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Extension Plant Pathology Update

June 2013

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Plant Disease Clinic Report for May 2013

By Ansuya Jogi and Jean Williams-Woodward

The following tables consist of the commercial and homeowner samples submitted to the UGA plant disease clinics in Athens and Tifton for May 2013 (Table 1) and for one year ago in June 2012 (Table 2). We've been testing quite a few rose samples for rose rosette-associated virus (see the May update for information and images). Almost all samples have been positive for the virus. It is likely that this virus is much more common among shrub roses, such as Knock-Outs, than we originally thought. Although I have not confirmed the virus in commercial production nurseries, it has been seen in surrounding states and at garden centers, which means it is possible that it may be spreading via propagation and nursery production. Be on the lookout and if you see it, try to find out when the plants were planted. This could help in trying to identify possible sources of infection. We are also seeing many more vegetable and row crop diseases since these crops are now in the field. The cooler, wetter weather is/was conducive for downy mildews and fungal foliage diseases, such as gummy stem blight on watermelon (see page 10). Looking ahead, expect to see quite a few more leaf and root diseases on all crops. Although many may not share our enthusiasm for plant diseases, it is an exciting time to be a plant pathologist. See page 8 for information on tomato diseases in home gardens.

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

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Abelia	Root Problems, Abiotic disorder	
Apple	*Alternaria* sp./spp. Abiotic disorder	Rust (*Gymnosporangium* sp./spp.) Fire Blight (*Erwinia amylovora*) Chemical Injury, Abiotic disorder
Azalea	Cercospora Leaf Spot (*Cercospora* sp./spp.)	Root Problems, Abiotic disorder Cultural/Environmental Problem
Bean	Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found	Environmental Stress; Problem, Abiotic disorder
Bermudagrass	Spring Dead Spot (*Ophiosphaerella* sp./spp.) *Rhizoctonia zeae* *Bipolaris* sp./spp. Plant Parasitic Nematodes, Unspecified Genera Cultural/Environmental Problem, Abiotic disorder	Spring Dead Spot (*Ophiosphaerella* sp./spp.) Fairy Ring, Various fungi
Blackberry	Unknown cause	
Blueberry	Mummy Berry (*Monilinia vaccinii-corymbosi*) Anthracnose Fruit Rot (*Colletotrichum* sp./spp.)	

	Leaf Rust [*Naohidemyces* (*Pucciniastrum*) *vacciniorum* (*vaccinii*)] Nutrient Imbalance, Abiotic disorder Freeze; Frost; Cold Damage, Abiotic disorder	
Boxwood		Environmental Stress; Abiotic
Bugle-weed *(Ajuga)*		*Phytophthora* sp./spp. Environmental Stress; Abiotic
Butterfly Bush	Phytophthora Crown, Root and/or Stem Rot	
Cabbage	Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found	
Camellia	Camellia Leaf Gall (*Exobasidium camelliae*) Oedema; Edema, Abiotic disorder No Pathogen Found	
Cantaloupe	Bacterial Leaf Spot (*Pseudomonas syringae*) No Pathogen Found, Identification Analysis	
Centipede	Large Patch (*Rhizoctonia solani*) Insufficient Sample, Identification Analysis	Rhizoctonia Blight (*Rhizoctonia solani*) Cultural/Environmental Problem
Centipedegrass		Rhizoctonia Blight (*Rhizoctonia solani*) Cultural/Environmental Problem
Cherry	Stone Fruit Rust (*Tranzschelia pruni-spinosae*)	Environmental Stress; Problem Wound Canker, Abiotic disorder
Chinese Fringe-flower	No Pathogen Found	
Coleus	Slug Damage, Unidentified Slug	
Corn	Rhizoctonia Root and Stem Rot (*Rhizoctonia solani*)	
Corn	Northern Corn Leaf Blight; Leaf Spot, [*Setosphaeria* (*Exserohilum*) *turcica* (*turcicum*)] Common Corn Rust (*Puccinia sorghi*) Chemical Injury, Abiotic disorder Unknown Abiotic Disorder, Abiotic disorder No Pathogen Found Fertilizer Injury, Abiotic disorder	Environmental Stress; Problem, Abiotic disorder
Cotton	Rhizoctonia Stem Rot (*Rhizoctonia* sp./spp.)	
Cucumber	Downy Mildew (*Peronospora* sp./spp.) Anthracnose; Colletotrichum Leaf Spot Phytophthora Stem Rot (*Phytophthora* sp./spp.) Bacterial Soft Rot, Unidentified Bacterium Unknown Agent Physiological Responses, Abiotic disorder	
Cypress	Spider Mite Injury (Unidentified Spider Mite) Not Pathogen; Saprophyte, Secondary Agents	Environmental Stress; Problem, Abiotic disorder
Dogwood		Cultural/Environmental Problem
Eggplant	Bacterial Leaf Spot (*Pseudomonas syringae*) Oomycetes	
Elaeagnus		Root Problems, Abiotic disorder
Elm	Phyllosticta Leaf Spot (*Phyllosticta* sp./spp.)	
English Laurel		Environmental Stress; Problem
Gardenia	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.) Cultural/Environmental Problem, Abiotic disorder	
Grape	*Botryosphaeria* sp./spp.	

