The Plant Disease Clinic and Weed Identification Lab Annual Report 2016

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Virginia Polytechnic Institute and State University
Blacksburg, Virginia

The Plant Disease Clinic
2016 Annual Report

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Acknowledgements

The Plant Disease Clinic depends on an 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 2016, diagnoses in the Plant Disease Clinic in Blacksburg were performed by Mary Ann Hansen and Elizabeth Bush, with valuable assistance from Ella Reeves and Isabel Awhee-Marrah.

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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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. Andrew Mike for IT support during the year.

Ella Reeves painstakingly compiled the annual report. The annual report can be viewed on-line at < https://www.ppws.vt.edu/extension/plant-disease-clinic/reports.html>.

Introduction

The annual report for the Plant Disease 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 are diagnosed with 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 the cause of the disease if they were cultured in high numbers from the plant tissue or identified by molecular techniques, 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 an antibody test involving the use of immunostrips 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 to make 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 plant samples from which no pathogen could be isolated and for which no obvious environmental or cultural condition could be associated with the problem. Trees have more samples 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. Samples with known insect problems should be sent directly to the Insect ID Lab with the appropriate form.

We also receive digital images and email messages regarding plant problems. For the most part, it is difficult to diagnose diseases without a plant sample; however, diseases with unique symptoms can sometimes be diagnosed from an image or a description. Images are most useful when submitted with a plant sample. Total numbers of email and digital image inquiries are listed on p.3.

Reports are mailed electronically to the local Extension office from which the sample originated. 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://pubs.ext.vt.edu/category/plant-diseases.html.

DISEASE HIGHLIGHTS 2016

The Plant Disease Clinic performed 1673 disease diagnoses and identifications on 1309 plant samples in 2016. Highlights are provided below.

Plant problems diagnosed in the Virginia Tech Plant Disease Clinic for the first time in 2016:

Field Crops

- Hops – Alternaria cone disorder, caused by the fungus *Alternaria alternata*
- Hops – Charcoal rot, caused by the fungus *Macrophomina phaseoli*
- Hops – Fusarium canker, caused by the fungus *Fusarium* spp.
- Tobacco – Fusarium wilt, caused by the fungus *Fusarium oxysporum*


Alternaria leaf spot on Dianthus

Hops is a relatively new crop for Virginia, and we are just beginning to learn about the diseases that occur on this crop in the Eastern United States. Thus, although several of the hops diseases listed here are well known in the West, they have not been seen in Virginia before because hops have only recently been cultivated in the East.

Herbaceous Ornamentals

- Dianthus – Alternaria leaf spot and petal blight, caused by the fungus *Alternaria dianthicola*
- Hellebore – Sclerotinia crown and root rot, caused by the fungus *Sclerotinia* sp.
- Hypericum – Rust, caused by the fungus *Uromyces triquestrus*
- Impatiens – Ramularia leaf spot, caused by the fungus *Ramularia* sp.
- Milkweed – Bacterial blight, caused by *Xanthomonas campestris*
- Peony – Foliar nematodes, caused by *Aphelenchoides* sp.
- Sunflower – Powdery mildew, caused by the fungus *Oidium* sp.


Foliar nematodes on peony


Cercospora leaf spot on zelkova

Trees and Woody Shrubs

- Hornbeam – Witches' broom, caused by the fungus *Taphrina carpini*
- Lilac – Ascochyta blight, caused by the fungus *Ascochyta syringae*
- Loropetalum – Bacterial gall, caused by *Pseudomonas savastanoi*
- Zelkova – Cercospora leaf spot, caused by the fungus *Cercospora* sp.

Vegetables and Herbs

- Celery – Southern root knot nematodes, caused by *Meloidogyne incognita*
- Ginger – Bacterial wilt, caused by *Ralstonia solanacearum* (negative for race R3b2)
- Potato – Black leg, caused by the bacterium *Dickeya dianthicola*
- Rhubarb – Phytophthora crown rot, caused by the oomycete *Phytophthora* sp.

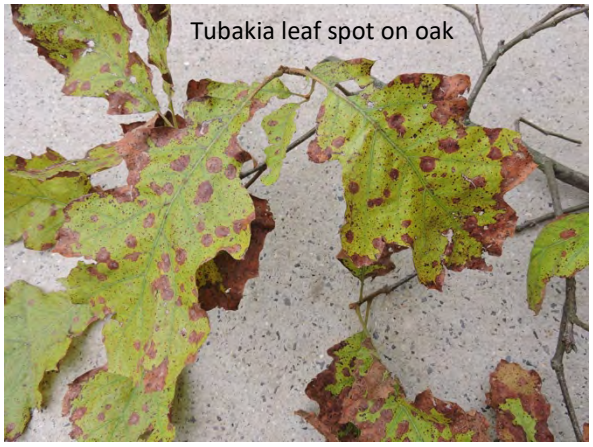
We commonly diagnose bacterial wilt on tomatoes and eggplant in Virginia; however, we had never seen this disease on ginger until this year. The bacterial pathogen, *Ralstonia solanacearum*, has several strains or races, one of which (race R3b2) causes a serious disease of potato that is of regulatory importance. Because we had never diagnosed this disease on ginger before, it was important to determine the race of the pathogen that was present in the plants we received. Race determination was done by the University of Florida diagnostic lab. It was determined that the ginger strain was NOT the strain that is federally regulated.

