PENNSYLVANIA MASTER CORN GROWERS ASSOCIATION

Between The Rows

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caused root growth to be inhibited and this resulted in sugars accumulating as red pigments in the leaf tissue of the small plants.

In some places, corn planted in mid-May experienced severe rain right after planting. This caused the destruction of soil structure in some fields and also movement of herbicides within the field. This resulted in increased potential for soil crusting and herbicide stress on some crops.

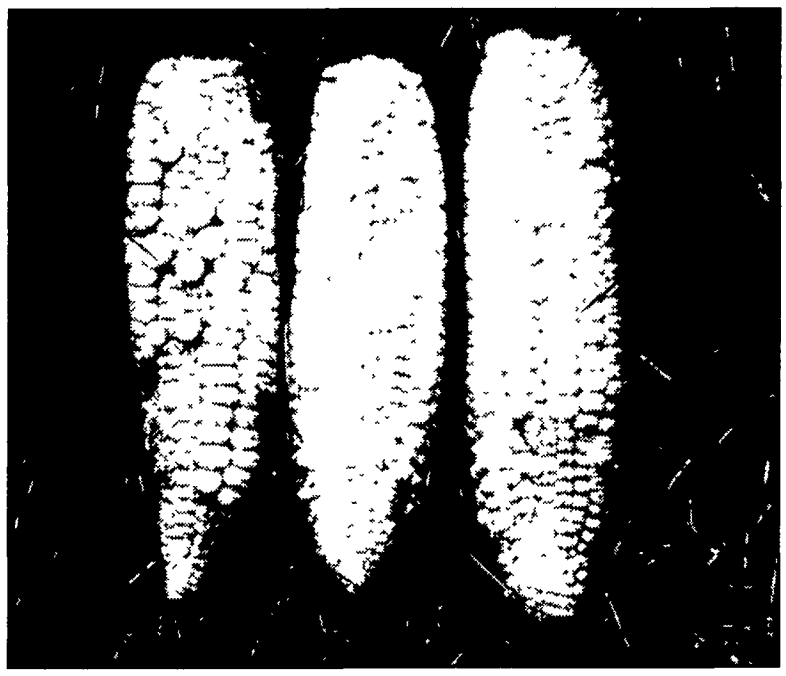
The dry weather in July really seemed to reduce root growth of the later-planted corn and also reduced the plants' ability to recover from any corn rootworm damage. In wet or normal years, we often get some good root regrowth on rootworm-damaged plants, but that did not occur this year. This was compounded by the fact that in some fields, root systems were not well developed because of the early cool, wet weather and stress.

The effects of the dry weather were exacerbated by high temperatures. Data from the Lancaster weather station showed 31 days in July and August had highs of 90 degree or above. This compares with a long-term average of 17. High temperatures have multiple negative effects on corn plants. High temperatures increase the evaporative demand on the crop, can reduce pollen viability, and increase the respiration of the crop.

Related to the heat stress, I noticed much more poor pollination this year. I also observed fields where the interior parts of the field seemed much worse than the perimeter. I attribute this to additional heat stress in those areas during the critical reproductive stages of growth.

Later in the season, I observed premature plant death in the worst parts of drought-stunted fields. This only happens in the worst conditions. In some fields with decent ear development, the ears drooped over prematurely and grain fill ended early. This also is unusual. Normal maturing crops progressed through silage and grain harvesting stages two to three weeks ahead of normal. This was likely due to the 200-300 excess growing degree days that we accumulated in most areas of the state this year.

My observations also showed wide variations in field-to-field performance this year. Factors that I think helped this year were early planting, long-term no-till, a history of manure application, good weed and insect control, and crop rotation. Also, selecting the right hybrid for the situation seemed to be important for me again this year. Several farmers told me they thought subsoiling helped to develop a better root system and subsequent growth under the drought conditions. They could be right.



Poorly pollinated ears such as these were common in corn fields in Pennsylvania as a result of high temperatures and drought stress during silking.

What should we do for next year? I don't think we should undertake any knee-jerk management responses to the drought this year. Instead, I think a long-term plan to build our soils, build some diversity into our cropping systems on marginal soils, and continue to evaluate the genetics that are out there for the combination of high yield and good drought stress are good ideas. These are strategies that should pay dividends in the future.