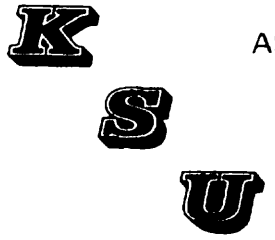

ASSESSING SWINE ENTERPRISE EFFICIENCY WITH COMPUTERIZED RECORDS

Donald E. Orr, Jr.[1]

Summary

Successful swine producers must be adaptable, utilize new technology, and know their herd production levels and costs if they want to alter those production factors that have an economic impact. A summary of the effect of various production factors on swine profitability is presented, using actual herd data in composite form. These data illustrate the production and financial impact that today's technology will have on future swine production units.

Introduction

United Feeds implemented a swine herd record program in 1973 and currently has over 400 herds on a quarterly computer records program. These herds are located primarily in Indiana and Michigan, and also include herds in Illinois, Missouri, and Ohio. Three full-time records people actually visit each farm every 3 mo to obtain inventories of hog numbers and weights, feed used, and other expenses and sales.

It is possible to examine various production and cost factors using herd record composites and determine the impact of selected factors on profits. The following composite records are for commercial farrow-to-finish farms during 1986. Each farm had four quarterly records taken.

Reasons for a Record Program

The most important reason for keeping herd records is to determine profit per cwt and total herd profitability. As changes are made in various production factors, it is imperative that these changes be evaluated for their effect on the "bottom line." Above average producers will focus on profits to survive. Records allow producers to track where they are and where they must place emphasis in production.

How a producer chooses to expand on the records information he is collecting depends upon need. If he identifies a weakness in the farrowing area, then data should be collected to identify and correct the problem. If this is not a problem area, then he may choose to collect general sow data and not key in on such items as causes of baby pig losses.

[1]United Feeds, Inc., Sheridan, Indiana 46069.

Using New Technology to Improve Swine Profits

Sow Herd Size

Can smaller, usually more diversified, swine producers compete with larger swine operations in regard to production efficiency? Table 1 presents the production and financial data from herds with just over a fivefold difference in herd sow numbers. Average number of working sows (females exposed to the boar) for smaller farms was 81, whereas the larger farms had an average of 468. For the purpose of this comparison, only farms containing less than 100 working sows or greater than 300 working sows were included in the records summary.

Overall sow herd size did not affect herd feed conversion and feed cost/cwt pork produced. Owners of larger sow herds also tended to sell part of their extra production as feeder pigs and, thereby, kept facilities full so as to maintain lower building and equipment cost. Smaller herds had higher building and equipment costs.

Boar costs are spread over the entire year and estimated at $.50/cwt pork. Each farm has an actual boar cost, but for many farms, boars may be purchased in only one quarter of the year. In a previous summary of production costs, actual labor cost was $.79/cwt for herds of less than 100 sows as compared to $2.26 actual labor cost/cwt for herds of greater than 300 sows. For summaries contained in this paper, labor (hired or family) is included at $3.50/cwt.

If boar and actual labor costs are added to total costs before labor and boars, the smaller herds show a profit that is within $.07/cwt of the larger farms.

For smaller sow herds to remain competitive, owners must strive to improve building and equipment utilization and place emphasis on marketing methods to reflect a stronger price for their hogs. All production units must place emphasis on herd efficiency (feed/cwt pork produced), if they are to progress and remain competitive.

Feed Mixing System - Proportional Mills vs. Weighing Ingredients (Batch)

Low volume proportional (volumetric) mills, such as Mix Mill, Modern Mill etc., have simplified on-farm mixing and reduced the labor required. However, these feed mills require regular calibration, if they are to mix rations correctly. Weighing of ingredients should be more precise, but may be more labor intensive or require large capital investments for automation.

The top half of the 82 farms using proportional mills actually had the best average feed efficiency (364) of all comparison groups, which indicates the potential of a properly calibrated proportional mill (table 1). Producers weighing ingredients had higher feed costs other than corn and soybean meal.

Farms using proportional mills produced hogs at a competitive rate with the top (larger) herds for which various ingredients were weighed. It is important to calibrate proportional feed mills weekly. The cost saving associated with proper mixing can be substantial, and producers may find their time spent calibrating to be worth several hundred dollars per hour.

Pen (Group) Mating vs. Hand Mating of Sows

Hand mating has received greater attention recently as a means of closely supervising a breeding program, with the objective of increasing pigs per sow per year. Hand mating usually requires a higher level of management and more labor and fits best where a breeding-gestation building is available. Hand mating does not fit well for the typical Midwestern grain farmer, since crop work usually takes priority for about 4 months each year. For many of those producers, turning the boars in with a group of females reduces the amount of breeding management required.

