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Sustainable Outdoor Drylot Farrow-to-Finish Hog Enterprise Budget

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Introduction

Outdoor hog producers face both opportunities and challenges. Economic opportunities include the growing number of pork buyers who are looking for niche products produced locally and produced in certain ways. Economic challenges include higher costs of production and achieving a sufficient size of enterprise to be viable. Environmental opportunities include the value of nutrients produced by the hogs if used in crop production. Environmental challenges include preventing those nutrients from polluting surface and ground waters.

Hog manure and urine contain large amounts of nitrogen, phosphorus and potassium. Phosphorus can build up to high levels in the soil populated by hogs. If not properly managed, phosphorus and nitrogen can contaminate surface and ground waters. Phosphorus contamination can occur through soil erosion that carries this nutrient to surface waters. If the level of phosphorus in soil reaches very high levels, a portion can become soluble, increasing the potential for leaching into ground water. Nitrogen is a more soluble nutrient and has the potential for entering both surface and ground waters. To prevent these environmental problems, outdoor hog enterprises can be combined in a rotation with salable crops to extract and export these nutrients from areas previously in hogs. In addition, buffers may be needed to prevent erosion and run-off from reaching surface waters.

Farrow-to-finish is the production system most commonly used by producers serving niche markets because the producer can control all stages from breeding the sows through marketing the finished hog. In some cases, the producer also manages processing the hogs and marketing the meat. This enterprise budget is based on the production and sale of finished hogs as live animals.

There are several uses for an enterprise budget. One use is by an existing producer to estimate costs and returns, say, using data for a particular year. A second use is to make projections for the coming year, as an aid to decision making. A prospective producer might use a budget to explore new enterprises. An enterprise budget incorporates all the economic costs and returns attributable to the hog enterprise. Expenses include operating costs, the ownership or fixed costs associated with investments in the enterprise, the cost of hired labor and a charge for unpaid family labor. General farm overhead expenses and land charges are not included because these are whole farm costs.

This budget is based on a hog farming system believed to be fairly representative of what might be found under North Carolina conditions. Prices are based on recent history and expectations for the medium term future. It was created using Excel© and this version is available on-line at http://www.ag-econ.ncsu.edu/extension/Ag_budgets.html. The various worksheets can be modified to generate costs and returns for an enterprise of a different size and type than the one in this budget or for different

levels of animal performance and prices. However, anyone using the budget spreadsheet must accept responsibility for the information he generates and acts upon.

Marketing

Changing consumer tastes and preferences create niche market opportunities for many farmers, including hog producers. Segments of the consuming public are looking for food products with specific attributes. These include foods produced by particular production methods, such as, produced without antibiotics and added hormones, natural, free range, grass fed, raised humanely. Producers must comply with USDA certification regulations in order to label their foods "Organic". If used on labels, some other terms such as grass fed and natural must be backed up by production methods that meet USDA definitions. Increasingly, consumers are seeking products that are locally produced or raised on a family farm, although these terms do not have a strict definition. Some consumers have preferences as to where they buy food, including direct purchases from farms, at farmers markets, in Community Supported Agriculture groups, in specialty retail stores, and in restaurants featuring these types of food products. Other features also add value to a purchasing experience including on-farm activities such as corn mazes and hay rides. Nevertheless, the traditional meat qualities of tenderness, juiciness, flavor, and leanness still matter, as does consistency of product from one purchase to the next.

Compared to farmers who supply traditional commodity markets, producers have some discretion over prices charged but consumers still show some price sensitivity and compare prices among competing products. Producers are strongly advised to do some market research and identify their target markets before developing their production systems. The needs and desires of these customers should influence the design of the hog production system, including overall volume of production, seasonality, the choice of breed, and target market weights. For direct marketers, meat cuts, product type, and package size and type are important also.

Dry Lot Production

One basis for a sustainable production system is that it produces hogs in a rotation with salable crops that will remove the nutrients generated by the hogs. It is necessary to remove the crops from the hog production area to achieve nutrient balancing. In addition, buffers may be required to trap soil and nutrients in order to protect surface waters.

Cropping options include commodity crops, specialty crops and hay crops, each with a different nutrient requirement to achieve optimum yield. Crop type and yield determine nutrient uptake and removal. The nutrient uptake by crops in a rotation will help determine how many hogs per acre can be produced in a sustainable manner. The greater the annual crop uptake of nutrients the more hogs can be produced per acre and vice versa. Alternatively, a longer period of crop production between periods of hog production will also increase nutrient removal. If the goal is to maintain stable levels of phosphorus in the soil it is likely that two years or more of crops would be required to remove the nutrients produced by a farrow-to-finish hog enterprise in one year. Also, each of the crops selected must fit with the available farm resources, including labor, and fit the overall goals and plans for the farm.

The representative farm for this budget produces hogs on an area for 12 months followed by two years of cropping. This system requires three blocks of land and the infrastructure and equipment used for the hog operation must be moved each year to a new block. Sixteen acres are allocated to the hogs each year and an additional 32 acres are cropped, for a total of 48 acres. A cover crop is required after the hogs are moved and before the salable crop is planted. (The need for a cover crop and whether to charge the cost to the hogs or to the crop enterprise will be a farm specific decision.) Additional acreage is required for access lanes and buffers to prevent run-off into surface waters.

