Wet Weather Causes Loss of Soil Nitrogen

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Some parts of New Jersey have had significantly above normal rainfall this spring. The excessively wet conditions increase the likelihood of soil nitrogen deficiency. Results of soil sampling this year for the presidedress soil nitrate test show that many fields have lower levels of available soil N than might be expected. Even some heavily manured fields are testing low in soil nitrate because they are too wet. It is especially important in a wet growing season to check fields with the PSNT to determine if sidedressing is needed. Manured fields that are expected to have adequate soil nitrogen, may in fact have low levels of available nitrogen due to the losses of soil nitrate.

Wet weather decreases nitrogen availability in several ways:

1. Soils saturated with water lack oxygen. Microorganisms need oxygen to make nitrogen available from the decomposition of organic matter.
2. Cooler soil temperatures associated with wet weather also slow nitrogen release from soil organic matter.
3. Nitrogen in the nitrate form is easily leached from the soil. When soils stay wet for an extended period, considerable amounts of nitrate are also lost by a process called denitrification. This process converts nitrate to a gaseous form of nitrogen which then moves into the atmosphere.

As a consequence of this season's wet weather, more field corn and sweet corn fields will need sidedress nitrogen. The presidedress soil nitrate test is useful to determine which fields are most likely to need sidedressing.

Cultivation can also help. Once soils have dried sufficiently, cultivation of the soil can help bring oxygen back into the soil and stimulate a release of soil nitrogen. ❑

Post Hail Disease Management on Apples

Submitted by Win Cowgill, Hunterdon County Agricultural Agent

The following comments regarding how to treat hail damaged apple blocks in the Hudson Valley, New York by Dr. Dave Rosenberger, Extension Plant Pathologist, Cornell University, are reprinted from the electronic mail discussion group, Apple-Crop found at <apple-crop@orchard.uvm.edu>

Dr. Rosenberger worked closely with us in North Jersey for the past two years until our new plant pathologist, Dr. Norm Lalancette came on board this spring with Rutgers Cooperative Extension.

This growing season we have also had hail damage in parts of the Hudson Valley on apples. However, many growers are overly pessimistic immediately after a hail storm. At harvest some of these growers decide that they can salvage some fresh market fruit after all. Sometimes this involves picking only the side of the trees that was down-wind and somewhat protected from hail. If growers think that there is any potential for salvaging part of the crop, then scheduled fungicide treatments for summer diseases should be applied for the remainder of the summer.

Bitter rot can be a problem, but it usually occurs only in "hot spots" and I suspect is not worth spraying for in most locations in the Northeast. The 5-6 inches of rain we had over the week-end (2 weeks ago), however, could encourage bitter rot development. However, in our area the rain from Hurricane Bertha came straight down and we therefore did not get the potential for dispersal of bitter rot inoculum that occurs when we get very windy storm events.

It is worth noting that trees that do not receive summer fungicides *may* set less fruit and/or thin more easily the following spring. We first noted this phenomenon in a 4-year study with Liberty that was recently published in Plant Disease 80:798 (1996). Since that time, I have some additional data from other plantings (all on M.9 rootstocks) that shows the same thing. The mechanisms by which summer fungicides might affect fruit set the following year have not been determined, but some possibilities are discussed in the Plant Disease publication.

The potential reduction in fruit set where fungicides are not used is relatively small, so I would *not* suggest that fungicides be applied to hail-damaged blocks just to improve next years fruit set. However, I *would* consider this effect, along with all of the other variables that affect thinning, when determining the rates of chemical thinners to use the spring following a summer when no fungicides were applied. I would be very cautious when thinning hailed blocks that were left unsprayed during the previous summer, especially if other factors also suggested fruit set might be light or only average.

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