



Feeder Pig Nursery Cost-Return Projection

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Production Practices

The practice of dividing traditional farrow-to-finish hog production into three distinct phases is becoming common 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.

The most popular modern production system 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 nursery 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 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 directly related to production risk of a livestock enterprise.

Production levels for SEW nursery operations are assumed to vary due to differences in the feed efficiency of the pigs in the nursery. Varying this production factor allows an analysis of alternative projected economic results.

Capital Investment

The capital invested in nursery facilities varies greatly, and is dependent on the size and kind of facilities constructed. The success of the SEW concept 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 nursery building with liquid manure handling facilities and narrow slotted floors is estimated to cost \$110 per pig (3.5 sq. ft. per pig), with the equipment inside the building costing an additional \$10 per pig. Office facilities, site preparation, and miscellaneous items also are included in the capital requirements. The capital requirements are assumed to be the same for all production levels, so fixed costs per pig are the same for all production levels.

Returns

Returns to the nursery stage accrue from the sale or transfer of feeder pigs. Feeder pigs produced in SEW nursery programs are typically heavier and of better quality than those reflected in most commonly reported feeder pig markets. The 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 and the market hog price in the finishing budget. Any feeder pig price used for SEW budgets will need to include a significant premium over average feeder pig prices to account for quality differences.

Feed Costs

Feed costs were calculated based on the four-phase diet system proposed in the *Kansas Swine Nutrition Guide* for each efficiency level. Feed costs account for a large component of the total costs per pig sold, and vary considerably across efficiency levels.

The break-even price needed to cover all costs (Line 20) is sensitive to changes in feed prices and to the purchase price of the weaned pig. Also, for a given expected break-even selling price, the maximum amount a producer can pay for the weaned pig (Line 17) is sensitive to feed prices. Table 2 shows the amount these break-even selling or purchase prices need to be adjusted as feed prices and other factors vary.

Table 1. New Facility Investment—1,200 Pigs

Building Type	Investment		Capacity	Total Investment
	Per Space	Per Square Foot		
Nursery Bldg.	\$110 / Pig	\$36.67 / Sq. Ft.	1,200 Pigs	\$132,000
Equip.	10 / Pig			12,000
Other (Office, Site, etc.)				15,000
TOTAL				\$159,000

Information Included in Nursery Budget:

	Productivity level		
Feed efficiency (feed/gain, lbs.)	2.00	1.80	1.60
Average daily gain	0.90	0.90	0.90

	Pounds fed per pig		
1. Grain: sorghum @ \$3.54 per hundredweight	52.0	46.8	41.6
2. Protein: soybean meal @ \$186 per ton	26.6	24.0	21.3
3. Base mix: vitamins, minerals @ \$412 per ton	3.2	2.9	2.5
4. Pig starter: @ \$491 per ton	5.5	5.0	4.5
5. Feed processing: total tons of feed fed times \$12 per ton.			
6. Labor: Based on quarter-time employee at \$34,000 per year (salary + benefits) divided by pigs sold per year.			
7. Veterinary, drugs, and supplies: costs for prevention and control of disease.			
8. Utilities, fuel, and oil: telephone, utilities, fuel, and oil allocated to swine enterprise.			
9. Transportation and marketing costs: trucking, commissions, etc.			
10. Buildings and equipment repairs: annual building and equipment repairs allocated to swine enterprise calculated as 2.5 percent of the total investment.			
11. Professional fees (legal, accounting, etc.): business/ miscellaneous costs allocated to swine enterprise.			
12. Interest on variable costs: calculated on cost of weaned pig and one-half of variable costs at a rate of 10 percent for 53 days.			
13. 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 \$147,000 with a salvage value of 10 percent and an equipment investment of \$12,000 with a salvage value of 0 percent. A useful life of 15 years is used for buildings and 10 years for equipment.			

- 14. 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 10 percent divided by the number of feeder pigs sold per year.
- 15. Insurance and taxes on buildings and equipment:** based on 0.25 percent (insurance) and 1.5 percent (taxes, buildings only) times the original cost divided by the number of feeder pigs sold per year.
- 16. Feeder pig sales:** based on per-head price of 55-pound feeder pig at \$40.03 per pig.
- 17. Less cost of weaned pig:** based on per-head price of 10-pound weaned pig at \$27.45 per pig.
- 18. Less death loss:** based on 3.0 percent of the value of feeder pig.
- 19. Average selling price of feeder pig to cover variable costs:** calculated by adding cost of weaned pig (Line 17) to total variable costs (Line A). This value is adjusted by death loss to obtain the average break-even price per head.
- 20. Average selling price of feeder pig to cover total costs:** calculated the same as for variable costs except total costs (Line C) are used.
- 21. Cwt. of pork produced:** weight of feeder pig sold adjusted for death loss minus weight of weaned pig purchased divided by 100.
- I. ASSET TURNOVER:** (returns per 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.
- J. NET RETURN ON INVESTMENT:** [(returns over total costs + interest on variable costs + interest on fixed 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.