Hibiscus	Anthracnose; Colletotrichum Leaf Spot (*Colletotrichum* sp./spp.)	
Holly		Environmental Stress; Problem
Hydrangea	Rhizoctonia Crown and Stem Rot (*Rhizoctonia* sp./spp.) No Pathogen Found	Cercospora Leaf Spot (*Cercospora* sp./spp.) Cultural/Environmental Problem
Impatiens		Environmental Stress; Problem
Kale	Bacterial Leaf Spot (*Xanthomonas* sp./spp.) Black Rot (*Xanthomonas campestris*)	
Lettuce	Bacterial Leaf Spot (*Pseudomonas* sp./spp.) Fusarium Root; Crown Rot (*Fusarium* sp./spp.)	
Magnolia		Cultural/Environmental Problem
Maple		Root Problems, Abiotic disorder
Oak	Oak Leaf Blister (*Taphrina caerulescens*) Dieback; Canker; Twig Blight (*Botryosphaeria* sp.) Chemical Injury, Abiotic disorder Mechanical Damage, Abiotic disorder	*Heterobasidion* (*Fomes*) *annosum* (*annosus*) Environmental Stress; Problem, Abiotic disorder
Palm	No Pathogen Found	Unknown, General
Peach		Peach Leaf Curl (*Taphrina deformans*) Unknown, General
Pear		Fire Blight (*Erwinia amylovora*) Environmental Stress; Problem
Pecan	Pecan; Hickory Scab (*Cladosporium caryigenum*)	
Pepper	Bacterial Leaf Spot (*Xanthomonas* sp./spp.) No Pathogen Found	Environmental Stress; Problem, Abiotic disorder
Petunia	Slug Damage, Unidentified Slug No Pathogen Found, Identification Analysis	
Plum		Bacterial Canker (*Pseudomonas syringae*) Insect Damage, Unidentified Insect
Pomegranate	Anthracnose Fruit Rot (*Colletotrichum* sp./spp.)	
Rhododendron	Root Problems, Abiotic disorder No Pathogen Found, Identification Analysis	Algae, General
Rose	Powdery Mildew (*Oidium* sp./spp.) Rose Rosette Disease, [Rose rosette-associated virus (RRaV)] Roseslug (*Endelomyia aethiops*) Poor Root Development, Abiotic disorder Root Problems, Abiotic disorder No Pathogen Found	Rose Rosette Disease, [Rose rosette-associated virus(RRaV)] Root Problems, Abiotic disorder Unknown cause
Rusty Lyonia	Leaf and flower gall (*Exobasidium ferrugineae*)	
Sawara Falsecypress	No Pathogen Found, Identification Analysis	
Squash	Bacterial Leaf Spot (*Pseudomonas syringae*) Phytophthora Fruit Rot (*Phytophthora capsici*) Pythium Root and/or Crown Rot (*Pythium* sp.) Unknown Agent	
St. Augustinegrass		Rhizoctonia Blight (*Rhizoctonia solani*) Take-all (*Gaeumannomyces* sp./spp.) Cultural/Environmental Problem

Strawberry	Leaf Scorch [*Diplocarpon* (ana. *Marssonina*) *earlianum* (*fragariae*)] Rhizoctonia Root; Crown Rot (*Rhizoctonia* sp.) Angular Leaf Spot (*Xanthomonas* sp./spp.) Spider Mites (Family Tetranychidae) Twospotted Spider Mite (*Tetranychus urticae*) Nutrient Imbalance, Abiotic disorder	
Sycamore		Sycamore Anthracnose [*Apiognomonia* (*Gnomonia*) (ana. *Discula*) *veneta* (*platani*)]
Tobacco	*Pseudomonas* sp./spp. Rhizoctonia Crown and Stem Rot (*Rhizoctonia* sp.) Tomato Spotted Wilt Virus (TSWV)	
Tomato	Southern Stem Rot (*Sclerotium rolfsii*) Bacterial Leaf Spot (*Xanthomonas* sp./spp.) Pythium Root and/or Crown Rot (*Pythium* sp.) Insufficient Sample, Identification Analysis No Pathogen Found	Unknown, General Environmental Stress; Problem, Herbicide Injury; Exposure Herbicide Drift, Abiotic disorder
Turnip	Unknown Bacterial Disease	
Watermelon	Gummy Stem Blight [*Didymella* (ana. *Phoma*) *bryonae* (*cucurbitacearum*)] Watermelon Fruit Blotch (*Acidovorax avenae citrulli*) Bacterial Leaf Spot (*Pseudomonas syringae*) Fusarium Wilt (*Fusarium oxysporum*) Physiological Responses, Abiotic disorder Abiotic disorder / Environmental Stresses No Pathogen Found Ozone Damage, Abiotic disorder	
Wheat	Barley Yellow Dwarf Virus (BYDV-RPV) Bacterial Mosaic (*Clavibacter michiganensis tessellarius*) Take-all (*Gaeumannomyces* sp./spp.) Scab (*Fusarium* sp./spp.) Abiotic disorder No Pathogen Found	
Yew	No Pathogen Found	
Zoysiagrass	Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) *Rhizoctonia* solani Cultural/Environmental Problem, Abiotic disorder Environmental Stress; Problem, Abiotic disorder No Pathogen Found	*Rhizoctonia* Crown and Root Rot, [*Thanatephorus* (*Rhizoctonia*) *cucumeris* (*solani*) *Rhizoctonia* Blight (*Rhizoctonia solani*) Anthracnose (*Colletotrichum graminicola*) Cultural/Environmental Problem

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

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Arborvitae		Environmental Stress;Abiotic problem
Barberry	Pythium Root and/or Crown Rot (*Pythium* sp.)	

