



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

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Heavy Rain, Ponding Effects on Corn

Hardin County – Heavy rains over the weekend resulted in saturated soil conditions across much of the state. Excessive rainfall in some areas have resulted in localized ponding and flooding of corn. Local rainfall reports in Hardin County indicate an average of 3.27 inches of rain has fallen since April 15, causing ponding and wet conditions in some recently planted fields. If the ponding and flooding was of a limited duration, in other words the water drained off quickly within a few hours, the injury resulting from the saturated soil conditions should be minimal.

The extent to which ponding injures corn is determined by several factors including plant stage of development when ponding occurs, duration of ponding, and air/soil temperatures. Prior to the 6-leaf collar stage (as measured by visible leaf collars), or when the growing point is at or below the soil surface, corn can usually survive only 2 to 4 days of flooded conditions. Since most of the corn that's been planted so far is not beyond the VE stage, it's especially vulnerable to damage from ponding and saturated soil conditions.

The oxygen supply in the soil is depleted after about 48 hours in a flooded soil. Without oxygen, the plant cannot perform critical life sustaining functions. Nutrient and water uptake is impaired, root growth is inhibited, etc. If temperatures are warm during ponding (greater than 77 degrees F) plants may not survive 24-hours. Cooler temperatures prolong survival so the cooler than normal forecast this week may limit injury resulting from saturated soil conditions. Once the growing point is above the water level the likelihood for survival improves greatly.

Even if ponding doesn't kill plants outright, it may have a long term negative impact on crop performance. Excess moisture during the early vegetative stages retards corn root development. As a result, plants may be subject to greater injury during a dry summer because

root systems are not sufficiently developed to access available subsoil water. Ponding can also result in losses of nitrogen through denitrification and leaching. Even if water drains quickly, there is the possibility of surface crusts forming as the soil dries that can impact the emergence of recently planted crops. Growers should be prepared to rotary hoe to break up the crust to promote emergence.

For corn that's emerged check the color of the growing point to assess plant survival after ponding. It should be white to cream colored, while a darkening and/or softening usually precedes plant death. For corn not yet emerged, evaluate the appearance and integrity of seeds or seedlings that have yet to emerge (likely rotting if discolored and softening). Look for new leaf growth 3 to 5 days after water drains from the field.

Disease problems that become greater risks due to ponding and cool temperatures include pythium, corn smut, and crazy top. Fungicide seed treatments will help reduce stand loss, but the duration of protection is limited to about 10-14 days. The fungus that causes crazy top depends on saturated soil conditions to infect corn seedlings. There is limited hybrid resistance to these diseases and predicting damage from corn smut and crazy top is difficult until later in the growing season. However, the economic impact of these latter two diseases is usually negligible.

Article written by Dr. Peter Thomison, OSU Extension State Corn Specialist, and edited by Mark Badertscher, OSU Extension Agriculture and Natural Resources Educator-Hardin County.