The Plant Disease Clinic and Weed Identification Lab Annual Report 2005

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Blacksburg, Virginia

The Plant Disease Clinic and Weed Identification Laboratory
2005 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 soil and plant tissue, maintain records, answer the telephone, keep track of samples, and send out reports. In 2005, 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. Shahrooz Feizabadi for maintaining our computer system and network.

Andrea Lowe 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. Results of the soil assays performed by the Nematode Assay Laboratory are not included, nor are plant specimens that were submitted to and diagnosed at the Agricultural Research and Extension Centers throughout the Commonwealth. 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 did 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, diagnosed by the ELISA (Enzyme-Linked Immunosorbent Serological Assay) method by Agdia, Inc. or by Agdia's immunostrip testing system. 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 now mailed electronically to the Extension Office email address. 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/plantdiseasefs/. The new diagnostic form is available on the Web at: http://www.ext.vt.edu/vce/anr/plantpathology/450-097.pdf. Any comments or questions about reports or plant problems can be emailed to us at <clinic@vt.edu>.

For information on how to submit samples and complete the appropriate forms, please refer to the following web site for an audiovisual web presentation: http://www.ext.vt.edu/vce/staffdev/anrtraining/

Some Highlights from 2005

The early part of the 2005 growing season was very wet, in contrast to the latter part of the season, which was generally dry in most parts of Virginia. Sample number totals were higher than in 2004 (1567 in 2005 vs. 1337 in 2004). Disease highlights for various crop categories are presented below.

Field Crops

Many fields of orchardgrass were affected by fungal diseases, including anthracnose (*Colletotrichum graminicola*), leaf streak (*Cercosporidium graminis*), Rhizoctonia blight (*Rhizoctonia solani*) and Stagonospora leaf spot (*Stagonospora arenarium*). No fungicides are registered for control of these diseases in forage crops. Soilborne wheat mosaic virus was detected in several samples of wheat. This virus is vectored by a soilborne fungus.

We received more than the usual number of soybean samples in 2005, probably because of heightened awareness of the potential for Asian soybean rust to enter Virginia. (Most soybean samples are submitted to the Tidewater Agricultural Research and Extension Center in most years.) Although soybean rust has been found in states to the south of us, no cases of soybean rust were found in Virginia in 2005, probably because conditions were much too dry for disease development in the latter part of the growing season. However, numerous cases of brown spot (*Septoria glycines*), downy mildew (*Peronospora manshurica*), and frogeye leaf spot (*Cercospora sojina*) were observed. Symptoms of distortion, leaf thickening and epinasty were also observed on a sample of Roundup Ready™ soybeans. These symptoms occur fairly frequently on Roundup Ready™ soybean after Roundup™ application, particularly under conditions of high humidity and temperatures and high soil moisture. These symptoms are similar to injury from dicamba (Banvel™) drift, but in this case the timing of symptom appearance (i.e. two weeks after Roundup™ application) and the fact that multiple fields were showing this injury eliminated drift from dicamba as the cause. The mechanisms of glycosphate injury on Roundup Ready™ soybean are not well understood, but Monsanto does concede damage can occur.

Herbaceous Ornamentals

Leaf streak (*Aureobasidium microstictum*) was common in daylily, but no cases of daylily rust were received by the Clinic in 2005. Daylily rust, which can easily be confused with leaf streak, is usually more devastating to the plant.

Several new diseases were found in ornamentals this year, including Hosta Virus X in hosta and downy mildew in *Coleus* (*Peronospora lamii*). Hosta Virus X can cause a variety of symptoms that may be difficult to detect and that may vary from cultivar to cultivar. Dark green or blue markings may appear on light green leaf tissue. On darker green tissue, the virus causes a yellow mottling. Often the discoloration appears to "bleed" out from the veins. Leaves may also be distorted or affected leaf tissue may be puckered or thickened. In some cases, plants may harbor the virus but not show symptoms. Once a plant has been infected it can take up to a year for symptoms to become visible.


Hosta Virus X

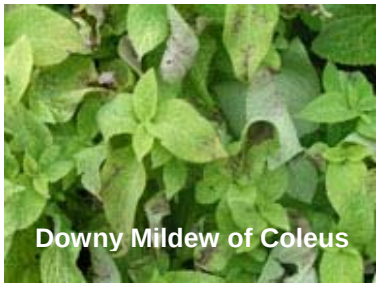
Hosta Virus X is a newly reported virus in hosta. It is present in several large growing fields in the Netherlands and the United States, so it is possible to purchase infected plants. The virus is mechanically transmitted from plant to plant on cutting tools or by handling healthy plants after handling infected plants. Control involves quarantining or removing infected plants. If a batch of plants is purchased of which several plants are known to be infected, it is advisable to destroy the entire batch of plants, including ones not showing symptoms. Plants should be taken to the landfill, burned or buried. Viruses move systemically in plants, so even roots of an infected plant may harbor the pathogen. Infected plants should be dug in order to remove the entire plant. The virus is not soil-borne, so once roots of infected plants have been removed from the soil or have decayed, new hostas can be transplanted into the same spot.

When new plants are purchased, they should be monitored for any unusual symptoms. Newly purchased plants should be kept separate


Hosta Virus X

from established hostas in the landscape or from other groups of hostas in the nursery until the grower can be sure that the plants are free of the virus. When dividing hostas with cutting tools, tools should be disinfested with a 10% solution of household bleach between plants. Cuttings should not be taken from any suspicious looking plants. Research has been initiated to identify cultivars with resistance to the disease, but no recommendations on resistance are available at this time. The following hosta cultivars are known to be susceptible to Hosta Virus X: 'Birchwood Parky's Gold', 'Blue Cadet', 'El Nino', 'Fan Dance', 'Gold Edger', 'Golden Tiara', 'Goldrush', 'Little Aurora', 'Paradise Joyce', 'Royal Standard', 'Stiletto', 'Striptease', 'Sun Power', 'Sum & Substance', 'Undulata Albomarginata', and 'Gold Standard', which is the most commonly encountered infected cultivar.

Another disease observed on hostas in 2005 was southern blight, caused by the fungus *Sclerotium rolfsii*. Plants wilt due to a rot at the base of the plant. The fungus produces hardened, mustard-seed-like structures, called sclerotia, at the base of the plant. Sclerotia can easily be seen with the naked eye. These structures allow the fungus to survive in the soil during periods less favorable to infection. Southern blight is difficult to control and can attack several other herbaceous ornamentals and vegetable plants, including *Ajuga*, *Physostegia*, tomato, and pepper. In home gardens, soil in affected areas should be excavated to a depth of about 6 inches and replaced with non-infested soil. For commercial plantings, Terraclor™ fungicide can be applied to the soil at planting time.


Downy Mildew of Coleus

Downy mildew of *Coleus* causes spotting and early senescence of leaves. This disease is common on bedding ornamentals, but we had not seen the disease in *Coleus* until this year. The disease was also observed in *Coleus* for the first time in several greenhouses in the Northeast in 2005. Symptoms may resemble damage caused by pesticide injury or drought stress, but a careful look at leaf undersides will reveal the dusty, grayish growth of the fungus associated with necrotic tissue. Downy mildew can be controlled with preventative fungicides.


Intumescence of Sweet Potato

Photo by H. Jerrell

An unusual condition called “intumescence” was observed on ornamental sweet potato. Intumescence is a proliferation of callus tissue on the surface of leaves of certain cultivars. The symptoms usually appear on the upper leaf surface as an irregular corky outgrowth of the leaf. No pathogen has been associated with intumescence. The symptoms develop under conditions of reduced transpiration, which may occur with high humidity and low light intensity. High temperatures may also be necessary. The condition is common in greenhouses. It is not a threat to the continued growth of the plants.

We isolated the bacterium *Pseudomonas viridiflava* from necrotic shoot tips of candytuft. This bacterium has not been specifically reported on *Iberis*; however, it is known to cause similar symptoms on a variety of other ornamental plants, including poinsettia, euphorbia, hibiscus, and hydrangea. *P. viridiflava* is thought to be an opportunistic pathogen that infects plant tissues that have been stressed by some other factor. In this case, cold injury could have been a predisposing factor. The information we found on this pathogen indicates that bactericides are not usually effective for control. The disease can be managed by pruning out affected tissue and avoiding predisposing stress factors.

Trees and Woody Ornamentals

A common disease we observed this year was Mycosphaerella leaf spot on woody ornamentals, such as cherry laurel, mountain laurel, rhododendron, sweetspire, and willow. Circular brown spots with a distinct margin eventually fell out of the leaf, leaving “shotholes”.

Downy mildew (*Peronspora harrotii*) was diagnosed on butterfly bush. Initial symptoms are angular yellow areas on the leaf. These areas later turn brown.


Downy Mildew of *Buddleia*

Cucumber Mosaic Virus was diagnosed in hydrangea. This virus is transmitted by aphids and is a common virus on cucurbits, but also on many herbaceous and some woody ornamentals.


Stigmina Needle Cast

We continued to see many cases of Stigmina needle cast (*Stigmina lautii*) on Norway spruce in 2005. This needle cast disease closely resembles Rhizosphaera needle cast and can easily be confused with it; however, the fungal spores are very different. We discovered several years ago that about half the spruce samples we receive that have symptoms of browning and drop of older needles have *Stigmina* rather than *Rhizosphaera* needle cast. Very little has been published about this disease and no data on fungicide control is available. We can only assume at this time that the fungicide controls recommended for *Rhizosphaera* will also work for *Stigmina*.


