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Pork Production Systems with Business Analyses: Feeding Purchased Pigs

Michigan State University

Cooperative Extension Service

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February 1987

8 pages

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# pork industry handbook

COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

## Pork Production Systems with Business Analyses Feeding Purchased Pigs

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### Feeding Purchased Pigs . . . What It Is and Where It Fits

This pork production system involves buying young pigs (usually around 40-60 lb. each) and feeding them to market weight. Whereas sow herd enterprises are often organized to use a minimum of purchased inputs, this one is dramatically different in that it calls for major cash outlays for the purchase of pigs.

Since feeder pigs sell for about twice as much per pound as do market hogs, cost of the purchased pigs represents approximately 40% of total production expenses. Consequently, a feeder pig finishing enterprise requires rather large sums of operating capital and involves considerable financial risk.

This system is usually well suited to the producer who fits the following description:

1. He is short of labor and the husbandry skills needed to manage a sow herd, but does have feed grain he wants to market through livestock (as would often be the case on large, well-capitalized grain farms).
2. He is skilled in buying and selling and is willing to invest sufficient time to keep on top of the markets.
3. He is able either to withstand periods of financial loss or to somehow "insure" himself against such losses. Some common forms of "insurance" (discussed in the next section) are no-loss contracts, price averaging or hedging in the futures market.

### Advantages

- Although capital requirements are high, the rate of capital turnover is relatively fast compared to farrow-to-finish operations. For instance, the period from start-up to first pay check is approximately a year with sow herds but only about 4 months with purchased pigs.
- Since the producer is starting with well-established (40-60 lb.) pigs, he avoids the high labor period of hog

production and the demanding management problems associated with breeding herds and new-born pigs.

- This enterprise permits a feed grain producer to expand his business by processing his grain through hogs while retaining the fertilizer value of the manure.
- The "penalty" for halting production is relatively modest with this enterprise. The only certain loss associated with shutting down is the continuing ownership cost of idle buildings and equipment. This is in contrast with the sow herd operator who upon shut-down may face serious problems in replacing breeding stock and a long start-up period.

### Disadvantages

- There are significant expenses associated with buying feeder pigs that certainly will include a transportation charge and may include charges for commission, yardage and shrinkage. In a typical situation, these costs might be expected to average \$1.50 per pig.
- There is also some production "penalty" for purchased feeder pigs. When young pigs are assembled from various sources, co-mingled and sorted before shipment to their final home, genetic uniformity will be lacking and the threat of disease multiplies.
- The price of feeder pigs is highly variable and is influenced by current market hog prices. Therefore, while profits from feeding purchased pigs are likely to be quite favorable in a period of rising market hog prices, losses may likewise be multiplied in a period of falling prices.

### Types of "Risk Insurance"

No-loss contracts, price averaging and futures market hedging are types of "insurance" that may help relatively small, under-capitalized producers to enter the feeder pig finishing business by reducing the threat of



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Issued in furtherance of Cooperative Extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. W.J. Moline, Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

19.41.07

2:87-2M-Reprint-SDC/MP-Price: 40 cents.

bankruptcy. Such "insurance" can also enhance the borrowing potential of an aggressive operator; for instance, he can use hedging as a tool to reassure his credit sources, then utilize that credit to expand and thereby gain the buying and selling efficiencies that come with increased volume.

Following is a brief mention of the 3 common forms of "insurance" used in hog finishing enterprises.

### No-Loss Contract

Under this arrangement, the finisher provides housing, equipment, labor and utilities in return for a guaranteed payment (commonly 2-3 cents per pound of gain). The contractor furnishes the pigs, feed and medication, and assumes all risk.

### Price Averaging

Here the finisher establishes a source of clean, healthy pigs, buys them on a continuing basis (probably at 4-8-week intervals), then sells the market hogs monthly (or oftener), settling for the average price and margin.

### Hedging in the Futures Market

This is an "insurance" program whereby the operator sells futures contracts when buying his feeder pigs, then buys back those contracts when selling his market hogs. For more complete insurance, he can also hedge his

supply of major feed ingredients (usually corn and soybean meal).

## Acquiring Feeder Pigs . . . When, Where and How

The key to success in a feeder pig finishing enterprise is to acquire pigs at those times when opportunity for profit is favorable. Over a hog cycle, profit prospects are best when the price of market animals is rising. Within a given year, profits will likely be higher for pigs purchased in fall and early winter to be fed into a seasonally rising market than for spring-or summer-purchased pigs.

As important as *when* to acquire purchased pigs is the matter of *where* and *how*. The 3 common methods of securing pigs are: open-market purchase, contracting and feeder pig co-ops. Following is a brief description of each.

### Open-Market Purchase of Feeder Pigs

The advantages of open-market purchase are that: (1) decisions concerning when to buy pigs and how many to buy rest with the finisher, and (2) bargains may appear in the feeder pig market which can be exploited. When buying on the open market, decisions must constantly be made as to timing of purchases, weight and quality of pigs, and price. As a basis for right decisions, we recommend preparation of a *bidding schedule*.

