Published at the Chat 'n Chew Cafe, June 2002
URL: http://www.kingcorn.org/news/articles.02/TMDS-0609.html

Some Corn Afflicted With TMDS Syndrome

R.L. (Bob) Nielsen
Agronomy Dept., Purdue Univ.
West Lafayette, IN 47907-1150
Email address: mailto:rnielsen@purdue.edu

A few of the regular patrons of the Main Street Café, at the corner of 1st and Walnut streets, have begun to filter back for their morning coffee and rolls following a couple of weeks of non-stop planting of corn and soybean. As the adrenaline rush slowly fades away, some have been checking out the condition of the few fields that were planted back in late April and early May as well as those that have recently emerged from the late May planting frenzy.

Several individuals are reporting that some of the corn crop is now suffering from a malady referred to as TMDS Syndrome, otherwise known as **T**oo **M**uch **D**ang **S**tress. Severe cases of TMDS merit the substitution of stronger expletives for "dang", but the net result is the same: Corn that is unevenly stunted, putrid light green, yellow, white, and/or striped with interveinal chlorosis; or extensive areas of fields with severe stand loss.

The TMDS Syndrome is most pronounced on sandy knobs or knolls in fields across the northern third of the state where most of the early-planted corn exists this year. Other versions of TMDS occur elsewhere in the state in the lower swales of fields or simply in areas of fields that are slightly lower elevation than the surrounding areas.

The common causal link to all cases of TMDS is the occurrence of multiple stresses and their timing with the developmental stage of the crop. As with good comedy, timing is everything, especially when it comes to the effects of severe early season stress on corn.

Two of my recent articles discussed the importance of early root development in corn and the consequence of stress occurring before stand establishment is complete; i.e., before the nodal roots are well established (see links below). This has been one of those years where multiple stresses have occurred in a time period in which corn has, by and large, not yet been well established. Consequently, the effects have been very dramatic in some fields.

The various stresses to choose from this year include the following. Pick and choose from the list to customize your own list of yield limiting factors thus far in 2002. Combine these stresses with hybrids with less than excellent hybrid vigor, rates of starter fertilizer rates less than optimum, or dangerously low soil pH and the results will be more severe.

1. Excessive rainfall that caused excessive leaching of soil nitrate N, magnesium, and other mobile nutrients below the root zone of young corn plants; especially in sandier coarser textured soils (i.e., those sandy knobs).
2. Excessive rainfall that caused lengthy periods of ponding or saturated soil conditions that quickly results in root death of young corn seedlings.
3. Excessive rainfall that caused severe soil surface crusting that restricted seedling emergence and resulted in leafing out underground.
4. Excessive rainfall leading to significant soil erosion that washed away parts of fields and mudded over other parts of fields.
5. Four to five weeks of cool and wet soil conditions following planting in late April that eventually resulted in significant outbreaks of seedling blight once the seed-applied fungicide "gave up the ghost".
6. Four to five weeks of cool and wet soil conditions following planting in late April that favored the development and activity of certain corn nematodes on some of the sandier soils in northern Indiana.
7. The combination of four to five weeks of cool and wet soil conditions following planting in late April followed by a very rapid transition to mid-summer type temperatures and strong drying winds.
8. Several frost and freeze events that resulted in stand loss or above-ground leaf damage followed by one or more weeks of continued cooler than optimum temperatures that stifled the recovery of the damaged crop.
9. Frequent and lengthy periods of cool, cloudy weather that greatly reduced the rates of photosynthesis.
10. Sidewall and other soil compaction that restricted the initial development of the seminal and nodal root system.
11. Cloddy seedbeds that hindered both germination and early root development of the corn crop.

What management steps can corn growers take in response to these stresses? Unfortunately, most of the damage has already been done. A return to decent corn growing weather (mid-80's and sunshine) will likely do wonders towards improving the appearance of the crop, especially once the root system develops more extensively and is better able to explore the soil environment for nutrients.

With regards to the excessive leaching of nitrogen, magnesium, and other nutrients, there are few certain options. The uncertainty lies with the difficulty in knowing how far the nutrients have leached. If not deeply, then the crop may still access them once its root system develops more extensively. Consequently, "rescue" applications of nitrogen or magnesium fertilizers may indeed cause a rapid greening of the crop, but may not result in increased yields.

Related References:

Johnson, Bill. 2002. Unhealthy Corn [Online]. Integrated Pest & Crop Management Newsletter, Vol. 12, No. 11. University of Missouri-Columbia. http://ipm.missouri.edu/ipcm/archives/v12n11/ipmltr1.htm (Verified 6/6/02).

Lipps, Pat. 2002. Corn Diseases: Seedling Blight, Anthracnose and Stewart's Wilt [Online]. Crop Observation and Recommendation Network, Ohio State University Extension. http://corn.osu.edu/archive/2002/jun/02-16.html#linkb (Verified 6/6/02).

Nielsen, Bob. 2002a. Corn Root Development [Online]. Purdue Univ. Coop. Extension Service. http://www.kingcorn.org/news/articles.01/Corn_Root_Dev-0509.html (Verified 6/6/02).

Nielsen, Bob. 2002b. Diagnosing Stand Establishment Problems in Corn [Online]. Purdue Univ. Coop. Extension Service. http://www.kingcorn.org/news/articles.02/Stand_Establ-0602.html (Verified 6/6/02).

Nielsen, Bob and Ellsworth Christmas. 2002. Early Season Frost & Low Temperature Damage to Corn and Soybean [Online]. Purdue Univ. Coop. Extension Service. http://www.agry.purdue.edu/ext/corn/news/articles.02/Frost_Freeze-0520.html (Verified 6/6/02).

Sweets, Laura. 2002. Seed Decay, Seedling Blights Contribute to Problems in Corn [Online]. Integrated Pest & Crop Management Newsletter, Vol. 12, No. 11. University of Missouri-Columbia. http://ipm.missouri.edu/ipcm/archives/v12n11/ipmltr2.htm (Verified 6/6/02).

Thomison, Peter. 2002. Prognosis Poor for Corn "Leafing Out" Underground [Online]. Crop Observation and Recommendation Network, Ohio State University Extension. http://corn.osu.edu/archive/2002/may/02-15.html#linkb (Verified 6/6/02).

Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the World Wide Web at http://www.kingcorn.org/cafe . For other information about corn, take a look at the Corn Growers' Guidebook on the World Wide Web at http://www.kingcorn.org/