

Irrigation Scheduling - you can do it!

We encourage producers to master the skills of irrigation scheduling. Whether it's for your own peace of mind, being able to tell the neighbors you're doing it right or proving to a contract that you're providing adequate water, irrigation scheduling and record keeping is in most irrigators' future. The following slides are examples of using the National Weather Service weekly data to calculate a crop water need. Effective rainfall is subtracted from the calculated water need, resulting in the recommended irrigation application.

Early in the season a single application may be effective. During July and August if no rain falls on the field, two applications may be needed, or the application may be split between this week and next week.

Irrigation Scheduling Article Links:

<https://www.canr.msu.edu/news/early-summer-crop-water-needs>

Irrigation scheduling tool help with recordkeeping:

<https://www.canr.msu.edu/news/water-use-reporting-making-it-easy-to-record-with-irrigation-scheduling-tools>

Soil Water Balance Sheet and Scheduling Tools Links:

<https://www.canr.msu.edu/uploads/235/67987/resources/SoilWaterBalanceSheet.03.05.15.pdf>

<https://www.canr.msu.edu/irrigation/upoads/files/FS03-IrrigationSchedulingTools07.19.pdf>

Indiana PAC rPET Monitoring Tool – Indiana State Climate Office (purdue.edu):

<https://ag.purdue.edu/indiana-state-climate/tools/pet-monitoring-tool/>

National Weather Service rPET:

<https://digital.weather.gov/?zoom=4&lat=37&lon=->

[96.5&layers=F000BTTFTT®ion=0&element=44&mxmz=false&barbs=false&subl=TFFFF&units=english&wunits=nautical&coords=latlon&tunits=localt](https://digital.weather.gov/?zoom=4&lat=37&lon=-96.5&layers=F000BTTFTT®ion=0&element=44&mxmz=false&barbs=false&subl=TFFFF&units=english&wunits=nautical&coords=latlon&tunits=localt)

Irrigation Related Article Links:

Fertigation/Side Dress

<https://www.canr.msu.edu/news/fertigation-and-sidedress-nitrogen-applications-can-protect-farm-profits-and-the-environment>

Weekly prediction of crop water needs: Corn

July 8 -15, 2024

Scheduling Tool available:

<https://www.canr.msu.edu/irrigation/uploads/files/FS03-IrrigationSchedulingTools07.19.pdf>

Indiana PAC rPET PET Monitoring Tool – Indiana State Climate Office (purdue.edu):

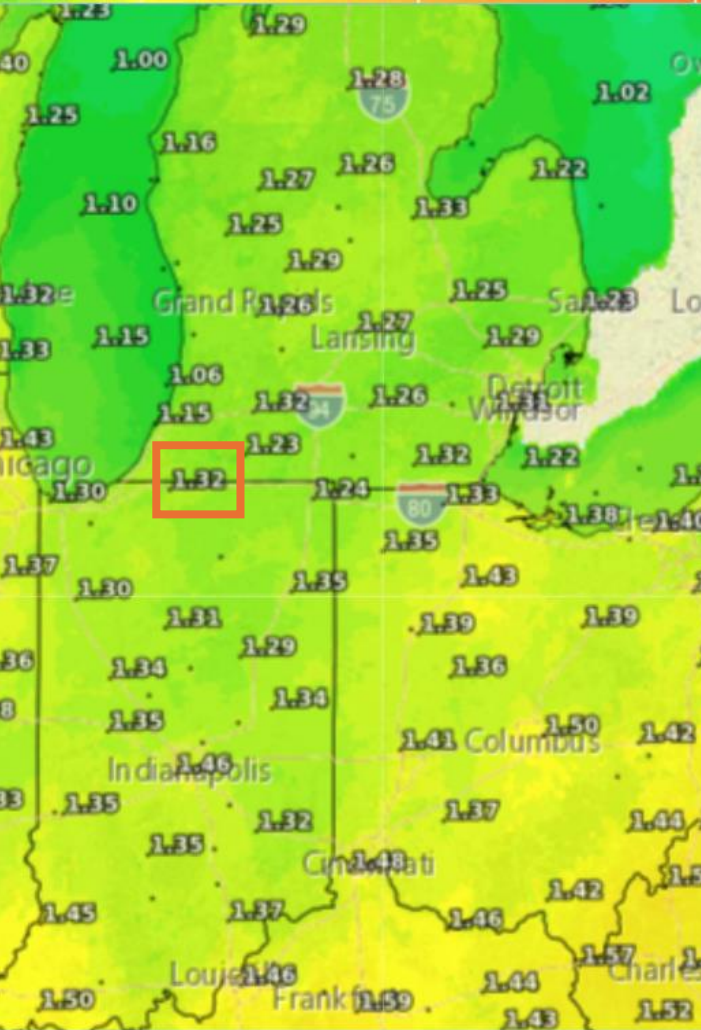
<https://ag.purdue.edu/indiana-state-climate/tools/pet-monitoring-tool/>

