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Issue 2, April 23, 2025

Arkansas Plant Health Clinic Newsletter

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We're calling this the 'Waterlogged Issue' due to the widespread heavy rains and flooding that have significantly affected crop production and plant health across the state. The clinic has experienced a surge in sample submissions, likely driven by the impacts of these extreme weather conditions. Many of the issues we're seeing involve diseases caused by pathogens (particularly water molds) that thrive in wet environments. Some of these issues will be highlighted in this newsletter.

Turf: *Pythium*

Pythium diseases are some of the most destructive and fast-moving problems in turfgrass management, especially during periods of high humidity and excessive moisture. Although *Pythium* species (categorized as fungus-like organisms or water molds) can be active in cool, wet weather, the most severe outbreaks typically occur during hot, humid conditions. All turfgrass species are susceptible, and damage can occur rapidly sometimes wiping out large areas of turf in just one day.

Pythium species can cause both root rot and blight in turf. In the early stages, symptoms of *Pythium* blight often appear as small, circular patches ranging from 2 to 6 inches in diameter. These spots can quickly coalesce and expand, creating irregular patterns of dead or dying grass. Infected turf may appear water-soaked, greasy, or slimy to the touch, giving rise to the common nickname "Grease Spot." As the disease progresses, affected leaves may become matted, shriveled, or coated in fluffy white or gray mycelium during periods of high humidity. *Pythium* blight symptoms are typically observed during the summer months in Arkansas. *Pythium* root rot symptoms are less distinctive (simply appearing as asymmetrical patches) but can be seen at any time during the year. Dieback can follow the path of water, showing the spread of unhealthy turf moving downhill or in low spots.

Pythium thrives in areas with poor drainage, overwatering, or extended periods of leaf wetness, making proper irrigation practices and good drainage essential to prevention. Cultural controls include avoiding night watering, reducing thatch layers (especially if they exceed half an inch), and managing mowing and fertilization to reduce plant stress. High soil pH and overuse of nitrogen fertilizers, especially in spring and summer, can increase susceptibility.

Chemical control is also an important part of managing *Pythium* diseases. In Arkansas,

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fungicides such as Subdue MAXX 40 WP (mefenoxam), Terrazole 35 WP (etridiazole), Banol 66.5 L (propamocarb), Alude 6.27 SC (salts of phosphorus acid), Junction 61.1 DF (mancozeb + copper hydroxide), Stellar 2.08 SC (fluopicolide + propamocarb), Heritage 50 WG (azoxystrobin), Fore Rainshield 80 W (mancozeb), and fosetyl-Al 80 WDG are currently labeled for commercial use on turf. Homeowners can use Scotts Disease EX Lawn Fungicide or a biological product like Actinovate. It should be noted that measures to ensure the ground doesn't stay wet for extended periods of time are extremely important for these fungicides to be effective. The other noted cultural controls will make the fungicides more effective as well. Approved chemicals can vary from state to state and year to year, so be sure to check what is currently approved for your area before applying anything. For more information, please see the UADA fact sheet on *Pythium* diseases of turfgrass (FSA7565).

Irregular Patches Caused by *Pythium*

Photo by Lee Miller, University of Missouri, Bugwood.org

***Pythium* Symptoms on Turf**

Photo by Lee Miller, University of Missouri, Bugwood.org

***Pythium* Mycelia on Turf**

Photo by Ward Upham, Kansas State University, Bugwood.org

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Tomato: Bacterial Wilt

The clinic recently received a tomato sample with fully wilted yet otherwise healthy-looking foliage (no yellowing or browning). Diagnostic testing confirmed the presence of a bacterial plant pathogen belonging to the *Ralstonia solanacearum* species complex. This group of bacteria causes bacterial wilt, a serious disease that can pose a significant threat to tomato production (and vegetable production overall).

Bacterial wilt of tomato is a disease that affects tomato crops worldwide, particularly in tropical, subtropical, and warm temperate regions. This pathogen invades the plant through the roots and colonizes the vascular system, leading to wilting and ultimately plant death. The disease is notorious for its rapid onset and the difficulty of controlling it once it is established, making it a serious concern for tomato producers.

The symptoms of bacterial wilt begin with a sudden wilting of the youngest leaves during the hottest part of the day, which can be followed by recovery of those same leaves at night. Wilting often develops unilaterally, meaning wilting will be observed on one side of the plant or leaf but not the other. As the disease progresses, the entire plant may wilt irreversibly without yellowing of the leaves, which is a distinguishing characteristic in tomato. Internally, the vascular tissues of the stem become discolored, and a cross-section of the stem often reveals bacterial ooze when placed in water. Ooze streaming out of the stem indicates extensive colonization of the xylem vessels by *Ralstonia* bacteria. To perform this streaming test, cut the tomato plant at the crown—where bacterial concentration is highest—and place the crown in a clear container of water. A milky white substance should stream out from the cut within 3-5 minutes if the problem is bacterial wilt. Shining light behind the clear container can help make the streaming more visible.

