

Tips and Reminders for Disease Management in Commercial Pecan Production

Bunch Disease

- Bunch disease is a phytoplasma disease in pecan that causes witches' brooms (abnormal growth of dense, numerous, thin shoots) (Figures 1 and 2). Infected terminals typically do not produce nuts.
- Bunch disease can be hard to recognize in trees when the growing season is well under way and there is plenty of new growth on the tree. However, terminals on branches or limbs infected with the bunch disease pathogen typically leaf out 1 to 2 weeks earlier than noninfected terminals in the spring. A ride through the orchard to look for this early growth in the spring can help to identify infected branches or trees in an orchard.
- There are no known treatments to cure bunch disease. In established orchards, attempts can be made to remove the infection from the orchard or individual trees by removing the tree or individual branches showing symptoms. However, these efforts may not be successful or may not be practical if wild hickories/pecans with bunch disease are located nearby. Also, avoid collecting scions from infected trees to prevent spreading the pathogen.
- *Additional information: ['A Review of Bunch Disease'](#) (2018 TriState Presentation)*



Figures 1 and 2: Witches' brooms in a pecan tree. Photos: R. A. Melanson, MSU Extension, Bugwood.org.

Pecan Bacterial Leaf Scorch

- Pecan bacterial leaf scorch is a bacterial disease in pecan that causes scorching (Figures 3 and 4) and abscission of leaflets and reduced yields.
- Symptoms of pecan bacterial leaf scorch typically appear in mid to late summer. Scout orchards during these times to look for symptoms of this disease. Late in the season when leaves begin to senesce, it can become difficult to distinguish between symptoms of bacterial leaf scorch and senescence. The classic symptoms of pecan bacterial leaf scorch may also be confused with damage caused by [pecan leaf scorch mites](#). Use a hand lens to check for the presence of these mites. If no mites are present and bacterial leaf scorch is still suspected as the problem, samples may be sent to a university diagnostic lab for testing and confirmation of the bacterial leaf scorch pathogen.

University diagnostic labs:

- [LSU AgCenter Plant Diagnostic Center](#) (Baton Rouge, LA)
- [Mississippi State University Extension Plant Diagnostic Laboratory](#) (Starkville, MS)
- There are no known treatments to cure pecan bacterial leaf scorch. In established orchards, attempts to remove the infection from individual trees may be made by removing the individual branches showing symptoms. In newly established orchards (three years or less) with limited occurrences of the bacterial leaf scorch, attempts may be made to remove the infection from the orchard by removing an entire tree. These efforts, however, may not be successful or practical if other infected trees are nearby. Also, avoid collecting scions from infected trees to prevent spreading the pathogen.
- *Additional information: [‘Pecan Bacterial Leaf Scorch’](#) (MSU Extension/LSU AgCenter publication)*



Figures 3 and 4: Symptoms of bacterial leaf scorch in pecan. Photos: R. A. Melanson, MSU Extension, Bugwood.org.

Leaf Spot Diseases

- Fungicides used for the management of scab also help to manage foliar leaf spot diseases, such as brown spot, liver spot, and zonate leaf spot, in pecan. When scab resistant varieties are not sprayed as part of a fungicide program, these other foliar diseases may develop and become problematic.
- *Additional information: Upcoming presentation at [2019 TriState Convention!](#)*

Pecan Scab

- **Environment:** Infection by the scab pathogen requires moisture. In the Southeast, this moisture is often provided by numerous rain events.
- ***Timing:** Fungicides largely aid in scab management by preventing tissue from becoming infected. They do not cure scab. In order to protect trees from infection, fungicides must be applied BEFORE rain events that create favorable conditions for disease development.
- **Frequency:** Fungicides are typically applied every 2 to 3 weeks depending on the weather. In wet seasons with frequent rain events, the time between applications may need to be reduced. In dry seasons, the time between applications may be able to be extended beyond 3 weeks; however, damaging infections can occur rapidly if a rain event occurs and trees are without the protection of a fungicide.

- **Host:** The scab pathogen infects immature (actively growing) tissue (leaves, green shoots, shucks). Fungicides should be applied to susceptible varieties as long as there is actively growing tissue on trees (early spring into late summer until the nuts stop growing in size).
- ***Coverage:** Coverage is important! It may be necessary to increase the amount of water used per acre, decrease tractor speed, or change the nozzle arrangement on the sprayer to make sure that the spray is getting into and covering the canopy of trees. Fungicide sprays should be applied to both sides of a tree.
- **Pathogen:** ROTATE. ROTATE. ROTATE. To prevent the buildup of resistant pathogens, a spray program that uses fungicides from multiple FRAC Groups should be used and fungicides within the program should be rotated (alternated) according to the FRAC Group.
- ***Concentration:** Fungicides must be applied at a concentration capable of preventing infection. Apply fungicides at the recommended product label rates.
- **Season limits:** Adhere to season limits for products AND active ingredients. This includes active ingredients that are applied in combination products.
- **Fungicide Notes (Conventional Fungicides):**
 - Fungicides in seven FRAC Groups (1, 3, 11, U12, 30, P07, and M03) are labeled for use against pecan scab.
 - **FRAC Group 1 fungicides** (e.g. thiophanate-methyl) have a high risk of resistance development and should be used no more than 1X or 2X per season.
 - **FRAC Group 30 fungicides** (e.g. triphenyltin hydroxide (TPTH)) are restricted use pesticides, require the use of enclosed cabs for ground application, and have livestock feed and grazing restrictions.
 - **FRAC Group P07 fungicides** (e.g. phosphites) were formerly classified as FRAC Group 33 fungicides, which still appear on many product labels. The higher labeled rates of phosphites are more effective on leaves and nuts than the lower labeled rates. A permanent maximum residue level (MRL) for pecans was established by the European Union in June 2018 and set at 500 ppm.
 - **Single-site mode of action fungicides:** Limit the use of each single-site mode of action fungicide (FRAC Groups 1, 3, 11) to one or two per season, and do not use single-site mode of action fungicides when disease pressure is high.
 - **ALWAYS FOLLOW LABEL DIRECTIONS. THE LABEL IS THE LAW.**



Figures 5 and 6: Scab lesions on pecan shucks. Photos: R. A. Melanson, MSU Extension, Bugwood.org.