

Missouri 1995 Irrigation Survey

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This is the 18th year the University of Missouri has collected data from Missouri farmers on irrigation performance. The data presented here are the average values for 48 irrigation systems which responded to our December 1995 survey. Individual farms may report more than 1 system. Irrigation systems located in the bootheel region of southeast Missouri are not included in this report.

Farmers who responded to this survey irrigated 6 different crops in 1995. Survey respondents included 32 irrigation systems irrigating corn, 23 systems irrigating single-crop soybeans and 6 systems irrigating double-crop soybeans in Missouri in 1995. Yield data on irrigated greenbeans, haygrazer, potatoes and sod are not included in this report because there were too few responses to draw conclusions.

Respondents reported that corn yields from land irrigated with an average of 3.7 inches of water exceeded dryland corn yields by 31.6 bushels. Irrigated single-crop soybean yields exceeded dryland yields by 3.6 bushels, with 2.4 inches of water being applied. 4.6 inches of water were applied to irrigated double-crop soybean land to increase yields 16.5 bushels over dryland yields

Eighty percent of the systems were center pivots, 11% were travelling guns and 9% were some other type of system. Pumping power was about evenly split between diesel and electricity with a smaller percentage using propane.

1995 began with a wet spring with many farmers being delayed in their planting and some reporting having to switch crops due to lateness of planting. Even after crops were planted many producers with irrigation systems reported not using them on several fields because of adequate moisture without irrigation. All respondents reported that their irrigation water supply was adequate and all that used reservoirs reported that their reservoirs were full in June.

Page 5 of this report contains a crop budget using this survey data, average Missouri production costs and average harvest-time crop prices. Corn and soybeans had a positive return to land and management in 1995. Page 6 presents the change in income and expenses due to irrigation. This year irrigation added net income to corn production and double-crop soybeans but decreased net income for single-crop soybeans.

**Missouri 1995 Irrigation Survey
(excluding Bootheel)**

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Types of Systems

Center Pivot	80%
Traveling gun	11%
Other	9%

Types of Water Supplies

Well	41%
Reservoir	30%
Lagoon	9%
Combination, reservoir/stream/well	11%
Stream	9%

Types of Pumping Power

Diesel	42%
Electricity	42%
Diesel/Electric combination	8%
Propane	8%

Water Supply Adequate?	100% yes
Reservoir full in June?	100% yes

1995 Average Fuel Cost per Acre Inch:

Diesel (12 systems)	\$2.42
Electricity (10 systems)	\$2.61
Electric/diesel combination (3 systems)	\$2.00
Propane (2 systems)	\$6.03
Average (27 systems)	\$2.90

1995 Repair Costs:

Average per farm (41 farms)†	\$363.25
Average per acre†	\$1.91

†Does not include one repair of more than \$10,000.

1995 Irrigation Survey Crop Details

	Corn	Single-crop Soybeans	Double-crop soybeans
Number reporting	32	23	6
Average acres irrigated	135	159	92.5
Irrigated yield/acre (bushels)	136.1	40.0	32.3
Dryland yield/acre (bushels)	<u>104.5</u>	<u>36.4</u>	<u>15.8</u>
Increase (bushels/acre)	31.6	3.6	16.5
Inches/application	.9	1.0	1.1
Times irrigated	3.9	2.3	4.3
Total inches applied	3.7	2.4	4.6

18 Year Survey *Corn* Yields, average:

Irrigated	140.4 bushels/acre
Dryland	97.8
Difference	42.6

1995 Average *Corn* Planting Rate:

Irrigated	27451 stalks/acre
Dryland	21917

18 Year Survey *Soybean* Yields, average:

Irrigated	45.0 bushels/acre
Dryland	33.7
Difference	11.3

Irrigation Systems by County and Crop

County	Corn	Soybeans	Other
Atchison	3	2	6
Audrain	12	9	0
Boone	3	2	0
Carroll	4	3	0
Saline	2	2	0
Vernon	3	3	0
Other	5	8	3

1995 Irrigated Crop Budgets (per acre)

	<u>Corn</u>	<u>Single-crop Soybeans</u>	<u>Double-crop Soybeans</u>
Income			
Yield/acre (bushels)	136.1	40.0	32.3
Price/bushel	\$3.00	\$6.50	\$6.50
Gross income/acre	\$408.30	\$260.00	\$209.95
Operating Costs:			
Seed	\$22.00	\$13.00	\$11.00
Fertilizer and lime	46.00	6.00	6.00
Chemicals	26.00	28.00	23.00
Machinery fuel, etc.	25.00	21.00	20.00
Labor	25.00	24.00	24.00
Drying @10¢/bushel	13.61		
Irrigation fuel (\$2.90/acre inch)	10.73	6.96	13.34
Irrigation repairs	1.91	1.91	1.91
Interest (10% x ½ operating costs)	8.51	5.04	4.96
Total operating costs/acre	\$178.76	\$105.91	\$104.21
Ownership Costs:			
Machinery	\$27.00	\$21.00	\$20.00
Irrigation Equipment	50.00	50.00	50.00
Total ownership costs/acre	77.00	71.00	70.00
Total Non-Land Costs/Acre	\$255.76	\$176.91	\$174.21
Return to Land and Management/Acre	\$152.54	\$83.09	\$35.74

1995 Income Change Due to Irrigation (per acre)

	<u>Corn</u>	<u>Single-crop Soybeans</u>	<u>Double-crop Soybeans</u>
Added Income:			
Yield/acre(bu.)	31.6	3.6	16.5
Price/bushel	\$3.00	\$6.50	\$6.50
Gross income/acre	\$94.80	\$23.40	\$107.25
Operating Costs:			
Seed	\$4.00		
Fertilizer and lime	10.00	3.00	2.00
Labor	5.00	5.00	5.00
Drying @10¢/bushel	3.16		
Irrigation fuel (\$2.90/acre inch)	10.73	6.96	13.34
Irrigation repairs	1.91	1.91	1.91
Interest (10% x ½ operating costs)	1.74	.84	1.11
Added operating costs/acre	\$36.54	17.71	\$23.36
Added Income over Added Costs	\$58.26	\$5.69	\$83.89
Ownership Costs:			
Irrigation Equipment	50.00	50.00	50.00
Added Return to Land and Management/Acre	\$8.26	(\$44.31)	\$33.89