



pork industry handbook

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Pork Production Systems with Business Analyses The High-Investment, High-Intensity System (Continuous Farrowing with 21 Groups of Sows, Farrow-to-Finish)

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Continuous Group Farrowing System

This farrow-to-finish production system is a very intensive system in terms of frequency of use of buildings. The illustration used in this fact sheet is 21 groups of 24 sows per group (504 sows). It is a highly specialized production program in which all functions of pork production and marketing take place each week. It is characterized as a highly capitalized, low labor, intensively managed unit with specialized buildings using sophisticated equipment and automation. It is used where the business of producing pork is the primary, and most frequently, the only objective. Obviously, this is a long-term commitment to produce pork. The manager is frequently hired or may be an owner or stockholder. Usually the employees have specialized assignments - i.e., farrowing-nursery, breeding-feed processing, or growing-finishing-marketing. A unit of this size (504 sows) will require four or five employees, one of whom is a working manager.

Advantages

1. Low labor requirements per pig produced, allows high productivity per employee.
2. Allows intensive use of capital investment.
3. Hogs are marketed more frequently which spreads out income and reduces market risk.
4. Improved marketing opportunities because of constant flow of consistent quality hogs.

5. Per pig boar costs are lower due to heavy use of boars.
6. Allows labor to be specialized in production function.
7. Easier to reward labor for specific job based on incentive.
8. Sows and gilts are easily added into a production schedule since essentially continuous breeding permits females to be bred any time they cycle.
9. This system allows for a more constant environment, regardless of weather, and should result in more efficient production.

Disadvantages

1. Requires a large capital outlay.
2. Results in a large negative cash flow during construction and start-up phase.
3. Requires skilled labor which is often difficult to obtain and more difficult to keep.
4. High-investment systems have little economic flexibility to change the size of the production unit with changes in cost of inputs and outputs.
5. System is highly dependent on mechanical devices for maintaining the necessary environment. Skill in maintenance must be available.

6. This system has a high energy requirement and energy saving devices or alternate energy sources should be considered in design and construction.
7. Sufficient land must be available to dispose of the large amount of waste. Actual land requirements will vary with type of waste management system used.

Design for Continuous Group Farrowing

Physical Facilities

Because of the intensity with which all facilities are used, careful attention should be directed to building design and layout to facilitate efficient flow of feed, hogs and waste and to minimize physical and environmental stress on the animals. Each structure or compartment within a given structure should be designed to do a specific job effectively (i.e., farrowing, weaning, etc.). As with other intensive systems, these units should be constructed so that "all-in, all-out" management practices can be used throughout the system.

Breeding and Production Schedule

Since farrowing will occur each week, breeding must take place each week also. This greatly simplifies the problems associated with less intensive systems where sows are kept in groups with periods when breeding is not permitted. However, one specific management hazard with all intensive systems is the opportunity for gilts and sows to get into the replacement "pool" and get lost. This has resulted in rather extended intervals between litters for some sows. Another hazard of this "pool" principle is the danger of carry-over sows and non-breeders concentrating into a group of "hard-breeders". A group of this nature will often have a conception rate of less than 50%. Sows or gilts that fail to conceive after two matings to fertile boars should be culled. One way to avoid the carry-over problem in the pool would be to have one or more pens of replacement females from which matings can occur for 30 days. Any unbred females left in these pens after 30 days would be sent to slaughter. Additional replacements selected during this 30-day period would be held in another set of pens from which matings would be made during the next 30 days. All mated females not returning to heat should be pregnancy-checked at approximately 35 days after mating.

As with any intensive system, sufficient replacement gilts must be available to replace all the sows that are culled so that a full farrowing group is assured each time. These gilts need to be well developed, sound, and from a productive maternal line. They can be produced by a specialized within-herd crossing program or they can be purchased from others who specialize in gilt production.

Developing a breeding-farrowing schedule for a continuous group farrowing program is relatively simple since all phases of production and marketing take place each week. However, it is one of the more difficult systems to manage since the flow of animals from one point to another at the proper time is critical. There is little time flexibility built into the schedule.

Continuous group farrowing can be planned for an approximate weaning age of 3 or 4 weeks. For the 4 week weaning, 21 sow groups are required with 5 farrowing rooms. For the 3 week weaning, 20 sow groups are needed but only 4 farrowing rooms. However, an ideal nursery environment is necessary to wean successfully at 3 weeks.

