Irrigation Scheduling Tools

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Irrigation scheduling by accounting for changes in available soil moisture provides information on the timing and amount of water to apply to meet crop needs. "Checkbook" irrigation scheduling confirmed with soil moisture monitoring can improve irrigation scheduling decisions. Checkbook scheduling is discussed below.

Checkbook method of irrigation scheduling follows the concept that the soil in your field is like a bank checking account. Rainfall and irrigation applications are deposits into the checking account. Rainfall and irrigation may need to be reduced to reflect the effective amount added to soil moisture. Daily water removal from evaporation and transpiration (evapotranspiration or ET) from the field and crop would be considered withdrawals from the account. Soil has a maximum amount of water that can be held (called Field Capacity), so water added beyond the soils water holding capacity is lost to the account. Irrigation applied at a rate exceeding the infiltration capacity will cause surface runoff and be lost to the soil water balance account.

Four different checkbook irrigation scheduling tools are available through Purdue or MSU Extension as described in the following paragraphs:

Enviro-weather computes daily estimate of potential ET and projects ET demands for 7 days at each of the 58 strategically located weather stations in Michigan calculating crop ET using wind, relative humidity, and net solar radiation in addition to temperature to estimate crop ET demands. Estimates are available from: www.enviroweather.msu.edu. Pick the station nearest to you, then click on one of the categories listed near the top of the screen (e.g. *Field crops*, *Fruit*, etc.), and then click on "Potential Evapotranspiration." For corn and soybeans, clicking the "Crop ET Estimate" button, then entering the crop emergence date will allow tracking the crop's ET as the crop develops. A free service of Enviro-weather Network sends daily reports of ET from the previous four days and projected values for the next week by text or email to producers that sign up at: http://www.enviroweather.msu.edu/homeMap.php.

The MSU Soil Water Balance Sheet is a paper version of a checkbook scheduler where producers can use Reference Evapotranspiration (ET) Data from their own ET gauge station or Reference ET data from the Purdue Agricultural Center weather stations (http://www.iclimate.org/). For Michigan, producers can use the Enviro-weather data listed above. The Soil Water Balance Sheet helps producers convert the Reference ET into an estimate of water removal for either corn or soybeans in their field. The Soil Water Balance Sheet is available at http://msue.anr.msu.edu/program/info/irrigation; scroll down to "Irrigation Resources Developed by Lyndon Kelley" and click on "Soil Water Balance Sheet".

MSU Excel Version of Scheduler allows greater flexibility and adaptability to irrigators who are comfortable using Excel. This method will provide results for all of Michigan and the upper tier of counties in Indiana. Reference crop ET can be taken from each of the Enviro-weather stations where the program will use the crop-specific coefficient to adjust for your crop stage of growth. The MSU Excel version of Scheduler is available from**: http://www.agweather.geo.msu.edu/mawn/irrigation/.

Irrigation Scheduler is a simple computerized irrigation scheduling checkbook model from the Agronomy Department of Purdue University. This method can be used throughout Michigan and Indiana. Crop specific ET values are estimated using the daily high and low temperatures and rainfall provided by the producer or weather data can be imported from the internet. **Irrigation Scheduler** is available from: www.purdue.edu/agsoftware/irrigation.

In Michigan, use of irrigation scheduling is required to be in compliance with Generally Accepted Agricultural Management Practices: http://www.michigan.gov/mdard/0,1607,7-125-1567_1599_1605---,00.html.

All of the above mentioned irrigation scheduling tools, plus other irrigation management information is available from: http://msue.anr.msu.edu/county/info/st._joseph; on the right side of the screen under "St. Joseph County Programs" click the drop down arrow and select "Irrigation".