



pork industry handbook

COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

Pork Production Systems with Business Analyses The Two-Litter Pasture System (Farrow-to-Finish)

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The Two-Litter System... What It Is and Where It Fits

This is a pasture system that operates on a 6-month cycle, with sows farrowing in late winter and late summer. It fits "best" on crop farms where hog production serves as a secondary enterprise to utilize available seasonal labor and salvage other under- or unused resources, such as feed that would otherwise be wasted, certain buildings, machinery, and fencing.

Crop production is characterized by periods of intense labor activity and then periods of almost no activity. Farrowings in a 2-litter system can be scheduled to utilize the labor available during these "inactive" times. Also, because the system does not call for permanent buildings, it fits where the manager cannot or will not make a long-run commitment to hog production but needs a livestock enterprise in the short run.

Advantages

- Building and equipment investments are relatively small and, except for wells and concrete feeding slabs, represent salable items that are not tied to the farm.
- The 2-litter system is a good one for learning some of the skills needed for larger, more complex operations.
- Unlike high investment, environmentally regulated systems, this one permits considerable flexibility. The 2-litter operator is not locked into production by the fixed-costs of expensive facilities, but rather is relatively free to expand and contract production.
- Wise use of pasture can significantly lower the bill for purchased supplement. A complete mixed ration is recommended. However, the feeding program for finishing hogs can be built around ear or shelled corn with protein supplement fed free-choice, allowing the producer to minimize his shelling, grinding, feed storage, and handling costs.

- The disagreeable aspects of environmentally regulated buildings—odor, flies, manure handling—are largely avoided.

Disadvantages

- There is a temptation, under a 2-litter system, to be overly-responsive to current market price and thus become an "in and outer."
- Peak hog marketings (and therefore, weakest hog prices) usually occur in March-April and in October-November. These peaks have been moderated by the shift to multiple farrowing systems. Nevertheless, the 2-litter operator will likely sell his market hogs for 3% less than the yearly average price.
- The system requires both bedding and pasture. In some areas, bedding may be scarce and expensive. And pasture systems do not fit all farms. The charge for land should reflect the lost opportunity of using the land in its highest paying alternative.
- A 2-litter operation has a relatively high labor requirement—from 50 to 100% greater per hog produced than with slatted-floor, environmentally regulated systems.
- Such a production system is vulnerable to unfavorable weather—mud, cold, heat and dust—which can adversely affect animal performance and does add to the discomfort of the operator.

Developing a Production Calendar

Two-litter hog production is distinctly seasonal; and many operators will combine it with crop production, some other livestock, or an off-farm job. Therefore, it's important to develop a calendar of management activities for a 2-litter system so one can forecast, by month, needs for various resources—especially labor. Table 1 presents such a calendar for an enterprise where farrowing is scheduled to begin March 1 and September 1.

The figures in Line 9 of Table 1 represent our best judgment of percentage distribution of labor over 12 months. You will want to shift those figures one direction or another if your farrowing dates are different.

Line 12 gives an estimate of the hours of labor needed by months. To arrive at these figures, multiply number of sows (Line 10) by estimated hours of labor per sow (Line 11) to find total annual labor requirement. Then, distribute the total labor across in accordance with your percentage distribution on Line 9.

Management Practices

To avoid both conflicts with crop production activities and the April/November seasonal lows in market hog prices, many 2-litter operators push their farrowing schedules up a month or so (i.e., February and August rather than March and September). The disadvantage of this practice, of course, is the risk of more adverse weather during farrowing.

In a 2-litter system, pigs are born and raised under conditions that only slightly modify what nature provides. Therefore, when nature doesn't cooperate, the operator knows that he, as well as his hogs, will be exposed to the problems and discomforts of mud, cold, or heat.

Breeding

Remove the boars after a 4-week breeding period. The result will be a shorter farrowing season, which has several advantages: (1) lowers incidence of baby pig diseases; (2) encourages closer supervision of sows during farrowing; and (3) helps avoid stragglers, which cause problems throughout the growing-finishing phase.

With a 4-week breeding period, 1 boar can be expected to service 10 females. However, because of the risk of buying a nonbreeder or having one incapacitated by injury, we recommend purchasing 1 boar for each 10 females plus 1 extra boar.