Stigmina Needle Cast

Tree and Small Fruit

A severe case of zonate leaf spot (*Cristulariella moricola*) was observed in a sample of Chambourcin grapes. This disease is sporadic in Virginia and may be extensive one year and not the next. Leaf spots are large, tan, and have concentric rings. All cultivars are equally susceptible. The fungus also affects various species of woody trees, such as maples, and may spread from these hosts. Symptoms may appear at any time of the season following several days of high humidity. We have checked the labels of all fungicides registered for use in grapes and can not find any that are specifically labeled for control of zonate leaf spot.

We also diagnosed Petri disease in grapes (see 2004 annual report). Several different fungal species are associated with Petri disease, which can cause a speckled black discoloration of the xylem tissue and subsequent leaf necrosis. In this case we found the species *Phaeomoniella chlamydospora*.


Ozone Injury to Nectarine

An unusual case of abiotic injury was observed in nectarines in storage. The fruit had small tan flecks uniformly distributed over the fruit surface. The injury was similar to injury from mite feeding on leaves of trees and other plants; however, mites do not cause this injury on fruit. White or tan flecking can also be caused by ozone injury on leaves of certain plants, but we had never seen ozone injury to fruit. Upon further research, we learned that ozone is generated in some types of fruit storage facilities to prolong fruit shelf life. In this case, ozone levels were above recommended levels and had apparently caused the flecking.

Turf

Nematodes were a problem on several golf greens across the state in 2005. The main nematodes involved were ring nematode (*Criconemella* sp.) and stubby root nematode (*Trichodorus* sp.). Cool, wet conditions early in the season probably favored these nematodes, and the results of nematode damage to the roots showed up under dry conditions later in the summer.

Vegetables

We received a sample of garlic with stem and bulb nematodes (*Ditylenchus dipsaci*). Although this disease is not a common problem in Virginia, stem and bulb nematodes can colonize many allium crops (i.e. chives, garlic, leek, onion), in addition to pea, lettuce, parsley, celery, and salsify. The nematode may be present in infested soil or garlic or onion sets. Infected sets are often discolored dark brown and weigh less than normal. This pathogen can be spread easily through infested soil, debris in storage houses, equipment, etc. Rotation to a non-susceptible crop is recommended.

Phytophthora blight (*P. capsici*) was common in peppers in 2005. This fungus-like organism can infect all parts of the plant, causing a root and crown rot of pepper, black lesions on stems, and a water-soaked rot of leaves and fruit. Plants wilt and die. This disease often develops in low areas of the field after heavy

rains and can spread quickly throughout the entire field. Planting on raised beds or ridges and/or staking plants can reduce the incidence of Phytophthora blight. Cultivars with resistance to Phytophthora blight are available, but resistant cultivars are not resistant to all races of the pathogen. Fungicides can be applied to the soil at transplanting or shortly thereafter to control the crown rot phase of the disease, and foliar fungicides can be applied to prevent the stem and fruit rot phases of the disease.


Roundup Injury to Tomato

Bacterial wilt (*Ralstonia solanacearum*) and Septoria leaf spot (*Septoria lycopersici*) were common in tomato, but the most frequent diagnosis in tomato in 2005 was chemical injury from either of the herbicides, 2,4-D or Roundup. 2,4-D is a growth regulator herbicide and causes leaf and petiole distortion, as well as formation of adventitious roots along the stems of tomatoes. Tomatoes are very sensitive to drift of 2,4-D. Roundup causes a bleaching or yellowing at the base of tomato leaflets. Droplets must contact the plants in order to cause symptoms.


2,4-D Injury to Tomato

Diseases we saw for the first time in the Plant Clinic in 2005 included:

- Downy mildew of Coleus (*Peronospora lamii*)
- Petri disease of grape (*Phaeomoniella chlamydospora*) (new species associated with this disease)
- Hosta Virus X of hosta

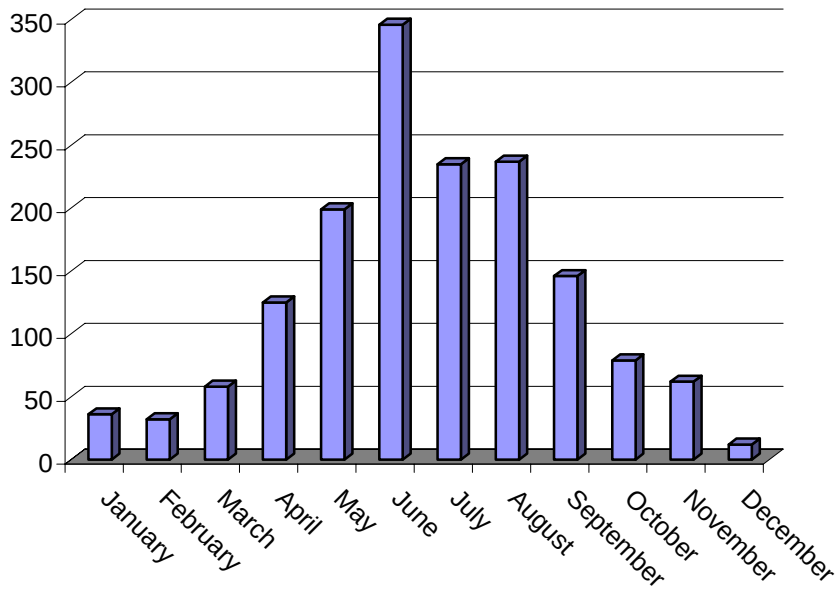
Plant Disease Clinic

Monthly Submission Summary

Number of samples received by month

Month	# Samples
2005	
January	36
February	32
March	58
April	125
May	199
June	346
July	235
August	237
September	146
October	79
November	62
December	12
Total for 2005	**1,567**
Grand Total	**1,567**

Number of Samples by Month

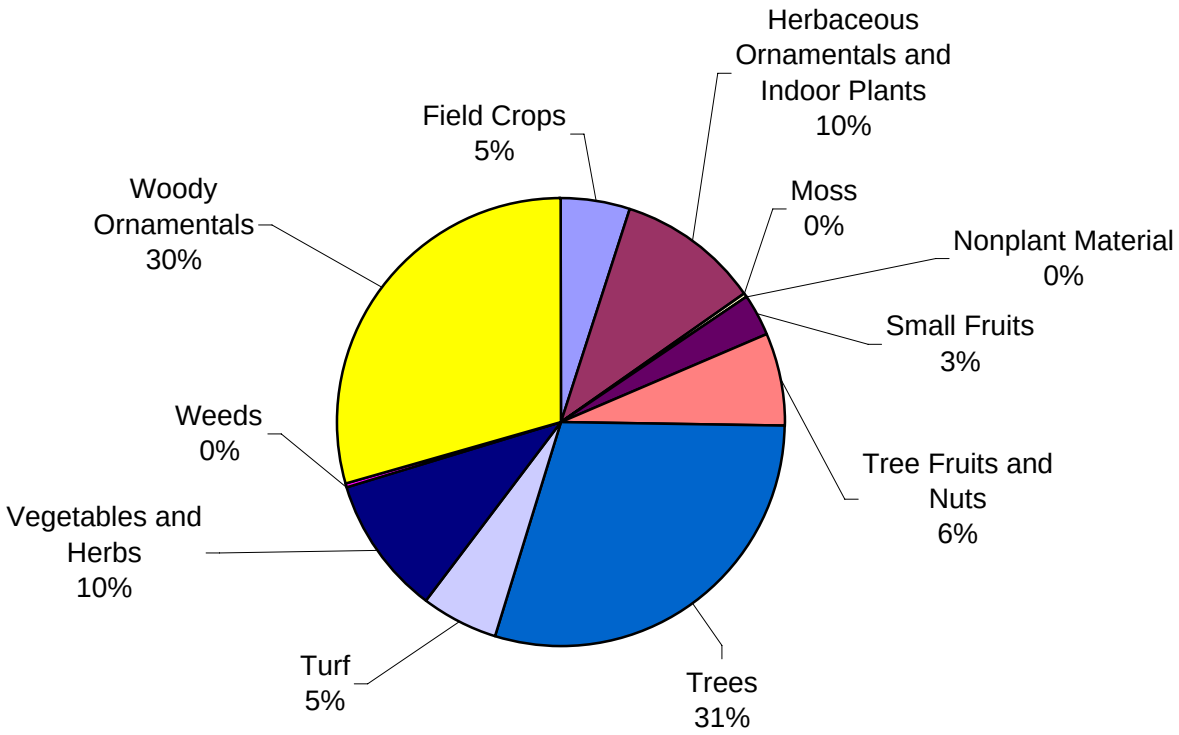


Crop Category Summary

Sample totals by major crop categories

Crop Category	# of Samples	% of Total
Field Crops	77	5.1
Herbaceous Ornamentals and Indoor Plants	156	10.3
Moss	1	0.1
Nonplant Material	1	0.1
Small Fruits	47	3.1
Tree Fruits and Nuts	98	6.5
Trees	449	29.6
Turf	83	5.5
Vegetables and Herbs	154	10.2
Weeds	1	0.1
Woody Ornamentals	448	29.6
Total	**1,515**	

