

Crop Production Costs, Yields and Returns for South-Central North Dakota for the Years 2003-2007

Steve Metzger

Carrington Area Farm Business Management Program

As producers look for viable farm cash flows, 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, expenses and marketing risks at manageable levels.

Data for this study was gathered directly from producers enrolled in the North Dakota Farm Business Management Program in Region 3 at 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), corn and hard red winter wheat (HRWW). These crops covered a total of 381,254 acres (Table 1) during the years 2003 through 2007. The crops included within the regional 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, direct and overhead costs and net returns for each of the six major crops included. Due to an earlier lack of production data, the HRWW data is calculated from only the 2005-2007 harvest years and is limited to 32 fields containing a total of 6,207 acres.

The highest 5-year average gross return, excluding direct and counter-cyclical payments, was claimed by corn at \$263.23 per acre. The average price for corn was calculated to be \$2.54 per bushel. The crop with the smallest annual average gross return was HRSW which averaged \$200.27 per acre and included a 5-year average price received of \$4.30 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 \$188.90 in direct costs. Barley, including both feed and malting types, had the lowest direct costs at \$117.83 per acre. Excluding corn, total overhead costs per acre were quite similar for the remaining five crops with a range of \$26.61 to \$31.92 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 \$38.62 per acre. With all costs considered, barley had the lowest average total costs at \$147.89 per acre while corn was the highest with a 5-year average of \$227.52 in total costs per acre. Of the five crops listed, for the entire 5-year period, the annual average total costs for corn varied the most, from a low of \$188.12 in 2003 to a high of \$265.20 in 2007.

To provide for a per acre profit number that also included the direct and counter-cyclical payments, the amount of \$11.25 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 \$11.25 payment included, the highest calculated average 5-year net return was for barley at \$63.69 per acre. This was followed by oil sunflowers at \$60.39 per acre, soybeans at \$56.87 per acre, HRSW at \$56.58 per acre and corn at \$46.96 per acre. Including the described government payments, winter wheat showed a 3-year average net income of \$85.22 per acre with the highest profit harvested crop year of 2007 coming in at \$205.82 per acre.

Producers are encouraged to consider both the potential income, the new and widening level of expenses and the level of production risk when selecting crops based on the 5-year averages as shown. 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 some, particularly with some row crops, the return to overhead is still 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 marketing price 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, 2003-2007, North Dakota Farm Business Management Program.

Table 1. Crop Production 2003-2007 in Region 3, South Central North Dakota.

Years 2003-2007 Region 3	Barley	Oil Sunf.	Soybeans	HRSW	Corn	HRWW* (05-07)
Number of Fields	240	209	424	565	201	32
Number of Farms	132	126	236	265	152	26
Acres per field	204.09	160.59	284.74	238.53	184.10	193.97
Total Acres of Crop	48,981	33,563	120,729	134,769	37,005	6,207
Yield per Acre	67.97	14.48	30.52	45.94	95.22	54.46
Operator Share	100.00	100.00	100.00	100.00	100.00	100.00
Value per Unit, includes LDP	2.82	14.32	6.51	4.30	2.54	4.49
Total product return/acre	191.96	207.38	198.61	197.63	241.47	244.71
Misc. Income per acre	8.37	6.29	7.84	2.64	21.76	0.78
Gross Return per Acre	200.33	213.67	206.45	200.27	263.23	245.49
Direct Expenses/Acre						
Seed	9.06	21.09	32.03	10.49	39.43	10.11
Fertilizer	24.64	20.36	8.23	27.37	39.13	33.60
Crop Chemicals	14.94	21.92	13.87	21.69	17.18	20.39
Crop Insurance	7.95	9.02	10.37	8.83	12.57	8.23
Fuel and Oil	9.68	11.02	9.78	9.35	16.19	9.70
Repairs	9.95	10.70	11.02	9.32	15.33	11.54
Custom Hire	4.88	5.37	5.04	4.58	5.19	6.81
Land Rent	33.99	32.66	36.77	33.16	37.52	35.28
Misc.	0.26	0.17	0.49	0.52	1.02	1.25
Operating Interest	2.48	3.28	3.33	3.02	5.34	2.69
Total Direct Costs/Acre	117.83	135.59	130.93	128.33	188.90	139.60
Return over Direct Exp.	82.50	78.08	75.52	71.94	74.33	105.89
Overhead Expenses/Acre						
Hired Labor	4.31	3.86	4.31	3.18	7.15	4.51
Machinery & Building Leases	1.45	2.00	1.97	1.82	2.29	1.96
Farm Insurance	2.04	1.82	2.18	2.00	2.36	3.03
Utilities	1.45	1.41	1.57	1.52	1.85	1.67
Interest	2.09	2.38	2.73	2.37	3.47	2.42
Mach. and Building Depreciation	14.11	13.58	13.42	12.11	17.64	14.14
Miscellaneous	4.61	3.89	3.72	3.61	3.86	4.19
Total Overhead Expense/Acre	30.06	28.94	29.90	26.61	38.62	31.92
Total Listed Expenses/Acre	147.89	164.53	160.83	154.94	227.52	171.52
Net Return per Acre without Direct or CC	52.44	49.14	45.62	45.33	35.71	73.97
Direct Expense per Unit	1.73	9.36	4.29	2.79	1.98	2.56
Total Listed Expense per Unit	2.18	11.36	5.27	3.37	2.39	3.15
Net Return per Unit	0.77	3.39	1.49	0.99	0.38	1.36
Breakeven Yield per Acre	49.48	11.05	23.50	35.42	81.01	38.03
Est. Gov't. Payments per Acre	11.25	11.25	11.25	11.25	11.25	11.25
Net Return Including est. Gov't. Payments	63.69	60.39	56.87	56.58	46.96	85.22

* Data Source, Region 3 Reports, 2003-2007, North Dakota Farm Business Management Program