A 4 week weaning schedule allows sows to be in the farrowing house 4 days before farrowing starts, plus 29 days for the oldest pigs and 1 or 2 days of clean-up time. There would be no additional down time. If producers use

a continuous group farrowing program with 6 farrowing areas in order to wean at 4 weeks, this will allow for an additional week of down time. This does not make maximum use of the farrowing house, although it does provide some management flexibility as far as the time available for emptying each farrowing room and cleaning and disinfecting before refilling with the next group of sows.

Obviously, to maximize production efficiency in an intensive system such as this, a complete record system will be mandatory. Because of the volume of data that will be generated, a computerized system would be especially helpful. Whatever record system is used, however, it must be able to track individual breeding animals and provide regular updated summaries for each sow, each boar, each farrowing group, and for the total herd. Farrowing rates, litter sizes, survival rates, growth rates, feed efficiencies, market weights, etc. must be available and studied regularly. Performance charts can be very helpful in making production analyses. While the use of records will not guarantee success, the absence of records will essentially guarantee failure.

Production Schedule and Facility Requirements

Table 1 illustrates a production schedule for continuous farrowing. Five farrowing rooms, five nursery rooms, and growing-finishing facilities for the production of seventeen farrowing groups are required. Some variation in these basic requirements is possible, as noted in the table footnotes.

The facilities shown in Table 2 correspond to this production schedule and are specifically designed to handle 504 sows and 25 boars on a weekly farrowing schedule. Twenty-one groups of 24 sows are maintained with 24 bred each week to fill one of the five 20-stall farrowing houses. If more than 20 sows conceive, piglets from the smaller litters can be combined to provide space for the additional sows.

Cost of facilities may vary considerably in various parts of the country. Some producers might be able to cut the initial cash expense by performing some or all of the construction, supervision, and labor.

Daily labor demands throughout the week are distributed as shown in Table 3. This table illustrates one of the advantages of continuous breeding and farrowing; namely, uniform distribution of labor demands over time. Because continuous farrowing units tend to be "large" scale operations with several full-time employees, it permits specialization among the work force. One individual can be responsible for farrowing, another responsible for managing the breeding, etc.

Estimating an Annual Budget

Income and costs will vary across locations and over time. Prospective investors should prepare budgets using the prices that apply to their specific situation. The estimated annual budget (Table 4) for 1040 litters from 504 sows involves 21 groups of 24 sows with an 83% farrowing rate. The overall feed conversion is 3.5 pounds of feed per pound of hog produced. A high level of management should result in a feed conversion at least as favorable as this. Care should be taken to maintain a healthy herd, prevent feed waste at the feeders and select top quality breeding stock.

Income

The income used in the estimated budget (Table 4) is based on selling 230 lb. market hogs for an average of \$47 per cwt. Assuming 1040 litters with 8.73 pigs finished per litter yields 9081 market hogs per year. Of these, 235 were kept as replacements. Twenty-four gilts failed to set-

Table 1. Continuous group farrowing production schedule (expressed as day-of-year).

| Sow group | Begin breeding | Into far. house | Far. room | Wean, move to nursery | Nur.* room | Move to grower-finisher** | Sell by*** |
|-----------|----------------|-----------------|-----------|-----------------------|------------|---------------------------|------------|
| 1 | 0 | 110 | A | 143 | A | 177 | 296 |
| 2 | 7 | 117 | B | 150 | B | 184 | 303 |
| 3 | 14 | 124 | C | 157 | C | 191 | 310 |
| 4 | 21 | 131 | D | 164 | D | 198 | 317 |
| 5 | 28 | 138 | E | 171 | E | 205 | 324 |
| 6 | 35 | 145 | A | 178 | A | 212 | 331 |
| 7 | 42 | 152 | B | 185 | B | 219 | 338 |
| 8 | 49 | 159 | C | 192 | C | 226 | 345 |
| 9 | 56 | 166 | D | 199 | D | 233 | 352 |
| 10 | 63 | 173 | E | 206 | E | 240 | 359 |
| 11 | 70 | 180 | A | 213 | A | 247 | 366 |
| 12 | 77 | 187 | B | 220 | B | 254 | 373 |
| 13 | 84 | 194 | C | 227 | C | 261 | 380 |
| 14 | 91 | 201 | D | 234 | D | 268 | 387 |
| 15 | 98 | 208 | E | 241 | E | 275 | 394 |
| 16 | 105 | 215 | A | 248 | A | 282 | 401 |
| 17 | 112 | 222 | B | 255 | B | 289 | 408 |
| 18 | 119 | 229 | C | 262 | C | 296 | 415 |
| 19 | 126 | 236 | D | 269 | D | 303 | 422 |
| 20 | 133 | 243 | E | 276 | E | 310 | 429 |
| 21 | 140 | 250 | A | 283 | A | 317 | 436 |
| 1**** | 147 | 257 | B | 290 | B | 324 | 443 |

*With 5 nursery rooms oldest pigs are 63 days old when transferred to grower-finisher. If older or younger pigs are desired for this move, appropriate changes must be made in the capacity of the nursery and the capacity of the grower-finisher.