The bacterial wilt pathogen survives well in soil, water, and infected plant material. It spreads through contaminated irrigation and surface water, farming tools, soil, and transplants that are infected but not showing symptoms (known as latent infections). Warm temperatures and high soil moisture greatly favor disease development. Because bacteria in the *R. solanacearum* species complex have a wide host range, including other solanaceous crops like eggplant and pepper, crop rotation can be insufficient to manage the disease effectively.

Control of bacterial wilt is challenging due to the pathogen's persistence in soil and its ability to survive in asymptomatic host plants. There are no recommended chemical controls. As with many plant diseases, prevention is the most effective approach. To keep bacterial wilt out of your field, use transplants that are free from latent *Ralstonia* infection, sanitize tools and equipment thoroughly, and ensure irrigation water is not contaminated with the bacteria.

Management strategies include grafting on to resistant rootstocks, using resistant tomato varieties if available (though effectiveness may be limited due to the genetic diversity within the

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Ralstonia solanacearum species complex), maintaining the strict sanitation practices mentioned previously, rotating the crop with cabbage, corn, or beans (a few of the limited vegetable crops that bacterial wilt does not impact), using soil solarization to reduce bacterial populations, and improving drainage to reduce soil moisture.

Symptoms of Bacterial Wilt of Tomato

Photo by Rebecca A. Melanson, Mississippi State University Extension, Bugwood.org

Vascular Browning Caused by *Ralstonia solanacearum* Species Complex

Photo by Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

Bacterial Wilt Stem Streaming

Photo by Taylor Klass, University of Arkansas Cooperative Extension

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Strawberry: Black Root Rot Complex

The clinic has received many strawberry samples recently, most of which have been diagnosed with root and crown rots (not a surprise based on our recent wet weather).

Strawberry black root rot is a complex disease caused by multiple pathogens (including *Pythium*, *Rhizoctonia*, and *Fusarium*, and possibly various nematodes), with *Pythium* playing a major role, especially under wet or poorly drained conditions. *Pythium* attacks fine feeder roots, causing them to become dark, mushy, and non-functional. This damage leads to stunted growth, reduced yields, and increased stress susceptibility in affected plants.

The disease is most severe in saturated soils where *Pythium* spreads easily through water. Managing it requires improving drainage, avoiding overwatering, and rotating out of strawberries for at least a season. Raised beds and organic matter can help improve soil structure. Fungicides like Fosphite may help provide control (follow label directions), but cultural practices are key to long-term success.

Keeping roots healthy and reducing excess moisture are the most effective strategies to suppress *Pythium* and reduce black root rot pressure in strawberry fields.

***Pythium* Root Rot on Strawberry**

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Strawberry: Phytophthora Crown and Root Rot

Phytophthora crown and root rot is a damaging disease of strawberries primarily caused by *Phytophthora cactorum*. Like *Pythium*, this water mold thrives in saturated, poorly drained soils. It infects crowns and roots and sometimes fruit, leading to plant collapse, poor vigor, and reduced yields—especially in fields with frequent waterlogging or limited crop rotation.

Affected plants typically show wilting, stunted growth, yellowing leaves, and poor fruit set. A key diagnostic feature is reddish-brown discoloration inside the crown, while roots may appear dark and decayed with minimal fibrous

growth. Plants may decline slowly or die suddenly under environmental stress.

Effective management begins with prevention. Use raised beds, ensure good drainage, avoid overwatering, and start with disease-free transplants. Some cultivars show partial resistance, but cultural practices remain essential. Fungicides such as Fosphite can help provide control. Follow label directions. In heavily affected fields, crop rotation may also be necessary. An integrated approach that combines sanitation, other cultural practices, and chemical tools offers the best defense.

Symptoms of *Phytophthora* Crown Rot

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Symptoms of *Phytophthora* Crown and Root Rot with Positive *Phytophthora* ImmunoStrip Test

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Note on *Neopestalotiopsis* (“Neo-P”) in Strawberry

Neopestalotiopsis, commonly known as "Neo-P," is a fungal disease with both aggressive and less aggressive strains that are capable of causing fruit and crown rot and leaf spot on strawberry plants. This disease thrives under conditions of prolonged leaf wetness, with outbreaks linked to extended periods of moisture and temperatures ranging from 41°F to 68°F. This disease is a current concern for strawberry growers this year. For more information on this emerging disease, please see Dr. Aaron Cato’s blog post.

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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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