What Causes Yellow Corn Seedlings

KEY POINTS

- Yellow corn plants early in the growing season may indicate that plants are experiencing less than optimal growing conditions.
- An understanding of corn plant development can help identify what conditions or symptoms to scout for, and the potential management options.

Figure 1. Yellowing caused by excessive water which can result in N leaching.

Corn seedlings transition from dependence on energy from the seed to the root system for nutrient uptake between the V3 and V5 growth stages. This is about the time that corn plants can begin to show yellowing. Yellow corn seedlings and/or uneven growth early in the growing season can be caused by many factors including:

- Cool air and soil temperatures
- Areas with excess moisture (Figure 1)
- Soil compaction
- Interactions that reduce nitrogen (N) and sulfur (S) uptake

Impact of Environmental Conditions

Cool spring temperatures combined with water-saturated soils, compaction, or crop residue can slow plant growth and limit root growth and root penetration into the soil, which can limit nutrient uptake. Nitrogen and S may leach below the root zone with heavy rainfall leading to nutrient deficiency symptoms in corn. The mineralization and plant availability of nutrients, including N and S, is also reduced in cool, wet soils due to slower microbial activity.

A potential cause of yellow corn seedlings may be **N deficiency**, which can result in chlorosis (leaf tissue yellowing or bleaching) and necrosis (leaf tissue death) in an inverted V shape running up the midrib (Figure 2). Nitrogen is mobile in the plant, so the deficiency is usually seen on the older leaves first. There are several causes for N deficiency in plants besides low soil nitrate.

Sulfur deficiency symptoms will show on newer leaves as striping and interveinal chlorosis (the veins, midrib, and leaf margin remain green). When soils warm, mineralization will likely increase and plants should recover from S deficiency (Figure 3).

Interveinal chlorosis on the upper leaves is a symptom of **zinc (Zn) deficiency**. As the deficiency intensifies, bands (or "stripes") develop on either side of the midrib and the leaves may turn almost white. Additionally, a Zn-deficient corn plant may be stunted.

Management

It is likely that the problem of yellow corn seedlings is more related to delayed root growth than to low levels of soil nutrients. The crop will likely turn green with the return of warmer temperatures and adequate sunlight

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Figure 2. Corn seedling showing yellowing due to environmental conditions (Top). Chlorosis and necrosis in an inverted V-shape pattern along the midrib may be an indication of nitrogen deficiency (Bottom).

if the yellowing is due to cool temperatures, wet soils, or inadequate sunlight.

If crop color remains poor even after a week of drying soils and good growing conditions, then N deficiency may be affecting the ability of the corn plants to recover. Nitrogen is most likely still present, but a sidedress N application may increase N availability to the root zone. Additional N application decisions should be based on original yield goals and quantities applied in the fall and spring in combination with weather conditions that may have caused leaching since the time of application.

Figure 3. Sulfur deficiency on young corn plants.

Sources:
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