Swine Feed Efficiency: Not Always Linked to Net Income

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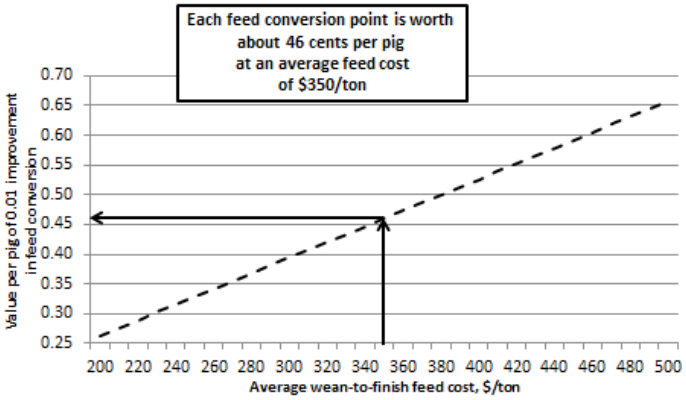
Introduction

Dr. Steve Pollman, President of Western Operations for Murphy Brown LLC, advised attendees at the 2011 International Conference on Feed Efficiency in Omaha, NE that feed efficiency is a useful metric in pork production but it is a poor driver for decision making. He was making the point that feed efficiency numbers can be influenced by so many factors that interpreting them can be difficult and that there is a great risk in over-simplifying the many things in the barn that can alter feed efficiency. Furthermore, the best feed efficiency is not necessarily going to lead to the highest net income.

This is not to say that feed efficiency is not important. The value of 1 feed conversion point varies between 30 and 50 cents. At an average feed cost of $350/ton, it is worth 46 cents per pig. As feed cost changes, so too does the economic value of feed efficiency. All other factors being equal, the best feed efficiency may lead to the best net income, but as we all know, when we compare one pig barn with another, or even compare one closeout versus another in the same barn, many factors are not equal.

FIGURE 1. VALUE OF FEED EFFICIENCY



Variables Influencing Feed Efficiency

Variables influencing feed efficiency fall into one of three categories. The first is the physical and social environment in the barn. Changes in barn temperature and humidity – above or below the pig's comfort zone - can decrease feed efficiency, as can poor feeder adjustment and inadequate access to drinking water.

The second relates to the pig, and includes entry weight, exit weight, health status, growth rate, lean yield, genetics and mortality. Smaller pigs entering the barn, or leaving the barn, will increase feed efficiency but certainly may not lead to higher net income. Healthier pigs are more efficient as are faster growing and leaner pigs. Some genetic lines will be more efficient than others. Mortality will lower feed efficiency, particularly if the deaths occur late in the finishing period.

Finally, there is the feed. Nutrient imbalances in the feed can lower efficiency and certain feed additives will improve it. Feed processing can influence efficiency, as smaller, more uniform particle size and pelleting will generally improve efficiency. Some pigs do not react well to small particle size and pelleting, and if so, finer feed can actually reduce net income.

Economic Benefit vs Cost of Improving Feed Efficiency

Thus, many variables influence feed efficiency, and in some instances, we might actually spend more money to improve it than we can possibly expect in return. How can we be certain that we are chasing both improved feed efficiency and increased net income, and not inadvertently lowering net income?

The important variable is the cost of improving feed efficiency. For example, simply improving feeder adjustment to maximize feed intake without increasing feed wastage will improve efficiency - and net income – because the cost is only a small amount of labor with no other out of pocket expenses.

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Maintaining the ventilation system, to ensure that the winter environment in the barn is comfortable, with the right temperature and humidity and avoidance of drafts, could actually lower net income in the short term while increasing feed efficiency, if the cost of maintenance such as replacement of equipment is too high. However, it is difficult to conceive of a situation where in the long term, this would be anything but positive financially because the improvement in feed efficiency would more than cover the cost of equipment maintenance. The same can apply to genetics; upgrading the quality of breeding stock may have a short-term negative affect on net income but in the long term, the effect should be highly positive. However, if the genetic line requires a more expensive diet to optimize efficiency, then the impact on net income is less certain.

Health is an even more complicated issue, because a disease break can be catastrophic to not just feed efficiency but also growth rate and mortality. However, the cost of measures to prevent disease, whether it is the use of vaccinations or feed additives could end up being higher than the cost of disease. Prevention is almost always cheaper than treatment, so aggressive biosecurity as a means of reducing the risk of disease probably offers the best payback. Combined with appropriate use of vaccines and feed additives, a financially sound disease management program can be achieved.

Feed is often the focus when pork producers wish to improve feed efficiency, because obviously feed is a key contributor. Feed processing equipment is becoming increasingly sophisticated with operating cost a key factor in design features. As explained in another factsheet in this series, the pork industry has been moving to smaller particle sizes over the past 5 to 10 years. Whereas the target used to be about 750 µ a decade ago, about 5 years ago the target moved to 500 to 600 µ. Today, an increasing number of producers are seeking even lower particle size as feed costs rise. To achieve reductions in particle size, problems with feed handling may occur, resulting in the need to pelleting diets. In this instance, the improvement in feed efficiency and associated reduction in feed cost must be balanced against the increased cost of achieving smaller particle sizes and if necessary pelleting.

Finally, the composition of feed is a major determinant of feed efficiency, but it is also the main determinant of feed cost. With the cost of dietary energy rising, and higher energy ingredients becoming increasingly expensive sources of energy (see table 1), the U.S. pig industry has been transitioning to lower energy diets. This will result in poorer feed efficiency but hopefully result in improved net income. The cost analysis of such a strategy is highly complex, so each farm could end up with differing optimum energy levels in the diet, depending on feed cost and market price relationships, the value of growth rate and the magnitude of penalties associated with reduced carcass weight, if this occurs. Of all of the factors discussed in this factsheet, this is the most complex.

Table 1. The Changing Cost of Energy

	Energy Content	2005 Cost		2012 Cost	
Ingredient	Mcal NE/lb	$/ton	¢/Mcal NE	$/ton	¢/Mcal NE
Corn	1.21	65	2.7	270	11.2
Soybean meal, 46%	0.95	200	10.5	550	28.9
Corn DDGS	1.06	50	2.4	280	13.2
Wheat midds	0.96	60	3.1	260	13.5
Fat source: AV blend	3.28	300	4.6	850	13.0

Conclusion

We can see that the best feed efficiency may not result in the best net income. The balance of the cost of improved feed efficiency versus the impact on net income must be considered when seeking to improve feed efficiency. Remember, the ultimate objective of raising pigs is not the best feed efficiency but rather the highest possible net income.