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Pork Production Systems with Business Analysis: The Low-Investment, Low-Intensity Confinement System (2 Groups of Sows Farrow-to-Finish)

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pork industry handbook

COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

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Low-Investment, Low-Intensity Confinement... What It Is and Where It Fits

This farrow-to-finish system is characterized by buildings simple in design, with a minimum of environmental control and labor-saving devices. Farrowings are usually 4 times a year and scheduled to avoid the peak labor periods for crop production. A popular farrowing sequence in the Corn Belt is December, February, June and August.

Low-investment confinement fits "best" on *crop farms* where hog production would serve as a secondary enterprise to utilize excess seasonal labor and other under- or unused resources, such as waste feed, buildings, fences, and materials handling equipment. However, because the system does require permanent buildings, management should be willing to make a long-run commitment to hog production.

Being a confinement system, this type of enterprise is well suited to highly productive land because it frees that land for crop production. Besides, the best crop land (flat and black) is often the poorest hog pasture (muddy).

Advantages

- Low-investment confinement systems often "employ" abandoned facilities (chicken houses, dairy stables, concrete slabs, fencing) that otherwise have no alternative use. Such "free" resources can give this production system a considerable advantage over other systems that require new, specialized buildings and sophisticated equipment.
- Because the buildings are simple in design and have few, if any, automatic devices, they can usually be

constructed or remodeled using farm labor; and they don't need a skilled mechanic to keep them in operation.

- Facility investments per square foot and per hog-capacity are low compared to more intensive confinement systems. Therefore, management is not under great pressure to make full use of every square foot every day.
- Many of the production tasks can be performed by unskilled labor.

Disadvantages

- Hogs in open-front buildings may require either bedding or supplemental heat in the winter to maintain acceptable levels of performance. Bedding is scarce and expensive in some communities and, of course, is not compatible with the handling of manure as a liquid.
- A low-investment, low-intensity system has a relatively high labor requirement—from 50 to 100% greater per hog produced than with slatted-floor, environmentally controlled confinement systems. And many of the activities (e.g., manure scraping, bedding, etc.) are tedious and disagreeable.
- The system usually employs exposed concrete slabs, which may cause control problems for flies, odors, runoff, etc.

Developing a Production Management Calendar

Because a low-intensity confinement enterprise is usually secondary to crop production, most producers seasonalize it around their cropping plans. Therefore, it's important to develop a calendar of management activities

for this hog production system so one can forecast, by months, his needs for various resources—especially labor.

Table 1 presents such a calendar for an enterprise where farrowing is scheduled for December and February, and for June and August.

The figures in management activity #8 of Table 1 represent our best judgment of percentage distribution of labor over 12 months. You will want to shift these figures

one direction or another if your farrowing dates are different.

Activity #11 is an estimate of the hours of labor needed by months. To arrive at these figures, first multiply number of sows (#9) by estimated hours of labor per sow (#10) to find total annual labor requirements; then distribute the total labor across the months in accordance with your percentage distribution in #8.

Table 1. Calendar of management activities for a low-intensity confinement system (example: 25 litters each in December, February, June and August).

