Crop Production Costs, Yields, and Returns for South-Central North Dakota for the Years 2005-2009

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As producers look to maximize farm cash flows, they are encouraged to take a real look at what the various major crops have provided over the past 5 years in terms of yield, total costs and net return per acre. As all crops have a place in the area, the challenge will be to find the right mix of crops and acres that will provide individual producers 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, canola, corn, hard red spring wheat (HRSW), hard red winter wheat (HRWW), oil sunflowers, and soybeans. These crops covered a total of 441,858 acres (Table 1) during the years 2005 through 2009. 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 seven major crops included. Due to an earlier lack of 2007 production data and a limited number of acres, pinto beans were not included in the 5-year report as illustrated in Table 1.

The highest 5-year average gross return, excluding direct and counter-cyclical payments, was claimed by corn at $342.67 per acre. The average price for corn was calculated to be $3.03 per bushel. The crop with the smallest annual average gross return was canola which averaged $247.21 per acre and included a 5-year average price received of $15.09 per cwt. The gross return per acre included the value of the raised crop, any loan deficiency payments received, and any additional insurance or miscellaneous crop income.

In the area of direct expenses, corn was once again the leader with an average total of $244.27 in direct costs. Barley, including both feed and malting types, had the lowest average direct costs at $148.82 per acre. Excluding corn, total per acre overhead costs were quite similar for the remaining six crops with a range of $31.24 to $35.04 per acre. With increased storage and machinery costs, additional chattel interest, and higher labor costs, corn accounted for the highest overhead costs of the seven listed crops at $45.22 per acre. With all costs considered, barley had the lowest average total costs at $183.33 per acre while corn was the highest with a 5-year average of $289.49 in total costs per acre. While barley did produce the highest 5-year average net income, it also recorded the greatest percentage increase in total expenses with these rising 57.3 percent during the 2005 to 2009 timeframe. Corn recorded the largest dollar increase in total expenses at $133.46 per acre for a 36.6 percent increase over the 5-year period. During this same time period, the other five crops showed an increase in total production costs ranging from $75.27 to $98.11 per acre.

To provide for a per-acre profit number that also included government payments (direct, counter-cyclical and CSP), the multi-year average farm program payment, on a per acre basis, was added to the net return per acre for each crop. This payment averaged $11.93 per acre across all seven of the listed crops, varying from a low of $11.20 to a high of $12.61 per acre. With the payment included, the highest calculated average 5-year net return was for barley at $104.10 per acre. This was followed by oil sunflowers at $82.83 per acre, HRSW at $82.54 per acre, HRWW at $81.13 per acre, soybeans at $78.72 per acre, corn at $64.98 per acre, and canola at $53.04 per acre. Although pinto beans were not included in the 7 crops in Table 1, due to lesser acreage and only 4 years of data, pinto beans did record a 4-year average net income of $85.01 per acre on a total of 9,061 acres.

Producers are always encouraged to consider 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 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 various marketing opportunities 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 produce the best possible annual net returns.

References

Region 3 - South Central ND Farm Business Management Annual Reports, 2005-2009, North Dakota Farm Business Management Program.

Table 1 Crop Production 2005-2009 in Region 3, South Central North Dakota.

Years 2005-2009 Region 3		Barley	Oil Sunf.	HRSW	HRWW	Soybean	Corn	Canola
Number of Fields		207	210	547	66	378	203	64
Number of Farms		126	127	255	55	229	156	39
Acres per field		227.80	189.94	266.47	213.58	340.81	239.44	273.83
Total Acres of Crop		47,154	39,888	145,760	14,096	128,828	48,607	17,525
Yield per Acre		71.04	16.17	48.02	56.91	32.01	110.27	15.12
Operator Share		100.00	100.00	100.00	100.00	100.00	100.00	100.00
Value per Unit, includes LDP	$	3.78	16.40	5.41	4.77	7.79	3.03	15.09
Total product return/acre	$	268.88	265.25	259.66	271.46	249.37	333.63	228.17
Misc. Income per acre	$	7.06	12.92	5.94	0.59	10.62	9.04	19.04
Gross Return per Acre	$	275.94	278.17	265.60	272.05	259.99	342.67	247.21
Direct Expenses/Acre								
Seed	$	11.81	25.61	14.39	12.94	39.19	50.02	31.03
Fertilizer	$	37.43	33.51	41.67	48.96	8.91	58.04	45.31
Crop Chemicals	$	17.86	31.49	25.48	24.21	16.04	17.80	22.04
Crop Insurance	$	10.92	12.84	12.81	11.97	14.90	17.66	11.84
Fuel and Oil	$	13.22	14.05	11.87	11.35	12.85	24.93	12.69
Repairs	$	12.84	12.25	11.75	12.73	14.44	20.73	11.02
Custom Hire	$	4.82	7.16	5.13	8.24	5.55	6.06	2.41
Land Rent	$	37.16	34.32	37.11	37.41	41.20	40.97	33.75
Misc.	$	0.21	0.13	0.70	0.82	0.96	2.00	0.27
Operating Interest	$	2.55	3.36	3.48	2.69	3.53	6.06	2.98
Total Direct Costs/Acre	$	148.82	174.72	164.39	171.32	157.57	244.27	173.34
Return over Direct Exp.	$	127.12	103.45	101.21	100.73	102.42	98.40	73.87
Overhead Expenses/Acre								
Hired Labor	$	5.37	5.00	4.12	4.82	5.76	8.89	3.95
Machinery & Building Leases	$	1.46	1.89	2.29	1.62	2.22	2.68	2.08
Farm Insurance	$	2.33	2.00	2.21	2.78	2.38	2.50	2.65
Utilities	$	1.69	1.75	1.68	1.92	1.68	2.06	1.45
Interest	$	1.98	2.17	2.50	2.14	2.91	3.52	1.48
Mach. and Building Depreciation	$	16.51	15.89	14.20	14.49	15.45	21.02	16.19
Miscellaneous	$	5.17	4.53	4.24	4.30	4.64	4.55	4.23
Total Overhead Expense/Acre	$	34.51	33.23	31.24	32.07	35.04	45.22	32.03
Total Listed Expenses/Acre	$	183.33	207.95	195.63	203.39	192.61	289.49	205.37
Net Return per Acre,No Direct or CC	$	92.61	70.22	69.97	68.66	67.38	53.18	41.84
Direct Expense per Unit	$	2.09	10.81	3.42	3.01	4.92	2.22	11.46
Total Listed Expense per Unit	$	2.58	12.86	4.07	3.57	6.02	2.63	13.58
Net Return per Unit	$	1.30	4.34	1.46	1.21	2.10	0.48	2.77
Breakeven Yield per Acre		46.57	11.89	35.08	42.52	23.36	92.69	12.35
Farm Program Payments per Acre	$	11.49	12.61	12.57	12.47	11.34	11.80	11.20
Net Return Including Farm Payments	$	104.10	82.83	82.54	81.13	78.72	64.98	53.04

* Data Source: Region 3 Reports, 2005-2009, North Dakota Farm Business Management Program