Evaluation of three genetic populations of pigs for response to increasing levels of Paylean™

C.T. Herr, S.L. Hankins, A.P. Schinckel, and B.T. Richert
Purdue University, West Lafayette, IN

Introduction

In the past several years, consumer demand has forced the swine industry to select for an animal with increased percent lean and higher lean accretion rates. Paylean is a technology that has been shown to increase carcass leanness while improving growth performance when fed to finishing pigs. It has been documented that average daily gain (ADG) and feed efficiency (F:G) are improved when feeding Paylean to finishing pigs, and these improvements increase as the dose of Paylean is increased. It has also been documented that improvements in carcass leanness are also observed, and these improvements increase as the dose of Paylean is increased. These improvements in growth performance and carcass characteristics have also been shown across many different genetic lines of pigs.

The Food and Drug Administration approved Paylean with research that was done with animals that had lower percent lean and lean accretion rates compared to today's animal. With today's leaner genetics, a question of the magnitude of response to Paylean at varying levels needs to be evaluated among different genetic lines of pigs.

Therefore, a late-finishing study (last four weeks) was conducted to evaluate the effect of feeding multiple Paylean levels among three different genetic lines on ADG,

ADFI, F:G, fat and loin depth, carcass weight, premiums, and percent lean while pigs were being fed Paylean. This trial was conducted from August to October, 2000.

Experimental Procedure

Four dietary treatments were formulated for this study to be fed over a four week time period. All diets were formulated to 18.6% CP and a 1.1 % lysine level (Table 1). Treatments were as follows: 1) Control diet (no Paylean); 2) 4.5 g/ton Paylean; 3) 9 g/ton Paylean; 4) 18 g/ton Paylean.

Three hundred gilts of three different genetic lines (Pietran sired (L1)=102 hd; Large White sired (L2)=102 hd; Terminal sired (L3)=96 hd) were blocked by weight into 60 pens (4 or 6 pigs/pen; 10 ft^2/pig). One of four dietary treatments were randomly assigned to each pen within a block. Pigs were weighed and feed intakes were recorded every week for the four-week period to determine ADFI and ADG, from which F:G was calculated. Backfat and loin eye areas were measured bi-weekly on 32 control pigs and 16 pigs per genotype-Paylean treatment using real time ultra sound (Aloka 500). Pigs were started on their dietary treatment when the block average reached 180 lbs. Pigs were then marketed after four weeks, at which time fat and loin depth, percent lean, carcass weight, carcass premium were collected at a commercial slaughter facility in Illinois. Additional measurements were taken on 2 pigs/pen for pork quality characteristics, loin, ham, and belly rough and trimmed weights, and packaging loss weights on ham and loin cuts.

Statistical analysis of the data collected was performed using the GLM procedure of SAS. Pigs were blocked by initial body weight and the main effects of Paylean level, genetic line

and their interactions were examined to determine their effect on growth and carcass characteristics.

Results and Discussion

All gilts used for this experiment were brought in to the nurseries as 14-day-old pigs. Performance data was collected during the nursery and grower phase so that growth curves could be calculated (Tables 2 and 3, respectively).

Paylean effects on Growth

Growth performance while pigs were on their dietary treatment's can be seen in Table 4. All pigs fed Paylean had a 16.6% ($P<.05$) increase in ADG during week1, and pigs fed 18 g/ton Paylean had a .57 lb/d ($P<.05$) decrease in ADFI compared to pigs fed 9 g/ton Paylean. Pigs fed 9 and 18 g/ton Paylean had an average improvement of 14.9% ($P<.05$) in F:G compared to the control treatment while pigs fed 18 g/ton Paylean had an improvement of 11.1% ($P<.05$) compared to pigs fed 4.5 g/ton Paylean.

During week 2, pigs fed 9 and 18 g/ton Paylean had an average increase in ADG of 12.8% ($P<.05$) compared to those pigs on the control diet, and pigs fed 4.5 g/ton Paylean had a .39 lb/d ($P<.05$) decrease in ADFI compared to the control treatment. All pigs fed Paylean had an average improvement of 14.6% ($P<.05$) in F:G compared to the control treatment.

All pigs fed Paylean had an average increase in ADG of 16.8% ($P<.05$) compared to the control treatment during week 3. Although all pigs fed Paylean had a numerical decrease in

ADFI, no significant differences were observed between treatments. All pigs fed Paylean had an average improvement in F:G of 16.7% (P<.05) compared to the control treatment.

During week 4, all pigs fed Paylean had an average increase in ADG of 11.6% (P<.05) compared to the control treatment. Pigs fed 18 g/ton Paylean had a decrease of .38 lb/d (P<.05) in ADFI compared to the control treatment. All pigs fed Paylean had an average improvement of 13.4% (P<.05) in F:G compared to the control treatment during week 4.

Overall, all pigs fed Paylean had an increase in ADG of 14.5% (P<.05) compared to the control treatment, and pigs fed 18 g/ton Paylean had a decrease in overall ADFI of .31 lb/d (P<.05) compared to pigs fed 9 g/ton Paylean and the control diet. All pigs fed Paylean had an average improvement in overall F:G of 14.6% (P<.05) compared to the control treatment. This data would indicate that all pigs fed Paylean had improved growth performance, however, pigs fed 4.5 g/ton of Paylean will provide over 90% of the ADG growth performance compared to the 9 and 18 g/ton Paylean levels. However, 18 g/ton numerically improved feed efficiency compared to 4.5 and 9 g/ton Paylean.

Genotype effects on Growth

No significant differences were observed in ADG between the three genetic lines during week 1. However, line 1 (L1) had an average decrease in ADFI of .44 lb/d (P<.05) compared to line 2 (L2) and line 3 (L3) during week 1. No significant differences were observed in F:G between genetic lines during week 1.

Line 3 had an average increase in ADG of 22.2% (P<.05) compared to L1 and L2 during week 2, while L1 had an average decrease in ADFI of .61 lb/d (P<.05) compared to L2 and L3. Line 3 had a 13.9% (P<.05) improvement in F:G compared to L2 during week 2.

No significant differences were observed in ADG between the three genetic lines during week 3. However, L1 and L2 had an average decrease in ADFI of .39 lb/d (P<.05) compared to L3. No significant differences were observed in F:G between genetic lines during week 3. Line 3 had an average increase of 10.2% (P<.05) in ADG compared to the other two genetic lines, and L1 had an average decrease in ADFI of .48 lb/d (P<.05) compared to L2 and L3 during week 4. Line 1 and L3 had an average improvement in F:G of 14.2% (P<.05) compared to L2 during week 4.

Line 3 had an average increase in overall ADG of 7.0% (P<.05) compared to L1 and L2. In addition, L1 had an average decrease in overall ADFI of .44 lb/d (P<.05) compared to L2 and L3. Line 1 and L3 had an average improvement in overall F:G of 4.6% (P<.05) compared to L2.

