AGRICULTURAL ALTERNATIVES

http://agalternatives.aers.psu.edu

Swine Production

Technological change and vertical integration in the swine industry have resulted in fewer farms producing record amounts of pork. The number of operators involved in swine production in Pennsylvania fell from 20,000 at the beginning of 1981 to 3,456 in 1997. Pennsylvania remains an important swine producer with market value of sales ranking it 12th in the country. Approximately 70 percent of Pennsylvania swine operations produce less than 100 head per year, and only 2.8 percent produce more than 1,000 head per year. While the trend in the swine industry continues towards larger farms, opportunities remain to make money by raising hogs in a part-time enterprise.

Three Enterprises and Characteristics

Three types of swine production enterprises are farrow-to-finish, farrow-to-feeder, and feeder-to-finish. No blueprint exists for these systems. The important thing is to design a production system that will complement your resources and lifestyle.

To determine which enterprise will work best in your situation, you must first consider:

- The amount of capital, labor, and land available.
- The level of management and marketing skills needed.
- The social and environmental implications associated with manure management.

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Farrow-to-Finish

A farrow-to-finish enterprise involves breeding and farrowing sows, and feeding the offspring until they reach a market weight of about 240 pounds. The entire production period takes 10 to 11 months, with four months for breeding and gestation, plus six or seven months to raise the litter to market weight. Of the three systems, farrow-to-finish has the greatest long-run market potential and flexibility. A small number of sows can fit into a crop operation nicely when farrowings are scheduled to avoid peak harvest times. Farrow-to-finish operations demand the most capital and labor, and require a long-term commitment to the swine business.

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Farrow-to-Feeder

A farrow-to-feeder enterprise involves breeding and farrowing sows and selling the piglets when they weigh 30 to 60 pounds to finishing operations. It decreases the need for facilities, operating capital, and the amount of feed and manure handled. Also, it provides a good foundation for increasing the number of sows or expanding into a farrow-to-finish operation. The biggest drawback of this system is that producers, especially those with small herds, are at the mercy of a volatile feeder pig market. This may require farrowing sows in groups to increase the number of pigs available during periods of high demand.

Feeder-to-Finish

Most feeder-to-finish enterprises buy feeder pigs weighing 30 to 60 pounds and feed them to market weight. In most cases existing facilities are adequate for this system. This system allows for minimum overhead, low labor requirements, and no long-term commitment. The feeder-to-finish operation offers an opportunity for a grain farmer to use homegrown feeds to fatten pigs without having to manage breeding stock. The operation also may capitalize on the fertilizer value of the manure. Important points of concern are the source, health, and quality when buying feeder pigs. Reducing the number of farms from which pigs are purchased will help reduce herd health problems.

Marketing

A marketing strategy should be developed before beginning a swine production enterprise. The alternatives for marketing feeder pigs and slaughter hogs from small-scale or part-time farms in Pennsylvania include:

- Finishing pig producers
- Livestock auctions
- Graded feeder pig sales
- Buying stations
- Direct sales to order buyers (on-farm market sales)
- Small packers/processors
- Specialty sales direct to consumers

Feeder Pig Marketing

All of the previously listed options are available to feeder pig producers. One of the most popular options is marketing directly to producers who finish pigs. This option has advantages for both parties. First, the buyer and seller know the price and delivery conditions in advance. Second, the direct-sale option reduces animal stress and disease risk. Third, the direct-to-finisher transaction voids commissions associated with a livestock auction.

Marketing feeder pigs through a livestock auction, a graded sale, or a buying station are other common options. Before using these markets, the producers should know the desirable weights and lot sizes that maximize prices received.

Slaughter Hog Marketing

Buying stations and sales direct to a major packer are popular options for marketing slaughter hogs. Both options allow producers to have a quoted price before selling their animals.

Small packers and processors are an additional market available to slaughter hog producers. They often pay a good price, but their plant capacity and number of customers restrict the number of hogs they buy.

An auction barn is a less commonly used option for selling slaughter hogs. Producers often use this market because of its location and convenience. The disadvantage of marketing through an auction barn is that producers are at the mercy of the hog supply available and the demand for hogs on the local market that day.

