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KSU SWINE ENTERPRISE RECORD PROGRAM

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Summary

On January 1, 1991, a enterprise record program was implemented on 13 swine operations in Kansas. The program evaluates economic criteria in the areas of variable and fixed costs, labor, marketing, and production and is conducted in cooperation with extension specialists and swine producers in Kansas, Nebraska, and South Dakota. Every six months, producers' records are summarized, and the data are pooled to form state and regional averages. This data base is then divided into the top, middle, and bottom third of producers based solely on profit per cwt. of pork produced. This summary allows producers to compare their individual records to those of other swine operations and identify strengths and weaknesses in their operation. In addition, it also identifies the criteria that may have the greatest impact on profitability. The Kansas Swine Enterprise Records Program is an opportunity for producers who have never kept records to evaluate the profitability of their operations. It also allows producers who keep detailed biological records of their operations an opportunity to assess their financial profitability. In either case, records can establish a baseline level of production and profit in order to make sound management decisions.

(Key Words: Enterprise, Records, Analysis, Profitability.)

Introduction

As the swine industry becomes more competitive, sound management decisions based on accurate records are essential to remain profitable. Many different types of record keeping programs are available to swine producers; however, the two main types of record programs are biological and financial. Biological records typically detail reproductive and growth performance to measure the output of a swine operation. Financial records provide an itemized account of the return and cost categories on a per unit basis and analyze the operation's economic performance.

Recently, Kansas State University joined the University of Nebraska and South Dakota State University in a cooperative record keeping project to evaluate financial records of swine operations.

The Swine Enterprise Records Program is a relatively simple, do-it-yourself, hand-kept records program that assists producers in keeping production cost and return information. The program costs \$60 per year and involves two training meetings (December and February) and two close-out sessions, where data are

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collected and summarized. At these close-out meetings, a producer gets a copy of his operation's records and then a copy is sent to Nebraska where group averages are compiled and summarized. State and regional averages for the top, middle, and bottom third of producers based on profitability of cwt. of pork produced are then distributed. Because many of the items are based on cwt. of pork produced, the program is size neutral (i.e., efficiency of production rather than quantity is measured). Swine enterprise summaries are provided for farrow to finish, feeder pig producing, feeder pig finishing, combination (less than 70% of pigs sold as either market hogs or feeder pigs), and purebred or SPF operations. This paper summarizes the records of the first 11 farrow-to-finish operations in Kansas that have completed the program. In addition, an example of how records may be used to make decisions is discussed.

Kansas Group Summaries

In the Swine Enterprise Records Program, data are collected on hog inventories, hog sales, hog purchases, feed inventories, feed purchases, operating expenses, labor, fixed expenses, and herd performance. Using these data, individual and group summaries are prepared (Table 1). Profit per cwt. on an economic life depreciation basis (Line 20) is used to separate producers into top and bottom one-third groups. Thus, all other items represent the means for that particular profit group. The resulting information gives producers a comparative analysis of their operations and helps identify key criteria that have the greatest impact on profitability.

Profit per cwt. on an economic life depreciation (ELD) basis is computed by dividing the return to management (Line 3) by the net pounds of pork produced (Line 1). The annual rate return on capital can be used to compare hog production to other investments. Hog production becomes an attractive investment

when its rate of return to capital is high relative to other investments.

Variable expenses are broken down into feed (Line 5), other operating expenses (Line 6), and interest on operating expenses (Line 9). Variable costs per cwt. for the top one-third group were relatively lower than those for the bottom one-third group for every expense category. Of the various expenses, feed costs typically had the greatest impact on profitability. This is evident when total costs per cwt. are compared for the low and high one-third groups (Line 17). Of the \$10.04 difference in total costs per cwt. between these two groups, \$3.46 or 34.5% reflects the difference in feed costs per cwt. (Figure 1). Cheaper diets do not directly correspond to lower feed costs. The bottom one-third group of producers actually had less expensive diets (Line 52). The greater grain to supplement ratio fed by the bottom one-third group may indicate that a poorer quality diet was fed, which, in addition to other variables, may have created poorer feed efficiencies.

