How Does Extreme Heat Affect Corn?

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Last week our summer heat wave was running a month early with daytime high temperatures already bumping or exceeding 100°. So our corn producers were likely concerned about the effect of the extreme heat on corn that is now pollinating. Corn is most sensitive to any type of stress during its tasseling, silking, and pollination growth stage.

The viability of pollen can be damaged by mid 90 or greater temperatures and killed by temperatures over 100 degrees. But pollen shed normally occurs during early to mid morning before temperatures reach dangerous levels and there is fresh pollen available every morning until pollination is complete. A greater concern is moisture stress that may occur during the extreme heat. Combining heat stress with moisture stress could potentially reduce final grain yield by as much as 13% per day.

Using http://agweather.mesonet.org/ we can access the following 10 inch soil moisture map for June 28 that shows soil moisture is already a concern in some areas of northeast Oklahoma. The irrigation planner available at the same website shows that the evapotranspiration rate for corn is currently near .3 inch per day.

![Soil Moisture Map](image)

The water holding capacity of Taloka and Verdigris soils, typical Cherokee prairie upland and bottomland soils respectively, is approximately .2 inch per inch of soil depth. At the evapotranspiration rate of .3 of an inch per day it you could say that we are removing the moisture from 1 ½ inches of soil per day. That means the brown areas on the soil moisture map are going to expand rapidly unless we get a rain soon.

So it is no surprise to anyone that we need a rain but it is especially disconcerting that the summer heat and dry weather seems to have arrived early this year. Some corn has likely already suffered a yield loss due to the heat and more importantly, a lack of soil moisture.