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Corn survival in flooded or saturated fields

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Corn survival in flooded or saturated fields

Abstract

Rainfall that fell from April 22-26 resulted in totals of 2 to 8+ inches across Iowa. Soils became saturated resulting in widespread flooding and ponding. According to the National Agricultural Statistics Service (NASS) Iowa Crops and Weather Report, only 8 percent of the state's corn had been planted as of April 22. As of April 29, 14 percent of the state's corn was planted. A range existed across the state with farmers in localized areas nearly complete with planting while many had not started. Although some acres have been planted, there were only a few fields of corn reported to have emerged as of April 30. In fields that were not flooded, the persistent hammering of rain will most likely result in thick soil crusts, which could inhibit emergence.

Keywords

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Disciplines

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Corn survival in flooded or saturated fields

by Roger Elmore and Lori Abendroth, Department of Agronomy

Rainfall that fell from April 22-26 resulted in totals of 2 to 8+ inches across Iowa. Soils became saturated resulting in widespread flooding and ponding. According to the National Agricultural Statistics Service (NASS) Iowa Crops and Weather Report, only 8 percent of the state's corn had been planted as of April 22. As of April 29, 14 percent of the state's corn was planted. A range existed across the state with farmers in localized areas nearly complete with planting while many had not started. Although some acres have been planted, there were only a few fields of corn reported to have emerged as of April 30. In fields that were not flooded, the persistent hammering of rain will most likely result in thick soil crusts, which could inhibit emergence.



Other fields were flooded or had ponds. Most fields had saturated soils. How long can that corn survive? (See Table 1.) Smaller seedlings are more susceptible than larger seedlings. We admit that the effect of standing water on germinating seeds is not well known. Some hybrids will probably respond better than others, yet differentiating among poor and good hybrids is not possible due to the limited data set. A germinating seed is a living organism

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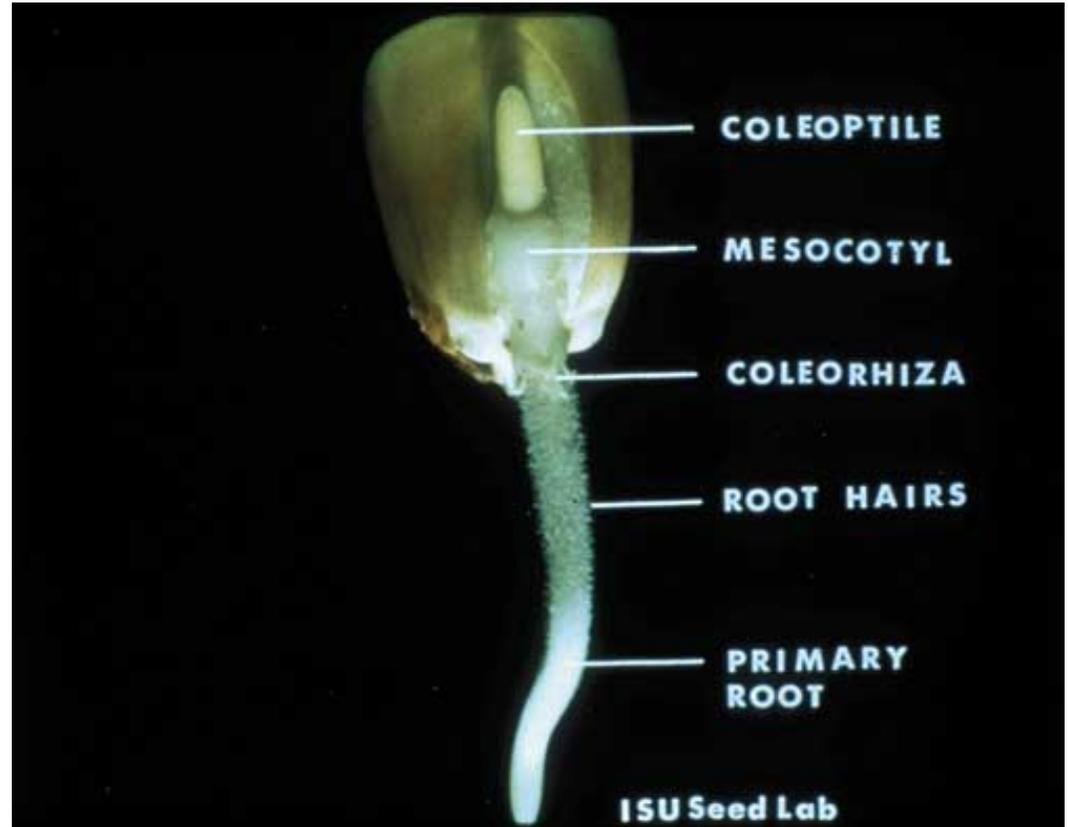
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and as such requires oxygen to survive. In flooded soil conditions, the oxygen supply will become depleted within approximately 48 hours. Cool air temperatures help to increase the possibility of survival. Yet, we would not expect survival of germinating seeds to be greater than that of young plants; they should not be expected to survive more than four days.



After the waters go down, plant survival should be confirmed by examining the color of the growing point of the seedlings if present. The radicle (root) and coleoptile (shoot) should appear white or cream colored. Seeds could be cut in half to determine if turgor pressure is still present. If the seed is extremely soft and does not hold form, it probably will not survive. Surviving plants will resume growth within three to five days after the water recedes.

A decision to replant should be made only after assessing stands and considering the economics of replanting or converting the acreage to soybean or another crop. An Iowa State University Extension resource on determining when to replant is the Corn Planting Guide (PM 1885). Corn planted prior to May 15 would be expected to yield similarly to the corn that was already planted if stands are comparable and diseases do not infect the seed or seedling. Therefore, if stands are extremely poor, replanting would be a good option; although, be aware that conditions can quickly change with several good days of weather.

Resources

[Corn Planting Guide](#), Iowa State University Extension, PM 1885.

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Find additional information at the [Iowa State University Extension Corn Production Web site](#).

Table 1. Survival of flooded corn plants.

Stage	Condition	Potential for Survival and Problems
Corn	Germinating	Genetic differences among inbreds (and we assume hybrids) exist for responses to flooding.
Corn prior to 6th leaf stage	Underwater (6 inches of water on surface); air temperature less than 77 °F	Will survive for four days. Longer flooding results in lower yields especially at lower nitrogen levels.
Corn prior to 6th leaf stage	Underwater (6 inches of water on surface); air temperature greater than 77 °F.	May not survive more than 24 hours.
Corn prior to 6th leaf stage	Saturated, cold soils, flooding	Seed rots, seedling blights, various other pathogens, crazy top.

Adapted from [Crop Watch](#), 20 May 2005.

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