Activity	Example	Month												Comments	
		J	F	M	A	M	J	J	A	S	O	N	D		
1. Select replacement gilts	Jan., May, July, Nov.	●				●		●					●		To provide greatest selection, choose gilts before selling any slaughter hogs.
2. Buy boars	Sept.												●		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	Group A Mar. 25, Sept. 25 Group B Jan. 25, July 25			●									●		Vaccinate for erysipelas and leptospirosis 15-30 days before breeding.
4. Breed	Group A Apr. 11-May 8 Oct. 12-Nov. 8 Group B Feb. 9-Mar. 8 Aug. 11-Sept. 7				●	●							●	●	Expose sows to the boars for 4-week period.
5. Farrow	Group A Feb. & Aug. Group B June & Dec.		●										●		Although this example schedules farrowings in Dec., Feb., June and Aug. (to avoid Corn Belt crop planting and harvesting conflicts), your farrowings might be during four other months, provided each group of sows is kept on a 6-month interval. Castrate when pigs are 7-10 days old.
6. Wean	Group A Mar. 15-Apr. 11 Sept. 12-Oct. 9 Group B Jan. 12-Feb. 8 July 13-Aug. 9			●	●								●	●	Plan for 5- to 6-week weaning. Vaccinate for erysipelas at this time. To keep sows on the 6-month farrowing schedule, skip one heat period before rebreeding those sows which farrowed early.
7. Sell market hogs	Dec.-Mar. June-Sept.				●									●	Animals should reach slaughter weight at 6-7 months of age.
8. Percentage distribution of labor	100%	10	11	9	6	5	9	8	9	10	6	5	12		Labor needs vary widely. Efficient, large-volume producers report a labor requirement as low as 25 hours per sow or 1 2/3 hours per hog produced. 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 relatively small enterprises (50 sows or less), this indirect labor may add another 30-35%, resulting in a total time commitment of 45 hours per sow.
9. Number of sows	50														
10. Hours of labor per sow*	45														
11. Hours of labor per month	2250	225	248	202	135	112	203	180	202	225	135	113	270		

*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. Approximately 15 market hogs will be sold each year per sow unit.

Management from Pre-Breeding to Finishing

Most low-intensity confinement managers are under considerable pressure to neglect their hogs during the busy seasons in crop production. To avoid situations that result in poor swine performance, the operator should: (1) do his best to schedule labor-intensive activities (e.g., farrowing) out of conflict with cropping; (2) be prepared to recruit extra help when cropping demands are greatest; (3) design buildings and select equipment that minimize daily chore labor (e.g., avoid floors that need daily scraping or feeders that need daily filling); and (4) build a margin for error into the system by providing adequate square footage for animals in all stages of the life cycle.

Following are proven management suggestions for each phase of low-intensity farrow-to-finish.

Pre-Breeding

Develop a definite plan for breeding herd replacement and *follow it*. We suggest one that adds gilts at each breeding period so that, over 12 months (4 breeding periods), 40% of the sow herd is replaced and a complete set of boars is purchased. This plan has the following features: (1) the average sow produces 5 litters in her lifetime, (2) boars are never too big to be used on gilts, and (3) inbreeding is avoided.

Breeding

Although this system utilizes relatively low-cost buildings, there is still considerable penalty for having unused space. So be sure to breed enough females. If all boars are not replaced yearly, provide enough breeding pens for gilts to be separated from sows and for the sow herd to be split, so that mating will not occur between mature boars and their progeny.

Plan on a 4-week breeding period, with 1 boar 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.

Remove the boars at the end of the 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.

Gestation

Most low-intensity confinement producers maintain the breeding herd on pasture or in dirt lots. High-quality legume pasture, if available, 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 sows.

Farrowing

A typical low-intensity confinement operation utilizes a central farrowing house, which might be a converted dairy stable or hen house, or possibly a pull-together building on a concrete slab. For purposes of example in this publication, we have described a set of facilities (Table 4) that include a 20-sow farrowing house to be used by 2 groups of 25 sows each. With such a building, cleaning chores can be minimized by turning the sows out twice a day for feed and water.

Nursery

Sows are moved with their litters to a sow-and-pig nursery when pigs are 2-4 weeks of age and have not yet begun to produce large quantities of manure. Although this practice reduces daily chore labor, one disadvantage of using a sow-pig nursery is pig injury or loss due to overlaying and robbing. The following suggestions will help

minimize the problem:

1. Don't move a sow and her litter to the nursery until the pigs are at least 10 days old.
2. Plan on no more than 3 sows and litters per nursery pen.
3. Arrange groupings so that range in age of pigs sharing a common pen is less than 1 week.
4. Provide a comfortable creep area to discourage pigs from sleeping with the sows.

