Estimating the Value of Segregated Early Weaned Pigs

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The practice of separating farrow-to-finish hog production into three distinct phases at multiple locations is revolutionizing the swine industry. The age separation practice, known as segregated early weaning (SEW), produces healthier, more efficient pigs and helps to maximize the genetic potential of today's breeding stock. The concept of SEW production systems along with the advantages and disadvantages have been widely discussed and documented (Clark; National Hog Farmer; Spronk; and Yeske). A popular SEW production system is the three site, all-in-all- out system, consisting of a breeding-gestation-farrowing site, a nursery site, and a grower finishing site. Segregated early weaning creates a need for a method of valuing SEW pigs between the production phases.

The value of SEW pigs is best determined by market supply and demand. However, because many buyers and sellers are working on contractual arrangements, few SEW pigs are sold on an open market. In the absence of a liquid market, buyers and sellers often revert to formula pricing to place a value on their pigs. Formula prices are based on external market factors such as production costs, prices of major inputs (corn and soybean meal), feeder pig prices, market hog prices, and pig weight.

Formulas for valuing feeder pigs have typically been for 40 to 50 pound feeder pigs. These formulas often include a quoted auction price for feeder pigs or factor in the cost of feeding pigs to slaughter weight. Research at Kansas State University found feeder-pig health, pig weight, lot size, and uniformity had significant impacts on feeder pig prices received at auctions (Mintert et al.). Due to differences in health status, weight, and performance potential of SEW pigs compared to the more traditional 40 to 50 pound feeder pig, previously developed formulas are not suitable for pricing SEW pigs. However, many of the same principles used in developing these formulas can be used to develop formulas for valuing SEW pigs. Several researchers have developed formulas that can be used for SEW pigs (DiPietre, Dahlgran, and Tubbs; DiPietre and Tubbs (1994a); DiPietre and Tubbs (1994b); Koehler, Lazarus, and Buhr; and Zering). The formulas developed have ranged from valuing pigs based on cost of production to expected profitability. However, none of these formulas have explicitly considered costs at all stages of production (farrow-to-wean, nursery, finish) typical of multiple-site production.

Formulas for valuing pigs

There are many different methods for determining a value for pigs in the absence of a relevant market price quote. The following are examples of different methods that can be used in establishing formulas for pricing SEW pigs.

- Value based on 40 to 50 pound feeder pig market, adjusted for weight and performance.
- Value based on cost of production.
- Value based on cost of production, plus a premium for increased performance.
- Value based on equal returns to different stages of production.
- Value based on profit sharing between different stages of production.

Two important points need to be made regarding the different methods for deriving formulas. First, it is important to realize that no formula will be best in all situations. Each of the methods mentioned has both strengths and weaknesses. Second, as producers and others attempt to develop or evaluate formulas, knowing production costs is critical. The following is a brief discussion of each of the methods listed.

Value based on feeder pig market

Developing a formula based on reported prices for 40 to 50 pound feeder pigs and making adjustments for weight and performance is defensible because the base price is market determined by buyers and sellers bidding on pigs. However, it is critical that weight and performance adjustments are made properly.

Even though the quality of SEW pigs being purchased under the formula may be well known, the quality of pigs sold in auctions vary considerably. Because of the diverse traits of auction pigs, their price quote may not be very representative and determining the proper performance adjustment could be difficult.

Variability in feeder pig market prices associated with changing profitability expectations is desirable from a formula standpoint; however, variability due to feeder-pig quality is undesirable. As the weight of formula priced feeder pigs varies from the base weight of 40 to 50 pounds, the formula should include a feed price variable to account for cost of gain differences.

Another problem with this method is that during periods of thin markets quoted feeder-pig auction prices may not adequately reflect current supply and demand conditions. A related problem is that of determining the location of the auction to use. The closest auction may not have adequate volume and auctions located further away having larger volume may not reflect local supply and demand conditions. Whenever formula pricing of this nature exists, if it is successful it makes the auction a thinner, less viable market. In other words, the mere existence of formula pricing can eliminate, or reduce, the quality of auction price information

Value based on costs of production

The advantage of valuing SEW pigs based on cost of production is simplicity. Based on historical costs of production, producers can project their future break-even prices. Once this price is estimated, a formula price is fixed and known.