**Single or multiple growth stage facilities. However arranged, total capacity must hold fourteen weeks of production.

***Oldest pigs in each group are approximately 182 days of age (296 minus 114) when marketed.

****Repeat sequence starting over with sow group 1.

Table 2. Facilities investment for continuous group farrowing 504 sows.

| Facility | Years of life | Size and Description | Cost | Your figures |
|----------------------------------|---------------|--|--------------------|--------------|
| 5 Farrowing rooms | 15 | 20 stalls each, controlled environment | \$120,995 | _____ |
| 5 Farrowing rooms equipment | 8 | Farrowing crates, ventilation, heating, creep feeders, etc. | 51,855 | _____ |
| 5 Nursery rooms | 15 | 20 pens, controlled environment | 58,189 | _____ |
| 5 Nursery rooms equipment | 8 | Pens, feeders, & waterers | 83,735 | _____ |
| Sow confinement & breeding | 15 | 354 sows, 50 replacement gilts, & 25 boars - free stall & flush gutter | 153,291 | _____ |
| Feeding floor | 15 | 2975 head capacity | 214,712 | _____ |
| Feeding floor equipment | 8 | Feeders, waterers, feed distribution and ventilation | 92,023 | _____ |
| Feed bins | 15 | 13 bins | 12,780 | _____ |
| Waste system | 15 | Lagoons | 22,918 | _____ |
| Waste handling | 8 | Irrigation or tank | 24,000 | _____ |
| Truck | 8 | 2 1/2 tons | 22,000 | _____ |
| Pickup truck | 8 | 3/4 ton | 11,000 | _____ |
| Incinerator | 8 | | 1,201 | _____ |
| Generator | 8 | | 11,960 | _____ |
| Basic facilities subtotal | | | \$880,659 | _____ |
| Mill building | 15 | 400 square feet | 4,189 | _____ |
| Feed mill | 8 | Mill & augers | 21,600 | _____ |
| Grain storage and Elevator legs | 15 | 70,000 bu. capacity (2/3 of annual needs) | 84,000 | _____ |
| Feed mill subtotal | | | \$109,789 | _____ |
| Breeding stock sows and gilts | | 504 head @ \$150 | 75,600 | _____ |
| boars | | 25 head @ \$575 | 14,375 | _____ |
| Subtotal 8 yr. property | | | \$319,374 | _____ |
| Subtotal 15 yr. property | | | 671,074 | _____ |
| Subtotal breeding stock | | | 89,975 | _____ |
| TOTAL INVESTMENT | | | \$1,080,423 | _____ |

tle and were sold at 300 pounds for \$42 per cwt. The remaining 211 gilts replaced 201 cull sows that were sold and 10 sows that died.

Boars are kept an average of about 2 years with one death loss and 11 cull boars sold each year.

Direct Operating Costs

About 80% of direct operating cost is for feed. Corn is valued at \$2.65 per bu. and soybean meal is valued at \$225 per ton. Creep feed is valued at \$15 per cwt. and vitamin-mineral premix is valued at \$17 per cwt. Annual repair costs are included in the miscellaneous category.

Table 3. Workload distribution, continuous group farrowing.

| Activity | Days required | | | | | | |
|--------------------------------------|---------------|-------|------|--------|------|------|------|
| | Mon. | Tues. | Wed. | Thurs. | Fri. | Sat. | Sun. |
| Wean, move sows & pigs | | | | X | | | |
| Breed | X | X | X | X | X | | |
| Clean farrowing house | | | | X | X | | |
| Load farrowing house | | | | | X or | X | |
| Farrow* | | | X | X | X | X | X |
| Move sows from breeding to gestation | | | X | | | | |
| Empty and clean nursery | | X | X | | | | |
| Sell hogs | X | X | X | X | X | | |

*This workload distribution can be altered significantly by the use of induced farrowing.

