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Planting date affects crop diseases

Gary P. Munkvold

Iowa State University, munkvold@iastate.edu

X. B. Yang

Iowa State University, xbyang@iastate.edu

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Planting date affects crop diseases

Abstract

Planting date can affect many crop diseases; early planting increases the risk of seedling disease and some other soilborne pathogens, but for some diseases there is a risk of greater yield loss with late planting. Increased risks associated with late planting occur because plants are at an earlier growth stage at the onset of disease. Plants infected earlier in their development suffer greater yield reductions. It can pay to be aware of how specific diseases are affected by planting date.

Keywords

Plant Pathology

Disciplines

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In soybeans, root diseases such as Phytophthora, Rhizoctonia, and sudden death syndrome can strike any time during the season, but the risk of infection is greater if soybeans are planted early into cooler, wetter soils. Timely cultivation can help dry the soil, reducing the risk of root rots and promoting root development. Care must be taken not to damage the roots during cultivation.

Some early-season diseases cause more damage in late-planted crops. In oats, the two major diseases, barley yellow dwarf virus and crown rust, become active in late May and early June. Late-planted oats are still very small at this time, and they suffer more damage. In corn, Stewart's disease and anthracnose leaf blight can occur early. During most years, these diseases are not a serious threat, but they can cause more damage on late-planted corn.

Diseases that occur later in the season are affected more indirectly by planting date. Some studies have shown that late-planted soybeans sometimes escape infection by the first generation of soybean cyst nematode. Nematodes that hatch more than a few days prior to planting do not survive. However, the extent of preplant hatching may or may not be significant, depending on the temperature and other factors. Later soybean maturity reduces Phomopsis seed decay. Use of delayed plantings or later maturity varieties has been very consistent in the reduction of this disease. Planting date effects on Sclerotinia stem rot are unpredictable. In some years, infection may be avoided by late planting because canopy closure occurs later in the season, when it may be too hot for rapid fungal growth. However, if disease-favorable weather conditions occur late in the flowering season, soybeans planted late in drill or narrow row would have more disease than the early-planted crops. The effects of planting date on this disease are indirect.

In late-planted corn, silking and maturity may occur later than usual and enhance the damage by late-season leaf blights and ear rots. Gray leaf spot and eyespot inoculum levels are high from last year. These diseases cause greater yield reduction when infection occurs on younger plants. Ear rots become more severe as the corn stays in the field during late summer and fall. Later maturing fields could experience more cool, wet fall conditions, which are more favorable to Diplodia and Gibberella ear rots. If the grain is harvested before it dries

down sufficiently, the result could be increased storage molds. It is difficult to generalize about the effects of planting date on stalk rots. Stalk rot development is often related to the growth stage of the plant, so it may be delayed in late-planted corn. However, if drydown is delayed because of late planting, the plants could suffer increased stalk rot damage as they stand in the field late into the fall. Usually the length of time between physiological maturity and harvest is important in determining the extent of stalk rot damage. Early maturing fields can suffer considerable lodging damage if harvest is not timely. For stalk rots and the other late-season diseases, keep in mind that weather conditions later in the season often have more influence than early-season conditions.

Summary of the effects of early planting on corn and soybean diseases.

Disease	Effect of early planting	Reason
Seedling diseases	More disease	Cooler, wetter soil favors infection
Corn leaf diseases	Less yield loss	More grain fill occurs before disease sets in
Corn stalk rots	Not consistent	Depends on weather and timing of harvest
Corn ear rots	Less disease	Earlier drydown
Soybean root rots, sudden death syndrome	More disease	Cooler, wetter soil favors infection
Soybean cyst nematode	More disease	Plants will be infected by early-hatching nematodes
Soybean white mold	Not consistent	Depends on weather during flowering
Soybean brown stem rot	Not consistent	Depends on weather
Soybean mosaic virus	Less yield loss	Disease spread by aphids occurs later in the season
Soybean pod & stem blight	More disease	Warm conditions during late pod fill stages

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