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

Michigan State University

Cooperative Extension Service

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# pork industry handbook

Michigan State University Extension

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

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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 un-used resources, such as land, buildings, machinery, and fencing.

Crop production is characterized by periods of intense labor activity and then periods of reduced activity. Farrowings in a two-litter system can be scheduled to utilize the labor available during these low crop activity times. Also, because the system does not call for permanent buildings, it fits where the manager cannot or will not make a long-term commitment to hog production but desires a livestock enterprise in the short run.

### Advantages

- Building and equipment investments are relatively small and, except for fences and concrete feeding slabs, represent salable items that are not tied to the farm.
- The two-litter system is excellent for learning some of the skills needed for larger, more complex operations.
- Unlike environmentally regulated systems, this system permits considerable flexibility. The two-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 cost of purchased protein supplements. A complete mixed ration is recommended. However, the feeding program for finishing hogs can be designed around ear 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 and manure handling—are largely avoided.

### Disadvantages

- There is a temptation under a two-litter system to be overly-responsive to current market price and become an "in and outer."
- The weakest hog prices usually occur in March-April and in October-November. The two-litter operator will likely sell market hogs for 2% 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 two-litter operation has a relatively high labor requirement—from 50% to 100% greater per hog produced than with slatted-floor, indoor systems.
- Such a production system is vulnerable to unfavorable weather, mud, cold, heat, and dust which adversely affect animal performance and add to the discomfort of the operator.
- Profitability is low. The budgets in this fact sheet project a return of \$6 per hour of labor and a 2% return on investments.

### Developing a Production Calendar

Two-litter hog production is distinctly seasonal and many operators will combine it with crop production, other livestock, or an off-farm job. Therefore, it is important to

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develop a calendar of activities for a two-litter system so one can forecast, by month, needs for various resources, especially labor. Table 1 presents 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 possible percentage distribution of labor over 12 months. Shift those figures one direction or another if your farrowing dates are different.

Line 12 estimates the hours of labor needed by month. 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 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, some two-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 greater risk of more adverse weather during farrowing.

In a two-litter system, pigs are born and raised under conditions that only slightly modify what nature provides. Therefore, when nature does not cooperate, the operator, as well as the 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, one 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 one boar for each 10 females plus one extra boar.

Half of the boars are replaced each September. 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.

Producers following rotational crossbreeding programs should be careful that boars are mated to the correct breed-cross of sows. The breed of sire of each sow should be identified to avoid out-of-sequence or back-cross matings. These improper matings will reduce herd performance and profitability (See PIH-39).

## 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 eight females.

## Farrowing and Nursery

The same facilities serve as both farrowing and nursery quarters. Usually, these are portable, single-sow units

(called A-frames, 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 two-litter hog production include:

**Control mud.** For spring farrowing, choose a naturally well-drained spot on which to locate the farrowing huts. If no such site is available, 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 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 three 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 two weeks of age, 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 diet 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 lb to 75 lb.

## Performance Standards for a Two-Litter System

A skilled, conscientious, two-litter operator should be able to achieve levels of animal performance close to 80% of that recorded in more elaborate and sophisticated facilities. Table 2 shows performance standards for 25 sows farrowing two 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 & Feb. 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 two-litter system (25 females farrowing every 6 months).**

| Item                                 | Standard                            | Annual results            |
|--------------------------------------|-------------------------------------|---------------------------|
| Conception rate                      | Gilts—80%<br>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 250 lb. |
| Gilts kept for replacement annually  | 15                                  | 360 pigs marketed         |
| Rate of gain                         | 250-lb. market animal at 6 to 7 mo. | 963 cwt. total gain*      |
| Feed conversion (including sow herd) | 400 lb. feed/cwt. gain              | 192.6 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 accuracy can be achieved merely by dividing "facilities" into 2 groups—items of 15-year life and items of 7-year life. For this two-litter pasture system, buildings, permanent fencing, and concrete slabs are depreciated over 15 years (italicized in Table 4), although for tax purposes they will be depreciated more quickly. Everything else is expected to have a shorter depreciable life and higher maintenance cost and is depreciated over seven years.

