United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E449J (WITH MONTANA SUPPLEMENT)

Intermediate IWM – 20% Reduced Water usage

Conservation Practice 449: Irrigation Water Management

APPLICABLE LAND USE: Crop (Annual and Mixed), Crop (Perennial)

RESOURCE CONCERN ADDRESSED: Insufficient Water

ENHANCEMENT LIFE SPAN: 1 Years

Enhancement Description

Intermediate irrigation water management involves monitoring soil moisture or water levels within an irrigated field by utilizing technological equipment to gather field specific data concerning weather, soil moisture or water levels throughout the irrigation season. The equipment will be utilized to log data through the season to be retrieved periodically so irrigation decisions can be made based on scientific data. Maximum time between data retrieval is weekly.

Monitoring will be for the entire irrigation season and data gathered will be used to make sound decisions on irrigation water use.

Criteria

- Equipment may include: soil moisture sensor with data collection systems; weather stations that collect solar radiation, wind speed and direction, rainfall, temperature; water level sensor with data collection system
- Irrigation water management plan from year one is followed in accordance to the NRCS Conservation Practice Standard Irrigation Water Management (Code 449):
    - An irrigation system layout map showing the main pipeline(s), irrigated area, soil moisture sensor/water level sensor locations (if used) and soils.

- Method used to measure or determine the flow rate or volume of the irrigation water applications
- Measurement records showing the amount of water used to irrigate as it enters the farm and goes into each field
- Documentation of the scientific method used to schedule the timing and amount of irrigation application
- Irrigation water management plan explaining:
    - ☐ How irrigation meets crop needs while maximizing irrigation water efficiency
    - ☐ Seasonal or annual planned water application volumes by crop
    - ☐ Management allowable depletion (MAD) and depth of the managed crop root zone or water level for each crop and stage of growth
    - ☐ Evaluation of irrigation system distribution uniformity and necessary changes to ensure uniform irrigation
    - ☐ Information on how to recognize irrigation induced erosion and how to mitigate it
    - ☐ Indicate how data from the sensor location and depths will be considered to make field-wide irrigation decisions
    - ☐ Water application scheduling based on soil moisture or water level monitoring and/or evapotranspiration monitoring from the weather station

- Recordkeeping documents for the irrigator to use during the operation and management

- Irrigation usage will be reduced by at least 20% from previous years use and maintained at that level through the remainder of the contract.

Documentation and Implementation Requirements

Participant will:

Prior to implementation

- □ Review the irrigation water management plan to make any necessary adjustments from the previous year.
- □ Ensure the irrigation water management plan continues to meet the NRCS Conservation Practice Irrigation Water Management (Code 449) requirements.

During installation or implementation

- □ Record irrigation data such as location, date, duration, and flow rate of all irrigation operations, rainfall, evapotranspiration, and soil moisture or water level data
- □ Monitor the devices during the growing season to determine timing and amounts of water to apply based on soil moisture/water level sensor, field checks and weather data

After implementation

- □ Make the following items available for review by NRCS to verify implementation of the enhancement:
  - Irrigation water management plan is followed, and records kept
  - Changes made to address distribution uniformity deficiencies
  - Utilization documentation of any sensor used throughout the growing season as well as certification of their proper installation

NRCS will:

- □ Provide and explain NRCS Conservation Practice Standard Irrigation Water Management (Code 449) as it relates to implementing this enhancement.
- □ **Prior to contracting, inventory/analyze the participant's existing irrigation system to determine baseline irrigation water use (total depth of water applied in inches annually) and compare to anticipated water use associated with implementation of this enhancement. Analysis must show a potential for 20% reduction in water usage.**
- □ **Prior to implementation, develop an IWM plan that meets NRCS Conservation Practice Standard Irrigation Water Management (Code 449) requirements and provide to participant; if the participant obtains an IWM plan from a different source, NRCS will verify that the plan meets the same requirements.**
- □ Provide additional assistance to the participant as requested After Implementation

- □ Verify re-installation of all irrigation water management equipment each year.
- □ Verify implementation of the irrigation water management plan by:
  - ○ Reviewing records kept during each year of enhancement implementation.
- □ **After implementation, verify 20% reduction in irrigation water usage by comparing total depth applied (inches based on irrigated area and starting/ending flowmeter readings) after implementation to baseline water use.**

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date