**Table 1. Worksheet for determining bid prices for feeder pigs of various weights (per-head basis).**

| Item                                      | Example*<br>50-lb. pigs | Your figures for pigs purchased at— |         |         |         |         |         |         |          |  |
|-------------------------------------------|-------------------------|-------------------------------------|---------|---------|---------|---------|---------|---------|----------|--|
|                                           |                         | 30 lbs.                             | 40 lbs. | 50 lbs. | 60 lbs. | 70 lbs. | 80 lbs. | 90 lbs. | 100 lbs. |  |
| Target market date (from Table 2)         | May 1                   | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| <b>A. Expected income</b>                 |                         |                                     |         |         |         |         |         |         |          |  |
| 1. Expected price                         | 34¢                     | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 2. Market weight                          | 220 lbs.                | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 3. Livability                             | 97 pct.                 | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 4. Gross returns/pig<br>(A.1 X A.2 X A.3) | \$72.56                 | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| <b>B. Variable costs</b>                  |                         |                                     |         |         |         |         |         |         |          |  |
| 1. Feed grain (from Table 3)<br>(\$2/bu.) | \$18.60<br>(9.3 bu.)    | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 2. Supplement (from Table 3)<br>(10¢/lb.) | \$10.40<br>(104 lbs.)   | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 3. Other variable costs**                 | \$ 7.11                 | (8.80)                              | (7.70)  | (7.11)  | (6.73)  | (6.44)  | (6.15)  | (5.85)  | (5.58)   |  |
| <b>C. Opportunity costed items</b>        |                         |                                     |         |         |         |         |         |         |          |  |
| 1. Labor (\$3.50/hour)***<br>(.8 hr.)     | \$ 2.80<br>(.8 hr.)     | (3.50)                              | (3.05)  | (2.80)  | (2.65)  | (2.50)  | (2.40)  | (2.30)  | (2.20)   |  |
| 2. Building and equipment<br>ownership*** | \$ 5.70                 | (6.95)                              | (6.45)  | (5.70)  | (5.20)  | (4.95)  | (4.45)  | (4.20)  | (3.70)   |  |
| <b>D. Total cost</b>                      |                         |                                     |         |         |         |         |         |         |          |  |
| 1. (B.1 + B.2 + B.3 + C.1 + C.2)          | \$44.61                 | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| <b>E. Break-even price over all costs</b> |                         |                                     |         |         |         |         |         |         |          |  |
| 1. Per pig (A.4 - D.1)                    | \$27.95                 | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |
| 2. Per pound (E.1 ÷ Purchase wt.)         | 56                      | _____                               | _____   | _____   | _____   | _____   | _____   | _____   | _____    |  |

\*Example based on budget for high-investment facilities (Table 9).  
\*\*Includes veterinary, marketing, power, insurance, taxes and interest on operating inventory, miscellaneous. We have furnished estimates in parentheses; use your own

figures, if available.  
\*\*\*We have furnished estimates in parentheses; use your own figures, if available.

**Table 2. Daily gain and days to 220 lb. for good quality purchased pigs properly fed.**

| Starting weight | Expected daily gain | Days to 220 pounds |
|-----------------|---------------------|--------------------|
| pounds          | pounds              | days               |
| 30              | 1.35                | 140                |
| 40              | 1.40                | 130                |
| 50              | 1.50                | 115                |
| 60              | 1.55                | 105                |
| 70              | 1.55                | 100                |
| 80              | 1.55                | 90                 |
| 90              | 1.60                | 85                 |
| 100             | 1.60                | 75                 |

A bidding schedule is a carefully calculated list of prices representing the upper limit that the buyer can afford to pay for pigs of various sizes and/or quality. Table 1 is a sample worksheet for preparing such a schedule. To arrive at a realistic bid price for any weight-group of pigs, 4 types of information are needed: (1) expected selling price for market hogs, (2) amount of feed grain and supplement required to reach market weight, (3) price of that feed grain and supplement and (4) cost of the non-feed items. These are entered under parts A, B and C of Table 1 and are discussed in the following paragraphs.

*Determining Expected Income (Part A).* Expected income from a group of purchased pigs is arrived at by multiplying expected market price (A.1) times expected

**Table 3. Feed requirements and conversion rates to carry hogs from various purchased weights to various market weights.\***

