Swine Wean-to-Finish Cost-Return Budget

K-STATE Research and Extension

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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Production Practices

The practice of dividing traditional farrow-to-finish hog production into distinct phases is a common practice in the swine 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. However, in recent years a number of producers have started combining the nursery and finishing phases and building wean-to-finish barns. Potential advantages of systems such as this are improved labor efficiency and reduced costs associated with moving pigs, i.e., increased average daily gain and decreased transportation costs, and easier to maintain all-in/all-out production. Disadvantages are that production flexibility may be reduced and barn space is under utilized at weaning time unless pigs are double stocked. Double stocking refers to bringing twice as many weaned pigs into the facility as can be handled in the finishing phase to fully utilize space and then moving half the pigs to a conventional finishing barn once they have reached a certain weight. While this practice reduces the advantage of not moving pigs, it also reduces the disadvantage associated with under utilizing barn space. Producers need to consider these trade-offs for their particular operations. This budget is designed to serve as an economic guide to the wean-to-finish phases of the production process. The budget includes production scenarios for both normal stock and double stock, where double stock requires an additional finishing barn in addition to the wean-to-finish barn (i.e., once pigs reach weaning weight half of the pigs are moved to a conventional finishing barn and half are finished in the wean-to-finish barn).

Production Level

Costs per unit and net returns in livestock production are highly dependent on production levels. The following estimated swine wean-to-finish budgets include two different production levels for both stocking densities due to varying feed efficiencies. 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 wean-to-finish operations are assumed to vary due to differences in the feed efficiency of the pigs in the wean-to-finish barn, specifically in the finishing phase. Varying this production factor, which has a major impact on the profitability of the wean-to-finish site, allows an analysis of alternative projected economic results.

Capital Investment

The capital invested in wean-to-finish facilities varies greatly, and is dependent upon the size and type of facilities constructed. Capturing the full benefits of the wean-to-finish 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 wean-to-finish building with liquid manure handling facilities (deep pit) and a totally slatted floor is estimated to cost $206 per pig (7.5 sq. ft. per pig), with the equipment inside the building costing an additional $30 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 both production levels, so building and equipment costs per pig are constant across production levels (see MF2152 for investment required for conventional deep-pitted finishing barn required for double stock scenario).

Returns

Returns to the wean-to-finish stage accrue from the sale of finished pigs less the cost of purchased weaned pigs or the transfer price from the farrowing phase and possibly the sale of manure (or value captured if used on producer owned land). The price of the weaned 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 each phase of a three-site system (farrow-to-wean, nursery, and finish) was exactly equal given a market hog price in the finishing budget and average costs of production in each of the three phases. For additional discussion pertaining to pricing SEW weaned and feeder pigs using this approach see MF2221, *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 corn, DDGS, and soybean meal-based diets in both the nursery and finishing phases (final diet in finishing phase includes Paylean) for each efficiency level as recommended by the K-State swine nutrition guidelines. The diets used here do not contain added fat, but producers need to evaluate potential fat additions to diets 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 grain sorghum, may achieve lower feed

costs. The break-even price needed to cover all costs (Line 21) is sensitive to changes in feed prices and to the purchase price of the weaned pig. Also, for a given selling price, the maximum amount a producer can pay for the weaned pig (Line 2) is sensitive to feed prices. The amount break-even 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 (Wean-to-Finish Barn)*[1]

	Investment			
Building Type	**Per Pig Space**	**Per Square Foot**	**Capacity**	**Total Investment**
Finishing Building	$206	$27.50 / Sq. Ft.	1,200 Pigs	$247,500
Equipment	30			36,225
Other (Office, Site, etc.)				18,000
			TOTAL	$301,725

[1] *Producers double stocking their wean-to-finish barn during the nursery phase with 2,400 pigs would have another $274,500 of investment for a 1,200-head conventional finishing barn (see MF2152 for investment details).*

Information Included in Wean-to-Finish Budget:

	Productivity level	
	Normal Stock	
Feed efficiency (feed/gain, lbs)	2.61	2.43
Average daily gain	1.61	1.61
Death loss, %	5.88	5.88