Samples by Crop Category

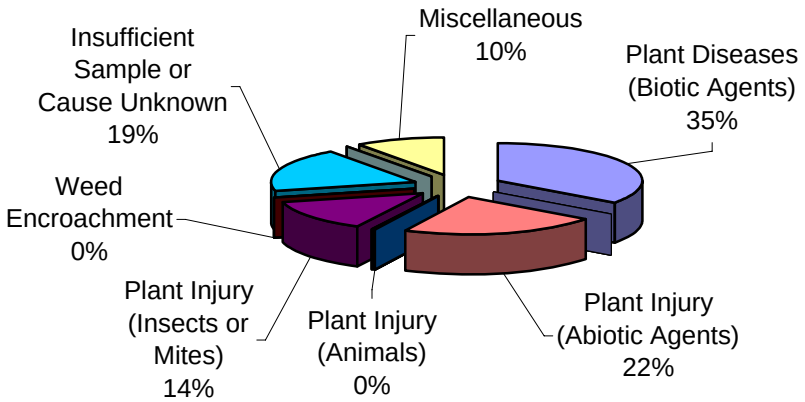


Diagnosis Category Summary

Distribution of diagnoses by major diagnostic categories

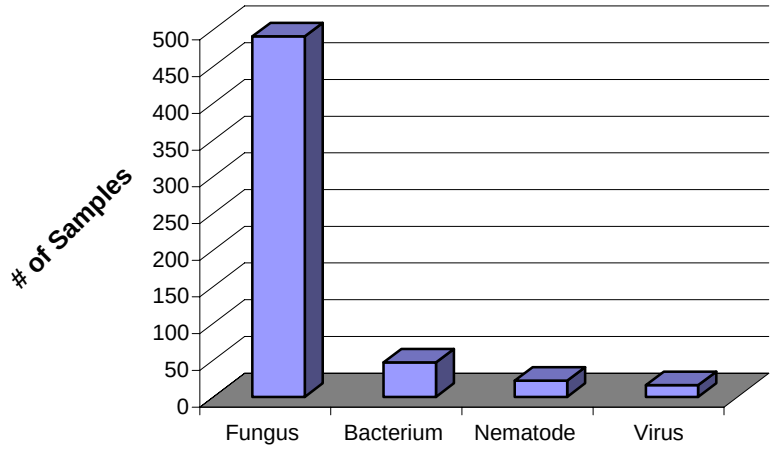
	# of Diagnoses/IDs	% of Total
Plant Diseases - Biotic Agents	**576**	**33.9**
Bacterium (47)		
Fungus (491)		
Nematode (22)		
Virus (16)		
Plant Injury - Abiotic Agents	**365**	**21.5**
Chemical (76)		
Environmental/Cultural (282)		
Mechanical (7)		
Plant Injury - Animals	**6**	**0.4**
Birds (4)		
Mammals (2)		
Plant Injury - Insects or Mites	**223**	**13.1**
Insects or Mites (223)		
Weed Encroachment	**2**	**0.1**
Weed (2)		
Insufficient Sample or Cause Unknown	**309**	**18.2**
Insufficient sample or information (294)		
Unknown (15)		
Miscellaneous	**166**	**9.8**
Algae (3)		
Lichen (8)		
Normal Condition (9)		
Other (107)		
Physiological/Genetic (39)		
Total	**1698**	**100**

2005 Samples by Diagnostic Category



Plant Disease Clinic

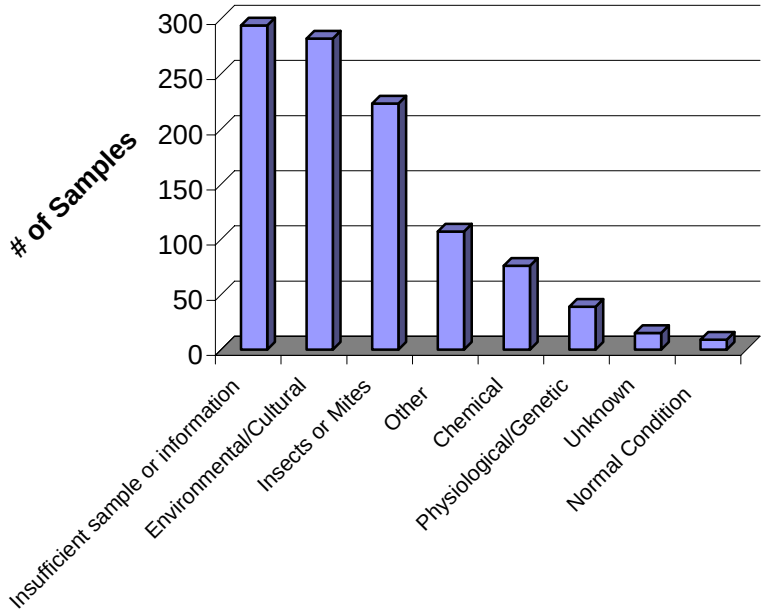
Plant Pathogens 2005



Other Assistance, 2005

Type	# of Inquiries
E-mail	56
Digital Images	24
Phone Calls	132

Other Agents 2005



Plant Disease Clinic

Distribution of Samples by County, 2005

County	# of Samples
Accomack	8
Albemarle	95
Alleghany	2
Amelia	3
Amherst	3
Appomattox	2
Arlington	13
Augusta	25
Bath	6
Bedford	8
Bland	3
Botetourt	9
Brunswick	1
Buckingham	8
Campbell	4
Caroline	2
Carroll	20
Charles (IC)	3
Charlotte	1
Chesapeake (IC)	49
Chesterfield	2
Clarke	6
Craig	4
Culpeper	4
Cumberland	7
Danville (IC)	24
Dickenson	8
Dinwiddie	7
Essex	4
Fairfax	18
Fauquier	26
Floyd	12
Fluvanna	4
Franklin	7
Frederick	16
Giles	19
Gloucester	6
Goochland	11
Grayson	13
Greene	41
Halifax	2
Hampton (IC)	15
Hanover	18
Henrico	37
Henry	11
Highland	6
Isle of Wight	3
James City	83
King George	18
King William	1

County	# of Samples
Lancaster	6
Lee	9
Loudoun	25
Louisa	41
Lunenburg	15
Lynchburg (IC)	15
Madison	6
Mathews	5
Mecklenburg	8
Middlesex	12
Montgomery	115
Nelson	55
New Kent	3
Newport News (IC)	9
Norfolk (IC)	9
Northumberland	19
Nottoway	4
Orange	15
Page	4
Patrick	18
Pittsylvania	26
Portsmouth (IC)	3
Powhatan	13
Prince Edward	5
Prince George	30
Prince William	3
Pulaski	16
Radford (IC)	1
Rappahannock	7
Roanoke	60
Rockbridge	11
Rockingham	27
Russell	2
Scott	13
Shenandoah	9
Smyth	5
Spotsylvania	23
Stafford	63
Suffolk (IC)	9
Surry	2
Sussex	4
Tazewell	4
Virginia Beach (IC)	16
Warren	9
Washington	34
Westmoreland	20
Wise	16
Wythe	3
York	42
Total	**1,567**

Weed Identification Lab

Monthly Submission Summary

Number of samples received by month

Month	# Samples
2005	
January	7
February	10
March	8
April	33
May	52
June	45
July	30
August	70
September	46
October	27
November	13
December	5
Total for 2005	**346**
Grand Total	**346**

Crop Category Summary

Sample totals by major crop categories

Crop Category	# of Samples
Apples	1
Aquatic	35
Asparagus	1
Buckwheat and partridgepea	3
Clover	1
Corn	6
Flower Garden	3
Garden	10
Hay	17
Lawn	6
N/A	21
Ornamental Bed	24
Pasture	82
Roadside	2
Sorghum	1
Soybeans	4
Stale Seedbed	1
Tobacco	1
Tree	12
Turf	96
Utility Area	16
Wheat	1
White Clover	1
Wildlife Plot	1
Total	**346**

Weed Identification Lab

Distribution of Samples by County, 2005

County	# of Samples
Accomack	1
Albemarle	7
Amelia	1
Amherst	1
Arlington	1
Augusta	5
Bath	3
Bland	2
Botetourt	2
Buckingham	4
Campbell	1
Chesapeake (IC)	5
Chesterfield	1
Craig	1
Culpepper	2
Cumberland	2
Danville	2
Dickenson	9
Dinnwiddle	5
Essex	5
Fauqier	2
Floyd	1
Fluvanna	1
Franklin	4
Frederick	6
Giles	15
Gloucester	1
Goochland	14
Greene	16
Hampton (IC)	5
Hanover	3
Henrico	2
Henry	1
Highland	1
Isle of Wight	2
James City	9
King George	2
Lee	5
Loudon	4
Louisa	5
Lunenburg	2
Lynchburg	19

County	# of Samples
Mathews	1
Mecklenburg	1
Montgomery	8
Nottoway	1
Page	2
Patrick	7
Pittsylvania	9
Powhatan	4
Prince Edward	2
Prince George	1
Prince William	8
Pulaski	7
Rappahanock	14
Richmond	1
Richmond (IC)	1
Roanoke	12
Rockbridge	3
Rockingham	4
Russell	2
Scott	2
Shenandoah	7
Smyth	1
SPAREC	4
Spotsylvania	13
Stafford	2
Suffolk (IC)	2
Tazwell	8
Virginia Beach (IC)	1
Warren	3
Washington	9
Westmoreland	7
Wise	6
Wythe	1
York	8
Out-of-State	2
Total	**344**

Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops

Alfalfa

1	Boron Deficiency	
1	Negative for Disease	
2	***Total for Alfalfa***	

Barley

1	Leaf Rust	*Puccinia hordei*
1	Negative for Barley Yellow Dwarf Virus	
1	Negative for Scab	
1	Net Blotch	*Pyrenophora teres*
2	Physiological Leaf Spot	
6	***Total for Barley***	

Clover

1	Positive for Rhizoctonia	*Rhizoctonia sp.*
1	Sclerotinia Crown and Root Rot	*Sclerotinia trifoliorum*
2	***Total for Clover***	

Corn

1	Chemical Injury	
2	Cultural Problem	
1	Diplodia Ear Rot	*Stenocarpella maydis*
1	Environmental Stress	
2	Low pH	
1	Nutrient Deficiency	
1	Seed Corn Maggot	
1	Southern Corn Leaf Blight	*Bipolaris maydis*
10	***Total for Corn***	