Table 4. Estimated annual budget for 1040 litter (504 Sow) operation.

| Item | Price | Units | Amount | Value 504 sows | Your figures |
|---|----------|--------|-------------|----------------|--------------|
| A. Income | | | | | |
| 1. Market hogs @ 230 lbs. | \$47.00 | cwt. | 20,346 | \$956,260 | _____ |
| 2. Cull sows @ 425 lbs. | 38.00 | cwt. | 854 | 32,462 | _____ |
| 3. Cull gilts @ 300 lbs. | 42.00 | cwt. | 72 | 3,024 | _____ |
| 4. Cull boars @ 500 lbs. | 30.00 | cwt. | 55 | 1,650 | _____ |
| 5. Gross income | \$46.58 | cwt. | 21,327 | \$993,396 | _____ |
| B. Direct costs | | | | | |
| 1. Feed | | | | | |
| a. Corn | \$ 2.65 | bu. | 103,446 | \$274,133 | _____ |
| b. Soybean meal | 11.25 | cwt. | 11,948 | 134,419 | _____ |
| c. Premix | 17.00 | cwt. | 2,855 | 48,534 | _____ |
| d. Creep feed | 15.00 | cwt. | 1,680 | 25,197 | _____ |
| e. Feed additives | 125.00 | cwt. | 131 | 16,375 | _____ |
| f. Total feed | \$ 6.694 | cwt. | 74,544 | \$498,658 | _____ |
| 2. Vet. & medication | 1.50 | hd. | 9,081 | 13,661 | _____ |
| 3. Electricity & fuel | 28.53 | litter | 1,040 | 29,670 | _____ |
| 4. Marketing & truck expense | 2.46 | hd. | 9,081 | 22,337 | _____ |
| 5. Miscellaneous | 63.70 | sow | 504 | 32,102 | _____ |
| 6. Boar purchase | 575.00 | hd. | 12 | 6,900 | _____ |
| 7. Total direct costs | \$ 28.29 | cwt. | 21,327 | \$603,328 | _____ |
| C. Overhead expenses | | | | | |
| 1. Investment overhead | | | | | |
| a. Facilities (15 Year Life) | 16.18% | | \$671,074 | \$108,580 | _____ |
| b. Facilities (8 Year Life) | 21.63% | | 319,374 | 69,081 | _____ |
| c. Breeding stock | 12.00% | | 89,975 | 10,797 | _____ |
| d. Interest on stored corn (40% of annual use) | 12.00% | | 109,653 | 13,158 | _____ |
| e. Interest on market hog inventory | 12.00% | | 404,832 | 48,580 | _____ |
| f. Total investment overhead | 15.69% | | \$1,594,908 | \$250,196 | _____ |
| 2. Labor | \$6.00 | hrs. | 10,000 | 60,000 | _____ |
| 3. Total overhead expenses | \$14.54 | cwt. | 21,327 | \$310,196 | _____ |
| D. Summary | | | | | |
| 1. Net return to land & management | \$3.759 | cwt. | 21,327 | \$79,873 | _____ |
| 2. Return on investment excluding land and management | 12.49% | | | | _____ |

Overhead Expenses

The cost of property taxes, property insurance, interest on investment including swine inventory, stored corn, depreciation of capital items and labor make up the overhead costs in the budget. Labor is valued at \$6.00 per hour. Facility overhead costs include 1.5% property insurance and taxes, and annual interest and depreciation (amortization) factors of 14.68% on property with 15 years of expected life and 20.13% on property with 8 years of expected life. Annual interest cost on swine inventory is calculated as 12% of \$89,975 invested in breeding stock plus 12% of \$404,832 invested in market hog inventory (calculated as the average amount of costs tied up in growing pig inventory on any day of the year).

Annual interest on the stored corn is calculated as 12% of the value of \$109,653 (the value of 40% of annual corn purchases).

Summary Calculations

Net return to land and management is the amount of income left after all direct costs and overhead costs including labor have been paid.

In calculating "return on investment excluding land", \$31,302 was charged for management (3% of gross income) and land (\$1500 annual rent). Depreciation was calculated as 1/15 times the amount invested in 15 year property plus 1/8 of investment in 8 year property. Property tax and insurance were calculated as 1.5% of invest-

ment in 15 and 8 year property. All direct costs plus labor were included as shown in the budget. The calculation was as follows:

\$ 79,873 returns to land and management
- 31,302 land and management allowance

\$ 48,571 net profit
+ 250,196 investment overhead
- 84,660 depreciation
- 14,857 property tax and insurance

\$ 199,250 returns on total investment

Dividing \$199,250 by \$1,594,908 equals 12.498% return on total investment. This is after repairs, depreciation, property tax and insurance have been paid.

