THE UNIVERSITY OF GEORGIA
COLLEGE OF AGRICULTURAL & ENVIRONMENTAL SCIENCES

Extension Plant Pathology Update

October 2013

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Plant Disease Clinic Report for September 2013

By Ansuya Jogi and Jean Williams-Woodward

As we move from warm season crops to cool season crops the diversity in plant samples and their problems has increased over previous months. Fungal leaf spot, leaf rust, and root diseases on all crops were very common in September. Other less common diseases including bacterial wilt on eggplant and other solanaceous crops and Rosellinia needle blight on hemlock (see page10) were also diagnosed. Looking forward into November, the number of samples is likely to decrease based upon what we've seen in the past. Downy mildew and fungal leaf spot diseases are likely to be seen in October-November due to cooler, wet, fall weather. The following tables consist of the commercial and homeowner samples submitted to the UGA plant disease clinics in Athens and Tifton for the past month, September 2013 (Table 1), and from one year ago in November 2012 (Table 2).

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

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Alfalfa	Leptosphaerulina Leaf Spot; Blight [*Leptosphaerulina trifolii* (*briosoana*)] Rhizoctonia Crown and Stem Rot (*Rhizoctonia* sp.) Fusarium Wilt (*Fusarium oxysporum* f.sp. *medicaginis*)	
American chestnut	Bacterial Leaf Scorch (*Xylella fastidiosa*)	
Anemone	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.) Root Knot Nematodes (*Meloidogyne* sp./spp).	
Ash		Undetermined Injury or Pest
Asparagus	Environmental Stress; Abiotic Problem Root Rot, Unidentified Agent	
Begonia	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.) Root Knot Nematodes (*Meloidogyne* sp./spp.)	
Bentgrass	Take-all (*Gaeumannomyces* sp./spp.) Anthracnose (*Colletotrichum cereale*) Pythium Root and/or Crown Rot (*Pythium* sp.) No Pathogen Found Cultural/Environmental Problem; Abiotic	

Bermudagrass	*Bipolaris* sp./spp. *Rhizoctonia solani* Large Patch (*Rhizoctonia solani*)	Rhizoctonia Blight (*Rhizoctonia solani*) Cultural/Environmental Problem
Black ants	Little Black Ant (*Monomorium minimum*)	
Blackberry	Cane and Leaf Rust (*Kuehneola uredines*) Cercospora Leaf Spot (*Cercospora* sp./spp.) Unknown cause	
Blueberry	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.) Hemlock-Blueberry Rust (*Thekopsora minima*) *Botryosphaeria* sp./spp. *Fusicoccum* sp./spp. Environmental Stresses Cultural/Environmental Problem, Abiotic No Pathogen Found	
Boxwood	No Pathogen Found	Root Problems, Abiotic disorder
Cabbage	Black Rot (*Xanthomonas campestris*) No Pathogen Found	
Centipedegrass	Root Decline of Warm Season Grasses (*Gaeumannomyces graminis* var. *graminis*) Rhizoctonia Root and Stem Rot (*Rhizoctonia solani*) Cultural/Environmental Problem, Abiotic No Pathogen Found	Rhizoctonia Blight (*Rhizoctonia solani*) Take-all (*Gaeumannomyces* sp.) Cultural/Environmental Problem, Abiotic disorder
Chinese Fringe Flower	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.)	
Corn	Northern Corn Leaf Spot [*Cochliobolus* (*Bipolaris*) *carbonum* (*zeicola*)] Charcoal Rot (*Macrophomina phaseolina*)	
Cotton	Corynespora Leaf Spot (*Corynespora cassiicola*) Phomopsis Dieback; Tip Blight; Canker (*Phomopsis* sp.) Ascochyta Blight (*Ascochyta* sp./spp.)	
Cucumber	Nutritional Analysis, Abiotic disorder	Undetermined Injury or Pest
Cypress		Environmental Stress; Problem
Eggplant	Bacterial Wilt (*Ralstonia solanacearum*)	
Eucalyptus	Leaf Spot (*Cristulariella* sp./spp.)	
Fescues		Gray Leaf Spot (*Pyricularia grisea*] Rhizoctonia Blight (*Rhizoctonia solani*) Environmental Stress; Problem
Gardenia	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.)	
Grain Sorghum	Anthracnose (*Colletotrichum graminicola*)	
Grape	Abiotic disorder	Undetermined Injury or Pest
Hemlock	Rosellinia Blight (*Rosellinia herpotrichoides*)	
Hydrangea	Granulate Ambrosia Beetle (*Xylosandrus crassiusculus*)	
Impatiens	Phytophthora Crown, Root and/or Stem Rot (*Phytophthora* sp./spp.) Root Knot Nematodes (*Meloidogyne* sp./spp.)	
Jasmine		Root Problems, Abiotic disorder