The sow-and-pig nursery is usually designed so it can house pigs weighing as much as 100-150 lb. In fact, this becomes necessary when farrowings are scheduled at irregular intervals (e.g., December and February, and then June and August). The nursery quarters are practically identical to the finishing facility except for smaller pens and provision of a creep area. Optimum age to wean under this system is 5-6 weeks.

Growing-Finishing

Quarters for growing-finishing hogs are usually simple, open-fronted buildings with exposed feeding floors. Provision must be made to control flies and odors, and to contain run-off from the feeding floor.

The challenge in designing and managing a low-investment finishing facility is (1) to provide a warm, dry, comfortable sleeping area that requires a minimum of bedding and/or labor, and (2) to "teach" the hogs to keep that area clean and to deposit manure where it can be easily removed. This means careful consideration given to such design features as size and shape of pens; position of solid and open partitions; location of feed, water and sleeping area; and to such management practices as per-hog space allowance, control of drafts and toilet training.

The number of pigs per pen in a growing-finishing unit should not exceed 75, and they should be relatively uniform in size (none more than 20% above or below the average weight of the group).

Performance Standards & Production Requirements

Skilled and conscientious herdsman have been able to achieve levels of animal performance with this system that are at least equal to those recorded in more elaborate and sophisticated confinement facilities. Table 2 shows performance minimums and estimates of annual production for a 50-sow herd (2 groups of 25 sows farrowing every 6 months).

Feeding Recommendations

Estimates of total annual feed needed to produce 750 market-weight hogs from 50 sows farrowing are given in Table 3.

Facility Needs and Costs

Table 4 lists a typical set of facilities for a 50-sow low-investment, low-intensity, farrow-to-finish system, along with an estimate of their cost when new. The last column is for your investment estimates.

In developing a budget (see next section), facilities should be classified 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 low-investment confinement system, only the building shells of permanent structures and concrete slabs would be depreciated over 15 years (*italicized in Table 4*); everything else is classified as "equipment" with a shorter depreciation life (8 years) and a higher maintenance charge.

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 low-investment confinement budget (Table 6).

Table 2. Performance standards for a 50-sow (100-litter) low-intensity confinement system.

Item	Standard	Annual results
Conception rate	Gilts—85% Sows—90%	100 litters
Live pigs farrowed/litter	10	1000 pigs farrowed
Pigs weaned/litter	7.6	760 pigs weaned
Mortality from weaning to market	1.5%	750 pigs reaching 220 lbs.
Gilts kept for replacement annually	28	722 market hogs sold
Rate of gain	220-lb. market animal at 6-7 mo.	1707 cwt. total gain*
Feed conversion (incl. breeding herd)	406 lbs. feed/cwt. gain	346.6 tons total feed

*Gross weight produced = total poundage sold — purchase weight of boars.

Table 3. Annual feed requirements (breeding herd and pigs) for a 50-sow low-intensity confinement system.

Type of feed	Annual amount
Cereal grain	5,684 cwt. (10, 150 bu. corn)
Sow supplement	13.6 tons
Grower-finisher supplement	43 tons
Creep ration	5.7 tons (15 lbs/pig)

Developing a Budget

Listed in Table 6 are estimates of the various items of cost and return for a 50-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 (Section A)

This annual budget assumes each sow unit farrows at 6-month intervals with 15.2 pigs weaned yearly, of which 14.4 market hogs are sold at 220 lb. each *plus* breeding stock sales. It also assumes all boars are replaced annually; hence, a boar depreciation charge (boar purchase minus boar receipts) of over \$16 per sow or about \$1.05 per pig produced.

Direct Costs (Section B)

These are the costs readily assigned to the enterprise, the major one being feed. In Table 6 the feed bill is broken into 2 categories: feed grain (corn equivalent) and purchased feed (supplement and creep). If using a feed grain other than corn, calculate the requirements on the basis of these conversions: 1 bu. of corn or milo equals 2 bu. oats, or .9 bu. wheat, or 1.1 bu. barley.