The 19 farms using hand mating (table 1) had a 9 lb improved feed conversion, on the average, compared to those pen mating. The former group also sold 2.08 more pigs per sow per year than the 109 farms using pen mating. The pen mating group had lower total costs above feed and a slightly lower total cost of production. The actual labor cost would be lower in the pen mating operations.

Operations that hand mate produce more pigs per sow per year, since they wean early and can hold boars longer (because of limit feeding), but may have higher facility and labor costs, which lower net profit per cwt pork produced. This illustrates how pigs per sow per year and feed efficiency figures do not always translate into more profit. For instance, early weaning does not always reduce production costs. The investment and added inputs may be increased such that the benefits are minimal. However, the mating system's effect on sow productivity does justify careful consideration.

Herds Using "New Design" Feeders or Consulting Veterinarians

Feed waste is a major contributor to poor feed conversion. In a series of three growing-finishing trials at the United Feeders Research Farm, use of round fiberglass feeders consistently resulted in a 10 lb per cwt improvement in feed conversion, when compared to conventional rotary metal feeders.

For 27 farms using the "new" fiberglass or polyethylene feeders (Osborne, Vel Agri, Pride of the Farm), herd feed efficiency averaged 366 compared to a 377 conversion for the total 203 farms.

A summary of 46 farms using consulting veterinarians on a regular basis showed veterinarian and medicine (injectables and vaccines) costs averaging $.61 per cwt and total herd feed conversion of 368. This is an average or low cost for most swine oeprations, indicating the cost effectiveness of the consulting veterinarian. All feed medication costs are placed with feed costs other than corn and soy.

Herds Buying Replacement Gilts vs. Producing Own Gilts

Table 2 contains the comparison of herds buying all replacement gilts vs. herds producing their own gilts (using white sire or rotational cross).

While pigs per sow per year and feed conversion appear similar, both generally have improved dramatically for herds now buying gilts, as compared to their previous records. Many of those herds were previously at a 400 or higher feed conversion, but after buying replacement gilts, their average for 1986 was 369. Gilt premiums averaged $.97 per cwt of pork produced for herds buying gilts.

High vs. Low Pigs Sold/Sow Exposed/Yr

It is clear that producers with high sow productivity are also doing many other jobs well (table 2). They tend to be larger operations with more labor, have an excellent feed conversion, and may have a higher quality market hog that commands a higher price. More are probably on a terminal breeding program and sell grade and yield. They sell extra production as feeder pigs.

The top half in the low pigs/sow/yr category had more profit per cwt of pork produced than the low half with high pigs/sow/yr. This is due mainly to lower facility costs. If operations with low pigs/sow/yr can fill their facilities and reduce overhead, their profit potential will be enhanced, at least until sow productivity can be improved or breeding and death problems corrected.

Feed Conversion - High vs. Low

Feed efficiency does not mean much unless you know feed costs per cwt of pork produced. Margin over feed cost is probably a better measure of how you are doing overall, since it takes into account other expenditures that affect herd feed efficiency.

As shown in table 2, feed efficiency is usually related to pounds of pork produced per sow per year. Herds with a feed efficiency of less than 360 were compared with those herds above 400 to illustrate the economic effects. High feed conversion may be due to low genetic performance, improper breeding programs, open sows, or units producing feeder pigs. From a summary of 203 farrow to finish farms for 1986, United Feeds measured a 10 lb improvement in herd feed efficiency as compared to 199 herds in 1985.

Producers must use self feeders that are efficient or install feeder guards to reduce wastage. Herds that have adopted terminal breeding programs are experiencing major improvements in feed efficiency. They are using an all white female and terminal sire to maximize heterosis.

Benefits from Changes Made on Commercial Farms

Production records were summarized for six central Indiana commercial farms for their fiscal years 1982 and 1985 (table 3). These farms all started purchasing F-1 or F-2 gilts just prior to FY 85 and are now on a terminal crossbreeding program. In FY 82, they were on rotational breeding programs, which were quite difficult to manage for this size of operation (table 3).

No additional buildings were added to these units during the above time period. All prices and costs were based on 1985 levels. All producers felt that they had produced at their facility capacity in 1982.

Profit per cwt of pork produced was $5.32 before and $10.07 after. Annual profits for the average of these six farms for FY 85 were 2.36 times greater than the FY 82 profits using FY 85 prices and costs.

