Wheat Without Cover Is Less Cold Tolerant

URBANA, ILL.

Winter's below normal temperatures may impact the winter survival of a variety of plants, but let's focus on winter wheat. Just like alfalfa, winter wheat can experience winter cold injury. Even though wheat varieties planted in our area should be tolerant to cold temperatures, fluctuating soil temperatures can cause the wheat crown and roots to be lifted or heaved out of the soil leaving them vulnerable to dehydration from sun and wind exposure. Freeze injury can also occur within wheat plant tissue as plant cells freeze and rupture, causing cell death.

This year concern arises because winter cold and below zero temperatures, combined with a lack of snow could impact cold tolerance of late-planted wheat. According to Emerson Nafziger, University of Illinois Agronomist, "fields with no ground cover, or fields where wheat plants failed to get established due to late planting and the early December cold snap, are the ones that cause the most concern."

If our area had some snow cover to insulate the plants, the concern of winter kill due to cold injury and desiccation would be less. When spring arrives, any dead patches of wheat could have resulted from any variety of individual stress factors or a combination of several factors such as excessive or under abundant moisture, wind desiccation, temperature extremes, or disease.

A couple of wheat diseases are favored by cold weather. One is soilborne wheat mosaic virus which survives naturally in soil in association with a fungal organism. The fungal organism enters the roots of a wheat plant in autumn during cool and wet periods and carries the virus along with it. If the fungus and virus enter the wheat plant during cool, fall weather it has a greater potential to damage the wheat plant than if it infected the plant during the spring. Last fall we had several early cold spells with temperatures below 60Â° F that could encourage infection by this pathogen. Management for this pathogen includes using resistant wheat varieties and avoiding continuous wheat cultivation.

Another disease favored by cool, wet autumn weather is Pythium root rot. This fungus exists naturally in area soils, especially in fields where previous wheat chaff and straw remain. The young wheat seed is infected when planted into cool, wet soil in the fall. Trying to plant winter wheat so it emerges in relatively dry soil or well-drained soil helps manage Pythium root rot. Ridge seeding may help with this better than furrow seeding. Always use high quality seed and supplemental phosphorous in fields where this disease is a problem. Systemic fungicides like Metalaxyl can provide early seedling protection.

As soil dries this spring, scout your fields to determine the quality of your wheat stand. Count wheat plants over a 20-foot span in five areas of your field for a period of several weeks to decide whether plants will outgrow injury and to access any damage that may have occurred. One general guideline is 70 tillers per square foot are considered adequate for optimal yield. Δ