Farm Planning and Budgeting

Circle the best answer. Put a square around your second choice if you want. Half-credit is given for second choice, no penalty.

1. In an enterprise budget, “Income over Variable Costs” is another name for: (4)
   a. gross margin
   b. gross income
   c. profit
   d. breakeven selling price

2. Interest cost on land that is already bought and paid for would be classified as a ______ cost in a crop enterprise budget. (4)
   a. cash, variable
   b. cash, fixed
   c. noncash, variable
   d. noncash, fixed

3. Which phase of the strategic management process would be most influenced by a farm family’s basic values and attitudes about agriculture? (4)
   a. external scanning
   b. internal scanning
   c. goal setting
   d. strategy development

4. A cash flow budget should contain all the following except: (4)
   a. expected depreciation on farm machinery in the coming year
   b. principal payments to be made on farm machinery loans
   c. initial purchase cost of farm machinery to be bought in the coming year
   d. expected cost of diesel fuel for farm machinery

5. For a whole farm budget that is being developed to analyze the profitability of adding a feeder pig finishing enterprise and 87 acres of cropland to a farm, the most appropriate selling prices to use would be: (4)
   a. prices you actually received last year
   b. projected prices from next year’s outlook information
   c. current prices offered by local buyers
   d. average prices in your area over the past 10 years
6. Which kind of budget would be most useful for each of the following purposes? Indicate with E, WF, P, or CF.
   E = enterprise budget
   WF = whole farm budget
   P = partial budget
   CF = cash flow budget

   ____ How much operating loan money will a farm need each month in 2003?
   ____ What is the breakeven selling price needed to pay total costs of producing hay?
   ____ How much total revenue can be expected per dairy cow?
   ____ Would it be profitable to install a new automated feeding system in a feedlot?
   ____ Will a certain farming operation generate enough net income to support a family of five people?

7. In a beef cow/calf enterprise budget, calculate the gross income per cow unit assuming that:

   — a 90% calving rate is achieved (90% of the cows wean a live calf)
   — half the calves are heifers, half steers
   — .25 heifer calves per cow unit are kept as replacements
   — 20% of the cows are culled and sold each year
   — expected selling prices and weights are:
     • Steer calves at 600 lb. @ $.90 per lb.
     • Heifer calves at 500 lb. @ $.80 per lb.
     • Cull cows at 1,250 lb. @ $.40 per lb.

   Gross income per cow unit from each source (show your work)

8. Describe one characteristic or aspect of agriculture that causes decision-making to be different from decision-making in other sectors of the economy.
9. Answer the following questions using information from the enterprise budget below. (12)

What is the “budgeting unit”? ____________________

How much is the **gross margin** per acre? $ _______________/acre

How much is the **profit (or loss)** per acre? $ _______________/acre

How much is the **total cost per bushel**? $ _______________/bu.

What is the **breakeven selling price** for corn? $ _______________/bu.

Assuming land and machinery would continue to be owned, but labor is a variable input, what is the minimum gross revenue needed to justify growing this crop? $ ___________/acre

| Estimated Costs and Returns Per Acre, 2002 |
|------------------------------|---------|----------------|----------------|
|                              | **Unit** | **Quantity** | **Price or Cost/Unit** | **Total Per Acre** |
| 1. Gross Receipts            |         |              |                           |                    |
| Corn, grain                  | Bushels | 120.00       | $2.46                      | $295.20            |
| Stalks, baled                | Bale    | 3            | $18.00                     | $54.00             |
| Total Receipts               |         |              |                           | $349.20            |
| 2. Variable costs (preharvest)|         |              |                           |                    |
| Seed                         | Thousand| 22.00        | $1.00                      | $22.00             |
| Fertilizer                   |         |              |                           |                    |
| - nitrogen                   | Lbs.    | 120.00       | $0.26                      | $31.20             |
| - phosphate                  | Lbs.    | 50.00        | $0.23                      | $11.50             |
| - potash                     | Lbs.    | 50.00        | $0.14                      | $7.00              |
| Lime (prorated)              | Ton      | 0.33         | $30.00                     | $9.90              |
| Herbicides                   | Acre    | 1.00         | $14.15                     | $14.15             |
| Insecticides                 | Acre    | 1.00         | $11.27                     | $11.27             |
| Machinery fuel, repairs      | Acre    | 1.00         | $21.53                     | $21.53             |
| Labor                        | Hours   | 2.90         | $6.00                      | $17.40             |
| Interest on operating capital (8 months) | Dollar | $145.95 | 9.0% | $8.76 |
| Total Preharvest Costs       |         |              |                           | $154.71            |
| 3. Variable costs (harvest)  |         |              |                           |                    |
| Drying                       | Bu.     | 120          | $.10                       | $12.00             |
| Hauling                      | Bu.     | 120          | $.15                       | $18.00             |
| Combining                    | Acre    | 1.00         | $7.66                      | $7.66              |
| Labor                        | Hrs.    | .60          | $6.00                      | $3.60              |
| Total Harvest Variable Costs |         |              |                           | $41.26             |
| 4. Fixed Costs               |         |              |                           |                    |
| Machinery ownership (preharvest) | Acre  | 1.00         | $27.04                     | $27.04             |
| Machinery ownership (harvest) | Acre  | 1.00         | $16.20                     | $16.20             |
| Land rent                    | Acre    | 1.00         | $65.00                     | $65.00             |
| Total Fixed Costs            |         |              |                           | $108.24            |
| 5. Total Costs               |         |              |                           | $304.21            |
10. It’s August and some neighbors who are short of corn silage for their dairy herd offer to buy some of your corn straight from the field. It will be ready to be harvested as silage in about 3 weeks. Normally you would wait and harvest it yourself later, as grain (as shown in the enterprise budget in question 9).

