



STEP 6

Steps in the Irrigation Series

1. Understanding Irrigation Efficiency
2. Pumping Plant Performance
3. Energy Source Selection
4. System Performance and Efficiency
5. Irrigation Application Uniformity
- 6. Irrigation Scheduling**
7. Incentives and Technical Assistance
8. Cumulative References



B-1264 | E3A-IE.6

©2015 E3A-IE.6 by Daran R. Rudnick and Suat Irmak, University of Nebraska-Lincoln and Milt Geiger, editor, University of Wyoming Extension, made available under a [Creative Commons Attribution Non-Commercial 4.0 license \(international\)](https://creativecommons.org/licenses/by-nc/4.0/)

E³A: Irrigation Scheduling

Daran R. Rudnick, Assistant Professor Biological Systems Engineering, University of Nebraska-Lincoln

Suat Irmak, Professor Biological Systems Engineering, University of Nebraska-Lincoln

Edited by Milton Geiger, Assistant Extension Educator, University of Wyoming

A well-designed irrigation system can perform unsatisfactorily or operate inefficiently due to poor irrigation scheduling. Scheduling irrigation to prevent crop water stress requires detailed information of the irrigation system (e.g., application efficiency and system capacity) as well as frequent and accurate information on crop status and field characteristics, which includes current and forecasted crop water demands and plant soil water availability (i.e., current soil water status). The irrigation amount should be adequate to meet evapotranspiration demand but not excessive to prevent surface runoff and deep percolation of water below the crop root system.

When scheduling an irrigation event, try to minimize operational costs by taking advantage of water available in the soil profile while at the same time starting the irrigation event early enough to ensure the last portion of the field being irrigated does not experience water stress. Using soil moisture monitoring sensors can enable irrigating the crops at the right time and apply adequate/sufficient amount of water to meet crop demand and minimize other water losses. There is a direct link between monitoring soil water status for irrigation scheduling and irrigation efficiency.

Although irrigation scheduling affects the performance and efficiency of an irrigation system, it is a vast topic that exceeds the scope of this publication. We direct the reader to a list of references for further information on properly scheduling irrigation. The University of Nebraska-Lincoln Institute of Agriculture and Natural Resources (UNL-IANR) has published several papers on irrigation design, management, and scheduling for various crops across different soils and climate gradients. A few of these publications are listed below, and further publications are at <http://ianrpubs.unl.edu>.



Sprinkler wheel tracks through a corn field.

E3A: Irrigation Efficiency is a peer-reviewed publication series.

Original available at: www.wyoextension.org/publications/

Suggested acknowledgment: Daran R. Rudnick, Suat Irmak, Milt Geiger, ed., 2015. "Irrigation Scheduling." *E3A: Irrigation Efficiency*. University of Nebraska-Lincoln, University of Wyoming Extension. B-1264|E3A-IE.6

Permission is granted to share, copy, and redistribute the material in any medium or format and adapt, remix, transform, and build upon the material for any purpose other than commercial, under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner but not in any way that suggests the licensor endorses you or your use.

References and Further Readings

Irmak, S., D.R. Hay, B.E. Anderson, W.L. Kranz, and C.D. Yonts. 2007. Irrigation management and crop characteristics of alfalfa. University of Nebraska-Lincoln NebGuide G1778.

Irmak, S. and D.R. Rudnick. 2014. Corn soil-water extraction and effective rooting depth in a silt-loam soil. University of Nebraska-Lincoln NebGuide G2245.

Irmak, S. and D.R. Rudnick. 2014. Corn irrigation management under water-limiting conditions. University of Nebraska-Lincoln Extension Circular EC2007.

Irmak, S., J.O. Payero, B. VanDeWalle, J. Rees, and G. Zoubek. 2014. Principles and operational characteristics of watermark granular matrix sensor to measure soil water status and its practical applications for irrigation management in various soil textures. University of Nebraska-Lincoln Extension Circular EC783.

Kranz, W.L., S. Irmak, S.J. van Donk, C.D. Yonts, and D.L. Martin. 2008. Irrigation management for corn. University of Nebraska-Lincoln NebGuide G1850.

Melvin, S.R. and C.D. Yonts. 2009. Irrigation scheduling: Checkbook method. University of Nebraska-Lincoln Extension Circular EC709.

Notes