Table 5 shows the investment costs of the facilities listed in Table 4, according to this depreciable life classification. These figures are used in calculations for the overhead expenses section of the two-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.

Use the last column to modify the figures in Table 6 to 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 250 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.

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

| Home grown feed                           | Purchased feed                        |
|---|---------------------------------------|
| 10 acres pasture *                        | 6 tons sow supplement                 |
| 3,192 cwt. feed grain<br>(5,700 bu. corn) | 24 tons grower-finisher<br>supplement |
|   | 3 tons creep ration†                  |

\* To permit a 3-year rotation, an additional 20 acres of rotation land will be needed.  
†15 lb. per pig.

### Direct Costs

These are the costs readily assigned to the enterprise, with feed being the major expense. In Table 6, the feed is divided into three 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, pasture is charged 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 earn 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 in line C-1 of Table 6. The sample budget assumes that all the *facilities* (15- and 7- 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 two-litter hog production to the 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.



**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 |
|--|-----------------------------|---------------|---------------|------------------|--------------|
| <b>Part A. Breeding herd facilities portable buildings for 30 females (8 gilts, 22 sows).</b>                            |                             |               |               |                  |              |
| Sow shelters   | 10' x 14' portable          | 3             | \$ 600.00     | \$1,800.00       | \$ _____     |
| Feeding fence  | Wooden panels               | 75 ft.        | 4.00          | 300.00           | _____        |
| Waterers   | Winter proof                | 1             | 165.00        | 165.00           | _____        |
| Fencing  | Temporary                   | 50 rods       | 12.00         | 600.00           | _____        |
| Concrete feeding slab  | 10'x45' 450 sq. ft.         | 2.00          | 900.00        | _____            | _____        |
|  | Total                       |               |               | \$3,765.00       | \$ _____     |
| <b>Part B. Farrowing-nursery facilities—individual houses with outside pens for 25 sows and litters.</b>                 |                             |               |               |                  |              |
| Individual houses  | 6' x 7'                     | 25            | \$400.00      | \$10,000.00      | \$ _____     |
| Feed trough 2'   | Individual                  | 25            | 18.00         | 450.00           | _____        |
| Wooden panels  | 10 ft. long                 | 50            | 35.00         | 1,750.00         | _____        |
| Creep feeders  | Indoor                      | 25            | 20.00         | 500.00           | _____        |
|  | Total                       |               |               | \$12,700.00      | \$ _____     |
| <b>Part C. Growing-finishing facilities—portable houses on grass in summer, on concrete slab in winter for 200 hogs.</b> |                             |               |               |                  |              |
| Pull-together houses   | 20' x 30' portable          | 2             | \$2,500.00    | \$ 5,000.00      | \$ _____     |
| Concrete slab  | 40 x 72                     | 2,880 sq. ft. | 2.00          | 5,760.00         | _____        |
| Shade frames   | Variable                    | 400 sq. ft.   | 2.00          | 800.00           | _____        |
| Feeders  | 60-bu. round                | 4             | 600.00        | 2,400.00         | _____        |
| Water fountains  | 80-gal. with heater         | 5             | 225.00        | 1,125.00         | _____        |
| Lot fencing  | Wooden panels               | 120 ft.       | 4.00          | 480.00           | _____        |
| Field fencing  | Permanent                   | 400 rods†     | 15.00         | 6,000.00         | _____        |
|  | Total                       |               |               | \$21,565.00      | \$ _____     |
| <b>Part D. Supporting facilities</b>   |                             |               |               |                  |              |
| Feed and manure handling & misc. equipment‡  | —                           | —             | —             | \$11,000.00      | \$ _____     |
|  | Total facilities investment |               |               | \$49,030.00      | \$ _____     |
|  | Investment per sow          |               |               | \$ 1,961.20      | \$ _____     |

\*Investment costs represent an estimate of prices in mid-1998.

