



Evaluating Your Swine Enterprise

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Superior management of each phase of a swine operation is essential if maximum profits are to be realized. Poor management can result in minimal profits or an actual loss even during periods of high hog prices. For instance, the profit potential a producer might realize from large litters, heavy weaning weights, or large numbers of pigs weaned can be lost through inefficient feed utilization, low rate of gain, or inferior carcass merit in the marketed hogs.

All too often, a pork producer merely knows that a problem exists, but doesn't know where it is or how serious it is. This fact sheet presents a list of "performance standards" that producers can use to check their management practices for potential problems and a series of questions to pinpoint solutions to these problems.

Determining Your Production Level

Table 1 lists eleven measures of operator performance that reflect management ability. For each measure, three levels of performance are given (excellent, average, and poor), plus a space to record your results.

The following is a brief discussion of each performance standard listed in Table 1, what it measures, and how it's calculated.

Weaned Sows Cycling Within 7 Days and Weaning to First Service Interval (A)

Failure of females to cycle in this time period can be an indication of a management problem. Expect a slightly lower percentage of first litter sows to cycle within 7 days after weaning compared to older sows.

Number of Pigs Farrowed (B) and Their Birth Weight (C)

Number of pigs farrowed alive is important because only live pigs can be marketed. Research indicates that the heavier the pigs at birth, the better their chances of survival.

Number (D) and Percent (E) of Pigs Weaned

Number of pigs weaned is probably the most descriptive productivity trait that we can measure since it reflects all the management criteria associated with breeding, gestation, farrowing, and lactation. Percent of pigs weaned is a more meaningful measure of farrowing house management. This figure reflects death loss between farrowing and weaning.

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Percent of pigs weaned is calculated as follows:
Percent weaned = $\frac{\text{No. of pigs weaned}}{\text{No. of live pigs farrowed}} \times 100$

Pigs Marketed/Sow/Year (F)

This is an indicator of performance from conception to market. It is affected by fertilization, embryo survival during gestation, and livability from birth to market. It is calculated by dividing number of market hogs produced by average sow herd size.

Pigs marketed/sow/year = $\frac{\text{No. of pigs}}{\text{Average sow herd size}} \times$

Average Weaning Weight of Pigs (G)

Weaning weight is the actual weight of the pig when it is weaned or removed from the sow. Weaning weight shows relative thriftiness of both individual pigs and the pig crop as a whole, and is also a reflection of the milking ability of the sow. This, in turn indicates the type of performance that can be expected in the early growing stage of the life cycle. In general, pigs that grow faster to weaning will also gain faster after weaning.

Rate of Gain (H) and Days to 230 Pounds (I)

Both of these performance measures are used to determine how fast a pig grows. To calculate age at 230 lbs., the birth date is essential. Average daily gain is calculated as follows:

Avg. daily gain = $\frac{\text{Total ending wt.} - (\text{Total starting wt.} - \text{Total starting wt. of pigs that died})}{\text{No. of pigs at the end} \times \text{total no. of days}}$

The following formula predicts the age of the animal when it reached or will reach 230 lbs.

Days to 230 lbs. = actual age in days + $\frac{(230 - \text{actual wt.}) \times (\text{actual age} - 38)}{\text{actual wt.}}$

Feed Efficiency (J)

Feed efficiency is simply the pounds of feed it takes to produce a pound of live hog. Since feed costs make up 55 to 65 percent of the total cost of pork production, even a slight improvement in this trait can mean a large return to profits.

Table 1. Performance Measures for Evaluating Swine Production.

Performance Measure	Unit	Performance Level			Your Farm
		Excellent	Average	Poor	
A. Weaned sows cycling within 7 days	pct.				_____
1st litter sows		Over 85	70-85	Under 70	_____
older sows		Over 90	80-90	Under 80	_____
B. Pigs/litter farrowed alive	no.				_____
gilts		Over 10	9-10	Under 9	_____
sows		Over 11	10-11	Under 10	_____
C. Avg. birth weight	lb.	Over 3.5	3.0-3.5	Under 3.0	_____
D. Pigs/litter weaned	no.				_____
gilts		Over 9	8-9	Under 8	_____
sows		Over 10	9-10	Under 9	_____
E. Pct. live pigs weaned	pct.	Over 90	80-90	Under 80	_____
F. Pct. marketed/sow/year	no.	Over 19	15.5-19	Under 15.5	_____
G. Avg. weaning weight	lb.				_____
3 weeks		Over 12	9-12	Under 9	_____
4 weeks		Over 16	11-16	Under 11	_____
5 weeks		Over 20	14-20	Under 14	_____
H. Avg. daily gain (40 lbs. to market)	lb./day	Over 1.65	1.45-1.65	Under 1.45	_____
I. Days to 230 lbs.	no.	Under 175	175-190	Over 190	_____
J. Feed efficiency	lb./feed				_____
40 to 230 lbs.	lb. gain	Under 3.0	3.0-3.5	Over 3.5	_____
Farrow to finish		Under 3.3	3.3-3.8	Over 3.8	_____
K. Backfat, last rib at 230 lbs.	inch	Under 1.0	1.0-1.2	Over 1.2	_____

