



Irrigation Fact Sheet #3  
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# 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 E.T.) 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.

Five different checkbook irrigation scheduling tools are available through Purdue, MSU Extension or University of Nebraska - Lincoln.

**Enviroweather** computes daily estimate of potential E.T. and projects E.T. demands for 7 days at each of the 58 strategically located weather stations in Michigan calculating crop E.T. using wind, relative humidity, and net solar radiation in addition to temperature to estimate crop E.T. demands. Estimates are available from: [www.enviroweather.msu.edu](http://www.enviroweather.msu.edu) Pick the station nearest to you, and then click on one of the categories listed near the top of the screen (eg. Field crops, Fruit), then click on Potential Evapotranspiration. For corn and soybeans clicking the Crop ET Estimate button then entering the emergence date allowing tracking crop ET as the crop develops. A free service of Enviroweather Network sends daily reports of ET from the previous 4 days and projected values for the next week by text or E-mail to producers that sign up at: <https://enviroweather.msu.edu/rpetalert.php>

**The MSU Soil Water Balance Sheet** is a paper version of a checkbook scheduler producers can use Reference Evapotranspiration (E.T.) Data from their own E.T. gauge station or Reference E.T. data from Purdue's PAC center weather stations (<http://www.iclimate.org/>). For Michigan, producers can use the Enviroweather data listed above. The Soil Water Balance Sheet helps producers convert the Reference E.T. into an estimate water removal for either corn or soybeans in their field. The Soil Water Balance Sheet is available at <https://www.canr.msu.edu/irrigation/> scroll down to "Irrigation Resources Developed by Lyndon Kelley and click on "[Soil Water Balance Sheet](#)" (pdf).

**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 counties in Indiana. Reference crop E.T. can be taken from each of the Enviro-weather stations where the program will use crop specific coefficient to adjust for your crop stage of growth. The MSU Excel version of Scheduler is available from: <https://mawn.geo.msu.edu/irrigation/>

**SoyWater**, an easy to use, irrigation management tool from The University of Nebraska- Lincoln (UNL). The tool is well recognized for its crop development model that helps producer predict when the soybean plant is at a development stage and when irrigation is needed. The online program retrieves data from the USDA soil surveys for the field being irrigated and has been adapted for use in Michigan allowing it to pull in needed daily weather information from the Enviroweather weather network. The UNL **SoyWater** program can be downloaded at: <http://hprcc-agron0.unl.edu/soywater/>

**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 E.T. 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: <https://www.purdue.edu/agsoftware/irrigation/>

In Michigan Irrigation scheduling is required to be in compliance with Generally Accepted Agricultural Management Practices: [https://www.michigan.gov/mdard/0,4610,7-125-1599\\_1605---,00.html](https://www.michigan.gov/mdard/0,4610,7-125-1599_1605---,00.html).

All of the above mentioned irrigation scheduling tools, plus other irrigation management information is available from: <https://www.canr.msu.edu/irrigation/index>.