

# MISSOURI 2002 IRRIGATION SURVEY

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This is the 25<sup>th</sup> year the University of Missouri has collected data from Missouri farmers on irrigation performance. The data presented here are the average values for 31 irrigation systems that responded to our December 2002 survey. Individual farms may report more than 1 system. Irrigation systems located in the southeast region of Missouri are not included in this report.

The number of surveys returned was about the same as last year. All of the respondents indicated that they used their irrigation system this year. Survey respondents included 25 irrigation systems irrigating corn and 27 systems irrigating single-crop soybeans in Missouri in 2002.

Respondents reported that corn yields from land irrigated with an average of 6.3 inches of water exceeded dryland corn yields by 54 bushels. Irrigated single-crop soybean yields exceeded dryland yields by 11.9 bushels, with 4.6 inches of water being applied.

Sixty six percent of the systems were fixed center pivots; 21% were towable center pivots and 13% were traveling gun. Pumping power was predominately diesel (65% of the systems), followed by 35% of the systems using electricity. Ninety percent of the respondents reported that their irrigation water supply was adequate. One hundred percent of those that used reservoirs reported that their reservoirs were full in June.

Page 4 of this report contains crop budgets using this survey data, average Missouri production costs and 2002 harvest time prices. Other government payments are not included. This year the net return to land and management for corn was 25.87/acre; single crop soybeans resulted in \$77.27/acre. Returns to land and management were profitable for both corn and soybeans in 2002. The income change due to irrigation was positive \$36.04 for corn but negative \$7.69 for soybeans (see bottom table of page 4).

## 2001 Irrigation Survey Crop Details

	Corn	Single-crop Soybeans
Number reporting	25	27
Average acres irrigated	122	134
Irrigated yield/acre (bushels)	152	55.5
Dryland yield/acre (bushels)	<u>98</u>	<u>43.6</u>
Increase (bushels/acre)	54	11.9
Inches/application	1.0	1.0
Times irrigated	6.3	4.7
Total inches applied	6.3	4.6

**Missouri 2002 Irrigation Survey (Excluding Bootheel)**

**Types of Systems**

Fixed Center Pivot	66%
Towable Center Pivot	21%
Traveling gun	13%

**Types of Water Supplies**

Reservoir	47%
Well	40%
Stream	7%
Combination, reservoir/stream/well	3%
Lagoon	3%

**Types of Pumping Power**

Electricity	35%
Diesel	65%

**2002 Average Fuel Cost per Acre Inch:**

Electricity (10 systems)	\$2.54
Diesel (19 systems)	\$2.52
Average (29 systems)	\$2.52

**2002 Repair Costs:**

Average per farm (28 farms)	\$1,023
Average per acre (125 acres/farm)	\$8.25

**Water Supply Adequate?**

90% yes

**Reservoir full in June?**

100% yes

**1993-2002 Survey *Corn* Yields, 10-year average:**

Irrigated	151.6 bushels/acre
Dryland	115.9 bushels/acre
Difference	35.7 bushels/acre

**2002 Average *Corn* Planting Rate:**

Irrigated	29,120 stalks/acre
Dryland	26,229 stalks/acre

**1993-2002 Survey *Soybean* Yields, 10-year average:**

Irrigated	50.1 bushels/acre
Dryland	40.6 bushels/acre
Difference	9.5 bushels/acre

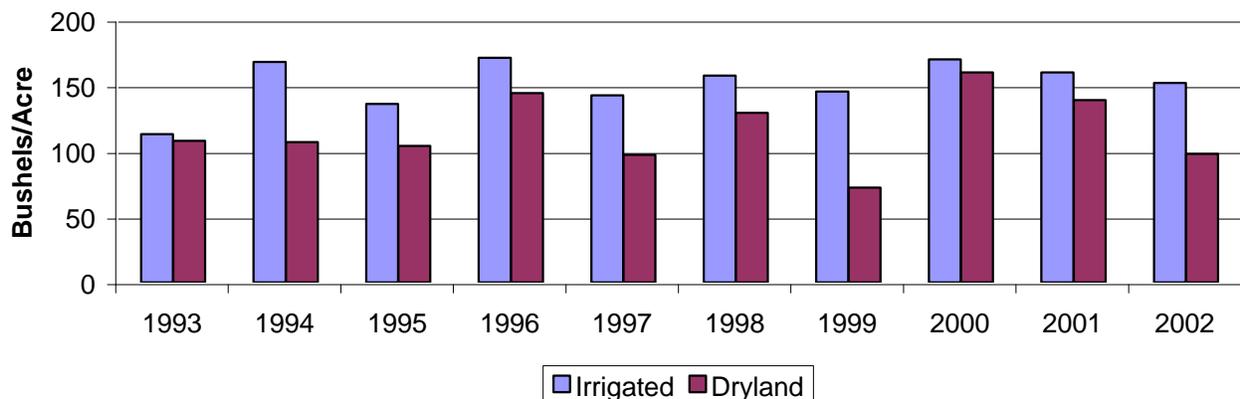
**2002 Irrigated Crop Budgets (per acre)**