The disadvantage of this method is that price risk is not shared between the buyer and seller, assuming production costs have been accurately projected. Because a larger proportion of total costs are fixed, in the short run, for farrow-to-wean compared to the nursery or finishing phase, the seller of weaned pigs will face much less price risk than the buyer. On the other hand, if all costs are not accounted for, the pig producer will not generate enough revenue to stay in business in the long run. DiPietre and Tubbs (1994b) refer to this method of valuing SEW pigs as the "long-run lower bound price for weaner pigs." However, in the short run, during periods of economic losses, it is possible the costs of production pricing method would overprice pigs.

Value based on costs of production with performance adjustment

Formula price is based on the cost of production plus a premium for increased performance potential. It represents what buyers can afford to pay compared to producing the pigs themselves. The premium for performance potential is based on SEW pigs having better performance (average daily gain and feed/gain) compared to conventional feeder pigs. These premiums should be based on historical performance data of the SEW pigs. In the absence of this information, premiums could be based on actual performance and added to the initial base price at the time of closeout. This method represents a maximum formula price because if the price were greater, buyers would find it advantageous to produce their own pigs. DiPietre and Tubbs (1994b) refer to this as the "long-run upper bound price for weaner pigs." They point out that, once upper and lower bounds are set, buyers and sellers can negotiate a price somewhere between this range. However, if the lower bound covers total costs of production, the pig seller will have much less risk than the pig buyer, which may lead to diverging capital investment goals between buyer and seller.

Value based on equal returns to production stages

Developing a formula price that determines the value of SEW pigs based on equal, or predetermined, returns to different stages of production allows risk to be shared between the buyer and seller. A formula of this nature can set the price for pigs based on cost of production for the different phases and then be adjusted based on major determinants of profitability such as market hog price and feed prices. An advantage of this formula is that it allows risk to be shared. A disadvantage is the difficulty in determining the criteria and costs of each phase to use in deriving the formula. An example of this type of formula is discussed in more detail on page four.

Value based on profit sharing between production stages

Another method of valuing SEW pigs is based on profit sharing between producers at the different stages of production. If all costs are properly accounted for, this method is the most stable long term of all methods because returns, thus risk, are shared based on actual profitability. Brumm and Bitney point out that producers interested in a profit sharing agreement need to "totally trust the integrity and management abilities of one another."

Even though actual profits are shared between both parties with this method, there are many disadvantages of a profit sharing arrangement. If returns are split based on actual costs at each phase of production, there will be less incentive for either party to reduce costs compared to an independent producer scenario. Additionally, expenses such as feed, veterinary care, and utilities are relatively easy to identify, but valuing the contribution

of fixed assets, labor, and management can be very difficult. The difficulty of valuing buildings and equipment arises because their useful life often exceeds their loan length and depreciation periods. If the value of buildings and equipment that is "paid off and depreciated out" is not recognized as a cost, valuing pigs based on profit sharing will not be in the best interest of the person owning the facilities.

Budget projections by stage of production

The first step in developing a formula for valuing SEW pigs based on shared risk, or equal returns, between production stages is to construct budgets for each phase of production. Tables 1 through 3 are estimated budgets to help producers evaluate the economic potential of separate site swine production utilizing current technology. The following is a brief discussion of the budgets.

Economic costs vs. cash flow costs Cash flow costs can be, and often are, significantly different than economic costs. Cash flow costs are those costs that require an out-of-pocket payment. Economic costs, as defined here, are all costs that need to be paid in the long run and include labor and management, depreciation, and interest on investment. The budgets in Tables 1 through 3 are based on economic costs, giving an indication of long-run profit potential.

When developing budgets it is important that relevant prices and costs are used. Finished pig price and feed costs are based on average prices in Kansas. Other variable costs are based on both historical records and projections.

Historically, if pigs were not finished, they were marketed as 40 to 50 pound feeder pigs and there was a market price to base projections on. However, a reliable market for early weaned (10 lb) pigs does not currently exist, nor is it likely to in the future. Also, the value of a feeder pig coming out of the nursery from a SEW program may not be comparable to the traditional feeder pig going through an auction because of better quality and health.

