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Extension Plant Pathology Update

May 2013

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Plant Disease Clinic Report for April 2013

By Ansuya Jogi and Jean Williams-Woodward

The following tables consist of the commercial and homeowner samples submitted to the plant disease clinics in Athens and Tifton for April 2013 (Table 1) and one year ago in May 2012 (Table 2). Cooler than normal temperatures has likely slowed some disease development. Root diseases, Botrytis, and leaf spot diseases were identified in April. Diseases caused by cooler weather pathogens, such as *Sclerotinia sclerotiorum*, was also seen on pepper. Although samples were not submitted to the clinic, *Sclerotinia* was also seen on lettuce in the field of an organic producer and on clover grown for forage. Bacterial leaf spot diseases on cucurbits was also a recent problem (see page 8). Looking ahead based upon samples from May of last year and with current weather conditions, we could expect a greater diversity of diseases to develop including a fungal and bacterial leaf spot, rust, powdery mildew, downy mildew and virus diseases. Root and crown rot diseases are always a problem on all crops.

Table 1: Plant disease clinic sample diagnoses made in March 2013

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Anise Tree	No Pathogen Found, Identification Analysis	
Azalea		Environmental Stress; Problem, Abiotic disorder
Bamboo		Rust (*Uromyces* sp./spp.) Environmental Stress; Problem, Abiotic disorder
Bentgrass	Anthracnose (*Colletotrichum cereale*) No Pathogen Found	
Bermudagrass	Insects, Class Insecta *Rhizoctonia solani* *Bipolaris* sp./spp.	
Blueberry	Mummy Berry (*Monilinia vaccinii-corymbosi*) *Botryosphaeria* sp./spp. *Colletotrichum* sp./spp. Unknown Abiotic Disorder, Abiotic disorder	
Boxwood	Planting Too Deep, Abiotic disorder No Pathogen Found, Identification Analysis	

Cabbage	*Xanthomonas campestris* No Pathogen Found	
Calibrachoa (Million bells)	Botrytis Blight (*Botrytis* sp.) Rhizoctonia Root; Crown Rot (*Rhizoctonia* sp.) Pythium Root / Crown Rot (*Pythium* sp.)	
Camellia		Camellia Yellow Mottle, Camellia Yellow Mottle Virus Nutrient Imbalance, Abiotic Not Pathogen; Secondary Agents
Cantaloupe	Bacterial Leaf Spot (*Pseudomonas syringae*) No Pathogen Found	
Centipede/St. Augustine		Rhizoctonia Blight (*Rhizoctonia solani*) Take-all, (*Gaeumannomyces* sp./spp.) Cultural/Environmental Problem, Abiotic disorder
Centipedegrass	*Rhizoctonia solani* Root Decline of Warm Season Grasses (*Gaeumannomyces graminis* var. *graminis*) *Bipolaris* sp./spp. Cultural/Environmental Problem, Abiotic Insect Damage, Unidentified Insect Insufficient Sample, Identification Analysis Environmental Stress; Abiotic disorder	Cultural/Environmental Problem, Abiotic disorder
Distyllium	Environmental Stresses	
Grape vine		Abiotic disorder
Hydrangea	Cyclamen Mite (*Phytonemus* (*Steneotarsonemus*) *pallidus*)	
Ilex cornuta (holly)		Root Problems, Abiotic disorder
Impatiens	Oomycetes	
Jasmine		Environmental Stress; Problem, Abiotic disorder
Lemon		Cultural/Environmental Problem, Abiotic disorder
Lettuce	Botrytis Blight (*Botrytis* sp./spp.)	
Magnolia		Environmental Stress; Problem, Abiotic disorder Algal Leaf Spot (*Cephaleuros* sp.)
Onion	Thrips (*Thrips* sp./spp.)	
Peach		Root Problems, Abiotic disorder
Pepper	Sclerotinia Rot (*Sclerotinia sclerotiorum*) Pythium Root / Crown Rot (*Pythium* sp.) Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.) Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found	