One way to simplify selection and replacement is to add breeding stock only once a year rather than at each farrowing. Replacement gilts are selected only in August to farrow the following March. Half of the boars are also replaced at this time. This means boars of two ages (sizes) and breeds will be available at all times—a mature set to breed the sows, and a younger set to mate gilts and first-litter females.

One consequence of the once-a-year replacement strategy is that number of litters will vary from spring to fall. However, the penalty for unequal numbers is probably small. To accommodate the extra litters for summer feeding, simply provide some extra shade. Winter feeding facilities cannot be so easily expanded; therefore, carefully cull the sow herd to balance the fall pig crop with the facilities available.

Producers following rotational crossbreeding programs should be careful that boars are mated to the correct breedcross of sows. The breed of sire of each sow should be identified to avoid out-of-sequence or backcross matings. These improper matings will reduce herd performance and profitability.

Gestation

If sows are bred in late spring to farrow in early fall, good quality pasture can be used to replace up to 50% of the grain and supplement needs during gestation. An acre of good pasture will accommodate about 8 females.

Farrowing and Nursery

The same facilities serve as both farrowing and nursery quarters. Usually, these are portable, single-sow units (called houses, huts, coops, or boxes, depending on local terminology) and are grouped in a spot which provides the greatest protection from cold and mud in winter and from heat in summer. Suggestions for this critical phase of 2-litter hog production include:

Control mud. For spring farrowing, choose a naturally well-drained spot on which to locate the farrowing huts. If you have no such site, then provide either a concrete slab or a mounded area of crushed stone or coarse bedding material like corncobs.

Provide protection from temperature extremes. For summer farrowing, the huts should be in a cool, shady area and designed so they can be opened up for maximum ventilation. For winter farrowing, they should be sheltered from prevailing winds and made tight enough to retain the sows' body heat. Also, plan for access to a source of electricity so that supplemental heat can be provided if necessary.

Provide close observation at farrowing. Surveillance can be made easier if the housing cluster is close to the operator's dwelling and if females are bred to farrow over a relatively short period. With replacements gilts, the only feasible way to shorten the farrowing season is to regulate the length of time the boars are with the gilts. This period should be at least 3 weeks to give all gilts an opportunity to conceive. With tried sows, however, the operator can control length of farrowing by using weaning to synchronize estrus.

Keep litters separate until pigs are 14 days old. When milk first appears in her udder sections (about 24 hours before farrowing), move each sow to her individual farrowing area, which usually includes the farrowing hut and a small outside yard or slotted porch. This practice minimizes the problems of overlay, robbing, and spread of disease.

Keep groups of suckling pigs small (75 pigs or less) and uniform in age (no more than 1 week variation). This helps prevent older pigs from robbing milk from the younger, which would result in death or stunting. When a group of litters reaches 2 weeks old, provide a creep area where these pigs have easy access to feed and fresh water.

Growing-Finishing

Feeders and fountains should be near each other. In summer, keep water supply close to shade.

A complete mixed ration is recommended. However, the pasture system may utilize a feeding program of corn and supplement self-fed free-choice. By feeding ear corn you can avoid the need for drying, shelling, and grinding corn for finishing hogs—a saving of approximately \$.20 per bushel. But this advantage can quickly be lost through excessive feed waste or poor pig performance. In any case, a complete mixed ration should be fed until pigs weigh 65-75 lb.

Performance Standards for a Two-Litter System

A skilled, conscientious, 2-litter operator should be able to achieve levels of animal performance nearly equal to those recorded in more elaborate and sophisticated facilities. Table 2 shows performance standards for 25 sows farrowing 2 litters each.

Table 1. Calendar of management activities for a 2-litter pasture system (example: 25 sows farrowing in March and September).*