A value for both the weaned pig and feeder pig needs to be estimated. These values were estimated by allocating the income received from the finished pig back to the individual phases by setting price levels for weaned and feeder pigs that result in all three phases earning a comparable return on investment at average production levels. It is important to note that production levels change cost per pig significantly. Thus, the estimated values for weaned pigs and feeder pigs using this method are sensitive to production levels.

Production level Costs per unit and net returns in swine production are highly dependent on production levels. The following estimated budgets include three different production levels. Production levels vary for a number of reasons such as livestock quality or genetics, weather, input levels, and management. Budgeting at multiple production levels can help producers examine the financial risk that is directly related to production risk.

Production levels for farrowing operations are assumed to vary due to differences in the number of pigs sold per litter and the number of litters per sow per year. Varying these two factors results in different numbers of pigs sold per sow per year. Returns are sensitive to the number of weaned pigs marketed per sow per year. This is because many costs decrease on a per pig basis as production increases. Production levels for nursery and finishing operations are assumed to vary due to differences in feed efficiency. Varying this production factor, which has a major impact on profitability, allows an analysis of alternative projected economic results. Production factors such as pigs weaned per sow per year, feed efficiency, and mortality rate should be estimated based on the actual genetics and health status of the SEW pigs being produced or purchased.

Capital investment Capital invested in farrowing, nursery, and finishing facilities varies substantially, and is dependent upon the size and type of facilities constructed. The success of the SEW concept is partially dependent upon the availability of capital intensive, high quality facilities. Investment costs are based on current cost projections and depreciated over 10 years. Salvage value is estimated at 20 percent for buildings and 0 percent for equipment at the end of 10 years. Investment for a farrowing house with liquid manure facilities and slotted floors is estimated at $1,980 per sow (66 square feet per sow), with the equipment inside the building adding an additional $800 per sow. The gestation building is estimated to cost $360 per sow (20 square feet per sow), and the equipment inside the building is estimated to cost an additional $150 per sow. A nursery building with liquid manure handling facilities and narrow slotted floors is estimated to cost $102 per pig (3.5 square feet per pig), with the equipment inside the building costing an additional $8 per pig. A finishing building with liquid manure handling facilities and a totally slotted floor is estimated to cost $144 per pig (8 square feet per pig), with the equipment inside the building costing an additional $20 per pig. Office facilities, site preparation, and miscellaneous items also are included in the capital requirements for all budgets. The capital requirements are assumed to be the same for all production levels. Thus, fixed costs per pig is a function of throughput, which varies in the farrow-to-wean budget, but is held constant in the nursery and finishing budgets.

Deriving formula based on projected budgets

Once budgets are developed, the parties involved can determine which factors should be included in formula pricing as well as a rule for allocating returns across the different produc-

tion phases. Typically, formulas are based on the major factors affecting profitability. In this case, formulas for valuing 10-pound weaned pigs and 60-pound feeder pigs are based on grain sorghum, soybean meal, and market hog prices. The method used for allocating returns in this example is to set return on investment equal for each phase of production. An example of an alternative rule might be to use a risk-adjusted return on investment for each phase of production.

Prices for weaned pigs and feeder pigs were derived over a range of grain sorghum, soybean meal, and market hog prices holding all other budget variables constant. All prices were estimated at average production levels (middle column in Tables 1-3). This was accomplished using an electronic spreadsheet of the budgets for each production phase and an iterative process to find the prices for weaned pigs and feeder pigs where return on investment was equal for all three phases of production. Using this methodology, prices for weaned pigs and feeder pigs were obtained for various combinations of sorghum, soybean meal, and market hog prices. The relationships between weaned pig and feeder pig prices to these variable factors were determined using regression analysis.