Pine		Pitch Canker (*Gibberella* (*Fusarium*) sp./spp.)
Privet	Cercospora Leaf Spot (*Cercospora* sp./spp.)	Environmental Stress; Problem, Abiotic disorder
Rhododendron		Environmental Stress; Problem, Abiotic disorder
Spinach	Abiotic disorder	
Squash	Bacterial Leaf Spot (*Pseudomonas syringae*) Not Pathogen; Secondary Agents	
St Augustinegrass	*Rhizoctonia solani* Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*)	Cultural/Environmental Problem, Abiotic disorder Unknown Abiotic Disorder
Strawberry	Leaf Scorch [*Diplocarpon* (ana. *Marssonina*) *earlianum* (*fragariae*)] *Alternaria* sp./spp. Botrytis Blight (*Botrytis* sp./spp.) *Phytophthora* Crown, Root and/or Stem Rot, *Phytophthora* sp./spp. Twospotted Spider Mite(*Tetranychus urticae*) Unknown Abiotic Disorder, Abiotic disorder	
Tall Fescue	Cultural/Environmental Problem, Abiotic Pythium Root and/or Crown Rot (*Pythium* sp./spp.)	
Tobacco	Tobacco Mosaic, Tobacco Mosaic Virus (TMV)	
Tomato	Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found Abiotic disorder	Environmental Stress; Problem, Abiotic disorder
Unidentified sample		Algae, General
Verbena	*Fusarium* sp./spp. Pythium Root and/or Crown Rot (*Pythium* sp./spp.)	
Watermelon	Gummy Stem Blight [*Didymella* (ana. *Phoma*) *bryonae* (*cucurbitacearum*)] Watermelon Fruit Blotch (*Acidovorax avenae citrulli*) *Pythium* Root and/or Crown Rot (*Pythium* sp.) Pythiaceous Root Rot, Family Pythiaceae *Pythium* Damping Off (*Pythium* sp.) Bacterial Leaf Spot, *Pseudomonas syringae* Fusarium Wilt (*Fusarium oxysporum*) No Pathogen Found Unknown Agent	
Wax Myrtle	Cultural/Environmental Problem, Abiotic disorder	

Wheat	Powdery Mildew (*Erysiphe* sp./spp.) Cultural/Environmental Problem, Abiotic disorder *Colletotrichum* sp./spp. Viruses No Pathogen Found	
Zoysiagrass	*Rhizoctonia solani* Cultural/Environmental Problem, Abiotic disorder Insufficient Sample, Identification Analysis	

Table 2: Plant disease samples diagnoses from A YEAR AGO – May 2012

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Apple	Fire Blight (*Erwinia amylovora*)	
Azalea	No Pathogen Found, No Pathogen Found	
Bean	Herbicide Injury; Exposure, Abiotic disorder	Root Problems, Abiotic disorder Unknown Abiotic Disorder, Abiotic disorder
Begonia	Pythium Root and/or Crown Rot (*Pythium* sp.) Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.)	
Bentgrass	Pythium Root and/or Crown Rot (*Pythium* sp./spp.)	
Bermudagrass	Large Patch [*Thanatephorus* (*Rhizoctonia*) *cucumeris* (*solani*)] Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) Pythium Root and/or Crown Rot (*Pythium* sp.) Leaf Rust; rust (*Puccinia* sp./spp.) Cultural/Environmental Problem, Abiotic	Rhizoctonia Blight, (*Rhizoctonia solani*) *Pythium* Root and/or Crown Rot, *Pythium* sp./spp. *Puccinia* sp./spp. Cultural/Environmental Problem, Abiotic disorder
Blackberries	Cane blotch *(Cephaleuros virescens)* Canker, Dieback; Leaf Blight (*Fusicoccum* sp./spp.) *Botryosphaeria* sp./spp. Eriophyid Mites, Family Eriophyidae Unknown, General	
Blueberry	Dieback; Canker; Twig Blight, (*Botryosphaeria* sp./spp.) Unknown Abiotic Disorder, Abiotic disorder	Unknown, General
Boxwood	Boxwood Volutella Blight; Canker (*Volutella buxi*)	Environmental Stress; Problem, Abiotic disorder
Cabbage	Unknown, General	