| Purchase wt. (lbs.) | Feed requirements | Unit      | Selling weight |          |          |          |          |          |          |
|---------------------|-------------------|-----------|----------------|----------|----------|----------|----------|----------|----------|
|                     |                   |           | 190 lbs.       | 200 lbs. | 210 lbs. | 220 lbs. | 230 lbs. | 240 lbs. | 250 lbs. |
| 30                  | Corn              | or bu.    | 7.9            | 8.5      | 9.2      | 9.9      | 10.6     | 11.4     | 12.1     |
|                     |                   | lbs.      | 441            | 478      | 515      | 554      | 595      | 636      | 680      |
|                     | Supplement        | lbs.      | 96             | 102      | 109      | 116      | 123      | 131      | 138      |
|                     | Total             | lbs.      | 537            | 580      | 624      | 670      | 718      | 767      | 818      |
|                     | Conversion        | lbs./cwt. | 336            | 341      | 347      | 353      | 359      | 365      | 372      |
| 40                  | Corn              | or bu.    | 7.6            | 8.2      | 8.9      | 9.6      | 10.3     | 11.1     | 11.9     |
|                     |                   | lbs.      | 426            | 462      | 500      | 539      | 579      | 621      | 664      |
|                     | Supplement        | lbs.      | 89             | 96       | 102      | 109      | 117      | 124      | 132      |
|                     | Total             | lbs.      | 515            | 558      | 602      | 648      | 696      | 745      | 796      |
|                     | Conversion        | lbs./cwt. | 343            | 349      | 354      | 360      | 366      | 372      | 379      |
| 50                  | Corn              | or bu.    | 7.2            | 7.9      | 8.6      | 9.3      | 10.0     | 10.8     | 11.5     |
|                     |                   | lbs.      | 406            | 443      | 480      | 520      | 560      | 602      | 645      |
|                     | Supplement        | lbs.      | 85             | 91       | 98       | 104      | 112      | 119      | 127      |
|                     | Total             | lbs.      | 491            | 534      | 578      | 624      | 672      | 721      | 772      |
|                     | Conversion        | lbs./cwt. | 351            | 356      | 361      | 367      | 373      | 379      | 386      |
| 60                  | Corn              | or bu.    | 6.9            | 7.5      | 8.2      | 8.9      | 9.6      | 10.4     | 11.1     |
|                     |                   | lbs.      | 386            | 422      | 460      | 499      | 539      | 581      | 624      |
|                     | Supplement        | lbs.      | 79             | 86       | 92       | 99       | 107      | 114      | 122      |
|                     | Total             | lbs.      | 465            | 508      | 552      | 598      | 646      | 695      | 746      |
|                     | Conversion        | lbs./cwt. | 358            | 363      | 368      | 374      | 380      | 386      | 393      |
| 70                  | Corn              | or bu.    | 6.5            | 7.1      | 7.8      | 8.5      | 9.2      | 10.0     | 10.8     |
|                     |                   | lbs.      | 363            | 400      | 437      | 476      | 517      | 558      | 602      |
|                     | Supplement        | lbs.      | 74             | 80       | 87       | 94       | 101      | 109      | 116      |
|                     | Total             | lbs.      | 437            | 480      | 524      | 570      | 618      | 667      | 718      |
|                     | Conversion        | lbs./cwt. | 364            | 369      | 374      | 380      | 386      | 392      | 399      |
| 80                  | Corn              | or bu.    | 6.1            | 6.7      | 7.4      | 8.1      | 8.8      | 9.5      | 10.3     |
|                     |                   | lbs.      | 339            | 376      | 413      | 452      | 493      | 534      | 578      |
|                     | Supplement        | lbs.      | 68             | 74       | 81       | 88       | 95       | 103      | 110      |
|                     | Total             | lbs.      | 407            | 450      | 494      | 540      | 588      | 637      | 688      |
|                     | Conversion        | lbs./cwt. | 370            | 375      | 380      | 386      | 392      | 398      | 405      |
| 90                  | Corn              | or bu.    | 5.6            | 6.2      | 6.9      | 7.6      | 8.3      | 9.1      | 9.9      |
|                     |                   | lbs.      | 314            | 350      | 388      | 427      | 467      | 509      | 552      |
|                     | Supplement        | lbs.      | 61             | 68       | 74       | 81       | 89       | 96       | 104      |
|                     | Total             | lbs.      | 375            | 418      | 462      | 508      | 556      | 605      | 656      |
|                     | Conversion        | lbs./cwt. | 375            | 380      | 385      | 391      | 397      | 403      | 410      |
| 100                 | Corn              | or bu.    | 5.1            | 5.8      | 6.5      | 7.2      | 7.9      | 8.6      | 9.4      |
|                     |                   | lbs.      | 287            | 324      | 362      | 401      | 441      | 482      | 526      |
|                     | Supplement        | lbs.      | 55             | 61       | 68       | 75       | 82       | 90       | 97       |
|                     | Total             | lbs.      | 342            | 385      | 430      | 476      | 523      | 572      | 623      |
|                     | Conversion        | lbs./cwt. | 380            | 385      | 391      | 397      | 402      | 409      | 415      |

\*Feed efficiency varies considerably depending on environmental temperatures, disease level, ration fed, quality of management, and death loss. The feed requirements here are for hogs with good per-

formance under excellent management. These figures assume zero mortality; correction for mortality is made when you complete the worksheet in Table 1.

market weight (A.2) times expected livability (A.3), which is the percent of feeders purchased that reach market.

To establish your target market date, use the days-to-220 lb. schedule in Table 2. Then to estimate what market hog prices might be at that target date, check U.S. Department of Agriculture and State Extension Service price projections, the hog "outlook" statements from various commercial organizations and farm magazines, and the prices at which futures contracts are being traded.

*Determining Feed and Other Variable Costs (Part B).* Feed represents approximately 65-75% of total feedlot costs. Table 3 estimates amount of feed per animal to carry pigs from various starting to various finishing weights. In Table 1, the feed grain requirement (B.1) is expressed as bushels of corn equivalent; the supplement (B.2), which includes protein supplement plus vitamins and minerals, is given in pounds. Those finishers who buy complete mixed rations should use the "total" feed requirement figure from Table 3 instead of the corn and supplement figures.

Non-feed costs (B.3) vary greatly from farm to farm, yet rarely are adequate records kept to accurately estimate their impact. Therefore, Table 1 provides, for those who lack such information, the average non-feed costs for pigs of various starting weights, based on the budget in Table 9.