Specialty markets represent another alternative for slaughter hog producers. A popular form of direct sale enables the consumer to buy directly from a producer. The consumer then contracts with a small packer for customized meat cutting and packaging.

In summary, choosing a market involves a little homework. In comparing market alternatives, you must account for differences in price received, transportation expenses, shrink losses, selling costs, and convenience. A market 50 miles farther from the farm that is offering a higher price may produce less net revenue than selling to a local market at a lower price when all marketing costs are included. You must know your alternatives and stay current with price changes.

Feeding

Feed is the major expense of any swine production system. In general, a farrow-to-finish operation will spend 75 percent of total expenses on feed, compared to 50 percent for farrow-to-feeder operations, and 65 percent for feeder-to-finish operations. A summary of the production inputs is listed in Table 1.

Growing your own grain, making bulk purchases of additional ingredients, and using your own grinder and mixer (or hiring the work done in some situations) are effective ways to lower feed costs. However, adequate storage for large quantities of feed ingredients is necessary.

One major consideration in planning a swine enterprise is how to get feed to the pigs. Ideally, animals in farrowing, gestation, and nursery units should be hand-fed and those in the growing-finishing units could get their feed from automatic augers.

Table 1. Summary of production resources.

ITEM	FARROW-FINISH (20 SOWS)	FARROW-FEEDER (20 SOWS)	FEEDER-FINISH (100 HOGS)
Feed (lb/week)	5,800	1,200	4,500
Feed ($/week)	385	120	265
Labor (hour/week)	16	11	5
Water (gal/week)	2,100	700	1,400
Manure output (cu ft/week)	370	100	160
Manure output (gal/week)	2,000	725	1,200

Table 2. Water requirements for swine.

	SIZE OF ANIMAL					
ITEM	12-30 LB	30-75 LB	75-100 LB	100-240 LB	SOW & BOAR	LACTATING SOW
Intake (quarts/ day/head)	1	2	5	6	8	10

Watering

Water source is a very important health consideration in swine production. City or well water is preferred. Caution must be used when using spring water due to surface contaminants that can lead to health problems. Pond water should be avoided.

Getting water to the pigs is generally simple. Water lines running into the barn should be buried or properly insulated to prevent winter freezing. Automatic nipple waterers are best when set at proper flow rates. Bowl-type waterers are acceptable, but they are difficult to keep clean and they often lead to water wastage. Remember that all the water put into the building must be hauled out.

A summary of water requirements for different size animals is listed in Table 2.

Manure Handling

Waste management often requires more labor than most part-time producers anticipate. How you get the manure out of the pens, out of the buildings, and onto the fields must be thoroughly planned before bringing any number of pigs onto your property. When handling manure, be considerate of your neighbors and be sure your practices are within the legal limits of the local, state, and federal governments.

The expected quantities of manure from each of the three production systems are listed in Table 1.

Bedding

The need for bedding will depend on the facility. The use of straw in a cold, drafty barn will minimize the need for an elaborate ventilation system, but will require more labor. Shavings may be used but can be quite costly. Sawdust should be avoided because of the potential for transmission of swine tuberculosis.

Health

Most part-time swine producers have minimal problems with herd health. Some important aspects of maintaining herd health include: (1) purchasing breeding stock or feeder pigs from a clean source; (2) keeping the facilities clean and maintaining adequate ventilation; (3) establishing a health maintenance program (through an extension agent or veterinarian).

The elements of a herd health plan usually include provisions for: (1) reducing the risk of new disease introduced by herd additions or visitors; (2) maintaining sanitation; (3) treating or avoiding parasites; (4) preventing and controlling respiratory, reproductive, and diarrheal diseases.

If these simple guidelines are followed, only a small investment in time and money need be made in a health program.

Sample Budgeting

The sample budgets included in this publication summarize costs and returns for swine. Included in this publication are three sample budgets that summarize the costs and returns of farrow-to-finish, farrow-to-feeder, and feeder-to-finish enterprises. These budgets should help ensure that you include all costs and receipts in your calculations. Costs and returns are often difficult to estimate in budget preparation because they are numerous and variable. Think of these budgets as an approximation and make appropriate adjustments using the "your estimate" column to reflect your specific production conditions. More information on using livestock budgets can be found in *Agricultural Alternatives: Enterprise Budget Analysis*.

