



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 the skills needed for larger, more complex operations.
- Unlike high investment confinement 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 will significantly lower the bill for purchased supplement. And since the feeding program for finishing hogs is usually built around ear or shelled corn with protein supplement fed free-choice, the producer can minimize his shelling, grinding, feed storage and handling costs.
- The disagreeable aspects of confinement production—odor, flies, cannibalism, 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."
- Because this has long been the dominant pork production system in the nation, peak hog marketings (and therefore, weakest hog prices) occur in March-April and in October-November-December. These peaks have been moderated somewhat by the shift to multiple farrowing systems. Nevertheless, the 2-litter operator will likely sell his market hogs for 5% 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 controlled confinement 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 very important to develop a calendar of management activities for a 2-litter system so one can forecast, by month, his 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 management activity #9 of Table 1 represent our best judgment of percentage distribution of

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

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.
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 6- to 7-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 in the field, report a labor requirement as low as 25 hours per sow. Most producers would use about 36 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 percent, resulting in a total time commitment of 48 hours per sow.	
10. Number of sows	25														
11. Hours of labor per sow	48														
12. Hours of labor per month	1200	72	120	144	108	84	72	72	120	144	108	84	72		

*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—all of which must be provided for.

labor over 12 months. You will want to shift those figures one direction or another if your farrowing dates are different.

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

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. Here are suggestions for this critical phase of 2-litter hog production.

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 corn cobs.

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 long 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), confine 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 pelleted feed and fresh water.

Growing-Finishing

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

This pasture system often utilizes a feeding program of ear corn and supplement self-fed free-choice. September-farrowed pigs are first fed ear corn dumped on the ground during harvest then self-fed from portable or picket cribs during the winter. Ear corn for March-farrowed pigs is often stored at harvest in portable or picket cribs located in the field set-aside for the next season's pasture.

This system avoids the need for drying, shelling and grinding corn for finishing hogs—a saving of approximately 20 cents per bushel. But this advantage can quickly be lost through excessive feed waste or poor pig performance. For best results, a complete mixed ration should be fed from weaning to 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 at least equal to those recorded in more elaborate and sophisticated facilities. Table 2 shows performance minimums for 25 sows farrowing 2 litters each.

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.

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

Item	Standard	Annual results
Conception rate	Gilts—85% Sows—90%	50 litters
Live pigs farrowed/litter	10	500 pigs farrowed
Pigs weaned/litter	7.6	380 pigs weaned
Mortality from weaning to market	1.5%	375 pigs reaching 220 lbs.
Gilts kept for replacement annually	14	361 pigs marketed
Rate of gain	220-lb market animal at 6-7 mo.	854 cwt. total gain*
Feed conversion (including sow herd)	400 lbs. feed/cwt. gain	171 tons total feed

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

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
2834 cwt. cereal grain (5060 bu. corn)	20 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 lbs. per pig. Producers not equipped to grind and mix and planning to shift pigs directly to free-choice will likely purchase double this amount (30 lbs. pelleted starter per pig).

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 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 pigs weaned yearly, of which 14.4 market hogs are sold at 220 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 over \$12 per sow or about 80 cents 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 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 \$30 per acre; this represents the cost of seeding, fertilizing, clipping, etc., to produce good quality forage. This charge may be ridiculous for your farm, however, for you might have the "opportunity" to cash rent such land for \$50 or \$80 per acre. If so, the hogs must "match" that offer.

Overhead Expense

Classified as overhead are the cost of labor and the cost of owning capital items (investment overhead). 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 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 \$145 per sow. 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. The 10.4% overhead charge is based on average investment.

In calculating the investment in operating inventory, it was assumed that the hog enterprise does not store corn but rather buys it on a current basis, either from some off-farm source or from the corn enterprise on the same farm.

Budget Summary

Net return to management is the return after all expenses, including a 9% interest charge on the money