†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, portable grinder-mixer, 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 50% of their estimated new cost is charged to the two-litter system.

**Table 5. Facility Investment costs for a two-litter system by major depreciation classifications.**

| Depreciable life | For 25 sows |              | Per sow     |              |
|------------------|-------------|--------------|-------------|--------------|
|                  | Our example | Your figures | Our example | Your figures |
| 15 years         | \$30,260.00 | \$ _____     | \$ 1,210.40 | \$ _____     |
| 7 years          | 18,770.00   | _____        | 750.80      | _____        |
| Total            | \$49,030.00 | _____        | \$1,961.20  | \$ _____     |

Average annual investment in *breeding stock* was estimated at \$197 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 the average of cull value and value of a market hog.

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, including feed, veterinary, fuel, etc., it does not include overhead. The figure is \$15,440 for this 25-sow production unit.

### 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 \$6/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 the two-litter system, it does not reflect when income is realized or expenses incurred. 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.



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

| Item One sow 25 Sows Your figures                 |                    |              |                    |          |
|---|--------------------|--------------|--------------------|----------|
| <b>A. Income</b>                                  |                    |              |                    |          |
| 1. Market hogs (250 lb. @ \$45/cwt.)              | \$1,620.00         | 360 head =   | \$40,500.00        | \$ _____ |
| 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>\$1,722.84</u>  |              | <u>\$43,071.00</u> | \$ _____ |
| <b>B. Direct costs</b>                            |                    |              |                    |          |
| 1. Feed   |                    |              |                    |          |
| a) Corn equivalent (\$2.50/bu.)                   | 228 bu. = \$570.00 | 5,700 bu. =  | \$14,250.00        | \$ _____ |
| b) Pasture (\$85/a.)                              | .4 a. = 34.00      | 10.0 a. =    | 850.00             | _____    |
| c) Purchased feed (\$0.15 1/2 /lb.)               | 2,640 lb. = 409.20 | 66,000 lb. = | 10,230.00          | _____    |
| d) Total feed                                     | <u>\$1,013.20</u>  |              | <u>\$25,330.00</u> | \$ _____ |
| 2. Veterinary and medicine                        | 45.00              |              | 1,125.00           | _____    |
| 3. Boar purchase (@ \$350)                        | 28.00              | 2 head =     | 700.00             | _____    |
| 4. Marketing                                      | 40.00              |              | 1,000.00           | _____    |
| 5. Power, fuel and equipment repair               | 88.00              |              | 2,200.00           | _____    |
| 6. Miscellaneous (bedding, supplies)              | 21.00              |              | 525.00             | _____    |
| 7. Total direct costs                             | <u>\$1,235.20</u>  |              | <u>\$30,880.00</u> | \$ _____ |
| 8. Income over direct costs (A.5—B.7)             | \$487.64           |              | \$12,191.00        | \$ _____ |
| <b>C. Overhead expenses</b>                       |                    |              |                    |          |
| 1. Depreciation                                   | \$187.95           |              | \$4,698.75         | \$ _____ |
| 2. Interest on bldg., equip., breeding stock @ 8% | 94.20              |              | 2,355.00           | _____    |
| 3. Interest on production inventory @ 12%         | 49.41              |              | 1,235.20           | _____    |
| 4. Repairs to buildings                           | 30.00              |              | 750.00             | _____    |
| 5. Property taxes                                 | 7.00               |              | 175.00             | _____    |
| 6. Insurance                                      | 14.00              |              | 350.00             | _____    |
| 7. Labor (\$6/hr.)                                | 35 hr. = 210.00    | 875 hr. =    | 5,250.00           | _____    |
| 8. Total overhead expenses                        | <u>\$592.56</u>    |              | <u>\$14,813.95</u> | \$ _____ |
| <b>D. Summary</b>                                 |                    |              |                    |          |
| 1. Total cost per cwt. of market hog              | \$47.91            |              |                    | \$ _____ |
| 2. Net return to management (B.8-C.8)             |                    |              | \$-2,622.95        | _____    |
| 3. Per hour return to labor and management        | \$-104.92          |              | 3.00               | _____    |
| 4. Return on investment (excluding land)          |                    |              | 2.2%               | _____ %  |

The two main reasons for preparing 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, two-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 \$19,131 (or approximately \$765 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 four 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 \$11,666 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.