	Productivity level	
	Double Stock	
Feed efficiency (feed/gain, lbs)	2.60	2.42
Average daily gain	1.54	1.54
Death loss, %	6.88	6.88

1. **Finished pig sales:** based on a 275 pound finished pig and a market price of $69.72 per cwt. (see MF1013 for details).
2. **Less cost of weaned pig:** based on per head price of 13-pound weaned pig at $44.75 per pig.
3. **Less death loss:** based on 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 $0.55/lb of N and $0.52/lb of P_2O_5 less an application cost of $0.01/gallon.
5. **Grain:** corn – see Table 2
6. **Distillers:** distillers grains with soluble (DDGS) – see Table 2
7. **Protein:** 46.5% soybean meal (SBM) – see Table 2
8. **Other ingredients:** all ingredients other than grain, DDGS, SBM, and complete feeds – see Table 2
9. **Complete feeds:** SEW and Transition diets – see Table 2
10. **Feed processing:** total tons of feed fed per pig sold – see Table 2
11. **Labor:** Based on 0.24 full-time employee (normal stock) and 0.38 full-time employee (double stock) at $41,520/year (salary + benefits) divided by pigs sold/year.
12. **Veterinary, drugs, and supplies:** costs for prevention and control of disease.
13. **Utilities, fuel, and oil:** telephone, utilities, fuel and oil allocated to swine enterprise.
14. **Transportation and marketing costs:** trucking, commissions, etc.
15. **Buildings and equipment repairs:** annual building and equipment repairs allocated to the swine enterprise calculated as 2.5% of the total investment.
16. **Professional fees (legal accounting, etc.):** business and miscellaneous costs allocated to swine enterprise.
17. **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 for normal stock is based on a total investment for buildings of $265,500 with a salvage value of 10% and an equipment investment of $36,225 with a salvage value of 0%. A useful life of 25 years is used for buildings and 15 years for equipment.
18. **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 6.5 percent divided by the number of feeder pigs sold per year.
19. **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.
20. **Interest on operating costs:** calculated on cost of weaned pig and one-half of operating costs at a rate of 6.5 percent for 165 days for normal stock and 171 days for double stock.
21. **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 break-even selling price per cwt.

F. TOTAL FEED COSTS: sum of all feed costs including processing charge (lines 5-10).

22. **Cwt. of pork produced:** weight of finished pig sold adjusted for death loss minus weight of weaned pig purchased divided by 100.
23. **Feed cost/cwt pork:** total feed costs per hundredweight of pork produced (line F ÷ line 22).

G. ASSET TURNOVER: (gross returns per pig plus cost of weaned 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 weaned 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.

SWINE WEAN-TO-FINISH COST-RETURN PROJECTIONS

	Feed efficiency (feed/gain, lbs)				Your Farm
	Normal Stock		Double Stock		
	2.61	2.43	2.60	2.42	
RETURNS PER PIG SOLD:					
1. Finished pig	$ $191.73	$ $191.73	$ $191.73	$ $191.73	
2. Less cost of weaned pig	44.75	44.75	44.75	44.75	
3. Less death loss	8.36	8.53	9.78	9.99	
4. Manure credit	5.08	4.45	5.45	4.75	
A. GROSS RETURNS PER PIG SOLD	$ $143.70	$ $142.90	$ $142.64	$ $141.74	
COSTS PER PIG SOLD:					
5. Grain	$ $40.24	$ $37.50	$ $40.15	$ $37.42	
6. Distillers (DDGS)	10.20	9.50	10.17	9.48	
7. Protein	23.62	22.02	23.57	21.97	
8. Other ingredients	5.10	4.75	5.09	4.74	
9. Complete feeds	1.65	1.54	1.65	1.54	
10. Feed processing	7.06	6.58	7.04	6.56	
11. Labor	4.19	4.19	3.32	3.32	
12. Veterinary, drugs, and supplies	2.76	2.76	2.76	2.76	
13. Utilities, fuel, and oil	3.20	3.20	2.67	2.67	
14. Transportation and marketing costs	5.68	5.68	5.68	5.68	
15. Building and equipment repairs	3.02	3.02	2.97	2.97	
16. Professional fees (legal, accounting, etc.)	0.96	0.96	0.96	0.96	
17. Depreciation on buildings and equipment	4.79	4.79	4.67	4.67	
18. Interest on buildings and equipment	4.27	4.27	4.19	4.19	
19. Insurance and taxes on buildings and equipment.	1.90	1.90	1.86	1.86	
B. SUBTOTAL	$ $118.64	$ $112.67	$ $116.75	$110.79	
20. Interest on weaned pig and ½ operating costs	2.81	2.73	2.89	2.80	
C. TOTAL COSTS	$ $121.46	$ $115.39	$ $119.64	$ $113.59	
D. RETURNS OVER TOTAL COSTS (A-C)	$ $22.24	$ $27.51	$ $23.00	$ $28.15	
E. BREAK-EVEN FINISHED PIG SELLING PRICE, $/cwt:					
21. To cover total costs	$ $61.63	$ $59.72	$ $61.36	$ $59.48	
F. TOTAL FEED COSTS (lines 5 - 10)	$ $87.87	$ $81.89	$ $87.67	$ $81.71	
22. Cwt. pork produced	2.46	2.46	2.43	2.43	
23. Feed cost/cwt pork	$ $35.74	$ $33.31	$ $36.07	$ $33.61	
G. ASSET TURNOVER [(A + 2) ÷ Investment][1]	132.5%	131.9%	133.1%	132.5%	
H. NET RETURN ON INVESTMENT [(D + 18 + 20) ÷ Investment][1]	20.62%	24.26%	21.37%	24.96%	