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Sample Farrow-to-Finish Swine Budget

Twenty sows and marketing fifteen pigs per sow per year.

Item	Market weight	Unit	Price	Per sow	Total for entire herd		Your estimate
Receipts							
Market hogs[1]	34.0	cwt	$40.00	$1,358.40	$27,168.00		_____
Sows [2]	1.5	cwt	$32.00	$47.60	$952.00		_____
Non-breeders[3]	1.2	cwt	$38.00	$45.60	$912.00		_____
Boars[4]	0.1	cwt	$20.00	$2.00	$40.00		_____
Total receipts				$1,453.60	$29,072.00		_____
Variable costs	**Amount**					**Percent of total expenses**	
Feed costs							
Pigs to 45 lb							
Pre-starter	75	lb	$0.40	$30.00	$600.00	2%	_____
Corn	9.75	bu	$2.75	$26.81	$536.25	2%	_____
SBM and supplement[5]	300	lb	$0.11	$33.00	$660.00	2%	_____
Grower pigs (45–125 lb)							
Corn	44.25	bu	$2.75	$121.69	$2,433.75	9%	_____
SBM and supplement[5]	825	lb	$0.11	$90.75	$1,815.00	7%	_____
Finisher pigs (125 lb and up)							
Corn	85.65	bu	$2.75	$235.54	$4,710.75	17%	_____
SBM and supplement[5]	1,200	lb	$0.11	$132.00	$2,640.00	10%	_____
Sows, gilts, and boars							
Corn	34.3	bu	$2.75	$94.33	$1,886.50	7%	_____
SBM and supplement[5]	480	lb	$0.11	$52.80	$1,056.00	4%	_____
Total feed costs				$816.91	$16,338.25	60%	_____
Other variable costs							
Vet. and medicine				$22.50	$450.00	2%	_____
Boar purchase				$9.00	$180.00	1%	_____
Electricity				$32.00	$640.00	2%	_____
Supplies				$10.00	$200.00	1%	_____
Heating				$32.00	$640.00	2%	_____
Marketing				$15.00	$300.00	1%	_____
Truck and tractor				$45.00	$900.00	3%	_____
Labor	21	hr	$8.00	$168.00	$3,360.00	12%	_____
Misc.				$15.00	$300.00	1%	_____
Interest on operating costs[6]				$55.36	$1,107.14	4%	_____
Total variable costs				$1,220.77	$24,415.39	89%	_____
Fixed costs							
Insurance, taxes, and repairs				$13.30	$266.00	1%	_____
Interest on sows[7]				$14.30	$286.00	1%	_____
Farrowing building[8]	$250	crate		$7.93	$158.32	1%	_____
Gestation building[9]	$150	sow		$19.03	$379.96	1%	_____
Nursery building[10]	$50	pig		$23.79	$474.95	2%	_____
Finisher building[11]	$75	hog		$68.39	$1,365.47	5%	_____
Real estate[12]	$350			$1.95	$38.93	0.1%	_____
Total fixed costs				$148.68	$2,973.61	11%	_____
Total costs				**$1,369.45**	**$27,389.00**	**100%**	_____

	Price	Price per pig	Totals
Returns above variable costs			
Low hog prices	$35.00	$63.03	$1,260.61
Moderate hog prices	$40.00	$232.83	$4,656.61
High hog prices	$45.00	$402.63	$8,052.61
Returns above total cost			
Low hog prices	$35.00	($85.65)	($1,713.00)
Moderate hog prices	$40.00	$84.15	$1,683.00
High hog prices	$45.00	$253.95	$5,079.00

[1] Number of 240-lb pigs raised per sow per year minus .85 gilts/sow saved for breeding.

[2] Based on culling 35% of sow herd per year @ 425 lbs.

[3] Based on selling .5 non-cycling 240-lb gilts from the .85 gilts saved for breeding.

[4] Based on selling .02 500-lb boars per sow.

[5] SBM and supplement costs are equal to the price of SBM and $60 for supplement.

[6] Equals .5 x variable cost x 12%.