Feed Cost Analysis

As expected, cost per ton of feed increased as the level of Paylean was increase in the diet (Table 1). Cost/lb of gain, however, did not necessarily increase in this fashion. The control diet and pigs fed 4.5 g/ton Paylean had a significantly lower cost/lb of gain ($.1725 vs $.1916) compared to pigs fed 18 g/ton Paylean, and pigs fed 4.5 g/ton Paylean had a numerically lower cost/lb of gain ($.1724 vs $.1726) compared to the control diet during week 1 (Table 4). During week 2, pigs fed 4.5 and 9 g/ton Paylean had a lower cost/lb of gain ($.1784 vs $.2072; P<.05)

compare to pigs fed 18 g/ton Paylean, and pigs fed 4.5 and 9 g/ton Paylean has a numerically lower cost/lb of gain when compared to the control diet.

During week 3, the control diet and pigs fed 4.5 g/ton Paylean had a significantly lower cost/lb of gain ($.1923 vs $.2434) compared to pigs fed 18 g/ton Paylean, and pigs fed 4.5 g/ton Paylean had a numerically lower cost/lb of gain ($.1816 vs $.2030) compared to the control diet. During week 4, the control diet and pigs fed 4.5 g/ton Paylean had a significantly lower cost/lb of gain ($.2302 vs $.2653) compared to pigs fed 18 g/ton Paylean.

Overall, pigs fed 4.5 g/ton Paylean had a significantly lower cost/lb of gain ($.1853 vs $.2089) compared to pigs fed 9 and 18 g/ton Paylean. The control treatment and pigs fed 9 g/ton Paylean had a significantly lower cost/lb of gain ($.1961 vs $.2188) compared to pigs fed 18 g/ton Paylean.

No significant differences were noticed between genetic lines during weeks 1 and 2 for cost/lb of gain. Genetic L2 had a significantly lower cost/lb of gain ($.1972 vs $.2299) compared to L3 during week 3, however, this trend reversed and L3 had a significantly lower cost/lb of gain ($.2278 vs $.2581) compared to L2 during week 4. No significant differences in overall cost/lb of gain between genotypes was observed.

Further evaluation of a more traditional feeding program, footnoted in table 4, containing a .80% lys level during week one and a .60% lysine level during weeks 2, 3, and 4 indicates a lower expected overall feed cost/lb of gain ($.1532/lb vs $.1932/lb) for the control treatment animals. These lysine levels were verified by using the NRC computer model, included in the 1998 NRC publication. A weight of 198 lbs for the first week was used; feed intake used to

calculate this lysine level was determined by taking the actual feed intake for the first week and subtracting 7.5% estimated feed wastage to estimate actual nutrient intakes, and then matching ADG (2.03 lb/d) with this intake (4.91 lb/d) and new feed efficiency (2.42 F:G). Lean gain determined by the model was 392 g/d. The performance observed in this trial for the controls would need a .75% lysine level, determined by the model, therefore a .80% lys level was used, to supply formulation cushion for mixing error, to calculate cost/lb of gain for the first week.

A midpoint weight of 226 lbs was used for the next three weeks for the control animals. Feed intake used in the model was 5.53 lb/d (actual minus 7.5% feed wastage) and ADG during this stage was 1.84 lb/d, with a new 3.00 feed efficiency. Lean gain determined by the model was 275 g/d. A .48% lysine level was calculated by the program for the performance observed by the control pigs in the trial during this time period. A .60% lysine level was used in determining the cost/lb gain during this time period as it is more tyL3al of the industry and would provide formulation cushion for mixing error. A dietary energy level of 3460 kcal/kg of DE was also used in the model for both weight periods. This DE level was the actual level fed throughout this trial.

For comparison, requirements for the 9 g/ton treatment were calculated for the same time periods using the NRC model. A 1.05% lysine level was calculated for the first weight period using a weight of 201 lbs, ADG of 2.36 lb/d, and feed intake of 4.70 lb/d (actual minus 7.5% feed wastage) for a feed efficiency of 1.99. Lean gain was calculated to be 560 g/d. Calculations for the second weight period (weeks 2, 3, and 4) were done using a live weight of 234 lbs, ADG of 2.10 lbs/d, and feed intake was 5.48 lbs/d (actual minus 7.5% feed wastage), resulting in a

feed efficiency of 2.61. Lean gain was 380 g/d and the calculated lysine level required was .66% for the second weight period for pigs fed the 9 g/ton treatment.

This reduction in cost/lb gain for the control animals fed a more typical phase feeding program would yield approximately $2.18 less in total feed cost for the control pigs. This reduction in actual feed cost assumes that the control treatment pigs would gain similarly and have similar carcass characteristics if fed the reduced lysine levels and is for discretionary purposes only. However, it does raise added cost pressure for the Paylean product to be cost effective compared to a more traditional program.

Carcass Data (Unadjusted = Pigs fed for same time before marketed)

Tables 5, 6, 7, and 8 report the carcass data from this study, as unadjusted for carcass weight. This allows the data to be analyzed as if the pigs were fed for an equal amount of time, and not to a certain market weight. Producers that utilize a production system that only allows for a certain amount of time for the animal in the finishing facility should utilize these tables to analyze the effect Paylean would have on the carcass merit of their market animals.

Unadjusted carcass measurements taken at a commercial slaughter facility are presented in Table 5. All pigs fed Paylean had an average increase in slaughter body weight of 8.4 lbs ($P<.05$) compared to those pigs fed the control diet. Hot carcass weight was also increased in all pigs fed Paylean by an average of 8.3 lbs ($P<.05$) compared to the control treatment. Pigs fed 18 g/ton Paylean had a 7.1% ($P<.05$) decrease in 10^{th} rib fat depth compared to the control treatment. Pigs fed 18 g/ton Paylean had an increase in loin depth of 7.6% ($P<.05$) compared to the control diet and pigs fed 4.5 g/ton Paylean. Pigs fed 18 g/ton Paylean had an increase in

percent lean of 1.4 percentage units (P<.05) compared to the control treatment. All pigs fed Paylean had an average increase of .8% (P<.05) in dressing percentage compared to the control treatment, and pigs fed 4.5 and 18 g/ton Paylean had an increase in dressing percentage of .4% (P<.05) compared to pigs fed 9 g/ton Paylean.

No significant differences were observed in slaughter weight between genotypes (Table 5). However, L2 had an increase in HCW of 5.25 lbs (P<.05) compared to L1 and L3. Line 1 and L3 had an average decrease in 10^{th} rib fat depth of 10.4% (P<.05) compared to L2. In addition, L1 had a 5.1% (P<.05) increase in loin depth compared to the other two genotypes represented in this trial. Line1 and L3 had an average increase in percent lean of 1.4 percentage units (P<.05) compared to L2. Line1 and L2 had an average increase of 2.5% (P<.05) in dressing percentage compared to L3, and L1 had an increase in dressing percentage of .7% (P<.05) compared to L2.