The results were possibly due to the increased pork produced in these facilities from the purchased white females, use of a terminal sire program, and

using self feeders that minimized feed wastage. Optimum soybean meal levels were used in both time periods.

Importance of Records for Securing Financial Loans

Bankers and lenders want to see records from programs in which they have confidence, not just projections or theoretical information. Profit based on theory is not always sound. If the banker knows that the figures are based on actual data, he will likely view them as sound information.

Records can also be used with lenders to project an expansion (i.e., new building and effect of building cost per cwt). This allows the producer to know what production costs should be, if extra building space is planned.

An actual situation occurred in which a producer's bank went out of business, and he had to go to another bank for all of his financial needs. The new bank could use inventories and production records to evaluate profits for the swine uint and, thus, felt comfortable in taking on his account.

Conclusions: Who Will Be Producing Hogs in the Future?

Producers who focus on profits (bottom line) and adopt economically viable technolgoy will be in the best position in the future. These producers must be large enough for adequate labor distribution and even marketing flow. They must have enough size to make investments and commitments in their operations to stay abreast of the industry's direction.

Steve Hargrave is the swine herdsman for the KSU Swine Research Unit.

Table 1. Production Summary - 1986

Item	Sow Herd Size		Feed mixing system		Mating System	
	<100	>300	Proportion	Weigh	Pen	Hand
No. of farms	40	27	82	56	109	19
No. of hogs sold	1306	7682	3145	3541	2790	5345
Pigs/sow/yr	16.16	16.44	15.70	16.30	15.40	17.48
Avg. selling price, $	49.74	50.40	49.75	50.09	49.55	50.99
Feed/pork, (lb/cwt)	371.80	374.08	372.10	373.23	373.70	364.70
Feed cost other than corn & SBM, $	5.76	5.54	5.32	5.58	5.65	5.26
Veterinarian and medicine, $	.61	.69	.58	.64	.58	.72
Building and equipment charge, $	5.85	5.27	5.78	5.80	5.71	6.34
Total costs above feed, $	10.89	10.30	10.38	10.49	10.40	11.88
Feed cost/cwt. pork, $	22.26	21.97	21.67	22.28	22.08	21.21
Total cost-with labor & boars, $	37.15	36.27	36.05	36.77	36.48	37.09
Profit per cwt, $	12.59	14.13	13.70	13.32	13.07	13.90

Table 2. Production Summary - 1986

Item	Replacement Gilts		Pigs/sow/yr		Feed conversion	
	Producing	Buying	Low	High	Low	High
No. of farms	57	51	36	54	53	27
No. of hogs sold	2941	2929	2031	4349	3597	2635
Pigs/sow/yr	16.02	16.07	11.72	18.68	17.03	13.88
Avg. selling price, $	49.66	50.27	48.53	50.45	49.60	49.50
Feed/pork, (lb/cwt)	372.99	369.08	389.76	363.59	349.73	412.59
Feed cost other than corn & SBM, $	5.44	5.59	5.38	5.86	5.53	5.74
Veterinarian and medicine, $	.56	.52	.52	.73	.62	.61
Building and equipment charge, $	5.15	6.28	5.46	5.91	5.87	6.57
Total costs above feed, $	9.83	10.89	10.95	10.84	10.72	12.25
Feed cost/cwt. pork, $	21.91	21.83	22.32	21.78	20.77	23.82
Total cost-with labor & boars, $	35.74	37.69	37.27	36.62	35.49	40.07
Profit per cwt, $	13.92	12.58	11.26	13.83	14.11	9.43

Table 3. Effects of Changes on Six Commercial Farms in Central Indiana

Item	Before (FY 82)	After (FY 85)*
Annual rate production, 220# hogs	4427	5192
Number hogs sold	3985	5013
Feed efficiency, lb/cwt	401.00	365.33
Equalized selling price	$47.36	$47.36
Feed cost	$27.50	$26.06
Overhead costs includes gilts & boars	$14.54	$11.23
Total costs per cwt	$42.04	$37.29
Profit per cwt	$5.32	$10.07
Profit per 220# hog	$11.70	$22.15
Pork produced, lbs	912,273	1,140,934
Profit for year	$48,533.00	$114,892.00
Profit difference		$66,359.00

*Purchasing F1 or F2 gilts; terminal sire program; "new design" self-feeders.
Note: All prices and costs (hog prices, corn, SBM, overhead) based on 1985 levels.

The KSU Swine Unit employs several students. Terry Trout and Scott Adams prepare to load hogs.