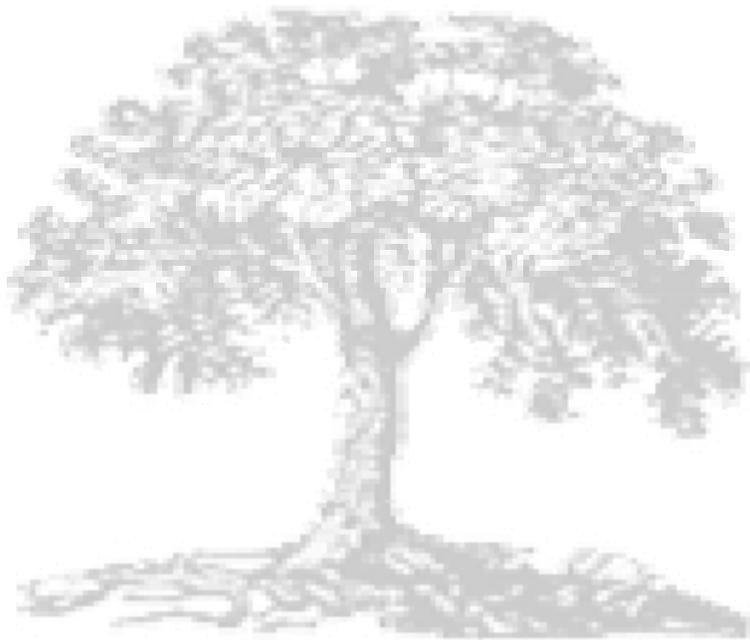




The Plant Disease Clinic and Weed Identification Lab Annual Report 2007



**Department of Plant Pathology, Physiology, and Weed Science
Virginia Polytechnic Institute and State University
Blacksburg, Virginia**

**The Plant Disease Clinic and Weed Identification Laboratory
2007 Annual Report**

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Acknowledgements

The Plant Disease Clinic depends on a industrious staff of both full-time and part-time employees to prepare culture media, isolate pathogens from plant tissue, measure soil pH, extract nematodes from plant tissue, maintain records, answer the telephone, keep track of samples, and send out reports. In 2007, diagnoses in the Plant Disease Clinic in Blacksburg were performed by Mary Ann Hansen and Elizabeth Bush, with valuable assistance from Andrea Lowe.

Plant Clinic staff consult with many faculty and staff in various departments in order to make complete, accurate diagnoses and recommendations. We would like to thank the following people for their helpful assistance during the past year:

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The Weed Identification Clinic is operated by Dr. Scott Hagood with the assistance of Mr. John Willis and Mr. Lloyd Hipkins. Mr. Tom Wieboldt, curator of the Herbarium in the Biology Department, performs many of the plant and weed identifications.

We would also like to thank Mr. Todd Powell of TSP Software for designing and continuing to support the Plant Clinic database ("PClinic"). The database has given us the ability to keep complete records of Plant Clinic samples and to mail reports to Extension Offices electronically. Information on purchasing PClinic can be obtained from the Clinic at <clinic@vt.edu>. We are also especially grateful to Mr. Dawen Xie for IT support during the year.

Christy Perry painstakingly compiled the annual report. The annual report can be viewed on-line at <<http://oak.ppws.vt.edu/~clinic/>>.

Introduction

The annual report for the Plant Disease Clinic and the Weed Identification Clinic located on the Virginia Tech campus in Blacksburg is presented in the following pages. Plant specimens that were submitted to and diagnosed at the Agricultural Research and Extension Centers throughout the Commonwealth are not included in this report. Note that the number of diagnoses performed was higher than the number of samples received because some samples have more than one problem.

For pathogens that could be identified to species or for which only one species is known to occur on the host plant in question, the species name is listed. For those diseases in which one of several species could have been involved, the epithet is listed as "sp." The Plant Disease Clinic does not routinely identify pathogens to species because species identification can sometimes be a very time-consuming process and often has little bearing on control recommendations. Most pathogens were assumed to be disease incitants if they were cultured in high numbers from the plant tissue, if they were reported in the literature to be pathogens of the particular host plant, and if they were reported to cause the observed symptoms.

Viral problems were, for the most part, either diagnosed by the immunostrip test or they were sent to a private lab for antibody testing at a cost to the grower. In some cases, identification of the specific virus was not desired by the client. In those cases, if symptoms indicated a virus infection, the diagnosis is listed simply as "virus".

Soil samples for nematode assays were forwarded to the Nematode Assay Laboratory. Nematode diseases were diagnosed by extracting nematodes from soil or plant tissue. Samples must include at least 1 pint of soil for nematode assays. Nematode assays were routinely performed on samples of plant species known to be affected by nematodes, e. g. boxwood. Nematode populations in the sample were compared to damage threshold levels in making a control recommendation. Threshold levels have been developed in research trials for many, but not all, crops grown in Virginia.

The phrase "Cause of Problem Unknown" is used for specimens for which no pathogen could be isolated and for which no obvious environmental or cultural condition could be associated with the problem. Trees have more specimens in this category and in the category "Insufficient Sample" than any other type of plant. Tree problems are more difficult to diagnose in a clinic setting than problems of annual plants for several reasons. First, tree problems often develop over the course of several years and current symptoms may be related to stressful conditions that occurred in previous years. Also, it is difficult for growers to supply an appropriate plant specimen for diagnosis since the causes of many tree diseases are in the trunk or roots.

Some insect problems are also listed in this report. Insect damage is often mistaken for disease, and samples with insect damage are sometimes submitted to the Plant Disease Clinic rather than the Insect Identification Lab. We make a preliminary diagnosis of insect damage on these samples and refer them to Mr. Eric Day in the Insect Identification Lab. The final diagnosis on all samples of insect damage is performed by Mr. Day.

We occasionally receive digital images or email messages regarding plant problems. For the most part, it is difficult to diagnose diseases without a plant sample; however, diseases that cause unique symptoms can sometimes be diagnosed from an image or a description. Images are most useful when submitted in addition to a plant sample.

Reports are mailed electronically to the local Extension Office. Upon request, we will simultaneously send electronic reports to one or more individual Extension personnel. Since implementing electronic mailing, we have discontinued faxing or mailing hard copies of reports. Relevant fact sheets for some diseases are available on the Web at <http://www.ext.vt.edu/pubs/plantdiseases/>. For information on how to submit samples and complete the appropriate forms, please refer to the audiovisual training presentation on the VCE intranet.

Some Highlights from 2007

Clinic Highlights

The Clinic experienced several major changes in 2007 that have improved the range of services we are able to provide. We were allocated additional laboratory space and are now able to perform sensitive diagnostic techniques, such as enzyme-linked immunoassay (ELISA) and polymerase chain reaction (PCR), which must be performed in a clean lab environment. These procedures have allowed us to process samples for pathogens that are difficult to detect by traditional microscopy or culturing methods, such as *Xylella fastidiosa*, the causal agent of bacterial scorch. We have also purchased new equipment for conducting these procedures with grant funds from the Southern Plant Diagnostic Network. Because we were able to retain our old lab in 106 Price Hall, we are now able to separate plant material and soil from the “clean” laboratory space. This is essential for being able to perform sensitive diagnostic techniques.



Disease Highlights

Virginia experienced severe drought over much of the state during the 2007 growing season. Despite the prolonged drought, sample numbers remained comparable to 2006 (1385 samples in 2007 vs. 1355 samples in 2006). Disease highlights for various crop categories are presented below.

Field Crops

Clinic personnel participated in the statewide survey for Asian soybean rust, caused by the fungus *Phakopsora pachyrhizi*, again in 2007 by examining soybean leaves from sentinel plots for soybean rust weekly during the growing season. No rust was found on any of the samples submitted from the four sentinel plots monitored by the Plant Disease Clinic; however, in 2007 soybean rust was again found in October by Dr. Pat Phipps on samples submitted from commercial fields and sentinel plots monitored by the Tidewater Agricultural Research and Extension Center. Because of the late appearance of the disease in Virginia soybeans, no fungicide treatment was recommended.



Charcoal root rot, caused by the fungus *Macrophomina phaseolina*, was diagnosed in two soybean fields in eastern Virginia. This represented a new diagnosis for the Plant Disease Clinic as it is uncommon in Virginia soybeans. The pathogen is widely distributed in soils, but only causes problems when plants are predisposed by hot, dry weather, which was plentiful in 2007. No chemical controls are recommended for charcoal rot. In heavily infested fields or fields with a history of charcoal rot, soybeans should be rotated with less susceptible hosts, such as cereals or cotton for 1-2 years, or corn or sorghum for at least 3 years. High seeding rates should be avoided and soil moisture conservation methods should be used. Irrigation during drought can help prevent the disease.

An interesting problem called “rootless corn syndrome” occurred in at least one corn field in 2007. Corn plants had little to no root system and were lodging in the field. We ruled out insect, nematode, and herbicide damage and learned about rootless corn syndrome from agronomist, Dr. Wade Thomasen. Rootless corn syndrome is a physiological condition that is usually associated with certain weather or cultural conditions after planting. These include hot, dry surface soils, shallow planting depths, excessive rainfall, compact soils, and loose or cloddy soil conditions. Under these conditions development of the nodal root system (the second root system that develops on corn plants) is inhibited and plants do not become firmly anchored in the soil. In some cases, it is possible for affected plants to recover with adequate rainfall for promoting nodal root development; however, recovery is inhibited under dry conditions, such as those we experienced in Virginia in 2007. Cultivation to move soil around exposed roots will aid in the corn's recovery, but if plants are already lodged, this can be difficult. More information on rootless corn syndrome can be found at the following web site:

<http://www.ipm.iastate.edu/ipm/icm/2007/5-21/rootless.html>.

Herbaceous Ornamentals

Diseases common in herbaceous ornamentals included Phytophthora root rot (see woody ornamentals below) and Volutella blight, a fungal disease, in pachysandra. Volutella blight commonly causes circular leaf spots, stem lesions and an overall blighting of pachysandra plants. Fungicides can be used to control the disease, but it is also important to clean beds of leaves and other debris that can cause increased humidity, which favors fungal infections.