[7] Interest on the sows is equal to the sows' value ($150+salvage value/2) x .1

[8] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (.2 crates/sow)

[9] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (.8 spaces/sow)

[10] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (3.0 spaces/sow)

[11] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (5.75 spaces/sow)

[12] Overhead cost on real estate equal to amount required to repay amount shown in price column in 20 years @ 10% interest/sow inventory.

Initial resource requirements

- Land: 10 acres
- Labor (per sow per year): 25 hours x 20 sows = 500 hours
- Capital

  Livestock (per head)

  $350 x 20 bred gilts = $7,000

  $400 x 2 boars = $800

  Existing buildings, equipment, fencing: $15,000

Sample Farrow-to-Feeder Swine Budget

Twenty sows and fifteen market pigs per sow per year.

Item	Market weight	Unit	Price	Per sow	Total for entire herd		Your estimate
Receipts							
Feeder pigs[1]	6.37	cwt	$80.00	$509.40	$10,188.00		_____
Sows[2]	1.49	cwt	$32.00	$47.60	$952.00		_____
Non-breeders[3]	1.20	cwt	$38.00	$45.60	$912.00		_____
Boars[4]	0.10	cwt	$20.00	$2.00	$40.00		_____
Total receipts				$604.60	$12,092.00		_____
Variable costs	**Amount**					**Percent of total expenses**	
Feed costs							
Pigs to 45 lb							
Pre-starter	75	lb	$0.40	$30.00	$600.00	5%	_____
Corn	9.75	bu	$2.75	$26.81	$536.25	5%	_____
SBM and supplement[5]	300	lb	$0.11	$33.00	$660.00	6%	_____
Sows, gilts, and boars							
Corn	38.63	bu	$2.75	$106.23	$2,124.65	18%	_____
SBM and supplement[5]	547.5	lb	$0.11	$60.23	$1,204.50	10%	_____
Total feed costs				$256.27	$5,125.40	44%	_____
Other variable costs							
Vet. and medicine				$15.00	$300.00	3%	_____
Boar purchase				$9.00	$180.00	2%	_____
Electricity				$11.25	$225.00	2%	_____
Supplies				$7.50	$150.00	1%	_____
Heating				$18.00	$360.00	3%	_____
Marketing				$15.00	$300.00	3%	_____
Truck and tractor				$26.25	$525.00	4%	_____
Labor	15	hr	$8.00	$120.00	$2,400.00	20%	_____
Misc.				$11.25	$225.00	2%	_____
Interest on operating costs[6]				$24.48	$489.52	4%	_____
Total variable costs				$514.00	$10,279.92	88%	_____
Fixed costs							
Insurance, taxes, and repairs				$5.20	$104.00	1%	_____
Interest on sows[7]				$14.30	$286.00	2%	_____
Farrowing building[8]	$250	unit		$7.93	$142.44	1%	_____
Gestation building[9]	$150	unit		$19.03	$341.86	3%	_____
Nursery building[10]	$50	pig		$23.79	$427.33	4%	_____
Real estate[11]	$350			$2.03	$45.0	0.4%	_____
Total fixed costs				$72.27	$1,445.45	12%	_____
Total costs				**$586.27**	**$11,725.37**	**100%**	_____

Initial resource requirements

- Land: 5 acres
- Labor (per sow per year): 18 hours x 20 sows = 360 hours
- Capital
  - Livestock (per head)
    - $350 x 20 bred gilts = $7,000
    - $400 x 2 boars = $800
  - Existing building, equipment, fencing: $7,000

	Price	Price per pig	Totals
Returns above variable costs			
Low pig prices	$55.00	($68.58)	($1,371.67)
Moderate pig prices	$80.00	$90.60	$1,812.08
High pig prices	$105.00	$249.79	$4,995.83
Returns above total costs			
Low pig prices	$55.00	($140.86)	($2,817.12)
Moderate pig prices	$80.00	$18.33	$366.63
High pig prices	$105.00	$177.52	$3,550.38

[1] Number of 45-lb pigs raised per sow per year minus .85 gilts/sow saved for breeding.

[2] Based on culling 35% of sow herd per year @ 425 lbs.

[3] Based on selling .5 non-cycling 240-lb gilts from the .85 gilts saved for breeding.

