

Is Reducing Soybean Meal Use a Wise Move?

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Rising soybean meal prices have prompted some pork producers to consider reducing the amount of soybean meal in grow-finish swine feeds in an attempt to reduce diet cost. Is that a wise decision?

When soybean meal is removed from the diet, the amino acid content of the diet will decrease unless crystalline forms of amino acids are added. Lower dietary amino acid levels may result in reduced growth performance and carcass merit depending the level of amino acids being fed currently. The issue for producers to address for their individual operation is does the saving in diet cost resulting from reduced soybean meal usage more than offset the effects of reduced performance that will likely occur?

To help producers address that issue, we provided data where the effect of increasing lysine:calorie ratio in 220 to 265 lb finishing barrows and gilts (PIC 337 X C22) grown in commercial facilities was examined (Tables 1 and 2). The lysine:calorie ratios were altered by adjusting the ratio of corn to soybean meal in the diet. Dietary lysine density is also shown as percent of the diet. We calculated income over feed for pigs fed each diet assuming the value of corn and 46.5% soybean meal was \$2.71/bu and \$277/ton, respectively.

Income over feed increased as dietary lysine density increased to .74% in gilts (Table 1). As expected, income over feed was maximized at a lower level of lysine (.6%) in barrows (Table 2). These lysine levels are similar to those reported in the Nebraska and South Dakota Swine Nutrition Guide for high lean gain pigs. Although the price of soybean has increased significantly, its value has not increased enough relative to corn to justify removing soybean meal from the finisher diet in an attempt to reduce diet costs. The relationship between corn price and soybean meal would need to widen significantly before removing meal. It is a relationship to watch but for now, producers may want to consider keeping very current in their marketing and staying at the lower end of the their best weight range. This is an action directed at total pounds of pork marketed, which in 2004 could become burdensome.

For a more detailed look at how we derived income over feed and how much the price of corn and soybean meal would need to widen to justify removing soybean meal, visit the Pork Central web site at <http://porkcentral.unl.edu/>.

Table 1. Effect of lysine:calorie ratio on 220 to 265 lb gilts fed a diet containing 6% added fat^a

Item	g lysine/mcal ME:	1.40	1.60	1.80	2.00	2.20	2.40
	% lysine ^b :	.47	.53	.60	.67	.74	.80
Daily gain, lb ^c		1.59	1.60	1.69	1.85	1.94	1.94
Feed/gain ^d		3.37	3.32	3.05	2.87	2.81	2.81
Off-test weight, lb ^c		262.2	262.3	264.5	268.4	270.8	270.8
Carcass yield, %		75.4	76.0	76.3	76.2	75.7	76.2
Carcass wt, lb ^c		197.7	199.4	201.8	204.5	205.0	206.4
10 th rib backfat, in ^d		.71	.69	.72	.69	.68	.67
Loin depth, in ^c		2.21	2.25	2.25	2.29	2.30	2.31
Lean, % ^d		54.7	55.1	54.6	55.2	55.3	55.5
Value of carcass wt gain, \$/head ^e		22.43	22.73	24.07	25.95	27.03	27.19
Feed cost, \$/head ^f		8.80	9.07	9.04	9.57	10.15	10.47
Income over feed, \$/head		13.63	13.66	15.03	16.38	16.88	16.72

^aGrowth and carcass data from the 2002 Kansas State University Swine Report. A total of 1,021 gilts (PIC) housed at 21 to 25 pigs/pen for 25 days.

^bCalculated to correspond to a non-fat supplemented, corn-soybean meal.

^cLinear (P < .0001).

^dQuadratic (P < .04).

^eNational base price grid, March 2, 2004.

^fCorn = \$2.71/bu and 46.5% CP soybean meal = \$277/ton.

Table 2. Effect of lysine:calorie ratio on 220 to 265 lb barrows fed a diet containing 6% added fat^a

Item	g lysine/mcal ME: % lysine ^b :	1.40 .47	1.60 .53	1.80 .60	2.00 .67	2.20 .74	2.40 .80
Daily gain, lb ^c		1.80	1.80	1.89	1.91	1.91	1.93
Feed/gain ^c		3.21	3.22	3.09	3.08	3.00	2.97
Off-test weight, lb ^c		264.7	264.7	266.5	266.9	267.0	267.4
Carcass yield, %		76.2	76.1	76.2	76.3	75.4	76.1
Carcass wt, lb ^c		201.7	201.4	203.0	203.6	201.3	203.5
10 th rib backfat, in ^d		.77	.78	.80	.79	.76	.76
Loin depth, in ^d		2.31	2.33	2.32	2.29	2.32	2.35
Lean, % ^d		53.94	53.90	53.58	53.63	54.17	54.18
Value of carcass wt gain, \$/head ^e		34.06	34.02	35.43	35.78	35.44	36.07
Feed cost, \$/head ^f		8.88	9.30	9.57	9.95	10.03	10.33
Income over feed, \$/head		15.13	14.72	15.48	15.12	14.74	14.83

^aGrowth and carcass data from the 2002 Kansas State University Swine Report. A total of 968 barrows (PIC) housed at 22 to 24 pigs/pen for 21 days.

^bCalculated to correspond to a non-fat supplemented, corn-soybean meal.

^cLinear (P < .0001).

^dQuadratic (P < .0002).

^eNational base price grid, March 2, 2004.

^fCorn = \$2.71/bu and 46.5% CP soybean meal = \$277/ton.