They will do all the harvesting and pay you $14 for each ton of corn silage harvested. You estimate that the yield will be 20 tons per acre.

You will have no harvesting costs, but you will have to apply an additional 20 pounds of phosphate fertilizer (@ $0.24 per pound) and 50 pounds of potash fertilizer (@ $0.15 per pound) this fall to make up for having the entire corn plant harvested.

Using the information above and any relevant costs and returns from the enterprise budget in question 9, use a partial budget to estimate the net gain or loss per acre you would realize if you sold your crop to the neighbors. Show your work.

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<tr>
<th>Change (describe, show calculations)</th>
<th>Added Revenue</th>
<th>Reduced Cost</th>
<th>Reduced Revenue</th>
<th>Added Cost</th>
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<td>Total</td>
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Net change = $ ____________/acre

How much would you have to sell each ton of silage for to just break even? $_________/ton
(Show your work below).
11. John and Carol are considering building a new machine shed and shop for their farm. They will have to take $4,500 from their savings account (which is earning 4% annual interest) and borrow $13,500 more at 10% annual interest.

a. What will their weighted cost of capital be for this investment? (4) 

_____%

b. How much will their ownership costs be for the first year? Assume a zero salvage value after 30 years of useful life. (6)

Depreciation: $__________

Interest: $__________

Insurance, taxes (use 1% of value) $__________

c. How much will their annual ownership costs be, on average, over the life of the building? (6)

Depreciation: $__________

Interest: $__________

Taxes, insurance (1% of value) $__________

12. Give one example of an agricultural production process that demonstrates “diminishing marginal returns.” Identify both the resource (input) and the product (output). (5)

Resource _______________________  Product _____________________
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1. A
2. D
3. C
4. A
5. D
6. CF, E, E, P, WF
7. .90 calves
   .45 steers, .45 heifers
   \((.45 - .25) = .20\) heifers to sell
   .20 head to sell

\[
\begin{array}{lcl}
Steer calves: & .45 \text{ head} \times 600 \text{ lbs.} \times \$0.90/\text{lb.} & = \$243 \\
Heifers calves: & .20 \text{ head} \times 500 \text{ lbs./hd.} \times \$0.80/\text{lb.} & = \$80 \\
Cull cows: & .20 \text{ head} \times 1,250 \text{ lbs./hd.} \times \$0.40/\text{lb.} & = \$423 \\
\end{array}
\]

8. • small business units
• perfectly competitive (many sellers)
• dependent on nature
• supply of farmland is fixed
• family supplies labor, capital and management

9. 1 acre
\[
\begin{align*}
\$349.20 - \$154.71 - \$41.26 &= \$153.23/acre \\
\$349.20 - \$304.21 &= \$44.99/acre \\
\$304.21/120 \text{ bu.} &= \$2.54/acre \\
\frac{(\$304.21 - \$54.00)/120}{120} &= \$2.09/\text{bushel} \\
\end{align*}
\]
Cover all variable costs \(\$154.71 + \$41.26 = \$195.97/\text{acre}\)

10. | Change (describe, show calculations) | Added Revenue | Reduced Cost | Reduced Revenue | Added Cost |
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<tbody>
<tr>
<td>Sell corn for silage: 20 T @ $14</td>
<td>$280.00</td>
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<tr>
<td>Do not sell corn grain, no stalk bales $295.20 + 54.00</td>
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<td>$349.20</td>
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<tr>
<td>No harvesting costs (variable) $12.00 + $18.00 + $7.66 + $3.60</td>
<td></td>
<td>$41.26</td>
<td></td>
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</tr>
<tr>
<td>Additional fertilizer (20 lb. @ $.24) + (50 lb. @ $.15)</td>
<td></td>
<td></td>
<td>$12.30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$280.00</td>
<td>$41.26</td>
<td>$349.20</td>
<td>$12.30</td>
</tr>
<tr>
<td>Net change =</td>
<td></td>
<td></td>
<td></td>
<td>($ (40.24)/\text{acre})</td>
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\[
\frac{(\$280.00 + 40.24)}{20} = \$16.01/\text{ton}
\]
\[
20 P + 41.26 = 349.20 + 12.30 \\
20 P = 320.24 \\
P = 16.01
\]
11. a. \[ 4\% \left( \frac{4,500}{18,000} \right) + 10\% \left( \frac{13,500}{18,000} \right) \]
   
   \[ = 1\% + 7.5\% \]
   
   \[ = 8.5\% \]

b. \[ \frac{18,000}{30 \text{ years}} = 600 \]
   
   \[ 18,000 \times 8.5\% = 1,530 \]
   
   \[ 18,000 \times 1\% = 180 \]

thetic

\[ \frac{18,000}{30 \text{ years}} = 600 \]

\[ \text{Average value} = \frac{18,000 + 0}{2} = 9,000 \times 8.5\% = 765 \]

\[ 9,000 \times 1\% = 90 \]

12. Fertilizer, seed, water, etc. applied to crops
   Feed and milk production
   Feed and selling weight