The derivation of weaned pig and feeder pig prices can be accomplished using a budgeting process for any given grain, soybean meal, and market hog prices. However, to estimate the relationships over a wide range of prices, it is necessary to use regression analysis since some of the relationships are nonlinear. Equations 1 and 2 depict the relationships that exist between both weaned pig and feeder pig formula prices with sorghum, soybean meal, and market hog prices:

The relationship between weaned pig and feeder pig prices with respect to both feed prices and market hog prices was nonlinear. Parameter coefficients on grain sorghum and soybean meal prices are larger in the feeder pig price formula [2] than in the weaned pig price formula [1]. This is as expected since feed costs have a greater impact on production costs for heavier pigs. Figures 1 and 2 show a graphical representation of formulas [1] and [2]. The formula price for weaned pigs changes by about $0.40 to $0.60 per head for every $0.50 per cwt change in the price of sorghum. That same change in the price of sorghum has about twice the impact on the formula price for feeder pigs. Similarly, a change of $5 per hundredweight in the price of market hogs changes the formula price for weaned pigs by a little more than three dollars per head and slightly over six dollars per head for feeder pigs.

Using formulas [1] and [2], buyers and sellers can place a value on SEW weaned pigs and feeder pigs as the prices for sorghum, soybean meal, and market hogs change. If desired, the formulas could be reestimated to reflect changes in other variables such as the price of base mix, replacement gilts, etc., using the same process. However, the more variables included in the formula the more complicated it becomes. Typically the reason for developing a formula is to determine a price in a relatively simple manner. Therefore, the parties involved need to recognize there is a trade-off between the exactness and complexity of the formula.

While these formulas are fairly simple and can be useful for estimating the value of SEW weaned and feeder pigs over time, they have limitations to consider. Once a formula is established, it is critical to have a predetermined method as to which prices are used in the formula. For example, the grain sorghum price used might be an agreed upon local price or it could be the corn futures price adjusted by basis. The market hog price should reflect the expected

Equations for valuing 10-pound weaned and 60-pound feeder pigs:

[1] $WP_P = -1.390 - 0.3758(GS_P) - 0.04764(GS_P)^2 - 0.004625(SBM_P) - 0.00001738(SBM_P)^2 + 1.0587(MH_P) - 0.00471(MH_P)^2$

[2] $FP_P = -0.847 - 1.3788(GS_P) - 0.03469(GS_P)^2 - 0.011431(SBM_P) - 0.00001140(SBM_P)^2 + 1.5106(MH_P) - 0.00316(MH_P)^2$

where,

WP_P = 10-pound weaned pig price, $/head

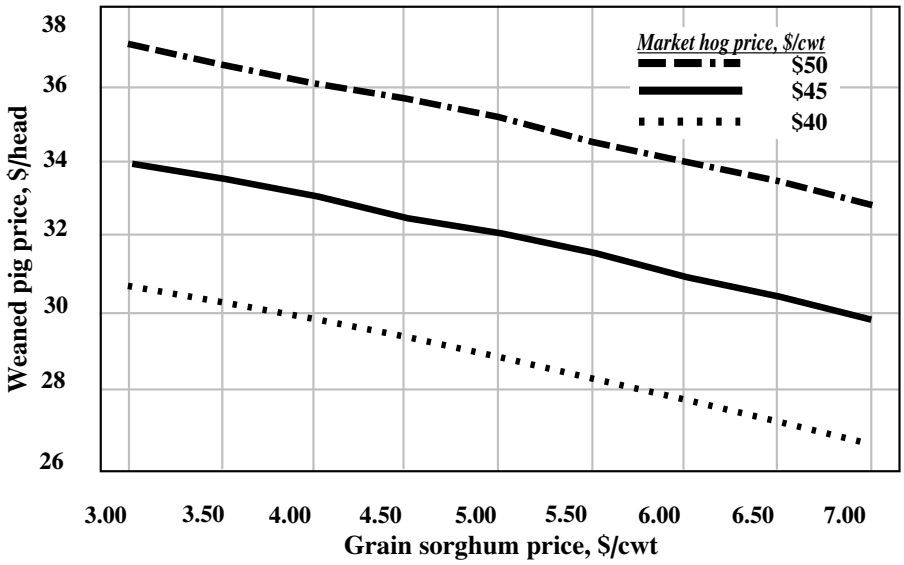
FP_P = 60-pound feeder pig price, $/head

GS_P = Grain sorghum price, $/cwt (projected average price over entire feeding period)

SBM_P = Soybean meal price, $/ton (projected average price over entire feeding period)

