



AGRI-BRIEFS

AGRONOMIC NEWS ITEMS

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CORN LODGING FROM STALK ROT - FERTILIZER FACTORS

Growers across the Corn Belt struggled with high levels of lodging this past season. Weather and other factors combined to increase infection with stalk rot, leading to poorly filled ears, ear rots, and harvest losses. It's too late to do much about it for the year 2000 crop. But it's not too late to identify preventive measures for the 2001 season.

Weather conditions played the largest role in producing the stresses that led to stalk rot infection. These stresses included shortages or excesses of water, leaf diseases like rust and Stewart's wilt, leaf damage from hail, frost, and low temperatures, and insect damage. However, fertilizer factors played a role as well. Since fertilizer is more controllable than weather, it deserves attention.

Stalk rots are encouraged whenever the plant cannot maintain carbohydrates in the stem. Late-season stresses that reduce leaf photosynthesis, the source of carbohydrates, tend to increase stalk rots, because the ear is supplied at the expense of the roots and stems. In some places, excess rains caused nitrogen losses. Later in the season, nitrogen-starved leaves couldn't maintain stem carbohydrates, resulting in stalk rot.

Potassium has long been the nutrient most associated with plant disease reduction. It has been shown to reduce stalk rots caused by the *Fusarium*, *Gibberella*, and *Diplodia* species of fungi in research reports over the past 40 years. It's particularly important to use potassium to balance nitrogen, since excess nitrogen without sufficient potassium produces weak, susceptible stalks.

Chloride also has a role in reducing stalk rot. Recent maximum yield research in New Jersey confirmed that fact in a field experiment. Corn fertilized with muriate of potash (potassium chloride) rather than sulfate of potash had less than half as much stalk rot on a four-year average. The 360 pounds of chloride per acre boosted yields from 255 to 272 bushels per acre. The rates of fertilizer used in this high-yield experiment would not be economical on most farms, but the results make it plain that chloride can suppress disease. In fact, such findings are not new. New York state research reported in 1958 that the chloride in muriate of potash reduced stalk rot.

Is it possible that increasing use of fluid fertilizers has led to lower supply of potassium and chloride than in the past? Banding fluids close to the seed efficiently delivers the phosphorus demanded by the young seedling, but it often supplies less potassium and little to no chloride. You may need to supply these two critical nutrients another way. Recent research in Ontario has confirmed an increased need for potassium in starters in no-till corn. Indeed, visual symptoms of potash deficiency showed up in many places across the Corn Belt and other regions during the 2000 growing season.

When you plan next year's corn crop, identify all the possible solutions to stalk rot...hybrids, crop rotation, residue management, and nutrients: in soils, fertilizers and manures. **Fertilizer management won't eliminate stalk rot, but it can help to suppress it.**

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