Procedure for Estimating Returns
Farrow to Finish

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The Iowa State University Estimated Returns model was developed to serve as a barometer of profitability for the industry and is not intended to represent any one operation. It is designed to represent the rank-and-file Iowa producer. To be transparent in how the return series is created, the following is a brief summary of the sources and approaches used.

Production Level

Costs per unit and net returns in farrow to finish production are highly dependent on production levels. The farrow to finish estimated returns includes a production level for finished pigs sold per sow per year which varies due to changes in the number of pigs weaned per litter (with adjustments for estimated death loss in nursery and finishing phases) and the number of litters per sow per year. Changing these two factors results in different numbers of finished pigs sold per sow per year.

- Pigs weaned per litter are provided by the USDA Hogs and Pigs Report.
- Litters per sow per year are provided by The Center for Farm Financial Management FINBIN Farm Financial Database.

Feed Costs

Feed costs were calculated using corn, dried distillers grains with soluble (DDGS), and soybean meal-based diets for all production phases (gestation, lactation, nursery, and finish). Feed rations also include feed components purchased as complete feeds and other ingredients. Feed requirements at each stage of production are based on Iowa State University swine nutrition guidelines. Feed costs are calculated each month based on the feed quantity consumed and monthly market price.

- Corn prices are provided by the monthly North Central Iowa corn price reported in the USDA report NW_GR110.
- Soybean meal prices are provided by the monthly Iowa soybean meal price reported in USDA report NW_GR116.
- DDGS prices are provided by the average of the monthly East Iowa and monthly West Iowa DDGS price reported in the USDA report NW_GR111.
- Complete feed prices are provided by utilizing the U.S., Feed, Complete Feeds – Index for Price Paid, 2011 reported in the USDA report Agricultural Prices.
- Other ingredient prices are provided by utilizing the U.S., Feed, Supplements – Index for Price Paid, 2011 reported in the USDA report Agricultural Prices.
- Feed processing costs are provided by the Iowa State University Iowa Farm Custom Rate Survey.

Capital Requirements

Facility investment of 220 sow farrowing capacity, 1,120 sow gestation capacity, 4,000 nursery pig capacity, and 9,000 finishing pig capacity is assumed. Capital invested in swine facilities assumes a central farrowing house with liquid manure facilities and slotted floors estimated at $2,508 per sow (66 sq. ft. per sow), with the equipment inside the building costing an additional $1,150 per sow. The gestation building is estimated to cost $600 per sow (20 sq. ft. per sow), and the equipment inside the building is estimated to cost an additional $235 per sow. A nursery building with total slotted floors will cost about $125 per pig (3.5 sq. ft. per pig), with the equipment inside the building costing an additional $12.50 per pig. A total confinement finishing building (deep pit) is estimated to cost $187.50 per pig (7.5 sq. ft. per pig), with the inside equipment adding another $28.75 per pig. Office facilities, site preparation, and miscellaneous items are also included in the capital requirements. The capital requirements are assumed to be the same for all production levels, thus building and equipment costs per pig change as production levels change. Building and equipment costs are included as repairs, depreciation, interest, insurance, and taxes.

- Building and equipment repairs: annual repairs calculated as 2.5% of the total investment.
- Depreciation on buildings and equipment: based on the total initial cost less salvage value of buildings and equipment on a per pig basis divided by the estimated life. A salvage value of 10% is used for buildings and 0% for equipment. A useful life of 25 years is used for buildings and 15 years for equipment.
- Interest on buildings and equipment: interest is charged on one-half the average investment [(initial cost + salvage value) ÷ 2] for buildings and equipment at a rate of 4% percent divided by the number of finished pigs sold per year.
- Insurance and taxes on buildings and equipment: based on initial cost multiplied by 0.25% (insurance) and 1.5% (taxes, buildings only) divided by the number of finished pigs sold per year.