Ham, loin, and belly cut weight data are presented in Table 6. All pigs fed Paylean had an average increase in ham weight of 2.83 lbs (P<.05) compared to the control treatment. Pigs fed 4.5 and 18 g/ton Paylean had an average increase in ham cut weight as a percent of HCW of 1.8% (P<.05) compared to the control treatment. All pigs fed Paylean had an average increase in loin weight of 2.72 lbs (P<.05) compared to the control treatment, and pigs fed 18 g/ton Paylean had an increase in loin weight of 1.3 lbs (P<.05) compared to pigs fed 9 g/ton Paylean. Pigs fed 4.5 and 18 g/ton Paylean had an increase in loin cut weight as a percent of HCW of .64 percentage units (P<.05) compared to the control treatment, and pigs fed 18 g/ton Paylean had a significant increase in loin cut weight as a percent of HCW of .23 percentage units compared to

pigs fed 4.5 g/ton Paylean (P<.05). Although no significant differences were seen in belly weight between treatments, all pigs fed Paylean had numerically higher belly weights than those animals on the control treatment. Pigs fed 4.5 and 18 g/ton Paylean had a decrease in belly weight as a percent of HCW of .44 percentage units (P<.05) compared to the control treatment. No significant differences were found in belly thickness between Paylean treatments.

Line 1 and L3 had an average increase in ham weight of 1.27 lbs (P<.05) and ham cut weight as a percent of HCW (26.05% vs 24.68%) compared to L2. Line 3 had an increase in ham cut weight as a percent of HCW of 2.0% (P<.05) compared to L1. Line 1 had an increase in loin weight of 1.39 lbs (P<.05) compared to L3 and L1 had an increase in loin cut weight as a percent of HCW of .70 percentage units (P<.05) compared to L2 and L3. Significant differences in belly weights were observed between all three genetic lines (L1=28.91 lbs; L2=31.45 lbs; L3=27.08 lbs). Significant differences in belly weight as a percent of HCW were also observed between all three genetic lines (L1=15.55%; L2=16.55%; L3=14.65%). L1 and L2 had an average increase in belly thickness of 6.8% (P<.05) compared to L3.

Table 7 contains plant pork quality data taken during this trial. No significant differences were observed in one hour and 22 hour pH loin and ham measurements, however, there were significant differences between genotypes. Line 1 had an increase in 22 hour loin pH (5.58 vs 5.53; P<.05) compared to L2. In addition, L1 and L2 had a significantly higher 22 hour ham pH (5.77 vs 5.69; P<.05) compared to L3. No significant differences in loin color were observed between Paylean treatments. However, L1 had a significantly higher loin color score (2.91 vs 2.68) than L2. Pigs fed 18 g/ton Paylean had an increase in loin firmness (1.87 vs 1.71; P<.05)

compared to the control treatment, although no significant differences were noticed between genotypes in loin firmness.

Pigs fed 9 g/ton Paylean had an increase in L^* (46.61 vs 45.48; P<.05) compared to the control treatment. All pigs fed Paylean had an average decrease in a^* of 11.6% (P<.05) compared to the control treatment. Pigs fed 9 and 18 g/ton Paylean had a lower b^* score (4.60 vs 5.28; P<.05) compared to the control treatment.

Line 1 and L3 had an average decrease in L^* (45.66 vs 47.02; P<.05) compared to L2, and all three genotypes had significantly different a^* scores (L1= -.074; L2= -.464; L3= .272). No significant differences were observed between genotypes for the other loin color measurements.

The cost/premium data from this trial is reported in Table 8. As expected total feed cost while pigs were on their Paylean treatment were significantly higher than those animals on the control treatment. Pigs fed 18 g/ton Paylean received $.51/cwt carcass premium (P<.05) more than those animals on the control diet, and pigs fed 4.5 and 9 g/ton Paylean received numerically higher premiums than those animals fed the control diet. All pigs fed Paylean received a higher total premium/pig ($7.69 vs $6.68) compared to the control treatment. Overall premium/pig received increased significantly (P<.05) as the level of Paylean was increased in the diet, eventhough there was no significant difference in base price received between treatments.

Line 3 had a higher 28 day feed cost while on test ($12.91 vs $11.75; P<.05) compared to L1 and L2. Line 1 received a significantly higher premium/cwt of carcass ($4.30 vs $3.84) compared to L2 and L3. Line 1 and L3 received a higher average total premium/pig ($7.75 vs

$6.82) compared to L2. L1 and L2 did receive $.43 (P<.05) more per hundred weight over L3. This was possibly caused by a chronic ileitis outbreak that affected L3 more than the other two genotypes. Pigs of L3 showed more visible signs of ileitis and where treated more by injection according to the treatment sheets kept during this trial.

All pigs fed Paylean received a higher total price/pig (including premium) of $6.09 (P<.05) more compared to the control treatment, and the total price/pig received numerically increased as the level of Paylean was increased in the diet. L2 also received a significantly higher total price/pig ($113.87 vs $110.40) compared to L3. This was principally due to the 6.2 lb greater carcass weight of L2 compared to L3.

Carcass data (Adjusted = Pigs fed to similar HCW)

Data in tables 9, 10, 11, and 12 contains data that has been adjusted for HCW. Producers that feed their animals to a common market weight should utilize these tables to determine the effects Paylean would have on the carcass merit of their pigs if fed in their production system. Although numbers have changed compared to the unadjusted carcass data in tables 5-8, there are very few changes in the significance of these values. The values that had a difference in significance compared to the unadjusted data are the only data points discussed in this section. The remainder of the data can be reviewed as needed.

Data in this section were adjusted for HCW and not live slaughter weight because pigs were sold in groups, resulting in group average live slaughter weights, where as individual HCW's were recorded at the plant. Due to this adjustment to the experiment's average HCW, it should be noted that the differences in % yield could be under estimated in this section (Table 9).

Data from Table 12 would indicate that pigs fed 18 g/ton Paylean was the only Paylean treatment which increased prem/cwt of carcass and prem/pig ($7.92 vs $6.97; P<.05) compared to the control treatment (Table 12). However, when subtracting 28 day feed cost from total price received/pig, the 4.5 g/ton Paylean treatment received $.83 more for each pig when compared to the control treatment.

Loin and Ham Dissection Data

Table 13 contains loin dissection and quality data collected at the University of Illinois. In the section labeled Loin weights, loins were inserted into a bag to measure purge loss. The significant differences observed between treatments for loin in and loin out weights are attributed to Paylean affect. There were no significant differences in 7 day purge loss between treatments.

Pigs fed 9 g/ton Paylean and the control treatment had an average increase in loin marbling of 18.0% (P<.05) compared to pigs fed 4.5 g/ton Paylean (Table13). No significant differences were observed in seven or eight day L* between treatments. However, the control treatment had a significantly higher seven day a* (7.92 vs 6.7; P<.05) compared to pigs fed 9 and 18 g/ton Paylean. The control treatment and pigs fed 4.5 g/ton Paylean had a significantly higher eight day a* (10.74 vs 10.00; P<.05) compared to pigs fed 18 g/ton Paylean. Pigs fed 18 g/ton Paylean had a lower seven day b* (14.41 vs 15.16; P<.05) compared to the other three treatments. In addition, pigs fed 9 g/ton Paylean had a significantly higher eight day b* (21.44 vs 16.87) compared to pigs fed 18 g/ton Paylean.

Pork chops were also subjected to cooking tests to determine cooking loss, shear forces, and moisture and fat percentages. All pigs fed Paylean had increased chop weights prior to

cooking. Pigs fed 18 g/ton Paylean had an increased chop weight (259.3g vs 247.4g; P<.05) post cooking compared to the control treatment. No significant differences were observed in cooking losses among treatments.

