

Water Quantity Enhancement Activity – WQT04 – Regional weather networks for irrigation scheduling



Enhancement Description

Crop evapotranspiration (crop ET) information from a regional weather network is utilized as a part of the irrigation water management plan for irrigation scheduling. Water use is planned and adjustments in application rates and timing are made using the regional weather network data.

Land Use Applicability

Cropland and pastureland.

Benefits

The use of data from regional weather networks can improve a farmer’s estimate of evapotranspiration from irrigated crops. This information combined with local rainfall data and monitoring of soil moisture can significantly improve the accuracy of irrigation timing and application rates. Benefits include reduced aquifer depletion, and reduced runoff and deep percolation, both of which reduce movement of agrichemicals from farm fields to aquifers, lakes, and streams.

Criteria

This enhancement requires:

1. A subscription to a regional weather network that supplies crop ET values for irrigation scheduling.
2. The crop ET information from the network must be used as part of the irrigation water management plan to match water application rates and timing to the needs of the crops and soils.

Documentation Requirements

1. Documentation of subscription to a regional weather network.
2. An irrigation water management plan showing the use of the crop ET data from a weather network in irrigation scheduling.

Michigan Supplement

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Irrigation scheduling is the process of maintaining optimum water balance in the soil profile for crop growth and production. Irrigation decisions are based on an accounting method on the water content in the soil. Components of irrigation scheduling include the plant growth stage and water use, soil water holding capacity, evaporative demand and rainfall or irrigation additions.

To estimate plant water use and evaporative demand factors such as temperature, solar radiation, humidity, wind and rainfall are monitored. The crop water use is known as crop evapotranspiration (ET). A potential reference evapotranspiration can be calculated based on weather conditions.

The Michigan Agricultural Weather Network (MAWN) calculates hourly PET at each station in Michigan and publishes the daily total value for irrigation scheduling use. The website for MAWN is <http://www.agweather.geo.msu.edu/mawn/irrigation>. Additional crop ET data can be found at <http://www.enviro-weather.msu.edu>. Both websites generate reports which may be submitted to NRCS as documentation of use of a regional subscription service.