Trees and Woody Ornamentals

The drought predisposed oak trees to Hypoxylon canker, caused by the fungus *Hypoxylon atropunctatum*. The fungus enters branches through wounds and then grows through the sapwood, causing decay. The first outward symptoms on the tree are yellowing, wilting of leaves, and death of top branches. Later fungal growth becomes evident on the bark as the outer bark sloughs off. There are no controls for this disease except to prevent predisposing stress conditions. A large tree may die from the disease within 1-2 years, depending on the vigor of the tree; however, because the early stages of the disease may not be noticed, trees may appear to die within a period of a few weeks. In home landscapes, it is recommended that individual trees with more than 15% of the crown area affected be cut to the ground and removed or burned. Trees with less damage should be given extra care, such as watering deeply during drought, providing adequate fertilization, and preventing mechanical damage to trunks and roots.

Many cases of Botryosphaeria dieback occurred in woody plants in 2007. *Botryosphaeria* is an opportunistic pathogen that, like *Hypoxylon*, invades plants that are already predisposed by some other stress (often drought). It causes a scattered dieback of branches and a reddish brown to gray discoloration of the wood, depending on the species affected. Black, pimple-like, fungal fruiting bodies may form on affected bark. The fungus can affect a wide range of species. We diagnosed the disease in grape, dogwood, elm, oak, sweet gum, willow, cherry laurel, honeysuckle, rhododendron, and photinia.



Botryosphaeria dieback on holly



Seiridium canker on Leyland cypress

In 2007 we also saw many cases of fungal tree diseases that are common every year, including *Seiridium* canker of Leyland cypress, powdery mildew of dogwood, and *Rhizosphaera* needle blight of spruce. Leyland cypress, which has become a popular landscape tree due to its fast growth rate and aesthetically pleasing habit, frequently suffers from *Seiridium* canker in Virginia landscapes. This disease causes a gradual dieback and resinous bleeding on the bark. Trees are predisposed to the disease by drought stress; thus, we will likely continue to see more of this disease following the 2007 drought. Fungicides will not control *Seiridium* canker. Both powdery mildew and *Rhizosphaera* needle blight can be controlled with fungicides, but repeated applications are necessary and, in the case of *Rhizosphaera* needle blight, it can take several years of fungicide applications before the trees appear to have full foliage again.

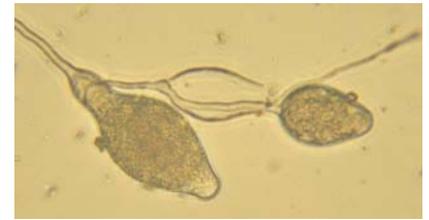
A diagnosis of beech bark disease, caused by the fungus *Nectria coccinea* var. *fagisuga* in combination with a scale insect, was a first record for this disease for the VT Plant Disease Clinic. This disease has apparently been present in certain forested areas in Virginia for several years; however, because it is not present in landscape trees at this time, we do not usually receive samples of this disease. The sample received in 2007 was from a forest tree. This disease spreads slowly but is fatal to beech trees.



Nectria fruiting bodies on beech bark

Several cases of bacterial scorch, caused by the pathogen *Xylella fastidiosa*, were also detected in 2007. *Xylella fastidiosa* is difficult to detect because it will not grow easily on common laboratory culture media. We were able to detect the pathogen in maple and oak samples by a polymerase chain reaction (PCR) assay in our new lab facility. Bacterial scorch is spread by leafhoppers, has a wide host range, and can result in ultimate death of the tree. No effective controls are known.

Despite the drought, we saw many cases of Phytophthora blight and Phytophthora root rot in 2007, as we do in most years. Phytophthora species are “water molds” that tend to infect during wet conditions. However, symptoms of diseases caused by *Phytophthora* may not show up until long after the initial infection; thus, symptoms may appear when plants are under stress during drought. Phytophthora diseases were diagnosed in many woody and herbaceous ornamentals, as well as some vegetable crops. These included: gardenia, Madagascar periwinkle (“annual vinca”), periwinkle, blueberry, bayberry, boxwood, cherry laurel, holly, andromeda, rhododendron, viburnum, pepper, and tomato.



Sporangia of Phytophthora drechsleri



Aboveground symptoms of black root rot on Japanese holly

Other diseases common in woody ornamentals in 2007 (as well as in most years) included black root rot of Japanese holly and inkberry, caused by the fungus *Thielaviopsis basicola*, various species of plant parasitic nematodes in boxwood, and rose rosette disease in rose, thought to be caused by a virus.

Tree and Small Fruit

Fire blight, caused by the bacterium *Erwinia amylovora*, was common in fruit-bearing and ornamental pears, as well as in apples and crabapples, in 2007. Although some cultivars of *Pyrus calleryana* (Bradford pear) have resistance to this disease, they are not immune and can develop symptoms in severe fire blight years.



Fire blight on Pyrus calleryana



Anthracnose crown rot on strawberry

Other diseases seen in small fruit included cane and leaf rust of blackberry and raspberry, caused by the fungus *Kuehneola uredinis*, and anthracnose crown rot of strawberry, caused by several species of the fungus *Colletotrichum*. The latter disease can result in serious losses in strawberry fields because whole plants are killed. The Clinic also received its first sample of pomegranate in 2007. Rotting of the fruit was caused by the fungus *Coniella granati*.

Vegetables

Tomato spotted wilt virus (TSWV), a disease that is transmitted by thrips, was rampant on Virginia’s Eastern Shore and in other tomato-growing areas in 2007. The outbreak may have been due to greater numbers of the western flower thrips as opposed to other species of thrips in 2007. The western flower thrips is an efficient transmitter of the virus. Thrips control with insecticides and/or reflective mulch helps reduce viral transmission, and several tomato cultivars with resistance or tolerance to the disease are now available. Fusarium basal stem rot (see 2006 annual report for description) and Septoria leaf spot were also common in tomatoes. Chemical injury due to growth regulator herbicides, such as 2,4-D, or to glyphosate was common in tomatoes and potatoes from home vegetable gardens.

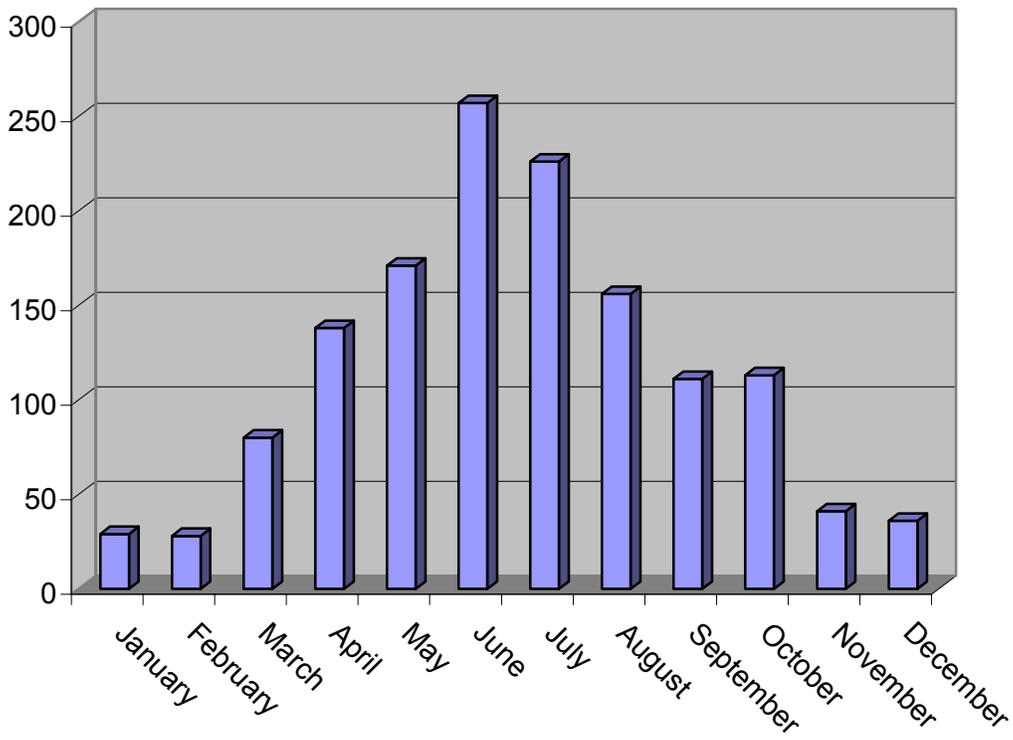


Symptoms of Tomato Spotted Wilt Virus on tomato leaves

Monthly Submission Summary 2007

Month	# Samples
January	29
February	28
March	80
April	138
May	171
June	257
July	226
August	156
September	111
October	113
November	41
December	36
Grand Total	1,386

Number of Samples by Month

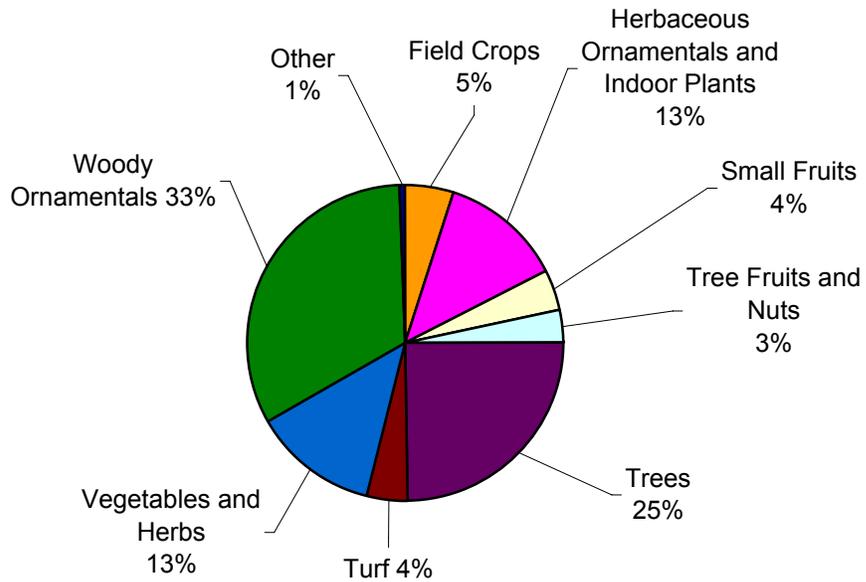


Crop Category Summary

Sample totals by major crop categories

Crop Category	# of Samples	% of Total
Field Crops	65	4.9
Herbaceous Ornamentals and Indoor Plants	167	12.6
Small Fruits	56	4.2
Tree Fruits and Nuts	44	3.3
Trees	327	24.6
Turf	59	4.4
Vegetables and Herbs	170	12.8
Woody Ornamentals	435	32.7
Other	6	0.5
Total	1,329	