*Assessing Opportunity Costed Items (Part C).* With any production activity, there are likely to be certain items which are not purchased from outside sources but rather are owned by the enterprise. Two items often in this category are: labor and the use of buildings and equipment.

In preparing a realistic bidding schedule, these "owned" items should be priced at what they would be worth in their best alternative use (opportunity value).

The charges for "opportunity costed items" in Table 1 are based on \$3.50 per hour for labor and a standard ownership charge for buildings and equipment (from Table 9). What you should charge must reflect your situation and will probably vary from month to month so that situation changes.

*Arriving at a Bid Price (Part E).* The "break-even price over all costs" represents what the buyer can afford to pay for feeders at various purchase weights. The final bid on any particular lot of pigs, however, may warrant some adjustment for quality.

Remember that the bid prices arrived at in Table 1 are merely break-even. Your goal in open-market purchase is to buy pigs at lower prices than these to permit a return to management and a payment for risk.

## Contracting for Feeder Pigs

Another way to acquire feeder pigs is through a long-term contract with a feeder pig producer. Under such an arrangement, the finisher takes a certain number or all of the pigs produced at a price established by a previously agreed-upon pricing formula.

Contract acquisition provides a dependable supply of pigs of known quality at minimum transfer cost. But it can also cause some problems:

1. Since his schedule is tied to the farrowing schedule of the feeder pig producer, the finisher is not always able to utilize his facilities to best advantage, nor is he always able to secure feeders when profit prospects are best.
2. Since the pigs are not sold on the open market, some sort of "formula" pricing is necessary; and formula prices can get way out of line with open-market feeder pig prices. Consequently, one of the contracting parties is usually under economic pressure to break the contract, since a better price is available to him on the open market.

Key to a lasting arrangement between farrower and finisher is a pricing formula that shares profits equitably. This can be accomplished if the formula provides for either (1) equal hourly labor income, or (2) equal returns to invested capital, or (3) equal mark-up on costs. The use of such a formula requires that both parties exhibit confidence and candor toward each other, keep complete and accurate records, and agree on uniform accounting procedures.

Table 4 is a pricing guide for contract acquisition of feeder pigs. It gives the profit-sharing purchase price for a 50-lb. pig over a range of feed and market hog prices. The figures reflect equal mark-up-over-all-costs to both farrower and finisher. Here's how such a guide might work.

At time of transfer, the farrower and finisher agree to a base payment for the pig crop—e.g., \$20 per head. After the finished hogs are marketed, an adjustment to this base payment is made, reflecting the market price of both feed grain and hogs. For instance, if corn has been \$2 per bushel and hogs are \$34 per cwt., Table 4 shows the profit-sharing price for a 50-lb. pig to be \$28.24, which is \$8.24 more than the original base payment and is what the finisher still owes the farrower.

Adjustment is also needed when average pig weight differs from the 50 lb. used in Table 4. One suggestion is to price the excess or deficit weight at prevailing market hog

**Table 4. Profit-sharing prices for a 50-lb. feeder pig at various corn and hog market prices.**

| Per bu.<br>market<br>price of<br>corn        | Per cwt. market price of a 220 pound hog |         |         |              |         |         |         |         |         |         |
|----------------------------------------------|------------------------------------------|---------|---------|--------------|---------|---------|---------|---------|---------|---------|
|                                              | \$22.00                                  | \$26.00 | \$30.00 | \$34.00      | \$38.00 | \$42.00 | \$46.00 | \$50.00 | \$54.00 | \$58.00 |
| profit-sharing price per 50-pound feeder pig |                                          |         |         |              |         |         |         |         |         |         |
| 1.40                                         | \$17.11                                  | \$21.38 | \$25.65 | \$29.92      | \$34.19 | \$38.46 | \$42.73 | \$46.99 | \$51.26 | \$55.53 |
| 1.60                                         | 16.55                                    | 20.82   | 25.09   | 29.36        | 33.63   | 37.90   | 42.17   | 46.43   | 50.70   | 54.97   |
| 1.80                                         | 15.99                                    | 20.26   | 24.53   | 28.80        | 33.07   | 37.34   | 41.61   | 45.87   | 50.14   | 54.41   |
| 2.00                                         | 15.43                                    | 19.70   | 23.97   | <u>28.24</u> | 32.51   | 36.78   | 41.05   | 45.31   | 49.58   | 53.85   |
| 2.20                                         | 14.87                                    | 19.14   | 23.41   | 27.68        | 31.95   | 36.22   | 40.49   | 44.75   | 49.02   | 53.29   |
| 2.40                                         | 14.31                                    | 18.58   | 22.85   | 27.12        | 31.39   | 35.66   | 39.93   | 44.19   | 48.46   | 52.73   |
| 2.60                                         | 13.75                                    | 18.02   | 22.29   | 26.56        | 30.83   | 35.10   | 39.37   | 43.63   | 47.90   | 52.17   |
| 2.80                                         | 13.19                                    | 17.46   | 21.73   | 26.00        | 30.27   | 34.54   | 38.81   | 43.07   | 47.34   | 51.61   |
| 3.00                                         | 12.63                                    | 16.90   | 21.17   | 25.44        | 29.71   | 33.98   | 38.25   | 42.51   | 46.78   | 51.05   |
| 3.20                                         | 12.07                                    | 16.34   | 20.61   | 24.88        | 29.15   | 33.42   | 37.69   | 41.95   | 46.22   | 50.49   |
| 3.40                                         | 11.51                                    | 15.78   | 20.05   | 24.32        | 28.59   | 32.86   | 37.13   | 41.39   | 45.66   | 49.93   |
| 3.60                                         | 10.95                                    | 15.22   | 19.49   | 23.76        | 28.03   | 32.30   | 36.57   | 40.83   | 45.10   | 49.37   |
| 3.80                                         | 10.39                                    | 14.66   | 18.93   | 23.20        | 27.47   | 31.74   | 36.01   | 40.27   | 44.54   | 48.81   |
| 4.00                                         | 9.83                                     | 14.10   | 18.37   | 22.64        | 26.91   | 31.18   | 35.45   | 39.71   | 43.98   | 48.25   |

