



Swine Fact Sheet

Animal Sciences

Auburn University



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Swine Herd Monitoring: Feed

W. F. "Frank" Owsley, Ph.D.
Extension Animal Scientist

Introduction

Feed accounts for the largest portion of the cost of producing a pound of pork. Feed management is also a major component of farm nutrient management. A routine monitoring program is essential for making efficient use of the money spent for feed, and to keeping nutrient excretion and feed wastage to a minimum. A good monitoring program requires records on animal production, feed use and feed quality.

Feed Conversion

Feed conversion and feed cost per pound of gain can be used to monitor a swine feeding program. Both are dependent on feed quality. However, there are other factors such as feed management, health, animal environment, and genetics that can affect feed conversion and costs.

To measure feed conversion and costs accurately, thorough records are essential. Accuracy also improves as the period increases. Total farm feed conversion should not be measured for less than 3 months; a 6- to 12-month period is better. The information required is:

- Beginning and ending inventory (pounds) of all feed ingredients and mixed feed.
- Inventory (pounds) of all pigs on hand at the beginning and end of test period.
- Pounds of all pigs sold.
- Pounds of feed and ingredients purchased.
- Price of feed purchased and cost of feed on hand.

The formula for feed conversion is: ***pounds of feed used / pounds of pork produced.***

Pounds of feed used = pounds of feed purchased + beginning feed inventory - ending feed inventory

Pounds of pork produced = pounds of hogs sold + ending pig inventory - beginning pig inventory

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Feed cost per pound of pork produced can be calculated from feed conversion if you know the price of feed. Multiply the average price of a pound of feed times the feed required per pound of pork produced.

Monitoring feed conversion will point out problems in the feeding program after they occur. Increases in feed conversion by period and changes by season indicate opportunities for improvement in the feeding program. Reductions in feed conversion indicate lower amounts of undigested solids and nutrients entering manure storage and treatment, reducing the amount of manure treatment needed.

Monitoring Feed Ingredients and Feed

While records provide a good method for monitoring feed quality, it is "after the fact." A program is also needed to monitor the quality of feed before feeding and even before mixing. The key component of a feed monitoring program is routine analysis of feed and feed ingredients. Constant monitoring of feed ingredients and the feed itself is another way to insure efficient pork production. A routine sampling program for all feed ingredients and mixed feeds -- combined with good feed records -- can improve the efficiency with which farm-mixed swine feeds are used.

Feed Ingredients. The nutrient content of many feed ingredients often varies. This variation can affect both the quality and the cost of the complete feed. To get the best evaluation of feed ingredients, take samples from each load delivered. When the ingredients are delivered in bulk, take samples before unloading. Using a grain probe, take several samples from the front, middle, and rear of the truck, then combine these samples to get a representative sample of that load. If this method is not possible, take samples throughout the time the truck is unloading. Although the combined sample may not be as representative of the load as when a probe is used, it will be better than a single sample or no sample at all.

While sampling each load is best, the cost of laboratory analysis for each sample can be prohibitive. One alternative is to mix samples from several loads, then submit the combined sample for analysis. It will be impossible to tell anything about a specific load from this type of analysis, but the sample will still aid in fine-tuning the feed formulation. Sampling will also point out any problems of contamination from foreign material such as weed seeds. Check mycotoxins in feed grains when they are a problem.

The analysis needed for feed ingredients depends on the ingredient. Check protein (lysine if possible), fiber, calcium, phosphorus and USDA grade for all grains and soybean meal (no grade for soybean meal). Mineral sources (trace mineral premixes, base mixes, complete supplements) require a complete mineral analysis, including calcium, phosphorus, iron, zinc, manganese, copper, and salt. If the protein content is guaranteed, it should be checked as well.

There is a monetary reason for routinely checking purchased ingredients. For example, if you buy soybean meal guaranteed to contain 48 percent crude protein and the analysis

shows that it contains only 46 percent, an adjustment should be made on the price. By checking that load, you know to adjust the formulations for the lower protein level and to have the supplier adjust the price.

Mixed Feeds. Routinely analyzing farm-mixed feeds is the best way to monitor feed mixing techniques. The method you use to sample mixed feed depends on your reason for the analysis. To decide if the mixing time is appropriate, take three or more samples from one batch of feed periodically as the mill is emptying. If the analyses of all the samples are close to the same, the mixing time is adequate. For a routine evaluation of the feeding program, use the same sampling technique but combine all the samples before the analysis to see if you added the proper amounts of all ingredients. If problems exist in certain hog pens, collect feed samples from each feeder. This last method may not give an accurate evaluation of the mixing process because of separation during delivery and in the feeder.

Ideally, every batch of farm-mixed feed and every load of purchased feed should be checked. Unfortunately, the cost may be prohibitive. An alternative is to sample each diet mixed or purchased at least once every 3 months and when problems occur. Have the sample analyzed for protein, fiber, calcium, phosphorus, iron, zinc, copper and salt. Amino acid and vitamin analysis would be very helpful, but these are often expensive and can be hard to get.

Collecting feed samples and having them analyzed will do little good without accurately evaluating the lab report. From this report, any nutritional problems can be detected as well as possible causes for these problems. A thorough evaluation of a laboratory analysis by a competent nutritionist can pinpoint problems and possibly solve them.

A combination of these sampling methods and correct evaluation of laboratory analyses results is the best evaluation of a feed mixing program. For more information on mixing swine feed, see **Circular ANR-637, "Controlling The Quality Of Farm Mixed Swine Feed."**