Fescue

1	Cultural Problem	
1	Insufficient Sample	
2	***Total for Fescue***	

Orchardgrass

3	Anthracnose	*Colletotrichum graminicola*
2	Environmental Stress	
1	Insufficient Sample	
3	Leaf Streak	*Cercosporidium graminis*
3	Rhizoctonia Blight	*Rhizoctonia solani*
1	Stagonospora Leaf Blotch	*Stagonospora arenaria*
13	***Total for Orchardgrass***	

Smooth Brome

1	Cause of Problem Unknown	
1	***Total for Smooth Brome***	

Sorghum

1	Physiological Leaf Spots	
1	***Total for Sorghum***	

Soybean

1	Abiotic Problem	
1	Alternaria Leaf spot	*Alternaria sp.*
6	Brown Spot	*Septoria glycines*
1	Cercospora Blight	*Cercospora sp.*
3	Downy Mildew	*Peronospora manshurica*
2	Frogeye Leaf Spot	*Cercospora sojina*
1	Insect	
2	Insufficient Sample	
4	Mites	
1	Negative for Disease	
1	Negative for Root Disease	
24	Negative for Soybean Rust	
1	Pod and Stem Blight	*Phomopsis sp.*
1	Powdery Mildew	*Microsphaera diffusa*
1	Roundup Injury on Roundup Ready Soybean	
1	Suspect Chemical Injury	
1	Suspect Improper pH	
5	Thrips	
1	Whiteflies	
58	***Total for Soybean***	

Tobacco

1	Botrytis Blight	*Botrytis cinerea*
1	Suspect Manganese Toxicity	
2	***Total for Tobacco***	

Wheat

1	High pH	
3	Insufficient Sample	
1	Low pH	
1	Normal Condition	
2	Soilborne Wheat Mosaic Virus	
1	Suspect Barley Yellow Dwarf Virus	
1	Suspect Environmental Stress	
2	Suspect Soilborne Mosaic Virus	
1	Tan Spot	*Pyrenophora tritici-repentis*
13	***Total for Wheat***	

Herbaceous Ornamentals and Indoor Plants

Ageratum

1 Environmental Stress

1 Total for Ageratum

Aloe

1 Borers

1 Total for Aloe

Amaryllis

1 Mites

1 Total for Amaryllis

Aster

1 Physiological Problem

1 Total for Aster

Balloon Flower

1 Suspect Chemical Injury

1 Total for Balloon Flower

Bedding Plants, Miscellaneous

1 High pH

1 Low soluble salts

2 Total for Bedding Plants, Miscellaneous

Begonia

1 Botrytis Blight — *Botrytis cinerea*

1 Powdery Mildew — *Oidium begoniae*

1 Soluble Salts High

3 Total for Begonia

Bergenia

1 Penicillium Leaf Spot — *Penicillium sp.*

1 Total for Bergenia

Black-eyed Susan

1 Insect

1 Spider Mites

2 Total for Black-eyed Susan

Bleeding Heart

1 Insufficient Sample

1 Total for Bleeding Heart

Calamint

1 Phytophthora Root Rot — *Phytophthora sp.*

1 Total for Calamint

Calathea		
1	Mites	
1	***Total for Calathea***	

Candytuft		
1	Pseudomonas Tip Blight	*Pseudomonas viridiflava*
1	***Total for Candytuft***	

Celosia		
1	Environmental Stress	
1	***Total for Celosia***	

Chrysanthemum		
1	Bacterial Leaf Spot	*Pseudomonas cichorii*
1	High pH	
1	Insects	
1	Leafminers	
1	Low pH	
4	Pythium Root Rot	*Pythium sp.*
1	Soluble Salts High	
1	Suspect Soluble Salts Injury	
11	***Total for Chrysanthemum***	

Clematis		
1	Insufficient Sample	
1	Scorch	
2	***Total for Clematis***	

Cleome		
1	Negative for Disease	
1	***Total for Cleome***	

Coleus		
1	Cold Injury	
1	Downy Mildew	*Peronospora sp.*
1	Suspect Low pH	
3	***Total for Coleus***	

Coneflower		
1	Chemical Injury	
1	Insect	
2	Insufficient Sample	
1	Physiological Leaf Spot	
5	***Total for Coneflower***	

Coral Bells		
1	Pythium Root Rot	*Pythium sp.*
1	***Total for Coral Bells***	

Coreopsis

1	No Disease Found	
1	Web Blight	*Rhizoctonia solani*
2	***Total for Coreopsis***	

Dahlia

1	Suspect Chemical Injury	
1	***Total for Dahlia***	

Daisy

1	Insufficient Sample	
1	Negative for Virus	
1	Phytophthora Root Rot	*Phytophthora sp.*
3	***Total for Daisy***	

Daylily

5	Leaf Streak	*Aureobasidium microstictum*
1	Suspect Chemical Injury	
6	***Total for Daylily***	

Dracaena

1	Suspect Chemical Injury	
1	***Total for Dracaena***	

Easter Cactus

1	Pythium Root Rot	*Pythium sp.*
1	***Total for Easter Cactus***	

Elderberry

1	Insufficient Sample	
1	***Total for Elderberry***	

Fern

1	Insects	
1	Suspect Environmental Stress	
2	***Total for Fern***	

Flowering Maple

1	Chemical Injury	
1	Insufficient Sample	
2	***Total for Flowering Maple***	

Forget-me-not

1	Insects	
1	***Total for Forget-me-not***	

Fuchsia

1	Air Pollution	
1	***Total for Fuchsia***	

Gardenia		
1	Bacterial Leaf Spot	*Xanthomonas campestris*
1	Chemical Injury	
1	Cultural Problem	
4	Insufficient Sample	
1	Phoma Leaf Spot	*Phoma sp.*
8	***Total for Gardenia***	

Geranium		
1	Botrytis Blight	*Botrytis cinerea*
1	Low pH	
1	Pythium Root Rot	*Pythium sp.*
1	Scales	
1	Suspect Environmental Stress	
5	***Total for Geranium***	

Gladiolus		
1	Insects	
1	***Total for Gladiolus***	

Heliotrope		
1	Environmental Stress	
1	***Total for Heliotrope***	

Hosta		
1	Anthracnose	*Colletotrichum sp.*
2	Hosta Virus X	
1	Negative for Virus	
1	Soft Rot	*Erwinia carotovora*
2	Southern Blight	*Sclerotium rolfsii*
7	***Total for Hosta***	

Impatiens		
1	Impatiens Necrotic Spot Virus	
1	Pythium Stem Rot	*Pythium sp.*
1	Suspect Physiological Problem	
3	***Total for Impatiens***	

Iris		
2	Bacterial Soft Rot	*Erwinia sp.*
2	Borers	
1	Cause of Problem Unknown	
2	Heterosporium Leaf Spot	*Heterosporium iridis*
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
8	***Total for Iris***	

Jack-in-the-pulpit		
1	Rust	*Uromyces avi-triphylli*
1	***Total for Jack-in-the-pulpit***	

Lamb's Ears		
1	Insects	
1	***Total for Lamb's Ears***	

Lavender		
1	Phytophthora Root Rot	*Phytophthora parasitica*
1	***Total for Lavender***	

Lemon, Meyer		
1	Suspect Cultural Problem	
1	***Total for Lemon, Meyer***	

Madagascar Periwinkle		
1	Botrytis Blight	*Botrytis cinerea*
3	Phytophthora Blight	*Phytophthora parasitica*
1	Rhizoctonia Web Blight	*Rhizoctonia sp.*
5	***Total for Madagascar Periwinkle***	

Monkshood		
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia sp.*
1	***Total for Monkshood***	

Orchid		
1	Artillery Fungus	*Sphaerobolus stellatus*
1	Mesophyll Cell Collapse	
2	***Total for Orchid***	

Pachysandra		
1	Suspect Nutrient Deficiency	
1	Volutella Blight	*Volutella pachysandrae*
2	***Total for Pachysandra***	

Palm		
1	Cultural Problem	
1	Environmental Stress	
2	***Total for Palm***	

Pansy		
1	Air Pollution	
2	Black Root Rot	*Thielaviopsis basicola*
3	Negative for Root Disease	
1	Pythium Root Rot	*Pythium sp.*
1	Soluble Salts High	
8	***Total for Pansy***	

Pawpaw		
1	Insufficient Sample	
1	***Total for Pawpaw***	

Peony	
2 Botrytis Blight	*Botrytis cinerea*
1 Cause of Problem Unknown	
1 Cladosporium Stem and Leaf Blotch	*Cladosporium paeoniae*
1 Rhizoctonia Rhizome Rot	*Rhizoctonia solani*
5 Total for Peony	

Periwinkle	
1 Negative for Disease	
2 Phoma Dieback	*Phoma sp.*
1 Phyllosticta Stem Rot	*Phyllosticta sp.*
1 Phyllosticta Stem Rot and Leaf Spot	*Phyllosticta sp.*
5 Total for Periwinkle	

Petunia	
1 Chemical Injury	
1 Total for Petunia	

Philodendron	
1 Cultural Problem	
1 Total for Philodendron	

Phlox	
1 Cultural Problem	
1 Insufficient Sample	
1 Low pH	
2 Physiological Problem	
5 Total for Phlox	

Plant, Unknown	
1 Insufficient Information	
1 Insufficient Sample	
2 Total for Plant, Unknown	

Plants, Miscellaneous	
1 Cause of Problem Unknown	
1 Environmental Stress	
1 Insufficient Sample	
3 Total for Plants, Miscellaneous	

Plumbago	
1 Chemical Injury	
1 Total for Plumbago	

Poinsettia	
1 Pythium Root Rot	*Pythium sp.*
1 Total for Poinsettia	

Poppy	
1 Environmental Stress	
1 Total for Poppy	

Privet	
1 Winter Injury	
1 Total for Privet	

Rudbeckia	
1 Insects	
2 Insufficient Sample	
3 Total for Rudbeckia	

Schefflera	
1 Scales	
1 Total for Schefflera	

Sunflower	
1 Environmental Stress	
1 Suspect Chemical Injury	
2 Total for Sunflower	