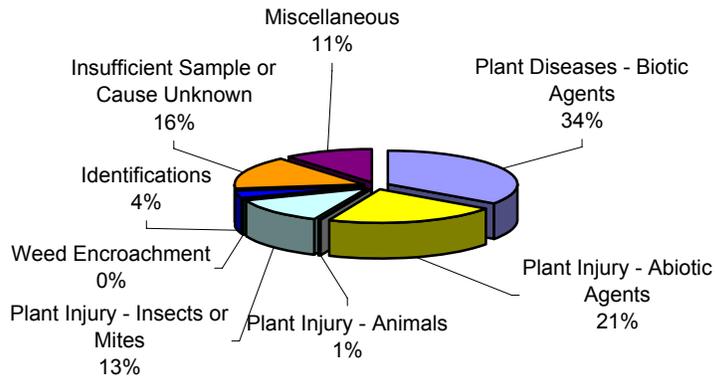
Samples By Crop Category



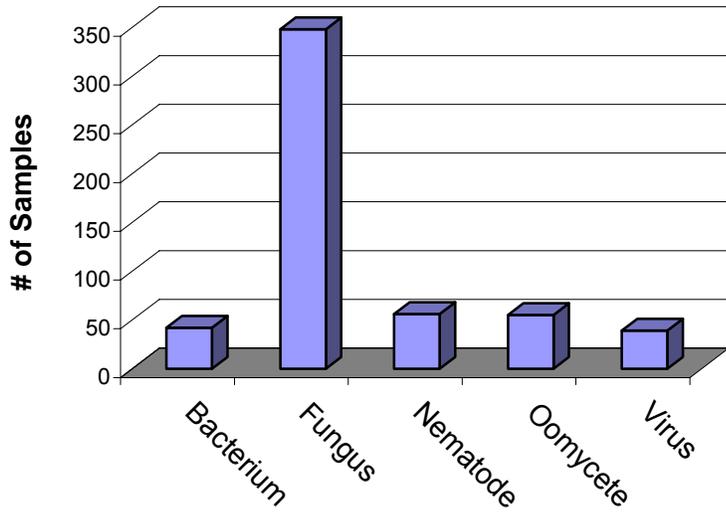
Diagnosis/Identification Category Summary

	# of Diagnoses/IDs	% of Total
Plant Diseases - Biotic Agents	540	34.7%
Bacterium (42)		
Fungus (348)		
Nematode (56)		
Oomycete (55)		
Virus (39)		
Plant Injury - Abiotic Agents	334	21.5%
Chemical (55)		
Environmental/Cultural (272)		
Mechanical (7)		
Plant Injury - Animals	7	0.5%
Birds (4)		
Mammals (3)		
Plant Injury - Insects or Mites	195	12.5%
Insects or Mites (195)		
Weed Encroachment	2	0.1%
Weed (2)		
Identifications	56	3.6%
Algae (1)		
Fungi (12)		
Other Substance (1)		
Plant (39)		
Unable to Identify (3)		
Insufficient Sample or Cause Unknown	248	15.9%
Insufficient sample or information (228)		
Unknown (20)		
Miscellaneous	173	11.1%
Lichen (5)		
Normal Condition (15)		
Other (115)		
Parasitic Plant (1)		
Physiological/Genetic (37)		
Total	1555	

2007 Samples by Diagnostic Category



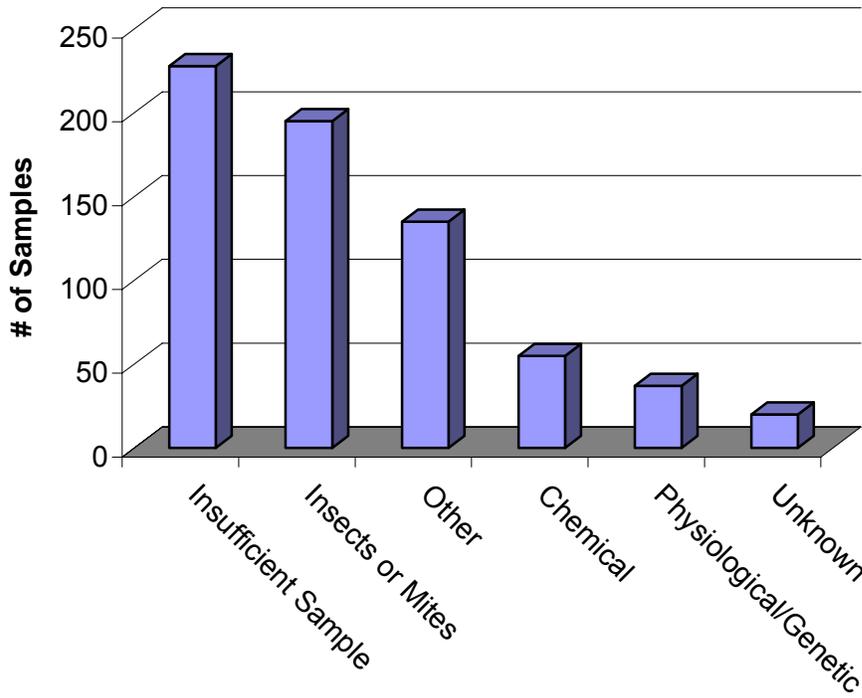
Plant Pathogens, 2007



Other Assistance, 2007

Type	# of Inquiries
Email	40
Digital Images	28
Phone Calls	108

Other Agents, 2007



Plant Disease Clinic

County	# of Samples	County	# of Samples
Accomack	5	Louisa	29
Albemarle	45	Lunenburg	8
Alleghany	1	Lynchburg City	23
Amelia	10	Madison	8
Amherst	2	Mathews	5
Appomattox	12	Mecklenberg	5
Arlington	10	Middlesex	5
Augusta	12	Montgomery	72
Bath	1	Nelson	48
Bedford	9	New Kent	4
Botetourt	11	Newport News City	6
Brunswick	9	Norfolk City	47
Buckingham	1	Northampton	6
Campbell	9	Northumberland	20
Caroline	3	Nottoway	12
Carroll	10	Orange	11
Chesapeake City	36	Page	4
Chesterfield	1	Patrick	6
Clarke	2	Petersburg City	1
Culpepper	8	Pittsylvania	29
Cumberland	4	Portsmouth City	11
Danville City	10	Powhatan	16
Dickenson	5	Prince Edward	4
Dinwiddie	3	Prince George	13
Essex	7	Prince William	8
Fairfax	61	Pulaski	12
Fauquier	12	Rappahanock	14
Floyd	8	Richmond City	5
Fluvanna	17	Richmond City	8
Franklin	18	Roanoke	46
Frederick	24	Rockbridge	7
Giles	11	Rockingham	25
Gloucester	1	Russell	6
Goochland	17	Scott	4
Grayson	2	Shenandoah	11
Greene	8	Smyth	1
Greensville	1	Southampton	5
Halifax	3	Spotsylvania	40
Hampton City	6	Stafford	21
Hanover	28	Suffolk City	4
Henrico	82	Surry	3
Henry	1	Sussex	7
Highland	4	Tazewell	3
Isle Of Wight	2	Virginia Beach	14
James City	40	Warren	11
King and Queen	2	Washington	38
King George	25	Westmoreland	27
Lancaster	3	Wise	13
Lee	8	York	29
Loudoun	21	Total	1,386

Monthly Submission Summary 2007

Month	# Samples
January	10
February	13
March	13
April	38
May	54
June	41
July	46
August	46
September	33
October	32
November	12
December	0
Total	338

Crop Category Summary 2007

Crop	# of Samples
Alfalfa	3
Aquatic	33
Blueberry	1
Broccoli	1
Corn	11
Fencerow	1
Garden	16
Hay	13
ID	4
Landscape	34
None Listed	3
Oats	1
Orchardgrass	5
Pasture	64
Roadside	1
Seeds	1
Soybeans	1
Structure	1
Trees	6
Turf	80
Utility Area	54
Wheat	3
Wildlife plot	1
Total	338

Weed Identification Lab

County	# of Samples
Albemarle	1
Alleghany	1
Appomattox	6
Augusta	7
Bath	1
Bedford	1
Bland	2
Botetourt	5
Brunswick	1
Buckingham	2
Campbell	3
Caroline	1
Carroll	1
Chesapeake	2
City of Lynchburg	27
City of Norfolk	5
City of Portsmouth	3
Clarke	5
Craig	5
Culpeper	2
Danville	6
Dickenson	6
Fauquier	4
Fincastle, VA	1
Floyd	3
Fluvanna	3
Franklin	10
Frederick	7
Giles	4
Goochland	7
Greene	1
Hanover	11
Henrico	13
Highland	2
James City County	7

County	# of Samples
Lancaster	1
Lee	2
Louisa	7
Lynchburg	4
Montgomery	12
Nelson	3
Newport News	2
Norfolk	1
Northumberland	2
Nottoway	6
Page	5
Patrick	6
Pittsylvania	17
Powhatan	5
Prince Edward	2
Prince George	2
Prince William	1
Pulaski	5
Rappahonock	11
Richmond	2
Roanoke	6
Rockingham	3
Russell	4
Shenandoah	10
Spotsylvania	12
Stafford	1
Suffolk	9
Tazewell	1
Warren	3
Washington	5
Westmoreland	1
Wise	3
York	5
Other	13
Total	338

Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops

Alfalfa

- 1 Environmental Stress
- 1 Insects
- 1 Negative for Disease

3 Total for Alfalfa

Barley

- 1 High pH
- 2 Low pH
- 2 Spot Blotch *Bipolaris sorokiniana*
- 1 Suspect Chemical Injury

6 Total for Barley

Corn

- 1 Chemical Injury
- 1 Diplodia Ear Rot *Stenocarpella maydis*
- 1 Low pH
- 1 Potassium Deficiency
- 1 Rootless Corn Syndrome

5 Total for Corn

Fescue

- 1 Excess Thatch
- 1 Fusarium Blight *Fusarium sp.*
- 2 Insufficient Sample
- 1 Normal Dormancy

5 Total for Fescue

Foxtail Millet

- 1 Gray Leaf Spot *Pyricularia grisea*

1 Total for Foxtail Millet

Oats

- 1 Barley Yellow Dwarf Virus
- 1 Sharp Eyespot *Rhizoctonia cerealis*
- 1 Suspect Chemical Injury

3 Total for Oats

Plant Disease Clinic

Orchardgrass

2 Anthracnose	<i>Colletotrichum graminicola</i>
1 Frost Injury	
1 High pH	
1 Leaf Scald	<i>Rhynchosporium orthosporum</i>
4 Leaf Streak	<i>Cercosporidium graminis</i>
1 Physiological Leaf Spot	
1 Suspect Cold Injury	
1 Suspect Environmental Stress	
12 Total for Orchardgrass	

Smooth Brome

1 Powdery Mildew	<i>Erysiphe graminis</i>
1 Total for Smooth Brome	

Sorghum

1 Zonate Leaf Spot	<i>Gloeocercospora sorghi</i>
1 Total for Sorghum	

Soybean

1 Brown Spot	<i>Septoria glycines</i>
2 Charcoal Rot	<i>Macrophomina phaseolina</i>
1 Cultural Problem	
1 Fusarium Stem Rot	<i>Fusarium oxysporum</i>
1 Mites	
2 Negative for Disease	
1 Powdery Mildew	<i>Microsphaera diffusa</i>
1 Suspect Chemical Injury	
1 Thrips	
11 Total for Soybean	

Switchgrass

1 Rust	<i>Puccinia emaculata</i>
1 Total for Switchgrass	

Timothy

1 Physiological Leaf Spot	
1 Total for Timothy	

Tobacco

1 Weather Fleck	
1 Total for Tobacco	

Wheat

3 Barley Yellow Dwarf Virus	
2 Chemical Injury	
5 Cold Injury	
2 Environmental Stress	
1 Frost Injury	
1 Healthy	
3 Low pH	
1 Manganese Deficiency	
1 Soilborne Wheat Mosaic Virus	
1 Suspect Barley Yellow Dwarf Virus	
1 Suspect Chemical Injury	
2 Take-all	<i>Gaeumannomyces graminis</i>
23 Total for Wheat	

Herbaceous Ornamentals and Indoor Plants

African Violet

- 1 Abiotic Problem
- 1 Cultural Problem
- 1 Insects
- 1 Insufficient Sample
- 4 Total for African Violet**

Ajuga

- 2 Southern Blight *Sclerotium rolfsii*
- 2 Total for Ajuga**

Amaranth

- 1 Cultural Problem
- 1 Total for Amaranth**

Arabidopsis

- 1 Pythium Root Rot *Pythium sp.*
- 1 Thrips
- 2 Total for Arabidopsis**

Balloon Flower

- 1 Insufficient Sample
- 1 Total for Balloon Flower**

Begonia

- 1 Insufficient Sample
- 1 Negative for Disease
- 1 Negative for Root Disease
- 1 Scorch
- 4 Total for Begonia**

Cactus

- 1 Oedema
- 1 Physiological Problem
- 2 Total for Cactus**

Calamondin Orange

- 1 Suspect Cultural Problem
- 1 Total for Calamondin Orange**

Canna Lily

- 1 Cultural Problem
- 1 Fusarium Rhizome Rot *Fusarium sp.*
- 1 Insects
- 3 Total for Canna Lily**

Cattail

- 1 Pythium Root Rot *Pythium sp.*
- 1 Total for Cattail**

Chinese Fringe Flower

- 1 Cold Injury
- 1 Total for Chinese Fringe Flower**

Chrysanthemum

- 1 Cultural Problem
- 1 Fusarium Stem Rot *Fusarium oxysporum*
- 1 Negative for Disease
- 1 Negative for Root Disease
- 1 Pythium Root Rot *Pythium sp.*
- 3 Pythium Stem and Root Rot *Pythium sp.*
- 1 Suspect Mechanical Injury
- 9 Total for Chrysanthemum**

Clematis

- 1 Insects
- 2 Insufficient Sample
- 3 Total for Clematis**

Columbine

- 1 Leafminers
- 1 Total for Columbine**

Coneflower

- 1 Insufficient Sample
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*
- 1 Suspect Nutrient Deficiency
- 3 Total for Coneflower**

Coral Bells

- 1 Foliar Nematodes *Aphelenchoides sp.*
- 1 Total for Coral Bells**

Cordgrass

- 1 Cultural Problem
- 1 Total for Cordgrass**

Coreopsis

- 1 Physiological Problem
- 1 Total for Coreopsis**

Cup Plant

- 1 Rust *Puccinia silphii*
- 1 Total for Cup Plant**

Dahlia

- 1 Chemical Injury
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*
- 2 Total for Dahlia**

Daisy

- 1 Insufficient Sample
- 1 Total for Daisy**

Daylily

- 2 Leaf Streak *Aureobasidium microstictum*
- 1 Suspect Chemical Injury
- 1 Thrips
- 4 Total for Daylily**

Dianthus

- 1 Fusarium Stem Rot *Fusarium sp.*
- 1 Insufficient Sample
- 2 Total for Dianthus**

Epimedium

- 1 Environmental Stress
- 1 Total for Epimedium**

Eupatorium

- 1 Environmental Stress
- 1 Total for Eupatorium**

Foxglove

- 1 Insufficient Sample
- 1 Thrips
- 2 Total for Foxglove**

Gardenia

- 2 Insufficient Sample
- 1 Phytophthora Root and Stem Rot *Phytophthora nicotianae*
- 1 Scales
- 1 Sooty Mold
- 5 Total for Gardenia**

Geranium

- 1 Bacterial Blight *Xanthomonas campestris pv. pelargonii*
- 1 Ethylene Injury
- 1 High pH
- 1 Low pH
- 1 Oedema
- 1 Pythium Root Rot *Pythium sp.*
- 1 Rust *Puccinia pelargonii-zonalis*
- 7 Total for Geranium**

Gerbera Daisy

- 1 Rhizoctonia Stem Rot *Rhizoctonia sp.*
- 1 Total for Gerbera Daisy**

Golden Toadlily

- 1 Environmental Stress
- 1 Total for Golden Toadlily**

Hellebore

- 1 Fusarium Crown Rot *Fusarium sp.*
- 1 Suspect Environmental Stress
- 2 Total for Hellebore**

Hosta

- 2 Scorch
- 1 Soft Rot *Erwinia carotovora*
- 1 Southern Blight *Sclerotium rolfsii*
- 4 Total for Hosta**

Impatiens

- 1 Air Pollution
- 1 Negative for Cucumber Mosaic Virus
- 1 Negative for Disease
- 6 Negative for Impatiens Necrotic Spot Virus
- 1 Negative for Tobacco Mosaic Virus
- 6 Negative for Tomato Spotted Wilt Virus
- 1 Negative for Virus
- 1 Suspect Chemical Injury
- 1 Thrips
- 19 Total for Impatiens**

Iris

- 3 Heterosporium Leaf Spot *Heterosporium iridis*
- 1 Negative for Disease
- 4 Total for Iris**

Lavender

- 1 Cultural Problem
- 1 Total for Lavender**

Lemon

- 1 Mites
- 1 Total for Lemon**

Lily

- 1 Poor Drainage
- 1 Total for Lily**

Liriope

- 2 Fusarium Crown and Leaf Rot *Fusarium sp.*
- 2 Total for Liriope**

Lobelia

- 1 Low pH
- 1 Thrips
- 2 Total for Lobelia**

Madagascar Periwinkle

- 1 Negative for Disease
- 2 Phytophthora Blight *Phytophthora nicotianae*
- 3 Total for Madagascar Periwinkle**

Marigold

- 1 Environmental Stress
- 1 Thrips
- 2 Total for Marigold**

Miscanthus

- 1 Low pH
- 1 Total for Miscanthus**

Mondograss

- 1 Anthracnose *Colletotrichum sp.*
- 1 Insufficient Sample
- 2 Total for Mondograss**

Norfolk Island Pine

- 1 Negative for Disease
- 1 Total for Norfolk Island Pine**

Olive

- 1 Rootbound
- 1 Total for Olive**

Orange

- 1 Scales
- 1 Total for Orange**

Orchid

- 1 Negative for Disease
- 1 Total for Orchid**

Orchid Cactus

- 1 Oedema
- 1 Total for Orchid Cactus**

Pachysandra

- 1 Physiological Problem
- 6 Volutella Blight *Volutella pachysandrae*
- 7 Total for Pachysandra**

Plant Disease Clinic

Pansy

1 Black Root Rot	<i>Thielaviopsis basicola</i>
1 Chemical Injury	
1 Cold Injury	
1 Environmental Stress	
1 Mites	
1 Negative for Disease	
1 Pythium Root Rot	<i>Pythium sp.</i>
1 Rhizoctonia Stem Rot	<i>Rhizoctonia sp.</i>
3 Suspect Nutrient Deficiency	
11 Total for Pansy	

Peony

1 Borers	
1 Cold Injury	
1 Insufficient Sample	
1 Negative for Disease	
1 Physiological Problem	
1 Powdery Mildew	<i>Erysiphe polygoni</i>
1 Tobacco Rattle Virus	
7 Total for Peony	

