



Small-Scale Livestock Enterprises: *Tools for Choosing the Right Enterprise for You*

Introduction

Do you want to get involved in animal agriculture? What livestock type fits your lifestyle best? How much time, money, and acreage do you have to devote to a livestock enterprise? What are the tradeoffs amongst different livestock enterprises that you should know about before starting out?

Choosing the right small-scale livestock enterprise for you is an important decision with many components. This publication introduces a Web-based tool package comprised of the Purdue Comparative Decision Support (PCDS) matrix and PCDS2 profit/loss analysis tool. These tools are designed to help you make entry decisions into a small-scale livestock enterprise. The tools assist you in identifying and comparing enterprise characteristics that will affect your decision, such as:

- The reason you want to begin a livestock enterprise,
- The resources you have available,
- The local markets you have access to, and
- The amount of risk you are willing to accept in this venture.

The PCDS matrix can be used to evaluate the tradeoffs amongst the enterprises, as well as to analyze the profit/loss implications. After going through the exercise, you will have a greater understanding of the characteristics of each enterprise and be closer to choosing the enterprise that best meets your needs, fits with your resources, and satisfies your motivation for beginning a small-scale livestock enterprise.

Examples of the PCDS matrix are included in Tables 2 and 3 on pages 3-4 of this publication to assist you in evaluating these many components. Cow-calf, dairy steer, sheep, goats, and turkey enterprises are represented in the PCDS to help you explore potential enterprises with livestock that have different time, acreage, and investment needs.

Purdue Comparative Decision Support (PCDS) Matrix

The PCDS matrix is an interactive tool that incorporates your resource parameters (initial investment and available acreage) to return individualized financial information. Enterprise budgets based on small-scale enterprises for cow-calf, dairy steer, sheep, goats, and turkeys serve as the quantitative base of the PCDS matrix. The PCDS matrix allows you to compare and contrast financial, time, and qualitative characteristics of enterprise alternatives using multiple decision criteria.

Enterprises Defined: Scope and Scale

Prior to using the PCDS tools, it is important to understand how each enterprise is defined. Additionally, the enterprise budgets used to create the PCDS assumed small-scale production practices and a small-scale enterprise. For this reason, the PCDS will not return financial information for units greater than the upper bounds used to formulate the budgets. The scale of an

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Audience: Individuals seeking to begin a small small-scale livestock enterprise either as a stand-alone entity or as part of an existing farm operation.

Content: Introduces tools to assist individuals in identifying the livestock enterprise that best fits with their lifestyle, resources, and motivations.

Outcome: Readers will understand the interactive Web-based provided decision support tools introduced in this publication (<https://ag.purdue.edu/Agecon/Pages/Livestock-Enterprise.aspx>) and have realistic expectations surrounding multiple small-scale livestock enterprises. The tools will aid the readers in evaluating multiple objectives to make small-scale livestock enterprise entry decisions.

enterprise affects many of the production decisions and influences costs on a per unit basis (due to the inability to spread fixed costs over large numbers of production units). The PCDS is a starting point for planning, but further analysis into the actual scale of your desired enterprise should be conducted. The scope and scale of the enterprises used in the PCDS is summarized in Table 1.

Table 1. Enterprise Definition, Scale, and Scope

| Enterprise | Definition Summary | Budget Scale | Upper Bound |
|-------------|---|--------------|-------------|
| Cow-Calf | Hay and pasture, calves sold at 500 lbs. | 50 cows | 100 cows |
| Dairy Steer | Starting weight 350 lbs, market weight 700 lbs. | 25 head | 200 head |
| Sheep | Ewe flock, lambing Jan-Feb, market weight 125 lbs. | 150 ewes | 300 ewes |
| Goat | Does kidding for meat goats, market weight 80 lbs. | 100 does | 300 does |
| Turkey | Hens, poults purchased at 1 day old, marketed at 14 weeks | 3,000 birds | 4,500 birds |

Investment and Acreage

The PCDS asks you to provide investment and acreage parameters that are used to return the maximum number of animals you could initially support. The investment number is what you would need to pay up front to get started; the PCDS will return operating expenses per year based on the maximum number of head from your initial inputs.

Interpretation

The PCDS matrix returns information to provide realistic expectations of each of the enterprises. Numerical information provides a realistic scale that you could attain based on your investment/acreage parameters. Total time and frequency of time are included, along with ease of entry and exit. Consider your time availability and willingness to work in year-round production, and compare to the PCDS output. Also, your access to different market types and permanent structures could help determine your best fit in terms of enterprise type. Finally, think about why you want to begin a small-scale livestock enterprise.