Line	Activity	Example & your plan	Month												Comments		
			J	F	M	A	M	J	J	A	S	O	N	D			
1.	Select replacement gilts	Aug. 1															To provide greatest selection, choose gilts before selling any slaughter hogs.
2.	Buy boars	Sept. 1															Boars should be on the farm at least 2 months before the breeding season and be at least 9 months old when mating begins.
3.	Vaccinate gilts and sows	May 1 & Nov. 1															Vaccinate for erysipelas and leptospirosis 15 to 30 days before breeding. Vaccinate gilts with porcine parvovirus 6 weeks and 2 weeks before breeding. Consider vaccination for rhinitis, TGE, and E. coli.
4.	Breed	May 12-June 8 & Nov. 9-Dec. 6															Expose sows to the boars for a 4-week period.
5.	Prepare for farrowing	Feb. & Aug.															Repair and position fencing, water supply, shelters, feeders, etc. Confine sows to farrowing huts when they have milk.
6.	Farrow	Mar. 1-28 & Sept. 1-28															Although this example schedules farrowings in March and September, your farrowings might be during two other months, provided there is a 6-month interval. Castrate when pigs are 7-10 days old.
7.	Wean	Apr. 15-May 12 & Oct. 15-Nov. 11															Plan for 5- to 6-week weaning. Vaccinate for erysipelas at this time. To keep on the 6-month farrowing schedule, you will need to skip one heat period before rebreeding those sows which farrowed early.
8.	Sell market hogs	Mar.-Apr. & Sept.-Oct.															Animals should reach slaughter weight at 6-7 months of age.
9.	Percentage distribution of labor	100%	6	10	12	9	7	6	6	10	12	9	7	6			Labor needs vary widely. Large volume producers using such technology as electric fencing and water piped to the field, report a labor requirement as low as 25 hours per sow. Most producers would use about 35 hours per sow. However, both figures ignore the indirect labor spent in planning, keeping records, maintaining the farmstead, etc. For a relatively small enterprise, "indirect" labor may add another 25-35%, resulting in a total time commitment of 48 hours per sow.
10.	Number of sows	25															
11.	Hours of labor per sow	35															
12.	Hours of labor per month	875	52	87	105	79	61	53	52	88	105	79	61	53			

* The sow is the unit around which the discussion in this publication is built. A sow unit denotes a mature female in production and includes a supporting cast of boars, replacement gilts, and progeny in various stages of growth—you must provide for all these.

Table 2. Performance standards for a 2-litter system (25 females farrowing every 6 months).

Item	Standard	Annual results
Conception rate	Gilts—80% Sows—90%	50 litters
Live pigs farrowed/litter	10	500 pigs farrowed
Pigs weaned/litter	7.75	387 pigs weaned
Mortality from weaning to market	3%	375 pigs reaching 230 lb.
Gilts kept for replacement annually	15	360 pigs marketed
Rate of gain	230-lb. market animal at 6-7 mo.	891 cwt. total gain *
Feed conversion (including sow herd)	400 lb. feed/cwt. gain	178 tons total feed

* Gross wt. produced = total poundage sold - purchase wt. of boars.

Production Requirements for a Two-Litter System

Feed Requirements

Estimates of total annual feed needed to produce 375 market-weight hogs from 25 sows farrowing are given in Table 3.

Facility Needs and Costs

Table 4 lists the facilities required for a 25-sow 2-litter system, along with an estimate of their cost when new. The last column is for your own investment estimates.

In developing a budget (see next section), facility investments should be categorized for estimating overhead expenses. While a separate category for each depreciable item would give greatest accuracy, an acceptable degree of precision can be achieved merely by dividing "facilities" into 2 groups—items of 15-year life and items of 8-year life. For a 2-litter pasture system, only permanent fencing and concrete slabs would be depreciated over 15 years (italicized in Table 4); everything else might be expected to have a shorter depreciable life and higher maintenance cost.

Table 5 shows the investment costs of the facilities listed in Table 4, according to this depreciable life classification. These figures are the ones used in calculations for the overhead expenses section of our 2-litter budget (Table 6).

Developing a Budget for a Two-Litter System

Listed in Table 6 are estimates of the various items of cost and return for a 25-sow (farrowing) enterprise, and are shown on both a total enterprise and a sow unit basis (see Table 1 footnote).

Using the last column, modify the figures in Table 6 to accurately describe your situation. Following is a brief explanation of the budget's four major sections.

Income

This annual budget assumes each sow unit farrows at 6-month intervals with 15.5 pigs weaned yearly, of which 14.4 market hogs are sold at 230 lb. each plus breeding stock sales. It also assumes half the boars are replaced annually; hence, a boar depreciation charge (boar purchase minus boar receipts) of \$17.80 per sow or about \$1.20 per pig produced.

Direct Costs

These are the costs readily assigned to the enterprise, the major one being feed. In Table 6, the feed bill

Table 3. Annual feed requirements (breeding herd and pigs) for a 25-sow 2-litter system.