Beans	Anthracnose, Colletotrichum Leaf Spot (*Colletotrichum* sp./spp.)	
Begonia	Pythium Root and/or Crown Rot (*Pythium* sp.)	
Bentgrass	Pythium Root and/or Crown Rot (*Pythium* sp.) Anthracnose (*Colletotrichum cereal*) Dollar Spot (*Sclerotinia homeocarpa*) Algae, General No Pathogen Found, No Pathogen Found	
Bermudagrass	Leaf Rust; rust (*Puccinia* sp./spp.) Helminthosporium Leaf Spot [*Cochliobolus* (*Bipolaris*) *cynodontis*] Bipolaris Spot Blotch, *Bipolaris* sp./spp. Root Decline of Warm Season Grasses (*Gaeumannomyces graminis* var. *graminis*) Spring Dead Spot (*Ophiosphaerella* sp./spp.) Rhizoctonia Leaf Spot and/or Leaf Blight (*Rhizoctonia* sp./spp.) *Rhizoctonia zeae* Cultural/Environmental Problem, Abiotic Not Pathogen; Saprophyte, Secondary Agents	Slime Mold, Class myxomycetes; Myxomycota
Blackberry	Eriophyid Mites (Family Eriophyidae)	*Mycosphaerella* (*Septoria*) rubi
Blueberry	Phyllosticta Leaf Spot (*Phyllosticta* sp./spp.)	Phyllosticta Leaf Spot (*Phyllosticta* sp) Nutrient Imbalance, Abiotic
Boxwood	Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.)	Environmental Stress; Problem, Abiotic disorder
Camellia	Stem Canker [*Colletotrichum* (*Glomerella*) sp.]	
Cantalope	Alternaria Leaf Spot, *Alternaria* sp./spp. Abiotic disorder	
Centipedegrass	Large Patch (*Rhizoctonia solani*) Environmental Stress; Problem, Abiotic Fairy Ring, Various fungi No Pathogen Found	Cultural/Environmental Problem, Abiotic disorder Rhizoctonia Blight (*Rhizoctonia solani*) No Pathogen Found
Cherry laurel		Root Problems, Abiotic disorder
Chrysanthemum	No Pathogen Found	
Corn	Southern Corn Rust (*Puccinia polysora*) Common Corn Rust (*Puccinia sorghi*) Northern Corn Leaf Blight [Leaf Spot, *Setosphaeria* (*Exserohilum*) *turcica* (*turcicum*)] No Pathogen Found Abiotic disorder Chemical Injury, Abiotic disorder Unknown, General	
Cotton	Fusarium Wilt (*Fusarium oxysporum*) No Pathogen Found Unknown, General	
Crabapples	Fire Blight (*Erwinia amylovora*)	
Cypress		Chemical Injury, Abiotic disorder
Dill		Herbicide Injury; Exposure
Dogwood		Nutrient Imbalance, Abiotic
Eggplant	*Phomopsis* sp./spp.	
Elm	Complex of Biotic; Abiotic Factors	

Fungus	Birds Nest Fungus (Family Nidulariaceae)	
Gardenia	Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.)	
Geranium	No Pathogen Found, No Pathogen Found	
Grape	Black Rot [*Guignardia* (*Phyllosticta*) *bidwellii* (*ampelicida*)]	Cultural/Environmental Problem, Abiotic disorder
Hibiscus	Bacterial Leaf Spot (*Pseudomonas* sp./spp.)	
Holly	No Pathogen Found, No Pathogen Found	
Honeysuckle	Honeysuckle Leaf Blight [*Insolibasidium* (*Herpobasidium*) *deformans*]	
Hydrangea	Fungal Leaf Spot (*Cercospora hydrangea*) No Pathogen Found, No Pathogen Found No Virus Found, No Virus Found	
Impatiens	Downy Mildew (*Plasmopara obducens*)	Downy Mildew (*Plasmopara obducens*) Pythium Root and/or Crown Rot (*Pythium* sp./spp.)
Japanese Spurge	Rhizoctonia Stem and Root Rot (*Rhizoctonia* sp.)	
Juniper		Cultural/Environmental Problem
Kalanchoe	No Pathogen Found	
Kale	Alternaria Leaf Spot(*Alternaria* sp./spp.)	
Lettuce	Pythium Root and/or Crown Rot (*Pythium* sp.)	
Liriopie	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.)	
Loropetalum	Bacterial stem gall (*Pseudomonas savastanoi*)	
Maple	Not Pathogen; Secondary Agents No Pathogen Found	
Multiple hosts	Pythium Root and/or Crown Rot (*Pythium* sp.)	
Oak		Oak Leaf Blister (*Taphrina caerulescens*) Unknown, General
Okra		Root Problems, Abiotic disorder
Oregano	Rhizoctonia Root Rot (*Rhizoctonia* sp./spp.)	
Pea	Southern Stem Rot (*Sclerotium rolfsii*)	
Peanut	Aspergillus Crown Rot (*Aspergillus niger*) *Aspergillus flavus* Unknown Abiotic Disorder, Abiotic disorder Unknown, General	
Pear		Fire Blight (*Erwinia amylovora*)
Pecan	Pecan; Hickory Scab (*Cladosporium caryigenum*) Black Pecan Aphid (*Melanocallis caryaefoliae*) Nutritional Deficiency, Abiotic disorder No Pathogen Found Unknown, General	
Pepper	Pythium Root and/or Crown Rot (*Pythium* sp.) Bacterial Soft Rot (*Erwinia* sp./spp.) No Pathogen Found	
Periwinkle	Aerial Stem Blight (*Phytophthora* sp./spp.)	
Petunia	Pythium Root and/or Crown Rot (*Pythium* sp.)	

