Agronomy Profile

Nutrient deficiencies in young corn

Overview

Between the V3 and V5 growth stages, corn transitions from deriving energy directly from the seed to acquiring energy from sunlight through photosynthesis. Visual appearances, including coloration, during these stages offer clues to overall plant health. However, visual appearance may also be temporarily affected by weather, so proper diagnosis is important.

What you should know

- Deep reddish or purple coloring may be caused by anthocyanin pigment formation, caused by exposure to night air temperatures in the 40s and day temperatures in the 60s.
- Cool, wet soils can lead to slower microbial activity in soil, causing a decrease in mineralization and available nutrients, and slow corn seedling root growth and penetration that causes purple seedlings. Phosphorus deficiency can occur if the root system can't absorb sufficient nutrients for the seedling.
- Yellow leaf coloration may occur without adequate sunlight and/or heat units. Pigmentation caused by weather will not affect grain yield and will slowly disappear as soil temperatures return to normal.
- Tissue tests can establish which nutrients are deficient and whether symptoms are due to soil deficiency or plant uptake and metabolism.

Action steps

1. **Scout early and use visual cues:** Purple coloration may indicate anthocyanin pigment formation. Yellowing may be caused by nitrogen deficiency.
2. **Test and correct:** Examine soil and tissue test results and make sure proper nutrient rates are recommended and applied.
3. **Manage crop residue:** Evenly disperse residue across the field. Large amounts of residue delay the soil's ability to warm.
4. **Check genetics:** Some hybrids are genetically predisposed to have higher levels of anthocyanins. This does not affect final population, growth or yield. If the coloring is uniform through the field, the cause is likely genetic.

Nitrogen-deficient corn is visibly lighter than healthy corn.

30-Second Summary

- Scout fields early to look for plant coloration issues which may indicate nutrient deficiency.
- If the issue is nutrient-related, take appropriate steps early on to improve soil nutrients and/or plant nutrient uptake and avoid permanent crop damage.
- Weather-related coloration issues often disappear when the soil warms and don't typically affect plant productivity.

NOTES:

For more information, contact:

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