Periwinkle

1 Insufficient Sample	
3 Phoma Dieback	<i>Phoma sp.</i>
1 Phomopsis Dieback	<i>Phomopsis lirella</i>
1 Phyllosticta Stem Rot and Leaf Spot	<i>Phyllosticta sp.</i>
2 Phytophthora Root Rot	<i>Phytophthora nicotianae</i>
8 Total for Periwinkle	

Petunia

1 High pH	
4 Phytophthora Root Rot	<i>Phytophthora nicotianae</i>
1 Suspect Cultural Problem	
6 Total for Petunia	

Phlox

1 Anthracnose	<i>Colletotrichum sp.</i>
1 Low pH	
2 Total for Phlox	

Plants, Miscellaneous

1 Suspect Chemical Injury	
1 Total for Plants, Miscellaneous	

Poinsettia

1 Suspect Cultural Problem	
1 Total for Poinsettia	

Rubber Plant

- 1 Cultural Problem
- 1 Total for Rubber Plant**

Rudbeckia

- 3 Insufficient Sample
- 1 Negative for Disease
- 1 Psyllids
- 5 Total for Rudbeckia**

Russian Sage

- 1 Negative for Disease
- 1 Total for Russian Sage**

Salvia

- 1 Insects
- 1 Negative for Disease
- 1 Rhizoctonia Stem Rot *Rhizoctonia sp.*
- 3 Total for Salvia**

Schefflera

- 1 Insects
- 1 Total for Schefflera**

Sedum

- 1 Fusarium Stem Rot *Fusarium sp.*
- 1 Insufficient Sample
- 2 Total for Sedum**

Shield Fern

- 1 Physiological Problem
- 1 Total for Shield Fern**

Snapdragon

- 1 Ethylene Injury
- 1 Thrips
- 2 Total for Snapdragon**

Spathiphyllum

- 1 Cultural Problem
- 1 Total for Spathiphyllum**

Sunflower

- 1 Insufficient Sample
- 1 Total for Sunflower**

Veronica

- 1 Insufficient Sample
- 1 Negative for Disease
- 2 Total for Veronica**

Plant Disease Clinic

Water Violet

1 Negative for Disease
1 Total for Water Violet

Zinnia

1 Bacterial Leaf Spot *Xanthomonas campestris* pv. *zinneae*
1 Total for Zinnia

Unknown Indoor Plant

1 Insufficient Sample
1 Total for Unknown Indoor Plant

Small Fruits

Blackberry

1 Anthracnose	<i>Elsinoe veneta</i>
2 Cane and Leaf Rust	<i>Kuehneola uredinis</i>
2 Cane Blight	<i>Coniothyrium fuckellii</i>
2 Crown Borers	
1 Cucumber Mosaic Virus	
1 Dagger Nematode	<i>Xiphinema sp.</i>
2 Insufficient Sample	
1 Negative for Disease	
1 Normal Condition	
1 Orange Rust	<i>Gymnoconia peckiana</i>
1 Virus	
15 Total for Blackberry	

Blueberry

1 Cold Injury	
1 Insects	
2 Insufficient Sample	
1 Low pH	
1 Mites	
1 Physiological Leaf Spot	
1 Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
1 Rootbound	
1 Suspect Cold Injury	
10 Total for Blueberry	

Fig

1 Insects
1 Total for Fig

Grape

5 Black Rot	<i>Guignardia bidwellii</i>
2 Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
2 Chemical Injury	
1 Crown Gall	<i>Agrobacterium vitis</i>
1 Cultural Problem	
1 Girdling Roots	
1 Insects	
3 Insufficient Sample	
1 Phylloxera Galls	
2 Suspect Nutrient Deficiency	
1 Wood Decay	
20 Total for Grape	

Plant Disease Clinic

Raspberry

2 Anthracnose	<i>Elsinoe veneta</i>
1 Cane and Leaf Rust	<i>Kuehneola uredinis</i>
2 Cane Blight	<i>Coniothyrium fuckellii</i>
1 Insects	
1 Suspect Environmental Stress	
7 Total for Raspberry	

Strawberry

2 Anthracnose Crown Rot	<i>Colletotrichum gloeosporioides</i>
1 Insufficient Information	
1 Powdery Mildew	<i>Sphaerotheca macularis</i>
2 Pythium Root Rot	<i>Pythium sp.</i>
1 Thrips	
7 Total for Strawberry	

Tree Fruits and Nuts

Apple

1 Bitter Rot	<i>Glomerella cingulata</i>
4 Cedar-Apple Rust	<i>Gymnosporangium juniperi-virginianae</i>
2 Fire Blight	<i>Erwinia amylovora</i>
3 Insects	
2 Southern Blight	<i>Sclerotium rolfsii</i>
2 Suspect Black Rot	<i>Physalospora obtusa</i>
1 Suspect Environmental Stress	
1 Suspect Nutrient Deficiency	
16 Total for Apple	

Asian Pear

1 Insufficient Sample
1 Pear Leaf Blister Mites
2 Total for Asian Pear

Cherry

2 Insufficient Sample
2 Total for Cherry

Chestnut

2 Insufficient Sample
2 Total for Chestnut

Crabapple

6 Fire Blight	<i>Erwinia amylovora</i>
1 Frogeye Leaf Spot	<i>Physalospora obtusa</i>
1 Tent Caterpillars	
8 Total for Crabapple	

Fruit Trees, Misc.

1 Cultural Problem
1 Total for Fruit Trees, Misc.

Guava

1 Chemical Injury
1 Total for Guava

Nectarine

1 Suspect Mechanical Injury
1 Total for Nectarine

Plant Disease Clinic

Peach

- 1 Environmental Stress
 - 2 Insects
 - 1 Normal Condition
 - 1 Scab *Cladosporium carpophilum*
- 5 Total for Peach**

Pear

- 4 Fire Blight *Erwinia amylovora*
 - 1 Insufficient Sample
 - 1 Mites
 - 1 Negative for Fire Blight
 - 1 Negative for Sour Mulch
 - 1 Suspect Chemical Injury
- 9 Total for Pear**

Pomegranate

- 1 Coniella Fruit Rot *Coniella granati*
- 1 Total for Pomegranate**

Walnut

- 1 Cylindrosporium Leaf Spot *Cylindrosporium juglandis*
 - 1 Eriophyid Mites
 - 1 Mites
- 3 Total for Walnut**

Trees

Arborvitae

- 2 Bagworms
 - 1 Crystalline Residue
 - 1 Cultural Problem
 - 1 Environmental Stress
 - 2 Mites
 - 3 Negative for Disease
 - 1 Normal Condition
 - 2 Pestalotiopsis Twig Blight *Pestalotiopsis funerea*
 - 1 Physiological Problem
 - 2 Winter Injury
- 16 Total for Arborvitae**

Ash

- 1 Bark Beetles
 - 1 Insufficient Sample
 - 1 Negative for Disease
- 3 Total for Ash**

Baldcypress

- 1 Cultural Problem
- 1 Total for Baldcypress**

Beech

- 1 Anthracnose *Discula umbrinella*
 - 1 Beech Bark Disease *Nectria coccinea var. fagisuga*
- 2 Total for Beech**

Birch

- 1 Cultural Problem
 - 1 Insufficient Sample
- 2 Total for Birch**

Black Gum

- 1 Environmental Stress
- 1 Total for Black Gum**

Cedar

- 1 Cedar-Quince Rust *Gymnosporangium clavipes*
 - 1 Mites
 - 1 Pestalotiopsis Needle Blight *Pestalotiopsis sp.*
 - 1 Winter Injury
- 4 Total for Cedar**

Cherry

- 1 Cercospora Leaf Spot *Cercospora circumscissa*
 - 1 Wood Decay
- 2 Total for Cherry**

Cryptomeria

- 2 Cultural Problem
- 2 Insufficient Sample
- 1 Negative for Root Disease
- 3 Pestalotiopsis Tip Blight *Pestalotiopsis sp.*
- 3 Scales
- 2 Winter Injury
- 13 Total for Cryptomeria**

Cypress

- 3 Environmental Stress
- 10 Insufficient Sample
- 2 Negative for Root Disease
- 1 Rodent Injury
- 7 Seiridium Canker *Seiridium unicorne*
- 1 Suspect Cultural Problem
- 7 Suspect Seiridium Canker *Seiridium sp.*
- 31 Total for Cypress**

Dawn Redwood

- 1 Pestalotiopsis Needle Blight *Pestalotiopsis sp.*
- 1 Seasonal Needle Drop
- 2 Total for Dawn Redwood**

Dogwood

- 1 Botryosphaeria Canker *Botryosphaeria dothidea*
- 1 Cicadas
- 2 Cold Injury
- 1 Cultural Problem
- 1 Genetic Abnormality
- 3 Insufficient Sample
- 1 Negative for Disease
- 1 Negative for Root Disease
- 1 Phyllosticta Leaf Spot *Phyllosticta sp.*
- 1 Physiological Leaf Spot
- 4 Powdery Mildew *Oidium sp.*
- 1 Scorch
- 2 Septoria Leaf Spot *Septoria cornicola*
- 1 Spot Anthracnose *Elsinoe corni*
- 21 Total for Dogwood**

Douglasfir

- 1 Mechanical Injury
- 1 Total for Douglasfir**

Elm

- 2 Botryosphaeria Dieback *Botryosphaeria sp.*
- 2 Insufficient Sample
- 2 Negative for Dutch Elm Disease
- 1 Wood Decay
- 7 Total for Elm**

Falsecypress

- 1 Cause of Problem Unknown
- 1 Mites
- 1 Pestalotiopsis Twig Blight *Pestalotiopsis sp.*
- 4 Seasonal Needle Drop
- 1 Suspect Environmental Stress
- 8 Total for Falsecypress**

Fir

- 2 Insects
- 2 Insufficient Sample
- 3 Mites
- 2 Negative for Disease
- 1 Negative for Foliar Pathogens
- 1 Rhizosphaera pini *Rhizosphaera pini*
- 1 Scales
- 1 Sooty Mold
- 1 Winter Injury
- 14 Total for Fir**

Giant Sequoia

- 1 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Insufficient Sample
- 2 Total for Giant Sequoia**