Feed conversion can be calculated two ways: (1) for each pen of pigs of (2) for the entire swine operation. Records kept for each pen of pigs will spot management errors, such as improper feeder adjustment. Records for the entire enterprise are useful in year end analysis of the swine enterprise. Feed efficiency per pen of pigs is calculated as:

$$\text{Lbs. Feed/lb. of gain} = \frac{\text{Total feed from starting wt. to market}}{\text{Total weight gain}}$$

and for the entire herd is calculated as

$$\text{Lbs. Feed/lb. of gain} = \frac{\text{Lbs. total feed fed to swine on farm}}{\text{Total pounds of live hogs sold}}$$

Backfat (K)

Fat measurements such as the backfat thickness at the last rib are an excellent indicator of leanness. To adjust backfat to a standard weight of 230 lbs., use the following formula:

$$\text{Backfat at 230 lbs.} = \text{Actual backfat} + \frac{(230 - \text{Actual wt.}) \times (\text{actual backfat})}{(\text{actual wt.} - 25)}$$

Troubleshooter’s Management Practice Checklist

The following are the management practices or activities which most directly affect the eleven performance measures that determine your swine production profile. These practices are grouped according to the specific performance measures they influence.

When a performance standard is found to be above average, chances are you have answered “yes” to most of the management questions listed under that performance measure. On the other hand, when the standard is below average, you probably had to answer “no” to many of the questions (or at least the more important ones). Attention to those management practices which you have overlooked or neglected should improve your overall swine production profile — and your profits!

Management Practices Affecting Conception Rate

	Yes	No
1. Were boars purchased at least 60 days prior to use?	_____	_____
2. Were boars free of any lameness or stiffness?	_____	_____
3. Were boars free of external parasites - i.e., lice, mange, etc.?	_____	_____
4. Were the newly purchased boars isolated for 30 days and retested negative for pseudorabies?	_____	_____
5. Were boars given fence line contact with females 30 days prior to use?	_____	_____
6. Were boars maintained in comfortable lots and quarters that were dry, draft-free, and junk free?	_____	_____
7. Were boars kept cool in the hot summer months?	_____	_____
8. Were boars old enough to have matured sexually - i.e., at least 8 months of age?	_____	_____
9. Were boars test-mated prior to use to check semen, libido, and ability to breed?	_____	_____
10. Were boars in breeding condition - i.e., not too fat or too thin?	_____	_____
11. Were boars treated for internal parasites?	_____	_____
12. Were boars free of flu or high body temperatures prior to and/or during breeding?	_____	_____
13. Was breeding done on a dry, not a slick surface?	_____	_____
14. Was "boar power" adequate? (Young boar - 5 to 6 gilts per boar, pen breeding; older boar - 6 to 8 per boar, pen breeding).	_____	_____
15. If a larger number of females are to be bred, were boars rotated?	_____	_____
16. Was using a young, untried boar to pen-breed a group of newly weaned sows avoided?	_____	_____
17. Were gilts at least 7 months old at breeding?	_____	_____
18. Did all gilts exhibit normal breeding?	_____	_____
19. Were sows and gilts vaccinated for leptospirosis (5 way vaccine) and parvovirus prior to breeding?	_____	_____
20. Were sows and gilts free of any exposure to high environmental temperatures during breeding and prior to farrowing?	_____	_____
21. Were sows and gilts in breeding condition - i.e., not too fat or too thin?	_____	_____
22. Were sows and gilts in a weight-gaining status at breeding time?	_____	_____
23. Was a balanced ration fed to the breeding animals?	_____	_____
24. Was the ration fed free of molds?	_____	_____
25. If a hand mating system is used, were sows and/or gilts mated at least twice (24 hours apart) at breeding time?	_____	_____

Management Practices Affecting Pigs Farrowed and Birth Weight

1. Did you answer yes to all items under "conception rate"?	_____	_____
2. If a commercial operation, is a systematic crossbreeding program practiced?	_____	_____
3. Were sows and gilts limit-fed (4-5 lbs. per sow per day) during gestation?	_____	_____
4. Were sows and/or gilts in the right condition during gestation — not too fat and not too thin?	_____	_____
5. Was the actual farrowing time of each sow of normal duration (2-4 hours)?	_____	_____
6. Was a thermometer available for checking temperature?	_____	_____

