



Creating and Using Enterprise Budgets

Nate Bruce – Farm Business Management Specialist

An enterprise is defined as a single crop or livestock commodity that produces a marketable product. The mix of enterprises an agricultural producer raises determines the overall profitability of a farming business. It is imperative for producers to evaluate the revenues and expenses associated with each individual enterprise to determine which ones can be expanded and eliminated from the farm business. An enterprise budget is a listing of all income and expenses associated with a specific enterprise. Enterprise budgets can be developed for each existing enterprise or potential enterprise in a farm business. Each enterprise budget is set at a production scale that makes sense for the producer operator (acre, acres, poultry house, head of livestock, etc.). This fact sheet will discuss how to make and use enterprise budgets for a farming operation.

Enterprise Budget Applications

There are many different uses for enterprise budgets. Below is a list of some of the applications for enterprise budgets.

- List the inputs and production practices required by an enterprise.
- Allow producers to evaluate risks to individual enterprises.
- Itemize the receipts (income) received for an enterprise.
- Several budgets can be developed for a single enterprise using alternative combinations of inputs and outputs. Some examples are no-till vs conventional tillage and matted-row strawberries vs plasticulture strawberries.
- Support applications for lending.
- Provide the basis for a total farm business plan.
- Allow producers to compare the profitability of alternative and competing farm resources.
- Conduct break-even analyses for individual enterprises.

Components of an Enterprise Budget

An effective enterprise budget consists of several main components. All of which will be discussed in detail. These components are:

- Variable Expenses (Operating Expenses)
- Fixed Expenses
- Establishment Costs (If applicable)
- Revenue / Income
- Breakeven Analysis

Variable Expenses

Variable expenses are the out-of-pocket costs that are incurred if an enterprise is produced. Some examples are fertilizer, chemicals, fuel, seed, etc. Variable expenses vary from year to year and also vary depending on the volume of the commodity that is produced. Variable costs are determined based on common production units for the specific enterprise. Examples of units are per acre, per chicken house, per head, etc. It is imperative to take operating interest on variable expenses to reflect the opportunity cost of short-term capital invested in the production of the commodity. Operating loans can be represented in an enterprise budget by charging operating interest on variable expenses. An opportunity cost is the return that could be realized if the funds for variable expenses were invested in another alternative. To gather variable expenses for creating enterprise budgets, call around to seed distributors, chemical distributors, fertilizer distributors, etc. The operating interest should be representative of the current rates lenders are giving regionally to producers. An agricultural business can survive in the short-run by covering variable costs at the minimum.

Fixed Costs

Fixed costs are incurred whether or not production of the enterprise happens or not once the land, machinery, and equipment necessary for the production of the enterprise have been obtained. Fixed costs are often called ownership costs or sunk costs. If the enterprise budget is for a new enterprise budget and the machinery, equipment, and land have not yet been obtained for production, these ownership costs are avoidable. Examples of fixed costs are machinery expenses, depreciation, leases, taxes, repairs, etc. Fixed costs are slightly more challenging to estimate than variable costs. Surveys such as custom rate surveys and land rental rate surveys are good resources for estimating variable expenses. Machinery cost calculators have also been developed by several reputable sources. These estimate the cost of operating farm equipment. Discussions with other producers on fixed expenses is also a good resource in determining own fixed costs for budgeting purposes. The most accurate fixed costs will be a combination of several resources. Last but certainly not least, ample record keeping is imperative to having accurate fixed costs for a farming operation. To survive in the long-run a farming business must cover both fixed costs and variable costs.

Establishment Costs

Establishment costs are not applicable to all types of enterprises. Only enterprises that have an initial establishment year will have an establishment cost. An establishment cost is an important fixed cost in a production year budget that is amortized for the initial establishment cost. Establishment costs are prorated throughout the enterprise's useful production lifecycle. For example, a peach orchard may have a useful lifecycle of twenty years. The initial establishment cost of planting orchard would be prorated for twenty years and included in the annual production budget to ensure the initial establishment cost is covered over the twenty year useful lifecycle of the orchard. Establishment costs can be regarded as if they are loans that need to be paid off with interest.

