Impact of Drought on Pollination

Leaves of corn plants have been rolling in many area fields. Concern is growing about the impact that hot dry weather will have on pollination. We will not know the full impact until we have kernel set. I was in my own corn field a week ago in Andrew County and my early corn is setting kernels but tip kernels are not pollinated at this time.

Drought can severely impact corn pollination. If stress occurred early in the growth of corn and continues to pollination, the timing of pollen drop and silk emergence may not coincide. Under ideal conditions, silk elongation will start 7 days before pollen drop. If tassel emergence is delayed, this will result in poor kernel set or in extreme cases, none. Next, pollination occurs for 7 to 10 days. Pollen is released in the mornings. This provides a window of opportunity that if hot dry winds kill pollen grains one day, the next day, the pollen may remain viable to grow into the silk to the kernel to fertilize the ovule. Typically, temperatures above 95 degrees Fahrenheit will kill corn pollen especially with low humidity. However, if corn tassels turn white from the hot dry winds, the total pollen may be killed.

Also, hot dry silks can be desiccated so they are not receptive to the corn pollen. Typically, silks are moist to touch, but hot dry winds can cause these to dry. Silks will continue to elongate if moisture exists. Eventually, they will shut down. Pollinated silks will turn brown and those unfertilized will remain green until they stopped elongating or turn brown from hot dry winds.

There is a method to determine how if corn kernels are fertilized. First, one should examine corn plants after kernel set. To do this, carefully pull the ear from the plant. Next, again carefully pull the ear shucks off without disturbing the silks. Continue to remove shucks until silks are exposed. Next, dangle the corn ear holding the butt of the ear. The fertilized silks will drop off and those which are unfertilized will continue to remain attached. This will provide you how well fertilization took place.

Even though kernels may be fertilized, the corn plant will examine the resources available to fill kernels and under continued dry conditions, we will have kernel abortion.

Nitrate Testing of Corn

Area livestock and agronomy specialists have test kits used to indicate if corn stalks are high in nitrates. Call your local Extension office to determine if this can be done locally or if you need to contact an office with the appropriate specialist.
Short and Tall Soybeans

This spring has been a challenged with soybean emergence. Some seed was planted in moist soil and seed germinated resulting in large soybean plants. Others were planted in dry soil and finally emerged resulting in small soybean plants. However, there was transition zone in which seed did swell and the lack of moisture caused seed to die.

So how will delayed emergence impact soybean yield? Delayed emergence limits the soybean plants ability to add vegetative growth. For example, long-term MU research conducted by Dr. Bill Wiebold indicates that soybeans planted June 5 will yield 89 percent compared to that of the optimum planting date; June 12, 84 percent; June 19, 79 percent; June 26, 72 percent and July 3, 65 percent. If soybeans have moisture, they can emerge relatively quickly.

So how could I use this information if my soybeans lay in the soil without germinating? I would use the emergence date of my late emerging soybeans and then subtract off a week. Typically, June has good soil moisture and soybeans will emerge in a week. By backing off a week, then use the planting dates already stated to compare yield loss. Again, key is using the emergence date of the delayed soybeans and backing off a week.

The proportion of the area of delayed emergence would be the area that would have reduce yield. If 25 percent of the field had delayed emergence, then 25 percent of the field would have delayed yield loss.

Yes, some larger plants which emerged first will compensate yield in smaller gaps, but many fields have large gaps. Also, narrow row spacing will compensate more than in 30-inch rows as plants will be better spaced.

If the dry weather continues, the vegetative and reproductive growth will be limited reducing additional yield compared to the long term data research data.

If you would like to be added to our electronic mailing list, please contact Charmaine Flint, Holt County Secretary at 660-446-3724.

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