Home grown feed	Purchased feed
10 acres pasture *	6 tons sow supplement
2,940 cwt. feed grain (5,250 bu. corn)	22 tons grower-finisher supplement
	3 tons creep ration †

* To permit a 3-year rotation, an additional 20 acres of rotation cropland will be needed.

† This is 15 lb. per pig.

is divided into 3 categories; feed grain (corn equivalent), pasture, and purchased feed (supplement and creep). If you use a feed grain other than corn, calculate the requirements on the basis of these conversions: 1 bu. of corn or milo equals 2 bu. of oats, or .9 bu. of wheat, or 1.1 bu. of barley.

In Table 6, we have charged pasture at \$85 per acre; this represents the cost of seeding, fertilizing, clipping, etc., to produce good quality forage. It does not include an allowance for land rental. If you have the "opportunity" to rent your pasture land out or to produce some other profitmaking crop on it, the hogs should pay a land rental fee in addition to the cash cost of producing forage.

Overhead Expense

Classified as overhead are the cost of labor and the cost of owning capital items. The hogs should pay a wage equal to what this particular labor can demand elsewhere. The ownership charge for capital items is an estimate of the total of depreciation, interest, maintenance costs, taxes, and insurance.

The straight line method of depreciation with no salvage value was used in arriving at the figure on line C-1 of Table 6. The sample budget assumes that all the facilities (15- and 8-year depreciable items) listed in Table 4 must be purchased. In your situation, however, some of those facilities (e.g., fencing) may already be available, and you may be incurring ownership costs (depreciation, taxes, insurance, etc.) because they are there. In estimating the contribution of 2-litter hog production to your business, the charge for fixed resources (the ones already available) should be set at their opportunity value which may be zero or close to it.

Average annual investment in *breeding stock* was estimated at \$218 per sow. On average the breeding herd was assumed to include 4 boars, 22 sows and 8 replacement gilts. Boar value was figured as the average of the buying and selling price; females were figured at market price.

Table 4. Facilities investment for a 2-litter pasture system (25 sows farrowing twice a year). *

Item	Size & description	Units needed	Cost per unit	Total investment	Your figures
Part A. Breeding herd facilities—portable buildings for 30 females (8 gilts, 22 sows).					
Sow shelters	10' x 14' portable	3	\$ 800.00	\$2,400.00	\$ _____
Feeding fence	Wooden panels	75 ft.	3.00	225.00	_____
Waterers	Winter proof	1	165.00	165.00	_____
Fencing	Temporary	50 rods	7.00	350.00	_____
Concrete feeding slab	10' x 45'	450 sq. ft.	1.25	562.50	_____
	Total			\$3,702.50	\$ _____
Part B. Farrowing-nursery facilities—individual houses with outside pens for 25 sows and litters.					
Individual houses	6' x 7'	25	\$260.00	\$6,500.00	\$ _____
Feed trough 2'	Individual	25	15.00	375.00	_____
Wooden panels	10 ft. long	50	20.00	1,000.00	_____
Creep feeders	All-weather	3	140.00	420.00	_____
	Total			\$8,295.00	\$ _____
Part C. Growing-finishing facilities—portable houses on grass in summer, on concrete slab in winter for 200 hogs.					
Pull-together houses	20' x 30' portable	2	\$2,750.00	\$ 5,500.00	\$ _____
Concrete slab	40' x 72'	2,880 sq. ft.	1.25	3,600.00	_____
Shade frames	Variable	400 sq. ft.	.60	240.00	_____
Feeders	60-bu. round	4	300.00	1,200.00	_____
Water fountains	80-gal. with heater	5	165.00	825.00	_____
Lot fencing	Wooden panels	120 ft.	3.00	360.00	_____
Field fencing	Permanent	400 rods †	20.00	8,000.00	_____
	Total			\$19,725.00	\$ _____
Part D. Supporting facilities					
Feed and manure handling & misc. equipment ‡	--	--	--	\$6,000.00	\$ _____
	Total facilities investment			\$37,722.50	\$ _____
	Investment per sow farrowing			\$ 1,508.90	\$ _____

* Investment costs represent an estimate of prices in mid-1986.

† Permanent fencing provided for three fields to permit a 3-year rotation.

