

Low Hog Prices: Will Diet Modification Help?

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The Holiday Season is upon us as this column is being written. This is the season of joy for everyone, but it is difficult for many in the swine business to feel joyful with present economic conditions. Never in my 30-some year career at the University of Kentucky do I remember such a difficult situation for pork producers. Hog prices are almost as low as during the great depression - relatively speaking, they are probably even lower than they were then. One of my colleagues handed me a \$20 bill the other day and asked if I realized that one could buy a 240 pound market hog with it. That is unbelievable!

As a nutritionist, I wish that I could give some good advice to pork producers to help them deal with the dilemma of \$2.15 per bushel corn, \$150 per ton soybean meal, and \$9.00 per cwt slaughter hogs. Unfortunately, there is no magic answer to this situation. Everyone is looking for cheaper feed ingredients to help minimize feed costs, since feed makes up over half of the total costs of production. Occasionally there are ingredients that are available that will cheapen up the feed, but those ingredients are more in demand now because everyone is looking for them.

I do have some advice that I will pass along to pork producers that should help them to minimize their losses. This advice is prudent during times of profitability, but it also applies during times of unprofitability. That advice is based on the fact that the cheapest feed is not necessarily the best feed.

During times of high feed costs or low hog prices, it is tempting to cheapen the diet by reducing the level of the more expensive nutrients in the diet - nutrients such as protein (amino acids) and phosphorus. For example, at present costs of ingredients, one can reduce the cost of a fortified corn-soybean meal diet by approximately \$2.00 per ton for each 1 percentage point reduction in crude protein (or for each .075 percentage point reduction in lysine, the first limiting amino acid). Similarly, one can reduce diet cost by approximately \$1.00 per ton for each .1 percentage point reduction in phosphorus. Or, one can trim the vitamin-trace mineral mix, leave out the antibiotic pack, or trim back on the base mix.

While these types of manipulations do reduce the cost of the diet, they generally do not reduce the feed cost per cwt of pork produced. In fact, they generally increase the feed cost per cwt of pork. If one is feeding higher levels of lysine, phosphorus, and other nutrients than really needed for a particular stage of production, slight reductions in nutrients makes good economic sense. But, if one is feeding a diet that just meets the pig's requirements, lowering nutrient levels will reduce growth rate and, more importantly, will increase the amount of feed associated with each pound of gain. As a result, the overall feed cost will be inflated.

Down through the years, we have conducted numerous experiments at the University of Kentucky that document this relationship. Recently, in studies where we have evaluated the effects of amino acid additions to low protein diets, we have data to show the effects of feeding low protein diets on pig performance during the growing-finishing stages. Table 1 shows that effect. Note that reducing the dietary lysine by .30 percentage points, which is equal to reducing the dietary protein by 4 percentage points, growth rate is reduced, feed/gain is increased, and carcass leanness is markedly reduced.

I have gathered information from experiments such as this to assess the impact of reducing the dietary lysine level below the pig's requirement. The overall effects of feeding a lysine deficient diet are shown in graphic form in figures 1 and 2. The regression line shows that for every .1 percentage point that dietary lysine is reduced below the pig's requirement, feed/gain is increased by about 5%.

Now let's put some economics to this, using the most current prices of corn (\$2.15 per bushel) and soybean meal (44% protein, \$150 per ton), and a mineral-vitamin base mix (50 pound per ton inclusion rate at \$400 per ton). At these prices a .60% lysine (14% protein) finisher diet pencils out at \$95 per ton. Suppose that one trims back on the soybean meal in the diet and in so doing, reduces the dietary lysine to .50%. This will reduce the cost of the diet from 95 per ton to 93 per ton. But remember, now it will take approximately 5% more feed to produce each pound of gain. Assuming that feed/gain was 3.25 when .60% lysine was fed (feed cost of \$15.44 per cwt of gain); now feed/gain is approximately 3.41 for the lower lysine diet which is equivalent to \$15.86 per cwt of gain. The margin becomes even greater if one reduces the dietary lysine even further below the requirement.

The bottom line is that it is important for swine producers to not "skimp" on lysine or other nutrients during times such as this. While one might be able to reduce the cost of the diet by lowering nutrient levels, they will hurt themselves economically by inflating their feed costs due to poorer feed efficiency, reduced gains, and reduced leanness in their market hogs.

Table 1. Effects of feeding low lysine diets to barrows and gilts on performance and carcass leanness - University of Kentucky (1996).

	Dietary lysine	
	Adequate	Reduced by 0.3 of a percentage point
Daily gain, lb	1.92	1.65
Feed/gain	3.50	4.13
Scanned backfat, in.	.94	1.15
Scanned loin depth, in.	1.80	1.57
Estimated carcass lean, %	49.5	45.6

Data from two experiments, 48-233 lb. Adequate lysine diet was .75% (16% protein) for barrows and .90% (18% protein) for gilts to 110 lb, then lysine was lowered to .60% and .75% for barrows and gilts. The reduced lysine diet was .30 percentage points lower in lysine for the two sexes.