prices. From our example above, if the feeders averaged 54 lb., the farrower would receive an adjustment of \$1.36 per pig (4 lb. above 50-lb. basex34¢/lb. market price).

### Feeder Pig Co-ops

A third method of acquiring feeder pigs has been the formation of co-ops or corporations that engage solely in the production of pigs for finishing. By investing in such a unit, the finisher gains a claim to a share of the pigs produced.

The pigs are priced at their actual production costs. So whether or not they are a "bargain" compared to open-market purchase, depends upon both the performance levels achieved by the production unit and the current feeder pig prices in the open market. Like contracting for feeders, the finisher in a co-op arrangement is tied to a delivery schedule over which he has little, if any, control.

### Facility Needs and Costs for Feeding Purchased Pigs

Tables 5 and 6 list the facilities and equipment required for an all-in, all-out finishing operation, along with an estimate of their cost when new. Table 5 is for slatted-floor, environmentally controlled units; Table 6 for open-fronted units with exposed concrete slab. The last column in each table is for your own investment estimates.

Investment in trucks or tractors has not been included in Tables 5 and 6, since the finishing activity is assumed to be part of some larger farming business which "owns" such equipment. In the budget that follows (Table 9), the service of trucks or tractors is charged to the hogs on an hourly or per mile basis.

### Selecting a Housing System

If you plan to buy on a continuing basis directly from a feeder pig producer, or if you are a share-holder in a feeder

pig co-op, then a labor-saving, high fixed-cost housing system can more easily be justified. The reason is that intensive use keeps building cost per pig within bounds, and a single source of pigs permits such intensive use.

However, if you plan to buy pigs on the open market, it's best to have a housing system that gives you the flexibility to "shut down" during those times when there is no chance for profit; and high-cost buildings reduce such flexibility. Furthermore, the all-in, all-out management system—although the best way to cope with disease problems of shipped-in pigs—does not permit best use of a feeding facility, for the space allotted to a 40-lb. pig must be adequate to serve him up to market weight.

Table 7 presents a set of charges for use of the buildings and equipment in Tables 5 and 6. With all-in—all-out usage, this is the "rent" which must be paid to cover depreciation, taxes, insurance, interest and repairs; and it goes on regardless of whether the facilities are used or not.

### Facility Categories

In developing a budget, facility investments should be categorized for estimating overhead expenses. For greatest accuracy, you should calculate depreciation, interest, taxes, repairs and insurance costs for each individual building and machinery item. However, an acceptable degree of precision can be achieved merely by dividing "facilities" into 2 groups—items of 15-year depreciable life and items of 8-year life. Table 8 shows the investment costs of the facilities listed in Tables 5 and 6 according to this depreciable life classification. These figures are the ones used in the *overhead expenses* section of our feeder pig finishing budget (Table 9).

We have included as 15-year items in Tables 5 and 6 the shells of permanent buildings, all concrete work and the earthen manure basin; everything else is classified as "equipment" with a shorter depreciable life (8 years) and a higher maintenance charge.

**Table 5. Facilities investment for a 500-head capacity feeder pig finishing unit—fully slatted, controlled environment.\***

| Item                                                                                                    | Size and description   | Units needed | Cost per unit | Total investment | Your figures |
|---------------------------------------------------------------------------------------------------------|------------------------|--------------|---------------|------------------|--------------|
| <b>Part A. Feeding Quarters</b>                                                                         |                        |              |               |                  |              |
| Building (incl. plumbing, wiring, ventilation, fully slatted floor and 5' deep under floor manure tank) | 34' x 120'             | 4080 sq. ft  | \$ 8.95       | \$36,500.00      | \$ _____     |
| Bulk feed holding bin                                                                                   | 9-ton hopper bottom    | 1            |               | 620.00           | _____        |
| Feeders and feed distribution equipment                                                                 | 10-bu. round           | 18           | 67.00         | 1,200.00         | _____        |
| Waterers                                                                                                | Nipple                 | 18           | 10.00         | 180.00           | _____        |
| Pen partitions                                                                                          | Wood                   | 500 ft.      | 3.25          | 1,625.00         | _____        |
| Total                                                                                                   |                        |              |               | \$40,125.00      | \$ _____     |
| <b>Part B. Supporting Equipment</b>                                                                     |                        |              |               |                  |              |
| Feed processing                                                                                         | Portable grinder-mixer | 1            |               | \$ 4,000.00      | \$ _____     |
| Supplement storage                                                                                      | 6-ton hopper bottom    | 1            |               | 510.00           | _____        |
| Liquid manure spreader                                                                                  | 1500 gal.              | 1            |               | 3,300.00         | _____        |
| Total                                                                                                   |                        |              |               | \$ 7,810.00      | \$ _____     |
| Total facilities investment                                                                             |                        |              |               | \$47,935.00      | \$ _____     |
| Investment per pig capacity                                                                             |                        |              |               | 95.85            | _____        |

\*Assumes all-in, all-out usage—i.e., building filled all at once and pigs fed-out in same pens in which they are started. The dollar figures represent an estimate of the cost in mid 1975.