Sweet Potato	
1 Insufficient Sample	
1 Intumescence	
2 Total for Sweet Potato	

Tarragon	
2 Insufficient Sample	
2 Total for Tarragon	

Toad Lily	
1 Anthracnose	*Colletotrichum sp.*
1 Total for Toad Lily	

Tulip	
1 Basal Rot	*Fusarium sp.*
1 Blue Mold	*Penicillium sp.*
1 Gummosis	
1 Mites	
4 Total for Tulip	

Verbena	
1 Negative for Disease	
1 Spider Mites	
1 Thrips	
3 Total for Verbena	

Zinnia		
1	Bacterial Leaf Spot	*Xanthomonas campestris pv. zinneae*
1	Suspect Physiological Problem	
2	***Total for Zinnia***	

Moss		
Moss		
1	Cause of Problem Unknown	
1	***Total for Moss***	

Nonplant Material		
Mulch		
1	pH Test	
1	Saprophytic Fungi	
2	***Total for Mulch***	

Small Fruits

Blackberry

1	Cane Blight	*Leptosphaeria coniothyrium*
1	Chemical Injury	
1	Insects	
1	Negative for Root Disease	
1	Normal Condition	
1	Orange Rust	*Gymnoconia peckiana*
1	Slime Mold	
1	Suspect Chemical Injury	
8	***Total for Blackberry***	

Blueberry

1	Cultural Problem	
1	Girdling Roots	
2	Insects	
4	Insufficient Sample	
1	Physiological Leaf Spot	
1	Thrips	
10	***Total for Blueberry***	

Dewberry

1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
1	***Total for Dewberry***	

Fig

1	Cause of Problem Unknown	
1	Crown Gall	*Agrobacterium tumefaciens*
1	Physiological Problem	
3	***Total for Fig***	

Grape

1	Black Rot	*Guignardia bidwellii*
3	Chemical Injury	
1	Cultural Problem	
1	Petri Disease	*Phaeomoniella chlamydospora*
2	Phomopsis Cane and Leaf Blight	*Phomopsis viticola*
1	Suspect Chemical Injury	
1	Zonate Leaf Spot	*Cristulariella moricola*
10	***Total for Grape***	

Miscellaneous Brambles

1	Raspberry Leaf Spot	*Cylindrosporium rubi*
1	***Total for Miscellaneous Brambles***	

Raspberry		
1	Insufficient Sample	
1	Raspberry Leaf Spot	*Cylindrosporium rubi*
1	Spur Blight	*Didymella applanata*
1	Suspect Environmental Stress	
4	***Total for Raspberry***	

Strawberry		
1	Dendrophoma Leaf Blight	*Dendrophoma obscurans*
1	Environmental Stress	
1	High pH	
2	Insufficient Sample	
1	Low Soluble Salts	
2	Mites	
1	Phomopsis Leaf Blight	*Phomopsis obscurans*
2	Pythium Root Rot	*Pythium sp.*
1	Rhizoctonia Crown and Root Rot	*Rhizoctonia solani*
1	Suspect Cultural Problem	
13	***Total for Strawberry***	

Tree Fruits and Nuts

Apple

6	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
1	Cedar-Quince Rust	*Gymnosporangium clavipes*
1	Chemical Injury	
1	Cork Spot	
10	Fire Blight	*Erwinia amylovora*
2	Fly Speck	*Microthyriella rubi*
3	Insect	
3	Insects	
4	Insufficient Sample	
1	Necrotic Leaf Blotch	
1	Phomopsis Canker	*Phomopsis sp.*
1	Plum Curculios	
2	Russetting	
1	Scab	*Venturia inaequalis*
1	Sooty Blotch	*Gloeodes pomigena*
1	Suspect Chemical Injury	
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	White Rot	*Botryosphaeria dothidea*
1	Wood Decay	*Irpex lacteus*
43	***Total for Apple***	

Apricot

1	Gummosis	*Botryospharia sp.*
1	***Total for Apricot***	

Asian Pear

1	Fire Blight	*Erwinia amylovora*
1	***Total for Asian Pear***	

Cherry

1	Cercospora Leaf Spot	*Cercospora circumscissa*
1	Cultural Problem	
2	Insect	
2	Insufficient Sample	
1	Phoma Leaf Spot	*Phoma pomorum*
1	Webworms	
1	Wood Decay	
9	***Total for Cherry***	

Chestnut

1	Chestnut Blight	*Endothia parasitica*
1	Suspect Nutrient Deficiency	
2	***Total for Chestnut***	

Crabapple		
1	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
1	Fire Blight	*Erwinia amylovora*
1	Insects	
1	Insufficient Sample	
2	Scab	*Venturia inaequalis*
1	Suspect Fire Blight	*Erwinia amylovora*
9	***Total for Crabapple***	

Fruit Trees, Misc.		
2	Insufficient Sample	
2	***Total for Fruit Trees, Misc.***	

Nectarine		
1	Ozone Injury	
1	***Total for Nectarine***	

Peach		
4	Brown Rot	*Monilinia fructicola*
1	Cicada Injury	
1	Cultural Problem	
4	Curculios	
1	Frost Injury	
1	Genetic Abnormality	
1	Healthy	
1	Insects	
4	Insufficient Sample	
1	Oriental Fruit Moths	
3	Peach Leaf Curl	*Taphrina deformans*
1	Physiological Leaf Spot	
1	Physiological Problem	
2	Scab	*Cladosporium carpophilum*
1	Scales	
1	Suspect Curculios	
28	***Total for Peach***	

Pear		
1	Curculios	
1	Entomosporium Leaf Spot	*Entomosporium mespili*
1	Environmental Stress	
3	Fire Blight	*Erwinia amylovora*
1	Insect	
2	Insufficient Sample	
1	Negative for Disease	
1	Pear Leaf Blister Mites	
11	***Total for Pear***	

Pecan		
1	Pops	
1	***Total for Pecan***	

Persimmon		
1	Anthracnose	*Colletotrichum sp.*
1	Girdlers	
1	Scales	
3	***Total for Persimmon***	

Plum		
2	Black Knot	*Dibotryon morbosum*
1	Brown Rot	*Monilinia fructicola*
1	Gall Insects	
1	Insufficient Sample	
1	Suspect Curculios	
1	Suspect Mechanical Injury	
7	***Total for Plum***	

Trees

Arborvitae

2	Bagworms	
1	Cultural Problem	
1	Deep Planting	
1	Insufficient Sample	
1	Kabatina Tip Blight	*Kabatina sp.*
1	Low pH	
3	Mites	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis funerea*
11	***Total for Arborvitae***	

Ash

1	Anthracnose	*Discula sp.*
1	Insect	
1	Suspect Cold Injury	
3	***Total for Ash***	

Baldcypress

1	Insect	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
2	***Total for Baldcypress***	

Beech

1	Anthracnose	*Gloeosporium sp.*
1	Chemical Injury	
1	Environmental Stress	
2	Lichens	
1	Sooty Mold	
6	***Total for Beech***	

Birch

1	Cause of Problem Unknown	
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
1	Sooty Mold	
1	Suspect Chemical Injury	
1	Suspect Virus	
8	***Total for Birch***	

Black Gum

1	Anthracnose	*Colletotrichum sp.*
1	Chemical Injury	
1	Insufficient Sample	
3	***Total for Black Gum***	

Cedar		
3	Environmental Stress	
1	Mites	
1	Weevils	
5	***Total for Cedar***	

Cherry		
1	Scorch	
1	***Total for Cherry***	

Cryptomeria		
1	Insufficient Sample	
1	***Total for Cryptomeria***	

Cypress		
1	Bagworm Injury	
1	Cause of Problem Unknown	
1	Deep Planting	
3	Environmental Stress	
13	Insufficient Sample	
1	Negative for Root Pathogens	
7	Pestalotiopsis Tip Blight	*Pestalotiopsis sp.*
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Rootbound	
1	Scales	
8	Seiridium Canker	*Seiridium unicorne*
2	Suspect Environmental Stress	
5	Suspect Seiridium Canker	*Seiridium sp.*
45	***Total for Cypress***	

Dogwood		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cicada Injury	
2	Discula Anthracnose	*Discula destructiva*
3	Environmental Stress	
1	Frost Injury	
1	Girdling Roots	
1	Hail Injury	
7	Insufficient Sample	
2	Negative for Disease	
9	Powdery Mildew	*Oidium sp.*
1	Scales	
2	Scorch	
6	Spot Anthracnose	*Elsinoe corni*
2	Suspect Chemical Injury	
2	Suspect Environmental Stress	
1	Suspect Nutrient Deficiency	
42	***Total for Dogwood***	

Douglasfir	
1 Environmental Stress	
1 Swiss Needle Cast	*Phaeocryptopus gaeumannii*
2 Total for Douglasfir	

Eastern Red Cedar	
1 Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
1 Insufficient Sample	
1 Kabatina Tip Blight	*Kabatina juniperi*
1 Mites	
1 Negative for Disease	
1 Phomopsis Tip Blight	*Phomopsis juniperovora*
1 Spiders	
7 Total for Eastern Red Cedar	

Elm	
1 Bacterial Wetwood	
1 Botryosphaeria Dieback	*Botryosphaeria sp.*
1 Dutch Elm Disease	*Ophiostoma ulmi*
1 Mites	
4 Total for Elm	

Falsecypress	
1 Insufficient Sample	
2 Mites	
1 Negative for Root Disease	
1 Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
5 Total for Falsecypress	