We have made no charge for land use, even though land is needed for buildings and for the dirt lots where the breeding herd will be kept. Our assumption is that the land used by the hog enterprise has no alternative use. This may not be the case on your farm, however; you may have opportunity to cash rent this land for \$60-\$80 per acre or to profitably use it for crop production. If so, the hogs must "match" the best alternative use; and a charge for the land at that best-use rate should be made when you adapt Table 6 to your situation.

Overhead Expenses (Section C)

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.

As listed in the budget, the ownership charge for capital items is an estimate of the total of depreciation, interest, maintenance costs, taxes and insurance.

When developing your figures in Table 6, remember that the sample budget assumes that all the *facilities* (15- and 8-year depreciable items) listed in Tables 4 and 5 must be purchased. In your situation, however, some of those facilities may already be available (e.g., an abandoned hen house suitable for conversion to a farrowing unit); and you may be incurring ownership costs (depreciation, taxes, insurance, etc.) merely because they are there. In estimating the contribution of low-investment confinement hog production to your total business, the charge for such *fixed* resources (the ones already available) should be set at their opportunity value rather than the annual ownership charge shown in Table 6.

Average annual investment in *breeding stock* was estimated at \$155 per sow unit. On average, the breeding herd was assumed to include 4 boars, 44 sows and 14 replacement gilts. Boar value was figured at the average of the buying and selling price; females were figured at market price. The 10.4% overhead charge includes 9% for interest, 1% for property taxes and 0.4% for insurance.

In calculating 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 (Section D)

Net return to management is the return after all expenses, including a 9% interest charge on the money invested and a \$3.50 per hour 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 Requirements

While the budget in Table 6 estimates type and amount of income and expense for low-investment, low-intensity confinement hog production, 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 to make provision to meet them.

The two main reasons why you might want to prepare a cash flow projection are: (1) to show the cash demands in

Table 4. Facilities investment for a 50-sow low-intensity confinement system (25 females farrowing December and June, 25 farrowing February and August).*

Item	Size and description	Units needed	Cost per unit	Total investment	Your figures
Part A. Farrowing Facilities — 20-sow central house (sows turned out twice daily)					
Building	22' x 55'	1210 sq. ft.	\$ 4.50	\$ 5,450.00	\$ _____
Farrowing crates	Metal	20	85.00	1,700.00	_____
Waterer	4-hole, frost proof	1	160.00	160.00	_____
Feeder	20-hole, 40 bu.	1	320.00	320.00	_____
Heating devices	Space heater + heat lamps	—	—	300.00	_____
Feeding floor for sows	20' x 30'	600 sq. ft.	.60	360.00	_____
Outside fencing	Wooden panels	90 ft.	2.00	180.00	_____
Total				\$ 8,470.00	\$ _____
Part B. Nursery Facilities — 25-litter capacity sow and pig unit					
Building	20' x 64' pole	1280 sq. ft.	\$ 2.60	\$ 3,330.00	\$ _____
Exposed concrete slab	20' x 64'	1280 sq. ft.	.60	770.00	_____
Heat lamps and attachments		25	6.00	150.00	_____
Waterers	2-hole, frost proof	4	90.00	360.00	_____
Feeders	Convert. creep-grower	8	150.00	1,200.00	_____
Sow troughs	6 ft.	8	20.00	160.00	_____
Fencing, gates, creeps	Wooden panels	400 ft.	2.00	800.00	_____
Total				\$ 6,770.00	\$ _____
Part C. Finishing Facilities — 200-hog capacity open front with exposed slab					
Building	20' x 72' pole	1440 sq. ft.	\$ 2.60	\$ 3,750.00	\$ _____
Exposed concrete slab	20' x 72'	1440 sq. ft.	.60	870.00	_____
Waterers	4-hole, frost-proof	2	160.00	320.00	_____
Feeders	20-hole, 75 bu.	2	350.00	700.00	_____
Partitions and gates	Wooden panels	235 ft.	2.00	470.00	_____
Total				\$ 6,110.00	\$ _____
Part D. Breeding Herd Facilities — 60 females (16 gilts, 44 sows) portable buildings on permanent dirt lots					
Sow shelters	10' x 14'	6	\$360.00	\$ 2,160.00	\$ _____
Feeding fence	Wooden	100 ft.	3.00	300.00	_____
Waterers	2-hole, frost-proof	3	90.00	270.00	_____
Concrete feeding slab	7' x 100'	700 sq. ft.	.60	420.00	_____
Fencing	Woven wire	100 rods	9.00	900.00	_____
Total				\$ 4,050.00	\$ _____
Part E. Supporting Equipment**					
Feed handling, manure handling & misc. equip.				\$ 6,100.00	\$ _____
Part F. Facilities Investment Summary					
Total facilities investment				\$31,500.00	\$ _____
Investment per sow farrowing				630.00	_____
Investment per hog produced yearly				42.00	_____

