

Traveler System Example Estimating Annual Irrigation Operation Costs

Traveler irrigation system with actual irrigated area of 80 acres installed at a cost of \$19,000 for traveler, \$3,000 for piping and installation with a power and water source and connecting equipment cost of \$30,000.

A standard procedure is outlined on page 7 of MSU Extension Bulletin E-2131, "Custom Work Rates in Michigan". The following would be modification of the DIRT #5 pricing system.

Ownership Cost

Depreciation: $(\text{original cost} - \text{salvage value})/\text{years of use}$
 $(\text{traveler cost} + \text{installation cost} - \text{salvage value})/10 \text{ years} =$
 $(\$22,000 - 11,000)/10 = \$1,100$

$(\text{well cost} - \text{salvage value})/20 \text{ years} =$
 $(\$30,000 - 10,000)/20 = \$1,000$

Interest: $\text{interest rate} * \text{average investment value}$
 $9.5\% * (\text{original cost} + \text{salvage value}/2) =$
 $9.5\% * (\$52,000 + \$11,000/2) =$
 $9.5\% * \$31,500 = \$2,993$

Repair: estimated to between 2 to 5% of original cost
 $\text{well cost} * 2\% =$
 $\$30,000 * 2\% = \600

$\text{traveler cost} * 3\% =$
 $\$22,000 * 5\% = \$1,100$

Taxes: no personal property tax in Michigan
the addition of irrigation equipment should not increase property taxes

Insurance: estimated at $0.5\% * \text{average investment value}$
 $0.5\% * (\text{original cost} + \text{salvage value}/2) =$
 $0.5\% * (\$52,000 + \$11,000/2) =$
 $0.5\% * (\$31,500) = \158

Total Annual Ownership Cost = \$ 6,951
 $\$6,951 / 80 \text{ acres} = \$86.89/\text{irrigated acre/year}$

Annual Operating Cost (per acre) or total actual annual cost

These costs are best handled annually, calculated using actual costs at the end of season.

Power: use actual fuel or power bill is recommended

Estimated power cost:

$\$5.00/\text{acre in.} * 6 \text{ in.} * 80 \text{ acres} = \$2,400 \text{ annually}$
\$3 to \$5.50/acre in. range

Labor cost: recommend use of actual labor bills

Range of \$1 to \$3.50/acre in.
 $\$3.50 * 6 \text{ acre in.} * 80 \text{ acres} = \$1,680 \text{ annually}$

Total Operating cost annually $\$6,951 + \$2,400 + \$1,680 = \$11,031$

Grand Total Estimated Annual Cost = \$ 11,031

$\$11,031/80 \text{ acres} = \$137.89/\text{acre at 6"}$