Operating Costs

Breeding/Genetic

- Depreciation: difference between purchase price and cull value divided by years of useful life. Useful life is estimated at 1.9 years for sows and 2.5 years for boars. A sow/boar ratio of approximately 120:1 is assumed. The income from the sale of culls is accounted for by including an assumed salvage value in the depreciation component of the breeding/genetic charge. Therefore, income from culls is entered as a reduction in costs rather than as an increase in returns.
    - Based on cull sows weighing 426 pounds (adjusted for assumed death loss) and cull boars weighing 500 pounds. Cull prices are provided by the USDA report LM_HG214 Iowa/Minnesota.
- Semen: based on artificial insemination charge of $16.25/litter (2.5 straws @ $6.50/straw).
- Interest: interest is charged on the average breeding herd investment [(purchase price + cull value) ÷ 2] at the operating loan rate reported by the Chicago Federal Reserve Bank divided by the number of finished pigs sold per year.
- Insurance: averages approximately 1% of the total breeding herd investment divided by the number of finished pigs sold per year.

Other Operating Costs

- Labor: Based on 8 full-time employee equivalent. A wage rate is provided by utilizing the Corn Belt, Labor, Hired, Animal Workers – Wage Rate, Measured in $/Hour reported in the USDA report Agricultural Prices.
- Transportation: Include the expense of hauling finished pigs. Trucking costs are calculated from a base per mile livestock hauling cost per loaded mile adjusted for the price of over-the-road diesel fuel.
    - Livestock hauling costs provided by the Iowa State University Iowa Farm Custom Rate Survey.
    - The price of over-the-road diesel fuel is provided by the price of Midwest No. 2 over-the-road diesel reported in the U.S. Energy Information Administration report Weekly Retail Gasoline and Diesel Prices.
- Marketing: Provided by The Center for Farm Financial Management FINBIN Farm Financial Database.
- Utilities, Fuel, and Oil: Utilities, fuel, and oil costs allocated to farrow to finish enterprise are provided by The Center for Farm Financial Management FINBIN Farm Financial Database.
- Veterinary and supply: Provided by The Center for Farm Financial Management FINBIN Farm Financial Database.
- Miscellaneous: Provided by The Center for Farm Financial Management FINBIN Farm Financial Database.
- Interest on Operating Costs: Calculated on one-half of operating costs at the operating loan rate reported by the Chicago Federal Reserve Bank for the number of months per litter.

Returns

Finished Pig Sales

- ~~Based on a 270 pound finished pig. Finished pig prices are provided by the negotiated purchases price, USDA report LM_HG 204. The average finished pig price is multiplied by 75% to make the conversion to a live hog price.~~
- Based on a 270 pound finished pig. Finished pig prices are provided by the weighted average base prices of the producer sold negotiated, other market formula (futures/options), and swine or pork market formula purchase types. Data are obtained from the USDA Livestock, Poultry & Grain Market News report LM_HG204 Iowa/Minnesota Daily Direct Prior Day Hog Report Based on State of Origin.
- To arrive at a net price to represent producer's total income, the weighted average difference between the average net price and the carcass base price for the producer sold negotiated, other market formula, and swine or pork market formula purchase types in the USDA Livestock, Poultry & Grain Market News report LM_HG201 National Daily Direct Hog Prior Day Report – Slaughtered Swine is calculated.
- The calculated premiums from the LM_HG201 report are added to the calculated price from the LM_HG204 report. This derived price series provides an Iowa/Minnesota price and accounts for the added income from premiums from packer buying programs.
- The goal of this derived price series is to provide the total revenue for an Iowa producer selling in a manner representative of Iowa producers. The producer sold negotiated, other market formula, and swine or pork market formula purchase types have averaged 75% of the Iowa/Minnesota producer sold transactions over the last 15 years.

Less Death Loss

- Based on death loss in nursery and finisher times the value of the finished pig (with feed, transportation, and marketing cost adjustment).

Manure Credit

- A manure credit is included that is based on the amount of nitrogen and phosphate excreted that would be available to crops the following year valued at the price of commercial fertilizer less the cost of applying the liquid manure.
    - Based on nitrogen (N) and phosphate (P_2O_5) excreted per pig sold with manure stored in a deep pit (assumed 85% retained N from excreted amount) that would be available the following year for crop production valued at N and P_2O_5 prices reported in the USDA report Agricultural Prices less an application cost reported by the Iowa State University Iowa Farm Custom Rate Survey.