National weather service rPET:

<https://digital.weather.gov/?zoom=4&lat=37&lon=-96.5&layers=F000BTTTFTT®ion=0&element=44&mxmz=false&barbs=false&subl=TFFFF&units=english&wunits=nautical&coords=latlon&tunits=localt>

Soil Water Balance Sheet:

<https://www.canr.msu.edu/uploads/235/67987/resources/SoilWaterBalanceSheet.03.05.15.pdf>



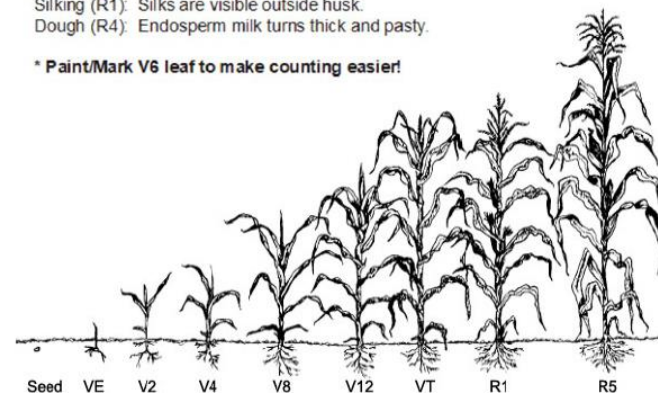
Corn Crop Coefficients - Kc

| Crop Stage | Kc | Rooting Depth | % Growing Season |
|---------------|------|---------------|------------------|
| V2 | 0.2 | 6 | 10 |
| V4 | 0.20 | 10 | 15 |
| V6 | 0.39 | 15 | 20 |
| V8 | 0.56 | 20 | 27 |
| V10 | 0.76 | 23 | 34 |
| V12 | 1.0 | 26 | 50 |
| V14 | 1.1 | 28 | 55 |
| V16-VT | 1.2 | 30 | 60 |
| Silking | 1.2 | 30 | 65 |
| Blister | 1.2 | 30 | 70 |
| Dough | 1.2 | 30 | 75 |
| Begin Dent | 1.2 | 30 | 80 |
| Full Dent | 1.0 | 30 | 85 |
| Black Layer | 0.66 | 30 | 90 |
| Full Maturity | 0.11 | 30 | 100 |

Corn Growth Stages

- 2 leaf (V2): Two collars visible.
- 4 leaf (V4): Four collars visible.
- 6 leaf (V6): Growing point above ground, tassel forms.*
- 8 leaf (V8): Ear formation begins.
- Silking (R1): Silks are visible outside husk.
- Dough (R4): Endosperm milk turns thick and pasty.

* Paint/Mark V6 leaf to make counting easier!



Total Weekly FRET (in)
Through: Mon, Jul 15 2024, 8 PM EDT
Issued: Jul 09 at 8:00 AM EDT

It is the policy of Purdue University Cooperative Extension Service that all persons

7 days reference ET * crop coefficient = actual crop ET

$$\begin{array}{rclcl}
 \text{FRET} & * & \text{Kc} & = & \text{aET} \\
 \boxed{1.32''} & * & \textcircled{1.0} & = & 1.32'' \\
 \boxed{1.32''} & * & \textcircled{1.2} & = & 1.58''
 \end{array}$$

Irrigate only when you can increase yield and quality or reduce risk. Subtract any effective rainfall the field receives for the week.

Weekly prediction of crop water needs: Soybeans

July 8 -15, 2024

Scheduling Tool available:

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Indiana PAC rPET PET Monitoring Tool – Indiana State Climate Office (purdue.edu):

