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Pork Production Systems with Business Analyses:

The High-Investment, High Intensity Confinement System (3 Groups of Sows Farrow-to-Finish)

Michigan State University

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COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

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

This farrow-to-finish system calls for specialized buildings and rather sophisticated equipment. Common features of closed confinement are: self-cleaning floors (slatted or flushed), liquid manure handling, automatic ventilation and automatic feed distribution. Even on farms where crop production activities may compete for available labor, making full use of the hog facilities takes precedent. Farrowings are frequent (at least 6 times a year) and at regular intervals.

Such a system fits "best" (but is not necessarily limited to) on farms where the following conditions exist:

1. *There is a long run commitment to hog production.*
2. *Hog production is to be a major enterprise.* Considerable cost advantages are realized when an operation is relatively large—i.e., at least 100 sows.
3. *There is more than one operator.* Two or more persons committed to the operation provide not only "management insurance" if the primary herdsman is incapacitated, but also an opportunity for time off and vacation.
4. *The farm land is highly productive.* Confinement frees productive land for crop use. Furthermore, the best crop land (flat and black) is often the poorest hog pasture (muddy).

Advantages

- A high-investment, high-intensity confinement system virtually eliminates scoop-shovel labor.
- Because the system permits more hogs to be produced with a given amount of labor, the potential for profit (or loss) per man equivalent is greater.
- Closed confinement practically eliminates the need for bedding.

- The fact that the facilities are fully enclosed makes this system more independent of adverse weather.
- Labor requirements are relatively uniform from month to month.
- A productive, high-intensity operation will likely be selling market hogs weekly. This weekly income helps avoid cash-flow problems.

Disadvantages

- With high-investment confinement systems come more serious business management and financial problems for the producer. Investment per sow unit* in slatted-floor confinement is approximately \$1,500, including buildings, equipment, breeding livestock and operating inventory (but excluding land).
- The manager must be willing and able to adhere to a relatively tight production schedule.
- While closed confinement provides a certain degree of independence from the weather, the penalty is dependence on mechanical devices. Therefore, the operator should have considerable mechanical skill.

Scheduling Facility Use and Labor

With farrowing scheduled to occur at least every other month, there is no seasonal pattern to production with a high-intensity closed confinement system. The production scheduling emphasis, therefore, is usually on making full use of both buildings and labor without overtaxing either.

*The sow is the unit around which the discussion here 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 per sow unit will be sold each year.

Facilities Use

In developing a breeding-farrowing schedule, the producer usually determines first the building needs for each phase of the operation (farrowing, nursery, growing-finishing, breeding-gestation), then he farrows as frequently as feasible. With a given set of buildings, the limits on farrowing frequency are usually set by: (1) his willingness to forego the disease control advantages of all-in, all-out scheduling of farrowing and nursery facilities; (2) his decisions on when to wean (3- to 6-week range) and where to wean (farrowing house vs. nursery); and (3) his ability to limit the length of the breeding period and subsequent farrowing.

With conservative decisions on these matters, a single farrowing house cannot be scheduled more frequently than once every 7 or 8 weeks. However, by constructing a "compartmentalized" farrowing house (to allow all-in, all-out scheduling in each compartment) and by limiting the breeding period to a week or less, some producers have been able to use their farrowing crates at 5-week intervals. Extra costs are incurred to gain this "extreme" use of farrowing facilities: (1) to build compartments in a farrowing house will increase construction costs, and (2) to shorten the breeding period will require extra females or estrus synchronization and/or hand mating.

Figure 1 presents a sample schedule of building occupancy and is based on these management assumptions: (1) all-in, all-out scheduling for the farrowing phase with 1 week down-time for cleaning, (2) minimum weaning age of 4 weeks in the farrowing crate, and (3) a 3-week exposure period of each group of sows to the boars.

Figure 1 shows that 1 farrowing house is adequate to serve 3 groups of sows farrowing in alternate months. The building is occupied constantly except for a 1-week clean-up period after each farrowing. At weaning, sows go to the breeding area and pigs to the nursery unit. Each group of pigs stays in the nursery until forced out by the next group coming along.