*The dollar figures represent an estimate of the cost of these items in mid-1975.

**A hog enterprise of the type described here is likely found on a multi-enterprise farm and thus shares equipment with other enterprises. We have charged this operation with 60% of the investment in a portable grinder-mixer, front-end loader, high pressure pump and dry manure spreader; and with 100% of the investment in the bulk tanks for supplement storage, loading chute and hog holder. No investment in trucks or tractors was figured, but their use is charged to the hogs on an hourly or per mile basis in Table 6.

Table 5. Facility investment by major depreciation classifications.

Depreciable life	For 50 sows		Per sow	
	Our example	Your figures	Our example	Your figures
15 years	\$15,000*	\$ _____	\$300.00	\$ _____
8 years	16,500	_____	330.00	_____
Total	\$31,500	\$ _____	\$630.00	\$ _____

*Sum of italicized items in Table 4.

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 50-sow confinement farrow-to-finish example, the worst cash flow situation occurs in November of the start-up year, 11 months after launching the enterprise. At this time, the manager must be prepared to cover expenses that exceed receipts by \$23,925 (or approximately \$480 per sow unit) either by borrowing or by dipping into accumulated reserves.

Cumulative cash flow remains negative through the second year of operation. In other words, it takes 2 years for the enterprise to digest the start-up expense and cost of obtaining breeding stock. Early in the third year, cash flows become positive. This is what can be used to reward labor and management and to pay for buildings and equipment.

Once established, this low-intensity farrow-to-finish system has a relatively favorable cash-flow pattern. In only 4 months (April, May, October and November) of a normal year would you expect expenses to exceed that month's receipts. The December cumulative cash flow figure in Table 8 of \$17,970 is the normal year's net return after paying production expenses, excluding labor and capital costs.

In Table 7, 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 1 year. It is included here, however, to show the timing as well as the size of this expenditure. Both Tables 7 and 8 assume 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 payment on existing debt.
2. Principal payments on existing debt.
3. Down payments on purchase of new capital items.

Effect of Performance and Price Variation on Returns

For those who produce market hogs, the major sources of risk are: poor production performance, a drop in hog prices and a rise in feed ingredient prices.

Any hog enterprise must be sufficiently well-funded to withstand 1 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 low-investment farrow-to-finish enterprise.

Performance

To reflect the consequences of variation in performance, feed conversions were varied 10% above and below the mean. Feed conversion (lb. 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 \$34 per cwt. is our best estimate of the annual price likely to prevail. The high (\$41) and low (\$27) figures approximate the swing in prices that might be expected in a 4-year hog cycle. A producer might anticipate 1 low price year, 1 high price year and 2 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 *return 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 represents approximately 61% of total production costs of a low-investment, low-intensity confinement system. To produce 100 lb. of liveweight gain requires 333 lb. of cereal grain (5.9 bu. of corn) and 73 lb. of purchased feed. Therefore, a 10-cent-per-bu. increase in the price of corn adds 59 cents to production cost per cwt.; a \$20-per-ton increase in the price of purchased feeds adds 73 cents to your break-even price.