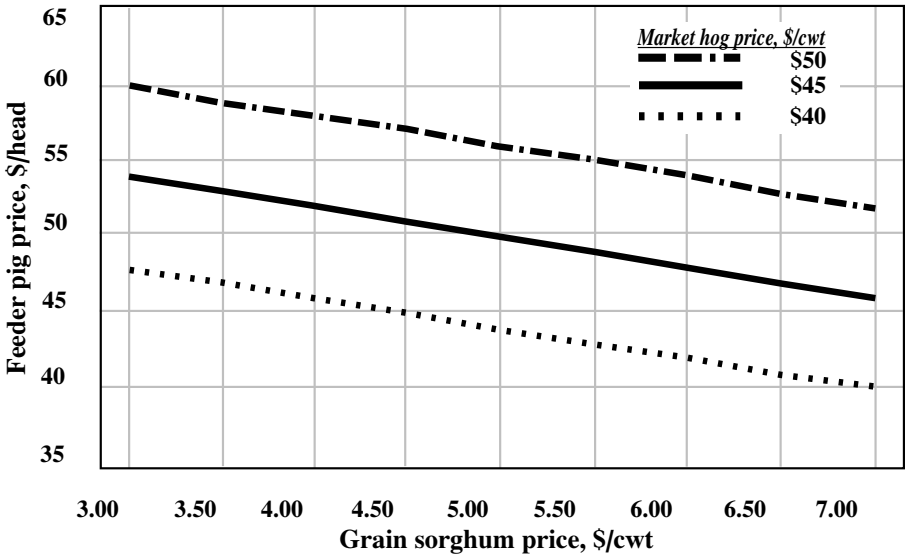
MH_P = Market hog price, $/cwt (projected price at end of feeding period)

Figure 1. Ten-pound weaned pig price varying grain and market hog prices.



SBM price = 118.7 + 14.9 x Grain sorghum price

Figure 2. Sixty-pound feeder pig price varying grain and market hog prices.



SBM price = 118.7 + 14.9 x Grain sorghum price

price of pigs when they are finished and not the day they are purchased. A projected price might be the futures price adjusted for basis. The basis should reflect adjustments for both location and quality (premiums and discounts). More important than the actual price referenced, is that the method of deriving the formula is agreed upon by all parties and that consistency is maintained over time.

If, at some point in time, a specific price quote is not relevant anymore, the formulas will need to be re-estimated using the new price quote. This also would be true as production factors change over time.

Another limitation of these formulas is that they were developed based upon specific production factors and cost assumptions. It is important to realize that as production factors and costs change from those in Tables 1 through 3, the formulas will need to be re-estimated. Management, facilities, and production costs will vary considerably between operations. Budgets used to estimate formulas should be based on average long-run costs and production values typical for the type of facilities involved. Doing this as opposed to using actual costs of production will reward producers who are doing "better than average." However, average costs and typical production are not always easily identified. Maintaining consistency in how inputs are valued across budgets is probably more important than actual values used. For example, the cost of facilities in Tables 1 through 3 is based on a 10 year life with a 20 percent salvage value in all budgets. The correct useful life of swine facilities is unclear; thus, 10 years may be an inappropriate time frame. However, maintaining consistency across budgets will help alleviate the problem of incorrectly specifying the time frame. On the other hand, if a formula is based on the costs of production of only one phase such as break-even price of farrow-to-wean, the assumptions and method of calculating costs will be much more critical.

These formulas were derived based on projected costs in Kansas. While they may be relevant for other locations in the Midwest and High Plains having similar costs, they would not be representative for geographical regions having a different cost structure. For example, feed prices in the southeastern United States are relatively higher, but facilities costs are lower compared to the Midwest. Therefore, these formulas would not be accurate for producers in the southeast. However, this same methodology could be used to estimate unique formulas for that region.

The formulas were derived based on weaned and feeder-pig prices where the return on investment was equal for all phases of production. This was

done to reflect a sharing of returns between the phases. It is possible that returns should not be shared equally between phases. If one phase of production faces considerably more risk than the others, it should receive a higher rate of return to compensate for the increased risk. Returns were set equal because at this time there is little data available that can be used to determine the relative riskiness of the different phases for SEW pigs using current technologies. Production risk in the farrow-to-wean phase is most likely higher than in the nursery or finishing phases, but the input price risk will most likely be higher in the nursery and finisher phases.