All pigs fed Paylean had an increase in Warner-Bratzler shear force (2.30 vs 2.04; P<.05) compared to the control treatment. No significant differences were observed in percent moisture among treatments. Pigs fed 9 g/ton Paylean had an increase in % fat in the cooked loin chop of 12.8% (P<.05) compared to pigs fed 4.5 g/ton Paylean, and this match's the observed difference in loin marbling between these two treatments mentioned earlier in this report.

Pigs fed Paylean had a significantly higher initial and final loin chop drip loss weight (Table 13). However, pigs fed 9 g/ton Paylean had a 19.5% increase (P<.05) in percent drip loss compared to the control treatment

Line 2 had an average increase in loin marbling of 16.4% compared to L1 and L3 (Table 13). In addition, L3 had an increase in loin seven day a* of 25.8% (P<.05) compared to L1 and L2. Line 3 had an increase in loin eight day a* of 14.4%, but a lower seven day b* (14.6 vs 15.71; P<.05) compared to L1 and L2. Additionally, L3 did have a higher purge loss (1.708 vs 1.336; P<.05) compared to L1 and L2.

Line 1 had a significantly higher chop weight (354.3g vs 334.6g; P<.05) compared L2 and L3, and L1 had an increase in chop weight (262.5 vs 247.8; P<.05) post cooking compared to L2 (Table 13).

Line 1 and L2 had an average increase in loin Warner-Bratzler shear force (2.32 vs 2.07; P<.05) compared to L3 (Table 13). Line 3 had a significantly higher loin % moisture (74.68 vs

74.94) compared to L1 and L2. Line 2 and L3 also had an average increase in loin % fat of 14.8% (P<.05) compared to L1. In addition, L3 had a significantly higher percent drip loss (.979 vs 1.708; P<.05) compared to L1 and L2.

Table 14 contains ham dissection data that was collected at the University of Illinois. Hams from 29 pigs/trt were sent for further dissection. All pigs fed Paylean had increased whole ham weights (23.01 lbs vs 24.07 lbs; P<.05) and increased boneless ham weights (13.49 lbs vs 14.40 lbs; P<.05). No significant differences were seen in either bone or skin weights between treatments.

All pigs fed Paylean had a 7.0% (P<.05) increase in inside ham muscle weight compared to the control treatment (Table 13). Pigs fed 18 g/ton Paylean had a 10.3% (P<.05) increase in outside muscle weight compared to the control treatment. No significant differences were observed in knuckle weights between treatments. All pigs fed Paylean had an average increase in ham trim weight of 8.4% (P<.05) compared to the control treatment.

When combining the weights of the three major muscles of the ham, pigs fed 18 g/ton Paylean had an 8.3% (P<.05) increase compared to the control treatment, however, no significant differences were observed between genotypes. Boneless ham yields displayed similar results, with pigs fed 18 g/ton Paylean yielding 2.13 percentage units (P<.05) more boneless ham than the control treatment. No significant differences were observed in yield of the three major muscles of the ham between treatments.

Line 1 had a significant increase in whole ham weight compared to L2, however, no significant differences were observed in boneless ham weights between genotypes (Table 13).

Line 2 had a 9.9% (P<.05) increase in skin weight compared to L1 and L3. Line 3 had a significant increase (2.72lbs vs 3.02lbs) in bone weight compared to the other two genotypes. No significant differences were observed between genotypes in inside ham muscle weights. Line 1 had an 8.0% increase (P<.05) in outside muscle weight compared to the other two genotypes, and L1 had an increase in knuckle weight (2.79lbs vs 2.63lbs; P<.05) compared to L3. There was a significant difference between each genotype for ham trim weight (L1 = 4.79 lbs; L2 = 4.45 lbs; L3 = 5.37 lbs).

Line 1 and L2 had an average increase in ham yield of 2.07 percentage units (P<.05) compared to L3 when combining the weights of the three major muscles of the ham. Line 1 had a significant increase of 2.84 percentage units compared to L3.

Application

Pigs fed Paylean had an increase in ADG, which resulted in an average increase in live weight of 8 lbs and an increase in HCW of 8.5 lbs. Improvements in carcass merit of those pigs fed Paylean also resulted in an average increase in premium/pig of just over $1.00/pig.

Results from this trial would indicate that pigs fed 4.5 g/ton Paylean was the most cost effective Paylean treatment when subtracting 28 day feed cost from the total price received/pig when analyzing the unadjusted data (Table 8). Pigs fed 4.5 g/ton Paylean returned $4.56 more than the control fed pigs, $.95 more than pigs fed 9 g/ton Paylean, and $.36 more than pigs fed 18 g/ton Paylean. In addition, L2 appears to be the most cost effective genotype when fed Paylean, in this trial. Line 2 returned $.69 more per pig than L1 and $4.43 more per pig than L3. This large difference in return between L1 and L3 could, however, be explained by the health

problems that L3 was confronted with when ileitis was diagnosed and the subsequent reduced carcass weight. In addition, the 2 lb difference in nursery start weight could have also attributed to this difference in return, as it is known that larger pigs entering the nursery subsequently have better performance in the grower and finishing stages of growth.

Profitability data from Table 12 (adjusted for HCW) would indicate that pigs fed the 4.5 g/ton Paylean was the only cost effective Paylean treatment when compared to the controls. When subtracting 28 day feed cost from the total price received/pig, the 4.5 g/ton Paylean treatment returned $.83 more than the control treatment. Returns received from the 9 and 18 g/ton Paylean treatments compared to the controls raise questions whether it is economically feasible to feed these levels when feeding market animals to a equal market weight. However, the economics of reduced days to market, fewer light weight pigs, and more turns/barn has not yet been fully evaluated for pigs marketed at a common final body weight.

Pork quality data would indicate that even though there were a few significant differences among the pork quality measurements taken between , there were no detrimental effects on pork quality measurements while feeding Paylean. It is interesting to note the differences between genotypes in pork quality, and results would indicate the need for further investigation between genotypes. However, there may not be a true difference between L1 and L2 versus L3 in pork quality. Most of the L3 pigs were slaughtered on different days than L1 and L2, and there is a known effect of slaughter day that could have caused these differences, but could not be removed from the comparison in this trial.