Poinsettia	No Pathogen Found	
Rose	No Pathogen Found	
Sky Flower	No Pathogen Found	
Soybean	Unknown, General	
Squash		*Rhizopus* sp./spp. Squash Vine Borer (*Melittia cucurbitae*)
St. Augustinegrass	Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) Large Patch (*Rhizoctonia solani*)	Take-all (*Gaeumannomyces* sp.)
Tobacco	Rhizoctonia Foliar/ Aerial/ Web Blight (*Rhizoctonia solani*) Black Shank (*Phytophthora nicotianae*) Tomato Spotted Wilt Virus (TSWV) Tobacco Mosaic Virus (TMV Tobacco Etch Virus (TEV) Potato Virus Y (PVY) No Pathogen Found Unknown, General	
Tomato	Leaf Mold (*Fulvia fulva*) Tomato Spotted Wilt Virus (TSWV) Tobacco Mosaic Virus (TMV) Bacterial Wilt (*Ralstonia solanacearum*) Bacterial Leaf Spot (*Xanthomonas* sp./spp.) Southern Stem Blight (*Sclerotium rolfsii*) Septoria Leaf Spot (*Septoria* sp./spp.) Unknown, General	Septoria Leaf Blight (*Septoria lycopersici*) Fusarium Wilt (*Fusarium oxysporum*) *Septoria* Leaf Blight (*Septoria lycopersici*) Late Blight (*Phytophthora infestans*) Early Blight; Leaf Spot (*Alternaria solani*) Tomato Spotted Wilt Virus (TSWV) Herbicide Injury; Exposure Cultural/Environmental Problem
Turnip	Downy Mildew (*Peronospora* sp./spp.)	
Unknown		Unknown Abiotic Disorder
Watermelon	Gummy Stem Blight [*Didymella* (ana. *Phoma*) *bryonae* (*cucurbitacearum*)] Anthracnose; *Colletotrichum* Leaf Spot (*Colletotrichum* sp./spp.) Anthracnose (*Gloeosporium* sp./spp.) Watermelon Fruit Blotch (*Acidovorax avenae citrulli*) Powdery Mildew (*Sphaerotheca* sp./spp.) Pythium Fruit Rot; Cottony Leak (*Pythium* sp.) Phytophthora Fruit Rot (*Phytophthora capsici*) Fruit Rot (*Sclerotium rolfsii*) Abiotic disorder No Virus Found No Pathogen Found Herbicide Injury; Exposure, Abiotic disorder Physiological Responses, Abiotic disorder	Unknown, General
Wheat	*Fusarium* sp./spp.	
Wisteria		Nutrient Imbalance, Abiotic disorder
Yew	No Pathogen Found	

Zoysiagrass	Large Patch (*Rhizoctonia solani*) Bipolaris Spot Blotch (*Bipolaris* sp./spp.) Leaf Rust; rust (Puccinia sp./spp.) No Pathogen Found Not Pathogen; Saprophyte, Secondary Agents Cultural/Environmental Problem	Take-all (*Gaeumannomyces* sp.) Rhizoctonia Blight (*Rhizoctonia solani*) Cultural/Environmental Problem, Abiotic disorder No Pathogen Found