Summary

No one formula for valuing SEW pigs will be best in all cases. The best formula will be one that all parties can consistently agree to and treats each participant equitably. If the parties involved want to maintain a long-term relationship, pigs should be valued so one party is not consistently benefitting at the expense of another. Therefore, when entering into a long-term contractual arrangement, buyers and sellers should use a formula that allows market risks to be shared. Regardless of the method or formula used to value pigs, buyers and sellers need to be flexible and communicate over time. Buyer and sellers also need to realize there will be a "learning period" as they adopt new technologies such as SEW. Therefore, formulas used in long-term contractual agreements should be revised and updated as costs and pig performance values change. For long-term contracts it may be advantageous to include terms in a contract specifying how and when formulas will be revised. An alternative to this would be to keep contracts relatively short so that contract terms can be changed as new contracts are entered into.

As the production of SEW pigs continues to increase, a market may develop that reduces the need for formula pricing. Until that time there will continue to be the need for valuing SEW pigs based on some type of formula due to the high cost of price discovery. This factsheet illustrates a method for deriving formulas for valuing SEW pigs that allows for market risks to be shared among the different production phases.

References

Brumm, M. and L. Bitney. 1995. *Pricing SEW Piglets*, NF 95-224, University of Nebraska Cooperative Extension Service.

Clark, L.K. 1995. *The Concept of SEW and the Rules to Make it Work*, Proceedings of Pork Academy, Des Moines, IA, pps 154-157, National Pork Producers Council.

DiPietre, D., R. Dahlgran, and R. Tubbs. 1993. *Value vs. Price in High Quality Feeder Pigs: Is There a Difference?*, Proceedings of American Association of Swine practitioners, Kansas City, MO, pps 459-469.

DiPietre, D., and R. Tubbs. 1994a. *Establishing a method of pricing for early weaned pigs*, Proceedings of 13th IPVS Congress, Bangkok, Thailand, p 422.

DiPietre, D., and R. Tubbs. 1994b. *Valuing Weaned Pigs Through a Budgeting Process*, Proceedings of American Association of Swine Practitioners, Chicago, IL, pps 222-226.

Koehler, B., B. Lazarus, and B. Buhr. 1996. *Swine Production Networks in Minnesota: Resources for Decision Making*, Staff Paper P96-6, Department of Applied Economics, College of Agricultural, Food, and Environmental Sciences, University of Minnesota.

Mintert, J.R., J. Blair, T.C. Schroeder, D. Nichols, and J. Jones. 1989. *Factors Affecting Auction Prices of Feeder Pigs*, C-703, Kansas State University Cooperative Extension Service.

National Hog Farmer. Fall 1994. *Blueprint Series for Top Managers, Segregated Early Weaning*, No. 19 in a series. Webb Division, Intertec Publishing Corporation, 9800 Metcalf, Overland Park, KS.

Spronk, G. 1995. *Impact of Health on Genetics*, Proceedings of Pork Profitability Summit, Des Moines, IA, pps 27-31, National Pork Producers Council.

Yeske, P. 1995. *Making SEW Work in Your Her*d, Proceedings of Pork Academy, Des Moines, IA, pps 158-168, National Pork Producers Council.

Zering, K. 1995. *Methods of pricing weanling pigs*, Swine News, Vol. 18, No. 9, North Carolina Cooperative Extension Service.