Fir	
2 Chemical Injury	
3 Cultural Problem	
1 Environmental Stress	
1 Girdling Roots	
4 Insufficient Sample	
1 Lichens	
3 Negative for Root Disease	
2 Phytophthora Root Rot	*Phytophthora cinnamomi*
4 Phytophthora Root Rot	*Phytophthora sp.*
21 Total for Fir	

Giant Sequoia	
1 Botrytis Blight	*Botrytis cinerea*
1 Total for Giant Sequoia	

Gingko	
1 Suspect Cultural Problem	
1 Total for Gingko	

Hackberry	
1 Leaf Gall Insects	
1 Total for Hackberry	

Hawthorn	
2 Cedar-Quince Rust	*Gymnosporangium clavipes*
1 Xylaria Root Rot	*Xylaria polymorpha*
3 Total for Hawthorn	

Hemlock	
3 Insufficient Sample	
1 Lichens	
1 Low pH	
1 Mites	
1 Woolly Adelgids	
7 Total for Hemlock	

Hickory	
5 Insect Galls	
5 Total for Hickory	

Honeylocust	
1 Cercospora Leaf Spot	*Cercospora condensata*
1 Plant Bugs	
2 Total for Honeylocust	

Hornbeam	
1 Secondary Organism	*Melanconium sp.*
1 Total for Hornbeam	

London Planetree	
1 Environmental Stress	
1 Phloeospora Leaf Spot	*Phloeospora sp.*
2 Total for London Planetree	

Magnolia	
4 Anthracnose	*Colletotrichum sp.*
1 Environmental Stress	
2 Insufficient Sample	
1 Mites	
1 Negative for Disease	
1 Pestalotiopsis Leaf Spot	*Pestalotiopsis sp.*
1 Physiological Problem	
1 Powdery Mildew	*Oidium sp.*
1 Suspect Canker	
2 Suspect Chemical Injury	
5 Winter Injury	
20 Total for Magnolia	

Maple

5	Anthracnose	*Kabatiella sp.*
1	Aphids	
1	Borers	
4	Botryosphaeria Dieback	*Botryosphaeria sp.*
2	Cause of Problem Unknown	
1	Cerrena unicolor	*Cerrena unicolor*
1	Cicada Injury	
1	Coniothyrium Leaf Spot	*Coniothyrium sp.*
1	Cultural Problem	
4	Environmental Stress	
2	Eriophyid Mites	
1	Frost Injury	
1	Insect	
20	Insufficient Sample	
1	Mites	
4	Negative for Verticillium Wilt	
1	Phomopsis Dieback	*Phomopsis sp.*
3	Purple-eye Leaf Spot	*Phyllosticta minima*
2	Scales	
2	Scorch	
1	Slime Mold	
1	Suspect Environmental Stress	
1	Suspect Phomopsis Gall	*Phomopsis sp.*
1	Verticillium Wilt	*Verticillium dahliae*
1	Wood Decay	
63	***Total for Maple***	

Oak

1	Anthracnose	*Apiognomonia quercina*
2	Bacterial Scorch	*Xylella fastidiosa*
1	Bacterial Wetwood	
1	Botryosphaeria Twig Canker	*Botryosphaeria quercuum*
2	Chemical Injury	
1	Coryneum Twig Blight	*Coryneum sp.*
1	Endothia Canker	*Endothia gyrosa*
4	Environmental Stress	
1	Eriophyid Mites	
1	Gall Insect	
9	Insects	
8	Insufficient Sample	
1	Iron Chlorosis	
1	Leaf Gall Insects	
1	Leafminers	
1	Mites	
1	Negative for Bacterial Leaf Scorch	
1	Negative for Phytophthora	
1	Oak Leaf Blister	*Taphrina caerulescens*
1	Oak Leaf Button Galls	
1	Phomopsis Canker	*Phomopsis sp.*
1	Physiological Problem	

1	Scales	
1	Sunscald	
1	Suspect Cultural Problem	
1	Suspect Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Suspect Root Rot	
3	Tubakia Leaf Spot	*Tubakia dryina*
1	White Rot	
1	Wood Decay	
52	***Total for Oak***	

Ornamental Cherry

1	Black Knot	*Dibotryon morbosa*
1	Blossom Blight	*Monilinia sp.*
2	Botryosphaeria Canker	*Botryosphaeria sp.*
1	Chemical Injury	
1	Eastern Tent Caterpillars	
7	Insufficient Sample	
1	Negative for Disease	
1	Negative for Root Disease	
1	Phomopsis Canker	*Phomopsis sp.*
1	Physiological Leaf Spot	
17	***Total for Ornamental Cherry***	

Ornamental Pear

1	Cedar-Quince Rust	*Gymnosporangium clavipes*
2	Chemical Injury	
1	Cicada Injury	
4	Fire Blight	*Erwinia amylovora*
3	Hawthorn Rust	*Gymnosporangium globosum*
2	Suspect Chemical Injury	
1	Suspect Root Problem	
14	***Total for Ornamental Pear***	

Paulownia

1	Environmental Stress	
1	***Total for Paulownia***	

Pine

1	Cause of Problem Unknown	
1	Deep Planting	
4	Diplodia Tip Blight	*Diplodia pinea*
2	Dothistroma Needle Blight	*Dothistroma pini*
3	Environmental Stress	
1	Fungal Growth on Medium	
2	Girdling Roots	
1	Insect	
13	Insufficient Sample	
2	Negative for Disease	
1	Negative for Root Disease	
1	Normal Condition	
1	Physiological Problem	

1	Pine Tip Moths	
2	Procerum Root Disease	*Leptographium procerum*
1	Rootbound	
1	Sapsucker Injury	
1	Seasonal Needle Drop	
1	Sooty Mold	
1	Sphaeropsis Canker	*Sphaeropsis pinea*
3	Suspect Environmental Stress	
1	White Pine Weevils	
45	***Total for Pine***	

Prunus

1	Black Knot	*Dibotryon morbosum*
1	***Total for Prunus***	

Redbud

1	Botryosphaeria Dieback	*Botryosphaeria dothidea*
1	Insect	
3	Insufficient Sample	
1	Negative for Verticillium	
6	***Total for Redbud***	

Serviceberry

1	Juniper Broom Rust	*Gymnosporangium nidus-avis*
1	Scorch	
2	***Total for Serviceberry***	

Spruce

1	Bagworms	
1	Environmental Stress	
1	Gall Adelgids	
1	Girdling Roots	
1	Insect	
1	Insects	
4	Insufficient Sample	
1	Lichens	
1	Low pH	
7	Mites	
3	Negative for Disease	
1	Physiological Problem	
2	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Phytophthora Root Rot	*Phytophthora sp.*
7	Rhizosphaera Needle Blight	*Rhizosphaera kalkhoffii*
5	Stigmina Needle Cast	*Stigmina lautii*
1	Suspect Winter Injury	
1	Web Blight	*Rhizoctonia solani*
1	White Pine Weevils	
41	***Total for Spruce***	

Sweet Gum		
1	Scales	
1	***Total for Sweet Gum***	

Sycamore		
2	Anthracnose	*Gnomonia platani*
2	***Total for Sycamore***	

Tree, Unknown		
1	Insufficient Sample	
1	Suspect Bacterial Wetwood	
2	**Total for Tree, Unknown**	

Trees, Miscellaneous		
3	Insufficient Sample	
1	Lichens	
1	Suspect Chemical Injury	
1	Suspect Environmental Stress	
6	***Total for Trees, Miscellaneous***	

Tulip Tree		
1	Tarspot	*Rhytisma sp.*
1	***Total for Tulip Tree***	

Willow		
1	Cultural Problem	
1	Fasciation	
1	Insufficient Sample	
1	Mites	
1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
1	Phoma Canker	*Phoma sp.*
1	Sapsucker Injury	
7	***Total for Willow***	

Yellowwood		
1	Physiological Problem	
1	***Total for Yellowwood***	

Turf

Bentgrass

1	Algae	
1	Anaerobiosis	
1	Anthracnose	*Colletotrichum graminicola*
2	Environmental Stress	
1	Lance Nematodes	*Hoplolaimus sp.*
1	Nematodes	
1	Pythium Blight	*Pythium sp.*
1	Ring Nematodes	*Criconemella sp.*
1	Suspect Environmental Stress	
1	Take-all	*Gaeumannomyces graminis*
1	Yellow Patch	*Rhizoctonia cerealis*
12	***Total for Bentgrass***	

Bluegrass

1	Brown Patch	*Rhizoctonia solani*
2	Environmental Stress	
2	Insufficient Sample	
1	Leptosphaerulina Leaf Blight	*Leptosphaerulina sp.*
1	Red Thread	*Laetisaria fuciformis*
1	Slime Mold	
1	Suspect Environmental Stress	
9	***Total for Bluegrass***	

Centipedegrass

1	Suspect Take-all	*Gaeumannomyces graminis*
1	***Total for Centipedegrass***	

Crabgrass

1	Slime Mold	
1	***Total for Crabgrass***	

Fescue

17	Brown Patch	*Rhizoctonia solani*
1	Cause of Problem Unknown	
1	Cultural Problem	
2	Environmental Stress	
1	Helminthosporium Blight	*Drechslera dictyoides*
1	High pH	
8	Insufficient Sample	
3	Negative for Disease	
1	Red Fescue	*Festuca rubra*
1	Red Thread	*Laetisaria fuciformis*
1	Rhizoctonia Blight	*Rhizoctonia solani*
1	Suspect Dog Damage	
1	Weed Encroachment	
1	White Patch	*Melanotus philipsii*
40	***Total for Fescue***	

Ryegrass		
1	Dollar Spot	*Sclerotinia homeocarpa*
1	Environmental Stress	
2	***Total for Ryegrass***	

St. Augustinegrass		
1	Dull Mower Injury	
1	Gray Leaf Spot	*Pyricularia grisea*
1	Insufficient Sample	
3	***Total for St. Augustinegrass***	