Update: Home Garden

Summer tomato diseases in the vegetable garden

By Elizabeth Little

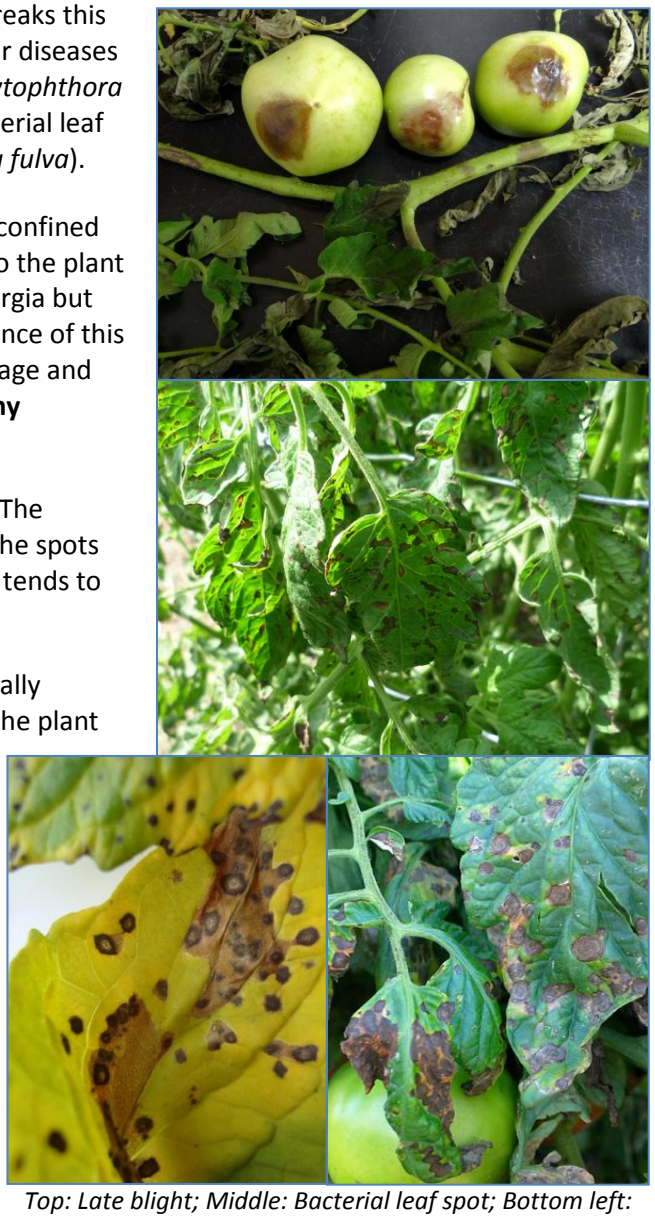
The plentiful rain may contribute to foliar disease outbreaks this summer. Tomatoes are susceptible to a number of foliar diseases including early blight (*Alternaria solani*), late blight (*Phytophthora infestans*), Septoria leaf spot (*Septoria lycopersici*), bacterial leaf spot (*Xanthomonas euvesicatoria*) and leaf mold (*Fulvia fulva*).

The **late blight** outbreak in the Piedmont last year was confined to a short period in June based on what was reported to the plant disease clinic. Late blight is rare in the piedmont of Georgia but with frequent rains this year there could be a reoccurrence of this disease. This disease causes a irregular blight of the foliage and fruit rather than distinct spots. **Please let us know of any suspected outbreaks of this disease.**

Bacterial leaf spot is common on tomatoes in Georgia. The symptoms may be similar to other leaf spots although the spots are generally smaller and more numerous. This disease tends to cause more damage on peppers than on tomatoes.

Early blight is very common on tomatoes. Infection usually starts on the lower leaves and moves upward through the plant canopy. Leaf spots are often gray to brown with a zonate appearance. Spots can coalesce causing larger areas of blighting. **Septoria leaf spot** is also common. Septoria spots are smaller than early blight spots. Spots are small, round with a tan center and darker brown border. Pycnidia (spore-producing structure) can be seen in the center of the spot.

Leaf Mold is a relatively infrequent disease, except in greenhouse or high tunnel cultivation. Leaf mold spreads during periods of high relative humidity (>90%) and does not necessarily need rain. The optimum temperature range is from the low 70's into the low 80's. Greenhouses most often satisfy these conditions although the disease will appear in tomatoes grown outside in areas with poor



Top: Late blight; Middle: Bacterial leaf spot; Bottom left: Septoria leaf spot; Bottom right: Early blight (Images by Elizabeth Little)

air circulation. Leaf mold is distinctive from the other leaf spot diseases in that the top of the leaf shows a distinct irregular-shaped yellowing while the underside has a thick, fuzzy carpet of brown fungal spores. As with most of the leaf spot diseases, spotting and defoliation usually starts at the bottom of the plant and works upward through the plant.

Yellow spots on the upper leaf surface (above left) and greenish-brown sporulation on the leaf underside (above right) due to leaf mold infection. Images by Elizabeth Little.

Management strategies for these diseases are similar and based on prevention. Most foliar tomato diseases survive on the infected plant tissues that fall to the ground during the growing season. Crop residues should be removed and destroyed at the end of the season to reduce the survival of the pathogens between crops. A three year rotation away from tomatoes and related crops is optimal and helps distance the plants from the sources of disease. Greenhouses and high tunnels should be thoroughly cleaned and rotated away from tomatoes and related crops whenever possible. Healthy plants are better able to resist disease, so good soil preparation is essential with adequate levels of organic matter and a balance of nutrients and pH (based on a soil test).

Choose a sunny, open site for tomatoes with good air flow. Low spots or areas surrounded by vegetation or trees will tend to be more humid. Overhead irrigation should not be used on tomatoes. High tunnels should be well-ventilated and fans used as needed to reduce humidity. Adequate spacing of plants, staking, and pruning to open the leaf canopy are all important measures for increasing air circulation. Mulching the ground with organic matter will prevent pathogens from splashing up onto the leaves. Scout for early symptoms of disease and remove infected leaves.

