



AGRONOMIC

Spotlight



When to Terminate Irrigation for Soybean Production

One of the most important factors for achieving optimum soybean plant growth and yield potential is moisture. Due to the warm, dry climate in many Southern regions maintaining adequate moisture can be a challenge during the summer growing season. Proper irrigation management can increase and stabilize crop yields from year-to-year, as opposed to the unpredictability of dry land acres.

As commodity prices reach record highs, soybean acres are more valuable than ever. As a result of the high commodity prices many input costs have also risen, in return making a successful harvest equally important for producers. Irrigating crops is a production expense that can significantly increase crop yield and insure against drought losses. Supplying water until a crop reaches maturity can help maximize yield potential, however continuing irrigation after physiological maturity occurs is simply an added expense since no additional yield will be realized. The following provides tips to determine when to terminate watering schedules for soybean production.

Terminating Irrigation on Soybean Production

For soybean production, irrigation should begin at bloom and continue consistently until seeds are fully developed. Supplying a soybean crop with adequate moisture via irrigation is necessary in order to maximize seed weight and yield potential. Inadequate moisture during seed development can significantly reduce yields as much as 10 bushels per acre. Lack of moisture from beginning flowering to beginning seed (R1 to R5) growth stages can reduce the number of total pods per plant or the average number of seeds per pod. Between the R5 and R6 growth stages, inadequate moisture can result in smaller seeds that have not reached their full potential.



Figure 1. The soybean pod pictured is at full seed or R6 growth stage. At this stage seeds have reached maximum weight.

Deciding at what soybean growth stage irrigation should be cut off can be a difficult decision and may vary according to weather conditions and soil moisture. As a general rule of thumb, good soil moisture should be maintained until at least 50 percent of the soybean pods have seeds that are touching within the pod (~R5.5).

While water requirements decrease as the plant gets closer to maturity it is still important to maintain proper soil moisture to minimize stress and maximize yields. To insure maximum yields, continue to maintain good soil moisture until the R6 stage. At R6 stage the seeds have reached maximum seed weight. If good soil moisture is present at R6 stage, no additional irrigation is needed.

Soybean Growth Stages	
R1	Beginning Flowering - at least one flower on any node
R2	Full Flowering - open flower at one of the two uppermost nodes
R3	Beginning Pod - pods are 3/16 inch at one of the four uppermost nodes
R4	Full Pod - pods are 3/4 inch at one of the four uppermost nodes
R5	Beginning Seed - seed is 1/8 inch inside pod located on the main stem at one of the four uppermost nodes
R6	Full Seed - pod contains at least one green seed filling pod capacity. Pod is located on the main stem at one of the four uppermost nodes
R7	Beginning Maturity - one pod located on the main stem has reached mature pod color
R8	Full Maturity - 95 percent of the pods have reached their mature pod color

Table 1. Soybean Growth Stages. Iowa State University Extension

Sources: *Soil and Water Management, Soybean – Crop Irrigation. University of Arkansas Cooperative Extension Service. May 28, 2008. http://www.aragriculture.org/soil_water/irrigation/crop/soybeans.htm*

Pedersen, P. Soybean Growth Stages. Iowa State University Soybean Extension and Research Program. April 9, 2008. http://extension.agron.iastate.edu/soybean/production_growthstages.html

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