



Risk and Resilience in Agriculture

Enterprise Budgeting

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One of the most basic and important production decisions is choosing the combination of products or enterprises to produce. An enterprise is defined as a single crop or livestock commodity that actually produces a marketable product. Some examples of different enterprises are:

- Cow/Calf
- Feeder Cattle
- Sheep
- Corn for Grain
- Corn for Silage
- Alfalfa Hay

What is produced determines the profitability of the business. Enterprises are the basic building blocks for a farm plan. The objective of a farm manager must be to evaluate which combination of enterprises will meet the goals and objectives of the farm/ranch family. By analyzing revenues and expenses associated with individual enterprises a manager can determine which enterprises might be expanded and those that should be cut back or eliminated. A manager may also want to compare profitability of one production

technique with another technique (e.g., minimum-till versus conventional tillage practices).

Enterprise Budgets

An enterprise budget is a listing of all estimated income and expenses associated with a specific enterprise to provide an estimate of its profitability. A budget can be developed for each existing or potential enterprise in a farm or ranch plan. Several budgets could be developed for a single budget to represent alternative combinations of inputs and outputs. Each budget should be developed on the basis of a small common unit such as one acre of corn, wheat, hay, etc. or one head of livestock. This permits comparison of the profit for alternative and competing enterprises. Great care should be taken when preparing enterprise budgets. The assumptions require much information, thought, and analysis.

Enterprise budgets can be organized and presented in several different formats, but they typically contain three sections:

- income/receipts
- variable or operating expenses and
- fixed expenses.

How To Develop An Enterprise Budget

The first step is to estimate total production (output or yield) and expected output price. The estimated yields and prices should be what you expect under normal conditions. Be as realistic as possible.

The second step is to estimate variable costs. Variable costs are just what they sound like - they vary with the amount of product you produce. These are the out-of-pocket costs that must be incurred if the enterprise is produced or grown. Some examples of variable costs are hired labor, repairs, feed, supplies, veterinary medicine and services, fuel, seed, etc.

The third step is to assess fixed costs. Fixed costs will occur and will stay about the same no matter how much you produce, or, in most cases whether or not you produce at all. Some examples of fixed costs are depreciation, taxes or insurance. At times the allocation of such charges are difficult, particularly when more than one crop enterprise is involved. While there are several methods to allocate fixed costs among multiple enterprises, the important thing to remember is to choose one method and use it consistently among multiple enterprises over time.

The last step is calculating net receipts. Net receipts represent that income which is left for the farmer/rancher and family to live on, pay debt, invest, or save. A return to a manager's land, labor and capital can be defined in an enterprise budget to represent these family living and investment choices. Land charges are generally based on one of three acceptable methods: 1) interest opportunity based on current value of land, 2) owner rental income; or 3) typical cash rent charge (market rent). Labor charges can be defined as a wage rate necessary to provide the management

functions of the producer. Capital charges can be defined as interest opportunity based on the value of non-real estate assets. When these values are deducted from net receipts, a return to a producers management and risk is left.

Example 1 depicts an enterprise budget for a corn enterprise. The first section describes the income for this enterprise. Production is estimated at 150 bushels per acre and price received is estimated at \$4.00 per bushel. Total receipts for this enterprise equal \$600.00 based on these estimates.

The next section of the budget describes variable costs of production. Variable costs total \$267.81 in Example 1. An income above variable costs can be calculated by subtracting total variable costs from total receipts. In this corn enterprise, income above variable costs equals \$332.19. The final section of this example budget is fixed costs of production. Fixed costs total \$39.46 per acre. Adding variable costs and fixed costs of production produces total costs of production, \$302.27 in this example. Net receipts are calculated by subtracting total costs from total receipts. Net receipts for this corn enterprise equal \$292.73. Charges for the manager's land, labor and capital have not been defined so estimated profit is what is available for family living, pay debt, invest or save.

Example 2 depicts an enterprise budget for a cow/calf livestock enterprise. The most important difference between this cow/calf enterprise budget and the corn enterprise budget in Example 1 is in the income section. The cow/calf enterprise shows income for steer calves, heifer calves and cull cows, differing from the single income source of the corn enterprise. In any enterprise budget, be sure to include all sources of income to get an accurate estimate of net receipts for each enterprise.

