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Cotton Insights Newsletter

A service provided by Windstar, Inc. affiliated gins.

May 19, 2021

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Crop Situation

After significant and greatly welcomed rainfall in many areas and cold temperatures last week, we have an excellent planting window opening up based on current temperature forecasts. Many growers are looking at fields to determine which ones are dry enough to plant. The forecast with respect to temperatures looks good for the next 10 days or so, but we all know the further out the forecasts go, the less reliable they are. Some cotton was planted around a week to two weeks ago, and these were subjected to considerable cold temperatures and in some places wet conditions after the storms came through. These fields may have challenges with respect to seedling vigor and health.

Seedling Diseases

Seedling diseases can be caused by individual pathogens, but are many times caused by multiple organisms in what is called seedling disease complex. Seedlings can die before or after emergence. Many times single plants can be affected or larger areas can be encountered. Seedling diseases are generally favored by cool soils, wet weather, overcast skies, waterlogged conditions, herbicide injury, and any other stress factors that reduce seedling growth. Generally, water conducting tissues (xylem) or root are compromised which in turn causes wilting and eventually seedling death. Symptoms can include obvious lesions near or below the soil line. Modern fungicide seed treatment packages are typically effective control measures, but invariably these can be overwhelmed by poor seedling growth due to low vigor seed, various environmental factors and high levels of disease inoculum. There are several fungal pathogens typically involved, and these can include Pythium, Rhizoctonia, Thielaviopsis, and some Fusarium species.

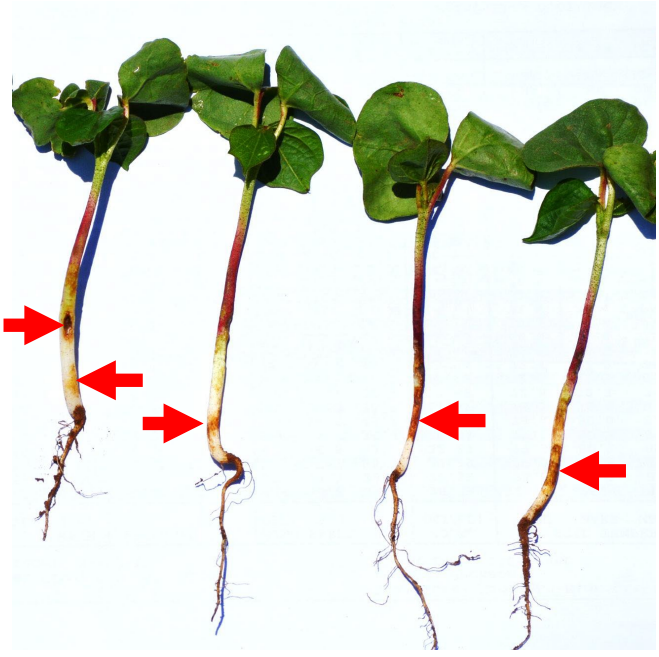
For vintage but still relevant information and photographs of various seedling diseases, click on the link below: https://www.cotton.org/tech/physiology/cpt/pest/upload/CPT-Mar96-REPOP.pdf

Pythium species

This disease is typically found in moist soils and can infect within hours of planting. It can produce a seed rot, and is called "damping off." The symptoms include poor seedling emergence/failure to emerge, soft, mushy tissue of seed/seedling, light brown-to-dark discoloration on roots, shrinkage, wrinkling of root tissues, with above ground tissue brown to black in appearance. Girdled plants can die.

Rhizoctonia solani

This disease infects young, emerging seedling at the soil line causing "post-emergence damping-off" of the seedling or "soreshin." It can result in lack of vigor and overall poor growth. Lesions are generally reddish brown in color, sunken and typically found below the soil line. However, lesions can be found above the soil line. Browning or discoloration will penetrate into the vascular tissues. If lesions girdle the stem, the plant can die. Excessive soil moisture generally drives this disease, but it can be found under varying moisture levels. For photographs of Rhizoctonia symptoms, see below.



Thielaviopsis basicola or Black Root Rot

This seedling disease is many times encountered under cool, wet conditions. It infects and blackens the root epidermal and cortical tissue. The affected area will typically have a reduced diameter compared to healthy tissue. The affected tissue can be removed, and the white layer underneath found fairly intact. This fungal injury can result in seedling stunting and if prolonged may ultimately reduce yield potential. Black root rot can be severe under conditions where other pathogens have also infected the plant roots.

The above Black root rot photographs were sourced from the Cotton Incorporated Cotton Root Disorder Guide, and were originally provided for that publication by Dr. Terry Wheeler, Texas A&M AgriLife Research, Lubbock, TX.

Photograph Gallery of Cotton Diseases

There is a great gallery of photographs of numerous cotton diseases available from Texas A&M. Several good pictures of diseases mentioned in this newsletter can be found about half way down the page. If you click on a photo, it will enlarge. To see this gallery click on the link below:

http://cotton.tamu.edu/Photos/diseasephotos/diseasephotos.html

Considerations

If fields are exhibiting issues with seedling health, it is important to identify which pathogen or more likely which pathogens might be involved. For growers who consistently strive for early planting into likely cool, wet conditions, the fungicide seed treatment packages planted may need to be fine-tuned. Typically the base fungicide seed treatment packages are appropriate for normal conditions. However, more expensive premium seed treatments may have to be considered. Identifying and planting acceptable varieties that have excellent genetically inherent seedling vigor, plus knowing that you have the highest quality seed (high cool germination percentage) and an excellent seed treatment package on that seed are all important factors to consider. Early season crop health is important, especially in extremely short-season environments.