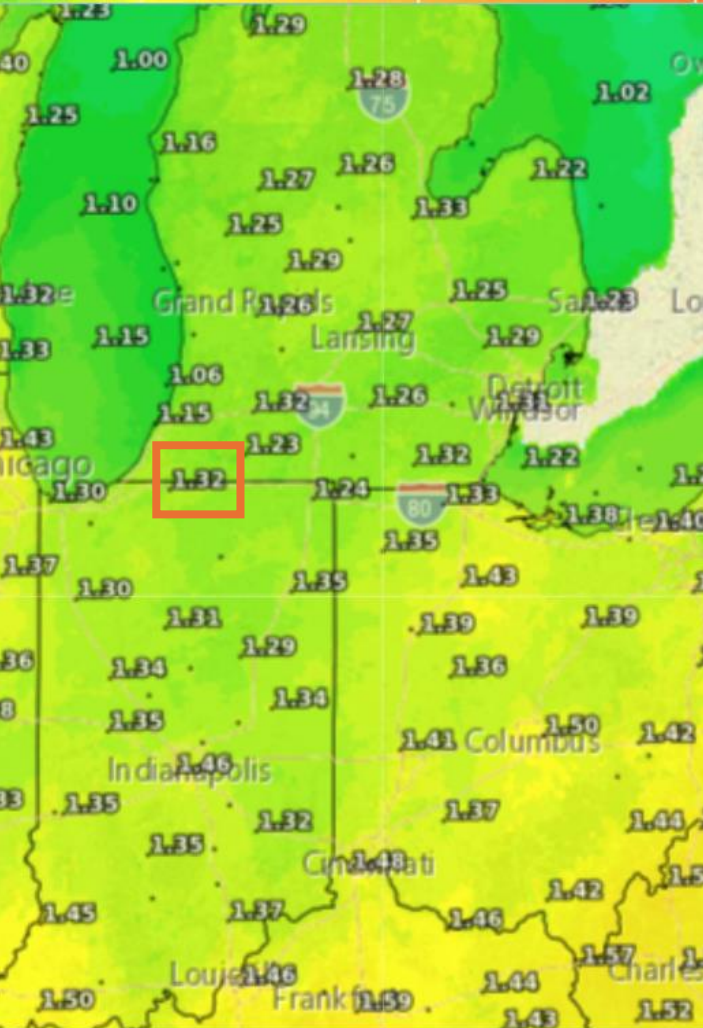
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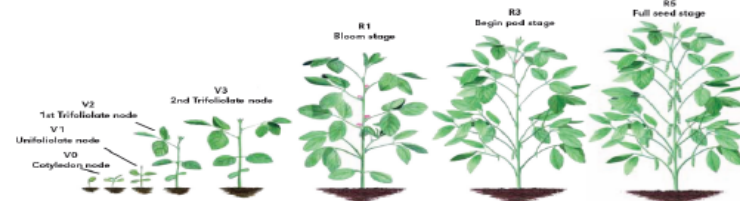
Soybean Crop Coefficients - Kc

Crop Water Use by Growth Stage — Soybeans



Soybean Growth Stages

- V0 Cotyledon nodes 0 — cotyledons extended
- V1 Unifoliate node 1 — unifoliate leaves expanded
- V2 1st Trifoliate node 2 — trifoliate leaves expanded
- V3 2nd Trifoliate node 3 — trifoliate leaves expanded
- R1 Begin bloom — one flower any node
- R2 Full bloom — flowers at top 2 nodes
- R3 Begin Pod — A pod 3/16 inch long in any of the top 4 nodes
- R4 Full Pod — A pod 3/4 inch long in any of the top 4 nodes
- R5 Full Seed — A seed 1/8 inch long in any of the top 4 nodes
- R6 Full Seed — A seed filling a pod cavity in 4 top nodes
- R7 Begin Pod Mature (leaf fall) — one brown pod any where on plant
- R8 95% pods mature
- Mature Harvest-ready



| Crop Stage | Crop coefficient Kc | Root Depth (in) | % of Growing Season |
|----------------|---------------------|-----------------|---------------------|
| V0 Cotyledon | 0.2 | 6 | 0 |
| V1 1st Node | 0.3 | 9 | 4 |
| V2 2nd Node | 0.5 | 12 | 8 |
| V3 3rd Node | 0.6 | 16 | 11 |
| R1 Begin Bloom | 1.0 | 24 | 26 |
| R2 Full Bloom | 1.1 | 24 | 32 |

| Crop Stage | Crop coefficient Kc | Root Depth (in) | % of Growing Season |
|---------------------|---------------------|-----------------|---------------------|
| R3 Begin Pod | 1.2 | 24 | 41 |
| R4 Full Pod | 1.2 | 24 | 50 |
| R5 Begin Seed | 1.2 | 24 | 63 |
| R6 Full Seed | 1.2 | 24 | 80 |
| R7 Begin Pod Mature | 1.0 | 24 | 89 |
| R8 95% Pods Mature | 0.2 | 24 | 100 |

7 days reference ET * crop coefficient = actual crop ET

$$\begin{array}{rcl}
 \text{FRET} & * & \text{Kc} & = & \text{aET} \\
 1.32'' & * & 0.6 & = & 0.79'' \\
 1.32'' & * & 1.0 & = & 1.32''
 \end{array}$$

Irrigate only when you can increase yield and quality or reduce risk. Subtract any effective rainfall the field receives for the week.