	<b>Corn</b>	<b>Single-crop Soybeans</b>
<b>Income</b>		
Yield/acre (bushels)	152	55.50
Price/bushel	\$2.40	\$5.40
Gross income/acre	\$364.80	\$299.70
<b>Operating Costs:</b>		
Seed	\$36.00	\$29.00
Fertilizer and lime	75.00	29.00
Chemicals	24.00	6.00
Machinery, fuel, repair etc.	80.00	59.00
Labor and Miscellaneous	29.00	29.00
Drying @10¢/bushel	15.20	0.00
Irrigation fuel (\$2.52/acre inch)	15.88	11.59
Irrigation repairs	10.98	10.98
Irrigation Equipment	40.00	40.00
Interest (9% x ½ operating costs)	\$12.87	\$7.86
<b>Total Non-Land Costs/Acre</b>	<b>\$338.93</b>	<b>\$222.43</b>
<b>Return to Land and Management/Acre</b>	<b>\$25.87</b>	<b>\$77.27</b>

**2002 Income Change Due to Irrigation (per acre)**

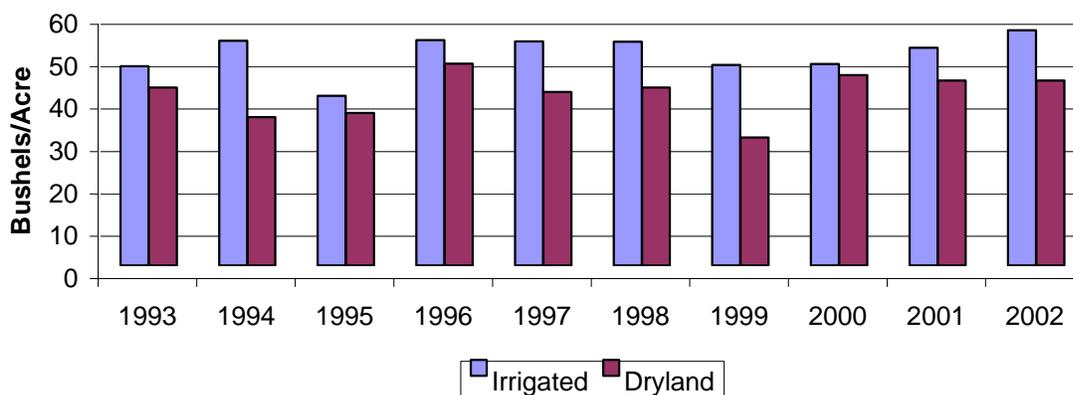
	<b>Corn</b>	<b>Single-crop Soybeans</b>
<b>Added Income</b>		
Yield/acre (bushels)	54.0	11.90
Price/bushel	\$2.40	\$5.40
Gross income/acre	\$129.60	64.26
<b>Operating Costs:</b>		
Seed	\$4.00	0.00
Fertilizer and lime	10.00	3.00
Labor	5.00	5.00
Drying @10¢/bushel	5.40	-
Irrigation fuel (\$2.52/acre inch)	15.88	11.59
Irrigation repairs	10.98	10.98
Interest (9% x ½ operating costs)	\$2.31	\$1.38
Added operating costs/acre	\$53.56	\$31.95
<b>Added Income over Added Costs</b>	<b>\$76.04</b>	<b>\$32.31</b>
<b>Ownership Costs:</b>		
Irrigation Equipment	\$40.00	40.00
<b>Added Return to Land and Management/Acre</b>	<b>\$36.04</b>	<b>(\$7.69)</b>

### 10 Year Survey Corn Yields



Corn	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
Irrigated	113	168	136	171.2	142.6	157.5	145.4	170	160	152
Dryland	108	107	104	144.2	97.3	129.2	72.2	160	139	98
Increase	<b>5</b>	<b>61</b>	<b>32</b>	<b>27</b>	<b>45.3</b>	<b>28.3</b>	<b>73.2</b>	<b>10</b>	<b>21</b>	<b>54</b>

### 10 Year Survey Soybean Yields



Soybeans	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
Irrigated	47	53	40	53.2	52.9	52.8	47.3	47.5	51.4	55.5
Dryland	42	35	36	47.6	40.9	42	30.2	44.9	43.6	43.6
Increase	<b>5</b>	<b>18</b>	<b>4</b>	<b>5.6</b>	<b>12</b>	<b>10.8</b>	<b>17.1</b>	<b>2.6</b>	<b>7.8</b>	<b>11.9</b>