Revenue / Income

Income is capital derived from selling the commodity produced from the enterprise to a consumer. Total income is calculated by multiplying the quantity sold by the price per unit.

$$\text{Price} \times \text{Units Sold} = \text{Total Income}$$

Net returns represents the total income which is left for a producer to live on, pay down debts, invest, or save.

$$\text{Net Returns} = \text{Total Income} - (\text{Variable Costs} + \text{Fixed Costs})$$

Breakeven Analysis

A breakeven analysis determines the yield and price combination that will cover projected total costs for the enterprise. Breakeven analysis helps producers create reasonable expectations of changes necessary to achieve the ideal combination. There are two methods to evaluate breakeven: breakeven price and breakeven yield. A breakeven price is the price a product would have to be sold for in order to pay for its production.

$$\text{Breakeven Price} = \frac{\text{Total Costs}}{\text{Total Production Yield}}$$

A breakeven yield is the yield needed to cover the cost of production at a given sales price.

$$\text{Breakeven Yield} = \frac{\text{Total Costs}}{\text{Sales Price}}$$

Examples

Most land-grant universities and cooperative extension agencies annually publish enterprise budgets for crops and livestock in their respective states. Much research is done in producing these budgets and are revised on a continuing basis as prices change. Published budgets are only a general guideline. Producers should develop budgets based on their own specific situation. Most budgets are in excel formats that producers can edit and make their own to reflect the farm operation's expenses. On the next couple pages are enterprise budget examples from the University of Delaware.

Wheat

University of Delaware Cooperative Extension Field Crop Budget - 2023-24

Estimated Costs - Do not make changes here.

VARIABLE COSTS				
Input/Item	Unit	Price/Unit	Units/A	Cost/Acre
Nitrogen	lbs	\$0.82	70	\$57.40
Phosphorous	lbs	\$0.88	40	\$35.20
Potassium	lbs	\$0.54	40	\$21.60
Lime (prorated over 3 years)	ton	\$57.00	0.5	\$28.50
Soil Test	Acre	\$12.00	1	\$12.00
Seed	Pound	\$0.52	150	\$78.00
Herbicide - Harmony SG	oz	\$9.53	0.8	\$7.62
Herbicide - Surfactant	qt	\$1.00	1	\$1.00
Insecticide - Warrior II	oz	\$1.40	2	\$2.80
Fungicide - Tilt	oz	0.75	2	\$1.50
Fungicide - Prostaro	oz	1.95	6.5	\$12.68
Interest on Variable Costs	\$258.30	8.00%	6	\$10.33
Total Variable Costs				\$268.63

FIXED COSTS (custom rates are used as a proxy for field operation costs)				
Input/Item	Unit	Price/Unit	Units/A	Cost/Acre
Spreading Fertilizer	application	\$9.55	1	\$9.55
Vertical Tillage	application	\$19.47	2	\$38.94
Broadcast Seeding	application	\$11.20	1	\$11.20
Pesticide Spraying	acre	\$10.50	2	\$21.00
Harvesting	acre	\$37.81	1	\$37.81
Hauling	acre	\$0.20	85	\$17.00
Interest on Fall Custom Charges ²	\$80.69	8.00%	6	\$3.23
Land Charge	acre	\$100.00	1	\$100.00
Total Fixed Costs				\$238.73

Total Costs	\$507.36
Expected Gross Revenue at Average Price	\$510.00
Net Returns	\$2.64

Net Returns Based On Example Costs

		Price Assumptions (\$/bu)		
		High	Average	Low
Yield Assumption (bu/A)		\$7.00	\$6.00	\$5.00
Excellent	105	\$227.64	\$122.64	\$17.64
Expected	85	\$87.64	\$2.64	-\$82.36
Poor	65	-\$52.36	-\$117.36	-\$182.36

Profit or Loss Per Bushel On Example Costs

		Price Assumptions (\$/bu)		
		High	Average	Low
Yield Assumptions (bu/A)		\$7.00	\$6.00	\$5.00
Excellent	105	\$2.17	\$1.17	\$0.17
Expected	85	\$1.03	\$0.03	-\$0.97
Poor	65	-\$0.81	-\$1.81	-\$2.81

Breakeven Price at Different Yield Assumptions (bu/A)		
Excellent	105	\$4.83
Expected	85	\$5.97
Poor	65	\$7.81

¹ Cells , from left to right, correspond to total variable costs, interest rate and number of months interest is charged.

² Cells , from left to right, correspond to total fall custom rate charges, interest rate and number of months interest is charged.

SEEDLESS WATERMELONS ON PLASTIC MULCH W/ DRIP IRRIGATION

University of Delaware Cooperative Extension Vegetable Crop Budget 2024

Estimated Costs - Do not make changes here.