‡ Equipment needed will vary from farm to farm but will likely include: water wagon, feed wagon, or pickup truck, high-pressure pump, front-end loader, dry-manure spreader, loading chute, and hog holder. Since most of these items would likely be shared by some other enterprise, only 30% of their estimated new cost is charged to the two-litter system.

Table 5. Facility investment costs for a 2-litter system by major depreciation classifications.

Depreciable life	For 25 sows		Per sow	
	Our example	Your figures	Our example	Your figures
15 years	\$12,162.50	\$ _____	\$486.50	\$ _____
8 years	25,560.00	_____	1,022.40	_____
Total	\$37,722.50	\$ _____	\$1,508.90	\$ _____

The term "production inventory" was used for the market or nonbreeding animals on hand. The investment in those was assumed to be the direct cost of producing them. It includes feed, veterinary, fuel, etc; it does not include overhead. The figure is \$5,750 on average for this 25-sow production unit.

The market interest rate is made up of two components, the payment rate for money and an inflation expectation. Since buildings, equipment, and breeding stock are relatively long-term investments, and since most users of these data will not build an inflation expectation into the price of hogs, we have removed the inflation component (4%) from the interest charge. We charged 8% for these long-term assets. In contrast, the interest on "production inventory" should be at the market rate which we placed at 12%.

Budget Summary

Total cost per cwt. of market hog is calculated by subtracting a credit for breeding animals sold from total expenses, then dividing this remainder by cwt. of market hogs sold. Compare this number with your expected market price. Net return to management is the return after all expenses, including interest on the money invested and a \$5/hr. labor charge. Per hour

Table 6. Estimated budget for a 25-sow 2-litter pasture system.

Item	One sow	25 Sows	Your figures
A. Income			
1. Market hogs (230 lb. @ \$45/cwt.)	\$1,490.40	360 head = \$37,260.00	\$ _____
2. Sows (425 lb. @ \$38/cwt.)	77.52	12 head = 1,938.00	_____
3. Non-breeders (300 lb. @ \$42/cwt.)	15.12	3 head = 378.00	_____
4. Boars (425 lb. @ \$30/cwt.)	10.20	2 head = 255.00	_____
5. Gross income	<u>\$1,593.24</u>	<u>\$39,831.00</u>	\$ _____
B. Direct costs			
1. Feed			
a) Corn equivalent (\$2.50/bu.)	210 bu. = \$525.00	5,250 bu. = \$13,125.00	\$ _____
b) Pasture (\$85/a.)	.4 a. = 34.00	10.0 a. = 850.00	_____
c) Purchased feed (\$0.15½/lb.)	2,450 lb. = 379.75	61,250 lb. = 9,493.75	_____
d) Total feed	<u>\$938.75</u>	<u>\$23,468.75</u>	\$ _____
2. Veterinary and medicine	27.00	675.00	_____
3. Boar purchase (@ \$350)	28.00	2 head = 700.00	_____
4. Marketing	35.85	896.25	_____
5. Power, fuel and equipment repair	77.00	1,925.00	_____
6. Miscellaneous (bedding, supplies)	40.00	1,000.00	_____
7. Total direct costs	<u>\$1,146.60</u>	<u>\$28,665.00</u>	\$ _____
8. Income over direct costs (A.5—B.7)	\$446.64	\$11,166.00	\$ _____
C. Overhead expenses			
1. Depreciation	\$160.20	\$4,005.00	\$ _____
2. Interest on bldg., equip., breeding stock @ 8%	78.00	1,950.00	_____
3. Interest on production inventory @ 12%	27.60	690.00	_____
4. Repairs to buildings	4.80	120.00	_____
5. Property taxes	8.20	205.00	_____
6. Insurance	8.20	205.00	_____
7. Labor (\$5/hr.)	35 hr. = 175.00	875 hr. = 4,375.00	_____
8. Total overhead expenses	<u>\$462.00</u>	<u>\$11,550.00</u>	\$ _____
D. Summary			
1. Total cost per cwt. of market hog		\$45.46	\$ _____
2. Net return to management (B.8—C.8)	\$-15.36	\$-384.00	_____
3. Per hour return to labor and management		\$4.56	_____
4. Return on investment (excluding land)		7.5%	_____ %

return to labor and management is the dollar return per hour after all expenses except labor. *Return on investment* is the percent return to the enterprise after all expenses except interest.

