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Crop Management Newsletter

News about Crop Management for producers in Dawson, Lynn and surrounding Counties.

Thanks to the sponsors and the gins who support the Dawson/Lynn IPM Program
(found on page 2)

The Seedling

Hydrating and Germinating the Seed

The recent rains have increased the soil water content in the top of the profile where the seed and seedling plants are using it before it moves down into the deeper profile. This soil water is used for the first stage of plant growth - germination through water uptake. Water only moves to the seed in the liquid form from soil in firm contact with the seed. Actually the seed starts out so dehydrated that it can dry the surrounding soil. Once a sandy soil starts to dry, it loses its water conducting abilities making it unable to move water into the seed for germination and leading to stand failures.

Seedling Disease

With increase in soil moisture content, long periods of no sunlight and cooling soil temperatures, expect possible delays for the seed to emerge - we are set up to encounter seedling disease. A number of different soilborne pathogens including *Pythium* spp., *Rhizoctonia solani* and *Thielaviopsis basicola* are involved in the seedling disease complex.

RHIZOCTONIA a.k.a. Soreshin, Rhizoc, Damping Off

The most common cause of post-emergence damping off throughout the world *Rhizoctonia* invades the cotton plant at soil level. It produces a sunken lesion which girdles the hypocotyl (stem), causing the seedling to collapse. In wet conditions, the lesion can extend upwards several centimeters from the soil line. Plants surviving *Rhizoctonia* are weakened, and they bear the mark of the

stem-girdling lesion at the base of the stem (Soreshin).

Contributing Factors: Excessive soil moisture predisposes cotton seedling to infection by reducing their rate of growth. Infection occurs over a wide range of soil moisture levels.

PYTHIUM a.k.a. Root Rot

Pythium infects the seed and radical, causing seed rot and pre-emergence damping off. The seedling hypocotyl (stem) can also be affected at the soil line, causing post-emergence damping off. At later stages of plant development, *Pythium* may cause stunting and chlorosis.

Contributing Factors: *Pythium* is most damaging to cotton seedlings at low temperatures and high soil moisture content. Degree of infestation is also impacted by soil texture and organic matter.

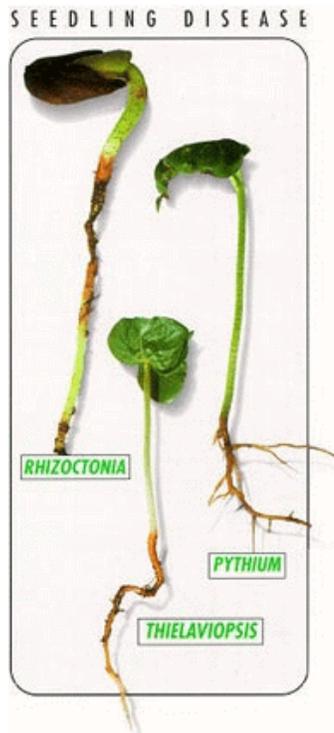
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The Texas A&M University System, U.S. Department of Agriculture and the County Commissioners Courts of Texas cooperating.

THIELAVIOPSIS a.k.a. Black Root

Thielaviopsis is most prevalent in Texas, Mississippi, New Mexico, and the San Joaquin Valley area of California. Infection occurs at the seedling stage with roots and the portion of the hypocotyl below soil line rotting and turning black. When older plants are infected by Thielaviopsis the result is collar rot. Signs of Thielaviopsis include swelling/blackening of the tissue at the base of the stem, and fungus growing from infection sites.

Contributing Factors: Thielaviopsis is more prevalent in clay soils than sandy soils and is usually most severe under cool, wet conditions.



Chilling Injury

Soil and air temperatures should be at optimum levels when planting. A mid-morning soil temperature of 68°F at the planting depth for three consecutive days and a favorable five-day forecast following planting is best, but not always realistic.

Soil temperatures below 50°F have been associated with chilling injury. If this occurs at the most sensitive stage, when the seed is taking up water, the pre-emerged seedlings often die after the root tip or radicle has pushed out a half inch. Chilling within the first five days after planting results in weak plants with delayed maturity and reduced yields. Dry seeds are highly tolerant of chilling, but as soon as they are placed in moist soil they begin soaking up water and enter their most sensitive stage. Since the temperature of shallow planted cotton seeds can fluctuate widely, planting

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should be avoided when temperatures are forecast to drop below 50°F anytime during the first few days after planting.

A favorable five-day forecast will help avoid potential chilling injury getting the seedling off to a good start which can pay dividends at the end of the season. When the 5-day accumulated heat units were above 25, yield is not limited by temperature.

During the growing season, research has shown that there is one two-week period where the heat unit accumulation and yield had a significant correlation - it coincides with the seedling stage of the cotton plant. This indicates the importance of warm temperatures on obtaining healthy stands to potentially obtain maximized yield.