At any one time, the farrowing unit is used by sows of only one group. The nursery may be occupied by pigs of 2 successive farrowings, but the total number never exceeds the 1-time farrowing output. In contrast, Figure 1 shows that the growing-finishing quarters must be adequate to house pigs from 2 farrowings simultaneously, and the breeding-gestation quarters adequate to house every sow in the herd.

Labor

Labor use per sow unit varies greatly from farm to farm. Some efficient producers report as little as 15 hours labor per sow unit per year (approximately 1 hour per hog marketed). Most operators, however, would use about 22 hours per sow. Both figures ignore the "indirect" labor spent in planning, keeping records, maintaining the farmstead, etc. Such indirect labor may add another 25%, resulting in a total time commitment of 28 hours per sow.

High-investment, high-intensity confinement operations are usually large enough that a man or a crew of men is assigned to the enterprise. If so, it becomes very important to minimize variation in labor requirements, so that there is neither underemployment of the regular work force nor need for extra help.

The activities causing most problems as far as labor needs are concerned include: (1) farrowing and handling the pigs for iron shots, medication, needle teeth clipping, tail docking and castration; (2) periodic emptying and scrubbing of the farrowing units; (3) loading and selling the market hogs; and (4) pumping down the manure pits.

The first three can be alleviated by farrowing often and in small groups. In fact, some producers have adopted weekly farrowing so activities can be scheduled on a set day of the week (e.g., sell market hogs on Tuesday, empty and clean nursery on Wednesday; wean, empty and clean farrowing room on Thursday; etc.).

For most managers, however, the "best" solution is some compromise between an all-in, all-out system (which provides disease protection but causes uneven labor demands) and a continuous farrowing system (which smooths out labor needs but poses disease control problems).

Management from Pre-Breeding to Finishing

With a high investment system, great emphasis is placed on those practices which will increase the number of animals that can be "put-through" a set of facilities, the aim being to reduce the building and equipment cost per animal.

Successful high-intensity confinement operators develop and follow a strict schedule of management activities. Usually, target farrowing dates are established first. These determine the breeding schedule. Then all

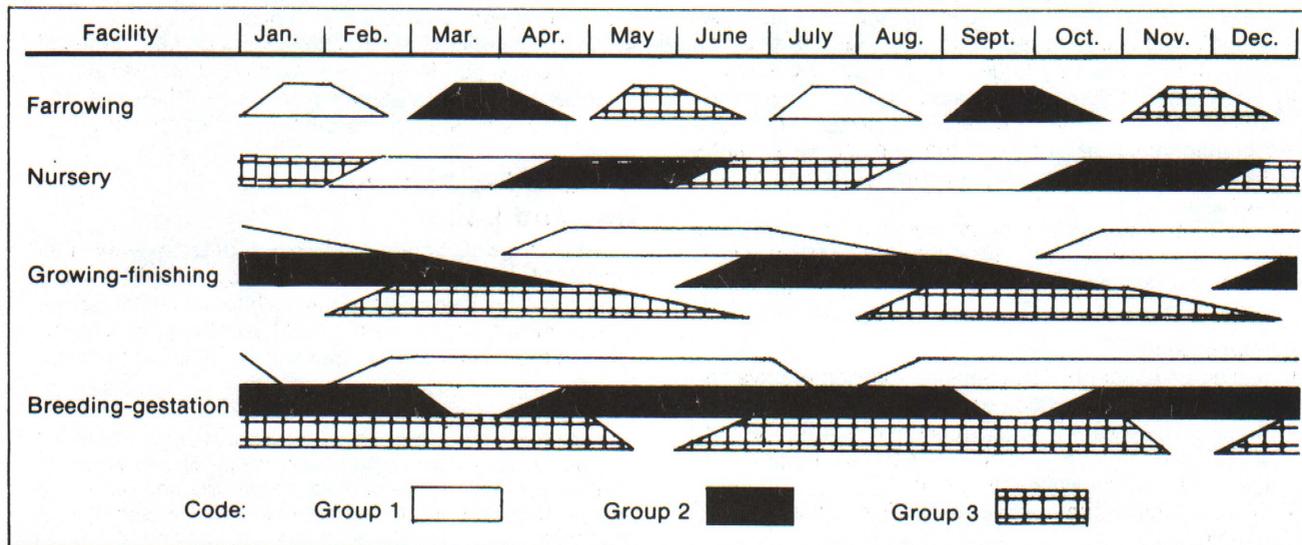


Figure 1. Facility use schedule by sow groups and pigs from these groups.