Management Practices Affecting Pigs Weaned and Weaning Weight

1. Was a definite breeding and farrowing schedule followed?	_____	_____
2. Were sows and gilts free of external parasites?	_____	_____
3. Were sows and gilts treated for internal parasites prior to farrowing?	_____	_____
4. Was the farrowing house isolated for disease prevention?	_____	_____
5. Were slotted floors constructed accurately and uniformly (so pigs don't get caught in slots)?	_____	_____
6. Was there a break of at least 2 days in the use of the farrowing unit for it to be washed and disinfected?	_____	_____
7. Was proper ventilation provided?	_____	_____
8. Was the farrowing unit draft free - i.e., no air intakes allowing drafts directly on pigs?	_____	_____
9. Were doors to the farrowing unit kept shut at all times to prevent drafts?	_____	_____
10. Was the farrowing unit sufficiently warm (65-70° F. room temperature)?	_____	_____
11. Was heat used at farrowing time to keep the pigs' sleeping area around 90-95° F.?	_____	_____
12. Was there a footbath at entrances to the farrowing unit?	_____	_____
13. Were dogs, cats, birds, and rodents kept away from the premises?	_____	_____
14. Was all equipment in good repair?	_____	_____
15. Were sows washed and sprayed with a disinfectant prior to farrowing?	_____	_____
16. Did you follow an all-in all-out procedure in the farrowing house and nursery?	_____	_____

17. Did all sows and gilts have at least 12 functional mammary glands? _____
18. Did pigs have a dry sleeping area because the farrowing house floor was kept dry? _____
19. Were the pigs' tails docked within 3 days with disinfected equipment? _____
20. Were the eight needle teeth clipped within 3 days? _____
21. Were the pigs' navels disinfected the first day? _____
22. Were the iron injections given within 3 days of age? _____
23. Were male pigs castrated prior to 2 weeks of age? _____
24. Were pigs' knees in good condition - i.e. no knee abrasions? _____
25. Were utensils used for cutting and injecting cleaned thoroughly and disinfected before and after such use? _____
26. Was litter size evened up - i.e. largest pigs from big litters transferred to smaller litters within 48 hours? _____
27. Was initial selection of potential replacement gilts made soon after farrowing? (Check number and placement of teats; mark selected pigs.) _____
28. Were replacement gilts selected on the basis of litter size, average daily gain, the dam's milking and mothering ability? _____
29. Was some consideration given to genetic potential for maternal traits when choosing boars to produce replacement gilts? _____
30. Was there a supply of clean, fresh water for both sows and pigs? _____

Management Practices Affecting Daily Gain and Feed Efficiency

1. Were pigs of uniform size in a pen? _____
2. Was there a satisfactory number of pigs per pen (ideal is 20 to 35 or less)? _____
3. Was there adequate space per pig in the pens? (Slotted floors - 8 sq.ft./240 lb. pig; solid floors - 9 to 10 sq.ft./240 lb. pig.) _____
4. Was there sufficient feeder space - i.e., 4 to 5 pigs per self-feeder hole? _____
5. Were feeders in good repair and adjusted to prevent feed wastage? _____
6. Were there sufficient waterers - i.e. a maximum of 15 pigs per waterer with a minimum of two per pen? _____
7. Were waterers in good repair with no leakage or wastage? _____
8. Did pigs appear to be comfortable? _____
9. Was the environment clean, dry, and draft-free? _____
10. Were shade and foggers provided during hot summer months? _____
11. Were feeder pigs or breeding stock purchased from a source with a good disease control program? _____
12. Did the performance records of purchased boars indicate that their offspring would have the genetic potential for fast gain, good feed efficiency, and superior carcass merit? _____
13. Was a balanced growing-finishing ration fed? _____
14. Were tails docked? _____
15. Were pigs wormed? _____
16. Were pigs treated for external parasites? _____
17. Were pigs free of lameness, abscesses, or swollen hocks? _____
18. Were pigs generally free of health problems, such as coughing, sneezing, scours, and unthriftiness? _____
19. Was there a medication system available when needed? _____
20. Were sick pigs isolated in a separate pen or building? _____
21. Were pigs that died given a post-mortem examination by a veterinarian? _____
22. Were feedmen or other servicemen able to make deliveries without entering the hog lot? _____
23. Were sows limited to 4 or 5 pounds of feed per day during gestation? _____
24. Were feed losses from the wind during delivery minimized? _____
25. Was there good control of rodents? _____
26. Were losses from wet, spoiled, moldy, and old feed kept to a minimum? _____

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