Table 1. PROJECTED BUDGET FOR FARROW-TO-WEAN PHASE

	Marketable pigs weaned/sow/year			
	16.0	19.0	22.0	Your Farm
VARIABLE COSTS PER PIG SOLD:	-------- $ per pig sold --------			
1. Grain	$4.13	$3.51	$3.07	
2. Protein	2.30	1.97	1.73	
3. Base mix: vitamins, minerals, etc.	1.14	0.97	0.85	
4. Pig starter	0.00	0.00	0.00	
5. Feed processing	0.57	0.49	0.43	
6. Labor and management	8.48	7.14	6.16	
7. Veterinary, drugs, and supplies	1.10	1.00	0.90	
8. Utilities, fuel, and oil	1.65	1.50	1.35	
9. Transportation and marketing costs	0.55	0.50	0.45	
10. Building and equipment repairs	1.29	1.09	0.94	
11. Breeding/genetic charge (sum of lines a - d)	6.15	5.29	4.66	
a. *Depreciation*	*(2.90)*	*(2.44)*	*(2.11)*	
b. *Semen*	*(2.00)*	*(1.79)*	*(1.64)*	
c. *Interest*	*(1.14)*	*(0.96)*	*(0.83)*	
d. *Insurance*	*(0.11)*	*(0.10)*	*(0.08)*	
12. Professional fees (legal, accounting, etc.)	0.55	0.50	0.45	
13. Interest on $^1/_2$ variable costs	0.68	0.55	0.46	
A. TOTAL VARIABLE COSTS	$28.60	$24.51	$21.44	
FIXED COSTS PER PIG SOLD:				
14. Depreciation on buildings and equipment	5.54	4.66	4.03	
15. Interest on buildings and equipment	3.70	3.12	2.69	
16. Insurance and taxes on buildings and equip.	0.63	0.53	0.46	
B. TOTAL FIXED COSTS	$9.87	$8.31	$7.18	
C. TOTAL COSTS PER PIG SOLD	$38.47	$32.82	$28.62	
RETURNS PER PIG SOLD				
17. Weaned pig	33.00	33.00	33.00	
D. GROSS RETURNS PER PIG SOLD	$33.00	$33.00	$33.00	
E. RETURNS OVER VARIABLE COSTS (D - A)	$4.40	$8.49	$11.56	
F. RETURNS OVER TOTAL COSTS (D - C)	-$5.47	$0.18	$4.38	
G. WEANED PIG BREAKEVEN PRICE, $÷head:				
18. To cover variable costs	$28.60	$24.51	$21.44	
19. To cover total costs	$38.47	$32.82	$28.62	
H. TOTAL FEED COSTS (lines 1 - 5)	$8.14	$6.94	$6.07	
20. Cwt. pork produced	0.10	0.10	0.10	
21. Feed cost/cwt.	$81.41	$69.41	$60.70	
I. ASSET TURNOVER (D ÷ Investment)[1]	41.8%	49.6%	57.4%	
J. NET RETURN ON INVESTMENT ((F+11c+13+15÷Investment)[1]	0.07%	7.23%	14.55%	

[1]Investment equals total cost of breeding herd and buildings and equipment

*For more information on the projected budget for the farrow-to-wean phase consult *Farrow to Weaned Pig Cost Return Projection*, MF-2153.

Table 2. PROJECTED BUDGET FOR NURSERY PHASE

	Feed efficiency (feed/gain, lbs.)			
	2.00	1.80	1.60	Your Farm
VARIABLE COSTS PER PIG SOLD:				
1. Grain	$2.29	$2.06	$1.83	
2. Protein	2.88	2.59	2.30	
3. Base mix: vitamins, minerals, etc.	1.84	1.66	1.47	
4. Pig starter	2.12	1.91	1.70	
5. Feed processing	0.45	0.41	0.36	
6. Labor and management	1.58	1.58	1.58	
7. Veterinary, drugs, and supplies	0.50	0.50	0.50	
8. Utilities, fuel, and oil	0.25	0.25	0.25	
9. Transportation and marketing costs	0.50	0.50	0.50	
10. Building and equipment repairs	0.39	0.39	0.39	
11. Professional fees (legal, accounting, etc.)	0.25	0.25	0.25	
12. Interest on $^1/_2$ V.C. and weaned pig	0.60	0.60	0.59	
A. TOTAL VARIABLE COSTS	$13.64	$12.68	$11.71	
FIXED COSTS PER PIG SOLD:				
13. Depreciation on buildings and equipment	1.57	1.57	1.57	
14. Interest on buildings and equipment	1.15	1.15	1.15	
15. Insurance and taxes on buildings and equip.	0.23	0.23	0.23	
B. TOTAL FIXED COSTS	$2.94	$2.94	$2.94	
C. TOTAL COSTS PER PIG SOLD:	$16.59	$15.62	$14.66	
RETURNS PER PIG SOLD				
16. Feeder pig	$52.25	$52.25	$52.25	
17. Less cost of weaned pig	33.00	33.00	33.00	
18. Less death loss (3% of line 16)	1.57	1.57	1.57	
D. GROSS RETURNS PER PIG SOLD	$17.68	$17.68	$17.68	
E. RETURNS OVER VARIABLE COSTS (D - A)	$4.04	$5.00	$5.97	
F. RETURNS OVER TOTAL COSTS (D - C)	$1.10	$2.06	$3.03	
G. FEEDER PIG BREAKEVEN PRICE, $/head:				
19. To cover variable costs	$48.21	$47.25	$46.28	
20. To cover total costs	$51.15	$50.19	$49.22	
H. TOTAL FEED COSTS (lines 1 - 5)	$9.58	$8.62	$7.66	
21. Cwt. pork produced	0.48	0.48	0.48	
22. Feed cost/cwt pork	$19.88	$17.89	$15.90	
I. ASSET TURNOVER (D ÷ Investment) [1]	33.8%	33.8%	33.8%	
J. NET RETURN ON INVESTMENT ((F + 11c + 13 + 15 ÷ Investment)[1]	5.44%	7.27%	9.10%	