Estimating Monthly Cash Flow

While the budget in Table 6 estimates type and amount of income and expense for our 2-litter system, it does not reflect *when* income is realized or expenses incurred. Therefore, before committing resources to such a system, the operator should estimate costs and returns on a month-to-month basis to see if and when financial problems might arise and make provision to meet them.

The two main reasons why you should prepare a cash flow projection are: (1) to determine the cash

demands in the *start-up period*, when a new enterprise is launched, or sows are added to an existing enterprise (Table 7); and (2) to determine the seasonal pattern of receipts and expenses in a *normal year of operation* (Table 8).

Notice that the last line of Table 7—*cumulative cash flow*—is carried forward and continued on the last line of Table 8 to give a 2-year cash-flow picture for a new enterprise. In our 25-sow, 2-litter example, the worst cash flow situation occurs in February of the second year, 11 months after launching the enterprise. At this time, the manager must be prepared to cover expenses that exceed receipts by \$19,942 (or approximately \$798 per sow unit) either by borrowing or by dipping into accumulated reserves. In fact, the *net monthly cash flow* line of Table 8 shows that, even in a normal operating year, there are only 4 months (March, April, September,

Table 7. Estimated cash flow for a 25-sow 2-litter operation—start-up year.

Item	Total	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated cash receipts											
5 non-breeding gilts (300 lb. @ \$42/cwt.)	\$630						\$630				
3 dry sows (350 lb. @ \$39/cwt.)	410									\$410	
Total estimated cash receipts	\$1,040						\$630			\$410	
Estimated cash expenses											
Purchased feed	\$3,753	\$163	\$160	\$163	\$160	\$164	\$169	\$293	\$679	\$795	\$1,007
Corn *	3,885	206	200	194	180	185	193	275	500	831	1,121
Pasture (4 a. @ \$85) †	340	140		60					140		
Veterinary and medicine	340						85	170	85		
Boar purchase (3 @ \$350)	1,050	1,050									
Gilt purchase (35 @ \$155)	5,425	4,805						620			
Marketing	26						15			11	
Power, fuel and repairs	453	21	21	20	19	19	20	79	52	86	116
Misc. (bedding and supplies)	360	10	11	10	11	10	11	117	90	37	53
Insurance and taxes	40				40						
Total estimated cash expenses	\$15,672	\$6,395	\$392	\$447	\$410	\$378	\$493	\$1,554	\$1,546	\$1,760	\$2,297
Net cash flow, monthly ‡		(6,395)	(392)	(447)	(410)	(378)	137	(1,554)	(1,546)	(1,350)	(2,297)
Cumulative cash flow ‡	(14,632)	(6,395)	(6,787)	(7,234)	(7,644)	(8,022)	(7,885)	(9,439)	(10,985)	(12,335)	(14,632)

* Corn is charged at an estimate of market value (\$2.50/bu.).

† Pasture is charged at production cost (\$85/a.) assuming no alternative use for the land.

‡ Parenthesis () indicate negative values.

Table 8. Estimated cash flow for a 25-sow 2-litter operation—normal operating year.

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated cash receipts													
360 market hogs (230 lb. @ \$45/cwt.)	\$37,260			\$9,315	\$9,315				\$9,315	\$9,315			
12 dry sows (425 lb. @ \$38/cwt.)	1,938		\$484			\$485		\$484			\$485		
3 non-breeding gilts (300 lb. @ \$42/cwt.)	378		126					252					
2 boars (425 lb. @ \$30/cwt.)	255						\$255						
Total estimated cash receipts	\$39,831		\$610	\$9,315	\$9,315	\$485	\$255	\$736	\$9,315	\$9,315	\$485		
Estimated cash expenses													
Purchased feed	\$9,494	\$1,016	\$934	\$610	\$712	\$773	\$974	\$753	\$610	\$487	\$730	\$833	\$1,062
Corn *	13,125	1,588	1,621	777	518	849	1,264	1,511	1,542	752	532	869	1,302
Pasture †	850			357		136					357		
Veterinary and medicine	675		84	169	84				84	170	84		
Boar purchase (2 @ \$350)	700									700			
Marketing	896		16	207	206	13		9	19	207	206	13	
Power, fuel and repair	2,045	177	306	104	81	113	147	269	322	151	84	115	176
Misc. (bedding and supplies)	1,000	57	121	159	86	35	48	51	111	155	87	37	53
Insurance and taxes	410					102	205						103
Total estimated cash expenses	\$29,195	\$2,838	\$3,082	\$2,383	\$1,687	\$2,021	\$2,638	\$2,593	\$2,688	\$2,622	\$2,080	\$1,970	\$2,593
Net monthly cash flow (normal year) ‡		(2,838)	(2,472)	6,932	7,628	(1,536)	(2,638)	(2,338)	(1,952)	6,693	7,235	(1,485)	(2,593)
Cumulative cash flow (normal year) ‡	10,636	(2,838)	(5,310)	1,622	9,250	7,714	5,076	2,738	786	7,479	14,714	13,229	10,636
Cumulative cash flow (from start-up in Table 7) ‡		(17,470)	(19,942)	(13,010)	(5,382)	(6,918)	(9,556)	(11,894)	(13,846)	(7,153)	82	(1,403)	(3,996)

