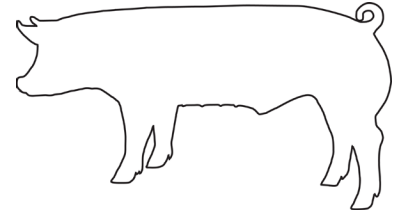




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Inclusion of Additional Alternative Feedstuffs in Swine Diets Show no Improvement in Carcass Fat Quality of Pigs

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Distillers Dried Grains with Solubles (DDGS) is one of the most abundant and competitively-priced alternative feedstuffs for inclusion in swine diets available to pork producers. It is well noted (Guthrie and Rozeboom, 2011) that the inclusion of DDGS in swine finishing rations may have an impact on carcass fat quality. These carcass quality factors include: the slice ability of bellies for bacon, an oily appearance in the retail package and reduced shelf life. Therefore, in order to meet customer expectations, scientists as well as other allied industry groups are looking for ways to improve carcass fat quality of pigs that are fed DDGS. Several studies have reported that by adding feeds containing saturated fatty acids such as corn germ, beef tallow, palm kernel oil or glycerol in pig diets containing no DDGS in diets has improved carcass fat firmness. More recently, a study was conducted by Lee et al., (2013) to investigate change in carcass fat quality of pigs being fed finishing diets containing DDGS by adding corn germ, beef tallow, palm kernel oil or glycerol. These scientists sought to evaluate if adding beef tallow or palm kernel oil, which contain greater amounts of saturated fats, would counteract the softer fat effect of unsaturated DDGS fats. Corn germ and glycerol had reduced belly fat iodine values in two earlier experiments, which indicated that saturated fatty acid content increased suggesting improved belly fat firmness (Mourot et al., 1994; Widmer et al., 2008). But neither study could explain how the improvement occurred, and neither study

directly assessed fat firmness.

Pigs within this study (Lee et al., 2013) received 1 of 6 dietary treatments. These dietary treatments included: 1) corn-soybean meal based diet with no DDGS and no added fat, 2) corn-soybean meal based diet with 30% DDGS, 3) DDGS diet with 15% corn germ, 4) DDGS diet with 3% beef tallow, 5) DDGS diet with 3% palm kernel oil, and 6) DDGS diet with 5% glycerol.

Growth performance

Results of Lee et al., (2013) study yielded no differences in ADG among dietary treatments throughout the entirety of the experimental period as illustrated in Table 1. Interestingly, results from this experiment indicate that the addition of 15% corn germ to a corn-soybean meal based diet does not change pig performance. This observation is in line with previous research findings in regard to the inclusion of corn germ ranging from 10 – 30% in swine diets containing DDGS (Widmer et al., 2008 and Lee et al., 2012).

Carcass characteristics and muscle quality

Interestingly, dressing percentage was not reduced with the feeding of DDGS. These researchers and others do not know why dressing percentage is reduced in some studies (about 55% of the time) and not in others. Varying feed ingredients did not affect subjective color, marbling, firmness, 24-h pH, 48-h drip loss, and objective color (L^* , a^* , b^*) of the loin muscle.

Belly quality

As illustrated in Table 2, there were no differences in belly length, belly width or belly weight among dietary treatments. However, belly flop distance was greater for pigs fed the control diet compared to pigs fed the 5 other diets containing DDGS, but no significant differences in belly flop differences among diets containing DDGS. Essentially, belly flop measures the firmness of fat, the greater the distance the firmer the fat. There were no differences in the fatty acid composition of fat among pigs fed the different diets, and consequently no effect of dietary treatment on fat iodine value.

In conclusion, this respective study illustrates that adding corn germ, beef tallow, palm kernel oil or glycerol in swine finishing diets containing DDGS does not improve carcass fat quality. As scientists continue to research alternative strategies to decrease the negative effects of DDGS on carcass fat quality, pork producers may implement a regimen of reducing inclusion rates of DDGS during the finishing phase of production to deliver a product to pork processors that will ultimately meet the expectations of the customer.

References

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Table 1. Data adapted from Lee et al., 2013

Effect of adding corn germ, beef tallow, palm kernel oil and glycerol to DDGS containing diets on growth performance of finishing pigs.

<i>Diet</i>						
<i>88 day period</i>						
<i>Item</i>	<i>Control</i>	<i>DDGS</i>	<i>Corn germ</i>	<i>Beef tallow</i>	<i>Palm kernel oil</i>	<i>Glycerol</i>
<i>ADG, lbs.</i>	<i>2.18</i>	<i>2.09</i>	<i>2.14</i>	<i>2.16</i>	<i>2.16</i>	<i>2.09</i>
<i>ADFI, lbs.</i>	<i>6.28</i>	<i>5.89</i>	<i>6.04</i>	<i>5.95</i>	<i>5.60</i>	<i>6.02</i>

Table 2. Data adapted from Lee et al., 2013

Effect of adding corn germ, beef tallow, palm kernel oil and glycerol to DDGS – containing diets on belly quality of finishing pigs.

<i>Diet</i>						
<i>Item</i>	<i>Control</i>	<i>DDGS</i>	<i>Corn germ</i>	<i>Beef tallow</i>	<i>Palm kernel oil</i>	<i>Glycerol</i>
<i>Belly length, cm</i>	<i>63.6</i>	<i>61.9</i>	<i>61.7</i>	<i>62.1</i>	<i>60.4</i>	<i>62.0</i>
<i>Belly width, cm</i>	<i>23.7</i>	<i>24.3</i>	<i>24.6</i>	<i>24.6</i>	<i>24.6</i>	<i>24.5</i>
<i>Belly weight, lb.</i>	<i>17.86</i>	<i>18.08</i>	<i>18.74</i>	<i>18.30</i>	<i>18.08</i>	<i>18.08</i>