Farrow-to-Weaned Pig Cost-Return Budget

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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. 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 breeding-gestation-farrowing phase of the production process.

Production Level

Costs per unit and net returns in livestock production are highly dependent on production levels. The following farrow-to-weaned pig 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 of a livestock enterprise 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 a different numbers of pigs sold per sow per year.

Capital Investment

The capital invested in farrowing facilities varies greatly, and is dependent upon the size and type 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 central farrowing house with liquid manure facilities and slotted floors is estimated at $2,638 per sow (66 sq. ft. per sow), with the equipment inside the building costing an additional $1,213 per sow. The gestation building is estimated to cost $593 per sow (20 sq. ft. per sow), and the equipment inside the building is estimated to cost an additional $243 per sow. 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 significantly lower for higher production levels.

Returns

Returns to the farrowing stage accrue from the sale or transfer of weaned pigs. 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 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 pigs using this approach see MF-2221 *Estimating the Value of Segregated Early Weaned Pigs*.

Producers also receive income from the sale of culled breeding stock. In this budget the income from the sale of culls is accounted for by including an assumed salvage value in the depreciation component of the breeding/genetic charge. Therefore, income from culls is entered as a reduction in costs rather than as an increase in returns so that the returns are representative of the true objective of the enterprise (producing weaned pigs).

Feed Costs

Feed costs were calculated using corn–soybean meal based diets for both the gestation and lactation diets. The practice of adding fat to diets is becoming more common and something producers need to evaluate on a case-by-case basis. In these budgets the lactation diet includes 5% added fat. K-State swine nutrition guidelines serve as the basis for calculating feed requirements for each production level. Table 2 provides a partial breakdown of the different feed ingredients and their relative costs. The breakeven price needed to cover all costs (Line 18) is sensitive to changes in grain and soybean meal prices. The expected breakeven prices for a range of corn and soybean meal prices for each of the three production levels are presented in Tables 3, 4, and 5.

Table 1. *New Facility Investment — 1,200 Sows (Farrow-to-Wean)*

	Investment			
Building Type	**Per Space**	**Per Square Foot**	**Capacity**	**Total Investment**
Farrowing Bldg.	$2,638 / Sow	$39.96 / Sq. Ft.	220 Sows	$580,250
Equip.	1,213 / Sow			266,915
Gestation Bldg.	593 / Sow	29.67 / Sq. Ft.	1,120 Sows	664,650
Equip.	243 / Sow			271,768
Other (Office, Site, etc.)				79,125
			TOTAL	$1,862,708

Information Included in Farrow-to-Wean Budget:

	Productivity level		
Litters/sow/year	2.20	2.30	2.40
Weaned pigs sold/litter	8.64	9.13	9.58
Weaned pigs sold/sow/year	19.0	21.0	23.0

1. **Weaned pig sales:** based on a 13 pound weaned pig at $35.89 per pig.
2. **Grain:** corn and grain sorghum – see Table 2
3. **Protein:** 46.5% soybean meal – see Table 2
4. **Other ingredients:** all ingredients other than grain, soybean meal, and complete feeds – see Table 2
5. **Complete feeds:** SEW and Transition diets – see Table 2
6. **Feed processing:** total tons of feed fed per pig sold – see Table 2
7. **Labor:** Based on 5 full-time employees at $36,750/year (salary + benefits) divided by pigs sold/year.
8. **Veterinary, drugs, and supplies:** costs for prevention and control of disease.
9. **Utilities, fuel, and oil:** telephone, utilities, fuel and oil allocated to swine enterprise.
10. **Transportation and marketing costs:** trucking, commissions, etc.
11. **Buildings and equipment repairs:** annual building and equipment repairs allocated to swine enterprise calculated as 2.5% of the total investment.
12. **Breeding/genetic charge:**
  a. **Depreciation:** difference between purchase price and cull value divided by years of useful life. Based on gilt purchase price of $221/head and cull value of $126/head, boar purchase price of $400/head and cull value of $140/head. Useful life is estimated at 1.8 years for sows and 2.5 years for boars. A sow/boar ratio of 120:1 is assumed.
  b. **Semen:** based on artificial insemination charge of $16.25/litter (2.5 straws @ $6.50/straw).
  c. **Interest:** interest is charged on the average breeding herd investment [(purchase price + cull value) ÷ 2] at a rate of 9 percent divided by the number of weaned pigs sold per year.
  d. **Insurance:** averages approximately 1.0 percent of the total breeding herd investment divided by the number of pigs sold per year.
13. **Professional fees (legal accounting, etc.):** business and miscellaneous costs allocated to swine enterprise.
14. **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 $1,324,025 with a salvage value of 10% and an equipment investment of $538,683 with a salvage value of 0%. A useful life of 25 years is used for buildings and 15 years for equipment.
15. **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 9 percent divided by the number of weaned pigs sold per year.
16. **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 weaned pigs sold per year.
17. **Interest on operating costs:** calculated on one-half of operating costs at a rate of 9 percent for the number of months per litter.
18. **Average selling price of weaned pig to cover total costs:** equals total costs per head (Line C).