* Corn is charged at an estimate of market value (\$2.50/bu.).

† Pasture is charged at production cost (\$85.00/a.) assuming no alternative use for the land.

‡ Parenthesis () indicate negative values.

and October) in which receipts from this enterprise are expected to exceed that month's expenses.

The December cumulative cash flow figure of \$10,636 in Table 8 is the normal year's net return after paying production expenses, excluding labor and capital costs.

In Table 7, the purchase of initial breeding stock is treated as a cash expenditure, even though this item would probably be financed with a note payable over more than one year. It is included here, however, to show the timing as well as the size of this expenditure. Table 7 also assumes that labor will not be a cash expense item but will be provided by the farm family.

In developing your cash flow budget, you may want to add several expense items to indicate debt servicing obligations and/or planned outlays for new capital items. These lines would be labeled:

1. Interest payments on existing debt.
2. Principal payments on existing debt.
3. Down payments on purchase of new capital items.

Effects of Performance and Price Variation on Returns

For the 2-litter hog producer, the major sources of risk are: poor production performance, a drop in hog prices, and a rise in feed costs.

Any hog enterprise must be sufficiently well-funded to withstand one adverse year without danger of bankruptcy. Tables 9 and 10 show the year-to-year variation in returns that might be expected in the normal operation of a swine enterprise.

Performance

To reflect the consequences of variation in performance, feed conversions were varied 10% above and below the mean. Feed conversion (pounds of feed per cwt. gain) was chosen as the over-all index of animal performance, since it is affected by conception rate, litter size, herd health, etc.

Market Price

In Tables 9 and 10, average market hog price of \$45 is our best estimate of the annual average price likely to prevail. The high (\$54) and low (\$36) figures approximate the swing in prices expected over a 4-year cycle. A producer might expect one low price year, one high price year and two years of average prices.

Table 9 reports *returns above cash costs*. This is the amount of money available to service debt, buy new capital items, and reward labor and management. Compare these figures to the final cumulative cash flow figure at the bottom of Table 8.

Table 10 reports *returns to labor and management* after all other costs have been met, including depreciation and interest on average investment. The cost of supplying capital items (depreciation and interest) has been charged here but not in Table 9. Compare these figures to the sum of Line C7 and Line D2 in Table 6.

Feed Ingredient Prices

Feed (including pasture) represents about 58% of the total production costs of a 2-litter system. To produce 100 lb. of live weight gain requires 330 lb. of feed grain (5.9 bu. of corn) and 69 lb. of purchased feed. Therefore, a \$.10-per-bushel increase in the price of corn adds \$.59 to production cost per cwt; a \$10-per-ton increase in the price of purchased feeds adds about \$.35 to your break-even price.

Table 9. Estimated returns above cash cost over a range of market hog prices and production rates for a 25-sow 2-litter system.

Market hog price	Animal performance level		
	High	Medium	Low
High (\$54)	\$20,949	\$18,602	\$16,255
Average (\$45)	12,983	10,636	8,289
Low (\$36)	5,017	2,670	323

Table 10. Estimated returns to labor and management over a range of market hog prices and production rates for a 25-sow 2-litter system.

Market hog price	Animal performance level		
	High	Medium	Low
High (\$54)	\$14,303	\$11,956	\$9,609
Average (\$45)	6,337	3,990	1,643
Low (\$36)	(1,629)	(3,976)	(6,323)



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