Break-even Analysis

Break-even analysis is a useful tool in enterprise analysis. The break-even point occurs when total receipts equal total costs. Break-even analysis can help you answer questions like: "What are the break-even prices at various yields?" and, similarly, - "What are break-even yields at given prices?" The break-even formulas are:

$$\text{Break-even Sale Price} = \frac{\text{Total Costs}}{\text{Total Production (Yield)}}$$

$$\text{Break-even Yield} = \frac{\text{Total Costs}}{\text{Sale Price}}$$

Through a study of combinations of breakeven prices, the farm/ranch manager can form reasonable expectations of changes necessary to obtain a price and yield combination that will cover projected total costs.

Example 1 presents a breakeven analysis for the corn enterprise. Breakeven price and breakeven yield required to cover total costs

are calculated in this example. Yield and price received are varied 10 and 25 percent above and below the yield and price received described in the enterprise budget. The resulting breakeven price and yield will provide insights towards the risk bearing ability for the particular enterprise. Although not presented here, the same type of analysis can be completed for a livestock enterprise as well.

The biggest limitation to enterprise budgeting is a lack of information. These budgets deal with future actions and it is difficult to make accurate estimates regarding future markets, input prices, yields, etc. Historical data provides a primary estimate to establish initial levels of budget input data. Utilize the most accurate information obtainable to complete an enterprise budget. Estimates of prices, costs, yields, etc. will be imperfect. However, decisions must be made on the best estimates available. Failure to budget due to insufficient or imperfect data accomplishes nothing.

Example 1. Enterprise Budget for Corn Production (1 Acre)

Item	Value per Acre
Income:	
150 bushels at \$4.00 per bushel	<u>\$600.00</u>
Total receipts	\$600.00
Variable costs:	
Seed.....	\$30.08
Fertilizer and lime	77.25
Chemicals.....	23.48
Machinery fuel and repairs	17.75
Irrigation expense.....	20.00
Custom harvest expense.....	39.50
Labor at \$6 per hour.....	42.00
Miscellaneous	5.00
Interest on variable costs (10% for 6 months)	<u>12.75</u>
Total variable costs	<u>\$267.81</u>
Income above variable costs	\$332.19
Fixed costs:	
Machinery depreciation, interest, taxes, and insurance	<u>\$39.46</u>
Total fixed costs	\$39.46
Total costs	<u>\$307.27</u>
Estimated profit (loss)	<u>\$292.73</u>

Breakeven prices to pay total costs (\$307.27)

112 bushels per acre.....	\$2.74 per bushel
135 bushels per acre.....	2.28 per bushel
150 bushels per acre.....	2.05 per bushel
165 bushels per acre.....	1.86 per bushel
187 bushels per acre.....	1.64 per bushel

Breakeven yield to pay total costs (307.27)

\$3.00 per bushel	102 bushels per acre
3.60 per bushel	85 bushels per acre
4.00 per bushel	77 bushels per acre
4.40 per bushel	70 bushels per acre
5.00 per bushel	61 bushels per acre

Example 2. Enterprise Budget for Cow/Calf Production (One Head)*

Item	Value per acre
Income:	
Steer calf (0.45 hd at 560 lbs at .68)	\$171.36
Heifer calf (0.35 hd at 540 lbs at .62)	117.18
Cull cow (0.15 hd at 1000 lbs at .40)	<u>60.00</u>
Total receipts	\$348.54
Variable costs:	
Purchased feed	\$25.00
Pasture lease	25.00
Crop residue	7.50
Hay (I-5T x \$60/ton)	90.00
Federal lease	60.00
Veterinary and medicine	15.75
Repairs - fences, buildings equipment	23.05
Machinery expense	4.50
Hauling and marketing	7.70
Labor	30.00
Miscellaneous	5.00
Interest on variable costs (10% for 6 months)	<u>14.67</u>
Total variable costs	<u>\$308.18</u>
Income above variable costs	\$40.36
Fixed costs:	
Insurance	\$ 15.55
Depreciation – bull	12.00
Depreciation - fences, buildings, equipment	23.30
Interest on breeding stock	76.40
Interest on fences, buildings, equipment	<u>22.61</u>
Total fixed costs	\$149.86
Total cost	<u>\$458.04</u>
Estimated profit (loss)	<u>(\$109.50)</u>

*Assumes a 90 percent calf crop, 15 percent of herd replaced each year with raised replacement heifers.

Sources: 1) Business, Management in Agriculture - Bart Eleveld, Oregon State University and Richard Carkner, Washington State University.
 2) Identifying Costs of Production - Norm Dalsted Colorado State University.
 3) Farm Management - Ronald D. Kay, McGraw Hill Book Co.

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