Goldenchain Tree

- 1 Fusarium Canker *Fusarium lateritium*
- 1 Total for Goldenchain Tree**

Hackberry

- 1 Insects
- 1 Total for Hackberry**

Hemlock

- 1 Insects
- 4 Insufficient Sample
- 2 Woolly Adelgids
- 1 Adequate, Sample and Information
- 8 Total for Hemlock**

Hickory

2 Insect Galls
2 Total for Hickory

Hornbeam

1 Negative for Disease
1 Total for Hornbeam

Juniper

1 Kabatina Tip Blight *Kabatina juniperi*
1 Total for Juniper

Larch

1 Weevils
1 Total for Larch

Linden

1 Deep Planting
1 Insects
1 Scorch
3 Total for Linden

Magnolia

5 Environmental Stress
1 Eriophyid Mites
1 Insects
2 Insufficient Sample
1 Negative for Ramorum Blight
2 Scorch
1 Wood Decay
13 Total for Magnolia

Malabar Chestnut

1 Insufficient Sample
1 Total for Malabar Chestnut

Plant Disease Clinic

Maple

2 Anthracnose	<i>Kabatella sp.</i>
1 Bacterial Scorch	<i>Xylella fastidiosa</i>
1 Cause of Problem Unknown	
1 Cicada Injury	
2 Cold Injury	
1 Corky Bark Formation	
3 Environmental Stress	
3 Insects	
8 Insufficient Sample	
2 Japanese Beetles	
1 Leaf Spot--Unknown Fungus	
1 Leafhoppers	
2 Negative for Disease	
1 Negative for Root Disease	
1 Negative for Verticillium Wilt	
1 Oak Mistletoe	<i>Phoradendron leucarpum</i>
1 Phomopsis Dieback	<i>Phomopsis sp.</i>
1 Purple-eye Leaf Spot	<i>Phyllosticta minima</i>
1 Scales	
3 Scorch	
1 Steganosporium	<i>Steganosporium sp.</i>
1 Verticillium Wilt	<i>Verticillium dahliae</i>
1 Winter Injury	
40 Total for Maple	

Mimosa

1 Suspect Mimosa Wilt	<i>Fusarium oxysporum f. sp. perniciosum</i>
1 Total for Mimosa	

Plant Disease Clinic

Oak

2 Bacterial Scorch	<i>Xylella fastidiosa</i>
2 Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
3 Chemical Injury	
1 Cold Injury	
2 Gall Insects	
1 Heart Rot	
1 Hypoxylon Canker	<i>Hypoxylon atropunctatum</i>
1 Insect Galls	
1 Insects	
8 Insufficient Sample	
1 Mites	
1 Negative for Bacterial Scorch	
2 Oak Leaf Blister	<i>Taphrina caerulescens</i>
1 Oak Leaf Button Galls	
1 Scorch	
1 Squirrel Twig Pruning	
1 Suspect Bacterial Wetwood	
2 Suspect Chemical Injury	
1 Tubakia Leaf Spot	<i>Tubakia dryina</i>
1 Wood Decay	
34 Total for Oak	

Ornamental Cherry

1 Black Knot	<i>Dibotryon morbosum</i>
1 Cold Injury	
1 Gummosis	<i>Botryosphaeria sp.</i>
2 Insects	
3 Insufficient Sample	
1 Negative for Disease	
1 Physiological Leaf Spot	
10 Total for Ornamental Cherry	

Ornamental Peach

1 Insects
1 Total for Ornamental Peach

Ornamental Pear

2 Cultural Problem	
8 Fire Blight	<i>Erwinia amylovora</i>
1 Insufficient Sample	
1 Negative for Fire Blight	
1 Suspect Fire Blight	<i>Erwinia amylovora</i>
13 Total for Ornamental Pear	

Paulownia

1 Insects
1 Total for Paulownia

Plant Disease Clinic

Pine

1 Bark Beetles	
5 Cold Injury	
1 Cultural Problem	
1 Diplodia Tip Blight	<i>Diplodia pinea</i>
1 Eastern Gall Rust	<i>Cronartium quercuum</i>
1 Environmental Stress	
3 Insects	
8 Insufficient Sample	
1 Mechanical Injury	
2 Negative for Disease	
1 Ozone Injury	
2 Pine Bark Adelgids	
1 Pine Tip Moths	
1 Pinewood Nematodes	<i>Bursaphelenchus xylophilus</i>
1 Ploioderma Needle Cast	<i>Ploioderma lethale</i>
1 Sapsucker Injury	
1 Sawflies	
1 Suspect Procerum Root Disease	<i>Leptographium procerum</i>
33 Total for Pine	

Prunus

1 Negative for Root Disease
1 Total for Prunus

Redbud

1 Environmental Stress
1 Eriophyid Mites
1 Insufficient Sample
1 Mites
4 Total for Redbud

Smoke Tree

1 Negative for Disease
1 Total for Smoke Tree

Spruce

2 Bagworms	
3 Chemical Injury	
1 Cytospora Canker	<i>Cytospora sp.</i>
2 Dothistroma Needle Blight	<i>Dothistroma sp.</i>
3 Environmental Stress	
2 Insects	
6 Insufficient Sample	
5 Mites	
4 Negative for Disease	
2 Negative for Root Disease	
10 Rhizosphaera Needle Blight	<i>Rhizosphaera kalkhoffii</i>
1 Sapsucker Injury	

Plant Disease Clinic

3 Scales
3 Stigmata Needle Cast *Stigmata lautii*
2 Suspect Cytospora Canker *Cytospora sp.*
49 Total for Spruce

Sweet Gum

1 Botryosphaeria Canker *Botryosphaeria dothidea*
1 Total for Sweet Gum

Trees, Miscellaneous

1 Insects
1 Lichens
1 Powdery Mildew *Oidium sp*
3 Total for Trees, Miscellaneous

Tulip Tree

1 Drought
1 Suspect Chemical Injury
2 Total for Tulip Tree

Willow

1 Botryosphaeria Canker *Botryosphaeria dothidea*
1 Cytospora Canker *Cytospora sp.*
1 Suspect Environmental Stress
3 Total for Willow

Zelkova

1 Deep Planting
1 Insects
1 Mechanical Injury
1 Rootbound
1 Sapwood Rot *Schizophyllum commune*
5 Total for Zelkova

Turf

Bentgrass

- 1 Cause of Problem Unknown
- 1 Suspect Pythium Root Dysfunction *Pythium sp.*
- 2 Total for Bentgrass**

Bermudagrass

- 1 Brown Patch *Rhizoctonia solani*
- 1 Total for Bermudagrass**

Bluegrass

- 3 Environmental Stress
- 1 Leaf Rust *Puccinia graminis*
- 4 Total for Bluegrass**

Fescue

- 7 Brown Patch *Rhizoctonia solani*
- 3 Environmental Stress
- 1 Excess Thatch
- 1 Helminthosporium Blight *Drechslera dictyoides*
- 2 Insufficient Sample
- 3 Low pH
- 3 Negative for Disease
- 1 Slime Mold *Physarum sp.*
- 21 Total for Fescue**

St. Augustinegrass

- 1 Environmental Stress
- 2 Take-All *Gaeumannomyces graminis var. graminis*
- 3 Total for St. Augustinegrass**

Turfgrass

- 1 Annual Ryegrass Senescence *Lolium multiflorum*
- 1 Bermudagrass Encroachment *Cynodon dactylon*
- 9 Brown Patch *Rhizoctonia solani*
- 1 Cause of Problem Unknown
- 1 Cultural Problem
- 2 Environmental Stress
- 1 Excess Thatch
- 5 Insufficient Sample
- 2 Leaf Rust *Puccinia graminis*
- 1 Negative for Disease
- 1 Slime Mold
- 1 Weed Encroachment
- 26 Total for Turfgrass**

Zoysia

1 Cause of Problem Unknown	
1 Rust	<i>Puccinia zoysiae</i>
1 Suspect Zoysia Patch	<i>Rhizoctonia solani</i>
1 Zoysia Patch	<i>Rhizoctonia solani</i>
4 Total for Zoysia	

Vegetables and Herbs

Basil

- 1 Fusarium Wilt *Fusarium oxysporum*
- 1 Insects
- 2 Total for Basil**

Bean

- 1 Anthracnose *Colletotrichum lindemuthianum*
- 1 Aschochyta Leaf Spot *Phoma exigua var. exigua*
- 1 Cercospora Leaf Spot and Blotch *Cercospora sp.*
- 1 Environmental Stress
- 1 Fusarium Damping-off *Fusarium oxysporum*
- 2 Fusarium Root Rot *Fusarium solani*
- 2 Insects
- 1 Mites
- 1 Physiological Problem
- 1 Pythium Root Rot *Pythium sp.*
- 3 Rhizoctonia Root Rot *Rhizoctonia solani*
- 15 Total for Bean**

Broccoli

- 2 Cold Injury
- 2 Total for Broccoli**

Cabbage

- 1 Insects
- 1 Total for Cabbage**

Cantaloupe

- 1 Bacterial Wilt *Erwinia tracheiphila*
- 1 Environmental Stress
- 1 Insufficient Sample
- 1 Low Soluble Salts
- 4 Total for Cantaloupe**

Cole Crops

- 1 Environmental Stress
- 1 Total for Cole Crops**

Cucumber

- 2 Anthracnose *Colletotrichum lagenarium*
- 1 Aphids
- 2 Cucumber Beetles
- 1 Downy Mildew *Pseudoperonospora cubensis*
- 1 Environmental Stress
- 1 Insufficient Sample
- 2 Negative for Disease
- 1 Suspect Phytophthora Root Rot *Phytophthora sp.*
- 11 Total for Cucumber**

Herbs, Miscellaneous

- 2 Four-lined Plant Bugs
- 2 Total for Herbs, Miscellaneous**

Jerusalem-artichoke

- 1 Storage Rot *Penicillium sp.*
- 1 Whiteflies
- 2 Total for Jerusalem-artichoke**