Expectations for Your Situation: PCDS2

In the PCDS matrix, you find the financial information for the maximum number of head you could support based on your initial investment and acreage. PCDS2 allows you to choose the scale of the enterprises and returns the profit/loss on the enterprises. In addition to choosing the scale of the enterprises, PCDS2 allows you to change input parameters and sale prices.

You can use PCDS2 to reflect local market prices. For instance, you may be able to get hay for \$100 per ton instead of the assumed \$150 per ton, which would affect the profitability of the cow-calf, sheep, and goat enterprises.

PCDS2 is also useful for doing a best case/worst case analysis. Consider the best price for which you could secure inputs and receive for livestock in your local market. Then compare the profit/

loss to the highest priced inputs and lowest priced livestock you project. Think about the level of risk you are willing to take in this livestock enterprise; can you handle the worst case scenario? If not, consider changing the scale of the enterprise or not choosing that livestock enterprise.

If you are considering a niche marketing opportunity, enter the price you think you will be able to get to determine the impact on profit/loss. Be aware that you may have to change production practices that will affect the cost of raising animals sold in a niche market. This will affect the enterprise profit/loss, with the potential to affect both costs and revenues.

Finally, you can use PCDS2 to reflect the impact of the value of your time. In PCDS it is assumed that your time is worth \$14 per hour. You can adjust the value of your time in PCDS2 to reflect a higher value or to reflect a zero value because the value of time may not actually be affecting the cash flow of the enterprise. If you are planning to hire labor for the operation, you can also adjust the labor expense to reflect the estimated wage rate of the labor. (See *Example 1, page 3, and Example 2, page 4*).

Reading the PCDS Matrix

There are a number of factors to be considered when selecting among small-scale livestock enterprises. Some factors in the matrix will be more important than others to some individuals, depending on personal preferences and lifestyle factors. You may place different importance on a characteristic than reflected in the examples included here. The following discussion describes the information found in the Purdue CDS matrix in Example 2 to help you fully understand the information presented in the tool.

Maximum Number of Head

The maximum number of head is the number of head that the individual could support based on their 20 acres and \$15,000 initial investment. Because there are two constraints used to return the maximum number of head, the matrix shows the initial investment and acreage needed to have the maximum number of head. In this example, even though the individual was willing to invest \$15,000—the matrix only shows investment of \$12,376 for cow-calf because all of the acreage was used before the investment hit \$15,000. Likewise, the turkey enterprise only used 8 acres rather than the 20 the individual could devote to the enterprise because the initial investment could not surpass \$15,000.

Operating Expenses

Operating expenses are given for an operation size equal to the maximum number of head. The operating expenses of dairy steers and turkeys are given in two ways because these operations rely on animal purchases each production cycle. The initial investment on PCDS for these operations includes animal purchases so the operating expense in year 1 is less than the years that follow. Remember that your own estimated expenses may differ from those reflected in this matrix because of scale and operating decisions. The matrix is meant to be a starting place for you to compare species, but further budgeting should be conducted to reflect your individual operation more precisely. Feed cost as a percentage of operating expenses is given for you to identify

Example 1: Motivated by Lifestyle

A couple is interested in beginning a small-scale livestock enterprise because they desire the lifestyle characteristics inherent in a rural-based operation. Each individual in the household has an off-farm income source that will continue at the current level. The couple has 40 acres, \$25,000 initial investment, existing permanent structure, urban and traditional market access, and 20 hours per week to devote to the livestock enterprise.

