DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System
Sherrie Smith

SPDN
Southern Plant Diagnostic Network
Issue 11-May 12, 2011

# Arkansas Plant Health Clinic Newsletter

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## Turnip

Three different species of *Alternaria* causes leaf and pod spots on Brassica crops. Alternaria disease is commonly called Black Spot or Gray Leaf Spot or Alternaria Blight. For the purposes of this article, we will refer to the disease as Black Spot. The causal agents of Black Spot of turnip are usually either *Alternaria brassicae* or *Alternaria brassicicola*. *Alternaria japonica* is commonly the culprit in Black Spot of radish. Leaf symptoms begin as small dark spots that gradually enlarge and turn brown to gray. These spots may have a blackish or purple border. Lesions may stay round as they enlarge or become angular as they are delineated by leaf veins. Older lesions may contain concentric zones that become brittle and split open. Dark brown to elongate lesions later develops on petioles and stems. Oil seed crops will develop round black spots on the pods. Alternaria species are facultative parasites, meaning they colonize dead plant tissue as saprophytes, as well as attacking live tissue as pathogens. Good weed control and crop rotation are the primary cultural means of control. At least a three-year crop rotation with non-hosts should be used when growing Brassica crops. Plowing under crop debris speeds decomposition of plant material and reduces inoculum. Hot water seed treatments and foliar fungicides are effective means of control. Quadris, Amistar, Switch, and Cabrio are labeled for Brassica crops. Homeowners may use a product containing chlorothalonil.

## Turnip Black Spot-*Alternaria* spp.

**Photo by Sherrie Smith, University of Arkansas Cooperative Extension**

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## Turnip Black Spot-*Alternaria* spp.

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## Broccoli

Fusarium Yellows is a soil-borne disease that attacks most Brassica crops. Plants are initially stunted with a dull yellow to yellow-green leaf color. Affected plants become increasingly yellow with the lower leaves eventually turning brown with necrotic areas and falling prematurely. The yellowing and defoliation progress upward. Infection is generally more severe on one side on the plant resulting in a curved or twisted stem. Leaves may also show a one-sided curvature with one side of the leaf more yellow than the other side. A yellow brown to dark brown vascular discoloration develops from the roots into the stem and even into leaf petioles. Eventually lateral roots become rotted. Although infection primarily occurs through root tips, it can also occur through wounds in both older and young roots. Most cruciferous weeds serve as alternate hosts. The disease can also be brought into a field on infected transplants, on tools, equipment, shoes, and by wind or moving water. The fungus can survive many years in the absence of a host, making control difficult. Soil solarization can be helpful in reducing inoculum. The area to be solarized should be free of debris and thoroughly wetted. Place clear plastic sheeting over the area and seal the edges with soil. Leave in place for 45 days. Commercial growers may use soil fumigants. Planting resistant cultivars is the very best method of control.

## Broccoli Fusarium Yellows-*Fusarium oxysporum* f. sp. *conglutinans*

**Photo by Sherrie Smith, University of Arkansas Cooperative Extension**

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## Broccoli Fusarium Yellows-
***Fusarium oxysporum* f. sp. *conglutinans***

**Photo by Sherrie Smith, University of Arkansas Cooperative Extension**

## Pinewood Nematode
by Ronnie Bateman

The Pinewood Nematode (*Bursaphelenchus xylophilus)* is a parasite of several conifer species. It has been detected in Arkansas and 33 other states in the United States, as well as in Canada, Mexico, and numerous other countries around the world. It has destroyed most ornamental pine trees in the Oklahoma City area (Figure 1). It does not seem to affect our native loblolly but may pose a threat to those species used in landscapes and some of the Christmas trees.

This nematode is vectored from infected trees to non-infected trees by the Southern Sawyer Beetle (*Monochamus* spp. *Figure 2).* Once inside the tree the Pinewood Nematode can reproduce very fast in ideal conditions. The Nematode Diagnostic Clinic has extracted over 5,000 pinewood nematodes from 50 grams of sawdust from an infested tree. It completes its' life cycle in four or five days with each female laying 80 eggs. It can move within the tree but not from tree to tree without the aid of a vector. The vast number of nematodes that build up within the tree impedes the water and nutrient flow necessary for the health of the tree in addition to drawing their own nutrients from the tree. There is also some evidence that a bacterium associated with the nematode may be involved in causing the rapid death of the host that gives the disease its name. Symptoms of pine wilt will begin to appear three to four weeks after infestation. The needles will become a light grayish-green, and then yellow before finally turning brown. The change in needle color is usually uniform throughout the tree but depending on tree size and environmental factors it may occur from branch to branch. The more susceptible pine varieties may die within 30-90 days after infestation.

Another symptom of pinewood nematode infestation is reduced resin production in the tree. A cut or the removal of a limb will result in very little resin flow from the wound. Branches and twigs will also become brittle due to the lack of moisture.

There is no practical treatment for trees that have been infested with pinewood nematode. Planting native or otherwise resistant pine varieties to keep from having the problem at all is the best option. This nematode tends to infest older and otherwise stressed trees. This is particularly true in the

summer with the addition of drought conditions. Keeping ornamental pines watered to avoid drought stress will reduce the likelihood of nematode infestation. To lessen the likelihood of spreading this nematode the infested tree or trees should be removed and burned or buried.

A dead or dying tree with symptoms of pinewood nematode should be sampled for analysis. A sample should be taken from 2 or 3 branches of the tree at chest height. Using a chain saw remove each branch leaving about a ten-inch stub. From this stub cut off 2-4 discs approximately 1 inch thick. If the tree is large enough a 4-5-inch diameter branch is fine. Once 4 to 8 total discs have been collected place them in a plastic bag and seal it. Label the bag with the proper location, date, and contact person. Keep the bagged sample out of the heat and sun. The sample should be sent to the Arkansas Nematode Diagnostic Clinic in Hope for analysis as soon as possible after collection. The address at the lab is: Arkansas Nematode Diagnostic Clinic, 362 Hwy 174 N, Hope, AR. 71801. Samples are now submitted online through the DDDI system. An account may be set up for submission of samples at the following link: dddi.uada.edu. The best approach for submission is to take the sample to the local county agent and let them submit the sample to the lab. There is a $25 cost-recovery fee for this analysis which will take two days to complete after receipt of the sample.

The following conifers are at least moderately susceptible to the pinewood nematode and would be the varieties to avoid if concerned about a potential problem with this nematode. Austrian pine, Cluster pine, Japanese black pine, Japanese red pine, some loblollies, Mugo pine, Scot's pine, and Virginia pine. Those with resistance are Jack pine, Longleaf pine, pitch pine, shortleaf pine, slash pine, Table Mountain pine, and white pine.

## Tree death from Pinewood Nematodes-*Bursaphelenchus xylophilus*

**Photo by the Kansas Department of Agriculture**

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# Southern Sawyer Beetle adult- *Monochamus* spp.

**Photo by Dr. Jim Appleby, University of Illinois**

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

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