

A Review of Crop Production Costs, Yields and Returns for South-Central North Dakota for the Years 2002-2006

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As producers seek to answer a growing demand for specific crops, they will need to take a real look at what the various major crops have provided over the past years in terms of yield, total costs and net return per acre. As all crops have a place in the area, producers will be challenged to find the right mix of crops and acres that will provide them with the maximum opportunity for increased profits while maintaining the production and marketing risks at manageable levels.

Data for this study was gathered directly from producers enrolled in the North Dakota Farm Business Management Program. The sites where these producers were enrolled included Bismarck, Casselton, Carrington, Enderlin, Jamestown, Napoleon and Wahpeton. Each of these sites collected and summarized the data for its own area, after which the data was combined into an annual regional report. Farms located within the Red River Valley or west of Bismarck were typically deleted from the regional report and included with other regional reports that were more reflective of the area where the producers were located.

The data for this study included the crops of barley, oil sunflowers, soybeans, hard red spring wheat (HRSW), hard red winter wheat (HRWW), and corn. These crops covered a total of 346,665 acres (Table 1) for the years 2002 through 2006. The crops included within the report were not separated for such characteristics as conventional or Roundup-Ready®, by tillage practices or by similar items. Irrigated crops were not included in the report. This study summarizes the production, costs and net returns for each of the six major crops included. A detailed listing of both direct and overhead expenses is included as part of the report. Due to a lack of earlier production data, the HRWW data is calculated from only the 2005 and 2006 harvest years and is limited to 16 fields containing a total of 2,490 acres.

The highest 5-year average gross return, excluding direct and counter-cyclical payments, was claimed by corn at \$226.80 per acre. The average price for corn sold was calculated to be \$2.21 per bushel. The crop with the smallest annual average gross return was HRSW which averaged \$160.24 per acre and had a 5-year average price received of \$3.81 per bushel. The gross return per acre included the value of the raised crop plus any additional insurance or miscellaneous income.

In the area of direct expenses, corn was again the leader with a total of \$175.70 in direct costs. Barley, including both feed and malting types, had the lowest direct costs at \$109.30 per acre. Total overhead costs per acre were quite similar for five of the crops with a range of \$24.76 to \$30.00 per acre. With increased storage and machinery costs, additional chattel interest and higher labor costs, corn accounted for the highest overhead costs of the six crops at \$36.70 per acre. With all costs considered, barley had the lowest average total costs at \$137.28 per acre while corn was the highest with a 5-year average of \$212.40 in total costs per acre. Of the six crops, the annual average total costs for corn varied the most, from a low of \$188.12 in 2003 to a high of \$241.26 in 2005.

To provide for a per acre profit number that also included the direct and counter-cyclical payments, the amount of \$11.00 per acre was added to the net return per acre for each crop. This decoupled payment amount was based on the 5-year regional reports and was equalized across all of the six crops. With the estimated \$11.00 payment included, the highest calculated net return was for barley at \$59.61 per acre. This was followed by oil sunflowers at \$47.47 per acre, soybeans at \$35.67 per acre, HRSW at \$35.43 per acre, HRWW at \$31.63 per acre and corn at \$25.40 per acre.

Producers are encouraged to consider both the potential income and the level of production risk when selecting crops based on the 5-year averages as shown. In addition, producers are encouraged to look

at the return over direct costs, or as it is also known, return to overhead for each crop that they are considering. By comparing the return over direct costs for each crop, producers can get a better look at what amount of income remains to handle the overhead costs for each crop. While overhead costs do vary, the return to overhead is a good method of judging the potential profitability of selectable crops.

While there is no exact method of forecasting the weather or possible weather-related production problems, producers may be able to take advantage of multi-year pricing opportunities for crops such as corn, soybeans and wheat. By taking advantage of this type of marketing opportunity through the use of cash forward contracts, futures, options and combinations of these tools, producers can greatly reduce the pricing risk for crops they may select. By reducing the pricing risk, more emphasis can be placed on the production practices needed to ensure yields that annually produce the best possible net returns.

References

Region 3 - South Central ND Farm Business Management Annual Reports, 2002-2006, North Dakota Farm Business Management Program.

