

MMM 460

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2008 Estimated Costs and Returns for Irrigated Corn

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As row-crop producers think about the 2008 crop-year, they should have a smile on their faces. The commodity markets continue to bid for acreage. With bio-fuels creating new markets for both corn and soybeans, this demand-driven market may continue to provide marketing opportunities. Currently, the major decision for producers is to evaluate the crop enterprise mix for 2008. This memo discusses the estimated costs and returns to producing irrigated corn, how production costs have increased since 2002, and how price and yield variability affects profitability.

Costs and Returns for 2008

The estimated Return over Variable (production) costs for irrigated corn for 2008, based on Clemson University Enterprise budgets, is described in Table 1.

Table 1. 2008 Irrigated Corn Estimated Costs and Returns (\$/Acre) ^{1/}.

| | <u>Unit</u> | <u>Quantity</u> | <u>Price or Cost/Unit</u> | <u>Total Per Acre</u> |
|-----------------------------------|-------------|-----------------|---------------------------|-----------------------|
| Gross Receipts | | | | |
| Corn ^{2/} | bu. | 160 | \$4.76 | <u>\$761.60</u> |
| Total Receipts | | | | <u>\$761.60</u> |
| Variable Costs | | | | |
| Seed | thou. | 28 | \$1.50 | \$42.00 |
| Fertilizer | | | | |
| Nitrogen | lbs. | 190 | \$0.59 | \$112.10 |
| Phosphate | lbs. | 60 | \$0.52 | \$31.20 |
| Potash | lbs. | 60 | \$0.26 | \$15.60 |
| Lime (prorated) | ton | 0.5 | \$52.50 | \$26.25 |
| Herbicides | acre | 1 | \$7.48 | \$7.48 |
| Insecticides | acre | 1 | \$11.20 | \$11.20 |
| Irrigation Machinery and Labor | acre | 1 | \$48.16 | \$48.16 |
| Drying (3 points) | bu. | 169.33 | \$0.15 | \$25.40 |
| Hauling | bu. | 160 | \$0.40 | \$64.00 |
| Tractor/Machinery | acre | 1 | \$30.95 | \$30.95 |
| Labor | hrs | 2.54 | \$6.50 | \$16.51 |
| Interest on Operating Capital | dol. | \$219.58 | 9.00% | <u>\$9.88</u> |
| Total Variable Costs | | | | <u>\$440.73</u> |
| Return over Variable Costs | | | | <u>\$320.87</u> |

^{1/} Detailed enterprise budgets for agronomic crops are available at: <http://cherokee.agecon.clemson.edu/budgets.htm> or from your local Clemson University Cooperative Extension office.

^{2/} Corn price based on December 2008 Corn Futures price on January 4, 2008 with a harvest-time basis of -\$0.10/bu.

Total production costs are estimated to be \$441/acre with fertilizer/lime costs accounting for 42% of the total cost per acre (Table 1). In addition, machinery/irrigation, hauling and seed expenses account for 18%, 15% and 10%, respectively, of the total cost per acre (Table 1).

The harvest cash price, based on the value of the December 2008 Corn Futures contract of \$4.86 and adjusted by an estimated harvest-time basis of -\$0.10, is estimated to be \$4.76 per bushel (Table 1). Given the revenue and cost estimates, the Return over variable costs for irrigated corn is estimated to be \$320 per acre (Table 1).

Understanding the Increase in Production Costs

For long-term profitability, producers must continue to control costs. The production costs for irrigated corn from 2002 to 2008, based on Clemson University Extension enterprise budgets, are reported in Table 2. Variable costs have increased \$175/acre since 2002 with 73% of the increase occurring since 2005 (Table 2). As you would expect, the largest increase has been for fertilizer with nitrogen costs increasing \$49 per acre since 2002 (Table 2). The increased cost of fertilizer and lime accounts for 44% of the cost increase since 2002. Machinery costs, especially the cost of irrigation, account for 20% of the increase in production costs since 2002 (Table 2). Another large increase has occurred in hauling expense which has increased by \$40 per acre since 2003 (Table 2).