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

Table 2. *Feed Requirements and Costs for Two Levels of Feed Efficiency–Normal Stocking Density*[1]

	Feed Efficiency (feed/gain, lbs)				
	2.61	2.43	2.61	2.43	Average
Feed	**Pounds fed/pig sold**		**Cost per pig sold**		**cost/ton**[2]
Corn ($4.95/bu)	455.2	424.3	$40.24	$37.50	$117.83
Soybean meal ($452/ton)	104.6	97.5	$23.62	$22.02	$69.18
DDGS ($198/ton)	102.9	95.9	$10.20	$9.50	$29.86
Other ingredients	16.0	14.9	$5.10	$4.75	$14.94
Complete feeds	4.2	3.9	$1.65	$1.54	$4.84
Processing ($20.80/ton)	678.8	632.6	$7.06	$6.58	$20.67
TOTAL	683.0	636.5	$87.87	$81.89	$257.32

[1] *Values for Double Stocking Density are similar with slight rounding differences.*

[2] *Portion of the total diet cost attributed to a particular ingredient.*

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

	Feed efficiency (feed/gain, lbs)			
	Normal Stock		Double Stock	
	2.61	**2.43**	**2.60**	**2.42**
Finished pig break-even selling price in budget	$61.63	$59.72	$61.36	$59.48
Maximum purchase price for weaned pig in budget	$61.43	$67.15	$61.79	$67.46
Factor	**Change in break-even selling price of finished pig, $/cwt**			
$0.50/cwt. change in grain price	$0.82	$0.76	$0.81	$0.75
$10/ton change in soybean meal price	$0.19	$0.17	$0.19	$0.17
$10/ton change in DDGS price	$0.18	$0.17	$0.18	$0.17
$50/ton change in other ingredients price	$0.14	$0.13	$0.14	$0.13
5.0% change in feed efficiency	$1.57	$1.47	$1.56	$1.46
1.0% change in death loss	$0.42	$0.44	$0.42	$0.44
$2.50/head change in weaned pig price	$0.94	$0.94	$0.94	$0.94
Factor	**Change in break-even purchase price of weaned pig, $/head**			
$0.50/cwt. change in grain price	$2.18	$2.03	$2.16	$2.01
$10/ton change in soybean meal price	$0.50	$0.47	$0.50	$0.46
$10/ton change in DDGS price	$0.49	$0.46	$0.49	$0.46
$50/ton change in other ingredients price	$0.38	$0.36	$0.39	$0.37
5.0% change in feed efficiency	$4.20	$3.92	$4.17	$3.89
1.0% change in death loss	$1.13	$1.19	$1.12	$1.18
$2.50/cwt. change in finished pig price	$6.29	$6.29	$6.24	$6.24

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