**Table 6. Facilities investment for a 500-head capacity feeder pig finishing unit—open-front, exposed concrete slab.\***

| Item                                | Size and description                                        | Units needed  | Cost per unit | Total investment | Your figures |
|-------------------------------------|-------------------------------------------------------------|---------------|---------------|------------------|--------------|
| <b>Part A. Feeding Quarters</b>     |                                                             |               |               |                  |              |
| Building                            | 16' x 155' low-silhouette pole plus 66' x 155' exposed slab | 1             |               | \$14,000.00      | \$ _____     |
| Waterers                            | 6-hole frost proof                                          | 4             | \$150.00      | 600.00           | _____        |
| Feeders                             | 90-bu. 24-hole fenceline                                    | 4             | 400.00        | 1,600.00         | _____        |
| Partitions and gates                | Reinforced woven wire                                       |               |               | 2,600.00         | _____        |
| Manure storage                      | Earthen basin                                               | 6800 cu. yds. | .50           | 3,400.00         | _____        |
| Total                               |                                                             |               |               | \$22,200.00      | \$ _____     |
| <b>Part B. Supporting Equipment</b> |                                                             |               |               |                  |              |
| Feed processing                     | Portable grinder-mixer                                      | 1             |               | \$ 4,000.00      | \$ _____     |
| Supplement storage                  | 6-ton hopper bottom                                         | 1             |               | 510.00           | _____        |
| Manure spreader                     | 95-bu. conventional                                         | 1             |               | 1,000.00         | _____        |
| Manure loader and scraper           | Tractor-mounted                                             | 1             |               | 1,400.00         | _____        |
| Irrigation equipment                | Low volume                                                  | 1             |               | 700.00           | _____        |
| Total                               |                                                             |               |               | \$ 7,610.00      | \$ _____     |
| Total facilities investment         |                                                             |               |               | \$29,810.00      | \$ _____     |
| Investment per pig capacity         |                                                             |               |               | 59.60            | _____        |

\*Assumes all-in, all-out usage--i.e., building filled all at once and pigs fed-out in same pens in which they are started. The dollar figures represent an estimate of the cost in mid 1975.

**Table 7. Building and equipment use charge.**

| Item                     | High investment | Low investment |
|--------------------------|-----------------|----------------|
| Per pig*                 | \$5.70          | \$3.55         |
| Per hundredweight gain   | 3.49            | 2.17           |
| Per pig capacity per day | 5¢              | 3¢             |

\*Pigs purchased at 50 pounds, sold at 220 pounds.

## Developing a Budget for Feeder Pig Finishing

Listed in Table 9 are estimates of the various items of cost and return for 50-lb. pigs fed to market weight in both high- and low-investment facilities (i.e., full-slatted, controlled environment vs. open-front, exposed slab).

Using the last column, modify our figures to accurately describe your situation. Following is a brief explanation of the budget's four major sections.

### Income

This annual budget assumes 3 batches of pigs per year fed 4 months each in a set of facilities (all-in, all-out usage), with the estimated costs and returns given on a per-100-pig basis. Figuring a mortality rate of 3%, gross income was calculated on 97 hogs marketed at 220 lb. or 213.4 cwt. for each 100 pigs purchased.

### Direct Costs

These are the costs readily assigned to the enterprise, the major one being feed. In Table 9, the feed bill is broken into two categories: feed grain (corn equivalent) and supplement (protein, vitamins and minerals). 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.

### Overhead Expenses

Classified as "overhead" are: the cost of labor and the cost of owning capital items (investment overhead). The hogs should pay a wage equal to what this particular labor can demand elsewhere. The ownership charge for capital items is an estimate of the total of depreciation, interest, maintenance costs, taxes and insurance.

The sample budget assumes that all the *facilities* (15- and 8-year depreciable items) listed in Tables 5 or 6 and in Table 8 must be purchased. In your situation, however, some of those facilities (e.g., grinder-mixer) may already be available, and you may be incurring ownership costs because they are there. For budgeting purposes, in pricing such fixed resources (the ones already available), ignore their ownership costs and charge them to the feeder pig finishing enterprise at their opportunity value or reservation price.

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. An estimate was made of average investment in the pigs as they increase in value from feeder pig stage to slaughter size; then a charge for interest, taxes and insurance on this investment was levied against the enterprise.

### Budget Summary

*Net return to management* is the return after all expenses, including 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.