Estimating Monthly Cash Flow

The estimated monthly cash flow (Table 5) is for a beginning operation purchasing the first group of gilts (approximately 5.5 months of age) on the first of August. The first group is bred at the end of September. Feed is assumed purchased as it is fed during the first year. This gives an accurate account of feed consumed but it may not coincide with the timing of actual feed purchases. With grain storage facilities and a feed mill, a producer would probably purchase most of the grain needed for the first year in September and October.

Gilt and boar purchases and labor are included in the cash flow to provide a better estimate of when cash will be required. Interest and principal payments on itemized long-term debt are included in the first year's cash flow. Since there is no positive cash flow from which to make those payments, operating loans are used to finance the deficit.

The cumulative cash flow shows the greatest deficit (\$474,072 plus \$20,735 in accrued interest) during the twelfth month when the first mortgage payment is made. This cash deficit is approximately offset by the investment in swine inventory which reaches full capacity in the eleventh month. The sale of market hogs begins in the middle of June. Therefore, only half as many are sold in June as are sold in each month thereafter. Under this multiple farrowing system, about 170 market hogs are sold each week.

A cash flow for an ongoing operation would be of value primarily to indicate monthly cash receipts and

expenses since no operating deficit should occur. A cash flow for an ongoing operation is useful in scheduling debt payments and capital expenses that may otherwise result in overall cash deficits in particular months.

During the second and later years of this 504 sow operation, regular cash receipts should exceed cash expenses including labor, property tax and insurance, and boar replacement by \$315,211 (based on Table 4). This is equivalent to a monthly net cash flow of \$26,268. Cumulative net cash flow (assuming a \$162,804 annual mortgage payment and excluding income tax) is expected to reach \$0 and turn positive 35 months after the end of the first year or 47 months after the first gilts were purchased. An additional operating loan is required to make the mortgage payment in the 48th month. Mortgage payments in the fifth and subsequent years can be made from internal cash flow.

Effects of Production Performance

Reducing the overall feed conversion from 3.5 to 3.4 lb. of feed per lb. of swine sold reduces the feed bill by \$13,787. Thus, each decrease of 0.1 lb. feed per lb. sold increases net return to management and land by \$13,787. Each additional market hog sold increases gross income by \$103.50 and increases net returns to land and management by \$53.34. A decrease of 1 market hog sold per litter decreases net returns to management and land by \$55,470 (1040 x \$53.34). Increasing average market weight from 230 to 240 pounds increases net returns by \$15,325 including the cost of additional finishing floor capacity.

Effects of Market Prices

Each \$1.00 per cwt. change in the average price received for hogs changes the expected net returns by \$21,327. Based on these figures, with corn at \$2.65 per bu. and soybean meal at \$11.25 per cwt., a market hog price of \$44.61 (or an average price of \$44.30 per cwt. of all swine sold) is needed to pay total costs including land rent and management. This is with an overall feed conversion of 3.5 lb. of feed per lb. of swine sold and with all other costs as shown in the preceding budget (Table 4). Each \$0.10 per bu. increase in corn price reduces net returns by \$10,345. Each \$0.10 per cwt. increase in soybean meal price reduces net returns by \$1,195. An increase of \$1.00 per hour in average wage rate reduces net returns by \$10,000. A decrease from 12% to 11% in interest rate increases net returns by \$13,447.

Table 5. Cash flow for 1040 litter (504 sow) first year's operation (buying gilts August 1).

