Feedstuffs, October 1st, 2018 Feedstuffs Reprint

Optimize hog finishing feed costs during low-profitability markets

Bottom Line

with
DUSTIN DEAN*

INEVITABLY, the variable nature of commodity agricultural markets brings times of profitability and, unfortunately, times of losses.

The recent expansion of the U.S. swine herd has increased supply to the point at which current and near-term hog markets are at or below breakeven values for most producers. The question often asked is what the best feeding strategies are to optimize feed costs in that type of market environment.

It is important to first understand that producers have different economic models based on the goals of their production system and their marketing arrangements, so optimizing costs can be somewhat different for each producer and his or her situation. Generally, as hog market prices decrease, the economic optimum for feed formulation trends toward minimizing the cost of gain to optimize income over feed and facility costs, even in fixed-time, short-space scenarios.

Remember that minimizing diet costs does not always minimize costs per pound of gain, because feed efficiency will change as diet formulations are changed, and cost of gain is a product of the cost of a pound of feed and feed efficiency (expressed as feed per unit of gain).

One of the largest drivers for cost per pound of gain from a diet formulation standpoint is dietary energy and nutrient density. High-energy diets with added fat are generally utilized to increase the rate of gain but often do not provide the lowest cost per pound of gain. During periods of low profitability, the value of increased gain with high-energy diets decreases significantly in most economic models due to the low or non-existent margin opportunity for each extra pound marketed.

In high-profitability markets, on the other hand, the value of increasing gain with high-energy diets or by other means can be significant in a fixed-time scenario to maximize revenue and income over feed cost (IOFC).

An example is provided in the Table that assumes constant dietary costs for low- and high-energy diet programs but fluctuating lean hog prices from a low market scenario of 55 cents/lb. to a high market scenario of 95 cents/lb. In this fixed marketing time example, there is an advantage in IOFC for the low-energy diets with low market prices and an advantage for the high-energy diets with high market prices.

While the example demonstrates the trend, additional factors such as changes in sort loss need to be considered when evaluating the value of gain for specific systems and are dependent upon marketing arrangements and the degree of change in average market weight.

Other dietary factors that can influence gain include feed additive components and formulating to variable percentages of biological requirements for amino acids. Understanding the expected performance responses for both rate and efficiency of gain for these types of variables is crucial to accurately estimate their effects on cost of gain, revenue and IOFC.

Independent of diet formulation, a couple of controllable factors that affect feed efficiency and, thus, cost of gain include grain particle size and feeder adjustment. While these factors may seem mundane, their economic impact shouldn't be forgotten. Recent research with modern genetics suggests about a 1% improvement in feed efficiency for each 100-micron reduction in grain particle size down to 300 microns (Steinhart, 2012).

This effect may be lesser in diets with high amounts of byproducts and less grain, but with current diet costs, a 1% improvement in feed efficiency during the grow/finish period is worth approximately 55 cents per head marketed.

Feed flowability is a limiting factor in mash diets with grain ground to less than 500 microns, but many systems are able to successfully target a range of 500-600 microns. Feeder adjustment can affect both feed efficiency and gain in finishing, with tighter settings near 30% pan coverage maximizing feed conversion but with more liberal settings (50-70%) maximizing gain (Tokach et al., 2012).

Once again, considering that gain has less value in low-profitability periods, tightening the feeder settings to mini-

Photo: songqiuju/iStock/Thinkstock.

Lean hog price influence on the value of energy to enhance gain in a fixed-time scenario*

	------Low market price------		------High market price------	
	Low energy	High energy	Low energy	High energy
Lean hog price, $/lb.	0.55	0.55	0.95	0.95
Finishing feed cost, $/head	46.87	52.86	46.87	52.86
Revenue, $	118.33	123.15	204.38	212.71
Cost/lb. of gain, $	0.2646	0.2843	0.2646	0.2843
Income over feed cost, $/head	71.46	70.29	157.51	159.85
Difference in IOFC, $/head	—	(1.17)	—	2.34

*Assumes a fixed-time market scenario and that dietary energy impacts both rate and efficiency of gain.

*Dr. Dustin Dean is a senior nutritionist with NutriQuest.

mize feed wastage is the likely optimum option during these market conditions.

The Bottom Line

In most systems, hog profitability has a significant effect on diet formulation strategies that optimize the economic outcome. The value of gain is reduced in low markets, which tend to favor lower energy and less-nutrient-dense diets.

Feed additives that provide a return from improved feed efficiency by decreasing the cost of gain continue to provide value, but those more dependent upon increases in gain for a return on investment may not do so during low-profitability periods.

Particle size monitoring of grain is crucial to minimize the cost of gain, and aggressive feeder management to optimize feed conversion should be the goal.

References

Steinhart, T.L. 2012. Swine feed efficiency: Influence of particle size. Iowa Pork Industry Center Fact Sheets. 13.

Tokach, M.D, R.D. Goodband, J.M. DeRouchey, S.S. Dritz and J.L. Nelssen. 2012. Chapter 2. Feeding and barn management strategies that maximize feed efficiency. In: Feed Efficiency in Swine. Wageningen Academic Publishers, Netherlands. p. 41-62. ■