Juniper		Root Problems, Abiotic disorder Environmental Stress; Abiotic Problem
Kale	Black Rot (*Xanthomonas campestris*)	
Maple	Leaf Spot (*Cristulariella* sp./spp.) Family Eriophyidae	Wound Canker, Abiotic disorder Unknown Abiotic Disorder
Mushroom		Armillaria Root Rot [*Armillaria* (*Armillariella*) sp./spp.]
Oak	Southern Fusiforme Rust (*Cronartium fusiforme*) No Pathogen Found Abiotic disorder	Powdery Mildew (*Oidium* sp./spp.) Herbicide Injury; Exposure, Abiotic disorder
Pea	Fusarium Crown Rot (*Fusarium oxysporum*)	
Peach		Insect Damage, Unidentified Insect
Peanut	Early Leaf Spot [*Mycosphaerella* (ana. *Cercospora*) *arachidis* (*arachidicola*)] Tomato Spotted Wilt Virus (TSWV) Unknown, General *Pratylenchus* sp./spp.	
Pecan	Pecan; Hickory Scab (*Cladosporium caryigenum*) Bacterial Leaf Scorch (BLS) (*Xylella fastidiosa*) Anthracnose [*Glomerella* (*Colletotrichum*) *cingulata* (*gloeosporioides*)] Phomopsis Leaf Spot (*Phomopsis* sp./spp.) *Lasiodiplodia* (*Botryodiplodia*) *theobromae* Unknown cause Physiological Responses, Abiotic disorder Black Pecan Aphid (*Melanocallis caryaefoliae*)	Undetermined Injury or Pest
Pepper	Pythiaceous Root Rot, Family Pythiaceae Pythium Root and/or Crown Rot (*Pythium* sp./spp.) Abiotic disorder Physiological Responses, Abiotic disorder	Bacterial Leaf Spot (*Xanthomonas* sp./spp.)
Plum Tree		Insect Damage, Unidentified Insect
Pomegranate	Anthracnose Fruit Rot (*Colletotrichum* sp./spp.)	
Rose		Root Problems, Abiotic disorder
Satsuma	Unknown cause	
Sorghum	Anthracnose (*Colletotrichum graminicola*)	
Soybean	Pod and Stem Blight [*Diaporthe* (*Phomopsis*) sp.] Soybean Downy Mildew (*Peronospora manshurica*) Soybean Bacterial Pustule (*Xanthomonas campestris* pv. *glycines*) Unknown, General No Pathogen Found	Soybean Anthracnose [*Glomerella* (*Colletotrichum*) *glycines* (*destructivum*)]
Squash	No Pathogen Found	
St Augsutinegrass	Root Decline of Warm Season Grasses (*Gaeumannomyces graminis* var. *graminis*) Gray Leaf Spot [*Magnaporthe* (ana. *Pyricularia*) *grisea*] Large Patch (*Rhizoctonia solani*) *Rhizoctonia* sp./spp.	Gray Leaf Spot [*Magnaporthe* (ana. *Pyricularia*) *grisea*] Take-all (*Gaeumannomyces* sp.) Environmental Stress; Problem, Abiotic disorder
Sugar Maple	Verticillium Wilt (*Verticillium* sp./spp.)	

Sunflower	No Pathogen Found, Identification Analysis	
Sweet potato		Cultural/Environmental Problem
Tall Fescue	Brown Patch (*Rhizoctonia* sp./spp.) Pythium Root and/or Crown Rot (*Pythium* sp.)	
Tomato	Pythium Root and/or Crown Rot (*Pythium* sp./spp.) No Pathogen Found	Septoria Leaf Spot (*Septoria* sp.) Septoria Leaf Blight (*Septoria lycopersici*) Environmental Stress; Problem
Tulip tree		Undetermined Injury or Pest
Viburnum		Root Problems, Abiotic disorder
Watermelon	Cercospora Leaf Spot (*Cercospora* sp./spp.)	
Zoysiagrass	*Bipolaris* sp./spp. Fairy Ring, Various fungi Leaf Rust; rust (*Puccinia* sp./spp.) *Rhizoctonia* sp./spp. No Pathogen Found	Take-all (*Gaeumannomyces* sp.) Rhizoctonia Blight (*Rhizoctonia solani*) Anthracnose (*Colletotrichum graminicola*) Cultural/Environmental Problem

