

INTEGRATED CROP MANAGEMENT

Get the latest research-based information on crops. [Sign up to be notified when new content is available!](#)

ICM > 2007 > IC-498 (3) -- March 26, 2007

Current Newsletter

You are viewing archives for the newsletter from 1993-2007. For current news, see [Integrated Crop Management News](#).

Archives 1993-2007



Announcements



Crop Production



Insects and Mites



Pesticide Education



Plant Diseases



Soils



Weed Management

[Image Gallery](#)

Printable Version

Printable version of this page

Related Articles

Manage soybean diseases with planting
April 2, 2007

Brown stem rot and sudden death syndrome: Can you tell them apart?
March 26, 2007

Sudden death syndrome prevalent this summer
September 18, 2006

Midsummer soybean

Why is sudden death syndrome found in early-planted soybeans?

by X. B. Yang, Department of Plant Pathology



Foliar symptoms of sudden death syndrome. (Tristan Mueller)

It has been demonstrated consistently that sudden death syndrome (SDS) is more severe in soybean fields planted earlier in a season. Growers who plant later often experience fewer SDS problems compared with those who plant earlier. Over the years, this observation has led plant pathologists to speculate that the fungus may infect soybean plants when they are very small. Recent research has shed light on why early-planted soybeans are more likely to experience SDS in the fall.

Infection occurs as early as seed germination.

An Iowa State University study two years ago found that the fungus can infect soybean plants as early as seed germinated under greenhouse conditions. Observations were that the earlier the germinated seedling gets infected, the more severe the foliar symptoms.

In a meeting late last year, researchers at the University of Illinois reported that the fungus was detected in soybean plants as early as the V1 growing stage in SDS-infested fields, consistent with results from the ISU greenhouse study.

disease scouting
July 10, 2006

Note for fall soybean
diseases

September 13, 2004

Diseases show up
earlier in 2004

August 2, 2004

New insights on early
planting and SDS

April 14, 2003

SDS management for
2003 season

January 21, 2003

Timing tillage for disease
control

October 21, 2002

SDS prevalent this
summer

August 19, 2002

Foliar symptoms and xylem colonization.

Fungus spores survive in the soil, germinate in cool temperatures, and penetrate through cortex tissues of the soybean root according to an Iowa State University study. The fungus then colonizes in xylem tissues of infected tap root plants. Since the xylem is the soybean plant's pathway for upward movement of material such as water, colonization in the xylem system is critical for the fungal toxin to move from the tap root to the leaves. When toxins produced in the infected plant are pumped to foliar parts, initial symptoms are produced as scattered yellow or white spots between leaf veins.

As the disease progresses, spots eventually coalesce to form brown streaks between the veins or interveinal necrosis and only the middle vein and major lateral veins remain green.

Early planting and xylem colonization. The younger the soybean plants, the more likely the pathogen will penetrate into xylems of tap roots. If the fungus fails to penetrate the xylem during the infection, no foliar symptoms would occur. Therefore, the earlier the SDS fungus attacks soybean plants, the higher the disease risk. Since the fungus attacks soybean effectively in cool soil temperatures and warm soil reduces the fungal activities, early-planted soybeans in cool soils are more likely to be colonized by the SDS fungus inside its tap root. Later in the fall, more foliar symptoms follow.

Knowing this, one should avoid planting soybeans in cool soil if SDS has been a production problem. The information about tap root colonization also reminds us to consider soybean cyst nematodes (SCN) in your SDS management because the nematodes may help the SDS fungus penetrate into xylem tissue. It has been shown consistently that SCN can enhance SDS infestation.

X. B. Yang is a professor of plant pathology with research and extension responsibilities in soybean diseases.

This article originally appeared on page 74 of the IC-498 (3) -- March 26, 2007 issue.

Updated 03/26/2007 - 4:37pm