Table 1. Management calendar for a 150-sow operation.

Stage	Days from breeding	Management practices
Pre-breeding	-30	Co-mingle gilts with sows or provide for fence-line contact; also provide new boars fence-line contact with sows.
	-28 to -14	Vaccinate sows for leptospirosis; also vaccinate for erysipelas, if a problem.
	-14 to -7	Increase feed intake for gilts to 6-7 pounds per gilt per day for 1 to 2 weeks prior to breeding.
	-2	Spray for lice and mange.
Gestation	0	Breed, rotating boars daily.
	21 to 24	Remove boars.
	35 to 60	Pregnancy check, and sell any open females.
	90	Vaccinate sows for erysipelas, if a problem.
	105	Worm sows with a broad-spectrum wormer. Clean the farrowing house.
	108 to 110	Wash sows with warm water and soap, spray for lice and mange, and move to farrowing house; isolate farrowing house from all visitors. Start hand-feeding 3 to 4 pounds per sow per day of a farrowing ration containing 20% wheat bran (or other bulky ingredients) and continue until 2 to 3 days after farrowing.
	112	Prepare auxiliary heat for pigs.
Farrowing-nursery	<u>Days after farrowing</u>	
	0 to 1	Dip navel cord in mild iodine solution. Clip needle teeth. Cut off tails. Ear notch gilts from good litters of 9 or more pigs. Complete the farrowing records, including date, number pigs farrowed, etc. Observe sows for MMA (mastitis, metritis, agalactia).
	1 to 3	Transfer pigs to equalize litters. Give iron shots.
	3 to 14	Castrate males.
	7 to 10	Provide creep feed for pigs.
	14 to 21	Give second iron shot, if needed.
	28 to 42	Wean pigs, group by size and move to nursery.
Growing-finishing	42	Worm pigs with a broad-spectrum wormer, and spray for lice and mange.
	56	Vaccinate pigs for erysipelas, if a problem.
	72	Worm pigs with a wormer other than the one used at 42 days.
	150	Select replacement gilts from those ear-notched at birth.
	150 to 200	Observe withdrawal regulations for feed additives, and market the hogs at 215 to 235 pounds.

other activities are sequenced around breeding and farrowing. Table 1 presents a calendar of management activities for a high-intensity system.

Performance Standards & Production Requirements

Table 2 shows performance minimums for a 150-sow high-intensity confinement enterprise, with estimates of annual production and of needs for feed, labor and buildings. Estimates of total annual feed needed to produce 2,246 market hogs from 150 sows farrowing are given in Table 3.

Facility Needs and Costs

Table 4 lists the facilities required for a 150-sow closed-confinement unit, along with an estimate of their cost when new. The last column is for your 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 two groups—items of 15-year life and items of 8-year life. Table 5 shows the investment cost 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 farrow-to-finish budget (Table 6).

With environmentally controlled, slatted-floor facilities (Table 4, parts A, B, C and E), the manure pit and building shell make up approximately 50% of the total investment. The other half will be the slatted floors, the ventilation, heating, feeding and watering equipment, etc. Therefore, in Table 5 we have recorded as 15-year depreciable-life

Table 2. Performance standards for farrow-to-finish production (high-investment confinement, 150 females, 50 farrow every second month).