Other operating expenses and fixed costs also had an important impact on profitability. Other operating expenses include utilities, hired labor, supplies, repairs, veterinary costs, and professional dues. The difference in operating expenses between the top and bottom one-third groups is \$2.63 per cwt. In percentage terms, other operating expenses are over 50% higher for the bottom one-third group.

Fixed costs include depreciation, interest charges on buildings and equipment, property taxes, and insurance. Fixed costs for the bottom one-third are about \$3.00 higher per cwt. than those for the top one-third.

Income and profits are presented on a tax and an ELD basis. Economic life depreciation attempts to measure the actual annual decline in the value for the useful life of buildings and equipment. Economic life depreciation and tax depreciation are not equivalent. Tax deprecia-

tion is typically larger than ELD in the early years of an asset's life. Returns above cash costs are quite often positive. However, to stay in business in the long-run, producers will also need to cover unpaid labor, wear and tear on facilities, and the opportunity costs (Line 12) associated with owning facilities. Opportunity costs reflect the fact that the capital used to produce hogs could be used for other investments.

In the production summary, the average operation had 112 sows (Line 24). The number of live pigs born (Line 27), number of pigs weaned (Line 28), and preweaning mortality (Line 32) appear to be major factors influencing profitability. These factors contribute to pig throughput and also affect the number of pigs weaned per crate and sold per litter. The differences in these values between the top and bottom one-third of producers indicate that producers need to keep facilities full to enhance profitability.

There is a \$1.18 difference in market price between the top and bottom one-third of producers for the average market price. This wide range is unique in that most other state's enterprise records typically indicate little difference in market price. The difference reported in our summary may reflect a greater diversity in marketing strategies between producers, given the lack of no major packing plants in Kansas.

There is a 16% difference in feed efficiency between top and bottom producers. This has a great impact on feed costs, because the bottom 1/3 of producers actually have less expensive diets. Again, this reflects that inexpensive feed is not directly correlated to profitability, but that feed cost per unit of pork produced is a more critical factor.

Using Records to Make Decisions

The primary goal of keeping enterprise records is to document the effect of management changes on profitability. In addition,

enterprise records allow comparison of an individual's operation to means of those in the state or region. This can allow a producer to identify problem areas and to focus on one or two of these and try to improve them. An example of how this can be accomplished is provided in examining the records of a 200-sow producer (Table 2). In examining this producer's records, almost all criteria are above average, and many are in the top one-third of all producers. Based on these data, the producer is doing an excellent job and is making \$6.74 per cwt. of pork sold. However, in comparing this producer's records to the state averages, it is easy to identify that he has a high total feed expense per cwt. of pork produced, resulting primarily from high diet costs. From this information, the producer's current feeding program and prices can be evaluated, and possible options can be reviewed. Expected tonnage for each of the diets fed and their expected yearly costs were then calculated and compared to alternative diet formulations with ingredient options available to the producer. All alternative diet options used the same grain price and were formulated to meet or exceed those nutrient recommendations in the Kansas State University Swine Nutrition Guide. Thus, differences in prices did not reflect poorer quality diets, but rather "best cost" ingredients and a lower added fat level in the new options. To then determine the effect of the new diet options on profitability, a new output was formulated to reflect the change in feed costs, if the producer had switched to the alternative diet options but kept all other inputs fixed. However, because the new diets did not contain any added fat, feed efficiency would be expected to become poorer with the change to the new diets. Therefore, the new enterprise record summary also includes adjustments for greater feed usage to reflect approximately 5% poorer feed conversion (384 vs 403 lb of feed per cwt. of pork produced). As observed in the producer's new records summary, feed costs per cwt. of pork produced is reduced (\$27.20 vs \$22.18 per cwt.), even taking into account the poorer feed conversion. This

results in almost doubling the profit per cwt. of pork produced (\$6.26 vs \$11.59 per cwt.).