The system used as the basis for the budget assumes 24 sows, 2 Boars, 2 litters born per sow per year, 7 pigs weaned per litter, and a 3% death loss after weaning. The operation produces and sells 326 hogs per year at a weight of 250 pounds. Sows farrow year round in order to supply the needs of the market, in groups of 4 each month. Finishing hogs are grouped by age. The hog acreage is subdivided into paddocks for groups of hogs at similar stages in the production cycle. Five acres are allocated to sows and divided into six paddocks. Growing hogs use 11 acres in six paddocks. Paddock size is calculated to distribute the nutrients produced by the hogs as evenly as possible across the total area.

Enterprise Investments

The infrastructure for the hog paddocks includes fencing and gates, watering points and feeders. These costs will be site specific and depend both on the farm layout and any existing infrastructure suitable for a hog operation. For the model farm used in the budget, fences are all electrified with three wires attached to T-posts, including perimeter and internal fencing. Each of the 12 paddocks has a watering point, feeders and artificial shade. Equipment needs likely include a tractor with implements, a pickup truck, and a livestock trailer. Some of these items may be shared with other farm enterprises. The budget includes equipment for seeding and land leveling.

A final category of investment is the breeding livestock – sows and boars—which may be purchased or raised on the farm. The budget is based on 24 sows and 2 boars. Replacement gilts and boars are assumed to be purchased in order to simplify the budget. Sows are replaced every three years and boars every other year. Note that no land charges are included in the budget.

Production costs

There are three types of cost to consider; operating or variable costs of production, the ownership or fixed costs associated with the hog enterprise, and labor costs or charges including a charge for family labor. Feed costs are by far the largest component of operating costs. Other operating expenses include supplies and miscellaneous items, repairs and maintenance expenses associated with fencing, water systems, any other facilities, and machinery and equipment, sales expense, and the cost of working capital. Additional items may include cover crop expenses and predator control costs, for example, keeping a dog (assumed to be unnecessary in this budget).

For the enterprise budget, feed requirements and costs were generated from a feed budget spreadsheet available on-line at http://www.ag-econ.ncsu.edu/extension/Ag_budgets.html. The feed budget includes daily feed requirements for each type of livestock, days on feed, waste %, and unit cost of feed by animal category and calculates total feed amounts and cost. Other operating expenses listed in the budget include estimated cover crop expenses, supplies and miscellaneous items. Repair and maintenance expenses associated with fencing and water systems are estimated as a percentage of the new investment cost. These are itemized in Table 1 of the budget. If the initial investments are in used items with a lower initial cost to the farm then the annual repair and maintenance cost will be a larger percentage of the purchase price. Equipment operating expenses include repairs, maintenance and fuel cost. These are calculated in Table 2 of the budget. The cost of working capital is estimated at a 5.5% annual interest rate on the average operating expenses (that is, on one-half of the annual total). Sales expenses are assumed to be paid by the buyer.

Ownership costs are the annual charges necessary to recoup investments used by the hog enterprise. Cost categories are depreciation, interest on investment, property taxes, and insurance. These costs are summarized in three categories: Facilities, fencing, water; Machinery & equipment; and Livestock. These are itemized in Table 1 of the budget.

There is a cost assigned to all labor used by the hog enterprise, including both hired labor and a charge assigned to the value of family labor. Labor is separated into labor for operating machinery and

equipment and livestock labor. The former is estimated in Table 2 of the budget. Livestock labor is associated with tasks not requiring equipment and any time spent while equipment is idle, such as, checking, moving and working with the hogs or repairing fences and facilities.

Revenue

Potential sources of revenue include sales of feeder pigs, finished (top) hogs, cull breeding stock, and animals sold for breeding stock. The enterprise budget includes only sales of top hogs and cull breeding stock. No credit is given for the value of the nutrients provided to the following crops because the value will be crop specific. Additional crop budgets are required to assess the profitability of each crop and the profitability of the combined hog and cropping enterprises.

Net Returns

The budget includes three measures of net returns: Returns over Operating Expenses, Returns over Operating Expenses and Ownership Costs, and Returns over All Listed Expenses. Note that an enterprise budget only includes costs and returns that are specific to that enterprise and does not include general farm expenses such as land costs and farm overhead. For this reason, Returns over All Listed Expenses is also referred to as Returns to Land, Overhead, Management and Risk. However, note that these are only partial measures of profit. The preferred estimates of profit are returns on assets (investment), in dollar terms or as a rate of return, or returns to management. These measures are more appropriate to the financial performance of the whole farm. Additional measures of enterprise profitability include the margins or ratios of revenue compared to various expense categories.

Risk

Agriculture is inherently risky. Anyone making projections is advised to evaluate the robustness of their estimates by posing "what if" questions about the levels of animal performance, costs and returns. Table 3 of the enterprise budget provides a simplified assessment of risk by estimating the effect of 10% changes in costs and returns on the Return over All Listed Expenses.

Other Considerations

The economic viability of the whole farm business depends on more than the financial performance of one enterprise. By definition, an enterprise budget looks only at the specific investments, costs and returns attributable to that enterprise. Farm overhead costs and land related costs are not included. There may be complementary relationships with other enterprises, as noted above, for example, using crops to utilize nutrients from the hog enterprise.

There may be benefits to small landowners if running a farm enterprise allows the owner to qualify for lower property taxes under the North Carolina Agricultural Use Value rules. Qualifying to file taxes as a farmer instead of a non-farm individual may also confer tax advantages.

The whole farm must meet the family goals, including lifestyle, profitability, wealth and solvency, and cash flow. Environmental stewardship may be one of the family goals. For families with outside income and strong preferences to live on a particular small farm, the final decision may be one of choosing the farming option that best fits this lifestyle decision.

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