Table 1: Experimental Diets

Diet	Control	4.5g/ton Paylean	9g/ton Paylean	18g/ton Paylean
Ingredient, %				
Corn	66.51	66.49	66.47	66.42
SBM, 48%	28.10	28.10	28.10	28.10
Fat	3.00	3.00	3.00	3.00
Limestone	0.97	0.97	0.97	0.97
Dical.	.65	.65	.65	.65
Vit/Min/Salt	.663	.663	.663	.663
Lysine-HCl	.10	.10	.10	.10
Paylean-9[a]	0.00	.025	.05	0.10
Lys, %	1.1	1.1	1.1	1.1
ME, Kcal/lb	1569	1569	1569	1569
CP, %	18.58	18.58	18.58	18.58
Ca, %	.6	.6	.6	.6
P, %	.5	.5	.5	.5
Cost, $/ton[b]	131.86	143.09	154.32	176.78

[a] Paylean was deducted from corn based on the control diet formulation

[b] Ingredient prices used in calculation: Corn, $.04/lb; 48% CP SBM, $.113/lb; Fat, $.12/lb; Vit/Min/Salt, $2.30/lb; Limestone, $.05/lb; Dical, $.15/lb; Lys., $.55/lb; Paylean-9, $22.50/lb

Table 2: Nursery growth performance

	L1	L2	L3	Std. Error
# of pigs	120	120	105	
Initial Wt, lbs	11.3	11.7	9.0	.381
Day 0-7				
ADG	.611	.547	.231	.017
ADFI	.556	.531	.385	.017
F:G	.914	.973	1.80	.112
Weight	15.6	15.5	10.3	.445
Day 7-21				
ADG	.948	.870	.639	.028
ADFI	1.27	1.19	.854	.040
F:G	1.35	1.36	1.34	.021
Weight	28.7	27.7	19.3	.776
Day 21-35				
ADG	1.04	1.05	1.08	.026
ADFI	1.86	1.80	1.72	.044
F:G	1.78	1.72	1.59	.027
Weight	42.6	41.4	33.3	1.05
Overall				
ADG	.892	.849	.696	.021
ADFI	1.36	1.30	1.11	.032
F:G	1.53	1.53	1.59	.015
Exit Weight	42.6	41.4	33.3	1.05

Table 3: Grower growth performance

	L1	L2	Std. Error		L3	Std. Error
# of pigs				# of pigs		
Initial Wt, lbs	42.1	41.0	1.15	Initial Wt, lbs	32.9	1.02
Day 0-21				**Day 0-7**		
ADG	1.48	1.62	.037	ADG	1.19	.044
ADFI	2.84	3.13	.061	ADFI	2.68	.018
F:G	1.92	1.94	.016	F:G	2.32	.102
Weight	73.1	75.0	1.86	Weight	42.5	1.29
Day 21-42				**Day 7-28**		
ADG	1.84	1.89	.029	ADG	1.60	.037
ADFI	3.76	4.12	.080	ADFI	2.93	.061
F:G	2.04	2.17	.028	F:G	1.84	.021
Weight	111.8	114.7	2.28	Weight	75.9	1.92
Day 42-67				**Day 28-53**		
ADG	1.90	2.04	.038	ADG	1.91	.025
ADFI	4.25	4.75	.117	ADFI	4.01	.079
F:G	2.24	2.32	.032	F:G	2.11	.046
Weight	159.2	165.9	3.05	Weight	123.6	2.26
Day 67 to Paylean				**Day 53-71**		
ADG	1.73	1.60	.075	ADG	2.01	.024
ADFI	4.61	5.14	.132	ADFI	4.75	.054
F:G	2.73	3.47	.221	F:G	2.36	.025
Weight	183.0	185.9	1.11	Weight	160.1	2.55
Overall				**Day 71 to Paylean**		
ADG	1.74	1.86	.026	ADG	2.03	.051
ADFI	3.88	4.18	.083	ADFI	5.05	.061
F:G	2.18	2.24	.017	F:G	2.52	.057
Paylean Start Wt, lbs	183.0	185.9	1.11	Weight	182.9	1.40
				Overall		
				ADG	1.83	.018
				ADFI	3.93	.036
				F:G	2.15	.022
				Paylean Start Wt, lbs	182.9	1.40

- L3 pigs were brought into the nursery 10 days later than L1 and L2. Therefore, L3 pigs spent more time in the grower than L1 and L2 before starting on their Paylean treatment

Table 4: Effect of Paylean and genetic line on weekly ADG, ADFI, and F:G in late finishing pigs.

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	74	76	74	76		102	102	96
Initial Wt, lbs	183.8	184.2	184.2	184.4	1.41	183.0	186.4	182.9
Week 1								
ADG	2.03^{a}	2.30^{b}	2.44^{b}	2.36^{b}	.080	2.23^{x}	2.39^{x}	2.22^{x}
ADFI	5.31^{ab}	5.52^{ab}	5.65^{b}	5.08^{a}	.181	5.10^{x}	5.58^{y}	5.49^{y}
F:G	2.65^{c}	2.44^{bc}	2.34^{ab}	2.17^{a}	.094	2.32^{x}	2.39^{x}	2.49^{x}
g/lys day	26.52	27.57	28.22	25.37		25.47	27.87	27.42
Cost/lb gain, $*	.1726^{a}	.1724^{a}	.1806^{ab}	.1916^{b}	.007	.1747^{x}	.1789^{x}	.1845^{x}
Week 2								
ADG	2.11^{a}	2.24^{ab}	2.41^{b}	2.35^{b}	.075	2.07^{x}	2.17^{x}	2.59^{y}
ADFI	5.76^{b}	5.37^{a}	5.65^{ab}	5.45^{ab}	.131	5.15^{x}	5.62^{y}	5.90^{y}
F:G	2.80^{b}	2.45^{a}	2.38^{a}	2.34^{a}	.099	2.51^{xy}	2.67^{y}	2.30^{x}
g/lys day	28.77	26.82	28.22	27.22		25.72	28.07	29.46
Cost/lb gain, $*	.1891^{ab}	.1747^{b}	.1821^{b}	.2072^{a}	.008	.1868^{x}	.1922^{x}	.1858^{x}
Week 3								
ADG	1.92^{a}	2.25^{b}	2.21^{b}	2.27^{b}	.078	2.15^{x}	2.13^{x}	2.20^{x}
ADFI	5.84^{a}	5.64^{a}	5.77^{a}	5.57^{a}	.128	5.55^{x}	5.60^{x}	5.96^{y}
F:G	3.08^{b}	2.54^{a}	2.68^{a}	2.48^{a}	.103	2.65^{x}	2.66^{x}	2.77^{x}
g/lys day	29.16	28.17	28.82	27.82		27.72	27.97	29.76
Cost/lb gain, $*	.2030^{a}	.1816^{a}	.2150^{ab}	.2434^{b}	.013	.2052^{xy}	.1972^{x}	.2299^{y}
Week 4								
ADG	1.76^{a}	1.94^{b}	2.00^{b}	1.95^{b}	.069	1.87^{x}	1.81^{x}	2.05^{y}
ADFI	6.11^{b}	5.92^{ab}	6.07^{ab}	5.73^{a}	.137	5.64^{x}	6.23^{y}	6.00^{y}
F:G	3.57^{b}	3.13^{a}	3.14^{a}	3.00^{a}	.151	3.07^{x}	3.55^{y}	3.02^{x}
g/lys day	30.51	29.56	30.31	28.77		28.17	31.11	29.96
Cost/lb gain, $*	.2283^{a}	.2321^{a}	.2380^{ab}	.2653^{b}	.010	.2369^{xy}	.2581^{y}	.2278^{x}
Overall								
ADG	1.95^{a}	2.19^{b}	2.26^{b}	2.25^{b}	.028	2.08^{x}	2.14^{x}	2.27^{y}
ADFI	5.75^{b}	5.61^{ab}	5.79^{b}	5.46^{a}	.102	5.36^{x}	5.76^{y}	5.84^{y}
F:G	2.95^{a}	2.56^{b}	2.57^{b}	2.43^{b}	.046	2.59^{x}	2.71^{y}	2.58^{x}
g/lys day	28.72	28.02	28.92	27.27		26.77	28.77	29.16
Cost/lb gain, $*	.1932^{ab}	.1853^{a}	.1989^{b}	.2188^{c}	.003	.1970^{x}	.2003^{x}	.1999^{x}
Final Wt, lbs	238.3^{a}	244.9^{b}	247.3^{b}	246.3^{b}	1.70	240.7^{x}	247.3^{y}	245.1^{y}
Slaughter Wt, lbs	245.8^{a}	253.7^{b}	254.2^{b}	255.05^{b}	1.75	249.6^{x}	254.9^{y}	252.1^{xy}