Table 2. Budgeted Production Costs from 2002 – 2008 for Irrigated Corn with an Estimated Yield of 160 Bushels/Acre.

| Variable Costs | <u>2008</u> | <u>2006-2007</u> | <u>2005</u> | <u>2004</u> | <u>2003</u> | <u>2002</u> |
|--|---------------|------------------|----------------|---------------|---------------|---------------|
| Seed | \$42.00 | \$41.72 | \$39.20 | \$35.00 | \$34.44 | \$28.00 |
| Fertilizer | | | | | | |
| Nitrogen | \$112.10 | \$104.50 | \$91.88 | \$81.39 | \$76.28 | \$62.96 |
| Phosphate | \$31.20 | \$21.00 | \$19.87 | \$17.87 | \$16.47 | \$15.33 |
| Potash | \$15.60 | \$17.40 | \$13.28 | \$9.93 | \$8.85 | \$9.15 |
| Lime (prorated) | \$26.25 | \$26.25 | \$24.02 | \$21.82 | \$20.76 | \$20.53 |
| Herbicides | \$7.48 | \$17.64 | \$16.55 | \$16.02 | \$33.05 | \$12.12 |
| Insecticides | \$11.20 | \$11.55 | \$10.50 | \$11.27 | \$11.83 | \$11.27 |
| Irrigation Machinery and Labor | \$48.16 | \$48.16 | \$28.50 | \$24.92 | \$24.92 | \$24.87 |
| Drying (3 points) | \$25.40 | \$22.01 | \$20.32 | \$16.93 | \$16.93 | \$16.93 |
| Hauling | \$64.00 | \$48.00 | \$40.00 | \$32.00 | \$24.00 | \$24.00 |
| Tractor/Machinery | \$30.95 | \$26.62 | \$24.14 | \$21.87 | \$16.44 | \$18.65 |
| Labor | \$16.51 | \$11.83 | \$15.24 | \$15.24 | \$13.80 | \$13.80 |
| Interest on Operating Capital | <u>\$9.88</u> | <u>\$14.86</u> | <u>\$11.22</u> | <u>\$9.25</u> | <u>\$9.79</u> | <u>\$7.94</u> |
| Total Variable Costs | \$440.73 | \$411.55 | \$354.71 | \$313.51 | \$307.56 | \$265.55 |
| Increase from Previous Year (\$/acre) | \$29.18 | \$56.84 | \$41.20 | \$5.95 | \$42.01 | |

This cost information will help managers understand which cost items have increased the most and, in turn, which items to focus on when monitoring costs. It is important to remember that it is important to cut the non-necessary expenses and to use inputs in a way to get the biggest return for the cost of the input. Therefore, sound management practices should be used when managing costs. For example, soil tests can be used to determine fertilization rates and increased scouting for weeds and insects can be used to monitor pesticide costs.

How Risky is Irrigated Corn in 2008?

Another question managers should consider when evaluating a crop enterprise is the risk of not covering variable costs. The Total Variable Costs for irrigated corn are estimated to be \$441/acre (Table 1). At an expected yield of 160 bu./acre, the break-even price for irrigated corn is \$2.75 per bushel. At this break-even

price, there will be just enough revenue to pay for the variable costs listed in Table 1. However, the break-even price does not pay for the cost of rented land or provide a return to fixed costs and management.

Table 3 describes the Return over Variable Cost for alternative prices and yields. Managers can use Table 3 to evaluate the risk of not covering variable costs of producing irrigated corn based on their own price and yield expectations. For example, at the price of \$3.50/bushel, there would be revenue available to pay for all production expenses with yields of 130 bu./acre or greater (Table 3). Similarly, at a yield of 110 bu./acre, all variable costs will be covered with prices of \$4.25/bu. or greater (Table 3).

Table 3. Return over Variable Cost for Various Prices and Yields for Irrigated Corn (160 bu/acre Expected Yield) ^{1/}.

| Harvest Yield | Harvest Cash Price | | | | | | |
|---------------|--------------------|---------|---------|--------|--------|--------|--------|
| | \$3.25 | \$3.50 | \$3.75 | \$4.00 | \$4.25 | \$4.50 | \$4.75 |
| 90 | (\$149) | (\$126) | (\$104) | (\$81) | (\$59) | (\$36) | (\$14) |
| 100 | (\$116) | (\$91) | (\$66) | (\$41) | (\$16) | \$9 | \$34 |
| 110 | (\$84) | (\$56) | (\$29) | (\$1) | \$27 | \$54 | \$82 |
| 120 | (\$51) | (\$21) | \$9 | \$39 | \$69 | \$99 | \$129 |
| 130 | (\$19) | \$14 | \$47 | \$79 | \$112 | \$144 | \$177 |
| 140 | \$14 | \$49 | \$84 | \$119 | \$154 | \$189 | \$224 |
| 150 | \$47 | \$84 | \$122 | \$159 | \$197 | \$234 | \$272 |

^{1/}Total Variable Costs are estimated to be \$441 per acre.

Where do I go for Help in Making this Decision?

Clemson University Extension has developed budgets for the major agronomic crops to help you evaluate their profitability for your farm business. The budgets are to be used as a guide and it is very important that you adjust these budgets to reflect your own costs, management practices, and productivity. You can download the enterprise budgets from the internet at <http://cherokee.agecon.clemson.edu/budgets.htm>. Your local extension office will be able to help you download these budgets and can help you understand how to use these budgets to make decisions for your farm business.