Item	Standard	Annual results
Conception rate	Gilts—80% Sows—90%	300 litters
Live pigs farrowed/litter	10	3000 pigs farrowed
Pigs weaned/litter	7.6	2280 pigs weaned
Mortality from weaning to market	1.5%	2246 pigs reaching 220 lbs.
Gilts kept for replacement annually	84	2162 pigs marketed
Rate of gain	220-lb. market animal at 6-7 mo.	5093 cwt. total gain*
Feed conversion (including sow herd)	400 lbs. feed/cwt. gain	1019 tons total feed
Labor use — Total	1.86 hrs/pig	4200 hrs.
Direct	1.46 hrs/pig	3300 hrs.
Building use — Farrowing	46 pigs weaned per year per crate	
Nursery-finishing	1 pig produced yearly for each 2.9 sq. ft. in nursery-finishing quarters	

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

Table 3. Annual feed requirements (breeding herd and pigs) for a 150-sow high-investment system.

Type of feed	Annual amount
Cereal grain	16,576 cwt. (29,600 bu. corn)
Sow supplement	36 tons
Grower-finisher supplement	137 tons
Creep ration	17 tons

items: (a) 50% of the total investment under parts A, B, C and E of Table 4 and (b) 100% of the concrete feeding slab from Part D. Everything else is classified as "equipment" with a shorter depreciable life (8 years) and higher maintenance charge.

Developing a Budget

Listed in Table 6 are estimates of the various items of cost and return for a 150-sow (farrowing) enterprise, and are shown on both a total enterprise and a sow unit basis.

Using the last column, modify the figures in Table 6 to accurately describe your situation.

Income

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 to avoid in-breeding and problems associated with boars that are too large to service first-litter females; hence, a boar depreciation charge (boar purchase minus boar receipts) of \$8.10 per sow yearly or about 54 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 broken into two 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. of oats, or .9 bu. of wheat, or 1.1 bu. of barley.

We have made no charge for land use, even though land is required for the buildings and for the dirt lots where the sows are bred. 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; and a charge for the land at that best-use rate should be made when you adapt Table 6 to your situation.

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.

When developing the figures that describe your situation, remember that the sample budget assumes all facilities (15- and 8-year depreciable items) listed in Tables 4 and 5 must be purchased. On your farm, however, some of the required facilities (e.g., an abandoned barn suitable for conversion to gestation quarters) may already be available, and you may be incurring ownership costs (depreciation, taxes, insurance, etc.) merely because they are there. In estimating the contribution of high-investment confinement hog production to your 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 \$145 per sow unit. On average, the breeding herd was assumed to include 6 boars, 134 sows and 42 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 .4% for insurance.

Table 5. Facility investment by major depreciation classifications.

Depreciable life	For 150 sows		Per sow	
	Our example	Your figures	Our example	Your figures
15 years	\$ 71,340	\$ _____	\$ 475.00	\$ _____
8 years	91,660	_____	610.00	_____
Total	\$163,000	\$ _____	\$1085.00	\$ _____

Table 4. Facilities investment for a 150-sow enterprise (50 females farrowing every other month).*