**Table 8. Facility investment costs for a feeder pig finishing operation by major depreciation classifications.**

| Depreciable life                                     | For 1500 head  |              | Per 100 head |              |
|------------------------------------------------------|----------------|--------------|--------------|--------------|
|                                                      | Our example    | Your figures | Our example  | Your figures |
| Fully slatted, controlled-environment unit (Table 5) |                |              |              |              |
| 15-year items                                        | \$29,200.00**  | \$ _____     | \$1,945.00   | \$ _____     |
| 8-year items                                         | 18,735.00      | _____        | 1,250.00     | _____        |
| Total                                                | \$47,935.00    | \$ _____     | \$3,195.00   | \$ _____     |
| Open-front, exposed slab unit (Table 6)              |                |              |              |              |
| 15-year items                                        | \$17,400.00*** | \$ _____     | \$1,160.00   | \$ _____     |
| 8-year items                                         | 12,410.00      | _____        | 825.00       | _____        |
| Total                                                | \$29,810.00    | \$ _____     | \$1,985.00   | \$ _____     |

\*Assumes three batches of pigs fed in a facility each year.  
 \*\*80% of the building figure from Table 5; the other 20% will be ventilation and control items with a shorter life.  
 \*\*\*Includes building and concrete slab plus earthen manure basin (Table 6).

### Determining Short- and Long-Range Cash Flow Requirements

The feeder pig finisher buys a sizable inventory of pigs, then increases their value with labor, feed, medication and other inputs until they reach market weight. A typical production cycle is 4 months long under an all-in, all-out management system, with a week or so between pig crops for cleaning the facilities.

#### Short Term Cash Flow

If the budget figures in Table 9 can be assumed to be "typical," and if we assume that facilities are fully owned and labor supplied by the farm family, we can visualize a "typical" cash flow. During a 120-day feeding cycle, 46% of total cash production expenses are incurred the first day with the purchase of the pigs; daily cash expenses of around 28 cents per pig prevail for the balance of the feeding period.

Final net cash flow (net return after paying all production expenses except labor and capital costs) is the amount of money available to service debt, buy new capital items, and reward labor and management. Based on Table 9, that figure would be \$8.95 per pig started with a high-investment facility and \$8.15 with a low-investment facility.

#### Long-Term Cash Flow

If entrance into the feeder pig finishing business calls for construction of buildings or extensive purchase of equipment, the operator may face long range cash flow problems not exposed by our budget. For instance, in estimating overhead in Table 9 (C.1), buildings and equipment were assumed to have useful life spans of either 15 or 8 years. What, then, is the cash flow consequence when such facilities are financed with borrowed money and the payback period is significantly shorter than their depreciable life?

Table 10 shows the cash flow for a 1500-head-per-year operation (500 head per 4-month feeding period) using the high-investment facilities described in Table 5, which have been financed with a 5-year loan at 9% interest on the unpaid balance. Assume the price and performance levels used in Table 9. In the first year, the business must be subsidized \$2,581 in order to meet cash commitments; and cash flow doesn't become positive until the fourth year. In the meantime, there has been no surplus for family living;

thus, the operator would need another source of income to carry him through the years of heavy debt.

### Effect of Performance and Price Variation on Returns

For the feeder of purchased pigs, the major sources of risk are poor feedlot performance (often caused by disease), a drop in hog prices and a rise in feed ingredient prices. Any hog enterprise should be sufficiently well-funded to withstand at least one adverse year without danger of bankruptcy.

#### Market Prices

Since 1974, the USDA's Economic Research Service has been publishing data on costs and returns in Corn Belt hog feeding in its publication, *The Livestock and Meat Situation*. This provides a continually updated report with which you can compare the financial performance of your hog feeding enterprise. It also demonstrates the dramatic influence of market price on your profits.

To choose two extreme situations from the recent past for illustrative purposes: (1) 40-lb. feeder pigs purchased in January 1974 for \$34.70 would have eaten corn worth \$2.60/bu. and supplement @ \$12.80/cwt. They would have been sold in May 1974 on a \$26.09 slaughter hog market and would have failed by \$16.89/cwt. to cover all costs, (2) 40-lb. pigs bought in May 1975 for \$44.00 would have eaten \$2.66/bu. corn and \$9.90/cwt. supplement and would have gone to market in September at \$61.23/cwt. They returned a profit after paying all costs of \$14.91/cwt.

#### Performance

It is difficult to predict the feedlot performance of purchased pigs. Often, the finisher has no way to determine the parentage and previous management of a group of prospective feeders. For a problem group, the mortality rate may run as high as 10% and feed conversion upwards toward 500 lb. feed per cwt. gain.

Feed represents approximately 2/3 of the total costs of feeding purchased pigs. To take a pig from 50 lb. to 220 lb. requires approximately 530 lb. of feed grain (9½ bu. of corn) and 100 lb. of protein-vitamin-mineral supplement. Therefore, a 10-cent-per-bushel increase in the price of corn adds 95 cents to the cost of producing a market animal; a \$10-per-ton-increase in the price of supplement adds \$1.00 to your break-even market hog value.