Camellia	Glomerella Canker [*Glomerella* (*Colletotrichum*) *cingulata* (*gloeosporioides*)] Camellia Leaf Gall (*Exobasidium camelliae*)	
Cantaloupe	Downy Mildew (*Peronospora* sp./spp.) Powdery Mildew (*Sphaerotheca* sp./spp.) Alternaria Leaf Spot (*Alternaria* sp./spp.) Poor pollination, Abiotic disorder No Pathogen Found	
Carrot	Sclerotinia Rot (*Sclerotinia sclerotiorum*)	
Centipedegrass	Large Patch, [*Thanatephorus* (*Rhizoctonia*) *cucumeris* (*solani*)] Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) Cultural/Environmental Problem, Abiotic disorder	Rhizoctonia Blight (*Rhizoctonia solani*) Insect Damage, Unidentified Insect Cultural/Environmental Problem, Abiotic disorder
Cherry laurel	Undetermined Injury or Pest,	
Chinese Fringe Flower	Pseudomonas Canker (*Pseudomonas* sp.) No Pathogen Found	
Cole Crops	Unidentified Spider Mite	
Corn	Northern Corn Leaf Blight; Leaf Spot, [*Setosphaeria* (*Exserohilum*) *turcica* (*turcicum*)] Common Corn Rust (*Puccinia sorghi*) Chemical Injury, Abiotic disorder Genetic Disorders, Abiotic disorder No Pathogen Found, No Pathogen Found Unknown, General	
Cotton	No Pathogen Found Unknown, General	
Crabapple	Fire Blight (*Erwinia amylovora*)	Fire Blight (*Erwinia amylovora*)
Cucumber	Downy Mildew (*Peronospora* sp./spp.) Alternaria Leaf Spot (*Alternaria* sp./spp.)	
Elm		Unknown, General
Fescues		Cultural/Environmental Problem
Flowering dogwood	Insufficient Sample, Identification Analysis	
Hawthorne	Cedar-Hawthorn Rust (*Gymnosporangium globosum*)	
Heuchera		Environmental Stress; Abiotic
Hibiscus	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.)	
Holly	Black Root Rot (*Thielaviopsis basicola*)	
Hollyhock		Mallow Rust; Hollyhock Rust (*Puccinia malvacearum*)
Hydrangea		Armillaria Root Rot (*Armillaria* (*Armillariella*) sp./spp.) Insect Damage
Japanese Maple		Root Problems, Abiotic disorder

Jasmine		No Pathogen Found
Juniper		Insect Damage, Cultural/Environmental Problem, Abiotic disorder
Magnolia		Leaf Spot; Black Mildew (*Sarcinella* sp./spp.)
Magnolia		Chemical Injury, Abiotic disorder
Muscadine	Unknown Abiotic Disorder	
Oak		Oak Leaf Blister (*Taphrina caerulescens*) Abiotic disorder
Pea	Fusarium Crown Rot (*Fusarium* sp./spp.)	
Peach	Unknown, General	Chemical Injury, Abiotic disorder
Peanut	*Rhizoctonia* Blight (*Rhizoctonia solani*) Chemical Injury, Abiotic disorder No Pathogen Found Unknown, General	
Pecan	Chemical Injury, Abiotic disorder No Pathogen Found	
Penstemom (Beard-tongue)	Impatiens Necrotic Spot Impatiens Necrotic Spot Virus (INSV)	
Pentas	Pythium Root and/or Crown Rot (*Pythium* sp./spp.)	
Pepper	Pythium Root and/or Crown Rot (*Pythium* sp./spp.) Bacterial Leaf Spot (*Xanthomonas* sp./spp.) Chemical Injury, Abiotic disorder No Pathogen Found	
Persimmon		Environmental Stress; Problem, Abiotic disorder *Botryosphaeria* sp./spp.
Pine		Undetermined Injury or Pest, Identification Analysis
Plum		Brown Rot (*Monilia* sp./spp.) Nutrient Imbalance, Abiotic disorder
Potato	Southern Stem Rot (*Sclerotium rolfsii*)	
Raspberries	Unknown Abiotic Disorder, Abiotic disorder	Insect Damage
Rhododendron		Environmental Stress; Problem, Abiotic disorder
Magnolia	Bacterial Leaf Spot (*Pseudomonas* sp./spp.)	
Sky Flower	Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.)	
Snowbell	Insufficient Sample, Identification Analysis	
Spinach	Alternaria Leaf Spot (*Alternaria* sp./spp.) Cercospora Leaf Spot (*Cercospora* sp./spp.)	