F. **TOTAL FEED COSTS:** sum of all feed costs including processing charge (lines 2-6).

19. **Cwt. of pork produced:** weight of weaned pig sold.
20. **Feed cost/cwt pork:** total feed costs per hundredweight of pork produced (line F ÷ line 19).

G. **ASSET TURNOVER:** (gross 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.

H. **NET RETURN ON INVESTMENT:** [(returns over total costs + interest on breeding herd + interest on buildings and equipment + interest on 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.

FARROW-TO-WEANED PIG COST-RETURN PROJECTIONS

	Weaned pigs sold/sow/year			Your Farm
	19.0	21.0	23.0	
RETURNS PER PIG SOLD:				
1. Weaned pig	$ 35.89	$ 35.89	$ 35.89	
A. GROSS RETURNS PER PIG SOLD	$ 35.89	$ 35.89	$ 35.89	
COSTS PER PIG SOLD:				
2. Grain	$ 4.51	$ 4.10	$ 3.76	
3. Protein	2.22	2.04	1.89	
4. Other ingredients	1.20	1.10	1.02	
5. Complete feeds				
6. Feed processing	0.92	0.84	0.77	
7. Labor	8.06	7.29	6.66	
8. Veterinary, drugs, and supplies	1.10	1.00	0.90	
9. Utilities, fuel, and oil	2.07	1.88	1.71	
10. Transportation and marketing costs	1.93	1.84	1.75	
11. Building and equipment repairs	2.04	1.85	1.69	
12. Breeding/genetic charge				
a. Depreciation	2.81	2.55	2.32	
b. Semen	1.88	1.78	1.70	
c. Interest	0.83	0.75	0.69	
d. Insurance	0.09	0.08	0.08	
13. Professional fees (legal, accounting, etc.)	0.53	0.48	0.43	
14. Depreciation on buildings and equipment	3.67	3.32	3.03	
15. Interest on buildings and equipment	3.94	3.56	3.25	
16. Insurance and taxes on buildings and equipment	1.08	0.97	0.89	
B. SUBTOTAL	$ 38.88	$ 35.42	$ 32.54	
17. Interest on ½ operating costs	0.50	0.44	0.39	
C. TOTAL COSTS PER PIG SOLD	$ 39.38	$ 35.86	$ 32.92	
D. RETURNS OVER TOTAL COSTS (A-C)	$ -3.49	$ 0.03	$ 2.97	
E. BREAKEVEN WEANED PIG PRICE, $/head:				
18. To cover total costs	$ 39.38	$ 35.86	$ 32.92	
F. TOTAL FEED COSTS (lines 2 - 6)	$ 8.85	$ 8.08	$ 7.45	
19. Cwt. pork produced	0.13	0.13	0.13	
20. Feed cost/cwt pork	$ 68.06	$ 62.16	$ 57.28	
G. ASSET TURNOVER (A ÷ Investment)[1]	38.38%	42.42%	46.45%	
H. NET RETURN ON INVESTMENT [(D + 12c + 15 + 17) ÷ Investment][1]	1.91%	5.65%	9.44%	

