

Swine Finishing Cost-Return Budget

Department of Agricultural Economics — www.agmanager.info



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Kevin C. Dhuyvetter
Agricultural Economist
Farm Management

Mike D. Tokach
Swine Nutrition Specialist

Steve S. Dritz
Swine Specialist
College of Veterinary Medicine

Joel DeRouchey
Extension Specialist

Production Practices

The practice of dividing traditional farrow-to-finish hog production into distinct phases is common practice in 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 ability to take advantage of this technology may help Kansas hog producers remain competitive in the industry.

One of the most popular modern production systems is a three site all-in, all-out system consisting of a breeding-gestation-farrowing site, a nursery site, and a grower-finishing site. This budget is designed to serve as an economic guide to the grower-finishing phase of the production process.

Production Level

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

Production levels for finishing operations are assumed to vary due to differences in the feed efficiency of the pigs in the finishing barn. Varying this production factor, which has a major impact on the profitability of the finishing site, allows an analysis of alternative projected economic results.

Capital Investment

The capital invested in finishing facilities varies greatly, and is dependent upon the size and type of facilities constructed. Capturing the full benefits of the SEW concept, even in the finishing phase, is dependent upon high quality facilities that require large capital investments. The investment shown in Table 1 was used for the cost return projections. Producers should use their own figures and recalculate the fixed cost before construction.

A finishing building with liquid manure handling facilities (deep pit) and a totally slatted floor is estimated to cost \$184 per pig (7.5 sq. ft. per pig), with the equipment inside the building costing an additional \$29 per pig. Office facilities, site preparation, and miscellaneous items

are also included in the capital requirements. The capital requirements are assumed to be the same for all production levels, so building and equipment costs per pig are the same for all production levels.

Returns

Returns to the finishing stage accrue from the sale of finished pigs less the cost of purchased feeder pigs or the transfer price from the nursery phase and possibly the sale of manure (or value captured if used on producer owned land). Feeder pigs produced in SEW programs are typically heavier and of better quality than those reflected in most commonly reported feeder pig markets. Thus, the feeder pig purchase price used in the finishing budget will generally represent a premium over average feeder pig prices to account for quality differences. The purchase price of the feeder pig used in this budget was arrived at by simultaneously calculating a weaned pig price and a feeder pig price such that the return on investment for the three phases of production (farrow-to-wean, nursery, and finish) were exactly equal given the assumed costs in each budget (middle productivity level) and the market hog price in the finishing budget. For additional discussion pertaining to pricing SEW weaned and feeder pigs using this approach see MF-2221 *Estimating the Value of Segregated Early Weaned Pigs*.

Feed Costs

Feed costs account for a large component of the total costs per pig sold, and vary considerably across efficiency levels. Feed costs in these budgets were calculated using grain sorghum-soybean meal based diets and the 5-phase diet system for each efficiency level as recommended by the K-State swine nutrition guidelines. The diets used here do not contain added fat, but the practice of adding fat to diets is becoming more common and something producers need to evaluate on a case-by-case basis. Table 2 provides a partial breakdown of the different feed ingredients and their relative costs. Producers using alternative ingredients, such as DDGS, may achieve lower feed costs. The breakeven price needed to cover all costs (Line 20) is sensitive to changes in feed prices and to the purchase price of the feeder pig. Also, for a given selling price, the maximum amount a producer can pay for the feeder pig (Line 2) is sensitive to feed prices. The amount breakeven selling or purchase prices need to be adjusted as feed prices and other factors vary are revealed in Table 3.

Table 1. New Facility Investment—1,200 Pigs (Finishing Barn)

Building Type	Investment		Capacity	Total Investment
	Per Pig Space	Per Square Foot		
Finishing Building	\$184	\$24.50 / Sq. Ft.	1,200 Pigs	\$220,500
Equipment	29			34,500
Other (Office, Site, etc.)				15,000
			TOTAL	\$270,000

Information Included in Finishing Budget:

	Productivity level		
Feed efficiency (feed/gain, lbs)	3.10	2.90	2.70
Average daily gain	1.75	1.75	1.75