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

Host Plant	Sample Diagnosis	
	Commercial Sample	**Homeowner Sample**
Bermudagrass	Leaf Spot (*Bipolaris* sp./spp.) Cultural/Environmental Problem, Abiotic	
Blueberry	*Botryosphaeria* sp./spp. Septoria Leaf Spot (*Septoria* sp./spp.) Unknown, General	
Cabbage	Unknown cause	
Carrot	No Pathogen Found	
Centipedegrass	Root Decline of Warm Season Grasses, (*Gaeumannomyces graminis* var. *graminis*) *Rhizoctonia solani*	
Collards	No Pathogen Found	
Cucumber	Cucurbit Downy Mildew (*Pseudoperonospora cubensis*)	
Dissotis	Cercospora Leaf Spot (*Cercospora* sp./spp.)	
Geranium	No Pathogen Found No Virus Found, No Virus Found	
Grain Sorghum	Charcoal Rot (*Macrophomina phaseolina*)	
Impatiens	No Pathogen Found	
Kale	Abiotic disorder	
Mandevilla	Phytophthora Crown, Root and/or Stem Rot, (*Phytophthora* sp./spp.) Fusarium Stem Rot (*Fusarium* sp.)	
Osmanthus		Root Problems, Abiotic disorder
Peanut	Unknown, General	
Pecan	Pecan Scab (*Cladosporium caryigenum*)	Environmental Stress; Problem

Pepper	Herbicide Injury; Exposure, Abiotic disorder	
Pomegranate	Cultural/Environmental Problem, Abiotic	
Radish	Not Pathogen; Saprophyte, Secondary Agents	
St. Augustinegrass		Cultural/Environmental Problem
Strawberry	*Phytophthora cactorum* Unknown, General	
Tomato	Nutrient Imbalance, Abiotic disorder Unidentified Virus, Unidentified Virus	
Turnip	No Pathogen Found	

Update: Commercial Turfgrass

Turfgrass Disease Update: Dollar Spot, Yellow Bentgrass, and Bipolaris leaf spot

By Alfredo Martinez

Dollar Spot is Still Active

The dollar spot fungus (*Sclerotinia homoeocarpa*) may continue to infect cool season grasses anytime temps are above 45°F. Due to low temperatures, recovery of turf from dollar spot symptoms in fall and winter may take weeks rather than days. Therefore, preventive control of dollar spot is more important in the winter than at other times of the year. Keep this in mind if you're planning on using a curative control program. We've had many calls about slow healing of dollar spots in late fall and winter. In some cases fungicide resistance may play a role, but usually the trouble is traced to slow turf growth in cold weather.

Above: Dollar spot on Bentgrass (Photo Alfredo Martinez)

Yellow bentgrass

Off-colored bentgrass in October may result from multiple factors including slow development of new roots, low fertility and a reduction in the quantity and quality of sunlight. In addition, nematodes, Pythium root rot and anthracnose may play a role. New bentgrass roots will not develop effectively until root zone temperatures drop below 70°F. Aerification, heavy top-dressing and other stressful practices should be avoided until this temperature reduction occurs. In Georgia, root zone temperatures may not decline significantly until mid-October or later.

Regarding fertility, fall is the best time of the year to fertilize cool-season grasses. High fertility in the fall stimulates the development of roots, stolons and shoots rather than just leaves. Up to two-thirds of all annually applied nitrogen should be applied between late September and late November. Continue foliar feeding in early fall until new roots begin to develop. Then switch to granular, fast-release materials that will move into the root zone with irrigation. Don't continue to spoon feed with foliar-applied materials in mid- to late-fall. Foliar feeding is acceptable for spring and summer, but it is not optimal for root growth in the fall.

Fall and winter are excellent times of the year for tree removal. Shade has become a prime factor contributing to poor growth of bentgrass and bermudagrass in Georgia. These grasses require at least 8 hrs of full sunlight per day for acceptable color and density. This is particularly important on greens, but shade also reduces the quality of bermudagrass on tees and fairways. Morning sun is essential - the earlier the better. A little afternoon shade may not hurt, but morning shade is a killer. Morning shade not only reduces the photosynthetic capacity of the turf, but it results in extended periods of leaf wetness that predisposes the turf to all the major foliar pathogens.

