MSU Grain Crops Update
June 4, 2007
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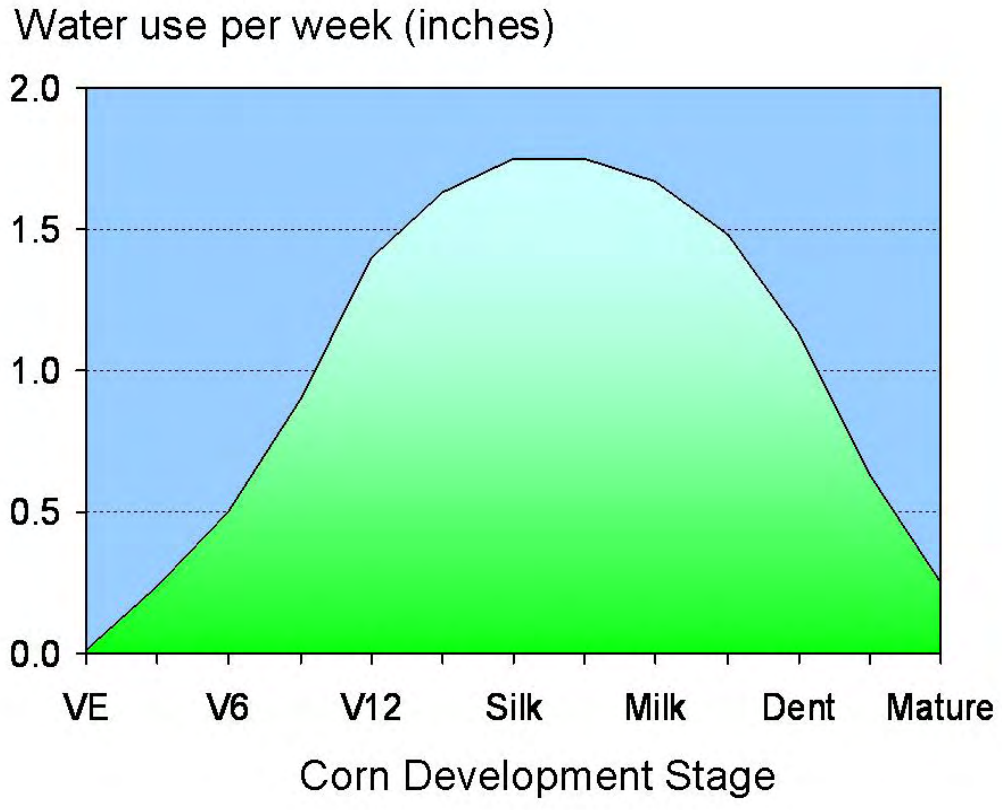
Critical time for rainfall and/or irrigation - Given that most of Mississippi has experienced substantial moisture deficit since early March, this season's crop will be extremely dependent upon rainfall or supplemental irrigation during the upcoming weeks. In fact, much of our dryland areas are drier than they were last year at this time. Corn's most critical and largest moisture requirement occurs during a four week period following tasseling, which will occur during June through mid-July for most of Mississippi's crop. Potential corn yield can be reduced up to 4 - 8 percent per day due to water deficit during this period. Thus, insufficient irrigation water and/or slight delays can quickly reduce yield potential and evaporate profitability. Corn plants use about 1.50-1.75 inches of water per week during peak water use, so producers nearly always must supplement rainfall with irrigation to meet crop demand during this extremely critical period. Furthermore, growers should anticipate this demand so they don't fall behind when it peaks, especially with center-pivot irrigation systems. Unfortunately, most center-pivot systems in our region were not designed to fully support crop demand without some rainfall to help them out. Thus, irrigators need to start early, so that subsoil moisture can be recharged somewhat, before peak water demand begins.

Figure 1. Corn water use during the growing season.



Will irrigation or rainfall hurt pollination? - Corn possesses a vast overabundance of pollen and several traits, which make the corn pollination process relatively immune to overhead irrigation or rainfall disturbance. Corn produces a huge overabundance of pollen grains (more than 4000 pollen grains per silk). Physical disturbance caused by overhead irrigation occurs over a very short time period in relation to corn pollination capacity. Pollen shed normally lasts 5 to 8 days, during which pollination may occur at any time. Corn plants also have an innate ability to stop pollen shed when the tassel is too wet or dry and trigger pollen shed when conditions are favorable. Additionally, silks are quite sticky, which makes pollen grains hard to wash off after they land on a silk. Thus, the physical disturbance caused by rainfall or overhead irrigation will not reduce corn pollination in a normal field environment.

Figure 2. Corn tassel during pollination.

Grain sorghum irrigation timing - Grain sorghum is very drought-tolerant. However, it will respond positively to supplemental irrigation during droughty conditions. These characteristics make grain sorghum well suited for limited irrigation. Grain sorghum is most dependent upon moisture around the boot stage. The boot stage is characterized by the head swelling inside the flag leaf sheath, immediately prior to heading. Grain sorghum water use is maximized from rapid vegetative growth stages through the soft dough stage. Water use during this time typically peaks at about 1.5 inches per week. Water use rapidly declines after the soft dough stage. Therefore, a furrow-irrigation application just prior to the boot stage, followed by another at bloom (if needed) should provide nearly the entire yield potential of full irrigation. Center-pivot irrigation systems typically require several applications since total water application is limited (compared to furrow irrigation) by runoff potential.

Figure 3. Grain sorghum or milo plant at the boot-stage (photo courtesy of "How a Sorghum Plant Develops," Kansas State University)

To add your address to the Corn and/or Wheat email list, please send a request to: **elarson@pss.msstate.edu**

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