Farrow-to-Finish Swine Cost-Return Budget

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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 of a livestock enterprise that is directly related to production risk.

Production levels for farrow-to-finish 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.

Capital Requirements

Capital invested in swine facilities varies greatly for farrow to finish swine enterprises. The investment shown in Table 1 was used for the cost return projections. Use your own figures and recalculate the fixed cost before construction. A trend toward higher investments and lower labor requirements has occurred.

A central farrowing house with liquid manure facilities and slotted floors is estimated at $2,000 per sow (66 sq. ft. per sow), with the equipment inside the building costing an additional $1,000 per sow. A nursery building with total slotted floors will cost about $110 per pig (3.5 sq. ft. per pig), with the equipment inside the building costing an additional $10 per pig. The gestation building is estimated to cost $450 per sow (20 sq. ft. per sow), and the equipment inside the building is estimated to cost an additional $200 per sow. A total confinement finishing building is estimated to cost $140 per pig (8 sq. ft. per pig), with the inside equipment adding another $25 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 significantly lower for higher production levels.

Feed Costs

Feed costs were calculated using grain sorghum - soybean meal based diets. The *Kansas Swine Nutrition Guide* served as the basis for calculating feed requirements at each stage of production. Feed costs vary considerably across production levels. The breakeven price needed to cover all costs (Line 19) is sensitive to changes in grain sorghum and soybean meal prices. The expected breakeven prices for a range of grain and soybean meal prices for each of the three production levels are presented in Tables 2, 3, and 4.

Returns

Producers receive income primarily from the sale of finished pigs. Additional income is received 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 business (producing finished pigs).

Table 1. *New Facility Investment — 150 Sows*

	Investment			
Building Type	**Per Space**	**Per Square Foot**	**Capacity**	**Total Investment**
Farrowing Bldg.	$2,000 / Sow	$30.30 / Sq. Ft.	30 Sows	$ 60,000
Equip.	1,000 / Sow			30,000
Nursery Bldg.	110 / Pig	36.67 / Sq. Ft.	530 Pigs	58,300
Equip.	10 / Pig			5,300
Finishing Bldg.	140 / Pig	17.50 / Sq. Ft.	1,020 Pigs	142,800
Equip.	25 / Pig			25,500
Gestation Bldg.	450 / Sow	22.50 / Sq. Ft.	140 Sows	63,000
Equip.	200 / Sow			28,000
Other (Office, Site, etc.)				60,000
			TOTAL	$472,900

Information Included in Farrow–to–Finish Budget:

	Productivity level		
Finished pigs sold/sow/year	15.0	17.5	20.0
Finished pigs sold/litter	7.50	8.25	8.90
Litters/sow/year	2.00	2.13	2.25
	Pounds fed per pig sold*		
1. Grain: sorghum @ $3.90/cwt	667.8	652.3	640.9
2. Protein: soybean meal @ $178/ton	162.4	158.6	155.8
3. Base mix: vitamins, minerals @ $372/ton	26.9	25.9	25.2
4. Pig starter (SEW diets I and II): @ $509/ton	5.0	5.0	5.0

5. **Feed processing:** total tons of feed fed times $12.00/ton.
6. **Labor:** Based on 1 full-time person at $34,000/year (salary + benefits) divided by pigs sold/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 percent of the total investment.
11. **Breeding/genetic charge:**
    a. **Depreciation -** difference between purchase price and cull value divided by years of useful life. Based on gilt purchase price of $207/head and cull value of $111/head, boar purchase price of $800/head and cull value of $117/head. Useful life is estimated at 1.8 years for sows and 2.5 years for boars. A sow/boar ratio of approximately 20:1 is assumed.
    b. **Semen** - artificial insemination charge, etc.
    c. **Interest** - interest is charged on the average breeding herd investment [(purchase price + cull value) ÷ 2] at a rate of 8 percent divided by the number of finished pigs sold per year.
    d. **Insurance** - averages approximately 1.0 percent of the total breeding herd investment divided by the number of finished pigs sold per year.
12. **Professional fees (legal accounting, etc.):** business/miscellaneous costs allocated to swine enterprise.
13. **Interest on variable costs:** calculated on one-half of variable costs at a rate of 8 percent for the number of months per litter.
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 $384,100 with a salvage value of 10 percent and an equipment investment of $88,800 with a salvage value of 0 percent. A useful life of 15 years is used for buildings and 10 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 8 percent divided by the number of finished pigs sold per year.
16. **Insurance and taxes on buildings and equipment:** based on original cost times 0.25 percent (insurance) and 1.5 percent (taxes, buildings only) divided by the number of finished pigs sold per year.
17. **Finished pig sales:** based on a 260 pound finished pig and a market price of $39.87 per cwt.
18. **Average selling price of finished pig to cover variable costs:** calculated by dividing total variable costs (Line A) by finished pig selling weight.
19. **Average selling price of finished pig to cover total costs:** calculated the same as for variable costs except total costs (Line C) are used.
20. **Cwt. of pork produced:** weight of finished pig sold.

I. **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.

J. **NET RETURN ON INVESTMENT:** [(returns over total costs + interest on breeding herd + 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.