Squash	Phytophthora Fruit Rot, (*Phytophthora* sp./spp.) Cucurbit Downy Mildew (*Pseudoperonospora cubensis*) No Pathogen Found Abiotic disorder	Insect Damage, Unidentified Insect Unknown, General
St Augustine Grass	Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) Large Patch [*Thanatephorus* (*Rhizoctonia*) *cucumeris* (*solani*)] Take-all (*Gaeumannomyces* sp./spp.) Insect Damage, Unidentified Insect	Take-all (*Gaeumannomyces* sp./spp.) Cultural/Environmental Problem, Abiotic disorder
Tobacco	Pythium Root and/or Crown Rot (*Pythium* sp./spp.) Black Shank (*Phytophthora nicotianae*) Tobacco Mosaic Virus (TMV) Tomato Spotted Wilt Virus (TSWV)	
Tomato	Bacterial Wilt (*Ralstonia solanacearum*) Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found	Bacterial Pathogens, General Tomato Spotted Wilt Virus (TSWV) Pythium Root and/or Crown Rot (*Pythium* sp./spp.) Cultural/Environmental Problem, Abiotic disorder Herbicide Injury; Exposure Unknown Abiotic Disorder
Turfgrass		Slime Mold, Class myxomycetes; myxomycota
Viburnum		No Pathogen Found
Vinca	Aerial Stem Blight (*Phytophthora* sp./spp.)	
Watermelon	Gummy Stem Blight [*Didymella* (ana. *Phoma*) *bryonae* (*cucurbitacearum*)] Watermelon Fruit Blotch (*Acidovorax avenae citrulli*) Fusarium Wilt (*Fusarium oxysporum*) Rhizoctonia Stem Rot (*Rhizoctonia* sp./spp.) Anthracnose, *Colletotrichum* Leaf Spot, (*Colletotrichum* sp./spp.) No Virus Found Insufficient Sample, Identification Analysis No Pathogen Found	Cultural/Environmental Problem, Abiotic disorder
Willow		Environmental Stress; Problem, Abiotic disorder
Zoysia	Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) Large Patch, [*Thanatephorus* (*Rhizoctonia*) *cucumeris* (*solani*)] Not Pathogen; Secondary Agents No Pathogen Found, No Pathogen Found Cultural/Environmental Problem, Abiotic disorder	Take-all (*Gaeumannomyces* sp./spp.) Environmental Stress; Problem, Abiotic disorder Cultural/Environmental Problem, Abiotic disorder Not Pathogen; Secondary Agents

Update: Landscape Ornamentals

What's the orange goo?

By Jean Williams-Woodward

I've been getting some calls and emails about "orange goo" growing on cut hardwood stumps. It is weird, interesting and looks like an attack of 'the blob" (see the image to the right). So, what causes the orange goo? It's the yeast, *Cryptococcus macerans*, growing on the sugary sap flowing from the cut branches or trunk. A few other fungi can also be found mixed in, including some species of *Fusarium* and *Acremonium*. The yeast is harmless to the plant; it is just growing on the sap. The orange color comes from the pigment carotene, which is the same pigment that colors carrots orange. Some strains of *Cryptococcus macerans* could cause disease in humans, so if you can't resist touching it, wash your hands! Generally though, it is harmless and just another interesting oddity in the fungal world.

The yeast, Cryptococcus macerans, growing on the cut end of a severely pruned holly stem. (Image by Jean Williams-Woodward)

Update: Commercial Vegetables

Pseudomonas syringae leaf spot on watermelons

By David Langston

Pseudomonas syringae leaf spot disease has developed on watermelon over the past several weeks. The spots can appear dark and greasy at first (see image below), then they turn light tan in the center (see image at right) and you can see a concentric ring pattern in the lesion. I see a little bit of the disease every year, but not as much as we've seen this year. Why are we seeing so much this year? The spring has been exceptionally cool and wet, which favors disease development, and it looks to stay that way. What do you do about it? Usually nothing but wait until warmer temperatures come along. Bacterial diseases caused by most Pseudomonads are cool weather diseases. Lately, I have been recommending copper sprays to reduce the spread of this disease. Use the lowest labeled rate of whichever copper brand you use and use it on a 7-day schedule until the temperatures get warmer and stay warmer.

Black leaf spots with concentric ring pattern (above) due to Pseudomonas syringae leaf spot on watermelon. (Image from David Langston)

Watch for Fusarium wilt of watermelons

By David Langston

Fusarium wilt of watermelon is another disease that is favored by cool, wet conditions. Right now, we are getting in several samples from fields. This is a disease of younger plants and symptoms appear as wilted runners that may have discolored vascular tissue when cut. The disease doesn't produce visible lesions, cankers, or spots as you would see with other diseases. Usually we see this disease on seedless watermelon, but we are seeing more and more on seeded varieties. Typically, if we only see the disease on seedless watermelons that means that race 1 of Fusarium wilt is present. Race 2 is indicated by wilting of both seeded and seedless watermelon plants. Once the disease is observed in the field, no remedial control measures are available. Rotation away from infested fields, using resistant varieties, and delaying planting will be somewhat effective for subsequent crops. Next year we may have some at-plant fungicides registered for use on this disease.