| Item | Total | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | March | April | May | June | July |
|---|-----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Estimated cash receipts | | | | | | | | | | | | | |
| 1021 market hogs (230 lbs. @ \$47/cwt.) | 110,370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36,754 | 73,616 |
| 33 cull gilts (300 lbs. @ \$42/cwt.) | 4,158 | 504 | 504 | 504 | 504 | 630 | 504 | 126 | 252 | 126 | 126 | 126 | 252 |
| 119 cull sows (425 lbs. @ \$38/cwt.) | 19,219 | 0 | 0 | 485 | 485 | 646 | 808 | 2,584 | 3,230 | 2,423 | 2,584 | 3,392 | 2,584 |
| 8 cull boars (500 lbs. @ \$30/cwt.) | 1,200 | 0 | 150 | 150 | 0 | 0 | 150 | 150 | 150 | 0 | 150 | 150 | 150 |
| Total estimated cash receipts | 134,947 | 504 | 654 | 1,139 | 989 | 1,276 | 1,462 | 2,860 | 3,632 | 2,549 | 2,860 | 40,422 | 76,602 |
| Estimated cash expenses | | | | | | | | | | | | | |
| Sow and boar feed | 49,864 | 1,097 | 1,965 | 2,793 | 3,559 | 5,479 | 4,670 | 4,664 | 5,819 | 4,661 | 4,666 | 5,833 | 4,658 |
| Pig creep feed | 11,646 | 0 | 0 | 0 | 0 | 0 | 97 | 1,050 | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 |
| Pig feed 18% starter | 23,477 | 0 | 0 | 0 | 0 | 0 | 0 | 3,276 | 3,848 | 3,848 | 4,810 | 3,848 | 3,848 |
| Pig feed 16% grower | 47,961 | 0 | 0 | 0 | 0 | 0 | 0 | 167 | 4,002 | 9,159 | 13,320 | 10,656 | 10,657 |
| Hog feed 14% finisher | 33,746 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 211 | 7,388 | 12,653 | 13,494 |
| Feed additives | 6,330 | 150 | 175 | 200 | 200 | 225 | 225 | 250 | 475 | 750 | 950 | 1,365 | 1,365 |
| Electricity & fuel | 21,760 | 960 | 1,200 | 1,200 | 1,200 | 1,400 | 1,900 | 2,100 | 2,200 | 2,400 | 2,400 | 2,400 | 2,400 |
| Vet. & medication | 7,430 | 200 | 200 | 200 | 300 | 400 | 550 | 550 | 750 | 950 | 1,050 | 1,140 | 1,140 |
| Repairs | 14,865 | 400 | 600 | 800 | 1,050 | 1,150 | 1,250 | 1,350 | 1,450 | 1,550 | 1,650 | 1,750 | 1,865 |
| Truck expenses | 12,070 | 500 | 500 | 500 | 500 | 500 | 750 | 1,000 | 1,200 | 1,400 | 1,500 | 1,860 | 1,860 |
| Insurance and taxes | 14,855 | 495 | 495 | 495 | 495 | 495 | 495 | 495 | 495 | 495 | 495 | 495 | 495 |
| Miscellaneous | 9,666 | 800 | 800 | 800 | 800 | 800 | 800 | 811 | 811 | 811 | 811 | 811 | 811 |
| Total estimated cash | 253,670 | 4,602 | 5,935 | 6,988 | 8,104 | 10,449 | 10,737 | 15,713 | 23,150 | 28,335 | 41,140 | 44,911 | 53,608 |
| Operating expenses | | | | | | | | | | | | | |
| Breeding stock purchases | 19,550 | 14,375 | 575 | 0 | 0 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 |
| Boars @ \$575/head | 126,800 | 27,000 | 20,400 | 20,000 | 18,400 | 19,400 | 3,600 | 3,600 | 4,400 | 3,600 | 3,600 | 2,800 | 0 |
| Gilts @ \$200/head | 46,195 | 3,085 | 3,085 | 3,085 | 3,085 | 3,085 | 3,600 | 3,600 | 4,285 | 4,285 | 5,000 | 5,000 | 5,000 |
| Labor | | | | | | | | | | | | | |
| Inter./long term loan payments: | | | | | | | | | | | | | |
| - principal | 43,950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43,950 |
| - interest | 118,854 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118,854 |
| Net monthly cash flow | (474,072) | (48,558) | (29,341) | (28,935) | (28,601) | (32,233) | (17,050) | (20,627) | (28,778) | (34,246) | (47,455) | (12,864) | (145,358) |
| Cumulative cash flow | (474,072) | (48,558) | (77,899) | (106,834) | (135,435) | (167,668) | (184,717) | (205,344) | (234,122) | (268,368) | (315,823) | (328,687) | (474,072) |
| Ending loan balances | | | | | | | | | | | | | |
| Operating loans | 474,072 | 48,558 | 77,899 | 106,834 | 135,435 | 167,668 | 184,717 | 205,334 | 234,122 | 268,368 | 315,823 | 328,687 | 474,072 |
| Accrued int. on op. loan | 20,735 | 0 | 486 | 1,265 | 2,333 | 3,687 | 5,364 | 7,211 | 9,265 | 11,606 | 14,289 | 17,448 | 20,735 |
| Int./long term loans | 946,498 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 990,448 | 946,498 |
| Total debt | 1441305 | 1039006 | 1069932 | 1098546 | 1128216 | 1161803 | 1180529 | 1203003 | 1233853 | 1270422 | 1320561 | 1336583 | 1441305 |



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