COST-RETURN PROJECTION — FEEDER PIG NURSERY

	Feed efficiency (feed/gain, lbs)			
	2.0	1.8	1.6	Your Farm
VARIABLE COSTS PER PIG SOLD:				
1. Grain	\$ 1.84	\$ 1.65	\$ 1.47	
2. Protein	2.48	2.23	1.98	
3. Base mix: vitamins, minerals, etc.	1.85	1.67	1.48	
4. Pig starter	1.36	1.23	1.09	
5. Feed processing	0.54	0.49	0.43	
6. Labor	1.06	1.06	1.06	
7. Veterinary, drugs, and supplies	0.75	0.75	0.75	
8. Utilities, fuel, and oil	1.12	1.12	1.12	
9. Transportation and marketing costs	0.50	0.50	0.50	
10. Building and equipment repairs	0.50	0.50	0.50	
11. Professional fees (legal, accounting, etc.)	0.30	0.30	0.30	
12. Interest on weaned pig and 1/2 variable costs	0.48	0.48	0.47	
A. TOTAL VARIABLE COSTS	\$ 12.79	\$ 11.97	\$ 11.16	
FIXED COSTS PER PIG SOLD:				
13. Depreciation on buildings and equipment	1.25	1.25	1.25	
14. Interest on buildings and equipment	1.08	1.08	1.08	
15. Insurance and taxes on buildings and equipment	0.32	0.32	0.32	
B. TOTAL FIXED COSTS	\$ 2.66	\$ 2.66	\$ 2.66	
C. TOTAL COSTS PER PIG SOLD (A + B)	\$ 15.44	\$ 14.63	\$ 13.82	
RETURNS PER PIG SOLD				
16. Feeder pig	40.03	40.03	40.03	
17. Less cost of weaned pig	27.45	27.45	27.45	
18. Less death loss	1.20	1.20	1.20	
D. GROSS RETURNS PER PIG SOLD	\$ 11.37	\$ 11.37	\$ 11.37	
E. RETURNS OVER VARIABLE COSTS (D–A)	\$ –1.41	\$ –0.60	\$ 0.21	
F. RETURNS OVER TOTAL COSTS (D–C)	\$ –4.07	\$ –3.26	\$ –2.44	
G. FINISHED PIG BREAK-EVEN PRICE, \$/head:				
19. To cover variable costs	\$ 41.44	\$ 40.63	\$ 39.81	
20. To cover total costs	\$ 44.10	\$ 43.28	\$ 42.47	
H. TOTAL FEED COSTS (lines 1 through 5)	\$ 8.07	\$ 7.27	\$ 6.46	
21. Hundredweight pork produced	0.43	0.43	0.43	
22. Feed cost per hundredweight pork produced	\$ 18.62	\$ 16.76	\$ 14.90	
I. ASSET TURNOVER (D ÷ INVESTMENT) ¹	24.05%	24.05%	24.05%	
J. NET RETURN ON INVESTMENT				
[(F + 12 + 14) ÷ INVESTMENT] ¹	–5.29%	–3.58%	–1.88%	

¹Investment equals total cost of weaned pig, buildings, and equipment.

Table 2. Sensitivity of break-even price needed to cover total costs (line 20)

	Feed efficiency (feed/gain, lbs)		
	2.00	1.80	1.60
Feeder pig break-even selling price in budget	\$44.10	\$43.28	\$42.47
Maximum purchase price for weaned pig in budget	\$23.44	\$24.24	\$25.04
Factor	Change in break-even selling or purchase price		
\$0.50/hundredweight change in grain price	\$0.26	\$0.24	\$0.21
\$10/ton change in soybean meal price	\$0.13	\$0.12	\$0.11
\$20/ton change in base mix	\$0.03	\$0.03	\$0.03
\$25/ton change in starter	\$0.06	\$0.05	\$0.04
5.0% change in feed efficiency	\$0.41	\$0.37	\$0.33
1.0% change in death loss	\$0.43	\$0.43	\$0.43
Factor	Change in break-even selling price		
\$2.50/head change in weaned pig price	\$2.54	\$2.54	\$2.54
Factor	Change in break-even purchase price		
\$4.00/head change in feeder pig price	\$3.82	\$3.82	\$3.82

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