Item	Size and description	Units needed	Cost per unit	Total investment	Your figures
Part A. Farrowing Facilities — 50 sow, slatted floor unit with underfloor manure storage					
Building (incl. plumbing, wiring, ventilation, heating, slatted floor, 4' deep under-floor manure tank)	23' x 145'	3335 sq. ft.	\$ 14.00	\$46,700.00	\$ _____
Farrowing crates (incl waterer plus sow and creep feeders)		50	155.00	7,750.00	_____
Bulk feed holding bin	3-ton, hopper bottom	1	550.00	550.00	_____
Total				\$55,000.00	\$ _____
Part B. Nursery Facilities — completely slatted and accommodating 400 weaned pigs.					
Building (incl. plumbing, wiring, ventilation, heating, fully slatted floor, 4' deep underfloor manure tank)	32' x 42'	1344 sq. ft.	\$ 9.30	\$12,460.00	\$ _____
Bulk feed holding bin	3-ton, hopper bottom	1	550.00	550.00	_____
Feeders and feed distribution equipment	5-bu. round	14	67.00	940.00	_____
Waterers	Nipple	14	10.00	140.00	_____
Pen partitions	Wood	280 ft.	3.25	910.00	_____
Total				\$15,000.00	\$ _____
Part C. Finishing Facilities — fully slatted, controlled environment					
Building (incl. plumbing, wiring, ventilation, fully slatted floor, 5' deep underfloor manure tank)	34' x 155'	5270 sq. ft.	\$ 8.90	\$46,750.00	\$ _____
Bulk feed holding bins	6 ton, hopper bottom	2	610.00	1,220.00	_____
Feeders and feed distribution equipment	Round, 10 bu.	28	76.00	2,130.00	_____
Waterers	Nipple	28	10.00	280.00	_____
Pen partitions	Wood	715 ft.	3.25	2,320.00	_____
Total				\$52,700.00	\$ _____
Part D. Breeding Facilities — 58 females (14 gilts, 44 sows), portable buildings with permanent dirt lots					
Sow shelters	10' x 14'	5	\$ 360.00	\$ 1,800.00	\$ _____
Feeding fence	Wooden	90 ft.	3.00	270.00	_____
Waterer	2-hole, frost proof	2	135.00	270.00	_____
Concrete feeding slab	7' x 100'	700 sq. ft.	.60	420.00	_____
Fencing	Woven wire	100 rods	9.00	900.00	_____
Total				\$ 3,660.00	\$ _____
Part E. Gestation Facilities — 116 females (28 gilts, 88 sows) partly slatted, open-fronted building					
Building (incl. plumbing, wiring, ventilation, 10' wide slatted section with 6' deep underfloor manure tank)	22' x 95'	2090 sq. ft.	\$ 7.70	\$16,090.00	\$ _____
Bulk feed holding bin	3-ton, hopper bottom	1	550.00	550.00	_____
Feeding system	Auger distribution and automatic floor drop	15	40.00	600.00	_____
Waterers	Nipple	15	10.00	150.00	_____
Pen partitions	Wood	360 ft.	3.25	1,170.00	_____
Heating	Under-floor			580.00	_____
Total				\$19,140.00	\$ _____
Part F. Supporting Equipment**					
Self-contained feed center	20-ton storage and automatic electric mill	1	\$7,000.00	\$ 7,000.00	\$ _____
Feed delivery system	Pneumatic	1	3,000.00	3,000.00	_____
Sprayer-cleaner	High pressure, 500 PSI	1	750.00	750.00	_____
Dead pig incinerator		1	950.00	950.00	_____
Stand-by generator	25 kilowatt	1	2,000.00	2,000.00	_____
Liquid manure spreader	1500-gal. with plow-down attachment	1	3,800.00	3,800.00	_____
Total				\$17,500.00	\$ _____
Part G. Facilities Investment Summary					
Total facilities investment				\$163,000.00	\$ _____
Investment per sow farrowing				1,085.00	_____
Investment per hog produced yearly				72.00	_____

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

**Does not include investment in trucks or tractors. This enterprise is assumed to be part of some larger farming business which owns such equipment. Service of power equipment will be charged to the hogs on an hourly or per mile basis.

Table 6. Estimated budget for a 150-sow high-investment enterprise.

