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# Rust and other diseases are accelerating corn maturity

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# Rust and other diseases are accelerating corn maturity

**Abstract**
During the last 2 weeks, the appearance of many cornfields has begun to deteriorate; plants in some fields are dead. Although we expect plants to be maturing about this time of year, clearly some plants are dying early. Statewide, we reached 50 percent silking about July 22, which means theoretically, the "average" corn plant should reach physiological maturity about September 17. In some areas, the crop will be mature prior to its expected maturity date. When corn plants don't live for the full season, they do not achieve maximum potential yields. Even though the kernels on prematurely dead plants will display a black layer, the lack of kernel plumpness indicates they reached this stage too soon.

**Keywords**
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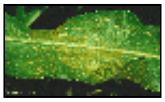
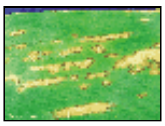
This year, premature death of plants in many fields is disease-related. Rusts, Stewart's wilt, gray leaf spot, and stalk rots are the diseases that are most evident. Moisture stress during grain fill also has played a role in premature death in some fields.

## Rusts

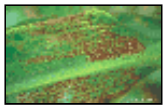
Rust is causing a lot of leaf damage late this season. This year is unusual because the majority of rust in most parts of the state is southern rust, caused by Puccinia polysora. Common rust (*Puccinia sorghi*) also is present, often in the same field, but southern rust is predominant. There are a few differences between these two diseases: southern rust spores are lighter orange, the pustules are smaller, and when they mature, they form black specks (telia) under the leaf epidermis, whereas common rust forms black telia that break through the epidermis. The hot, humid weather earlier this summer probably had an influence on the prevalence of southern rust. Yield loss may occur due to the leaf damage alone, and additional yield loss will occur if plants die prematurely.


[1]

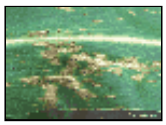
**Southern rust symptoms. Southern rust is caused by *Puccinia polysora*.**


[2]

**Southern rust telia.**



[3] **Common rust pustules and spores. Common rust is caused by *Puccinia sorghi*.**



[4] **Common rust causing death of leaf tissue.**

Producers who intend to chop and feed rust-infested corn silage will no doubt wonder about the forage quality and potential animal health risks. Forage quality may be lowered primarily because of the early death of the plant. Producers should monitor the crop to ensure that it is harvested at the optimum moisture content for ensiling (60-70 percent). There are no known toxic effects from feeding rust-infected corn silage. An obvious concern would be the palatability of the forage when mixed with the rust fungus. If fed as fresh cut forage, there may be some decrease in palatability. If the forage is ensiled, the ensiling process generally creates enough heat and acids to kill the fungus and detoxify the forage. In addition, the sugars and other by-products that are produced during the ensiling process should overwhelm any unpalatable tastes that the rust may impart. A word of caution to producers who are working in rust-infested fields: Initial exposure to the rust spores may result in a hypersensitivity to the spores upon subsequent exposures. Severe respiratory ailments have been known to develop causing pneumonia and other similar human health problems. If working in the open in rust-infested fields, it would be advisable to wear a respirator to avoid the inhalation of the rust spores.

## Anthracnose top dieback

This is a phase of the anthracnose disease that is less common than the typical stalk rot that occurs at the stalk base. With top dieback, the plant dies from the top down, with the upper leaves turning yellow or reddish purple, then drying out. When these leaves are removed or fall off, typical black anthracnose lesions can often be seen on the outside of the upper stalk. If the stalk is split, the pith appears rotted in the upper internodes. The fungus (*Colletotrichum graminicola*) infects through the whorl earlier in the season and remains dormant in the stalks until late in the season, or it infects though leaf sheaths. Late-season stress triggers the development of the symptoms.

[5] **Anthracnose top dieback.**

## Stalk rot

Some plants are dying because the base of the stalk is rotted by *C. graminicola*, *Gibberella*, or *Fusarium*. The onset of these stalk rots is also stress-related. When the stalk base is rotted, the whole plant wilts and dies suddenly. To see the symptoms, you may need to split the stalk all the way to the base, below the soil line. Plants that die prematurely for some

other reason also will probably develop stalk rot; thus, they are more likely to lodge.

Gray leaf spot and Stewart's wilt. These diseases are obvious in some fields in southern Iowa. Some fields have had most of the leaves killed by a combination of these two diseases, along with rust.

## Moisture stress

In general, corn root development was not good this year because of early-season wetness. During grain fill, the plant needs a lot of water, especially during some of the hot periods we have experienced. Corn plants in fields that were wet in the spring will have shallow, poorly developed, partially decayed root systems that cannot provide enough moisture to keep the plants alive. This scenario contributes to stalk rot and top dieback susceptibility.

Obviously, there is nothing that can be done now to prevent premature death. However, it might pay off to scout fields now for stalk problems, checking the firmness of the lowest internode on at last 100 plants. If more than 10-15 percent have soft stalks, have the combine ready to go a little early to prevent additional losses from lodging.

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