Bipolaris leaf spot on bermudagrass

Severe leaf and crown rot, caused by *Bipolaris* ssp. can occurr in bermudagrass lawns, sport fields, or golf fairways. Initial symptoms of this disease include brown to tan lesions on leaves. The lesions usually develop in late September or early October. Older leaves are most seriously affected. Under wet, overcast conditions, the fungus will begin to attack leaf sheaths, stolons and roots resulting in a dramatic loss of turf. Shade, poor drainage, reduced air circulation; high nitrogen fertility and low potassium levels favor the disease. To achieve acceptable control of leaf and crown rot, early detection (during the leaf spot stage) is a crucial.



Update: Small Grains

Wheat planting season is closer than you think

By Alfredo Martinez

By the time wheat seed is in the ground, pre-planting decisions have been made and they directly affect what we can expect in terms of disease. Some of these decisions include:

- Variety selection
- Crop rotation
- Tillage
- Seed quality, Seed Fungicides, Seedling Rate
- Planting Date
- Nitrogen Fertility

Healthy wheat field (Photo by Alfredo Martinez)

Variety Selection

The most effective and economical method to control diseases of wheat is to plant disease resistant varieties. Resistance is the primary means to manage foliar diseases, which cause the greatest yield reduction each year. However, few recommended varieties have "good" or high resistance to all the major foliar diseases. In addition, populations of fungi causing leaf rust and powdery mildew are constantly changing. There are numerous strains or races of these fungi. When a new variety is released, it is usually resistant to the most commonly occurring races of the fungi prevalent at that time. Certain individual races or new races may become more common. If a variety is not resistant to these races of the fungus, it can become y diseased. Varietal recommendations are modified each year, often as a result of changes in disease susceptibility. The 2013-2014 recommended varieties for Georgia include: AGS 2060, AGS 2026, AGS 2035, AGS 2038, USG 3555 OGLETHORPE, BALDWIN, 9171, SOUTHERN STATES (SS) 8641, FLEMING, JAMES TOWN, ROBERTS, LA754, TV8525, TV8535, TV8448, TV886, and ARCADIA.

Check Table 1 "Characteristics of Recommended Varieties of Wheat" in the 2013-2014 Wheat Production Guide. Information on disease resistance on each variety is given.

For the 2013-2014 Wheat Production Guide link visit:
http://www.caes.uga.edu/commodities/fieldcrops/gagrains/documents/2013-14WheatProductionGuide.pdf

Fungicides

Check Table 23 and 24 of the 2013-2014 Wheat Production Guide for updated information on seed and foliar fungicides: http://www.caes.uga.edu/commodities/fieldcrops/gagrains/documents/2013-14WheatProductionGuide.pdf

Genetic resistance: Severely infected susceptible variety on the left, Resistant variety on the right (photo Alfredo Martinez)

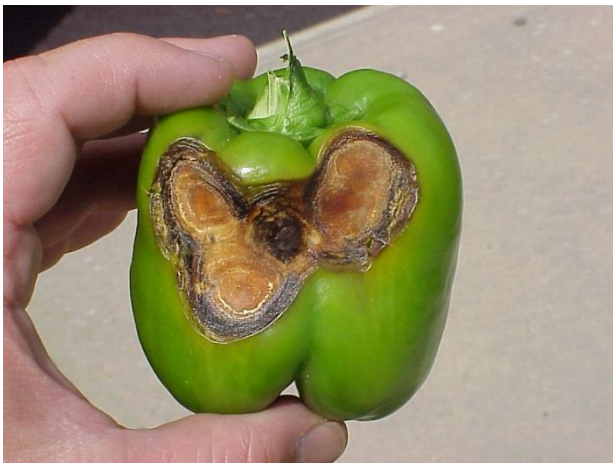
Update: Commercial Vegetables

Be looking for anthracnose on pepper and downy mildew on cucurbits

By David Langston

Lately we have seen a few outbreaks of anthracnose on peppers. This anthracnose only attacks the fruit and can attack both immature and mature fruit of all pepper types (hot, banana, bell, jalapeno, etc…) (See circular

lesions on pepper fruits below). The recommended fungicides for this disease are Cabrio and Quadris, however, since both of these are stobilurins it leaves us in a dilemma as to how to rotate. Use either Cabrio or Quadris and rotate in Bravo. Bravo has been effective against other anthracnose diseases and should have some efficacy against this disease. As always, be mindful of the 14 day PHI on Bravo.



Don't forget about downy mildew on cucurbits either. There is a lot of inoculum out there right now from what I can tell in my test plots. Ranman and Zampro tank-mixed with chlorothalonil and mancozeb are recommended for downy mildew management.