Item	One sow	150 sows	Your figures
A. Income			
1. Market hogs (220 lbs. @ \$34.00/cwt.)	\$1078.00	2162 head = \$161,716.00	\$ _____
2. Sows (425 lbs. @ \$29.00/cwt.)	50.00	60 head = 7,395.00	_____
3. Non-breeding gilts (300 lbs. @ \$32.00/cwt.)	15.00	24 head = 2,304.00	_____
4. Boars (425 lbs. @ \$23.00/cwt.)	4.00	6 head = 585.00	_____
5. Gross income	\$1147.00	\$172,000.00	\$ _____
B. Direct Costs			
1. Feed			
a) Corn equivalent (\$2.00/bu.)	197.3 bu. = \$ 394.60	29,600 bu. = \$ 59,190.00	\$ _____
b) Purchased feed (10¢/lb.)	2533 lbs. = 253.30	190 tons = 38,000.00	_____
c) Total feed	\$ 647.90	\$ 97,190.00	\$ _____
2. Veterinary and medicine	10.00	1,500.00	_____
3. Boar purchase (@ \$300.00)	12.00	6 head = 1,800.00	_____
4. Marketing	27.25	4,080.00	_____
5. Heating fuel	20.00	8500 gal. = 3,000.00	_____
6. Electricity	4.00	600.00	_____
7. Truck and tractor use	6.70	1,000.00	_____
8. Miscellaneous (bedding, supplies)	10.00	1,500.00	_____
9. Total direct costs	\$ 737.85	\$110,670.00	\$ _____
10. Income over direct costs (A.5 - B.9)	\$ 409.00	\$ 61,330.00	\$ _____
C. Overhead Expenses			
1. Investment overhead			
a) 15-year depreciable facilities (15.5%)	\$475* = \$ 73.70	\$71,340* = \$11,055.00	\$ _____
b) 8-year depreciable facilities (21.5%)	\$610* = 131.40	91,660* = 19,710.00	_____
c) Breeding stock (10.4%)	\$145 = 15.00	21,750 = 2,260.00	_____
d) Operating inventory (10.4%)	\$255 = 26.50	38,250 = 3,975.00	_____
e) Total investment overhead	\$ 246.60	\$ 37,000.00	\$ _____
2. Labor (\$3.50/hr.)	28 hrs. = 98.00	4,200 hrs. = 14,700.00	_____
3. Total overhead expenses	\$ 344.60	\$ 51,700.00	\$ _____
D. Summary			
1. Net return to management (B.10-C.3)	\$ 64.40	\$ 9,630.00	\$ _____
2. Per hour return to labor and management		5.80	_____
3. Return on investment (excluding land)		15.8%	_____ %

*From Table 5.

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

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

The two main reasons why you might want to prepare a cash-flow projection are: (1) to show 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 150-sow farrow-to-finish example, the

worst cash flow situation occurs in December of the start-up year, 12 months after launching the enterprise. At this time, the manager must be prepared to cover expenses that exceed receipts by \$63,586 (or approximately \$425 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 over 2 years for the enterprise to digest the start-up expense and the cost of obtaining breeding stock. In the third year, cash flows will become positive with these price and cost assumptions. This is what can be used to reward labor and management and to pay for buildings and equipment. The December cumulative cash-flow figure in Table 8 of \$53,139 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. 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 payments 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 the market-hog producer, the major sources of risk are: poor production performance, a drop in hog prices and a rise in feed ingredient prices.

Table 7. Estimated cash flow for a 150-sow operation—start-up year.

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated Cash Receipts													
16 dry sows (350 lbs. @ \$30.00/cwt.)	\$ 1680									\$ 630		\$ 630	\$ 420
32 non-breeding gilts (300 lbs. @ \$32.00/cwt.)	3072					\$ 960		\$ 960	\$ 960		\$ 960		192
Total estimated cash receipts	\$ 4752					\$ 960		\$ 960	\$ 960	\$ 630	\$ 960	\$ 630	\$ 612
Projected Cash Expenses													
Purchased feed	\$14383	\$ 215	\$ 198	\$ 406	\$ 394	\$ 594	\$ 548	\$ 978	\$ 1200	\$ 1788	\$ 2170	\$ 2738	\$ 3154
Feed grain*	20275	335	306	638	618	944	865	1065	1220	2100	2660	4590	4934
Veterinary and medicine	875						125	125	125	125	125	125	125
Boar purchase (6 @ \$300)	1800	1800											
Gilt purchase (216 @ \$120)	25920	7200		7200		7200		1440		1440		1440	
Marketing	122						24		24	17	24	17	16
Power, fuel and repairs	3253	18	18	36	36	55	55	190	240	400	625	790	790
Insurance and taxes	940	78	78	79	78	78	79	78	78	79	78	78	79
Misc. (bedding & supplies)	770	12	12	25	25	38	38	65	85	100	120	125	125
Total estimated cash expenses	\$68338	\$9658	\$ 612	\$ 8384	\$ 1151	\$ 8909	\$ 1734	\$ 3941	\$ 2972	\$ 6049	\$ 5802	\$ 9903	\$ 9223
Net cash flow, monthly**		(9658)	(612)	(8384)	(1151)	(8909)	(774)	(3941)	(2012)	(5419)	(4842)	(9273)	(8611)
Cumulative cash flow**		(9658)	(10270)	(18654)	(19805)	(28714)	(29488)	(33429)	(35441)	(40860)	(45702)	(54975)	(63586)

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

Table 8. Estimated cash flow for a 150-sow operation—normal operating year.

