

Missouri 1992 Irrigation Survey*

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This survey marks the fifteenth year the University of Missouri has collected data from Missouri farmers on irrigation performance. The numbers presented here are the average values for 64 irrigation systems which responded to our December 1992 survey. Each irrigation system is reported separately. Therefore, this data does not represent 64 different farms. Irrigation systems located in the bootheel region of southeast Missouri are not included in this report.

Farmers who responded to this survey irrigated ten different crops in 1992. However, yield data on irrigated silage, milo, alfalfa, seed corn, wheat, and pickles are not included in this report as there were too few responses to comfortably draw conclusions.

Survey respondents included 41 irrigation systems which were used to irrigate corn in Missouri in 1992. On average each of these systems irrigated 125.6 acres of corn which produced an average yield of 169.3 bushels per acre. Dryland corn grown on these same farms produced an average yield of 148.3 bushels per acre. Thus, irrigation produced an average corn yield increase of 21 bushels per acre.

Soybean yield increases from irrigation averaged 11 bushels per acre on full-season beans and 15.2 bushels on double-crop soybeans.

The last two pages of this report are crop budgets which were built around this survey data using harvest-time crop prices and average Missouri production costs. They show that the increased yield in 1992 more than paid the variable costs associated with irrigation. However, if a \$60 per acre charge is made for interest and depreciation on the irrigation equipment then only double-crop soybeans showed a positive net return over total irrigation costs.

*This survey was initiated and has continued largely due to the efforts of one man - Dale Schnarre, Farm Management Specialist at Mexico, Missouri. Dale passed away on January 9, 1993. His efforts on behalf of Missouri farmers will be greatly missed.

MISSOURI 1992 IRRIGATION SURVEY
 (excluding Bootheel)
 Presented at the Irrigation Conference
 Columbia, Mo. -- February 3, 1993
 Ron Plain, Extension Economist

Types of Systems	Percent
Center pivot	86
Traveling gun	8
Other	6
Types of Water Supplies	
Reservoir	50.8
Well	31.7
Stream	4.8
Combination, reservoir/well/stream	9.5
Lagoon	3.2
Types of Pumping Power	
Diesel	30.6
Electricity	58.3
Diesel/electric combination	8.3
Propane	2.8
Natural gas	0
Water Supply Adequate? 97% yes	
Reservoir Full in June? 72% yes	
Applied: Fertilizer through system -- 10	
Insecticides through system -- 0	
Herbicides through system -- 3	

1992 IRRIGATION SURVEY RESULTS

	Corn	Single-crop Soybeans	Dbl-crop Soybeans	Popcorn
Number reporting	41	26	15	6
Acres irrigated	125.6	97.0	50.3	74.3
Inches/application	0.96	1.0	1.03	1.0
Times irrigated	<u>3.95</u>	<u>2.7</u>	<u>3.1</u>	<u>4.5</u>
Total inches applied	3.8	2.7	3.2	4.5
Irrigated yield/ac. (bu.)	169.3	53.8	35.3	3561#
Dryland yield/ac.	<u>148.3</u>	<u>42.8</u>	<u>20.1</u>	
Increase (bu./ac.)	21.0	11.0	15.2	

Silage, milo, alfalfa, and wheat were reported once; seed corn twice; pickles five times.

15-year Survey CORN Yields, average:

Irrigated	140.7
Dryland	96.1
Difference	44.6

15-year Survey SOYBEAN Yields, average:

Irrigated	44.6
Dryland	32.9
Difference	11.7

1992 Average Corn Planting Rate (stalks per acre):

Irrigated	25,827
Dryland	21,165

1992 Average Fuel Cost Per Acre/Inch:

Diesel	\$2.71
Propane	\$4.58
Electricity	\$2.75
Gas/diesel combination	\$3.30
Natural gas	no reports
Average (36 systems)	\$2.83

