DDGS) and wheat middlings (midds) contain higher amounts of fiber and are lower in energy than their originating grain sources. Previous research has shown that feeding high-fiber diets to pigs throughout the finishing period has negative effects on carcass yield and HCW. Also, dietary therapies, such as ractopamine HCl, pelleting the diet, or increasing energy through fat addition prior to marketing, has not been successful to negate fiber's effect on carcass yield. Limited research suggests that removal of high-fiber ingredients approximately 20 to 30 d prior to slaughter can restore carcass yield. However, the optimal time period for withdrawing high-fiber ingredients prior to marketing has only recently been more closely researched. Two trials were conducted to determine the number of days prior to slaughter that high-fiber ingredients (30% DDGS and 19% midds; 19% NDF) should be removed from finishing pig diets to optimize growth performance, carcass characteristics, and digestive tract weights. First a university setting trial demonstrated that withdrawal strategy did not significantly influence growth performance, but carcass yield decreased ($P < 0.01$) in pigs fed the high-fiber diet compared with those fed the corn-soybean meal control (9.3% NDF) and increased (quadratic; $P < 0.03$) as days of withdrawal increased from 0 to 15 d. Pigs continuously fed the high-fiber diet had heavier ($P < 0.01$) full large intestine weight than pigs fed the control. A second study in a commercial setting demonstrated that pigs fed the high-fiber diet throughout had decreased ($P < 0.01$) HCW compared with those fed the control diet. Percentage yield was not significantly influenced by high-fiber diet withdrawal period; however, HCW increased linearly ($P < 0.05$) as withdrawal period increased up to 19 d. In summary, pigs fed high-fiber diets have decreased carcass yield but yield can be restored by switching pigs to a corn-soybean meal diet 15 to 19 d prior to marketing.

Key Words: fiber, finishing pigs, yield

106 Evaluation of the precision and accuracy of equations to predict backfat iodine value in pork carcasses of pigs fed diets containing distillers dried grains with solubles (DDGS). F. Wu^{1,*}, L. J. Johnston², P. E. Urriola¹, G. C. Shurson³, ¹*Department of Animal Science, University of Minnesota, St. Paul,* ²*West Central Research and Outreach Center, University of Minnesota, Morris.*

Iodine value (IV) is a common measurement of fat quality

Table 106.

Reference	Equation	PE	Bias
Benz et al., 2011			
Equation 1	$35.458 + 14.324 \times \text{Diet } 18:2n6, \%$	8.18	0.42
Equation 2	$51.946 + 0.2715 \times \text{Diet IVP}^1$	6.46	-5.07
Bergstrom et al., 2010	$57.89 + 0.18 \times \text{Diet IVP}$	6.18	-4.24
Boyd et al., 1997	$52.4 + 0.315 \times \text{Diet IVP}$	4.60	-2.18
Madsen et al., 1992	$47.1 + 0.14 \times \text{IVP/d, kg}$	6.44	-4.98
Cromwell et al., 2011	$64.5 + 0.432 \times \% \text{ DDGS in diet}$	8.26	7.10
Restrepo et al., 2013			
Equation 1	$70.06 + 0.29 \times \% \text{ DDGS in diet}$	9.19	8.00
Equation 2	$60.13 + 0.27 \times \text{Diet IVP}$	5.03	3.03

¹IVP = dietary IV \times % dietary lipids \times 0.10.

that determines the concentration of unsaturated fatty acids in pork carcass fat depots. Equations have been developed to predict backfat IV based on the amount and composition of dietary lipids fed to growing-finishing pigs. The objective of this study was to evaluate 8 published equations for predicting backfat IV of pigs using dietary fatty acid composition and intake of 8 diets fed in 2 similar experiments. Pigs ($n = 432/\text{experiment}$, initial BW = 23.9 ± 4.1 kg, 9 pigs/pen, 12 pens/treatment) were fed diets consisting of corn and soybean meal or corn-soybean meal diets containing 40% distillers dried grains with solubles (DDGS) from 7 different sources (ether extract content ranged from 5.6 to 16.0%) in a 4-phase feeding program. The IV product (IVP) of diets ranged from 24.0 to 82.1 g/100g. Pigs were harvested (BW = 114.6 ± 7.9 kg), and backfat at the midline of the last rib were sampled from 2 pigs in each pen (24 pigs/treatment), with BW closest to the pen mean. Backfat samples were analyzed for fatty acid composition, and IV was calculated from the AOAC (1998) equation and analyzed using Proc Mixed of SAS with pen as the experimental unit. Calculated backfat IV ranged from 57.7 to 82.3 g/100g. Precision (low prediction error; PE) and accuracy (deviation of predicted means from observed means; bias) were calculated for each equation using predicted backfat IV compared with calculated backfat IV of pigs fed the 8 dietary treatments. Backfat IV was predicted poorly using equations based on percentage of DDGS in the diet, but using equation: $52.4 + (0.315 \times \text{diet IVP})$ resulted in the best estimates for backfat IV due to the least PE and low bias.

Key Words: backfat iodine value, distillers dried grains with solubles, growing-finishing pigs, prediction equations

107 Effect of standardized ileal digestible tryptophan:lysine ratio on growth performance of finishing pigs. M. A. Goncalves^{1,*}, M. D. Tokach¹, S. S. Dritz¹, N. M. Bello¹, K. J. Touchette², J. M. DeRouchey¹, J. C. Woodworth¹, R. D. Goodband¹, ¹*Kansas State University, Manhattan,* ²*Ajinomoto Heartland, Inc., Chicago, IL.*

Four experiments were conducted to estimate the standardized ileal digestible (SID) Trp:Lys ratio requirement for finishing