Lettuce

- 1 Rhizoctonia Stem Rot *Rhizoctonia sp.*
- 1 Thrips
- 2 Total for Lettuce**

Okra

- 1 Cold Injury
- 1 Suspect Verticillium Wilt *Verticillium sp.*
- 2 Total for Okra**

Onion

- 1 Cold Injury
- 1 Total for Onion**

Pepper

- 3 Bacterial Spot *Xanthomonas vesicatoria*
- 1 Blossom End Rot
- 1 Environmental Stress
- 1 Fusarium Stem Rot *Fusarium solani*
- 1 Phytophthora Blight *Phytophthora capsici*
- 1 Phytophthora Root and Stem Rot *Phytophthora capsici*
- 8 Total for Pepper**

Plants, Miscellaneous

- 1 Environmental Stress
- 1 Mites
- 1 Negative for Disease
- 3 Total for Plants, Miscellaneous**

Plant Disease Clinic

Potato

1 Blackheart	
4 Chemical Injury	
1 Common Scab	<i>Streptomyces scabies</i>
1 Cultural Problem	
1 Environmental Stress	
1 Flea Beetles	
2 Fusarium Dry Rot	<i>Fusarium solani</i>
1 Hollow Heart	
1 Insects	
1 Rhizoctonia Root Canker	<i>Rhizoctonia solani</i>
1 Root Knot Nematode	<i>Meloidogyne sp.</i>
1 Wireworms	
16 Total for Potato	

Pumpkin

1 Alternaria Fruit Rot	<i>Alternaria alternata</i>
1 Borers	
1 Downy Mildew	<i>Pseudoperonospora cubensis</i>
3 Fusarium Foot Rot	<i>Fusarium solani</i>
1 Suspect Chemical Injury	
2 Suspect Cultural Problem	
1 Suspect Environmental Stress	
10 Total for Pumpkin	

Rhubarb

1 Bacterial Crown and Stem Rot	<i>Erwinia rhapontici</i>
1 Total for Rhubarb	

Rosemary

1 Environmental Stress	
2 Insufficient Sample	
3 Total for Rosemary	

Squash

1 Borers	
1 Chemical Injury	
1 Cold Injury	
1 Fusarium Foot Rot	<i>Fusarium solani</i>
1 Fusarium Fruit Rot	<i>Fusarium sp.</i>
1 Low pH	
6 Total for Squash	

Sweet Corn

1 Bacterial Top Rot	<i>Erwinia chrysanthemi</i>
1 Total for Sweet Corn	

Plant Disease Clinic

Tomato

1 Adventitious Roots	
2 Air Pollution	
1 Bacterial Wilt	<i>Ralstonia solanacearum</i>
1 Blossom End Rot	
1 Blotchy Ripening	
2 Buckeye Rot	<i>Phytophthora parasitica</i>
1 Catfacing	
1 Cause of Problem Unknown	
9 Chemical Injury	
1 Cucumber Mosaic Virus	
3 Cultural Problem	
4 Environmental Stress	
1 Excess Soluble Salts	
4 Fusarium Basal Stem Rot	<i>Fusarium oxysporum</i>
1 Fusarium Root Rot	<i>Fusarium oxysporum</i>
1 Fusarium Wilt	<i>Fusarium oxysporum</i>
1 Ghost Spot	<i>Botrytis cinerea</i>
1 High pH	
1 High Soluble Salts	
1 Insufficient Information	
12 Insufficient Sample	
1 Low pH	
1 Low Soluble Salts	
5 Mites	
3 Negative for Disease	
1 Negative for Tomato Spotted Wilt	
1 Negative for Virus	
1 Normal Condition	
2 Nutrient Deficiency	
1 Physiological Leaf Roll	
1 Phytophthora Blight	<i>Phytophthora capsici</i>
3 Pith Necrosis	<i>Pseudomonas corrugata</i>
3 Pythium Root Rot	<i>Pythium sp.</i>
8 Septoria Leaf Spot	<i>Septoria lycopersici</i>
1 Stinkbugs	
1 Suspect Chemical Injury	
1 Suspect Environmental Stress	
1 Suspect Insects	
3 Thrips	
1 Tobacco Mosaic Virus	
8 Tomato Spotted Wilt Virus	
1 Walnut Wilt	
1 Water Wilt	
99 Total for Tomato	

Turnip

1 Boron Deficiency
1 Total for Turnip

Watermelon

1 Blossom End Rot
1 Total for Watermelon

Zucchini

1 Powdery Mildew *Sphaerotheca fuliginea*
1 Total for Zucchini

Woody Ornamentals

Abelia

1 Negative for Root Disease

1 Total for Abelia

Aucuba

1 Chemical Injury

1 Cold Injury

1 Insufficient Sample

1 Negative for Disease

1 Suspect Cold Injury

5 Total for Aucuba

Azalea

1 Artillery Fungus

Sphaerobolus stellatus

1 Beetles

1 Chemical Injury

1 Cultural Problem

1 Environmental Stress

2 High pH

1 Insects

8 Insufficient Sample

3 Lacebugs

4 Lichens

1 Low pH

4 Negative for Disease

1 Pestalotiopsis Leaf Spot

Pestalotiopsis sp.

1 Phomopsis Dieback

Phomopsis sp.

2 Scales

1 Sooty Mold

1 Suspect Cold Injury

34 Total for Azalea

Barberry

1 Environmental Stress

2 Negative for Disease

1 Negative for Root Disease

4 Total for Barberry

Bayberry

1 Phytophthora Root Rot

Phytophthora cinnamomi

1 Total for Bayberry

Bluebeard

1 Rhizoctonia Root Rot

Rhizoctonia solani

1 Total for Bluebeard

Boston Ivy

1 Phyllosticta Leaf Spot

Phyllosticta ampelicida

1 Total for Boston Ivy

Bougainvillea

- 1 Negative for Disease
- 1 Total for Bougainvillea**

Boxwood

- 1 Adventitious Roots
- 2 Deep Planting
- 8 English Boxwood Decline *Paecilomyces buxi*
- 2 Environmental Stress
- 1 Frost Injury
- 1 Insufficient Information
- 16 Insufficient Sample
- 3 Lance Nematodes *Hoplolaimus sp.*
- 4 Leafminers
- 14 Lesion Nematodes *Pratylenchus sp.*
- 4 Low pH
- 6 Mites
- 1 Negative for Disease
- 1 Negative for Nematodes
- 9 Negative for Root Disease
- 12 Negative for Root Rot Fungi
- 1 Nematodes
- 1 Phytophthora Root Rot *Phytophthora cinnamomi*
- 11 Phytophthora Root Rot *Phytophthora nicotianae*
- 1 Pin Nematodes *Paratylenchus sp.*
- 12 Ring Nematodes *Mesocriconema sp.*
- 1 Rootbound
- 1 Scales
- 1 Sheath Nematodes *Hemicycliophora sp.*
- 4 Spiral Nematodes *Helicotylenchus sp.*
- 10 Spiral Nematodes *Rotylenchus buxophilus*
- 2 Stubby Root Nematodes *Trichodorus sp.*
- 4 Stunt Nematodes *Tylenchorhynchus sp.*
- 1 Suspect Chemical Injury
- 1 Suspect Dog Damage
- 1 Volutella Blight *Volutella buxi*
- 1 Wood Decay
- 138 Total for Boxwood**

Burning Bush

- 1 Mites
- 1 Total for Burning Bush**

Butterfly Bush

- 1 Four-lined plant bugs
- 3 Mites
- 4 Total for Butterfly Bush**

Buttonbush

- 1 Insufficient Sample
- 1 Total for Buttonbush**

Camellia

- 1 Suspect Camellia Yellow Mottle Leaf Virus
- 1 Cold Injury
- 1 Cultural Problem
- 1 Environmental Stress
- 1 Insufficient Sample
- 1 Mechanical Injury
- 1 Negative for Ramorum Blight
- 1 Negative for Root Pathogens
- 1 Oedema
- 1 Scales
- 1 Scorch
- 1 Suspect Cold Injury
- 2 Winter Injury
- 14 Total for Camellia**

Cherrylaurel

- 3 Botryosphaeria Dieback *Botryosphaeria dothidea*
- 1 Cultural Problem
- 1 Environmental Stress
- 1 Girdling Roots
- 4 Insufficient Sample
- 1 Mites
- 3 Negative for Disease
- 1 Negative for Root Disease
- 1 Phytophthora Root Rot *Phytophthora cinnamomi*
- 3 Scales
- 19 Total for Cherrylaurel**

Cleyera

- 1 Mycosphaerella Leaf Spot *Mycosphaerella sp.*
- 1 Total for Cleyera**

Cotoneaster

- 1 Insects
- 1 Insufficient Sample
- 1 Negative for Root Disease
- 1 Suspect Environmental Stress
- 4 Total for Cotoneaster**

Crape Myrtle

- 1 Exfoliating Bark
- 2 Powdery Mildew *Erysiphe lagerstroemiae*
- 3 Total for Crape Myrtle**

Daphne

- 1 Suspect Cold Injury
- 1 Total for Daphne**

English Ivy

- 2 Anthracnose *Colletotrichum trichellum*
- 1 Bacterial Leaf Spot *Xanthomonas hederae*
- 1 Environmental Stress
- 1 Mites
- 4 Oedema
- 1 Suspect Environmental Stress
- 10 Total for English Ivy**

Euonymus

- 1 Chemical Injury
- 1 Insects
- 1 Insufficient Information
- 1 Negative for Disease
- 1 Scales
- 5 Total for Euonymus**

Filbert

- 1 Eastern Filbert Blight *Anisogramma anomala*
- 1 Insufficient Sample
- 2 Total for Filbert**

Forsythia

- 2 Phomopsis Gall *Phomopsis sp.*
- 1 Phytophthora Root and Stem Rot *Phytophthora nicotianae*
- 3 Total for Forsythia**