1992 Average Repair Costs:

Average per farm (43 systems)	\$739.63
Average per acre	\$4.06*

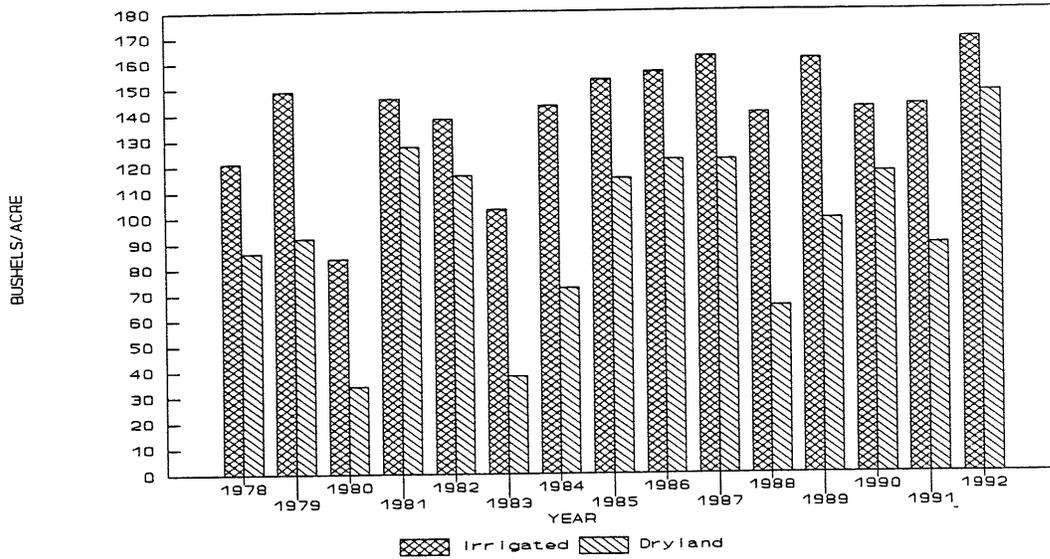
*Includes acres planted for irrigation but not irrigated.

Acres Planted for Irrigation, But Not Irrigated*

	Corn	Single-crop Soybeans	Dbl-crop Soybeans	Milo	Seed corn
Total acres	1,239	480	200	37	65
No. operations	9	6	2	1	1
Average acreage	137.7	80	100	37	65
Average yield	166.6	49	20	100	3920#
State average:					
Irrigated yield	169.3	53.8	35.3		
Dryland yield	148.3	42.8	20.1		

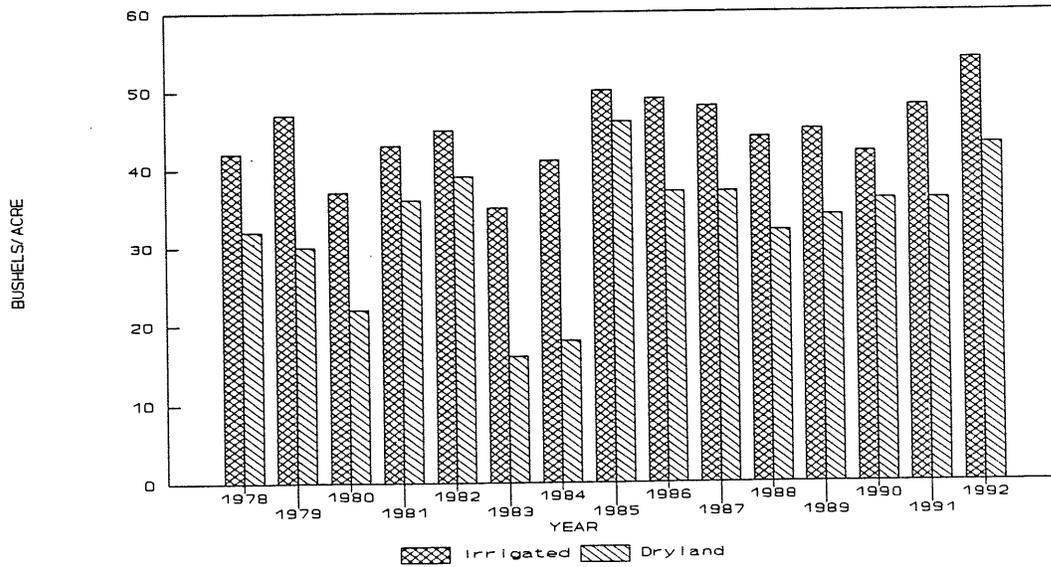
*Thirteen farms reported a total of 2,021 acres that were planted with the intention of irrigating but were not irrigated -- mainly because of adequate rainfall.