Table 6. Estimated budget for a 50-sow low-investment confinement system.

Item	One sow	50 sows	Your figures
A. Income			
1. Market hogs (220 lbs. @ \$34/cwt.)	\$1080.00	722 head = \$54,000.00	\$ _____
2. Sows (425 lbs. @ \$29/cwt.)	49.20	20 head = 2,460.00	_____
3. Non-breeding gilts (300 lbs. @ \$32/cwt.)	15.40	8 head = 770.00	_____
4. Boars (425 lbs. @ \$23/cwt.)	<u>8.00</u>	4 head = <u>400.00</u>	_____
5. Gross income	\$1152.60	\$57,630.00	\$ _____
B. Direct Costs			
1. Feed			
a) Corn equivalent (\$2.00/bu.)	203 bu. = \$ 406.00	10,150 bu. = \$20,300.00	\$ _____
b) Purchased feed (10¢/lb.)	2495 lbs. = <u>249.50</u>	62.5 tons = <u>12,475.00</u>	_____
c) Total feed	\$ 655.50	\$32,775.00	\$ _____
2. Veterinary and medicine	16.00	800.00	_____
3. Boar purchase (@ \$300)	24.00	4 head = 1,200.00	_____
4. Marketing	27.40	1,370.00	_____
5. Power and fuel	15.00	750.00	_____
6. Miscellaneous (bedding, supplies)	<u>21.00</u>	<u>1,050.00</u>	_____
7. Total direct costs	\$ 758.90	\$37,945.00	\$ _____
8. Income over direct cost (A.5 - B.7)	\$ 393.70	\$19,685.00	\$ _____
C. Overhead Expenses			
1. Investment overhead			
a) 15-year depreciable facilities (15.5%)	\$300* = \$ 46.50	\$15,000* = \$ 2,325.00	\$ _____
b) 8-year depreciable facilities (21.5%)	\$330* = 70.90	16,500* = 3,545.00	_____
c) Breeding stock (10.4%)	\$155 = 16.10	7,750 = 805.00	_____
d) Operating inventory (10.4%)	\$255 = <u>26.50</u>	12,750 = <u>1,325.00</u>	_____
e) Total investment overhead	\$160.00	\$ 8,000.00	\$ _____
2. Labor (\$3.50/hr.)	45 hrs. = <u>157.50</u>	2,250 hrs. = <u>7,875.00</u>	_____
3. Total overhead	\$317.50	\$15,875.00	\$ _____
D. Summary			
1. Net return to management (B.8 - C.3)	\$ 76.20	\$ 3,810.00	\$ _____
2. Per hour return to labor and management		5.19	_____
3. Return on investment (excluding land)		19.5%	_____ %

*From Table 5.

Table 7. Estimated cash flow for a 50-sow low-investment operation—start-up year.

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated Cash Receipts													
90 market hogs (220 lbs. @ \$34/cwt.)	\$6732												\$6732
8 dry sows (350 lbs. @ \$30/cwt.)	840								\$ 315		\$ 315	\$ 210	
13 non-breeding gilts (300 lbs. @ \$32/cwt.)	1248					\$480		\$480				288	
Total estimated cash receipts	\$8820					\$480		\$480	\$ 315		\$ 315	\$ 498	\$6732
Projected Cash Expenses													
Purchased feed	6670	\$ 106	\$ 98	\$ 200	\$ 195	\$188	\$285	\$582	\$ 858	\$1150	\$1012	\$1060	\$ 936
Feed Grain*	10290	165	150	316	308	292	344	618	1116	1615	1700	1960	1706
Veterinary and medicine	550					50	100	100	100	50		50	100
Boar purchase (4 @ \$300)	1200	1200											
Gilt purchase (74 @ \$120)	8880	3600		3600				960		720			
Marketing	211					12		12	8		8	13	158
Power, fuel and repairs	642	7	7	14	14	14	34	40	70	92	98	102	150
Insurance and taxes	200						200						
Misc. (bedding and supplies)	575	12	12	22	22	22	32	38	50	62	74	74	155
Total estimated cash expenses	\$29,218	\$5090	\$267	\$4152	\$ 539	\$578	\$995	\$2350	\$2202	\$3689	\$2892	\$3259	\$3205
Net cash flow, monthly**		(5090)	(267)	(4152)	(539)	(98)	(995)	(1870)	(1887)	(3689)	(2577)	(2761)	3527
Cumulative cash flow**		(5090)	(5357)	(9509)	(10048)	(10146)	(11141)	(13011)	(14898)	(18587)	(21164)	(23925)	(20398)