Commercial Vegetable Spray Guides for 2013 are online

By David Langston

Spray guides for commercial vegetable crops are available in the table below and online at: http://plantpath.caes.uga.edu/extension/extension/VegetableSprayGuides.html

Vegetable Spray Guides and Efficacy Tables - 2013			
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

New fungicides for ornamental disease control

By Jean Williams-Woodward

Several fungicides for ornamental production have come on the market within the past couple of years. Below is a summary of some of the products. Many of the products control Oomycete diseases including downy mildews and Pythium and Phytophthora root rot and blights. This is great news since there were few good Oomycete fungicide options available previously other than Subdue MAXX, Aliette and the numerous phosphonates/phosphites. Oomycete pathogens develop fungicide resistance readily. Current research on Phytophthora and Pythium populations within GA nurseries and greenhouses has shown that approximately 5-25% of the isolates from individual production facilities are resistance to mefenoxam (Subdue MAXX). To reduce fungicide resistance development, always use products according to label rates and restrictions and rotate applications with products with a different mode of action (i.e. different FRAC numerical code).

Brand Name	Active Ingredient	FRAC #	Sites[1]	Diseases Controlled
Adorn	Fluopicolide	43	G, L, N	Downy mildew, *Phytophthora, Pythium*: Must be tank mixed with a product with a different mode of action (different FRAC #) for fungicide resistance management
Disarm O	Fluoxastrobin	11	G, N	Broad spectrum – *Rhizoctonia*, *Phytophthora*, downy mildew, powdery mildew, anthracnose, leaf rusts, various fungal leaf spots and blights
Micora	Mandipropamid	40	G, N	Downy mildew and *Phytophthora* foliar blight and root rot: Provides a good rotation partner to Subdue MAXX, Segway and Adorn.
Orvego	Ametoctradin + dimethomorph	45 + 40	G, N	Downy mildew and *Phytophthora*: Contains the same active ingredient as Stature fungicide. Use in rotation with products with different mode of action.
Pageant	Boscalid + Pyraclostrobin	7 + 11	G, L, N	Broad spectrum – Anthracnose, powdery mildew, various fungal leaf spots, *Botrytis*, downy mildew, *Phytophthora*, *Rhizoctonia, Cylindrocladium*
Palladium	Cyprodinil + Fludioxonil	9 + 12	G,L, N	Provides good *Botrytis* control, plus other diseases including *Rhizoctonia*, powdery mildew, *Cylindrocladium, Sclerotinia, Sclerotium rolfsii, Fusarium*, certain fungal leaf spots
Segway	Cyazofamid	21	G, L, N	Downy mildew, *Phytophthora, Pythium*.
Torque	Tebuconazole	3	G, L, N	DMI fungicide with same mode of action as Strike, Banner MAXX, and Systhane. Controls powdery mildew, rusts, *Sclerotium rolfsii*, black spot, and various other fungal leaf spot diseases.
Tourney	Metconazole	3	L, N	For use on woody ornamentals (not floriculture). DMI fungicide. Controls anthracnose, powdery mildew, rusts.
Trinity TR	Triticonazole	3	G, L, N	Supplemental labeling for use on ornamentals. DMI fungicide. Controls anthracnose, powdery mildew, *Fusarium, Rhizoctonia, Sclerotium rolfsii, Sclerotinia*, certain fungal leaf spots

Veranda O, Affirm	Polyoxin D	19	G, N	*Botrytis, Colletotrichum, Alternaria, Fusarium, Rhizoctonia, Sclerotinia*

[1] Location where product is registered for use: Greenhouse (G), Landscape (L), Nursery (N)

Update: Commercial Landscape Ornamentals

Rosellinia needle blight on eastern hemlock

By Jean Williams-Woodward

While not as damaging and deadly as the hemlock woolly adelgid to eastern hemlock (*Tsuga canadensis*), Rosellina needle blight is often seen on hemlocks within landscapes and forested areas, particularly along streams. Rosellinia needle blight is caused by the fungus, *Hypoxylon herpotrichoides* (formerly known as *Rosellinia herpotrichoides*). The disease causes needle browning and drop. Fungal hyphae are often seen matting the brown needles together (see images below). The fungus produces dark gray to black perithecia (pimple-like structures) on the infected needles. The needles drop from the tree where the fungus survives until the following year. Very little is known about the lifecycle of this pathogen.

Fungicides are not labeled for use on this disease on hemlock. The best control is to prune out infected branches. The disease is most severe where moisture and humidity are high. Thinning stands of hemlock to allow for better air circulation could help reduce infection.

Browning needles (above left) and gray fungus matting needles (above right) due to Rosellinia needle blight on hemlock. (Images by Steven Patrick, CEC Habersham County, UGA Cooperative Extension)

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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