- 1. Finished pig sales:** based on a 265 pound finished pig and a market price of \$49.77 per cwt.
- 2. Less cost of feeder pig:** based on per head price of 60 pound feeder pig at \$57.07 per pig.
- 3. Less death loss:** based on 4.0 percent of the value of finished pig (with feed and transportation/marketing cost adjustment).
- 4. Manure credit:** based on nitrogen (N) and phosphate (P_2O_5) excreted per hog sold with manure stored in a deep pit (assumed 85% retained N from excreted amount) that would be available the following year for crop production valued at \$0.85/lb of N and \$1.09/lb of P_2O_5 less an application cost of \$0.01/gallon.
- 5. Grain:** corn and grain sorghum – see Table 2
- 6. Protein:** 46.5% soybean meal – see Table 2
- 7. Other ingredients:** all ingredients other than grain, soybean meal, and complete feeds – see Table 2
- 8. Complete feeds:** SEW and Transition diets – see Table 2
- 9. Feed processing:** total tons of feed fed per pig sold – see Table 2
- 10. Labor:** Based on 1/5-time employee at \$38,000/year (salary + benefits) divided by pigs sold/year.
- 11. Veterinary, drugs, and supplies:** costs for prevention and control of disease.
- 12. Utilities, fuel, and oil:** telephone, utilities, fuel and oil allocated to swine enterprise.
- 13. Transportation and marketing costs:** trucking, commissions, etc.
- 14. Buildings and equipment repairs:** annual building and equipment repairs allocated to the swine enterprise calculated as 2.5% of the total investment.
- 15. Professional fees (legal accounting, etc.):** business and miscellaneous costs allocated to swine enterprise.
- 16. Depreciation on buildings and equipment:** based on the total original cost less salvage value of buildings and equipment on a per pig basis divided by the estimated

life. The budget value is based on a total investment for buildings of \$235,500 with a salvage value of 10% and an equipment investment of \$34,500 with a salvage value of 0%. A useful life of 25 years is used for buildings and 15 years for equipment.

- 17. Interest on buildings and equipment:** interest is charged on one-half the average investment [(initial cost + salvage value) ÷ 2] for buildings and equipment at a rate of 8.0 percent divided by the number of feeder pigs sold per year.
- 18. Insurance and taxes on buildings and equipment:** based on 0.25% (insurance) and 1.5% (taxes, buildings only) times the original cost divided by the number of feeder pigs sold per year.
- 19. Interest on operating costs:** calculated on cost of feeder pig and one-half of operating costs at a rate of 8.0 percent for 118 days.
- 20. Average selling price of finished pig to cover total costs:** calculated by adding cost of feeder pig (Line 2) to total costs (Line C). This value is adjusted by death loss and divided by weight of finished pig to obtain the average breakeven selling price per cwt.
- F. TOTAL FEED COSTS:** sum of all feed costs including processing charge (lines 5-9).
- 21. Cwt. of pork produced:** weight of finished pig sold adjusted for death loss minus weight of feeder pig purchased divided by 100.
- 22. Feed cost/cwt pork:** total feed costs per hundredweight of pork produced (line F ÷ line 21).
- G. ASSET TURNOVER:** (gross returns per pig plus cost of feeder pig divided by investment) asset turnover is the percentage of investment recovered by total returns. Inverting this measure allows different enterprises to be compared on the basis of capital required to generate a dollar of gross income.
- H. NET RETURN ON INVESTMENT:** [(returns over total costs + interest on buildings and equipment + interest on feeder pig and operating costs) ÷ investment] Net return on investment is the percentage return on investment capital (both borrowed and equity). This measure enables comparisons to be made between enterprises as well as other investment alternatives.

Table 2. Feed Requirements and Costs for Three Levels of Feed Efficiency

Feed	Feed Efficiency (feed/gain, lbs)						Average cost/ton ¹
	3.10	2.90	2.70	3.10	2.90	2.70	
	Pounds fed per pig sold			Cost per pig sold			
Sorghum (\$4.30/bu)	505.5	472.9	440.3	\$38.82	\$36.31	\$33.81	\$122.16
Soybean meal (\$283/ton)	118.0	110.4	102.8	\$16.72	\$15.64	\$14.56	\$52.62
Other ingredients	12.0	11.2	10.4	\$3.40	\$3.18	\$2.96	\$10.69
Processing (\$16.90/ton)	635.5	594.5	553.5	\$5.37	\$5.02	\$4.68	\$16.90
TOTAL	635.5	594.5	553.5	\$64.30	\$60.15	\$56.01	\$202.37

¹ Portion of the total diet cost attributed to a particular ingredient.