There are various fungicides available, both conventional and organic, but often the above measures alone will be enough to prevent severe outbreaks of disease. If in doubt of which disease is present, please send a sample to the UGA Plant Disease Clinic.

Update: Commercial Ornamentals

Ornamental fungicide efficacy table available online

By Jean Williams-Woodward

I've been asked on numerous occasions for an efficacy table for fungicides labeled for ornamental plants. Well, myself, Alan Windham (University of Tennessee) and Kelly Ivors (North Carolina State University) put one together that lists products and their relative effectiveness for managing 10 diseases including black root rot (*Thielaviopsis basicola*), cedar rusts (*Gymnosporangium* rusts), downy mildew, fire blight, fungal cankers, fungal leaf spots, Passalora (syn. *Cercosporidium, Cercospora*) needle blight on Leyland cypress and other needled evergreens, Phytophthora root rot, Pythium root rot, and powdery mildew as part of a Southern Region IPM project. The table is not all inclusive, but it's a start that we hope to expand upon and update. You can find the table here:
http://plantpath.cals.ncsu.edu/sites/default/files/u33/Orn%20efficacy%20table%20v9.pdf

2013 Vegetable Spray Guides online

By David Langston

Spray guides and efficacy tables for vegetable crops for 2013 are now available online on the Department of Plant Pathology, Extension Plant Pathology webpage (http://plantpath.caes.uga.edu/extension/extension/VegetableSprayGuides.html). Links to the tables are below:

Spray Guides			Efficacy Tables
• Bean (snap, lima, pole)	• Cucumber	• Tomato	• Bean
• Brassica Greens	• Pepper – Spring	• Squash	• Brassica
• Broccoli / Cabbage	• Pepper – Fall	• Watermelon	• Cucurbit
• Cantaloupe	• Pumpkin		• Pepper
			• Tomato

Gummy Stem Blight on watermelons

By David Langston

The current weather pattern has been conducive to the development of gummy stem blight disease. Many times the disease attacks the mid vein of the leaf and causes it to break. The main signs of gummy stem blight are the dark, round pycnidia often found in the center of foliar and stem lesions. Most growers have been spraying products like chlorothalonil and tebuconazole for this disease, and they typically work really well. With the current warm and potentially wet weather pattern moving in, it may be prudent to apply preventive fungicide sprays of products that have more efficacy against gummy stem blight. Products that have worked well in my trials include Inspire Super, Switch, and Luna Experience. Although Fontelis has looked good in programs where it is tank-mixed with chlorothalonil, resistance of the gummy stem blight pathogen to the succinate dehydrogenase inhibiting (SDHI) chemistries in Fontelis, Endura, and Pristine has been widely observed across the southeast. With the current warm and wet weather, it may be prudent to apply preventive fungicide sprays targeting gummy stem.

Gummy stem blight infected foliage has very distinct, conspicuous lesions that are round with a strong concentric ring pattern. Pycnidia (fungal fruiting structures) can be seen within the lesions (above right). Images by Tucker Price.

Turfgrass Disease Update

By Alfredo Martinez

It's time to scout for **Brown patch** (caused by *Rhizoctonia solani*) and **Pythium blight** (caused by *Pythium* spp). These diseases are often the most serious diseases on cool season grasses, especially on tall fescue and ryegrass**. Brown patch** can cause a foliar blight, which results in necrotic leaves and circular brown patches up to 4-5 ft. in diameter. High soil and leaf canopy humidity, and high temperatures increase disease severity. Higher than recommended rates of nitrogen in the spring promotes disease. Management options includes: avoid nitrogen application when the disease is active, avoid infrequent irrigation and allow the foliage to dry, mow when grass is dry, ensure proper soil pH, thatch reduction, and improve soil drainage.

Brown patch on tall fescue. (Images by Lee Burpee and Alfredo Martinez)

Pythium blight has the potential to quickly cause significant damage to turfgrass. The disease starts as small spots, which initially appear dark and water-soaked. Affected turfgrass dies rapidly, collapses, and appears oily and matted. White, cottony mycelia may be evident early in the morning. The disease is driven by hot-wet weather, which correlates with an increased stress on the turf. Similar environmental and cultural factors that encourage brown patch also promote *Pythium*. Therefore, cultural practices for control of brown patch will also help to minimize *Pythium* blight development. A correct diagnosis is important because Pythium control requires specific fungicides.

Pythium blight on tall fescue (Photo: Lee Burpee)

Several fungicides are available for each of the diseases described above. Consult the 2013 Georgia Pest Management Handbook or the 2013 Turfgrass Pest Control Recommendations for Professionals for proper fungicide selection and usage. Read the label and follow proper guidelines.

For more information on Brown patch and Pythium visit:
http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7149&pg=dl&ak=Plant%20Pathology#BrownPatch
http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7149&pg=dl&ak=Plant%20Pathology#PythiumRootRot
http://www.apsnet.org/edcenter/intropp/lessons/fungi/Oomycetes/Pages/PythiumBlight.aspx
http://www.apsnet.org/edcenter/intropp/lessons/fungi/Basidiomycetes/Pages/Rhizoctonia.aspx

Small Grains Disease Summary – 2012-13 Growing Season

By Alfredo Martinez and James Buck

Wheat was or is being harvested in the southernmost part of Georgia. Weather conditions for wheat maturity are in place in most of the state, therefore wheat harvest should be soon a familiar sight.

