Economics 330   Name ___________________________________
Lab 2
Fall 2008

Crop Enterprise Budgets

The purposes of this lab are:
1. to become familiar with the concepts and organization of a crop enterprise budget
2. to estimate the costs and returns for two common crops
3. to learn how to search for a budget for a nontraditional crop

Fairview Acres intends to plant 800 acres of corn and 500 acres of soybeans this year. Your assignment is to create an enterprise budget for 1 acre of corn and 1 acre of soybeans for one year, using the blank forms at the end of the lab, and the information provided below. Choose either corn following corn or corn following soybeans, and soybeans.

<table>
<thead>
<tr>
<th>Spring machinery:</th>
<th>Price per Unit</th>
<th>Corn following soybeans, conventional tillage</th>
<th>Corn following corn, conventional tillage</th>
<th>Herbicide tolerant Soybeans, following corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>See variable costs per acre on page 2.</td>
<td>NH3 applicator (N)</td>
<td>Tandem disk</td>
<td>Field cultivator</td>
<td>Plant</td>
</tr>
<tr>
<td>Fall machinery:</td>
<td>See page 2.</td>
<td>Combine</td>
<td>Haul</td>
<td>Dry (1 gal. LP gas per 8 bushels)</td>
</tr>
<tr>
<td>Drying (LP gas)</td>
<td>$2.20 per gal.</td>
<td>No drying</td>
<td></td>
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</tbody>
</table>

Seed—corn: $2.00 /1000 K.  
Seed—soybeans: $30 per bag  
30,000 kernels / acre  
1.2 bags per acre

Fertilizer

| Nitrogen | $..75 per lb. | 135 lb./acre | 190 lb./acre | None |
| Phosphate | $1.00 per lb. | 60 lb./acre | 55 lb./acre | 40 lbs./acre |
| Potash | $.60 per lb. | 50 lb./acre | 45 lb./acre | 75 lbs./acre |
| Lime | $18 per ton | 1/3 ton /acre/year | 1/3 ton /acre/year | 1/3 ton /acre/year |

Herbicides

| Bicep II Magnum | $36 per gal.* | 5 pints / acre | 5 pints / acre |
| Balance PRO | $7.00 per oz. | 3 oz. / acre | 3 oz. / acre |
| Roundup | $26 per gal.* | 1.5 pints / acre |
| Authority | $40 per lb. | .3 lb. / acre |
| Insecticide | none | Cost of $12 per acre | none |

Crop Insurance: $15 per acre  
Miscellaneous costs: $8 per acre

*There are 8 pints in a gallon.
1. **Gross revenue:**
   **Yield:** This spring has been rather wet, but they hope to average 175 bushels per acre for corn following soybeans, 165 bushels per acre for corn following corn, and 50 bushels per acre for soybeans.

   **Price:** Check the Heartland Co-op Elevator web site at [www.heartlandcoop.com](http://www.heartlandcoop.com), then click on “Click here for cash prices.” Use the price quotes for O/N 2008 (October-November delivery) for corn and for soybeans, for any location except the Mississippi River, Cedar Rapids, Cargill, AGP or ADM (they would have higher hauling costs).

   Expected selling price at harvest:  
   Corn: $___________/bushel  
   Soybeans: $___________/bushel

   **USDA Payments**
   In addition, the USDA will pay them a **direct payment** of $22.00 per acre on both crops.

2. **Machinery operating costs:**
   Use the **variable costs** estimates on page 3 of this lab. Note--fixed machinery costs will come later.

3. **Supplies**
   Using the prices and application rates given on page 1, calculate the cost per acre for all seed, fertilizer, herbicides, insecticides and miscellaneous items.

4. **Interest:**
   Interest is charged on the total cost of spring machinery operating, supplies, and miscellaneous at 7.5% per year for 8 months.

5. **Labor:**
   **Spring:**
   Corn: For 800 acres of corn they will require 3 people working 12 hours per day each for 22 days.  
   _______ hrs

   Soybeans: For 700 acres of soybeans they will require 3 people working 12 hours per day each for 15 days.  
   _______ hrs.

   **Fall:**
   Corn: Harvest operations for 800 acres require 3 persons, each working 10 hours per day for 30 days.  
   _______ hrs

   Soybeans: Harvest operations for 700 acres require 2 persons for 10 hours per day, for 18 days.  
   _______ hrs

   **Annual:** Add more 200 hours for non-field work time, for each crop.  
   _______ hrs _______ hrs

   Find the hours needed for all the acres.
   _______ hr total _______ hr total

   Find the hours needed per acre.
   _______ hr/acre _______ hr/acre

   Value their labor at $11 per hour.  
   $_______/acre $_______/acre
6. **Machinery ownership (fixed) costs:**
Fairview Farm owns a line of machinery with a current value of $280,000. Calculate the following ownership costs (show your work):

   a. depreciation (assume 10% of current value): $__________

   b. interest (6% of current value): $__________

   c. insurance, housing (1% of current value): $__________

   d. total machinery ownership costs per year: $__________

   e. fixed cost per acre, for 1,500 total acres of corn and soybeans: $__________/acre

7. **Land**
Cash rent for their land is $200 per acre this year, for either crop.