[4] Based on selling .03 500-lb boars per sow.

[5] SBM and supplement costs are equal to the price of SBM and $60 for supplement.

[6] Equals .5 x variable cost x 12%

[7] Interest on the sows is equal to the sows' value ($150+salvage value/2) x .1

[8] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (.2 crates/sow)

[9] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (.8 spaces/sow)

[10] Overhead cost on facilities equal to amount required to repay amount shown in price column in 10 years @ 10% interest/sow inventory. (3.0 spaces/sow)

[11] Overhead cost on real estate equal to amount required to repay amount shown in price column in 20 years @ 10% interest/sow inventory.

For More Information

Farm Journal (Hogs Today)
230 West Washington Square
Philadelphia, PA 19105

Lancaster Farming
P.O. Box 366
Lititz, PA 17543

National Hog Farmer
P.O. Box 16351
St. Paul, MN 55116

Pennsylvania Farmer
704 Lisburn Road
Camp Hill, PA 17011

Pork
P.O. Box 2984
Shawnee Mission, KS 66201

Pork Industry Handbook
Publications and Distribution Center
Printing and Publications Building
Iowa State University
Ames, Iowa 50011

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Sample Feeder-to-Finish Swine Budget

One hundred feeder pigs purchased and ninety-five market hogs sold.

Item	Market weight	Unit	Price per unit	Price per pig	Total receipts		Your estimate
Receipts							
Finish pigs[1]	230	lbs	$40.00	$92.00	$8,740.00		_____
Variable costs	**Amount**					**Percent of total expenses**	
Feed costs							
Feeder pigs	45	lbs	$80.00	$36.00	$3,600.00	43%	_____
Grower pigs (45–125 lbs)							
Corn	2.95	bu	$2.75	$8.11	$770.69	9%	_____
SBM and supplement[2]	55	lb	$0.11	$6.05	$574.75	7%	_____
Finisher pigs (125 lbs and up)							
Corn	5.71	bu	$2.75	$15.70	$1,491.74	18%	_____
SBM and supplement[2]	80	lb	$0.11	$8.80	$836.00	10%	_____
Total feed costs				$38.67	$3,673.18	44%	_____
Other variable costs							
Vet. and medicine				$1.50	$142.50	2%	_____
Electricity				$0.60	$57.00	1%	_____
Heating				$0.35	$33.25	<1%	_____
Marketing				$1.00	$95.00	1%	_____
Truck and tractor				$1.00	$95.00	1%	_____
Labor	0.15	hr	$8.00	$1.20	$114.00	1%	_____
Misc.				$0.60	$57.00	<1%	_____
Interest on operating costs[3]				$1.92	$182.58	2%	_____
Total variable costs				$82.84	$7,869.50	95%	_____
Fixed costs							
Insurance, taxes, and repairs				$0.75	$71.25	1%	_____
Building and equipment[4]			$75.00	$3.96	$376.63	5%	_____
Real estate			$0.00	$0.00	$0.00	0%	_____
Total fixed costs				$4.71	$447.88	5%	_____
Total costs				**$87.55**	**$8,317.38**	**100%**	_____

	Price	Price per pig	Totals
Returns above variable costs			
Low hog prices	$35.00	($2.34)	($222.00)
Moderate hog prices	$40.00	$9.16	$870.50
High hog prices	$45.00	$20.66	$1,963.00
Returns above total costs			
Low hog prices	$35.00	($7.05)	($669.88)
Moderate hog prices	$40.00	$4.45	$422.62
High hog prices	$45.00	$15.95	$1,515.12

Initial resource requirements

- Land: 10 acres
- Labor (per head): 2 hours x 100 pigs = 200 hours
- Capital
  - Livestock (per pig): $36 x 100 pigs = $3,600
  - Existing building, equipment, fencing: $5,000

[1] Pigs are sold at 230 lbs. with a 3% death loss.

[2] SBM and supplement costs are equal to the price of SBM and $60.00 for supplement.

[3] Equals 10% X (120 days/365 days) X (cost of feeder pig + 1/2 X all variable costs).

[4] Overhead costs on facilities equal to annual payment required to repay amount in price column in 10 years at 10% interest, divided by three groups a year.