

Other MIL Resources:

The MIL Web site has information, photos, downloadable programs and online tools. MIL decision-support software available on the site includes KanSched, an ET-based irrigation scheduling tool. Other online tools are Compare Energy Costs, Fuel Cost online, Center Pivot Depth Calibrator, Estimate Seed Planting Rate, Estimate Plant Population and Corn Yield Estimator.

Irrigation related K-State Web sites:

Mobile Irrigation Lab
www.oznet.ksu.edu/mil

General irrigation information
www.oznet.ksu.edu/irrigate

Subsurface drip irrigation
www.oznet.ksu.edu/sdi

Mobile Irrigation Lab

Education & Technical Assistance

For more information check the web at:

www.oznet.ksu.edu/mil

or contact your local K-State Research and Extension office.

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Mobile Irrigation Lab

FuelCost – An Irrigation Fuel Cost Evaluator

- Simple, user-friendly computer program that's easy to learn.
- Evaluates the pumping plant performance efficiency using on-farm records.
- Compares irrigation energy options.
- Evaluates repair economics.
- Other downloadable programs and on-line tools are available at www.oznet.ksu.edu/mil.

**Kansas State University Agricultural Experiment
Station and Cooperative Extension Service**

FuelCost compares the fuel used for pumping against accepted consumption criteria for well designed and properly operated pumping plants. FuelCost comparisons provide guidelines of performance. If the performance estimate is low, it is recommended the irrigator contact a licensed well driller or consulting firm to conduct a site specific evaluation.

Initial Inputs

1. Field Information:

The number of irrigated acres and the seasonal or individual event application depth (inches) is needed.

2. Pumping Characteristics:

The discharge rate (gpm), pumping pressure (psi), and total lift (ft) are used to estimate energy needs.

3. Energy Source:

The type of fuel, fuel cost per unit, and the total pumping cost (seasonal or individual event) are also required inputs.

Help screens and drop-down menus are available for each input item.

Output Options

Fuel cost has three options for evaluation, including:

1. Evaluation of current pumping costs
2. Comparing irrigation energy options
3. Evaluation of repair economics

Analyzing current pumping costs is the most common evaluation. Fuel bills can be high due to pumping requirements (pressure and discharge), fuel price, pumping plant efficiency, and total volume of pumping. FuelCost will help determine if the fuel bill is appropriate for the fuel type, fuel price, and volume of water pumped. The pumping cost evaluation results provide information on brake horsepower requirements, projected hourly fuel use, pumping cost per unit of water volume (ac-in.), and an estimate of performance efficiency rating.

Figure 1: Example Printout of FuelCost

Pumping Cost Evaluation

| | | | |
|--|--------------------------|--|-------------|
| System Evaluated: | Example Field | Water Lift: | 250 feet |
| Date Evaluated: | 4/30/2003 | Application Depth: | 18 inches |
| Irrigated Acreage: | 125 acres | Operating Pressure: | 30 psi |
| Discharge Rate: | 750 gpm | Fuel Type: | Natural Gas |
| | | Fuel Price: | \$8.00/MCF |
| Brake Horsepower (BHP) = | 81 hp | | |
| <small>*Based upon a 75% pump efficiency</small> | | | |
| Projected Seasonal Pumping Hours = | 1, 350 hours/year | | |
| Projected Hourly Fuel Use = | 0.98 MCF/hr | | |
| <small>*According to the Nebraska Performance Criteria</small> | | | |
| Your Seasonal Fuel Cost = | \$14,000/year | \$778/inch of water or \$6.22/acre-inch applied to field | |
| Projected Seasonal Fuel Cost = | \$10,585/year | \$588/inch of water or \$4.70/acre-inch applied to field | |
| Excess Fuel Cost = | \$3,415/year | \$190/inch of water or \$1.52/acre-inch applied to field | |
| Excess Fuel Use = | 0.32 MCF/hr. | | |



Based on the information provided, this pumping plant is operating at 76 percent of the Nebraska Performance Criteria.