*Feed grain is charged at \$3.57/cwt. (\$2.00/bu. corn)
 **Parenthesis () indicate negative values.

Table 8. Estimated cash flow for a 50-sow low-investment operation—normal operating year.

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated Cash Receipts													
722 market hogs (220 lbs. @ \$34/cwt.)	\$54,000	\$6750	\$6750	\$6750			\$6750	\$6750	\$6750	\$6750			\$6750
20 dry sows (425 lbs. @ \$29/cwt.)	2460	245	370		\$ 370	\$ 245		245	370		\$ 370	\$ 245	
8 non-breeding gilts (300 lbs. @ \$32/cwt.)	770	192				192		192					194
4 boars (425 lbs. @ \$23/cwt.)	400										400		
Total estimated cash receipts	\$57,630	\$7187	\$7120	\$6750	\$ 370	\$ 437	\$6750	\$7187	\$7120	\$6750	\$ 770	\$ 439	\$6750
Projected Cash Expenses													
Purchased feed	\$12,475	\$ 925	\$1125	\$1150	\$1012	\$1075	\$ 950	\$ 938	\$1138	\$1150	\$1012	\$1062	\$ 938
Feed Grain*	20300	1414	1740	1600	1692	1968	1710	1426	1772	1612	1700	1960	1706
Veterinary and medicine	800	100	100	50		50	100	100	100	50		50	100
Boar purchase (4 @ \$300)	1200									1200			
Marketing	1370	170	170	158	10	12	158	170	170	158	24	12	158
Power, fuel and repairs	1640	124	144	128	90	100	90	200	330	90	98	100	146
Insurance and taxes	825					300	225					300	
Misc. (bedding and supplies)	1050	155	112	112	74	50	62	60	60	62	74	74	155
Total estimated cash expenses	\$39,660	\$2888	\$3391	\$3198	\$2878	\$3555	\$3295	\$2894	\$3570	\$4322	\$2908	\$3558	\$3203
Net monthly cash flow (normal year)**		4299	3729	3552	(2508)	(3118)	3455	4293	3550	2428	(2138)	(3119)	3547
Cumulative cash flow (normal year)**		4299	8028	11580	9072	5954	9409	13702	17252	19680	17542	14423	17970
Cumulative cash flow (from start-up in Table 7)**		(16099)	(12370)	(8818)	(11326)	(14444)	(10989)	(6696)	(3146)	(718)	(2856)	(5975)	(2428)

*Feed grain is charged at \$3.57/cwt. (\$2.00/bu. of corn)
 **Parenthesis () indicate negative values.

Table 9. Estimated returns above cash costs over a range of market hog prices and production rates for a 50-sow enterprise.

Market hog price		Animal performance level		
		High	Medium	Low
High	(\$41)	\$33,114	\$29,836	\$26,558
Average	(\$34)	21,248	17,970	14,692
Low	(\$27)	9,382	6,104	2,826

Table 10. Estimated returns to labor and management over a range of market hog prices and production rates for a 50-sow enterprise.

Market hog price		Animal performance level		
		High	Medium	Low
High	(\$41)	\$26,829	\$23,551	\$20,273
Average	(\$34)	14,963	11,685	8,407
Low	(\$27)	3,097	- 181	- 3,459