

Predicting the Last Irrigation of the Season

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The last few irrigations of the season require some of the most important water management decisions of the year. An extra irrigation may mean wasting both water and energy. In addition to saving water and lowering expenses, leaving the soil dry in the fall has several important advantages. This includes less soil compaction from harvest equipment and reduced harvest delays after rain. If you allow the soil to crack on top, this helps to build soil structure, breaks up compaction and aids water infiltration. Having the soil dry allows more room for storing off-season precipitation and gives us more of an opportunity to apply much needed conservation work this fall. Finally, as a community, saving irrigation water without sacrificing crop yield can delay irrigation water allocation regulations.

The main objective near the end of the season for fully watered crops should be to provide enough soil water in the root zone to carry the crop to maturity (black layer) and produce top yields while leaving the soil fairly dry. The following list makes this objective easier to obtain:

- Predict your crop maturity date by properly staging your crop. This is easier on corn, more difficult with beans.
- Predict remaining water use by crop maturity stage using the averages with the above chart as a starting point.
- Calculate the remaining readily available water in the soil 4 foot profile using a 60% soil water depletion factor.
- Be aware of rainfall forecasts. Obviously, rainfall is difficult to predict. Consequently, one must assume that no rainfall will occur.

Here are 3 tools or ways to help manage that last irrigation and irrigation sensors make this process even easier.

1. **UNL CROP WATER APP:** There is a new crop water app for your mobile devices to help you manage your irrigations and eliminate over irrigation. Calculations are a snap for watermark sensor installations. At the SE Corn Growers site last week, watermark sensor readings were 1 ft=61cb 2ft=74cb 3ft=42cb and 4ft=52cb. The app at 60% depletion, silty clay loam soil indicates 2.89 inches total available water. Crop stage is dough, therefore 4.61 inches of irrigation/rain is needed. **Goal: Aim for an average of 120cb at crop maturity of all three (or four) sensors.**
2. **SOYWATER WEBSITE:** The UNL SoyWater website has an online calculator to help you schedule last irrigations with watermark sensors using your home computer. It is a very useful tool if you are unsure if you need to water. This link will take you straight to the SoyWater website: <http://hprcc-agron0.unl.edu/soywater/>
3. **HAND CALCULATION** - "Predicting the Last Irrigation of the Season" (NebGuide G1871) on the UNL publications website or go directly to <https://water.unl.edu/cropwater/managementpubs>

The remaining crop water and days to maturity depends on correctly staging the crop. For corn, warmer weather speeds up maturity and cooler weather slows it down, so in the end, similar ending crop water use. For soybeans triggered by sunlight, warmer days can increase crop water use predictions. We want to allow 60% soil water depletion this time of year, which gives you extra wiggle room. At full soil water capacity on a silty clay loam soil and 4 feet management zone we would have 1.2 inches per foot available to the crop or 4.8 inches of readily available water. Deciding on whether or not you need that last irrigation could save you both water and money.

	Stage of growth	Approximate Days to maturity	Water use to maturity (inches)
Corn			
R4	Dough	34	7.5
R4.7	Beginning Dent	24	5.0
R5	1/4 milk line	19	3.75
	1/2 milk line -- full dent	13	2.25
	3/4 milk line	7	1.0
R6	Physiological maturity	0	0.0
Soybeans			
R4	End of pod elongation	37	9.0
R5	Beginning seed enlargement	29	6.5
R6	End of seed enlargement	18	3.5
R6.5	Leaves begin to yellow	10	1.9
R7	Beginning Maturity	0	0.0