Table 2. Purdue Comparative Decision Support Matrix: Example 1

| Criteria | Livestock Enterprise | | | | |
|--|--|---|--|--|--|
| | Cow-Calf | Dairy Steer | Sheep | Goat | Turkey |
| Maximum Number of Head | 16 | 56 | 92 | 78 | 4500 |
| Initial Investment Needed | \$ 24,752.00 <small>\$1547 investment/unit</small> | \$ 24,714.76 <small>\$441.34 investment/head</small> | \$ 24,748.00 <small>\$269 investment/unit</small> | \$ 24,882.00 <small>\$319 investment/unit</small> | \$ 17,310.00 <small>\$3.85 investment/bird</small> |
| Acreage Used | 39.2 <small>2.45 acres/unit</small> | 28 <small>0.5 acres/head</small> | 18.4 <small>0.2 acres/unit</small> | 23.4 <small>0.3 acres/unit</small> | 9 <small>0.002 acres/bird</small> |
| Operating Expenses | \$ 14,069.00 <small>\$879.31 cost/unit</small> | \$ 42,774.79 \$24192.03 in Year 1 <small>\$763.84 cost/head</small> | \$ 23,678.96 <small>\$257.38 cost/unit</small> | \$ 12,065.87 <small>\$154.69 cost/unit</small> | \$ 61,318.27 \$54883.27 in Year 1 <small>\$13.63 cost/bird</small> |
| Feed Cost as a % of Operating Expenses | 57% | 36% | 49% | 38% | 63% |
| Estimated Profitability | \$ (1,857.80) <small>\$-116.11 profit/unit</small> | \$ (8,886.39) <small>\$-158.69 profit/head</small> | \$ 586.09 <small>\$6.37 profit/unit</small> | \$ 6,472.86 <small>\$82.99 profit/unit</small> | \$ (10,693.27) <small>\$-2.38 profit/bird</small> |
| Total Labor Hours | 128 <small>8 hours/unit</small> | 112 <small>2 hours/head</small> | 460 <small>5 hours/unit</small> | 156 <small>2 hours/unit</small> | 720 <small>0.16 hours/bird</small> |
| Permanent Structure | - <small>Not important</small> | - <small>Not important</small> | 0 <small>Feed Storage</small> | 0 <small>Feed Storage</small> | + <small>Important</small> |
| Labor Intensity | Low <small>2-3 times/week</small> | Medium <small>Almost everyday</small> | Low <small>2-3 times/week</small> | Low <small>2-3 times/week</small> | High <small>Everyday</small> |
| Ease of Entry/Exit | High <small>180 days/ \$1,082 breeding stock</small> | Low <small>150 days/ \$0 breeding stock</small> | Medium <small>160 days/ \$159 breeding stock</small> | Medium <small>252 days/ \$154 breeding stock</small> | Low <small>98 days/ \$0 breeding stock</small> |
| Niche/Urban Market Access | - <small>Not important</small> | - <small>Not important</small> | 0 <small>Sometimes Important</small> | 0 <small>Sometimes Important</small> | + <small>Important</small> |
| Livestock Market Access | + <small>Important</small> | + <small>Important</small> | 0 <small>Sometimes Important</small> | 0 <small>Sometimes Important</small> | - <small>Not important</small> |

Decision: After going through PCDS, this couple decided to begin a cow-calf enterprise.

Why: The couple felt that having a cow herd would provide enjoyment. Additionally, the couple liked the flexibility of the low labor intensity (requiring labor 2-3 times/week) associated with cow-calf because of their off-farm employment. The use of all 40 acres was important to the couple since they really wanted to get back to their rural roots and use their land in the operation as it had been used in their childhood memories.

the risk of input price volatility on your operation. Consider your willingness to accept price risk and be aware of the potential for much higher (or lower) feed expenditures prior to beginning an operation.

Estimated Profitability

Estimated profitability is also given based on an operation size equal to the maximum number of head. This profitability estimate is found by subtracting operating expenses and fixed costs from sales revenue. The fixed cost included in the calculation is interest, taxes, insurance, and depreciation on facilities, machinery, and the

herds. Apart from these components, the initial investment is not captured in the estimated profitability. The estimated profitability of dairy steers and turkeys is found using the operating expenses for year 2 forward.

Total Labor Hours & Labor Intensity

Total labor hours is the estimated amount of time needed to operate at the size of the maximum number of head. This estimate is also subject to change based on your scale and production decisions and is meant to serve as an initial guide. The labor intensity reflects the frequency of labor required to meet the

Example 2: Motivated by Children

A family is interested in beginning a small-scale livestock enterprise because they desire the lessons in responsibility and educational value of running a livestock operation for their middle school-aged children. The family has a resource endowment of 20 acres, \$15,000 initial investment, existing permanent structure, urban and traditional market access, and 30 hours per week to devote to the livestock enterprise.

