Development Partners Include: USDA NIFA United States Department of Agriculture National Institute of Food and Agriculture; Mississippi State University; Oklahoma State University Agricultural Economics; National Association of Agricultural Educators

Lesson 1. Activity 4 – Breaking Even

Introduction

In *Activity 2 Simple Budgets*, you used enterprise budgets to compare two alternative scenarios to determine which approach provided the most return to Matt's trailer building enterprise. Enterprise budgets are a good tool to conduct that kind of analysis between options for a business plan. Enterprise budgets can also help you decide between two competing projects, such as selling bred heifers or maintaining a cow/calf operation. Decisions are based on your individual goals but usually in business the decision comes down to which enterprise is providing a higher rate of return for your investment of time and money.

Yet another way you can use enterprise budgets is to determine the breakeven point for production or selling price. The following are two formulas to determine breakeven output level and breakeven sale price.

- Breakeven Output (production) Level

$$\frac{\text{Total Expense}}{\text{Sale Price}} = \text{Breakeven Output Level}$$

  - Example:
    - Hog sale price = \$0.65 per pound
    - Total Expenses per hog = \$130.00

$$\frac{\$130.00}{\$0.65\text{ lb.}} = 200\text{ lb.}$$

  - This means that you would need to sell the hog at 200 lbs. just to recover the expenses put into raising the hog – or to "breakeven" on this enterprise.
  - Every pound over 200 will be profit assuming the sale price is the same.

- Breakeven Sale Price

  You can run a similar analysis to determine what sales price would be optimal for your expenses and target sale weight of animals. This is called breakeven sale price.

$$\frac{\text{Total Expense}}{\text{Targeted Output}} = \text{Breakeven Sale Price}$$

  - Example:
    - Hog production cost $130.00 per head
    - Average hog target weight is 260 pounds at sale

$$\frac{\$130.00}{260} = \$0.50$$

    - This means if you spend $130 per hog and sell the hog at 260 pounds the minimum price you need before making money is $0.50 per pound.
    - In a fluctuating market, a budget can help you monitor sale prices to sell your animals at the optimal time to make the most return.

Materials

Students will need to have the following materials to complete this exercise:

- Pencil
- Calculator

Student Instructions

Now that you have some background into breakeven analysis for an enterprise budget, let us try a few scenarios and test your skill. **You must show your work**, therefore write out each problem using a formula from above, and walk your teacher through the steps to solve each question.

Wendy’s Winter Wheat Enterprise

Wendy is developing a budget to determine if winter wheat is a good business venture. The cost of producing wheat is $120 per acre. From research with local growers, she learns that with proper management of her fields her wheat crop should yield 35 bushels per acre.

1. What is the breakeven selling price ($/bushels) that Wendy will need for her enterprise?

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2. If wheat price is $3.80 per bushel, what is the breakeven yield (bushels/acre) Wendy needs to target?

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Freddy’s Fat Hog Enterprise

Fred is running a hog operation on his grandpa’s farm. He is using many feed inputs from a local farm and this saves a good deal of costs. Freddy’s costs for producing a hog for slaughter are $125 per hog.

1. If Freddy’s target weight for hogs is 260 pounds, what is his breakeven sale price?

2. If the market price is $0.58 per pound, what is the breakeven sale weight?

Now let's put what you learned into practice in a different way…

Leo's Lumber Project

Leo cuts hardwood timber and mills the logs into rough-cut boards for use in cabinet making. His cabinetmaker requests only the best quality material and because of this pays Leo $1.85 per board foot of lumber. Leo has an operating cost of $0.72 per board foot he produces. His sawmill is getting old and worn out and new parts to upgrade his mill costs $1400.00. How many board feet will Leo need to produce in order to breakeven for the estimated upgrades to his mill?

Student Reflection

1. Why is calculating breakeven levels of production or sales price important to a business owner?

2. What if the price of a commodity is fixed and the level of output is always the same. For example, if the price per pound of mint oil is $22.00 and a producer can only sell 300 barrels per year according to his contract. If $22.45 per pound is the breakeven price for this producer, what could the producer change to breakeven or make money on this enterprise?

3. Why is estimating expenses and potential market sale prices important for budgeting?