[1] *Investment equals total value of breeding herd, buildings and equipment.*

Table 2. *Feed Requirements and Costs for Three Levels of Sow Productivity*

	Productivity Level, weaned pigs sold/sow/year						
	19.0	21.0	23.0	19.0	21.0	23.0	**Average**
Feed	**Pounds fed per pig sold[1]**			**Cost per pig sold**			**cost/ton[2]**
Corn ($2.90/bu)	87.1	79.2	72.6	$4.51	$4.10	$3.76	$77.77
Soybean meal ($197/ton)	22.5	20.7	19.2	$2.22	$2.04	$1.89	$38.68
Other ingredients	6.1	5.6	5.2	$1.20	$1.10	$1.02	$20.87
Processing ($15.96/ton)	115.7	105.4	97.0	$0.92	$0.84	$0.77	$15.96
TOTAL	115.7	105.4	97.0	$8.85	$8.08	$7.45	$153.29

[1] *Annual feed fed to sow and boar divided by weaned pigs sold per year.*

[2] *Portion of the total diet cost attributed to a particular ingredient (based on middle productivity level).*

Table 3. *Sensitivity of breakeven price needed to cover total costs (Line C) to changes in corn & soybean meal prices - Weaned pigs sold/sow/year = 19.0*

Corn price, $/cwt.	Soybean meal price, $/ton						
	$150	**$175**	**$200**	**$225**	**$250**	**$275**	**$300**
	Breakeven price of weaned pig, $/head						
$4.25	$38.01	$38.30	$38.59	$38.87	$39.16	$39.45	$39.73
4.50	$38.24	$38.52	$38.81	$39.10	$39.38	$39.67	$39.96
4.75	$38.46	$38.75	$39.03	$39.32	$39.61	$39.89	$40.18
5.00	$38.68	$38.97	$39.25	$39.54	$39.83	$40.11	$40.40
5.25	$38.90	$39.19	$39.48	$39.76	$40.05	$40.34	$40.62
5.50	$39.13	$39.41	$39.70	$39.99	$40.27	$40.56	$40.85
5.75	$39.35	$39.63	$39.92	$40.21	$40.49	$40.78	$41.07

Table 4. *Sensitivity of breakeven price needed to cover total costs (Line C) to changes in corn & soybean meal prices - Weaned pigs sold/sow/year = 21.0*

Corn price, $/cwt.	Soybean meal price, $/ton						
	$150	**$175**	**$200**	**$225**	**$250**	**$275**	**$300**
	Breakeven price of weaned pig, $/head						
$4.25	$34.62	$34.88	$35.14	$35.41	$35.67	$35.93	$36.20
4.50	$34.82	$35.08	$35.34	$35.61	$35.87	$36.13	$36.40
4.75	$35.02	$35.28	$35.55	$35.81	$36.07	$36.34	$36.60
5.00	$35.22	$35.48	$35.75	$36.01	$36.28	$36.54	$36.80
5.25	$35.42	$35.69	$35.95	$36.21	$36.48	$36.74	$37.00
5.50	$35.62	$35.89	$36.15	$36.42	$36.68	$36.94	$37.21
5.75	$35.83	$36.09	$36.35	$36.62	$36.88	$37.14	$37.41

Table 5. *Sensitivity of breakeven price needed to cover total costs (Line C) to changes in corn & soybean meal prices - Weaned pigs sold/sow/year = 23.0*

Corn price, $/cwt.	Soybean meal price, $/ton						
	$150	**$175**	**$200**	**$225**	**$250**	**$275**	**$300**
	Breakeven price of weaned pig, $/head						
$4.25	$31.78	$32.02	$32.26	$32.51	$32.75	$33.00	$33.24
4.50	$31.96	$32.21	$32.45	$32.69	$32.94	$33.18	$33.43
4.75	$32.15	$32.39	$32.63	$32.88	$33.12	$33.37	$33.61
5.00	$32.33	$32.57	$32.82	$33.06	$33.31	$33.55	$33.80
5.25	$32.52	$32.76	$33.00	$33.25	$33.49	$33.74	$33.98
5.50	$32.70	$32.94	$33.19	$33.43	$33.68	$33.92	$34.17
5.75	$32.89	$33.13	$33.37	$33.62	$33.86	$34.11	$34.35

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