Turfgrass		
1	Algae	
4	Brown Patch	*Rhizoctonia solani*
1	Cultural Problem	
1	Environmental Stress	
3	Insufficient Sample	
1	Low pH	
1	Melting Out	*Drechslera poae*
2	Pythium Blight	*Pythium sp.*
1	Red Thread	*Laetisaria fuciformis*
2	Slime Mold	
1	Suspect Cultural Problem	
18	***Total for Turfgrass***	

Zoysia		
1	Normal Leaf Senescence	
1	***Total for Zoysia***	

Vegetables and Herbs

Basil

1	Fusarium Wilt	*Fusarium oxysporum*
1	Insufficient Sample	
2	***Total for Basil***	

Bean

2	Anthracnose	*Colletotrichum lindemuthianum*
1	Aschochyta Leaf Spot	*Phoma exigua var. exigua*
3	Environmental Stress	
1	Fusarium Damping-off	*Fusarium oxysporum*
1	Fusarium Root Rot	*Fusarium solani*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Stinkbugs	
1	Sunscald	
11	***Total for Bean***	

Broccoli

1	Club Root	*Plasmodiophora brassicae*
1	Insects	
2	***Total for Broccoli***	

Cabbage

1	Alternaria Leaf Spot	*Alternaria brassicicola*
1	Alternaria Leaf Spot	*Alternaria sp.*
1	Cabbage Maggot	
1	Chemical Injury	
1	Maggots	
1	Suspect Cultural Problem	
6	***Total for Cabbage***	

Cantaloupe

1	Air Pollution	
1	***Total for Cantaloupe***	

Collards

1	Nutrient Deficiency	
1	***Total for Collards***	

Cucumber

1	Anthracnose	*Colletotrichum lagenarium*
1	Downy Mildew	*Pseudoperonospora cubensis*
1	Environmental Stress	
1	Insufficient Sample	
1	Physiological Problem	
5	***Total for Cucumber***	

Dill

1	Botrytis Blight	*Botrytis cinerea*
1	***Total for Dill***	

Garlic		
1	Mechanical Injury	
1	Mites	
1	Negative for Nematodes	
1	Stem and Bulb Nematode	*Ditylenchus dipsaci*
4	***Total for Garlic***	

Jerusalem-artichoke		
1	Insects	
1	***Total for Jerusalem-artichoke***	

Kale		
1	Nutrient Deficiency	
1	***Total for Kale***	

Lima Bean		
1	Anthracnose	*Colletotrichum truncatum*
1	***Total for Lima Bean***	

Mint		
1	Insects	
1	***Total for Mint***	

Oregano		
1	Insects	
1	***Total for Oregano***	

Pea		
1	Insufficient Sample	
1	***Total for Pea***	

Pepper		
2	Blossom End Rot	
1	Chemical Injury	
1	Cucumber Mosaic Virus	
1	Epidermal Separation	
1	European Corn Borer	
2	Insect	
2	Negative for Disease	
3	Phytophthora Blight	*Phytophthora capsici*
1	Phytophthora Blight	*Phytophthora sp.*
1	Suspect Nutrient Deficiency	
2	Thrips	
17	***Total for Pepper***	

Potato		
1	Black Dot	*Colletotrichum atramentarium*
2	Blackleg	*Erwinia carotovora*
4	Common Scab	*Streptomyces scabies*
1	Enlarged Lenticels	

1	Fusarium Dry Rot	*Fusarium sp.*
1	Growth Cracks	
1	Insufficient Sample	
1	Low pH	
1	Negative for Disease	
1	Root Knot Nematode	*Meloidogyne incognita*
1	Suspect Cultural Problem	
2	Wireworms	
17	***Total for Potato***	

Rhubarb

1	Bacterial Crown and Stem Rot	*Erwinia rhapontici*
1	***Total for Rhubarb***	

Rosemary

2	Adventitious Roots	
1	Pythium Root Rot	*Pythium sp.*
3	**Total for Rosemary**	

Sage

1	Insects	
1	Insufficient Sample	
2	***Total for Sage***	

Squash

1	Blossom End Rot	
1	Chemical Injury	
1	Insects	
1	Measles	
1	Scab	*Cladosporium cucumerinum*
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
7	***Total for Squash***	

Sweet Corn

1	Insects	
2	Suspect Chemical Injury	
3	***Total for Sweet Corn***	

Sweet Potato

1	Fusarium Surface Rot	*Fusarium solani*
2	Insects	
1	Wireworms	
4	***Total for Sweet Potato***	

Thyme

1	High pH	
1	***Total for Thyme***	

Tomato		
1	Anthracnose	*Colletotrichum coccodes*
3	Bacterial Wilt	*Ralstonia solanacearum*
1	Blotchy Ripening	
1	Botrytis Blight	*Botrytis cinerea*
11	Chemical Injury	
7	Cultural Problem	
1	Damping-off	*Pythium sp.*
1	Drought	
1	Early Blight	*Alternaria solani*
2	Environmental Stress	
1	Excess Soluble Salts	
1	Fusarium Crown and Root Rot	*Fusarium oxysporum*
1	Graywall	
2	Growth Cracks	
11	Insufficient Sample	
1	Low pH	
1	Mechanical Injury	
1	Mites	
1	Negative for Disease	
1	Negative for Virus	
1	Physiological Leaf Roll	
1	Physiological Problem	
3	Septoria Leaf Spot	*Septoria lycopersici*
1	Suspect Air Pollution Injury	
3	Suspect Chemical Injury	
2	Suspect Cultural Problem	
1	Suspect Mechanical Injury	
1	Suspect Nutrient Deficiency	
4	Walnut Wilt	
1	Whiteflies	
68	***Total for Tomato***	

Turnip		
2	Anthracnose	*Colletotrichum sp.*
2	***Total for Turnip***	

Vegetable Garden		
1	Referred to Nematology	
1	***Total for Vegetable Garden***	

Watermelon		
1	Anthracnose	*Colletotrichum lagenarium*
1	Negative for Disease	
2	***Total for Watermelon***	

Zucchini		
1	Insufficient Sample	
1	***Total for Zucchini***	

Weeds

Dead Nettle

1	Web Blight	*Rhizoctonia solani*
1	***Total for Dead Nettle***	

Woody Ornamentals

Anise Tree

1	Insufficient Sample	
1	***Total for Anise Tree***	

Aucuba

1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cold Injury	
1	Frost Injury	
3	***Total for Aucuba***	

Azalea

1	Cement	
1	Chemical Residue	
7	Insufficient Sample	
1	Iron Chlorosis	
3	Lacebugs	
4	Leaf and Flower Gall	*Exobasidium vaccinii*
1	Lichens	
3	Mites	
2	Negative for Disease	
1	Nutrient Deficiency	
1	Physiological Leaf Spot	
1	Rootbound	
1	Scales	
1	Winter Injury	
28	***Total for Azalea***	

Bamboo

1	Insufficient Sample	
1	***Total for Bamboo***	

Bayberry

1	Negative for Root Rot	
1	***Total for Bayberry***	

Boxwood

2	Cultural Problem	
1	Deep Planting	
19	English Boxwood Decline	*Paecilomyces buxi*
6	Environmental Stress	
1	Insect	
2	Insects	
20	Insufficient Sample	

1	Leafminers	
2	Lesion Nematodes	*Pratylenchus sp.*
1	Low pH	
6	Mites	
1	Negative for Disease	
1	Negative for Nematodes	
1	Negative for Phytophthora	
1	Negative for Root Disease	
13	Negative for Root Rot Fungi	
8	Nematodes	
1	Physiological Problem	
2	Possible Nematode Problem	
3	Psyllids	
1	Rootbound	
1	Scorch	
1	Spiral Nematodes	*Helicotylenchus sp.*
4	Spiral Nematodes	*Rotylenchus buxophilus*
1	Suspect Chemical Injury	
1	Suspect Cultural Problem	
1	Volutella Blight	*Volutella buxi*
102	***Total for Boxwood***	

Butterfly Bush

1	Downy Mildew	*Peronospora harrotii*
1	Insufficient Sample	
1	Mites	
3	***Total for Butterfly Bush***	

Camellia

1	Anthracnose	*Colletotrichum gloeosporioides*
1	Cause of Problem Unknown	
3	Environmental Stress	
1	Eriophyid Mites	
1	Insects	
1	Insufficient Sample	
2	Leaf and Flower Gall	*Exobasidium camelliae*
3	Mites	
2	Negative for Ramorum Blight	
1	Suspect Cold Injury	
3	Winter Injury	
19	***Total for Camellia***	

Carolina Allspice

1	Anthracnose	*Colletotrichum sp.*
1	***Total for Carolina Allspice***	

Cherrylaurel

1	Cultural Problem	
1	Environmental Stress	
1	Insects	

4	Insufficient Sample	
1	Mechanical Injury	
1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
2	Phoma Leaf Spot	*Phoma sp.*
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Poor Drainage	
13	***Total for Cherrylaurel***	

Cleyera

1	Environmental Stress	
1	***Total for Cleyera***	

Cotoneaster

1	Insufficient Sample	
1	***Total for Cotoneaster***	

Crape Myrtle

2	Insufficient Sample	
2	Sooty Mold	
1	Adequate, Sample and Information	
5	***Total for Crape Myrtle***	

Daphne

1	Insufficient Sample	
1	***Total for Daphne***	

Elaeagnus

1	Insufficient Sample	
1	***Total for Elaeagnus***	

English Ivy

1	Anthracnose	*Colletotrichum trichellum*
2	Mites	
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Suspect Environmental Stress	
1	Winter Injury	
6	***Total for English Ivy***	