SWINE FINISHING COST-RETURN PROJECTIONS

	Feed efficiency (feed/gain, lbs)			Your Farm
	3.10	2.90	2.70	
RETURNS PER PIG SOLD:				
1. Finished pig.....	\$131.89	\$131.89	\$131.89	
2. Less cost of feeder pig	57.07	57.07	57.07	
3. Less death loss	3.83	3.91	4.00	
4. Manure credit.....	8.40	7.54	6.66	
A. GROSS RETURNS PER PIG SOLD	\$ 79.39	\$ 78.45	\$ 77.48	
COSTS PER PIG SOLD:				
5. Grain	\$ 38.82	\$ 36.31	\$ 33.81	
6. Protein.....	16.72	15.64	14.56	
7. Other ingredients.....	3.40	3.18	2.96	
8. Complete feeds.....				
9. Feed processing.....	5.37	5.02	4.68	
10. Labor	2.14	2.14	2.14	
11. Veterinary, drugs, and supplies	1.80	1.80	1.80	
12. Utilities, fuel, and oil	0.61	0.61	0.61	
13. Transportation and marketing costs	4.00	4.00	4.00	
14. Building and equipment repairs	1.90	1.90	1.90	
15. Professional fees (legal, accounting, etc.).....	0.68	0.68	0.68	
16. Depreciation on buildings and equipment	3.03	3.03	3.03	
17. Interest on buildings and equipment	3.31	3.31	3.31	
18. Insurance and taxes on buildings and equipment	1.18	1.18	1.18	
B. SUBTOTAL.....	\$ 82.95	\$ 78.80	\$ 74.65	
19. Interest on feeder pig and ½ operating costs	2.41	2.35	2.30	
C. TOTAL COSTS	\$ 85.36	\$ 81.15	\$ 76.95	
D. RETURNS OVER TOTAL COSTS (A-C)	\$ -5.97	\$ -2.71	\$ 0.53	
E. BREAK-EVEN FINISHED PIG SELLING PRICE, \$/cwt:..				
20. To cover total costs	\$ 52.02	\$ 50.79	\$ 49.57	
F. TOTAL FEED COSTS (lines 5 - 9)	\$ 64.30	\$ 60.15	\$ 56.01	
21. Cwt. pork produced.....	1.94	1.94	1.94	
22. Feed cost/cwt pork	\$ 33.08	\$ 30.94	\$ 28.81	
G. ASSET TURNOVER [(A + 2) ÷ Investment] ¹	102.5%	101.8%	101.1%	
H. NET RETURN ON INVESTMENT				
[(D + 17 + 19) ÷ Investment] ¹	-0.19%	2.22%	4.61%	

¹Investment equals total value of feeder pig, buildings and equipment.

Table 3. *Sensitivity of breakeven price needed to cover total costs (Line C)*

	Feed efficiency (feed/gain, lbs)		
	3.10	2.90	2.70
Finished pig breakeven selling price in budget	\$52.02	\$50.79	\$49.57
Maximum purchase price for weaned pig in budget	\$51.26	\$54.43	\$57.59
Factor	Change in breakeven selling price of finished pig		
\$0.50/cwt. change in grain price	\$0.95	\$0.89	\$0.82
\$10/ton change in soybean meal price	\$0.22	\$0.21	\$0.19
\$50/ton change in other ingredients price	\$0.11	\$0.10	\$0.10
5.0% change in feed efficiency	\$1.20	\$1.13	\$1.05
1.0% change in death loss	\$0.44	\$0.45	\$0.46
\$2.50/head change in feeder pig price	\$0.97	\$0.97	\$0.97
Factor	Change in breakeven purchase price of feeder pig		
\$0.50/cwt. change in grain price	\$2.45	\$2.29	\$2.13
\$10/ton change in soybean meal price	\$0.57	\$0.53	\$0.50
\$50/ton change in other ingredients price	\$0.29	\$0.27	\$0.25
5.0% change in feed efficiency	\$3.11	\$2.91	\$2.71
1.0% change in death loss	\$1.09	\$1.11	\$1.13
\$2.50/cwt. change in finished pig price	\$6.20	\$6.20	\$6.20

Publications from Kansas State University are available on the World Wide Web at: www.oznet.ksu.edu.

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Kevin C. Dhuyvetter et al., *Swine Finishing Barn Cost-Return Budget*, Kansas State University, October 2008.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2152

October 2008

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Fred A. Cholic, Director.