Ration Worksheet							
Corn = \$2.71/bu							
46.5% CP soybean meal = \$277/ton.							
Diet/Lysine	0.47	0.53	0.6	0.67	0.74	0.8	
Corn	1790	1730	1685	1635	1585	1535	
SoyMeal HP 46+%	160	220	265	315	365	415	
Base Mix Pack	50	50	50	50	50	50	
Total Ration Weight	2000	2000	2000	2000	2000	2000	
Ration Cost per lb.	\$0.062	\$0.065	\$0.067	\$0.069	\$0.071	\$0.073	

The market values were taken from the March 2, 2004 USDA National Base Price as reported. Both gilts and barrows were assumed to have no other features that would prevent them from being valued at or near the upper range of the grid based on back fat, loin depth and carcass weight. The values used are estimates and do not reflect any individual buyers grid. Producers should compare their own data and put values that match their buyers grid to determine exact value on an individual buyer's grid. As an example those buyers that favor heavier carcasses with less discount for back fat would reward the heavier barrows more than shown in the table.

Gilt Table							
Starting Weight		220					
g lysine/mcal ME:							
Item	1.4	1.6	1.8	2	2.2	2.4	
% lysineb:	.47	.53	0.6	0.67	0.74	0.8	
Daily gain, lbc	1.59	1.6	1.69	1.85	1.94	1.94	
Feed/gaind	3.37	3.32	3.05	2.87	2.81	2.81	
Off-test weight, lbc	262.2	262.3	264.5	268.4	270.8	270.8	
Carcass yield, %	75.4%	76.0%	76.3%	76.2%	75.7%	76.2%	
Carcass wt, lbc	197.7	199.4	201.8	204.5	205	206.4	
10th rib backfat, ind	0.71	0.69	0.72	0.69	0.68	0.67	
Loin depth, inc	2.21	2.25	2.25	2.29	2.3	2.31	
Lean, %d	54.7	55.1	54.6	55.2	55.3	55.5	
lbs carcass gain	31.82	32.15	33.95	36.88	38.46	38.71	
*Carcass Value cwt	\$70.50	\$70.70	\$70.90	\$70.35	\$70.30	\$70.25	
Value of gain	\$22.43	\$22.73	\$24.07	\$25.95	\$27.03	\$27.19	
Cost of Gain	\$8.80	\$9.07	\$9.04	\$9.57	\$10.15	\$10.47	
Net Profit	\$13.63	\$13.66	\$15.03	\$16.38	\$16.88	\$16.72	
* Carcass value estimated from the information below.							
BACK-FAT	Loin Area/Depth		6.0 / 2.0		7.0 / 2.3		
0.6			\$58.75 – \$71.50		\$60.25— \$72.00		
0.7			\$57.25 – \$70.50		\$60.25— \$71.50		
Back fat	0.71	0.69	0.72	0.69	0.68	0.67	
Loin depth	2.21	2.25	2.25	2.29	2.3	2.31	
Est BF/LD	\$70.50	\$70.70	\$70.90	\$71.10	\$71.30	\$71.50	
Carcass wt, lbc							
205# -4.94 0.00	195# -1.24 0.00		185# -1.30 0.00				
	197.7	199.4	201.8	204.5	205	206.4	
Est Weight Value	\$0.00	\$0.00	\$0.00	-\$0.75	-\$1.00	-\$1.25	
Total Carcass Value	\$70.50	\$70.70	\$70.90	\$70.35	\$70.30	\$70.25	

Barrow Table							
Starting Weight		220					
Item							
% lysineb:		1.4	1.6	1.8	2	2.2	2.4
		0.47	0.53	0.6	0.67	0.74	0.8
Daily gain, lbc		1.8	1.8	1.89	1.91	1.91	1.93
Feed/gainc		3.21	3.22	3.09	3.08	3	2.97
Off-test weight, lbc		264.7	264.7	266.5	266.9	267	267.4
Carcass yield, %		76.2%	76.1%	76.2%	76.3%	75.4%	76.1%
Carcass wt, lbc		201.7	201.4	203	203.6	201.3	203.5
10th rib backfat, ind		0.77	0.78	0.8	0.79	0.76	0.76
Loin depth, ind		2.31	2.33	2.32	2.29	2.32	2.35
Lean, %d		53.94	53.9	53.58	53.63	54.17	54.18
lbs carcass gain		34.06	34.02	35.43	35.78	35.44	36.07
*Carcass Value cwt		\$70.50	\$70.70	\$70.90	\$70.35	\$70.30	\$70.25
Value of gain		\$24.01	\$24.02	\$25.05	\$25.07	\$24.77	\$25.16
Cost of Gain		\$8.88	\$9.30	\$9.57	\$9.95	\$10.03	\$10.33
Net Profit		\$15.13	\$14.72	\$15.48	\$15.12	\$14.74	\$14.83
* Carcass value estimated from the information below.							
BACK-FAT	Loin Area/Depth	6.0 / 2.0			7.0 / 2.3		
0.6		\$58.75 – \$71.50			\$60.25— \$72.00		
0.7		\$57.25 – \$70.50			\$60.25— \$71.50		
0.8					\$58.75 – \$70.50		
Back fat		0.77	0.78	0.8	0.79	0.76	0.76
Loin depth		2.31	2.33	2.32	2.29	2.32	2.35
Est BF/LD		\$70.50	\$70.60	\$70.70	\$70.80	\$70.90	\$71.00
Carcass wt, lbc							
205# -4.94 0.00	195# -1.24 0.00			185# -1.30 0.00			
		197.7	199.4	201.8	204.5	205	206.4
Est Weight Value		\$0.00	\$0.00	\$0.00	-\$0.75	-\$1.00	-\$1.25
Total Carcass Value		\$70.50	\$70.60	\$70.70	\$70.05	\$69.90	\$69.75