**Includes annual feed fed to sow and boar divided by finished pigs sold per year.*

COST-RETURN PROJECTION — FARROW-TO-FINISH

	Finished pigs sold/sow/year			
	15.0	**17.5**	**20.0**	**Your Farm**
VARIABLE COSTS PER PIG SOLD:				
1. Grain	$ 26.04	$ 25.44	$ 24.99	
2. Protein	14.50	14.16	13.91	
3. Base mix: vitamins, minerals, antibiotics, etc.	6.72	6.53	6.38	
4. Pig starter	1.27	1.27	1.27	
5. Feed processing	5.19	5.07	4.98	
6. Labor	15.11	12.93	11.32	
7. Veterinary, drugs, and supplies	4.13	3.75	3.38	
8. Utilities, fuel, and oil	3.33	2.85	2.50	
9. Transportation and marketing costs	3.00	3.00	3.00	
10. Building and equipment repairs	4.20	3.60	3.15	
11. Breeding/genetic charge				
a. Depreciation	4.52	3.86	3.38	
b. Semen				
c. Interest	0.98	0.84	0.73	
d. Insurance	0.12	0.10	0.09	
12. Professional fees (legal, accounting, etc.)	2.13	1.83	1.60	
13. Interest on 1/2 variable costs	1.76	1.55	1.38	
A. TOTAL VARIABLE COSTS	$ 93.01	$ 86.77	$ 82.05	
FIXED COSTS PER PIG SOLD:				
14. Depreciation on buildings and equipment	14.19	12.14	10.63	
15. Interest on buildings and equipment	9.09	7.78	6.81	
16. Insurance and taxes on buildings and equipment	3.09	2.64	2.31	
B. TOTAL FIXED COSTS	$ 26.37	$ 22.56	$ 19.75	
C. TOTAL COSTS PER PIG SOLD (A + B)	$119.38	$109.32	$101.80	
RETURNS PER PIG SOLD				
17. Finished pig	103.66	103.66	103.66	
D. GROSS RETURNS PER PIG SOLD	$103.66	$103.66	$103.66	
E. RETURNS OVER VARIABLE COSTS (D–A)	$ 10.65	$ 16.90	$ 21.61	
F. RETURNS OVER TOTAL COSTS (D–C)	$ -15.71	$ -5.66	$ 1.86	
G. FINISHED PIG SELLING PRICE NEEDED, $/cwt:				
18. To cover variable costs (A ÷ cwt. pork produced)	$ 35.77	$ 33.37	$ 31.56	
19. To cover total costs (C ÷ cwt. pork produced)	$ 45.91	$ 42.05	$ 39.16	
H. TOTAL FEED COSTS (lines 1 through 5)	$ 53.72	$ 52.46	$ 51.53	
20. Hundredweight pork produced	2.60	2.60	2.60	
21. Feed cost per hundredweight pork (line H ÷ line 20)	$ 20.66	$ 20.18	$ 19.82	
I. ASSET TURNOVER (D ÷ INVESTMENT)[1]	45.70%	53.41%	61.01%	
J. NET RETURN ON INVESTMENT [(F + 11c + 13 + 15) ÷ INVESTMENT][1]	-1.71%	2.32%	6.35%	

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

Table 2. *Sensitivity of break-even price needed to cover total costs (Line 19) to changes in grain sorghum and soybean meal prices—Pigs sold/sow/year = 15.0*

Grain sorghum price/cwt.	Soybean meal price, $/ton						
	$100	$125	$150	$175	$200	$225	$250
	Break-even price of finished pig, $/cwt						
$3.25	$41.71	$42.51	$43.30	$44.10	$44.90	$45.69	$46.49
3.50	42.37	43.16	43.96	44.76	45.55	46.35	47.14
3.75	43.02	43.82	44.61	45.41	46.21	47.00	47.80
4.00	43.68	44.47	45.27	46.07	46.86	47.66	48.45
4.25	44.33	45.13	45.92	46.72	47.52	48.31	49.11
4.50	44.99	45.78	46.58	47.37	48.17	48.97	49.76
4.75	45.64	46.44	47.23	48.03	48.83	49.62	50.42

Table 3. *Sensitivity of break-even price needed to cover total costs (Line 19) to changes in grain sorghum and soybean meal prices—Pigs sold/sow/year = 17.5*

Grain sorghum price/cwt.	Soybean meal price, $/ton						
	$100	$125	$150	$175	$200	$225	$250
	Break-even price of finished pig, $/cwt						
$3.25	$37.95	$38.72	$39.50	$40.28	$41.06	$41.83	$42.61
3.50	38.59	39.36	40.14	40.92	41.69	42.47	43.25
3.75	39.23	40.00	40.78	41.56	42.33	43.11	43.89
4.00	39.86	40.64	41.42	42.20	42.97	43.75	44.53
4.25	40.50	41.28	42.06	42.83	43.61	44.39	45.17
4.50	41.14	41.92	42.70	43.47	44.25	45.03	45.80
4.75	41.78	42.56	43.34	44.11	44.89	45.67	46.44

Table 4. *Sensitivity of break-even price needed to cover total costs (Line 19) to changes in grain sorghum and soybean meal prices—Pigs sold/sow/year = 20.0*

Grain sorghum price/cwt.	Soybean meal price, $/ton						
	$100	$125	$150	$175	$200	$225	$250
	Break-even price of finished pig, $/cwt						
$3.25	$35.13	$35.89	$36.66	$37.42	$38.18	$38.94	$39.71
3.50	35.76	36.52	37.28	38.05	38.81	39.57	40.33
3.75	36.39	37.15	37.91	38.67	39.44	40.20	40.96
4.00	37.01	37.77	38.54	39.30	40.06	40.82	41.59
4.25	37.64	38.40	39.16	39.93	40.69	41.45	42.21
4.50	38.27	39.03	39.79	40.55	41.32	42.08	42.84
4.75	38.89	39.66	40.42	41.18	41.94	42.71	43.47

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