

## Position Announcement

### **M. S. Graduate Research Assistantship**

Agricultural and Biological Systems Engineering or Mechanized Systems Management

**Description of Work:** In 1959, Nebraska established the Nebraska Pumping Plant Performance Criteria which is used worldwide as a standard for comparing pumping plant operation to an expected horsepower-hour output per unit of fuel. Since then power units and pumps have been modified that improved performance. Our goal is to update the Criteria to reflect these advancements. Nebraska has approximately 90,000 active irrigation wells with pumping costs that have more than doubled during the past 24-36 months. Pumping plant performance data indicated an average performance rating of 75-80 percent of the Nebraska Criteria. Properly matching and adjusting pumps, engines and motors could save irrigators 25-30% of the energy used to pump irrigation water. The objective of this research is to update the criteria for irrigation pumping plants powered by electric motors and diesel fuel, gasoline, natural gas or propane engines.

A Graduate Research Assistantship is available to pursue a Master of Science degree in Agricultural and Biological Systems Engineering or Mechanized Systems Management. This assistantship includes a monthly stipend, tuition remission and health insurance benefits. Procedures will include conducting a statewide survey of Nebraska irrigators to ascertain the degree and frequency of mismatched irrigation power units. In-field pumping plant performance tests will be conducted to determine the performance of existing installations. The project will work with internal combustion engine and pump manufacturers to develop methods for determining the expected horsepower-hour output per unit of fuel for newly manufactured power units. The student will be an integral part of all aspects of the project.

**Qualifications:** The applicant must possess a Bachelor of Science in agricultural or related engineering field and have an interest in irrigated agriculture. He or she should be familiar with irrigation pumping equipment and have a strong mechanical aptitude and analytical background, and an interest in machinery design/performance.

**Application:** The position is available starting August 1, 2009. Applications will be accepted immediately and until a suitable candidate is selected. For more information and to apply to Graduate Studies at the University of Nebraska refer to: <http://www.unl.edu/gradstudies/>

The position is available immediately or until a candidate is selected. For more information on the project and/or the application process, please contact one of the following professors.

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