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	\$360.00	\$ 1,080.00	\$ _____
Feeding fence	Wooden panels	75 ft.	2.00	150.00	_____
Waterers	Winter proof	1	87.00	87.00	_____
Fencing	Temporary	50 rods	3.20	160.00	_____
Cement feeding slab	10' x 45'	450 sq. ft.	.60	270.00	=====
Total				\$ 1,747.00	\$ _____
Part B. Farrowing-Nursery Facilities — individual houses with outside pens for 25 sows and litters					
Individual houses	6' x 7'	25	\$150.00	\$ 3,750.00	\$ _____
Feed pans	Individual	25	4.00	100.00	_____
Wooden panels	10 ft. long	50	20.00	1,000.00	_____
Creep feeders	All-weather	3	80.00	240.00	=====
Total				\$ 5,090.00	\$ _____
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	\$1500.00	\$ 3,000.00	\$ _____
Concrete slab	40' x 72'	2880 sq. ft.	.60	1,730.00	_____
Shade frames	Variable	400 sq. ft.	.40	160.00	_____
Feeders	60-bu. round	4	145.00	580.00	_____
Water fountains	80-gal. with heater	5	87.00	435.00	_____
Lot fencing	Wooden panels	120 ft.	2.00	240.00	_____
Field fencing	Permanent	400 rods*	9.00	3,600.00	=====
Total				\$ 9,745.00	\$ _____
Part D. Supporting Facilities					
Feed handling, manure handling & misc. equip.**				\$ 2,500.00	\$ _____
Total facilities investment				\$19,082.00	_____
Investment per sow farrowing				765.00	_____

*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 pick-up 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.

invested and a \$3.50/hr. labor charge. *Per hour 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 himself 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.

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	\$ 5,600*	\$ _____	\$225.00	\$ _____
8 years	13,500	_____	540.00	_____
Total	\$19,100	\$ _____	\$765.00	\$ _____

*Sum of italicized items in Table 4.

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

Item	One sow	25 sows	Your figures
A. Income			
1. Market hogs (220 lbs. @ \$34.00/cwt.)	1080.10	361 head = \$27,003.00	\$ _____
2. Sows (425 lbs. @ \$29.00/cwt.)	49.30	10 head = 1,232.50	_____
3. Non-breeders (300 lbs. @ \$32.00/cwt.)	15.40	4 head = 384.00	_____
4. Boars (425 lbs. @ \$23.00/cwt.)	7.80	2 head = 195.50	_____
5. Gross income	\$1152.60	\$28,815.00	\$ _____
B. Direct costs			
1. Feed			
a) Corn equivalent (\$2.00/bu.)	202.4 lbs. = \$405.00	5,060 bu. = \$10,120.00	\$ _____
b) Pasture (\$30.00/acre)	.4 acre = 12.00	10.0 acres = 300.00	_____
c) Purchased feed (10¢/lb.)	2335 lbs. = 233.50	58,375 lbs. = 5,837.50	_____
d) Total feed	\$650.50	\$16,257.50	\$ _____
2. Veterinary and medicine	19.00	475.00	_____
3. Boar purchase (@ \$250.00)	20.00	2 head = 500.00	_____
4. Marketing	27.60	690.00	_____
5. Power and fuel	15.00	375.00	_____
6. Miscellaneous (bedding, supplies)	38.00	950.00	_____
7. Total direct costs	\$770.10	\$19,247.50	\$ _____
8. Income over direct costs (A.5 - B.7)	\$382.50	\$ 9,567.50	\$ _____
C. Overhead expenses			
1. Investment overhead			
a) 15-year depreciable facility (15.5%)	\$225* = \$ 35.00	\$ 5,600* = \$ 870.00	\$ _____
b) 8-year depreciable facility (21.5%)	\$540* = 116.00	13,500* = 2,900.00	_____
c) Breeding stock (10.4%)	\$145 = 15.00	3,625 = 380.00	_____
d) Operating inventory (10.4%)	\$250 = 26.00	6,250 = 650.00	_____
e) Total investment overhead	\$192.00	\$4,800.00	\$ _____
2. Labor (\$3.50/hr.)	48 hrs. = 168.00	1,200 hrs. = 4,200.00	_____
3. Total overhead expenses	\$360.00	\$9,000.00	\$ _____
D. Summary			
1. Net return to management (B.8 - C.3)	\$ 23.00	\$ 567.50	\$ _____
2. Per hour return to labor and management		3.97	_____
3. Return on investment (excluding land)		12%	_____%

*See Table 5.

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 \$14,580 (or approximately \$580 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 and October) in which receipts from this enterprise are expected to exceed that month's expenses.

