Toad Stranglers, Goose Drownders, and Corn Survival

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

- Corn can survive 2 to 4 days of flooding or saturated soils.

Recent intense rainfall events (technically referred to as 'toad stranglers' or 'goose drownders') have left its mark on the 2002 corn and soybean planting season in Indiana. Of the very few farmers that have been able to plant corn in between the rainy spells, some are now wondering what to expect from corn fields that are under water or simply saturated.

Corn, like most crops, requires high levels of soil oxygen to successfully germinate. Flooded or ponded soils, or soils that are simply saturated, contain very little available soil oxygen. Germination won’t occur until soils dry out sufficiently. Soil oxygen is also essential for the metabolic processes of a developing seedling, including the active absorption and transport of nutrients from the soil. Without oxygen, the plant cannot perform critical life sustaining functions; e.g. nutrient and water uptake is impaired, root growth is inhibited, etc.

Anyway you look at it, flooded or saturated soils are not conducive to good germination or early seedling growth of corn. How long can corn withstand the oxygen-depleting effects of
saturated soils?

Prior to leaf stage V6 (six-leaf stage as measured by visible leaf collars), corn can survive only two to four days of flooded conditions. If temperatures are warm during flooding (greater than 77F) such young plants may not survive 24 hours. Cooler temperatures prolong survival. Compounding the outright effects of depleted soil oxygen reserves is the risk of soil-borne diseases on seeds or seedlings that are already stressed.

Plants younger than V6 are susceptible to damage for two reasons. First of all, the growing point in such young corn is at or below the soil surface and therefore is also subject to the stress of oxygen-depleted conditions.

Secondly, plants younger than V6 are in the process of trying to successfully establish a vigorous root system. Stunting or death of roots by oxygen-depletion can be a major stress for a plant that is not yet fully established.

Obviously, only time will tell whether a corn field that has been under water or saturated for long periods of time will require replanting. As you walk or wade through your fields and dig plants or seed, look for the obvious discoloration of the seeds or seedlings that indicates disease or death of the plant tissue.

For other information about corn, take a look at the Corn Growers Guidebook on the World Wide Web at http://www.kingcorn.org

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