Table 1 Crop Production 2002-2006 in Region 3, South Central North Dakota

| Years 2002-2006 Region 3 | Barley | Oil Sunf. | Soybeans | HRSW | HRWW* (05-06) | Corn |
|---|--------|-----------|----------|---------|------------------|--------|
| Number of Fields | 261 | 229 | 419 | 578 | 16 | 178 |
| Number of Farms | 143 | 128 | 233 | 261 | 12 | 137 |
| Acres per field | 196.67 | 149.04 | 259.26 | 217.81 | 155.62 | 135.90 |
| Total Acres of Crop | 51,331 | 34,130 | 108,630 | 125,894 | 2,490 | 24,190 |
| Yield per Acre | 65.88 | 14.09 | 29.51 | 42.06 | 52.00 | 92.35 |
| Operator Share | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Value per Unit, includes LDP | 2.67 | 12.75 | 5.74 | 3.81 | 3.54 | 2.21 |
| Total product return/acre | 176.06 | 179.58 | 169.31 | 160.24 | 184.32 | 204.28 |
| Misc. Income per acre | 9.83 | 7.03 | 8.95 | 6.18 | 0.12 | 22.52 |
| Gross Return per Acre | 185.89 | 186.61 | 178.26 | 166.42 | 184.44 | 226.80 |
| Direct Expenses/Acre | | | | | | |
| Seed | 8.16 | 18.88 | 29.20 | 9.86 | 9.80 | 35.41 |
| Fertilizer | 21.44 | 17.99 | 9.02 | 23.66 | 32.26 | 34.93 |
| Crop Chemicals | 14.19 | 19.17 | 14.45 | 19.16 | 17.72 | 17.59 |
| Crop Insurance | 7.09 | 7.77 | 9.04 | 7.53 | 7.25 | 10.56 |
| Fuel and Oil | 8.26 | 9.28 | 8.38 | 8.07 | 8.58 | 14.41 |
| Repairs | 9.38 | 9.80 | 10.65 | 8.87 | 11.17 | 14.45 |
| Custom Hire | 4.73 | 4.17 | 5.32 | 4.64 | 8.06 | 5.00 |
| Land Rent | 33.30 | 32.36 | 36.06 | 32.46 | 34.95 | 37.88 |
| Misc. | 0.31 | 0.22 | 0.51 | 0.48 | 1.85 | 1.00 |
| Operating Interest | 2.44 | 2.83 | 3.00 | 2.50 | 2.17 | 4.47 |
| Total Direct Costs/Acre | 109.30 | 122.47 | 125.63 | 117.23 | 133.81 | 175.70 |
| Return over Direct Exp. | 76.59 | 64.14 | 52.63 | 49.19 | 50.63 | 51.10 |
| Overhead Expenses/Acre | | | | | | |
| Hired Labor | 3.87 | 3.45 | 3.94 | 2.99 | 4.31 | 6.84 |
| Machinery & Building Leases | 1.20 | 1.73 | 1.63 | 1.57 | 0.71 | 2.12 |
| Farm Insurance | 1.94 | 1.79 | 2.13 | 1.85 | 3.09 | 2.41 |
| Utilities | 1.39 | 1.31 | 1.55 | 1.42 | 1.57 | 1.79 |
| Interest | 1.82 | 2.12 | 2.57 | 2.15 | 2.51 | 3.41 |
| Mach. and Building Depreciation | 13.52 | 13.40 | 12.48 | 11.42 | 14.17 | 16.50 |
| Miscellaneous | 4.24 | 3.87 | 3.66 | 3.36 | 3.64 | 3.63 |
| Total Overhead Expense/Acre | 27.98 | 27.67 | 27.96 | 24.76 | 30.00 | 36.70 |
| Total Listed Expenses/Acre | 137.28 | 150.14 | 153.59 | 141.99 | 163.81 | 212.40 |
| Net Return per Acre without Direct or CC | 48.61 | 36.47 | 24.67 | 24.43 | 20.63 | 14.40 |
| Direct Expense per Unit | 1.66 | 8.69 | 4.26 | 2.79 | 2.57 | 1.90 |
| Total Listed Expense per Unit | 2.08 | 10.66 | 5.20 | 3.38 | 3.15 | 2.30 |
| Net Return per Unit | 0.74 | 2.59 | 0.84 | 0.58 | 0.40 | 0.16 |
| Breakeven Yield per Acre | 47.73 | 11.22 | 25.20 | 35.65 | 46.24 | 85.92 |
| Est. Gov't. Payments per Acre | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 |
| Net Return Including est. Gov't. Payments | 59.61 | 47.47 | 35.67 | 35.43 | 31.63 | 25.40 |

* Data Source, Region 3 Reports, 2002-2006, North Dakota Farm Business Management Program