Complete the two budgets, then answer the questions below.

**ANALYSIS**

1. Which crop looks most profitable this year? _________________________

2. What is the break-even selling price needed to cover total costs?
   Remember to subtract the USDA direct payment from the total costs first.
   corn  _________________________
   soybeans  _________________________

3. What is the breakeven selling price needed to cover variable costs, only?
   Remember to subtract the USDA direct payments from variable costs first.
   corn  _________________________
   soybeans  _________________________

Should they go ahead and plant corn and soybeans even if the expected market price is below their breakeven selling price per bushel? Explain why. Do fixed costs need be taken into account in the short run?
CROP ENTERPRISE BUDGET – 1 acre

A. Crop _________________________________________________________________

B. Gross Revenue

Yield _________  Price _______________  _________
USDA direct payment _________
Total _________

C. Machinery Variable (operating) Costs—spring (fuel, oil, repairs). See page 2.

_______________________________    ________
_______________________________  ________
_______________________________    ________
_______________________________    ________
_______________________________    ________
_______________________________    ________
_______________________________    ________
_______________________________    ________

Machinery Variable (operating) Costs

Supplies
Quantity  Price
_______________________  ________
_______________________  ________
_______________________  ________
_______________________  ________
_______________________  ________
_______________________  ________
_______________________  ________
_______________________  ________

Crop insurance
Miscellaneous

Subtotal of preharvest machinery and supplies costs _________

E. Interest on preharvest machinery and supplies costs:

$___________ x _____ % x ______ mo./12 ________

F. Machinery Operating-harvest (fuel, oil, repairs). See page 11 of bulletin.

Combine
Haul _________ bu. @ $_____ ________
Dry _________ gal @ $_____ ________

G. Labor: Hours ________ x wage value ________ = ________

H. Machinery ownership costs (fixed) ________

I. Land: Land rent ________

J. Total Costs (Fixed) (Variable) (Total) ________  ________  ________

Show your work below.

K. Gross margin per acre: ________

L. Profit per acre: ________

M. Total cost per bushel: ________
# CROP ENTERPRISE BUDGET – 1 acre

## A. Crop

## B. Gross Revenue

<table>
<thead>
<tr>
<th>Yield</th>
<th>Price</th>
<th>$/acre</th>
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USDA direct payment

Total

## C. Machinery Variable (operating) Costs—spring (fuel, oil, repairs). See page 2.

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<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
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Crop insurance

Miscellaneous

Subtotal of preharvest machinery and supplies costs

## D. Supplies

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
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</table>

## E. Interest on preharvest machinery and supplies costs:

\[
\text{Interest} = \text{Costs} \times \text{Rate} \times \frac{\text{Months}}{12}
\]

## F. Machinery Operating-harvest (fuel, oil, repairs). See page 11 of bulletin.

Combine

Haul

\[\text{bu. @ $} \]

## G. Labor: Hours \[\times\] wage value \[=\]

Fixed Costs

## H. Machinery ownership costs (fixed)

## I. Land: Land rent

## J. Total Costs

<table>
<thead>
<tr>
<th>(Fixed)</th>
<th>(Variable)</th>
<th>(Total)</th>
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</table>

## Show your work below.

K. Gross margin per acre:

L. Profit per acre:

M. Total cost per bushel:
Part 2. Search for a Budget

The National Agricultural Risk Education Library has developed a data bank of crop and livestock enterprise budgets. Go to the Internet site shown below and find an enterprise budget for a crop with which you have no experience.

1. go to: http://www.agrisk.umn.edu/

2. Select **Budget Library**.

3. Choose **Crop**, then select a crop from the pick list for which you want to find a budget.

4. You may have to go through a couple more steps to get the budget you want, depending on how a particular state has organized its budgets.

   Alternative: Go to the ISU Ag Decision Maker web site. It has budgets for vegetable crops and organic crops in Iowa. http://www.extension.iastate.edu/agdm/cdcostsreturns.html

5. Once you find your budget, print a copy of it if possible, then answer the questions below.

Questions:

1. What is the title of the enterprise? ________________________________

2. What state is it from? __________________

3. How much is the expected gross revenue per acre? $___________

4. How much are the variable or operating (direct) costs per acre? $___________

5. How much are the fixed or ownership (indirect) costs per acre? $___________

6. How much is the estimated gross margin (return over variable costs) per acre? $___________

7. How much is the estimated profit and return to management per acre? $___________

8. Per acre, does this crop look more or less profitable than growing corn and soybeans in Iowa?

Attach a printed copy of the budget to this lab.