Sudden Death Syndrome Look Alike Part II: Southern Blight of Soybean

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Even though southern blight has most recently been a disease we relate to young soybean plants, the 2018 season has seen a major increase in the levels of southern blight observed in reproductive stage soybean plants. Several names exist for southern blight, including sclerotium blight, southern stem rot and depend on the specific literature source. Southern blight is caused by the fungus *Sclerotium rolfsii*, which is the same fungus that causes white mold of peanut. Prior to 2018 I had witnessed limited amounts of southern blight. In the past I have observed the disease in a few fields and oftentimes return to those to see if I can find the disease again. In general, southern blight prefers a hot, dry environment or periods with intermittent rain. In the past I have considered southern blight to be a disease of minor importance. However, and in particular as I have observed the disease this season, I think this is a disease with increasing importance that may become a greater issue in the future as we continue to grow soybean in a continuous cropping system in the absence of crop rotation.

Symptoms and signs

Symptoms

Mild interveinal chlorosis as can oftentimes be observed with soybean plants as a result of southern blight.

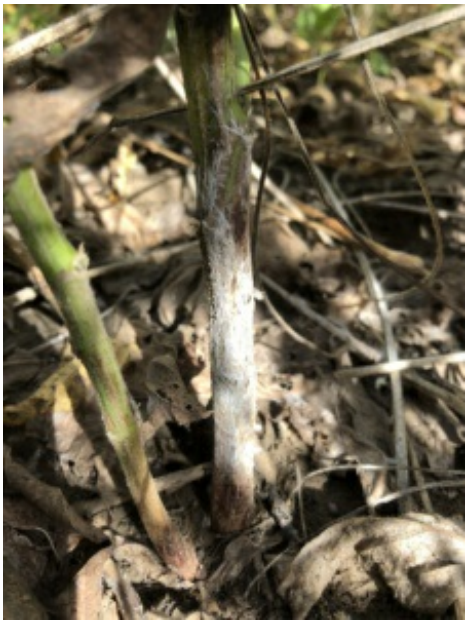
In vegetative soybean plants, typically V2-V5, dead plants in a row of planted soybean can be observed. Normally plants in small groups occur regardless of soil texture. On reproductive soybean plants mild interveinal chlorosis can develop on leaves in the upper canopy (see photo). The interveinal chlorosis encountered can appear similar to mild fungicide phytotoxicity. The chlorosis is so mild this can go unnoticed. Observing the plants exhibiting interveinal chlorosis for the presence of fungal signs (as described below) is important since the fungus will generally grow on the main stem. Reproductive stage soybean plants can wilt as a result of southern blight. Areas in fields where wilted plants are observed should be inspected for all of the symptoms and signs associated with this particular disease to make a proper diagnosis. In addition, in situations where small clumps of dead plants are observed, the leaves will generally remain on the plant. However, and more so as it relates to the 2018 season, in reproductive stage soybean plants a tremendous amount of leaf shed can occur. The leaf shed can easily be confused with many foliar diseases that occur in our production system. The most important thing is to observe plants for all of the

symptoms related with the disease as well as looking for the signs of the fungus as described below. In addition, and less frequently, a red lesion may form at the base of the crown and the soil line. The red lesion may appear sunken and should not be confused with the lesion that develops as a result of stem canker. However, keep in mind that the red lesion near the soil line will oftentimes be rather subtle and not always observable on every infected plant. In situations where the entire plant has prematurely died as a result of southern blight the entire stem will appear brown, leaves will have wilted prematurely and normally remain “stuck” to the stem of the plant. In situations where stem canker occurs, areas of the stem both above and below (but not always) will remain green, but this oftentimes relates to the specific reaction of the soybean variety in question. For example, a stem canker-susceptible variety may result in a stem that is engrossed in the stem canker lesion. However, stem canker lesions generally occur on one side of the stem, while the lesion resulting from southern blight will girdle the entire stem.

Dead plants as observed with those that southern blight has prematurely killed.

Signs

In plant disease situations, when the fungus is observed growing on the plant those are the signs of the disease. In vegetative stage soybean plants, mostly on dead plants (as described above), thick, white, ropey, fungal mycelia grow at the soil line and immediately below the soil line on the stem of the soybean plant. In situations where enough moisture occurs, and again on dead plants, small white to tan to brown sclerotia (a fungal reproductive structure) that look similar to small round balls can occur.



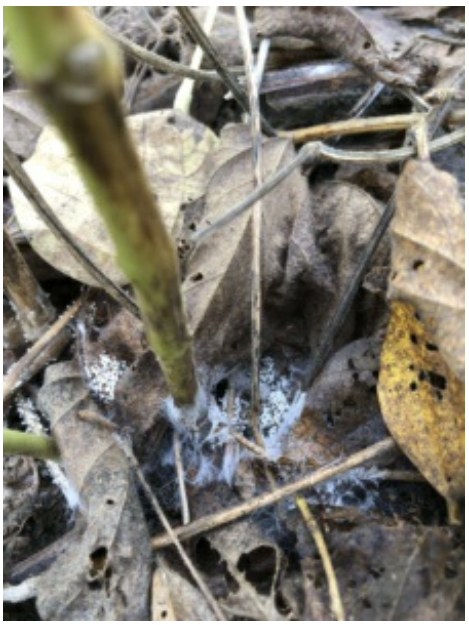
Southern blight infected plants can oftentimes exhibit substantial fungal growth at the base of the plant near the soil line. In addition, observe the stem at the base of the soil line for the characteristic red, girdling lesion.

In reproductive soybean plants the fungus can be observed at the base of the plant as a white fungal growth on the lower stems of plants that may grow up to 3 inches above the soil surface. However, in situations where dry conditions have occurred recently, the fungus may grow on the stem or the roots below the soil line making it difficult to observe without removing plants from the soil. In addition to actively growing on the base of the plant the fungal growth can also be observed growing on

residue on the soil surface especially in situations where a tremendous amount of leaf shed has occurred. Pods close to the soil line can also exhibit fungal growth. Sclerotia can grow abundantly on the stem of the plant, pods near the soil surface or on the soil surface itself depending on the environment that has occurred most recently. In situations where no fungus is present on plants and to confirm the specific disease that has occurred, getting on hands and knees and moving leaf litter on the soil surface may uncover piles of sclerotia and aid in the diagnosis of the disease. In situations when attempting to observe sclerotia, focus on clumps of green plants or the most dead plants, this will depend on the amount of moisture.

Management options

Currently, no fungicides are available to manage southern blight in soybean. Rotation to corn or another non-susceptible host is one method of preventing the disease. Rotation with peanut should not be done since peanut and soybean are both hosts for the fungus. In the past, tillage to bury infected residue as well as deep burial of sclerotia can limit the disease in subsequent seasons.



The fungus that causes southern blight can produce fungal mycelia and sclerotia (overwintering structures) on the soybean plant as well as residue on the soil surface.