^{a,b,c} Means in a row with different superscript differ P<.05 (pdiff)

^{x,y} Genetic Line means with different superscript differ P<.05 (pdiff)

- Cost of Paylean included for those diets containing Paylean
- Pen is unit of measurement
- Calculated cost/lb gain for control pigs fed a more traditional .70% lys during week 1 and a .6% lys during weeks 2, 3, and 4 are: Week 1 = $.1471, Week 2 = $.1367, Week 3 = $.1545, Week 4 = $.1764, Overall = $.1532

Carcass Data (Unadjusted = Pigs fed for same time before marketed)

Table 5: Effect of Paylean and genetic line on plant carcass characteristics in late finishing pigs (Unadjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
Slaughter BW, lbs	246.0^{a}	253.0^{b}	255.2^{b}	255.0^{b}	1.81	250.5^{x}	253.8^{x}	252.5^{x}
HCW, lbs	180.3^{a}	187.4^{b}	188.0^{b}	190.3^{b}	1.48	185.7^{x}	190.0^{y}	183.8^{x}
10^{th} Rib FD, in*	$.70^{b}$	$.66^{ab}$	$.67^{ab}$	$.65^{a}$	.451	$.64^{x}$	$.72^{y}$	$.65^{x}$
Loin Depth, in*	2.19^{a}	2.27^{a}	2.32^{ab}	2.40^{b}	.892	2.37^{y}	2.25^{x}	2.26^{x}
% Lean*	54.71^{a}	55.50^{ab}	55.52^{ab}	56.15^{b}	.303	56.16^{y}	54.56^{x}	55.69^{y}
% Yield (plant)	76.27^{a}	76.95^{c}	76.66^{b}	77.03^{c}	.082	77.08^{y}	77.64^{z}	75.46^{x}
% Yield (farm)	73.31^{a}	74.27^{b}	73.85^{b}	74.41^{b}	.212	74.12^{y}	74.85^{z}	72.91^{x}

^{a,b,c} Means in a row with different superscript differ P<.05 (pdiff)

^{x,y} Genetic Line means with different superscript differ P<.05 (pdiff)

- Not adjusted for HCW
- Measurements taken using Fat-O-Meter technology

Table 6: Effect of Paylean and genetic line on ham, loin, and belly weights (Unadjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
Slaughter BW, lbs	246.0^{a}	253.0^{b}	255.2^{b}	255.00^{b}	1.81	250.5^{x}	253.8^{x}	252.5^{x}
HCW, lbs	180.3^{a}	187.4^{b}	188.0^{b}	190.3^{b}	1.48	185.7^{x}	190.0^{y}	183.8^{x}
Total Ham Wt., lbs	45.52^{a}	48.24^{b}	48.00^{b}	48.81^{b}	.380	47.80^{y}	46.80^{x}	48.33^{y}
Ham %*	25.29^{a}	25.76^{b}	25.57^{ab}	25.75^{b}	.001	25.78^{y}	24.68^{x}	26.32^{z}
Total Loin Wt.,lbs	39.59^{a}	42.16^{bc}	41.74^{b}	43.04^{c}	.418	42.32^{y}	41.65^{xy}	40.93^{x}
Loin %*	21.94^{a}	22.46^{bc}	22.19^{ab}	22.69^{c}	.001	22.79^{y}	21.93^{x}	22.25^{x}
Total Belly Wt., lbs	28.72^{a}	29.00^{a}	29.63^{a}	29.23^{a}	.376	28.91^{y}	31.45^{z}	27.08^{x}
Belly %*	15.84^{b}	15.46^{a}	15.70^{ab}	15.34^{a}	.001	15.55^{y}	16.55^{z}	14.65^{x}
Belly Thickness, in	1.56^{a}	1.57^{a}	1.61^{a}	1.55^{a}	.723	1.61^{y}	1.61^{y}	1.50^{x}

^{a,b,c} Means in a row with different superscript differ P<.05 (pdiff)

^{x,y,z} Genetic Line means with different superscript differ P<.05 (pdiff)

- Not adjusted for HCW
- Ham and Belly cuts are rough cuts (trim included)
- Loin cuts are trim cut weights (approximately 1/8'' fat remaining, no skin)
- Percents are cut weight as a percent of HCW

Table 7: Effect of Paylean and genetic line on pork quality characteristics in late finishing Pigs

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
pH Loin, 1 hr*	5.95[a]	5.90[a]	5.89[a]	5.92[a]	.025	5.93[x]	5.90[x]	5.92[x]
pH Loin, 22 hrs*	5.57[a]	5.56[a]	5.54[a]	5.57[a]	.018	5.58[y]	5.53[x]	5.57[xy]
pH Ham, 22 hrs*	5.73[a]	5.76[a]	5.74[a]	5.75[a]	.026	5.78[y]	5.76[y]	5.69[x]
Loin Quality Measurements								
Color	2.93[a]	2.80[a]	2.73[a]	2.76[a]	.072	2.91[y]	2.68[x]	2.84[xy]
Firmness	1.71[a]	1.75[ab]	1.81[ab]	1.87[b]	.057	1.82[x]	1.76[x]	1.78[x]
L* **	45.48[a]	46.06[ab]	46.61[b]	46.31[ab]	.400	45.36[x]	47.02[y]	45.96[x]
a* **	.214[b]	-.179[a]	-.222[a]	-.167[a]	.119	-.074[x]	-.464[y]	.272[z]
b* **	5.28[b]	4.82[ab]	4.72[a]	4.48[a]	.226	4.72[x]	4.64[x]	5.12[x]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y,c] Genetic Line means with different superscript differ P<.05 (pdiff)

- Not adjusted for HCW
- Color scores determined using a 1-6 scale (1 = pale; 6 = dark)
- Firmness scores determined using a 1-5 scale (1 = extremely soft; 5 = extremely firm)
- Low pH (7 = neutral) is associated with poor meat quality