**Table 9. Estimated budget for the feeding out of 100 purchased pigs.<sup>a</sup>**

| Item                                                        | High-investment facility<br>(Fully-slatted, controlled environment) | Low-investment facility<br>(Open-front, exposed concrete slab) | Your figures |
|-------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------|--------------|
| <b>A. Income</b>                                            |                                                                     |                                                                |              |
| 1. Market hogs<br>(220 lbs. @ \$34.00/cwt.)                 | 97 head <sup>b</sup> = \$7,256.00                                   | 97 head <sup>b</sup> = \$7,256.00                              | \$ _____     |
| <b>B. Direct costs</b>                                      |                                                                     |                                                                |              |
| 1. Feed                                                     |                                                                     |                                                                |              |
| a) Corn equivalent (\$2.00/bu.)                             | 930 bu. <sup>c</sup> = \$1,860.00                                   | 960 bu. <sup>d</sup> = \$1,920.00                              | \$ _____     |
| b) Supplement (10¢/lb.)                                     | 10,400 lbs. <sup>c</sup> = <u>1,040.00</u>                          | 10,650 lbs. <sup>d</sup> = <u>1,065.00</u>                     | _____        |
| c) Total feed                                               | \$2,900.00                                                          | \$2,985.00                                                     | _____        |
| 2. Veterinary and medicine                                  | 150.00                                                              | 175.00                                                         | _____        |
| 3. Purchased 50-lb. feeders<br>(\$28.50/head) <sup>e</sup>  | 100 head = 2,850.00                                                 | 100 head = 2,850.00                                            | _____        |
| 4. Marketing (80¢/cwt.)                                     | 171.00                                                              | 171.00                                                         | _____        |
| 5. Power and fuel                                           | 71.00                                                               | 55.00                                                          | _____        |
| 6. Miscellaneous (bedding, supplies)                        | <u>60.00</u>                                                        | <u>96.00</u>                                                   | _____        |
| 7. Total direct costs                                       | \$6,202.00                                                          | \$6,332.00                                                     | \$ _____     |
| 8. Income over direct costs (A.1 - B.7)                     | \$1,054.00                                                          | \$ 924.00                                                      | \$ _____     |
| <b>C. Overhead expenses</b>                                 |                                                                     |                                                                |              |
| 1. Investment overhead                                      |                                                                     |                                                                |              |
| a) 15-year depreciable life facilities (15.5%) <sup>f</sup> | \$1,945 = \$ 301.50                                                 | \$1,160 = \$ 180.00                                            | \$ _____     |
| b) 8-year depreciable life facilities (21.5%) <sup>f</sup>  | \$1,250 = 268.50                                                    | \$ 825 = 177.00                                                | _____        |
| c) Operating inventory (10.4%)                              | \$1,525 = <u>159.00</u>                                             | \$1,540 = <u>160.00</u>                                        | _____        |
| d) Total investment overhead                                | \$ 729.00                                                           | \$ 517.00                                                      | \$ _____     |
| 2. Labor (\$3.50/hr.)                                       | 80 hours = <u>280.00</u>                                            | 100 hours = <u>350.00</u>                                      | _____        |
| 3. Total overhead expenses                                  | \$1,009.00                                                          | \$ 867.00                                                      | \$ _____     |
| <b>D. Summary</b>                                           |                                                                     |                                                                |              |
| 1. Net return to management (B.8 - C.3)                     | \$ 45.00                                                            | \$ 57.00                                                       | \$ _____     |
| 2. Returns to labor and management                          | Total = 325.00                                                      | 407.00                                                         | _____        |
|                                                             | Per hour = 4.06                                                     | 4.07                                                           | _____        |
| 3. Rate earned on investment <sup>g</sup>                   | 10.4%                                                               | 11.3%                                                          | _____ %      |

a Assumes three groups of pigs per year fed for 4 months per group in a set of facilities.

b Assumes 3 percent mortality from purchase to marketing.

c Assumes feed conversion of 382 lbs. feed/cwt. gain.

d Assumes feed conversion of 394 lbs. feed/cwt. gain.

e Includes \$1.00/pig buying and shipping cost.

f Facilities charged at 1975 new costs; see Tables 5, 6, and 8.

g Net return to management (D.1) plus interest charge from C.1 all divided by the average capital investment. (Note: average capital investment is the operating inventory, plus 1/2 equipment and 1/2 buildings from C.1 a, b and c. Interest charge in C.1 is 9 percent of the average capital investment.)

**Table 10. Effect of building and equipment financing on cash flow—500-head capacity high investment unit (1500 pigs per year).<sup>a</sup>**

| Item                                      | First year | Second year | Third year | Fourth year | Fifth year | Sixth year |
|-------------------------------------------|------------|-------------|------------|-------------|------------|------------|
| Income over direct costs <sup>b</sup>     | \$15,810   | \$15,810    | \$15,810   | \$15,810    | \$15,810   | \$15,810   |
| Minus:                                    |            |             |            |             |            |            |
| Interest                                  | 4,314      | 3,451       | 2,588      | 1,726       | 863        | ---        |
| Principal payment                         | 9,587      | 9,587       | 9,587      | 9,587       | 9,587      | ---        |
| Other <sup>c</sup>                        | 4,490      | 4,490       | 4,490      | 4,490       | 4,490      | 4,490      |
| Equals:                                   |            |             |            |             |            |            |
| Surplus or deficit cash flow <sup>d</sup> | -\$ 2,581  | -\$ 1,718   | -\$ 855    | +\$ 7       | +\$ 870    | +\$11,320  |

a Buildings and equipment as listed in Table 5 financed over 5 years at 9 percent interest.

b B 8 from Table 9 x 15 (1500 hogs/year).

c Taxes, insurance, repairs on buildings and equipment plus total overhead expense on operating inventory.

d Available for family living, retirement of other debt, business expansion.