**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.     |
|---|----------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
| <b>Estimated cash receipts</b>                |          |         |         |         |         |         |         |         |          |          |          |
| 6 non-breeding gilts<br>(300 lb. @ \$42/cwt.) | \$756    |         |         |         |         |         | \$756   |         |          |          |          |
| 3 dry sows<br>(350 lb. @ \$39/cwt.)           | 410      |         |         |         |         |         |         |         |          | \$410    |          |
| Total estimated cash receipts                 | \$1,166  |         |         |         |         |         | \$756   |         |          | \$410    |          |
| <b>Estimated cash expenses</b>                |          |         |         |         |         |         |         |         |          |          |          |
| Purchased feed                                | \$3,509  | \$172   | \$172   | \$172   | \$170   | \$164   | \$150   | \$293   | \$580    | \$818    | \$818    |
| Corn*   | 3,558    | 200     | 200     | 190     | 190     | 180     | 163     | 250     | 480      | 710      | 995      |
| Pasture (4 a. @ \$85)†                        | 340      | 140     |         | 60      |         |         |         |         | 140      |          |          |
| Veterinary and medicine                       | 504      | 40      | 10      | 10      | 10      | 10      | 70      | 80      | 88       | 93       | 93       |
| Boar purchase (3 @ \$350)                     | 1,050    | 1,050   |         |         |         |         |         |         |          |          |          |
| Gilt purchase (35 @ \$155)                    | 5,425    | 4,805   |         |         |         |         |         | 620     |          |          |          |
| Marketing                                     | 31       |         |         |         |         | 20      |         |         |          | 11       |          |
| Power, fuel and repairs                       | 690      | 30      | 30      | 30      | 30      | 30      | 30      | 100     | 80       | 110      | 220      |
| Misc. (bedding and supplies)                  | 245      | 45      | 10      | 10      | 10      | 10      | 15      | 47      | 23       | 25       | 50       |
| Insurance and taxes                           | 150      | 50      |         |         |         |         | 100     |         |          |          |          |
| Total estimated cash expenses                 | \$15,502 | \$6,532 | \$422   | \$472   | \$410   | \$414   | \$528   | \$1,530 | \$1,251  | \$1,767  | \$2,176  |
| Net cash flow, monthly‡                       |          | (6,532) | (422)   | (472)   | (410)   | 342     | (528)   | (1,530) | (1,251)  | (1,357)  | (2,176)  |
| Cumulative cash flow‡                         |          | (6,532) | (6,954) | (7,426) | (7,836) | (7,494) | (8,022) | (9,552) | (10,803) | (12,160) | (14,336) |