Hibiscus

- 1 Insufficient Sample
- 1 Physiological Problem
- 2 Total for Hibiscus**

Holly

5 Anthracnose	<i>Gloeosporium sp.</i>
20 Black Root Rot	<i>Thielaviopsis basicola</i>
3 Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
2 Cold Injury	
4 Environmental Stress	
2 Insects	
26 Insufficient Sample	
2 Mealybugs	
1 Mites	
6 Negative for Disease	
4 Negative for Root Disease	
1 Physiological Leaf Spot	
2 Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
1 Phytophthora Root Rot	<i>Phytophthora nicotianae</i>
1 Rootbound	
1 Sapsucker Injury	
5 Scales	
1 Scorch	
1 Sooty Mold	
4 Winter Injury	
92 Total for Holly	

Honeysuckle

1 Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
1 Environmental Stress	
1 Insufficient Sample	
1 Rhizoctonia Root Rot	<i>Rhizoctonia solani</i>
1 Thrips	
5 Total for Honeysuckle	

Hydrangea

1 Cold Injury
1 Environmental Stress
1 Insufficient Sample
1 Oedema
4 Total for Hydrangea

Hypericum

1 Aphids
1 Environmental Stress
1 Low pH
2 Negative for Disease
5 Total for Hypericum

Indian Hawthorn

4 Entomosporium Leaf Spot *Entomosporium mespili*
4 Total for Indian Hawthorn

Inkberry

2 Black Root Rot *Thielaviopsis basicola*
 1 Black Vine Weevils
 2 Insufficient Sample
5 Total for Inkberry

Japanese Kerria

1 Phomopsis Twig Blight *Phomopsis japonica*
1 Total for Japanese Kerria

Japanese Plum Yew

1 Mites
1 Total for Japanese Plum Yew

Japanese Yew

1 Insufficient Sample
1 Total for Japanese Yew

Juniper

2 Cedar-Quince Rust *Gymnosporangium clavipes*
 1 Environmental Stress
 11 Insufficient Sample
 4 Kabatina Tip Blight *Kabatina juniperi*
 7 Mites
 4 Negative for Disease
 1 Negative for Root Disease
 2 Phomopsis Tip Blight *Phomopsis juniperovora*
 1 Suspect Environmental Stress
33 Total for Juniper

Leucothoe

1 Negative for Root Disease
 1 Powdery Mildew *Microsphaera sp.*
2 Total for Leucothoe

Lilac

- 1 Insufficient Sample
- 1 Negative for Disease
- 1 Scales
- 3 Total for Lilac**

Mahonia

- 1 Environmental Stress
- 1 Spine Spot
- 2 Total for Mahonia**

Manzanita

- 1 *Cylindrocladium* Root Rot *Cylindrocladium sp.*
- 1 Total for Manzanita**

Mountain Laurel

- 2 Insufficient Sample
- 1 Physiological Leaf Spot
- 1 *Pseudocercospora* Leaf Spot *Pseudocercospora kalmiae*
- 4 Total for Mountain Laurel**

Nandina

- 2 Insufficient Sample
- 1 Negative for Root Disease
- 1 Negative for Root Pathogens
- 4 Total for Nandina**

Oleander

- 1 *Cercospora* Leaf Spot *Cercospora sp.*
- 2 Insufficient Sample
- 3 Total for Oleander**

Photinia

- 1 *Botryosphaeria* Canker *Botryosphaeria ribis*
- 2 *Entomosporium* Leaf Spot *Entomosporium mespili*
- 3 Total for Photinia**

Pieris

- 1 Deep Planting
- 1 Girdling Roots
- 1 Negative for Ramorum Blight
- 1 *Phytophthora* Blight *Phytophthora sp.*
- 1 Scorch
- 1 Winter Injury
- 1 Wood Decay
- 7 Total for Pieris**

Pittosporum

- 1 Insufficient Sample
- 1 Total for Pittosporum**

Plants, Miscellaneous

- 1 Cause of Problem Unknown
- 1 Insects
- 1 Winter Injury
- 3 Total for Plants, Miscellaneous**

Privet

- 2 Oedema
- 1 Suspect Cold Injury
- 1 Winter Injury
- 4 Total for Privet**

Pyracantha

- 1 Scab *Spilocaea pyracanthae*
- 1 Total for Pyracantha**

Redbay

- 1 Insects
- 1 Total for Redbay**

Rhododendron

- 1 Artillery Fungus *Sphaerobolus stellatus*
- 1 Borers
- 2 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Botryosphaeria Leaf Spot *Botryosphaeria sp.*
- 1 Environmental Stress
- 1 Frost Injury
- 1 Girdling Roots
- 7 Insufficient Sample
- 3 Negative for Disease
- 1 Negative for Ramorum Blight
- 5 Negative for Root Disease
- 1 Phytophthora Root Rot *Phytophthora cinnamomi*
- 2 Rootbound
- 2 Scorch
- 29 Total for Rhododendron**

Rose

- 2 Chemical Injury
- 2 Cold Injury
- 1 Insects
- 1 Insufficient Information
- 1 Negative for Root Disease
- 2 Powdery Mildew *Sphaerotheca pannosa*
- 3 Rose Rosette
- 1 Skeletonizers
- 1 Suspect Chemical Injury
- 1 Suspect Downy Mildew *Peronospora sparsa*
- 1 Suspect Rose Rosette
- 16 Total for Rose**

Shrubs, Miscellaneous

- 4 Insufficient Sample
- 4 Total for Shrubs, Miscellaneous**

Skimmia

- 1 Cultural Problem
- 1 Total for Skimmia**

Spirea

- 2 Negative for Disease
- 2 Total for Spirea**

Sweetshrub

- 1 Negative for Disease
- 1 Total for Sweetshrub**

Sweetspire

- 1 Suspect Chemical Injury
- 1 Total for Sweetspire**

Viburnum

- 1 Insufficient Sample
- 1 Physiological Leaf Spot
- 1 Phytophthora Root Rot *Phytophthora sp.*
- 1 Sapsucker Injury
- 1 Suspect Environmental Stress
- 5 Total for Viburnum**

Wisteria

- 1 Environmental Stress
- 1 Total for Wisteria**

Yew

- 1 Cultural Problem
- 1 High pH
- 4 Insufficient Sample
- 1 Winter Injury
- 7 Total for Yew**

Other

Arabidopsis

- 1 Pythium Root Rot *Pythium sp.*
- 1 Thrips

2 Total for Arabidopsis

False Brome

- 1 Cause of Problem Unknown

1 Total for False Brome

Irish Moss

- 1 Web Blight *Rhizoctonia solani*

1 Total for Irish Moss

Mulch

- 1 Slime Mold *Fuligo septica*
- 1 Sour Mulch

2 Total for Mulch

Soil

- 1 Low pH

1 Total for Soil

Vinyl Siding

- 1 Artillery Fungus *Sphaerobolus stellatus*

1 Total for Vinyl Siding

Identification Appendix

Samples submitted to the laboratory for identification

Higher Plants (37)

Family: Asteraceae

Aster lanceolatus
Baccharis halimifolia
Gnaphalium purpureum

Panicled Aster
High-tide Bush
Purple cudweed

Family: Bignoniaceae

Campsis radicans

Trumpet creeper

Family: Brassicaceae

Lepidium virginicum
Thlaspi sp.

Virginia Peppergrass
Pennycress

Family: Caprifoliaceae

Viburnum prunifolium

Blackhaw Viburnum

Family: Elaeagnaceae

Elaeagnus umbellata

Thorny Eleagnus

Family: Fagaceae

Castanea mollissima

Chestnut

Family: Gesneriaceae

Saintpaulia sp.

African Violet

Family: Gramineae

Poa pratensis

Kentucky Bluegrass

Family: Magnoliaceae

Magnolia acuminata

Cucumber Tree

Family: Malvaceae

Hibiscus sp.

Hibiscus

Family: Moraceae

Broussonetia papyrifera

Paper Mulberry

Family: Oleaceae

Fraxinus pennsylvanica
Ligustrum vulgare

Green Ash
Common Privet

Family: Pedaliaceae

Proboscidea louisianica

Unicorn Plant

Family: Poaceae

Bromus hordeaceus
Dichanthelium clandestinum
Digitaria ishaemum
Muhlenbergia schreberi

Soft Brome Grass
Deer-tongue Panic Grass
Crabgrass
Nimblewill

Plant Disease Clinic

<i>Phalaris arundinacea</i>	Reed Canarygrass
<i>Schedonorus arundinaceus</i>	Tall Fescue
<i>Spartina cynosuroides</i>	Giant Cordgrass
<i>Tripsacum dactyloides</i>	Eastern Gama Grass
Family: Rosaceae	
<i>Aronia arbutifolia</i>	Red Chokeberry
<i>Chaenomeles speciosa</i>	Flowering Quince
<i>Cydonia oblonga</i>	Quince
<i>Malus sp.</i>	Apple, Golden Delicious
<i>Pyrus sp.</i>	Pear
Family: Salicaceae	
<i>Populus balsamifera</i>	Balsam Poplar
<i>Populus sp.</i>	Poplar
Family: Sapindaceae	
<i>Koelreutaria bipinnata</i>	Bougainvillea Golden-Rain-Tree
Family: Tiliaceae	
<i>Tilia cordata</i>	Littleleaf Linden
Family: Viscaceae	
<i>Phoradendron leucarpum</i>	Oak Mistletoe
Family: Vitaceae	
<i>Vitis aestivalis</i>	Summer Grape
Fungi (9)	
Family: Agaricaceae	
<i>Unknown sp.</i>	
Family: Geoglossaceae	
<i>Geoglossum & Trichoglossum sp.</i>	Black Earth Tongue
Family: Myxomycetes	
<i>Fuligo septica</i>	Slime Mold
Family: Polyporaceae	
<i>Grifola frondosa</i>	Hen-of-the-Woods
<i>Unknown species</i>	Polypore
Family: Sclerodermataceae	
<i>Scleroderma geaster</i>	Dead Man's Hand
Family: Sphaerobolaceae	
<i>Sphaerobolus stellatus</i>	Artillery Fungus
Family: Unknown	
<i>Unknown species</i>	White Rot Fungus
<i>Unknown species</i>	Decay Fungus

Other (4)

Crystalline Substance

Insufficient Sample

Unable to Identify (2)