The December cumulative cash flow figure of \$8,717 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

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

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated cash receipts													
5 non-breeding gilts (300 lbs. @ \$32.00/cwt.)	\$480								\$480				
3 dry sows (350 lbs. @ \$30.00/cwt.)	315											\$315	
Total estimated cash receipts	\$795								\$480			\$315	
Estimated cash expenses													
Purchased feed	\$2421			\$ 105	\$103	\$105	\$103	\$106	\$109	\$ 189	\$ 438	\$ 513	\$ 650
Corn*	3208			165	160	155	144	148	154	220	400	665	897
Pasture (4 acres @ \$30)**	120			50		20					50		
Veterinary and medicine	240								60	120	60		
Boar purchase (3 @ \$250)	750			750									
Gilt purchase (36 @ \$120)	4320			3600						720			
Marketing	20								12			8	
Power, fuel and repairs	192			7	7	7	7	7	7	30	22	40	58
Misc. (bedding and supplies)	340			10	10	10	10	10	10	110	85	35	50
Insurance and taxes	20						20						
Total estimated cash expenses	\$11,631			\$4687	\$280	\$297	\$284	\$271	\$352	\$1389	\$1055	\$1261	\$1755
Net cash flow, monthly***				(4687)	(280)	(297)	(284)	(271)	128	(1389)	(1055)	(946)	(1755)
Cumulative cash flow***				(4687)	(4967)	(5264)	(5548)	(5819)	(5691)	(7080)	(8135)	(9081)	(10836)

*Corn is charged at an estimate of market value (\$2.00/bu.)

**Pasture is charged at production cost (\$30.00/acre) assuming no alternative use that would pay more.

***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													
361 market hogs (220 lbs. @ \$34.00/cwt.)	\$27,003			\$6750	\$6751					\$6751	\$6751		
10 dry sows (425 lbs. @ \$29.00/cwt.)	1233		\$245			\$371			\$245			\$372	
4 non-breeding gilts (300 lbs. @ \$32.00/cwt.)	384		192						192				
2 boars (425 lbs. @ \$23.00/cwt.)	195							\$195					
Total estimated cash receipts	\$28,815		\$437	\$6750	\$6751	\$371		\$195	\$437	\$6751	\$6751	\$372	
Estimated cash expenses													
Purchased feed	\$ 5838	\$625	\$ 575	\$ 375	\$ 438	\$ 475	\$ 600	\$ 463	\$ 375	\$ 300	\$ 450	\$ 512	\$ 650
Corn*	10,120	1225	1250	600	400	655	975	1165	1190	580	410	670	1000
Pasture**	300			126		48					126		
Veterinary and medicine	475		57	120	60				58	120	60		
Boar purchase (2 @ \$250)	500									500			
Marketing	690		12	159	159	10		10	12	159	159	10	
Power, fuel and repair	850	72	125	98	40	36	54	90	180	35	22	40	58
Misc. (bedding and supplies)	950	54	114	150	85	33	45	48	105	146	85	35	50
Insurance and taxes	375					135	105					135	
Total estimated cash expenses	\$20,098	\$1976	\$2133	\$1628	\$1182	\$1392	\$1779	\$1776	\$1920	\$1840	\$1312	\$1402	\$1758
Net monthly cash flow (normal year)***		(1976)	(1696)	5122	5569	(1021)	(1779)	(1581)	(1483)	4911	5439	(1030)	(1758)
Cumulative cash flow (normal year)***		(1976)	(3672)	1450	7019	5998	4219	2638	1155	6066	11,505	10,475	8717
Cumulative cash flow (from start-up in Table 7)***		(12812)	(14508)	(9386)	(3817)	(4838)	(6617)	(8198)	(9681)	(4770)	669	(361)	(2119)

*Corn is charged at an estimate of market value (\$2.00/bu.)

**Pasture is charged at production cost (\$30.00/acre) assuming no alternative use that would pay more.

***Parenthesis () indicate negative values.

Table 9. Estimated returns above cash, costs 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 (\$41)	\$16,276	\$14,650	\$13,024
Average (\$34)	10,343	8,717	5,933
Low (\$27)	4,410	2,784	1,158

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.

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 (\$41)	\$12,327	\$10,701	\$9,075
Average (\$34)	6,394	4,768	3,142
Low (\$27)	-461	-1,165	-2,791

Market Price

In Tables 9 and 10, average market hog price of \$34 is our best estimate of the annual average price likely to prevail. The high (\$41) and low (\$27) figures approximate the swing in prices expected over a 4-year cycle. A producer might anticipate 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 9% return 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 C.2 and line D.1 in Table 6.

Feed Ingredient Prices

Feed (including pasture) represents approximately 58% of the total production costs of a 2-litter system. To produce 100 lb. of live-weight gain requires 322 lb. of cereal grain (5.8 bu. of corn) and 68 lb. of purchased feed. Therefore, a 10-cent-per-bushel increase in the price of corn adds 58 cents to production cost per cwt; a \$10-per-ton increase in the price of purchased feeds adds 34 cents to your break-even price.