***Agents –** Let me know of fields that have this disease as we have a graduate student that is researching this disease and she would like to gather as much information and samples as possible.

Images of Fusarium wilt showing runner wilting (above) and vascular discoloration (right) by Dan Engel, Purdue University (http://extension.entm.purdue.edu/CAPS/pestInfo/fusariumWilt.htm)

Update: Row Crops

Wet, cool weather has importance for early-season disease management

By Bob Kemerait

Abundant rainfall and cooler temperatures over the past two months will have a significant impact on the disease faced by our row-crop growers in 2013. This year's conditions stand in marked contrast to early-season conditions from the past few years. Over the past five years or so, very warm conditions have defined the early growing season. March, April and the first week of May in 2013 have been anything but hot and dry.

Cooler and wetter weather has a tremendous impact on the potential for seedling disease in peanut, cotton, and soybeans. Cooler soils slow the germination of seeds and also slow the growth of seedlings. Fungal

pathogens, like *Rhizopus stolonifer* that causes seed rot and *Rhizoctonia solani* that causes seedling disease in peanuts, cotton and soybeans, flourish when soil moisture is abundant. Given cooler soil temperatures and abundant rainfall, germination of seeds will be slowed, growth of the seedlings could be less vigorous, and fungal pathogens like those mentioned above will have an upper-hand on the young crop. *Pythium* sp. is another pathogen that is especially sever on cotton in cooler, wetter soils and results in a pre-emergent damping-off disease. Interestingly enough, *Aspergillus niger*, causal agent of Aspergillus crown rot of peanut, should be less important in 2013 as this pathogen is most aggressive when early-season soils are hot and dry.

Note: Because cooler and wetter conditions slow growth of seedlings, such conditions may also increase the importance of thrips and thrips damage in 2013 for cotton and peanuts. The effect on severity of tomato spotted wilt affecting peanut this season is unknown. Damage may also be more severe from nematodes affecting each crop this season for the same reasons- slowed growth and reduced vigor.

Management strategies to reduce seedling diseases when conditions are cooler and wetter include:

1. Plant only high-quality seed.
2. Always plant peanut and cotton seeds that have been treated with an effective combination of fungicides. In a year when seedling disease is anticipated, an effective fungicide treatment for soybeans is also appropriate.
3. In a season like 2013 where seedling diseases are expected, cotton growers are more likely to see a benefit from adding additional fungicides to their seed. Such treatments include Trilex from Bayer CropScience and Dynasty CST from Syngenta.
4. Where seedling diseases have been a problem in the past, peanut growers may consider use of an in-furrow fungicide like Abound.
5. Plant seed at an appropriate depth. Seed that is planted too deep will be most affect by and susceptible to seedling disease. DO NOT PLANT SEED ANY DEEPER THAN NECESSARY.
6. **If a period of wetter and cooler weather is predicted, growers are advised to delay planting if possible until conditions are better for rapid germination and growth.**

Over the past couple of peanut seasons, we have spent a significant amount of time talking about the importance of Proline used within 5 weeks of planting to lay the foundation for an excellent white mold program. Outbreaks of white mold are earlier and more aggressive when soil temperatures early warmer than normal. This has been the case in recent years, years when growers have seen little of another important disease- Cylindrocladium black rot (CBR). Cylindrocladium black rot is less widespread than white mold; however this disease can be devastating in fields where it occurs and management of CBR is much more difficult than for white mold. CBR is favored by cooler and wetter conditions at planting, much like we are experiencing now. Although the symptoms of CBR do not become evident until much later in the growing season, the fungal pathogen becomes established by infecting the roots of young seedlings. Effective management of CBR requires protection of the crop at planting.