Stripe rust caused by *Puccinia striiformis* was observed in many Georgia wheat-growing counties. The first incidences of stripe rust were located in southwestern Georgia and progressed rapidly to other growing areas. Unusually wet and cool spring weather drove and sustained stripe rust incidence and severity. Fungicides were used throughout the state to stop or prevent stripe rust epidemics. Leaf rust (*Puccinia triticina*) incidence was minimal; presumable due to the wide spread fungicide use against stripe rust as well as weather patterns. Take a minute to review the 2012-13 Wheat Production Guide and/or the 2013 Georgia Pest Management Handbook for disease and fungicide information and fungicide selection. Look for the updated information in these publications early in the next growing season. More information on identification and control of stripe rust can be found at:

Stripe rust (left), leaf rust (right) on leaves. Images by Alfredo Martinez

http://www.caes.uga.edu/Publications/pubDetail.cfm?pk_id=7814&pg=dl&ak=Plant%20Pathology

Crown rust caused by *Puccinia coronata* (oats) was observed in a few counties concentrated in south central Georgia

Powdery mildew (*Blumeria graminis* – syn. *Erysiphe graminis*) was by far the most predominant and problematic disease in the 2012-13 growing season. Powdery mildew incidences were early, high and prevalent. In Georgia, powdery mildew rarely progresses up the plant and reaches the flag leaf (or even flag leaf minus two). However, this season was different. In several areas, fungicides had to be used for powdery mildew control which is rare in the state. Powdery mildew is still being observed at the Bledsoe UGA research station in Griffin in some late maturing lines and varieties. In some cases it has reached the wheat spikes. For more information on powdery mildew go to http://plantpath.caes.uga.edu/extension/plants/fieldcrops/WheatPowderyMildew.html

Stagonospora on wheat spikes by Brent Allen, CEC Washington Co.

Leaf and glume blotch caused by *Stagonospora nodorum* (image to left) and barley yellow dwarf virus (BYDV) were observed throughout the state and seemed more prevalent than previous years. A couple of incidences of loose smut and take-all were also registered.

Historically, Fusarium head blight (FHB/scab) (caused by *Fusarium* spp) incidence traditionally has been very low in Georgia and has not been reported in the last few years. However, Fusarium head blight was confirmed in a wheat field in the southernmost part of the state. An unconfirmed report of a field with heavy incidence of FHB on triticale was also recorded. A few incidences of loose smut, take-all, bacterial mosaic (caused by *Clavibacter michiganensis* subsp. *tessellarius*), and soil-borne wheat mosaic virus (SBWMV) were registered.

Update: Row Crops

Recent Rainfall Could Have Impact on Disease Management in Row Crops

By Bob Kemerait

Ten minutes ago I got off the phone with Anthony Black, superintendent of the UGA research station in Midville. I told him that I wanted to come up a spray some peanuts with Proline tomorrow, 21 days after planting. Anthony told me, "Dr. Kemerait, you are welcome to come up but I am worried you will have trouble getting into the field because it is so wet." I assured him that I would not need a tractor; I would back-pack the fungicide on the plots. To this he replied, "That is what I mean. I still don't think you will get in as we have had 10 ½ inches of rain since June 1st!"

Though not every grower has received as much precipitation as Midville has, many fields have had a "pile" of rain. While such can be good for growing conditions and saving money on diesel fuel to run the pivots, recent rainfall has created near-perfect conditions for development and spread of diseases affecting our row crops. Free water, whether in the form of dew, rainfall, or irrigation, creates favorable conditions for development of disease in several ways. First, and most obvious, moisture and high humidity is critical for spore germination, infection, growth, and spread of the fungal pathogen. Although bacterial pathogens are only a minor problem on agronomic crops in Georgia, diseases caused by bacteria may also flare in periods of wet weather. The second way in which rainfall and irrigation can affect development of diseases is through spore dispersal. Fungal spores tend to be transported over short distances in "rain splash" and over longer distances in wind-blown-rain. Long distance transport of spores, particularly rust spores, occurs in the upper air currents associated with tropical storms and hurricanes. Not only are the winds critical for transport, but the overcast skies associated with storms reduce the mortality of rust spores from UV radiation. The third way in which rainfall can affect the development of disease is to delays that may occur when the grower cannot get back into a muddy field. After significant rains, as for those reported at Midville, it could be a week or longer before fields are dry enough to allow a fungicide application with a tractor. Although aerial applications may be an option for use of fungicides, there may be a backlog of fields to be sprayed and aerial applications likely add unexpected expense. For all of these reasons, timely applications of fungicides PRIOR to anticipated rains are an important consideration.

At the time of this newsletter, our field crops have likely reached the following growth stages. Much of our corn crop has begun to tassel or will do so shortly. Much of our peanut crop is 21-35 days after planting and beginning to develop a small canopy of foliage. Much of our cotton crop has 4-5 true leaves, though some is less mature than that. Lastly, soybeans are still in the early vegetative stages of growth.