\*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.    |
|---|----------|----------|----------|----------|----------|---------|---------|----------|----------|----------|----------|---------|---------|
| <b>Estimated cash receipts</b>                      |          |          |          |          |          |         |         |          |          |          |          |         |         |
| 360 market hogs<br>(250 lb. @ \$45/cwt.)            | \$40,500 |          |          | \$10,125 | \$10,125 |         |         |          |          | \$10,125 | \$10,125 |         |         |
| 12 dry sows<br>(425 lb. @ \$38/cwt.)                | 1,938    | \$484    |          |          |          | \$485   |         | \$484    |          |          |          | \$485   |         |
| 3 non-breeding gilts<br>(300 lb. @ \$42/cwt.)       | 378      |          | 126      |          |          |         |         | 252      |          |          |          |         |         |
| 2 boars<br>(425 lb. @ \$30/cwt.)                    | 255      |          |          |          |          |         | \$255   |          |          |          |          |         |         |
| Total estimated cash receipts                       | \$43,071 | \$610    |          | \$10,125 | \$10,125 | \$485   | \$255   | \$737    |          | \$10,125 | \$10,125 | \$484   |         |
| <b>Estimated cash expenses</b>                      |          |          |          |          |          |         |         |          |          |          |          |         |         |
| Purchased feed                                      | \$10,230 | \$716    | \$921    | \$1,023  | \$819    | \$819   | \$819   | \$716    | \$920    | \$1,023  | \$818    | \$818   | \$818   |
| Corn*   | 14,250   | 1,282    | 1,425    | 1,568    | 1,283    | 855     | 1,140   | 1,140    | 1,282    | 1,425    | 1,140    | 712     | 998     |
| Pasture†  | 850      |          |          | 170      | 170      | 170     |         |          |          | 170      | 170      |         |         |
| Veterinary and medicine                             | 1,125    | 94       | 93       | 94       | 94       | 94      | 93      | 94       | 94       | 94       | 93       | 94      | 94      |
| Boar purchase (2 @ \$350)                           | 700      |          |          |          |          |         |         |          |          | 700      |          |         |         |
| Marketing   | 1,000    | 18       |          | 233      | 233      | 12      | 7       | 19       |          | 233      | 233      | 12      |         |
| Power, fuel and repair                              | 2,200    | 330      | 220      | 330      | 220      | 110     | 110     | 110      | 110      | 220      | 110      | 110     | 220     |
| Misc. (bedding and supplies)                        | 525      | 79       | 52       | 79       | 53       | 26      | 26      | 26       | 26       | 53       | 26       | 26      | 53      |
| Insurance and taxes                                 | 525      |          | 175      |          |          |         |         |          | 175      |          |          |         | 175     |
| Total estimated cash expenses                       | \$31,405 | \$2,519  | \$2,886  | \$3,497  | \$2,872  | \$2,086 | \$2,195 | \$2,105  | \$2,607  | \$3,918  | \$2,590  | \$1,772 | \$2,358 |
| Net monthly cash flow<br>(normal year)‡             |          | (1,909)  | (2,886)  | 6,628    | 7,253    | (1,601) | (1,940) | (1,368)  | (2,607)  | 6,207    | 7,535    | (1,288) | (2,358) |
| Cumulative cash flow<br>(normal year)‡              | 11,666   | (1,909)  | (4,795)  | 1,833    | 9,086    | 7,485   | 5,545   | 4,177    | 1,570    | 7,777    | 15,312   | 14,024  | 11,666  |
| Cumulative cash flow<br>(from start-up in Table 7)‡ |          | (16,245) | (19,131) | (12,503) | (5,250)  | (6,851) | (8,791) | (10,159) | (12,766) | (6,559)  | 976      | (312)   | (3,670) |

\*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.



## Effects of Performance and Price Variation on Returns

For the two-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. As a general rule, a hog farm will not survive the low period in the hog cycle if debt exceeds equity. 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 overall 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 (\$52) and low (\$38) 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 56% of the total production costs of a two-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 two-litter system.**

| Market hog price | Animal performance level |             |             |
|------------------|--------------------------|-------------|-------------|
|                  | High                     | Medium      | Low         |
| High (\$52)      | \$22,616.75              | \$20,168.75 | \$17,720.75 |
| Average (\$45)   | 15,914.00                | 13,466.00   | 11,018.00   |
| Low (\$38)       | 9,211.00                 | 6,763.00    | 4,315.00    |

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

| Market hog price | Animal performance level |            |            |
|------------------|--------------------------|------------|------------|
|                  | High                     | Medium     | Low        |
| High (\$52)      | \$11,875.72              | \$9,329.80 | \$6,783.88 |
| Average (\$45)   | \$5,172.97               | \$2,627.05 | \$81.13    |
| Low (\$38)       | (1,530.03)               | (4,075.95) | (6,621.87) |



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