** L* score 0 = black, 100 = white; a* score 0 = green, 100 = red; b* score 0 = blue, 100 = yellow

Table 8: Effect of Paylean on Cost/Premium in late finishing pigs (Unadjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
HCW, lbs	180.3[a]	187.4[b]	188.0[b]	190.3[b]	1.48	185.7[x]	190.0[y]	183.8[x]
Cost/lb gain, $[*]	.1932[ab]	.1853[a]	.1989[b]	.2188[c]	.003	.1970[x]	.2003[x]	.1999[x]
28 day feed cost, $[*]	10.66[a]	11.37[b]	12.62[b]	13.90[b]	.295	11.55[x]	11.95[x]	12.91[y]
Prem/cwt carcass, $	3.72[a]	3.99[ab]	4.02[ab]	4.23[b]	.128	4.30[y]	3.57[x]	4.10[x]
Prem/pig, $	6.68[a]	7.47[b]	7.55[b]	8.06[b]	.253	7.98[y]	6.82[x]	7.52[y]
Premium over control, $	0.00	0.79	0.87	1.38				
Base price, $/cwt carcass[**]	55.94[a]	56.28[a]	56.21[a]	56.28[a]	.153	56.32[y]	56.32[y]	55.89[x]
Base price received/pig, $[***]	101.10[a]	105.61[b]	105.80[b]	107.61[b]	.987	104.79[xy]	107.08[y]	102.88[x]
Total price received/pig, $[****]	107.78[a]	113.05[b]	113.35[b]	115.22[b]	1.08	112.78[xy]	113.87[y]	110.40[x]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y] Genetic Line means with different superscript differ P<.05 (pdiff)

- Cost of Paylean included for those diets containing Paylean

[**] Average carcass base price figured: >206lbs = $55.92; 206-169lbs = $56.61; 168-163lbs = $54.78; 162 – 156lbs = $52.21; <156lbs = $48.65

[***] Base price x HCW

[****] (Base price x HCW) + prem/pig

Carcass data (Adjusted = Pigs fed to similar HCW)

Table 9: Effect of Paylean and genetic line on carcass characteristics in late finishing pigs (Adjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
Slaughter BW, lbs	246.0^{a}	253.0^{b}	255.2^{b}	255.0^{b}	1.81	250.5^{x}	253.8^{x}	252.5^{x}
HCW, lbs	180.3^{a}	187.4^{b}	188.0^{b}	190.3^{b}	1.48	185.7^{x}	190.0^{y}	183.8^{x}
10^{th} Rib FD, in*	$.71^{b}$	$.66^{ab}$	$.67^{ab}$	$.64^{a}$	.459	$.64^{x}$	$.72^{y}$	$.65^{x}$
Loin Depth, in*	2.24^{a}	2.27^{a}	2.31^{ab}	2.38^{b}	.853	2.38^{y}	2.23^{x}	2.29^{x}
% Lean*	54.74^{a}	55.50^{ab}	55.52^{ab}	56.14^{b}	.310	56.17^{y}	54.54^{x}	55.70^{y}
% Yield (plant)*	76.31^{a}	76.95^{c}	76.66^{b}	77.01^{c}	.086	77.10^{y}	77.63^{z}	75.48^{x}
% Yield (farm)*	$73.7l^{a}$	74.26^{a}	73.80^{a}	74.22^{a}	.200	74.21^{y}	74.68^{z}	73.11^{x}

^{a,b,c} Means in a row with different superscript differ P<.05 (pdiff)

^{x,y} Genetic Line means with different superscript differ P<.05 (pdiff)

- Adjusted for HCW
- 10^{th} Rib FD, Loin Depth, and % lean measurements taken using Fat-O-Meter

Table 10: Effect of Paylean and genetic line on ham, loin, and belly weights (Adjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
Total Ham Wt., lbs	46.98[a]	48.20[b]	47.82[b]	48.27[b]	.227	48.13[y]	46.30[x]	49.03[z]
Ham %[*]	25.10[a]	25.77[b]	25.59[b]	25.83[b]	.001	25.74[y]	24.75[x]	26.23[z]
Total Loin Wt.,lbs	41.14[a]	42.05[bc]	41.55[ab]	42.46[c]	.263	42.64[y]	41.07[x]	41.69[z]
Loin %[*]	21.94[a]	22.46[bc]	22.19[ab]	22.69[c]	.001	22.79[y]	21.93[x]	22.24[x]
Total Belly Wt., lbs	29.87[c]	29.05[bc]	29.51[c]	28.71[ab]	.270	29.24[y]	30.98[z]	27.63[x]
Belly %[*]	15.93[c]	15.46[ab]	15.69[cb]	15.29[a]	.001	15.58[y]	16.51[z]	14.70[x]
Belly Thickness, in	1.59[a]	1.57[a]	1.60[a]	1.53[a]	.743	1.61[y]	1.60[y]	1.51[x]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y,z] Genetic Line means with different superscript differ P<.05 (pdiff)

- Adjusted for HCW
- Ham and Belly cuts are rough cuts (trim included)
- Loin cuts are trim cut weights (approximately 1/8'' fat remaining, no skin)
- Percents are cut weight as a percent of HCW

Table 11: Effect of Paylean and genetic line on pork quality characteristics in late finishing Pigs (Adjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	72	75	70	75		99	99	94
pH Loin, 1 hr*	5.97[b]	5.90[ab]	5.89[a]	5.91[ab]	.025	5.94[x]	5.89[x]	5.92[x]
pH Loin, 22 hrs*	5.57[a]	5.56[a]	5.54[a]	5.57[a]	.019	5.58[x]	5.54[x]	5.57[x]
pH Ham, 22 hrs*	5.72[a]	5.76[a]	5.74[a]	5.76[a]	.027	5.78[y]	5.77[y]	5.68[x]
Loin Quality Measurements								
Color	2.90[a]	2.81[a]	2.74[a]	2.78[a]	.075	2.90[y]	2.69[x]	2.83[xy]
Firmness	1.71[a]	1.75[ab]	1.81[ab]	1.87[b]	.060	1.81[x]	1.75[x]	1.78[x]
L* **	45.67[a]	46.05[a]	46.59[a]	46.27[a]	.415	45.42[x]	46.98[y]	46.04[x]
a* **	.229[b]	-.178[ab]	-.222[a]	-.173[ab]	.124	-.065[x]	-.469[y]	.276[z]
b* **	5.38[b]	4.82[ab]	4.71[a]	4.44[a]	.235	4.75[xy]	4.60[x]	5.16[y]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y,c] Genetic Line means with different superscript differ P<.05 (pdiff)

- Adjusted for HCW
- Color scores determined using a 1-6 scale (1 = pale; 6 = dark)
- Firmness scores determined using a 1-5 scale (1 = extremely soft; 5 = extremely firm)
- Low pH (7 = neutral) is associated with poor meat quality

** L* score 0 = black, 100 = white; a* score 0 = green, 100 = red; b* score 0 = blue, 100 = yellow

Table 12: Effect of Paylean on Cost/Premium in late finishing pigs (Adjusted for HCW)

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
Actual HCW, lbs	180.3[a]	187.4[b]	188.0[b]	190.3[b]	1.48	185.7[x]	190.0[y]	183.8[x]
Cost/lb gain, $	.1932[ab]	.1853[a]	.1989[b]	.2188[c]	.003	.1970[x]	.2003[x]	.1999[x]
28 day feed cost, $[d]	11.69	11.37	12.62	13.90		11.55[x]	11.95[x]	12.91[y]
Prem/cwt carcass, $	3.72[a]	3.99[ab]	4.02[ab]	4.23[b]	.135	4.29[y]	3.57[x]	4.11[x]
Prem/pig, $	6.97[a]	7.46[ab]	7.51[ab]	7.92[b]	.254	8.03[y]	6.71[x]	7.66[y]
Value over control, $	0.00	0.49	0.54	0.95				
Base price, $/cwt carcass[**]	56.27[a]	56.27[a]	56.17[a]	56.12[a]	.139	56.38[x]	56.17[x]	56.06[x]
Price received/pig, $[***]	105.44[a]	105.44[a]	105.30[a]	105.21[a]	.221	105.63[y]	105.29[xy]	105.12[x]
Total price received/pig, $[****]	112.37[a]	112.88[a]	112.77[a]	113.10[a]	.322	113.63[z]	111.97[x]	112.74[y]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y,z] Genetic Line means with different superscript differ P<.05 (pdiff)

[d] A new 28d feed cost for the control treatment was calculated using the last week's growth and feed efficiency data to "grow" the control pigs to the same final live weight as the average of the Paylean treatments.

