Irrigation Scheduling

- Process of maintaining an 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.

Why use irrigation scheduling?

- Prevent stress - health of plant, yield loss, appearance
- Maximize water use efficiency - beneficial use of resources including water, fertilizer and pesticides
- Minimize leaching of nitrates or pesticides
- Components
  - Plant Growth and Water Use
  - Soil Water Holding Capacity
  - Rainfall / Irrigation
  - System Uniformity and accurate irrigation amount
  - Record Keeping

How much water does the plant need?

Plant growth and water use

- Fundamentally, crops use water to facilitate cell growth, maintain turgor pressure, and for cooling.
- Crop water use is driven by the evaporative demand of the atmosphere.
- Example: A fully developed corn crop in Michigan can use as high as 0.35 inches per day. (~9,500 gallons/acre).
- Optimum crop growth and health occurs when the soil moisture content is held between 50 - 80% of the “plant available water”.

Allowable depletion of soil moisture depends on type of plant and stage of development that varies from 30-70%.

Water holding capacity:
The soil can hold only a limited amount of water before it moves below the root zone. Finer texture soil holds more water than course sandy soil.

Irrigation Scheduling Tool

Enviroweather can alert via email or text message with the reference potential evapotranspiration for the last two days, present day, and forecast at the station you choose. (www.enviroweather.msu.edu/rpetalert.php)

MSU Extension has created an irrigation scheduling water balance sheet (checkbook) based on crop stages, evapotranspiration, rainfall and Kc to determine the soil water deficit. (https://www.mawn.geo.msu.edu/irrigation/)

Enviroweather: https://www.enviroweather.msu.edu

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