Euonymus

1	Crown Gall	*Agrobacterium tumefaciens*
1	Cultural Problem	
1	Scales	
3	***Total for Euonymus***	

Forsythia

1	Cause of Problem Unknown	
1	Insects	
2	Insufficient Sample	
4	***Total for Forsythia***	

Hibiscus		
1	Insect	
1	Negative for Root Disease	
1	Oedema	
1	Thrips	
4	***Total for Hibiscus***	

Holly		
1	Anthracnose	*Gloeosporium sp.*
16	Black Root Rot	*Thielaviopsis basicola*
1	Cause of Problem Unknown	
4	Cultural Problem	
1	Girdling Roots	
25	Insufficient Sample	
1	Mites	
3	Negative for Root Disease	
1	Normal Leaf Senescence	
1	Physiological Leaf Spot	
2	Phytophthora Root Rot	*Phytophthora cinnamomi*
3	Rust	*Chrysomyxa ilicina*
1	Sapsucker Injury	
4	Scales	
1	Sooty Mold	
2	Winter Injury	
67	***Total for Holly***	

Hydrangea		
2	Bacterial Leaf Spot	*Xanthomonas campestris*
1	Cucumber Mosaic Virus	
1	Frost Injury	
7	Insufficient Sample	
1	Negative for Root Disease	
3	Scorch	
1	Suspect Chemical Injury	
1	Suspect Nutrient Deficiency	
17	***Total for Hydrangea***	

Hypericum		
1	Bacterial Leaf Spot	*Burkholderia andropogonis*
1	Insufficient Sample	
1	Low pH	
1	Phytophthora Root Rot	*Phytophthora sp.*
4	***Total for Hypericum***	

Indian Hawthorn	
1	Cold Injury
1	***Total for Indian Hawthorn***

Inkberry

1	Algae	
1	Environmental Stress	
2	***Total for Inkberry***	

Japanese Kerria

1	Insufficient Sample	
1	***Total for Japanese Kerria***	

Japanese Plum Yew

1	Cultural Problem	
1	Insufficient Sample	
2	***Total for Japanese Plum Yew***	

Jasmine

1	Winter Injury	
1	***Total for Jasmine***	

Juniper

2	Cultural Problem	
4	Environmental Stress	
1	Insects	
19	Insufficient Sample	
5	Kabatina Tip Blight	*Kabatina juniperi*
2	Low pH	
10	Mites	
7	Negative for Disease	
3	Negative for Root Disease	
3	Phomopsis Tip Blight	*Phomopsis juniperovora*
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
2	Phytophthora Root Rot	*Phytophthora sp.*
1	Rootbound	
1	Severe Pruning	
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	Vole Injury	
64	***Total for Juniper***	

Leucothoe

1	Deep Planting	
1	***Total for Leucothoe***	

Lilac

1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Chemical Injury	
1	Scorch	
1	Suspect Cultural Problem	
4	***Total for Lilac***	

Mountain Laurel	
1 Botryosphaeria Dieback	*Botryosphaeria sp.*
1 Insufficient Sample	
1 Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
1 Negative for Ramorum Blight	
1 Negative for Root Disease	
1 Scorch	
6 Total for Mountain Laurel	

Nandina	
1 Cercospora Leaf Spot	*Cercospora nandinae*
3 Environmental Stress	
1 Insufficient Sample	
1 Low pH	
1 Poor Drainage	
7 Total for Nandina	

Perennials, Miscellaneous	
1 Chemical Injury	
1 Southern Blight	*Sclerotium rolfsii*
2 Total for Perennials, Miscellaneous	

Photinia	
2 Entomosporium Leaf Spot	*Entomosporium mespili*
1 Insects	
1 Sapsucker Injury	
4 Total for Photinia	

Pieris	
1 Insect	
2 Insufficient Sample	
3 Total for Pieris	

Pittosporum	
1 Insufficient Sample	
1 Winter Injury	
2 Total for Pittosporum	

Plants, Miscellaneous	
1 Insects	
1 Insufficient Sample	
1 Lichens	
1 Plant Bugs	
4 Total for Plants, Miscellaneous	

Privet	
3 Environmental Stress	
1 Physiological Problem	
4 Total for Privet	

Pyracantha

1	Insufficient Sample	
1	***Total for Pyracantha***	

Rhododendron

2	Botryosphaeria Dieback	*Botryosphaeria sp.*
2	Cercospora Leaf Spot	*Cercospora handelii*
1	Cultural Problem	
1	Environmental Stress	
2	Insects	
3	Insufficient Sample	
1	Lacebugs	
2	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
2	Negative for Phytophthora	
1	Negative for Ramorum Blight	
1	Negative for Root Disease	
1	Pestalotia Leaf Spot	*Pestalotia sp.*
2	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Plant Hairs	
2	Rootbound	
1	Scorch	
1	Sunscald	
26	***Total for Rhododendron***	

Rose

2	Black Spot	*Diplocarpon rosae*
1	Botrytis Blight	*Botrytis cinerea*
3	Chemical Injury	
1	Cultural Problem	
2	Insects	
1	Insufficient Sample	
1	Mites	
1	Phomopsis Cane Canker	*Phomopsis sp.*
1	Powdery Mildew	*Sphaerotheca pannosa*
1	Rose Rosette	
1	Sooty Mold	
3	Suspect Rose Rosette	
1	Suspect Virus	
19	***Total for Rose***	

Shaving-brush-tree

1	Cultural Problem	
1	***Total for Shaving-brush-tree***	

Shrub, Unknown

1	Insect	
1	***Total for Shrub, Unknown***	

Skimmia	
1 Insufficient Sample	
1 Total for Skimmia	

Smoke Tree	
1 Chemical Injury	
1 Suspect Environmental Stress	
2 Total for Smoke Tree	

Snowball Bush	
1 Cultural Problem	
1 Total for Snowball Bush	

Spirea	
1 Botryosphaeria Dieback	*Botryosphaeria sp.*
1 Negative for Root Disease	
2 Total for Spirea	

Summersweet	
1 Mites	
1 Total for Summersweet	

Sweetspire	
1 Anthracnose	*Colletotrichum sp.*
1 Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
2 Total for Sweetspire	

Viburnum	
1 Botryosphaeria Dieback	*Botryosphaeria sp.*
1 Botrytis Blight	*Botrytis cinerea*
1 Giant European Hornets	
4 Insufficient Sample	
1 Negative for Disease	
1 Phoma Dieback	*Phoma sp.*
9 Total for Viburnum	

Wax Myrtle	
1 Botryosphaeria Dieback	*Botryosphaeria sp.*
1 Phyllosticta Leaf Spot	*Phyllosticta sp.*
2 Total for Wax Myrtle	

Wisteria	
1 Suspect Cultural Problem	
1 Total for Wisteria	

Witchhazel	
2 Phyllosticta Leaf Blight	*Phyllosticta hamamelidis*
2 Total for Witchhazel	

Yew		
1	Black Vine Weevils	
1	High pH	
4	Insufficient Sample	
1	Negative for Disease	
2	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Suspect Winter Injury	
10	***Total for Yew***	

Yucca		
1	Coniothyrium Leaf Spot	*Coniothyrium concentricum*
1	***Total for Yucca***	

Identification Appendix

Information about samples submitted to the laboratory for identification

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Higher Plants (35)

Family: Aceraceae	
Acer negundo	Boxelder
Family: Araceae	
Acorus calamus	Sweetflag
Family: Asteracaceae	
Tussilago farfara	Colt's-foot
Arnoglossum atriplicifolium	Pale Indian Plantain
Family: Berberidaceae	
Mahonia aquifolium	Oregon Grapeholly
Family: Caprifoliaceae	
Symphoricarpos orbiculatus	Buck-brush, Devils Shoestring, or Coralberry
Family: Celastraceae	
Euonymus europaeus	European Euonymus
Euonymus japonica	Japanese Euonymus
Family: Ceratophyllaceae	
Ceratiphylum demersum	Coontail
Family: Ericaceae	
Vaccinium stamineum	Deerberry
Family: Euphorbiaceae	
Euphorbia heterophylla	Spurge
Family: Juglandaceae	
Carya cordiformis	Bitternut Hickory
Carya sp.	Hickory
Family: Oleaceae	
Fraxinus pennsylvanica	Green Ash
Family: Onagraceae	
Ludwigea paulaustris	Marsh Purslane
Oenothera biennis complex	Common Evening Primrose
Family: Phytolaccaceae	
Gladiolus gandavensis	Gladiolus

Family: Poaceae	
Andropogon virginicus	Broomsedge
Digitaria sanguinalis	Large Crabgrass
Eleusine indica	Goosegrass
Festuca arundinacea	Tall Fescue
Festuca sp.	Fine Fescue
Lolium multiflorum	Italian Ryegrass
Microstegium vineium	Japanese Stiltgrass
Muhlenbergia schreberi	Nimbleweed
Family: Polygonaceae	
Polygonum cuspidatum	Japanese Knotweed
Polygonum sp.	Knotweed
Family: Ranunculaceae	
Clematis sp.	Clematis
Family: Rosaceae	
Pyrus calleryana	Bradford Pear Hybrid
Pyrus communis (2)	Common Pear
Rubus argutus	Common Blackberry
Family: Solanaceae	
Lycium chinense	Matrimony Vine
Family: Tamaricaceae	
Tamarix sp.	Tamarisk
Family: Verbenaceae	
Clerodendron trichotomum	Glory Bower

Fungi (9)

Omphalotus olearius	Jack-o-Lantern Mushroom
Scleroderma geaster (2)	Earthball
Phallus impudicus	Stinkhorn
Lepiota procera	Parasol Mushroom
Astraeus sp.	Earthstar
Polyporus sulphureus	Polyporus
Unidentified Genus	Unidentified Fungus
Stereum sp.	Parchment Fungus

All Others (3)

Unknown Substance (2)
Negative for Alsike Clover