Item	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Estimated cash receipts													
2162 market hogs (220 lbs. @ \$34.00/cwt.)	\$161716	\$13476	\$13476	\$13477	\$13476	\$13476	\$13477	\$13476	\$13476	\$13477	\$13476	\$13476	\$13477
60 dry sows (425 lbs. @ \$29.00/cwt.)	7395	739	493	740	493	739	493	740	493	739	493	740	493
24 non-breeding gilts (300 lbs. @ \$32.00/cwt.)	2304		384		384		384		384		384		384
6 boars (425 lbs. @ \$23.00/cwt.)	585										585		
Total estimated cash receipts	\$172000	\$14215	\$14353	\$14217	\$14353	\$14215	\$14354	\$14216	\$14353	\$14216	\$14938	\$14216	\$14354
Estimated cash expenses													
Purchased feed	38000	3166	3167	3167	3166	3167	3167	3166	3167	3167	3166	3167	3167
Feed grain*	59190	4932	4933	4932	4933	4932	4933	4932	4933	4932	4933	4932	4933
Veterinary and medicine	1500	125	125	125	125	125	125	125	125	125	125	125	125
Boar purchase (6 @ \$300)	1800									1800			
Marketing	4080	337	340	337	340	337	340	337	340	336	360	336	340
Heating fuel (8500 gal.)	3000	465	435	435	360	240	120	45	45	45	120	270	420
Electricity	600	50	50	50	50	50	50	50	50	50	50	50	50
Truck and tractor use	1000	83	83	84	83	83	84	83	83	84	83	83	84
Repairs and maintenance	4725	355	355	355	355	355	510	510	510	355	355	355	355
Insurance and taxes	3466					1263	940					1263	
Misc. (bedding & supplies)	1500	125	125	125	125	125	125	125	125	125	125	125	125
Total estimated cash expenses	\$118861	\$ 9638	\$ 9613	\$ 9610	\$ 9537	\$10677	\$10394	\$ 9373	\$ 9378	\$11019	\$ 9317	\$10706	\$ 9599
Net monthly cash flow (normal year)**		4577	4740	4607	4816	3538	3960	4843	4975	3197	5621	3510	4755
Cumulative cash flow (normal year)**		4577	9317	13924	18740	22278	26238	31081	36056	39253	44874	48384	53139
Cumulative cash flow (from start-up in Table 7)		(59009)	(54269)	(49662)	(44846)	(41308)	(37348)	(32505)	(27530)	(24333)	(18712)	(15202)	(10447)

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

Table 9. Estimated returns above cash costs over a range of market hog prices and production rates for a 150-sow enterprise.

Market hog price		Animal performance level		
		High	Medium	Low
High	(\$41)	\$98,274	\$88,554	\$78,834
Average	(\$34)	62,859	53,139	43,419
Low	(\$27)	27,444	17,724	8,004

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 closed-confinement 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 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 average 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 one low price year, one high price year and two years of average prices.

Table 10. Estimated returns to labor and management over a range of market hog prices and production rates for a 150-sow enterprise.

Market hog price		Animal performance level		
		High	Medium	Low
High	(\$41)	\$69,465	\$59,745	\$50,025
Average	(\$34)	34,050	24,330	14,610
Low	(\$27)	-1,365	-11,085	-20,805

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 represents approximately 60% of total production cost of a high-investment, high-intensity system. To produce 100 lb. of live-weight gain requires 325 lb. of cereal grain (5.8 bu. of corn) and 75 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 \$20-per-ton increase in the price of purchased feeds adds 75 cents to your break-even price.