[1] Investment equals total cost of weaned pig and buildings and equipment

*For more information on the projected budget for the nursery phase consult *Feeder Pig Nursery Cost Return Projection*, MF-2151.

Table 3. PROJECTED BUDGET FOR FINISHING PHASE

	Feed efficiency (feed/grain, lbs.)			
	3.30	3.10	2.90	Your Farm
VARIABLE COSTS PER PIG SOLD:				
1. Grain	$20.19	$18.96	$17.74	
2. Protein	10.98	10.31	9.65	
3. Base mix: vitamins, minerals, etc.	4.10	3.85	3.60	
4. Pig starter	0.00	0.00	0.00	
5. Feed processing	2.75	2.58	2.41	
6. Labor and management	3.07	3.07	3.07	
7. Veterinary, drugs, and supplies	0.80	0.80	0.80	
8. Utilities, fuel, and oil	0.25	0.25	0.25	
9. Transportation and marketing costs	2.00	2.00	2.00	
10. Building and equipment repairs	1.18	1.18	1.18	
11. Professional fees (legal, accounting, etc.)	0.50	0.50	0.50	
12. Interest on $^1/_2$ V.C. and weaned pig	2.44	2.40	2.36	
A. TOTAL VARIABLE COSTS	$48.26	$45.92	$43.57	
FIXED COSTS PER PIG SOLD:				
13. Depreciation on buildings and equipment	4.87	4.87	4.87	
14. Interest on buildings and equipment	3.49	3.49	3.49	
15. Insurance and taxes on buildings and equip.	0.67	0.67	0.67	
B. TOTAL FIXED COSTS	$9.03	$9.03	$9.03	
C. TOTAL COSTS PER PIG SOLD	$57.29	$54.95	$52.60	
RETURNS PER PIG SOLD				
16. Finished pig	$112.09	$112.09	$112.09	
17. Less cost of feeder pig	52.25	52.25	52.25	
18. Less death loss (2% of line 16)	2.24	2.24	2.24	
D. GROSS RETURNS PER PIG SOLD	$57.60	$57.60	$57.60	
E. RETURNS OVER VARIABLE COSTS (D - A)	$9.34	$11.68	$14.02	
F. RETURNS OVER TOTAL COSTS (D - C)	$0.31	$2.65	$4.99	
G. FEEDER PIG BREAKEVEN PRICE, $/cwt.:				
19. To cover variable costs	$41.94	$40.98	$40.03	
20. To cover total costs	$45.62	$44.67	$43.71	
H. TOTAL FEED COSTS (lines 1 - 5)	$38.01	$35.71	$33.41	
21. Cwt. pork produced	1.80	1.80	1.80	
22. Feed cost/cwt pork	$21.11	$19.83	$18.55	
I. ASSET TURNOVER (D ÷ Investment) [1]	51.7%	51.7%	51.7%	
J. NET RETURN ON INVESTMENT ((F + 12 + 14) ÷ Investment)[1]	5.59%	7.66%	9.72%	

[1]Investment equals total cost of feeder pig and buildings and equipment

*For more information on the projected budget for the finishing phase consult *Finishing Barn Cost Return Projection*, MF-2152.

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