In 2013, cotton growers will be most concerned with target spot and soybean growers with rust, anthracnose and Phomopsis pod and stem blight. If wet weather persists through the season, we are likely to see more severe outbreaks of target spot. Where fungicides are appropriate for management of target spot, I do not envision an application prior to first bloom. We have not found southern corn rust in the state as of 12 June 2013; however I would not be surprised to small levels of southern rust developing over the next 10 days as a result of Tropical Storm Andrea. Although northern corn leaf blight is wide-spread across the state, this disease has not been a problem in many fields. As the corn enters tasselling, the grower needs to decide if the threat from southern corn rust and northern corn leaf blight is significant enough to use a fungicide. If it is not, then the grower may delay a fungicide application for some period of time. We know that Asian soybean rust is active on kudzu in southwestern Georgia now and has been found on soybeans planted in sentinel plots in northern Florida. I anticipate that all soybean producers will use a fungicide to protect their crop in the late bloom/early pod development stage. Finally, conditions are quite favorable at this time for the development of peanut leaf spot diseases. Peanut growers should be vigilant in initiating their fungicide programs in a timely manner.

As Luke Bryan's song says, "rain is a good thing"; however it also brings with it challenges to managing diseases of our row crops. Perhaps the most important strategy to optimal disease management in the face of disease and rainfall is to anticipate storms and extended periods of wet weather by following the local forecasts. Remember, it is better to be a little early with your fungicide than to be late.

Update: Landscape Ornamentals

Slime molds in landscapes

By Jean Williams-Woodward

I've been getting quite few calls and emails about slime molds and various other fungi in landscape beds and on plants. The wetter than average spring has created the perfect conditions for fungal (mushroom) growth. Slime molds are a diverse group of myxomycetes that are not true fungi because they lack a cell wall. Slime molds grow on decaying organic material, such as bark/wood mulch, thatch in turf and on rotting leaves. They actually live off bacteia found on the decaying material. The most common slime mold we see is *Fuligo septica* or what probably is the least appealing common name for a fungus, "the dog vomit slime mold." Fuligo and other plasmodial slime molds resemble a "blob" and can be brightly colored (see image of *Fuligo septica* above). They are a mass of cells that are initially soft that can actually creep across a surface as it ingests its mostly bacterial food source. They are only in this soft stage for about 24-48 hrs, then they become crust-like when their spores are produced. The crust-like slime mold breaks apart from rains, foot traffic, or from people like me who poke them . Then, they disappear only to reappear in another area when environmental conditions are conducive for their growth.

Bright yellow plasmodium of Fuligo septica on mulch. Image by J. Williams-Woodward.

Although slime molds can grow over plants, they are not harming or damaging the plant. They are growing on the plant because the plant got in its way, just like a tree trunk or mailbox post would. Don't worry about them and there really isn't anything you can do about them other than removing all organic material from the area. I get calls from child care centers about them and really the only thing they can do is pick up the plasmodium and mulch with a shovel and put it in the trash or in an area the children can't get to. But, this really doesn't entirely remove it from the area. However, neither the plasmodium nor the spores will not harm you.

Although the plasmodial slime molds are commonly seen, there is a group of slime molds called "stalked slime molds" that I have received several emails about. The stalked slime molds are seen on turfgrass blades or on leaves of trees and shrubs. I believe the ones that I have seen recently in images from agents are *Stemonitopsis* sp. Just like the other slime molds, they are not harming the plants they are growing on and they will dry up and disappear with time.

Crust-like, older, less colorful Fuligo septica growing over a liriope plant (left; image by J. Williams-Woodward) and stalked slime mold of most likely Stemonitopsis sp. growing on a climbing fig leaf (right; image by James Jacobs, CEC Pierce County) .

Update: Commercial Ornamental Nurseries

Now is the time to protect plants from root pathogens

By Jean Williams-Woodward

With all the recent rains, the rooting substrate within containerized plants is saturated. It is at this time that the roots may become infected with the water-mold pathogens, Phytophthora and Pythium. All plants growing in containerized production have some level of root disease. If plant roots are actively growing, then infection may be small. However, as roots become damaged with summertime heat stress and root growth slows, the small amount of infection expands and spreads. Protect plants in the early spring and now with a fungicide drench to reduce plant loss in July and August. Often root disease symptoms of dull, off-color plants, wilting, yellowing, stem dieback, and plant death isn't seen until mid-summer when the plants are under heat stress and root infection has spread. I have measured root ball temperatures of 140°F in 3-gal containers in July, which essentially cooks the roots. There isn't anything you can do at that time other than remove and discard the infected plants. Fungicides applied in mid-summer will have little effect in turning these plants around. Now is the time to put out the fungicide to protect root-disease prone plants from infection. Drenching is best, but many growers don't have the equipment, time or man-power to do it. There are quite a few fungicide options to manage *Phytophthora* and *Pythium* infection including Subdue MAXX and other mefenoxam-containing products, Segway (cyazofamid), Truban/Terrazole (etridiazole), Adorn (fluopicolide) and Aliette (fosetyl-Al) and other phosphonates (K-Phite, Magellan, Alude, Vital, etc.). Always read and follow the product label for rates and restrictions. These things do change from year to year. I'll be providing an update on this in the July extension plant pathology update.

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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