

# Irrigation Analysis Worksheet<sup>†</sup>

	CORN		YOUR OPERATION	
	Irrigated	Non-Irrigated	Irrigated	Non-Irrigated
<b>Marketable Yield</b>	178 bu/A	59 bu/A		
<b>Expected Price</b>	\$2.25	\$2.25		
<b>MARKET INCOME<sup>1</sup></b>	\$400.50	\$132.75		
<b>DIRECT (VARIABLE) COSTS</b>	<b>Cost / Acre</b>	<b>Cost / Acre</b>	<b>Cost / Acre</b>	<b>Cost / Acre</b>
Seed	\$37.19	\$26.56		
Herbicides	23.45	23.45		
Fungicides	0.00	0.00		
Insecticides	14.96	14.96		
Fertilizer	41.01	25.00		
Crop Insurance	11.20	11.20		
Fuel & Lubrication	11.29	11.29		
Repairs	13.70	13.70		
Irrigation Power	31.06	0.00		
Irrigation Repairs	9.97	0.00		
Drying	14.40	4.78		
Custom Hauling	0.00	0.00		
Miscellaneous	1.05	1.05		
Operating Interest	9.68	6.60		
<b>SUM OF LISTED DIRECT COSTS</b>	\$218.96	\$138.59		
<b>RETURN OVER VARIABLE COSTS</b>	\$181.54	(\$5.84)		
<b>INDIRECT (FIXED) COSTS</b>				
Misc. Overhead	\$9.11	\$9.11		
Machinery	26.58	\$26.58		
Depreciation				
Machinery	16.39	16.39		
Investment				
Irrigation	31.49	0.00		
Depreciation				
Irrigation Investment	16.30	0.00		
Land Taxes	3.97	3.97		
Land Investment	26.25	26.25		
<b>SUM OF LISTED INDIRECT COSTS</b>	\$130.09	\$82.30		
<b>SUM OF ALL LISTED COSTS<sup>2</sup></b>	\$349.05	\$220.89		
<b>RETURN TO LABOR &amp; MANAGEMENT</b>	\$51.45	(\$88.14)		

\*Center pivot covering 130 acres of irrigated land; expenses are listed on a "per acre" basis.

$$\text{Return on Investment (Example)} = \frac{\text{added income}^1}{\text{added cost}^2} \frac{(\$400.50 - \$132.75)}{(\$349.05 - \$220.89)} \times 100 = 208.9\%$$

$$\text{Return on Investment (Your Field)} = \frac{\text{added income}^1}{\text{added cost}^2} \times 100 = \quad \%$$

<sup>†</sup>Source: Adapted from Growing Irrigated Potatoes, North Dakota State University, NDSU Extension Service, AE-1040 (Rev) March 1999  
<http://www.ext.nodak.edu/extpubs/plantsci/rowcrops/ae1040-2.htm#Economic>

# Irrigation System Analysis Worksheet

		Center Pivot	Pivot w/Corner	Lateral Move	Your Estimate
<b>TABLE 1.</b> <b>COMPARATIVE COST OF MECHANICAL MOVE IRRIGATION SYSTEMS (SQUARE 160 ACRES/65 HECTARES-HA), 100-FOOT DEEP WELL IN MIDDLE OF PROPERTY) IN GALLONS PER MINUTE (GPM) AND LITERS PER SECOND (LPS).</b>  <i>Source: Selecting A Sprinkler Irrigation System, North Dakota State University, AE-91, Rev. 1998</i>	<b>CAPITAL COSTS</b>				
	Number of Systems Required	1	1	1	
	Acres Irrigated (in 160 A quarter/65 ha)	130/52	152/61	158/64	
	Required Flow Rate (gpm/lps)	780/49	912/58	948/60	
	Equipment Cost	\$40,000	\$60,000	\$66,000	
	Well, Pump, Motor	\$30,000	\$35,000	\$35,000	
	Pipe, Meter, Valves	\$3,000	\$3,000	\$8,000	
	<b>TOTAL CAPITAL COSTS</b>	<b>\$73,000</b>	<b>\$98,000</b>	<b>\$109,000</b>	
	<b>CAPITAL COST PER ACRE</b>	<b>\$561.54</b>	<b>\$644.74</b>	<b>\$689.87</b>	
	<b>CAPITAL COST PER HECTARE</b>	<b>\$1,387.60</b>	<b>\$1,593.16</b>	<b>\$1,704.71</b>	

		Center Pivot	Pivot w/Corner	Lateral Move	Your Estimate	
<b>TABLE 2.</b> <b>ANNUAL OWNERSHIP COSTS (PER ACRE)</b>  <i>††Based on an electric rate of 4.5¢ per kilowatt-hour (kwh), an electric demand charge of \$9.00 per kwh per month (4 months of operation) and 1,050 hours of pump operation per growing season.</i>  <i>Source: Selecting A Sprinkler Irrigation System, North Dakota State University, AE-91, Rev. 1998</i>	Depreciation on System (20 yr)	\$15.38	\$19.74	\$20.89		
	Depreciation on Well, Pump, Motor and Pipe (20 year life, straight line depreciation)	11.54	11.51	11.08		
	Interest on Investment	28.08	32.24	34.49		
	Insurance (\$.50/\$100)	2.81	3.22	3.45		
	<b>TOTAL ANNUAL OWNERSHIP COST</b>	<b>\$57.81</b>	<b>\$66.71</b>	<b>\$69.91</b>		
	<b>OPERATING COSTS (PER ACRE/HECTARE)</b>					
	Power (electrical) <sup>††</sup>	\$20.30/8.12	\$20.30/8.12	\$21.94/8.78		
	Labor (@ \$7.00/hr)	5.25/2.10	5.25/12.10	7.00/2.80		
	Maintenance (1.5% new cost)	8.42/13.37	9.67/3.87	10.35/4.14		
	<b>TOTAL ANNUAL OPERATING COST</b>	<b>\$33.97/13.59</b>	<b>\$35.22/14.09</b>	<b>\$39.29/15.72</b>		
	<b>OPERATING AND OWNERSHIP COST</b>	<b>\$91.78/36.71</b>	<b>\$101.93/40.77</b>	<b>\$109.20/43.68</b>		
	Kilowatt Hours of Power	31.69/12.68	37.06/14.83	41.64/16.65		
	Pressure at Well (psi/bar)	40/2.75	40/2.75	45/3.1		

		Without Irrigation	With Irrigation
<b>TABLE 3.</b> <b>PROFIT PROJECTION COMPARISON</b>	Gross Revenue Per Acre		
	Irrigation Operating and Ownership Cost	0.00	
	Other Expenses (land cost, seed, chemical, fertilizer, etc.)		
	Net Income		

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