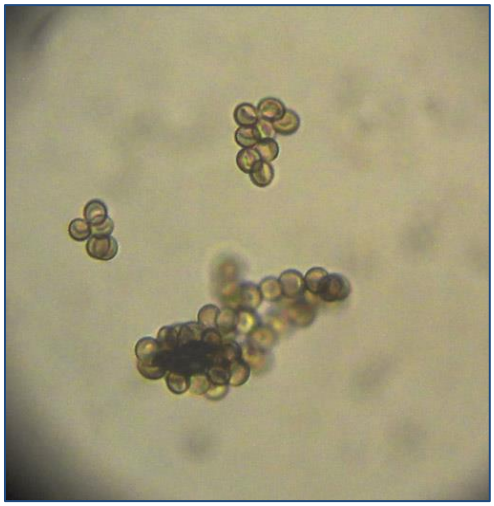
If cooler and wetter conditions continue in 2013, use of an in-furrow application of Proline (5.7 fl oz/A) will be an important consideration for the management of CBR. Early-emergence applications of Proline are effective for management of white mold when conditions are very warm; however for best control of CBR, the Proline needs to be placed IN THE FURROW in order to provide protection to the developing root system. The benefits of such an application will not be observed until later in the season; however such a practice, or fumigation with metam sodium, is critical for the management of CBR.

Wheat Diseases: Loose Smut, Sooty Mold, and Head Scab

By Alfredo Martinez and James Buck

With wheat at different maturation and/or kernel forming stages depending on location, variety and planting date, the potential for diseases showing up on the spike is still a concern.

Loose Smut. Loose smut (*Ustilago tritici*) symptoms are obvious after heading and characterized by the production of black, loose smutted spikes (see figure below). This is due to the flowers being replaced by the smut teliospores (see figure). The disease is unique in that the fungus is first incorporated into developing kernels and resides within the seed embryos. When the seed germinates the fungus is activated and grows toward the shoot apex and spreads through the culm nodes and seed primordia. The infected plants remain symptomless throughout the season. However, when the head emerges, these spikes are blackened with masses of teliospores that have replaced the wheat grains. Teliospores are dispersed by wind or washed off by rain. These spores will infect healthy flowers. Loose smut can increase rapidly from one season to the next. This is a seedborne disease; therefore grain from infected fields should not be used as seed without a fungicide treatment. Most fungicide seed treatments used today are effective in controlling the disease (see the GA Pest Control Handbook or Wheat Production Guide for most current small grains fungicide seed treatments). More information on loose smut can be found at http://plantpath.caes.uga.edu/extension/plants/fieldcrops/LooseSmut.html



Left: *Loose smut colonizing wheat head (far left) and loose smut teliospores. (Images by Jake Price, CEC and A&NR Extension Agent, Lowndes County)*

Below: *Sooty Mold on wheat kernels and blighted wheat head caused by Head Scab (next page). (Images from http://www.forestryimages.org)*

Sooty Mold: At the UGA plant disease clinic, just before or at wheat harvest we receive samples exhibiting olive green, gray to black head molding affecting only the grain-surrounding tissue but not the grain itself (see image to right). This condition is known as “sooty head mold”. The growth is superficial in nature. While the symptoms are worrisome, the condition does not affect yield or test weight. Sooty mold is the result of secondary, saprophytic fungi and not considered a true crop disease. Sooty mold develops on senescing and damaged wheat heads when wet, humid weather occurs during the latter stages of grain development and crop maturation. Molding is frequently most severe when harvest is delayed.

Head Scab. Historically, scab (*Fusarium* spp /teleomorphs *Gibberella* spp and *Microdochium nivale*) infections have been extremely low in Georgia. The pathogen requires warm (78-86 F consistently), humid/wet weather coinciding with wheat at flowering stages for infection to occur. *Fusarium* conidia and/or ascospores infection are most common at wheat anthesis. Recently, while the weather has been wet across the state, the temperatures have remained low and therefore diminishing greatly the risk for infection. It is still worth to scout for the presence of scab in areas where flowering have coincided with wet/moist weather. Scab is best recognized on emerged immature heads where one or more or the entire head appears prematurely bleached (see image to right). Usually a pinkish/orange mycelium is present, which will develop dark fruiting bodies (perithecia). Diseased, bleached spikelets are sterile or contain shriveled/discolored seed (usually with a tint of pink or orange). An additional problem is that the fungus produces a compound in the grain that is toxic to livestock and man. For control, avoid rotation with other cereal crops, specifically corn (*Fusarium graminearum* also causes ear and stalk on corn) or sorghum.

Update: Commercial Turfgrass

Turfgrass Disease Update

By Alfredo Martinez

1. Continue Monitoring for Large Patch. Samples of centipedegrass and zoysiagrass diagnosed with large patch have been common this spring. We have received submissions from different regions across the state. Continue scouting for the disease.