15-YEAR SURVEY CORN YIELDS



CORN	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Irrigated	121	149	84	146	138	103	143	153	156	162	140	161	142	143	169
Dryland	86	92	34	127	116	38	72	115	122	122	65	99	117	89	148
Increase	35	57	50	19	22	65	71	38	34	40	75	62	25	53	21

15-YEAR SURVEY SOYBEAN YIELDS



SOYBEANS	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Irrigated	42	47	37	43	45	35	41	50	49	48	44	45	42	48	54
Dryland	32	30	22	36	39	16	18	46	37	37	32	34	36	36	43
Increase	10	17	15	7	6	19	23	4	12	11	12	11	6	12	11

1992 IRRIGATED CROP BUDGETS (per acre)

	<u>Corn</u>	<u>Single-crop soybeans</u>	<u>Double-crop soybeans</u>
Yield/acre (bu.)	169.3	53.8	35.3
Price/bushel	\$2.00	\$5.50	\$5.50
Gross income/acre	\$338.60	\$295.90	\$194.15
Operating Costs:			
Seed	\$21.00	\$13.00	\$11.00
Fertilizer and lime	55.00	12.00	10.00
Chemicals	23.00	22.00	17.00
Machinery fuel, etc.	33.00	26.00	23.00
Drying @ 10¢	16.93		
Irrig. fuel (\$2.83/ac.-in.)	10.75	7.64	9.06
Irrigation repairs	4.06	4.06	4.06
Interest (10% x 1/2 op. costs)	<u>8.19</u>	<u>4.24</u>	<u>3.71</u>
Total operating costs/acre	\$171.93	\$88.94	\$77.83
Ownership Costs:			
Machinery	\$25.00	\$20.00	\$18.00
Irrig. equip. (\$400 @ 15%)	60.00	60.00	60.00
Labor	<u>25.00</u>	<u>20.00</u>	<u>17.50</u>
Total ownership costs/acre	\$110.00	\$100.00	\$95.50
TOTAL NON-LAND COSTS/ACRE	\$281.93	\$188.94	\$173.33
RETURN TO LAND AND MANAGEMENT/ACRE	\$56.67	\$106.96	\$20.82

1992 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.)	21.0	11.0	15.2
Price/bushel	\$2.00	\$5.50	\$5.50
Added income/acre	\$42.00	\$60.50	\$83.60
Added Operating Costs:			
Seed	\$ 4.00		
Fertilizer and lime	12.00	\$4.00	\$3.00
Chemicals			
Machinery fuel, etc.			
Drying @ 10¢	2.10		
Irrig. fuel (\$2.83/ac.-in.)	10.75	7.64	9.06
Irrigation repairs	4.06	4.06	4.06
Labor	5.00	5.00	5.00
Interest (10% x 1/2 op. costs)	<u>1.90</u>	<u>1.04</u>	<u>1.06</u>
Added operating costs/acre	\$39.81	\$21.74	\$22.18
Added Income Over Added Costs:	\$ 2.19	\$38.76	\$61.42
Added Ownership Costs:			
Irrig. equip. (\$400 @ 15%)	60.00	60.00	60.00
ADDED RETURN TO LAND AND MANAGEMENT/ACRE	-\$57.81	-\$21.24	\$ 1.42