* Cost of Paylean included for those diets containing Paylean

** Average carcass base price figured: >206 lbs = $55.92; 206-169 lbs = $56.61; 168-163 lbs = $54.78; 162-156 lbs = $52.21; <156 lbs = $48.65

*** Base price x HCW

**** (Base price x HCW) + prem/pig

- Adjusted for HCW

Table 13: Loin Dissection Results

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	67	70	66	70		91	91	91
Loin weights								
Loin in (lbs)	7.71^{a}	8.14^{b}	7.93^{ab}	8.29^{bc}	.1067	8.18^{y}	7.90^{x}	7.97^{xy}
Loin out (lbs)	7.60^{a}	8.01^{bc}	7.82^{ab}	8.17^{c}	.1039	8.07^{y}	7.81^{x}	7.83^{x}
7 day purge loss (%) *	1.412^{a}	1.610^{a}	1.409^{a}	1.410^{a}	.1159	1.396^{x}	1.276^{x}	1.708^{y}
Loin Chop Drip Loss								
Initial Wt. (g)	168.3^{a}	180.2^{b}	176.8^{b}	180.1^{b}	2.663	180.5^{y}	171.5^{x}	177.1^{xy}
Final Wt.(g)	166.7^{a}	178.3^{b}	174.7^{b}	178.2^{b}	2.621	178.7^{y}	169.8^{x}	175.0^{xy}
Drip Loss (%)	$.9447^{a}$	1.045^{ab}	1.174^{b}	1.051^{ab}	.0679	$.9939^{x}$	$.9651^{x}$	1.203^{y}
Loin Pork Quality								
Marbling **	2.607^{b}	2.178^{a}	2.704^{b}	2.419^{ab}	.0946	2.304^{x}	2.781^{y}	2.345^{x}
L* day 7	54.83^{a}	55.22^{a}	55.95^{a}	55.06^{a}	.4594	54.98^{x}	55.38^{x}	55.43^{x}
a* day 7 ***	7.92^{b}	7.13^{ab}	6.78^{a}	6.62^{a}	.4086	6.43^{x}	6.32^{x}	8.59^{y}
b* day 7 ***	15.35^{b}	15.12^{b}	15.02^{b}	14.41^{a}	.1912	14.58^{x}	14.63^{x}	15.71^{y}
L* day 8 ***	55.49^{a}	57.13^{a}	56.67^{a}	55.55^{a}	.6862	56.71^{x}	56.17^{x}	55.75^{x}
a* day 8 ***	10.80^{b}	10.67^{b}	10.31^{ab}	10.00^{a}	.2189	10.02^{x}	9.76^{x}	11.55^{y}
b* day 8 ***	17.53^{ab}	17.38^{ab}	21.44^{b}	16.87^{a}	1.656	16.83^{x}	19.92^{x}	18.17^{x}
Loin Chop Cooking Characteristics								
Prior to cooking (g)	328.6^{a}	344.3^{b}	343.1^{b}	348.6^{b}	4.846	354.3^{y}	330.6^{x}	338.6^{x}
After cooking (g)	247.4^{a}	257.9^{ab}	255.8^{ab}	259.3^{b}	4.042	262.5^{y}	247.8^{x}	255.1^{xy}
Cooking loss (g)	24.56^{a}	25.08^{a}	25.33^{a}	25.52^{a}	.6788	25.85^{x}	24.90^{x}	24.62^{x}
WBS (kg) ****	2.04^{a}	2.23^{b}	2.27^{b}	2.39^{b}	.0673	2.27^{y}	2.36^{y}	2.07^{x}
Moisture (%)	74.85^{a}	74.78^{a}	74.69^{a}	74.74^{a}	.0828	74.75^{x}	74.61^{x}	74.94^{y}
Fat (%)	2.06^{ab}	1.90^{a}	2.18^{b}	2.07^{ab}	.0813	1.84^{x}	2.08^{y}	2.24^{y}

^{a,b,c} Means in a row with different superscript differ P<.05 (pdiff)

^{x,y} Genetic Line means with different superscript differ P<.05 (pdiff)

* Higher values are related to poor meat quality

** Score of 1 = 1% intramuscular fat and scale increases in 1% increments

*** L* score 0 = black, 100 = white; a* score 0 = green, 100 = red; b* score 0 = blue, 100 = yellow

**** Increased values are an indication of poor tenderness

Table 14: Ham Dissection Results

	Control	4.5 Paylean	9 Paylean	18 Paylean	Std. Error	L1	L2	L3
# of Pigs, hd.	29	29	29	29		39	39	38
Whole Ham Wt. (lbs)	23.01[a]	24.00[b]	23.95[b]	24.26[b]	.2418	23.76[xy]	23.53[x]	24.12[y]
Boneless Ham Wt. (lbs)	13.49[a]	14.17[b]	14.28[b]	14.75[b]	.2356	14.45[x]	14.05[x]	14.02[x]
Skin Wt. (lbs)	3.93[a]	3.86[a]	3.93[a]	3.60[a]	.1318	3.71[x]	4.10[y]	3.68[x]
Bone Wt. (lbs)	2.80[a]	2.90[a]	2.77[a]	2.81[a]	.0502	2.76[x]	2.69[x]	3.02[y]
Trim Wt. (lbs)	4.57[a]	4.96[b]	4.92[b]	5.04[b]	.1203	4.79[y]	4.45[x]	5.37[z]
Inside Muscle Wt. (lbs)	4.19[a]	4.47[b]	4.43[b]	4.61[b]	.0971	4.40[x]	4.38[x]	4.48[x]
Outside Muscle Wt. (lbs)	4.80[a]	5.02[ab]	5.05[ab]	5.35[b]	.1202	5.26[y]	5.07[xy]	4.84[x]
Knuckle Wt. (lbs)	2.66[a]	2.74[a]	2.73[a]	2.75[a]	.0581	2.79[y]	2.75[xy]	2.63[x]
3 Major Muscle Wt. (lbs)	11.65[a]	12.23[ab]	12.05[ab]	12.71[b]	.2388	12.45[x]	12.09[x]	11.95[x]
Boneless Ham Yield (%)	58.61[a]	59.02[ab]	59.50[ab]	60.74[b]	.6335	60.77[y]	59.55[y]	58.09[x]
3 Major Muscle Yield (%)	50.66[a]	50.98[a]	50.29[a]	52.37[a]	.7835	52.40[y]	51.27[xy]	49.56[x]

[a,b,c] Means in a row with different superscript differ P<.05 (pdiff)

[x,y] Genetic Line means with different superscript differ