

# IN THE FIELD

## Websites to Visit:

Cornhusker  
Economics

[http://agecon.unl.edu/  
cornhuskereconomics](http://agecon.unl.edu/cornhuskereconomics)

Agricultural  
Economics

[http://agecon.unl.edu/  
marketing](http://agecon.unl.edu/marketing)

## New or Newly Revised UNL Extension Publications

Calibration of Sprayers  
(also seeders)

[http://www.ianrpubs.unl.edu/  
sendlt/q2044.pdf](http://www.ianrpubs.unl.edu/sendlt/q2044.pdf)

## Start Scouting for Soybean Seedling Diseases

Wet spring conditions have led to the development of soybean seedling diseases in some Nebraska fields.

Seedling damping off and seed rot caused by several fungi commonly occur in Nebraska. Early season damping off and root rots are often followed by premature death, which in many instances may be attributed to fungal infections earlier in the season. In some situations, large areas of a field or even entire fields need to be replanted due to early season fungal problems. This may especially be true in a year like this when cool, wet weather early in the growing season creates favorable conditions for infection by certain soil borne pathogens that attack developing soybean plants.

Seedling diseases also are active whenever soils are saturated.

Several soybean disease pathogens may cause damping off or root rot seedling diseases. The most common in Nebraska are species of Phytophthora, Pythium, Rhizoctonia, and Fusarium. All four are capable of killing soybean seedlings or at least causing damage sufficient enough to affect the plant's ability to achieve full yield potential.

These seedling diseases have similar symptoms, often making diagnosis difficult. Microscopic examination and other laboratory analyses of the diseased seedlings often are necessary to identify the cause and differentiate damage from disease, insect injury,

herbicide damage, planting problems, or environmental stresses that have similar symptoms.

Damping off from *Phytophthora sojae* is more common in low-lying areas, in poorly drained or compacted soil, and in soils with a high clay content. It also may occur on well-drained hillsides during very wet growing seasons. Disease develops most rapidly when the soil temperature is above 60°F and soil moisture is high. Symptoms include seed rots, pre- and post-emergence damping off of seedlings and stem rot of plants at various growth stages.

Infected seedlings exhibit water-soaked lesions on the stems and roots, and yellowing and wilting of the leaves. The stem rot phase is easily identified by the dark brown color on the exterior surface of the stem and lower branches. Discoloration of the stem extends from below the soil to 6 inches or more above the soil line. The taproot turns dark brown and the entire root system may be rotted. Leaves on older infected plants become chlorotic between the veins followed by general wilting and death.



Figure 1. Lesion on soybean root.  
(Photo by Aaron Nygren)

Postemergence damping off caused by *P. sojae* can be differentiated from that caused by *Pythium* spp. after the V2 growth stage as *Phytophthora*-infected seedlings will have brown discoloration extending up the stem from the root, whereas *Pythium* damping off is found at the hypocotyl and below. Pockets of a field or large areas may be affected.

*Rhizoctonia* root rot also may be seen in some fields this year as this disease is favored by stress and well drained soils. Stresses can include herbicide injury, soil insect damage, hail, sandblasting, soybean cyst nematode feeding, and dry conditions (which occurred in some areas of the state prior to this wet spell). Pre-emergence symptoms, such as seed decay, often are not visible in the field.

Post-emergence symptoms include brown to reddish lesions on seedling stems and on roots just below the soil line. These reddish brown lesions may become sunken, girdle the stem, and kill the plant. Plants often may appear stunted and unthrifty throughout the season or, less commonly, will die. Often the stand will appear uneven because of stunted plants. On older plants, the pathogen causes a reddish brown dry cortical root rot that may extend into the base of the stem. Later in the season, infections at the base of the plant (cortical rot) may result in plants snapping off during high winds. Damage is usually more common in warm, moist sandy soils, often on the south facing hillsides.

The few days of hot, dry conditions followed by the cold snap also may have caused cold injury to some seedlings if the hypocotyl hook or cotyledons were exposed to frost or near freezing conditions in some fields.



Figure 2. Cold snap and seedling disease pathogens cause lesions on roots and cotyledons of soybeans.  
(Photo by Jennifer Rees)

### Recommendations

Evaluate stands to determine if replanting is necessary. Don't replant stands with a field average of at least 100,000 plants per acre. The decision making process isn't always clear cut as certain areas or spots in the field may be more severely affected. If your seed was treated with a fungicide but you still had damping off problems, work with your seed dealer. You may want to consider a fungicide seed treatment in replant situations as the pathogens are present and may still cause damage on replanted beans.

For more information on soybean diseases, visit: the CropWatch Soybean Page at <http://cropwatch.unl.edu/web/soybeans/home>.

Source: Loren Giesler, Extension Soybean Pathologist; Jenny Rees, Extension Educator Clay County; Michael Rethwisch, Extension Educator Butler County; Keith Glewen, Extension Educator Saunders County; Aaron Nygren, Extension Educator Colfax County

### State Soybean Records

As of April 2011:

5.1 million acres harvested (2010)  
54.5 bushel/acre yield average (2009)  
1,575,300 bushels produced (2009)

Data Source: Nebraska State Agricultural Statistics