VARIABLE COSTS				
Input/Item	Unit	Price/Unit	Units/A	Cost/Acre
Nitrogen	lbs	\$0.50	150	\$75.00
Phosphorous	lbs	\$0.91	50	\$45.50
Potassium	lbs	\$0.54	150	\$81.00
Lime (prorated over 3 years)	ton	\$57.00	1	\$57.00
Sulfur	lbs	\$0.65	20	\$13.00
Seedless Watermelon Seed	thousand	\$349.25	1.9	\$663.58
Pollenizer Watermelon Seed	thousand	\$184.08	0.5	\$92.04
Plastic Mulch	foot	\$0.08	7260	\$580.80
Laying Mulch	acre	\$168.28	1	\$168.28
Planting Labor	hour	\$16.55	6	\$99.30
Transplant Production	72-cell tray	\$12.50	35	\$437.50
Harvest Labor	acre	\$16.55	9	\$148.95
Removing Mulch	acre	\$124.65	1	\$124.65
Mulch Disposal	acre	\$25.00	1	\$25.00
Herbicide - Sandea ¹	ounce	\$38.00	0.4	\$15.20
Herbicide-Dual Magnum ¹	pint	\$8.25	0.5	\$4.13
Insecticide - Admire	ounce	\$2.31	8	\$18.48
Fungicide - Bravo	pint	\$3.56	21	\$74.76
Insecticide-Agri-Mek	ounce	\$6.42	21	\$134.82
Fungicide-Manzate	lbs	\$3.15	21	\$66.15
Fungicide-Zampro	ounce	\$2.49	14	\$34.86
Insecticide - Portal	pint	\$13.00	2	\$26.00
Bee Rental	colony	\$70.00	1.5	\$105.00
Interest on Variable Costs ²	\$3,090.99	6	8.00%	\$123.64
Total Variable Costs				\$3,214.63

FIXED COSTS (custom rates are used as a proxy for field operation costs)				
Input/Item	Unit	Price/Unit	Units/A	Cost/Acre
Applying Fertilizer Broadcast	application	\$9.24	1	\$9.24
Applying Chemicals Ground	application	\$10.22	8	\$81.76
Applying Chemicals Aerial	application	\$15.18	0	\$0.00
Transplanter Operation	acre	\$18.70	1	\$18.70
Hooded Sprayer	application	\$31.16	1	\$31.16
Tillage/Chisel	acre	\$23.87	1	\$23.87
Disk & Harrowing	acre	\$19.91	1	\$19.91
Mowing Vines	acre	\$12.47	1	\$12.47
Lifting Mulch	acre	\$18.70	1	\$18.70
Fixed Irrigation Costs ³	acre	\$200.00	1	\$200.00
Land Charge	acre	\$600.00	1	\$600.00
Irrigation Operating Costs ³	acre-inch	\$7.68	8	\$61.44
Total Fixed Costs				\$1,077.25

Yield Dependent Costs				
Input/Item	Unit	Price/Unit	Units/A	Cost/Acre
Harvest Cost at Excellent Yield	lb	\$0.035	100,000	\$3,500.00
Harvest Cost at Expected Yield	lb	\$0.035	80,000	\$2,800.00
Harvest Cost at Poor Yield	lb	\$0.035	60,000	\$2,100.00

Total Costs				\$7,295.88
Expected Gross Revenue at Average Price				\$10,200.00
Net Returns				\$2,904.12

¹ Herbicides applied with hooded sprayer between plastic beds. Calculate rate as **50.0%** of the broadcast acre rate.

² Cells , from left to right, correspond to total variable costs, number of months interest is charged, and interest rate.

³ Irrigation costs are highly variable depending on the size of the system and the cost of the system components.

Irrigation Fixed costs include the cost of drip tape, layflat, fittings, pump, manifold, and installation labor.

Returns Based On Example Costs

		Price Assumptions (\$/lb)		
		High	Average	Low
Yield Assumptions (lbs)		\$0.16	\$0.13	\$0.07
Excellent	100,000	\$7,643.12	\$4,703.12	-\$1,176.88
Expected	80,000	\$5,256.12	\$2,904.12	-\$1,799.88
Poor	60,000	\$2,869.12	\$1,105.12	-\$2,422.88

Profit or Loss Per Pound On Example Costs

		Price Assumptions (\$/lb)		
		High	Average	Low
Yield Assumptions (lbs)		\$0.16	\$0.13	\$0.07
Excellent	100,000	\$0.08	\$0.05	-\$0.01
Expected	80,000	\$0.07	\$0.04	-\$0.02
Poor	60,000	\$0.05	\$0.02	-\$0.04

Breakeven Price at Different

Yield Assumptions (lbs)		
Excellent	100,000	\$0.07
Expected	80,000	\$0.09
Poor	60,000	\$0.12

Brokerage Fee: 2.00%

Field Description: This information is used to determine the number of transplants, yards of plastic mulch, and the amount of herbicide applied.

Rows are on	6	foot centers
There are	4	feet between plants in the row
There are	0.500	acres unmulched/A ¹
There are	7260	mulched feet/acre
Seeded pollenizers planted	between	seedless plants in the row.
Ratio of	1	pollenizer per 3 seedless
There are	1815	seedless plants per acre
There are	454	pollenizers per acre

*Enter either "between" or "in place of" in the yellow-highlighted box.

Summary

When making enterprise budgets, estimated expected yields and prices under normal conditions. Any and all assumptions within the enterprise budget must be logical. If previous production records are available, use the last five to ten years of available data as a basis for yields and prices. Keep careful records of existing enterprises, including all receipts for associated expenses.

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