These data provide the producer information necessary to evaluate other non-feed costs associated with a possible change in feeding program as well. For instance, new bulk bins or a new portable grinder mixer may need to be purchased. In addition, the producer may need to evaluate and implement a stringent quality control program for feed manufacturing. These inputs will need to be weighed against the possible returns the alternative

feeding program. However, with the use of records, the costs and returns of involved with management decisions can be documented.

In summary, Swine Enterprise Records Program can be a useful management tool to help identify the strengths and weaknesses of an operation. As swine production becomes more competitive, records can be used to evaluate possible management strategies to lower the cost of pork production and increase profitability.

Table 1. Kansas Group Summary Averages (Farrow to Finish Operations)*

Item	Average ^b	Top 1/3	Bottom 1/3
1. Net pork produced, lb	187,341	202,424	116,627
2. Income over feed, oper. exp., oper. int., & hired labor	27,120	42,236	7,227
3. Profit or return to management, ELD	8,569	21,259	(5,935)
4. Annual rate of return on capital, ELD	16.92	38.16	-3.06
Variable Expenses:			
5. Total feed expense/cwt. pork produced	26.32	24.60	28.06
6. Other oper. expenses (total)/cwt. pork produced	7.35	4.98	7.61
a. Utilities; fuel, electricity, phone/cwt. pork prod.	1.74	1.40	1.50
b. Vet. expenses and medications/cwt. pork prod.	1.01	.92	.78
c. Remainder of other oper. expenses/cwt. prod.	4.50	2.66	5.33
7. Total cost of labor/cwt. of pork produced	7.15	6.31	7.41
8. Total oper. capital inv./cwt. of pork produced	22.98	20.23	24.70
9. Int. cost on oper. invest./cwt. pork produced	2.76	2.43	2.96
10. Total variable cost/cwt. of pork produced	42.25	37.96	44.95
Fixed and Total Costs:			
11. Total fixed cap. inv. (ELD)/cwt. pork produced	21.59	16.10	30.89
12. Int. chg. on fixed inv., (ELD)/cwt. pork produced	2.16	1.61	3.09
13. E.L. deprec., taxes and ins. cost/cwt. pork prod.	2.90	2.31	3.89
14. Tax deprec., taxes and ins. cost/cwt. pork prod.	2.19	2.00	2.72
15. Fixed cost (ELD)/female/period	80.85	68.97	106.17
16. Fixed cost (ELD)/crate/period	443.24	441.76	496.20
17. Total cost (ELD)/cwt. or pork produced	47.31	41.89	51.93
18. Total cost (ELD)/female/period	777.19	750.32	800.97
19. Total cost (ELD)/crate/period	4207.37	4416.52	3856.72
Income and Profit:			
20. Profit based on ELD/cwt. pork prod.	3.52	11.46	-5.07
21. Profit based on Tax Depreciation/cwt. pork prod.	4.26	12.10	-4.33
22. Profit based on ELD/female/period	70.79	212.48	-70.70
23. Profit based on ELD/crate/period	376.29	1029.08	-335.06