More information on the disease can be found at:
http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7149&pg=dl&ak=Plant%20Pathology#BrownPatch

http://plantpath.caes.uga.edu/extension/documents/ExtensionPlantPathologyUpdate-April_2013.pdf

For commercial fungicides against large patch consult the 2013 Georgia Pest Management Handbook; or the 2013 Turfgrass Pest Control Recommendations for Professionals:
http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/Publicat/1640_Recommendations.htmcan

2. Spring Dead Spot (*Ophiosphaerella* spp). As turfgrass green-up continues, the presence of spring dead spot can become obvious (see figure below). Spring dead spot (SDS) is a persistent and destructive disease of bermudagrass (*Cynodon* sp.) in Georgia. The disease can be problematic on lawns, landscapes, golf courses (bermudagrass greens, tees and fairways) and sports fields. The disease is particularly prevalent and damaging in north Georgia, especially in the Piedmont region. However, SDS can be observed throughout the state after harsh winters and in areas where bermudagrass has been exposed to freezing temperatures for extended periods of time. The disease has also been observed in zoysiagrass, although less frequently. Comprehensive information on identification and control of SDS can be found at:
http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7983&pg=dl&ak=Plant%20Pathology

http://apps.caes.uga.edu/urbanag/Home&Garden/indexFS.cfm?storyid=2753

Patches of dead grass due to Spring dead spot (above). (Images by Alfredo Martinez)

3. Dollar spot (*Sclerotinia homoeocarpa*). In 2012, dollar spot was ubiquitous in all warm season grasses in Georgia. The disease started early in the spring and in some areas of the state, and lingered throughout the summer. Dollar spot is particularly troublesome in bermudagrass and zoysiagrass. Start scouting now for the disease to implement control measures in a timely manner. Information on dollar spot identification and control can be found at http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7149&pg=dl&ak=Plant%20Pathology#DollarSpot

Small, circular dead patches due to dollar spot infection (above left). Fungal hyphae can be seen early in the morning within dead patches (above right). (Images by Alfredo Martinez)

Update: Commercial Greenhouse/Nursery/Landscape Ornamentals

Still getting questions about impatiens downy mildew

By Jean Williams-Woodward

I am still getting questions about impatiens downy mildew. Mostly, the questions focus on whether this disease is really going to be a problem. I have not as of yet confirmed the disease in Georgia; however, it has infected impatiens in Florida throughout the winter and has been identified within impatiens crops in greenhouses in surrounding and more northern states. With the cooler, wet

weather we've had, it is very likely that the disease will show up. It's just a matter of time and whether someone sends me a sample or I see it when I'm traveling.

Above: *Downy mildew sporulation on the underside of an impatiens leaf. (Image by Alan Windham, UT)*

The real concern from landscapers has been that clients are demanding impatiens (nothing beats impatiens for mass color in shaded beds), but they are not able to find them. Growers are not producing impatiens because of the risk, both to them during production, as well as in returns and complaints if they become infected in the landscape. Some plug producers have reduced their impatiens production anywhere from 50-100%.

All *Impatiens walleriana* and *I. walleriana* hybrids are susceptible to the disease. With the risk involved, all impatiens (except New Guinea impatiens) must be sprayed throughout the growing season with fungicides weekly to every 14 days depending upon weather conditions and if downy mildew has been found. If suspected, and especially if plants are under sprinkler or stake emitter irrigation, then a weekly schedule and rotation of fungicides is needed. See the March extension plant pathology update for an example fungicide spray schedule and rotation.

This is a serious disease. Impatiens will melt out within a week of active infection. If landscapers go ahead and plant impatiens (if they can find them), they are taking a great risk and will likely fail if the current weather pattern continues. Once a landscape bed becomes infected, it will always be infected and impatiens won't be successfully grown there for years. Also, the disease does spread easily from plant to plant within the same bed and from bed to bed over time. This downy mildew will not infect other shade-tolerant annual plants, such as coleus, begonia and lobelia, so I'm recommending growers and landscapers plant something other than impatiens for the time being.