Table 3. Purdue Comparative Decision Support Matrix: Example 2

| Criteria | Livestock Enterprise | | | | |
|--|---|--|---|---|--|
| | Cow-Calf | Dairy Steer | Sheep | Goat | Turkey |
| Maximum Number of Head | 8 | 33 | 55 | 47 | 3899 |
| Initial Investment Needed | \$ 12,376.00 \$1547 investment/unit | \$ 14,564.06 \$441.34 investment/head | \$ 14,795.00 \$269 investment/unit | \$ 14,993.00 \$319 investment/unit | \$ 14,998.15 \$3.85 investment/bird |
| Acreage Used | 19.6 2.45 acres/unit | 16.5 0.5 acres/head | 11 0.2 acres/unit | 14.1 0.3 acres/unit | 7.798 0.002 acres/bird |
| Operating Expenses | \$ 7,034.50 \$879.31 cost/unit | \$ 25,206.57 \$14256.02 in Year 1 \$763.84 cost/head | \$ 14,155.90 \$257.38 cost/unit | \$ 7,270.46 \$154.69 cost/unit | \$ 53,128.87 \$47553.3 in Year 1 \$13.63 cost/bird |
| Feed Cost as a % of Operating Expenses | 57% | 36% | 49% | 38% | 63% |
| Estimated Profitability | \$ (928.90) \$-116.11 profit/unit | \$ (5,236.62) \$-158.69 profit/head | \$ 350.38 \$6.37 profit/unit | \$ 3,900.31 \$82.99 profit/unit | \$ (9,265.12) \$-2.38 profit/bird |
| Total Labor Hours | 64 8 hours/unit | 66 2 hours/head | 275 5 hours/unit | 94 2 hours/unit | 624 0.16 hours/bird |
| Permanent Structure | - Not important | - Not important | 0 Feed Storage | 0 Feed Storage | + Important |
| Labor Intensity | Low 2-3 times/week | Medium Almost everyday | Low 2-3 times/week | Low 2-3 times/week | High Everyday |
| Ease of Entry/Exit | High 180 days/ \$1,082 breeding stock | Low 150 days/ \$0 breeding stock | Medium 160 days/ \$159 breeding stock | Medium 252 days/ \$154 breeding stock | Low 98 days/ \$0 breeding stock |
| Niche/Urban Market Access | - Not important | - Not important | 0 Sometimes Important | 0 Sometimes Important | + Important |
| Livestock Market Access | + Important | + Important | 0 Sometimes Important | 0 Sometimes Important | - Not important |

Decision: After going through PCDS Matrix, this family decided to begin a meat goat operation.

Why: The family felt that having a doe herd would be educational for their children because they would see the entire life cycle from birth to sale for slaughter. Additionally, the couple liked the flexibility of the low labor intensity associated with a goat enterprise because of their off-farm employment and children's other activities. The couple also liked that the goats would be contained on fewer than their initial acreage parameter because it would give the children more hands on interactions and the goats would be more manageable for children due to their size. The relative ease of entry and exit as compared with the cow-calf enterprise was also a positive aspect for the couple in case their children lose interest or become too involved in other activities.

needs of that animal enterprise. Even if the total labor hours is low per unit, it may be that the care is needed in a more constant fashion (i.e. every evening as opposed to 2-3 times/week). The criteria of ease of entry/exit reflects a combination of total length of time you are committing to an animal in your enterprise and financial investment in breeding stock.

Need for Permanent Building

The need for a permanent building identifies whether a structure is critical to an operations' success. For a cow-calf or

dairy steer enterprise, a structure is not necessary. Sheep and goat operations may find that a structure is useful for feed storage, but the enterprise does not necessarily require a structure for housing animals. Animal housing is an integral part of turkey production.

Access to Markets

Access to niche/urban markets or traditional livestock markets reflects the type of market that small-scale operations may find most advantageous. The cow-calf and dairy steer operations represented in this matrix do not feed out finished animals,

meaning the operations sell before the animal is ready for slaughter. Thus, a traditional livestock market is the most common route for sales. The sheep and goat operations are selling a finished animal, so either market is suitable. The turkey industry, for large-scale production, conducts almost all sales by forward contracting and may not be receptive of small-scale turkey producers without prior negotiations; therefore, a niche market is the best option for marketing the finished birds.

Conclusion—Making Your Decision

The PCDS matrix and PCDS2 profit/loss analysis tools are designed to help you make an entry decision into a small-scale livestock enterprise. Think about the reason you want to begin a livestock enterprise, the resources you have available, the local markets you have access to, and the amount of risk you are willing to accept. Use the PCDS matrix to evaluate the tradeoffs of the enterprises and PCDS2 to analyze the financial risk. Choose the enterprise that best meets your resources and satisfies your motivation for beginning a small scale livestock enterprise.

You may find that your lifestyle does not align with a livestock enterprise. There may be too much price risk or you may not have a consistent amount of time to devote to the enterprise. In this case, consider investing your resources in a different venture.

The PCDS Tools

Find the interactive PCDS tools on the Purdue Agricultural Economics Extension website at

<https://ag.purdue.edu/Agecon/Pages/Livestock-Enterprise.aspx>.

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