Table 1. CONT. Kansas Group Summary Averages (Farrow to Finish Operations)*

	Average ^b	Top 1/3	Bottom 1/3
Production Summary:			
24. Average female inventory	112	118	73
25. Number of litters weaned/female/period	0.86	.86	.78
26. Number of litters weaned/crate/period	4.56	4.91	3.68
27. Number of live pigs born/litter farrowed	10.25	10.77	10.00
28. Number of pigs weaned/litter farrowed	8.01	9.10	7.08
29. Number of pigs weaned/female/period	7.17	7.91	6.25
30. Number of pigs weaned/crate/period	39.15	45.63	29.85
31. Number of pigs sold/litter farrowed	6.54	7.83	5.44
Death Loss:			
32. Birth to weaning (% of no. born)	15.14	16.28	28.64
33. Weaning to market (% of no. weaned)	4.98	4.07	7.18
34. Breeding stock (% of breeding herd maintained)	2.37	1.30	3.07
Labor:			
35. Labor hours/cwt. of pork produced	.97	.86	1.02
36. Labor hours/female/period	15.86	15.37	15.35
37. Labor hours/litter weaned/period	18.39	18.00	19.38
38. Cost of unpaid labor & mgmt./cwt. pork produced	5.82	5.96	6.31
39. Total cost of labor (paid + unpaid)/cwt. pork prod.	7.15	6.31	7.41
40. Total cost of labor (paid + unpaid)/female/period	116.76	111.90	111.84
41. Return/hour for all hours of labor and management	12.93	23.49	3.26
Marketing and Purchases:			
42. Number of market hogs sold	660	735	403
43. Average weight/head for market hogs sold	241	242	243
44. Average price received for market hogs/cwt.	51.90	52.38	51.20
45. Number of feeder pigs sold	61	0	67
46. Average weight/head of feeder pigs sold	50.6	0.0	50.9
47. Average price received/head for feeder pigs sold	35.50	0.00	30.90
48. Average price received/cwt. for feeder pigs sold	67.84	0.00	53.57
Feed Cost and Consumption:			
49. Total pounds of feed fed/cwt. of pork produced	393	365	425
50. Total pounds of grain fed/cwt. of pork produced	317	290	351
51. Total pounds of supplement fed/cwt. of pork prod.	76	75	75
52. Average costs of diets/cwt.	6.71	6.72	6.61

*Summary of 11 farms; January 1 through July 30, 1991.

^bAverage, top, and bottom one-third groups are determined by profitability per cwt. of pork produced (Line 20).

Table 2. Individual Swine Enterprise Records Analysis^a

Item	Actual Records	Kansas Summary Average	Adjusted for New Diet Costs
Profit or return to management ELD	18,109	8,569	33,525
Total feed expense/cwt. pork produced	27.20	26.32	22.18
Total variable cost/cwt. pork produced	41.46	42.25	42.25
Total cost (ELD)/cwt. of pork produced	47.45	47.31	36.14
Profit based on Economic Life Depreciation/cwt. prk. prod.	6.26	3.52	11.59
No. live pigs born/litter farrowed	10.04	10.25	10.04
No. pigs weaned/litter farrowed	9.70	8.01	9.70
No. pigs weaned/crate/period	65.95	39.15	65.95
Avg. price received for market hogs/cwt.	52.12	51.90	52.12
Total lb feed fed/cwt. pork prod	384	393	403
Total lb grain fed/cwt. prk prod.	314	317	330
Total lb supplement fed/cwt. prk prod.	70	76	73
Avg. costs of diets/cwt.	7.08	6.71	5.50

^aSwine Enterprise Records for a 200- sow, farrow to finish operation. Actual records are compared to the summary averages for 11 farms in northeast Kansas. Adjusted records reflect alternative diet costs and poorer feed conversion.

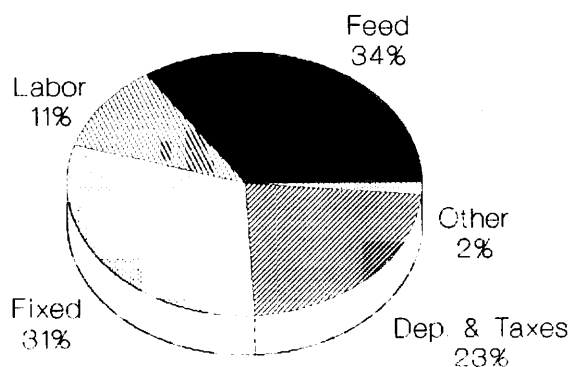


Figure 1. Percentage Difference in Production Costs between Top and Bottom One-third of Producers Based on Profitability (Cost Difference of \$10.04).