Downy mildew infected plants in landscape beds (above). Eventually all impatiens foliage will be killed and all that remains are the stems (above right). Notice the healthy coleus behind the killed impatiens. (Images by Alan Windham, UT)

Update: Commercial Greenhouse/Nursery/Landscape Ornamentals

Rose Rosette Virus – an emerging problem By Jean Williams-Woodward

Rose rosette virus is a damaging disease that is seeing an increase in occurrence across midwestern and southern states. Rose rosette has been described since the 1940s, but it wasn't until 2011 that the causal agent was confirmed to be a virus spread by the 'rose leaf curl' eriophyid mite (*Phyllacoptes fructiphylus*). Rose rosette virus was predominantly found in multiflora roses (*Rosa multiflora*) that now grow wild in many places and is considered an invasive/noxious weed. The wild multiflora roses were thought to be how the mite and virus spread into rose landscape plantings. What is causing greater concern is that the virus is now being seen in Knock-Out roses (see images). Knock-Out roses cover commercial and residential landscapes throughout the south because they are more disease resistance than other hybrid roses. The presence of the mass Knock-Out plantings provides an easy means for the mite and virus to spread from plant to plant and location to location. The increase in the amount of rose rosette showing up in Knock-Outs, which are all vegetatively propagated, has led to speculation that the virus may be spreading through nursery stock as well. This is possible, but currently I don't have any evidence of this.

(Images from Alan Windham, UT)

Symptoms of rose rosette virus mimic herbicide injury. In the past, we had no way of confirming the pathogen's presence and often tried to rule out improper herbicide use. Symptoms include an increased and rapid elongation of new growth; abnormal reddish discoloration of shoots and foliage (see image above); witches broom (proliferation of new shoots); an overabundance of thorns; and deformed buds and flowers.

We are testing a molecular PCR test in the Athens clinic that can detect the virus RNA in order to confirm the disease. This test is the only way we can confirm virus infection. If rose rosette virus is confirmed or suspected, control options are few. There is no cure for rose rosette. Roses growing near infected cultivated or wild (multiflora) roses have a high risk of infection. To prevent infection, inspect new nursery stock for symptoms of infection; remove all multiflora roses from the area; and increase plant spacing so rose plants will not touch each other to reduce mite spread. If rose rosette is present, completely remove the infected plant by bagging and discarding or by burning. There is some discussion on online garden forums and from rose breeders that just pruning off symptomatic canes/stems will remove the virus. There is not at present any scientific evidence that this will work. Therefore, the prudent recommendation I can give is to completely remove the infected plant. A miticide can help reduce mite (and virus) spread; however, miticides labeled for spider mite control and those commonly packaged for homeowners are ineffective on eriophyid mites. If homeowners want to have their roses sprayed, then they should contact commercially licensed landscape professionals who can use, per communication with entomologist Will Hudson, Avid (or other abamectin generics), Floramite, Magus, and Forbid.

Who to contact in Extension Plant Pathology?

Alfredo Martinez, Extension Coordinator	Turfgrass (commercial, professional lawncare, sod, golf, sports fields); Small grains and non-legume forages	amartine@uga.edu	770-228-7375
Phil Brannen	Commercial fruit	pbrannen@uga.edu	706-542-2685
Jason Brock	Commercial pecans	jbrock@uga.edu	229-386-7495
Bob Kemerait	Row crops – corn, cotton, soybean, peanut	kemerait@uga.edu	229-386-3511
David Langston	Commercial vegetables	dlangsto@uga.edu	229-386-7495
Elizabeth Little	Home turfgrass, landscapes, and gardens, small farm and organic production	elittle@uga.edu	706-542-4774
Jean Williams-Woodward	Commercial ornamentals in greenhouses, nurseries, and landscapes, Christmas trees, forestry, urban forestry, wood rots, legume forages	jwoodwar@uga.edu	706-542-9140
John Sherwood	Department Head	sherwood@uga.edu	706-542-1246

Clinic Sample Type	Contact Name & Number	Shipping Address
Christmas trees, fruit, ornamentals, forestry, all homeowner samples, legume forages, mushrooms, turf and small grains, urban ornamental landscapes, wood rots	**Ansuya Jogi** Office Phone: 706-542-8987 Clinic phone: 706-542-9157 ansuya@uga.edu Fax: 706-542-4102	UGA - Plant Pathology Athens Plant Disease Clinic 2106 Miller Plant Sciences Bldg. Athens, GA 30602-7274
Tobacco, pecan, cotton, soybean, peanut, corn, kenaf, commercial vegetables	**Jason Brock** Phone: 229-386-7495 jbrock@uga.edu Fax: 229-386-7415	Tifton Plant Disease Clinic Room 116 4604 Research Way Tifton, GA 31793
All samples for nematode analysis	**Ganpati Jagdale** Phone: 706-542-9144 gbjagdal@uga.edu Fax: 706-542-5957	UGA - Plant Pathology Nematode Laboratory 2350 College Station Road Athens, GA 30602-4356

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