Black leg of potato can be caused by several different species of bacteria. In recent years a bacterial species that has been present in the United States for many years began causing more problems in potato fields in eastern states. Symptoms caused by this species (*Dickeya dianthicola*) typically progress more rapidly and are more severe than the for the black leg disease caused by species of *Pectobacterium* that was previously more common. *Dickeya dianthicola* causes rapid wilting of plants during the growing season, especially during very hot weather. It causes a dry stem rot, characterized by dry, black, hollow stems, as opposed to the mushy stem rot caused by *Pectobacterium* species. Tubers infected by *D. dianthicola* become macerated but do not have the foul smell typical of black leg caused by species of *Pectobacterium*. *Dickeya dianthicola* enters fields in contaminated seed pieces. The bacteria may spread to other tubers under very wet soil conditions, but they do not persist in the soil in the absence of a susceptible host, so rotation to non-host crops is recommended. Brassica crops and onions may serve as alternate hosts.

Other Highlights

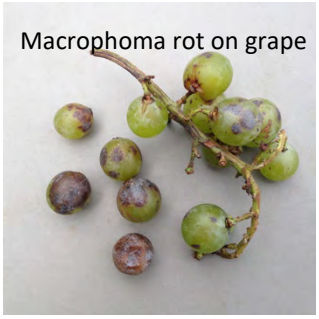
Impatiens downy mildew, caused by the oomycete *Plasmopara obducens*, was a big problem in greenhouse and landscape impatiens in the eastern United States in 2012. Impatiens downy mildew is only a problem in *Impatiens walleriana* and its hybrids; it is not a problem in New Guinea impatiens. Many greenhouse growers implemented appropriate disease management strategies and increased the diversity of the annuals they grew following the 2012 epidemic of this disease. Home growers also began to plant a variety of annuals rather than mass plantings of garden impatiens. As a result of all of these changes, we have not received samples of impatiens with downy mildew since 2013. The fact that we diagnosed this disease on plants from two different counties in 2016 means that this disease has not gone away for good!

Diseases that were common on trees in 2016 included **Seiridium canker**, a fungal disease of Leyland cypress, and **bacterial scorch**, a vascular disease of oaks and many other tree species that is caused by the bacterium *Xylella fastidiosa*. We diagnosed bacterial scorch on both oak and elm in 2016. **Tubakia leaf spot** was also common on oaks. This disease is usually a late-season disease, but during wet seasons, it may appear earlier and cause substantial leaf drop, as we saw this season.



Basil downy mildew, caused by the oomycete *Peronospora belbahrii*, appeared in several counties before the end of the 2016 growing season, causing sudden decline of basil plantings. This disease is favored by cool, humid weather conditions. It is often confused with nutrient deficiency or drought stress in the early stages. In later stages of infection, a dusty, gray, fuzzy growth can be seen on the lower leaf surface. There are few options for control, but breeding programs are ongoing to develop resistant varieties of sweet basil.

In grapes, we diagnosed the fungal disease, **Macrophoma berry rot**. The fungus *Macrophoma* has had several names, the most current being *Botryosphaeria dothidea*. This fungus causes a soft berry rot, as well as lesions on the stem and rachis. Infected berries drop from the vine and shrivel. The disease has been found on both bunch and muscadine grapes.


Macrophoma rot on grape

Boxwood blight, caused by the fungus *Calonectria pseudonaviculata*, continued to spread in Virginia in 2016, and the Plant Disease Clinic received record numbers of boxwood samples for diagnosis. Many submitters reported having bought new boxwood plants at one large retailer. The Virginia Department of Agriculture and Consumer Services was able to trace the problem back to one supplier on the West Coast. Stop-sales were implemented, but, unfortunately, many plants had already been sold before the source of the problem was identified.


Boxwood blight on English boxwood

Widespread **mortality of rosebay rhododendron** continued to be reported in 2016. (See 2015 annual report.) Two new locations of this phenomenon were reported, including Albemarle County and the St. Mary's Wilderness Area, in addition to new properties along the Blue Ridge Parkway and in Grayson County. Soil and plant samples were collected from the Albemarle County site. Insects reared from small holes in trunk samples turned out to be *Xylosandrus germanus*, a secondary borer. As with the 2015 samples collected from the Parkway, ring nematodes were found in the soil and secondary fungi were cultured from the stems. No single cause of the problem could be determined, and we believe this problem is due to a combination of abiotic and biotic factors.

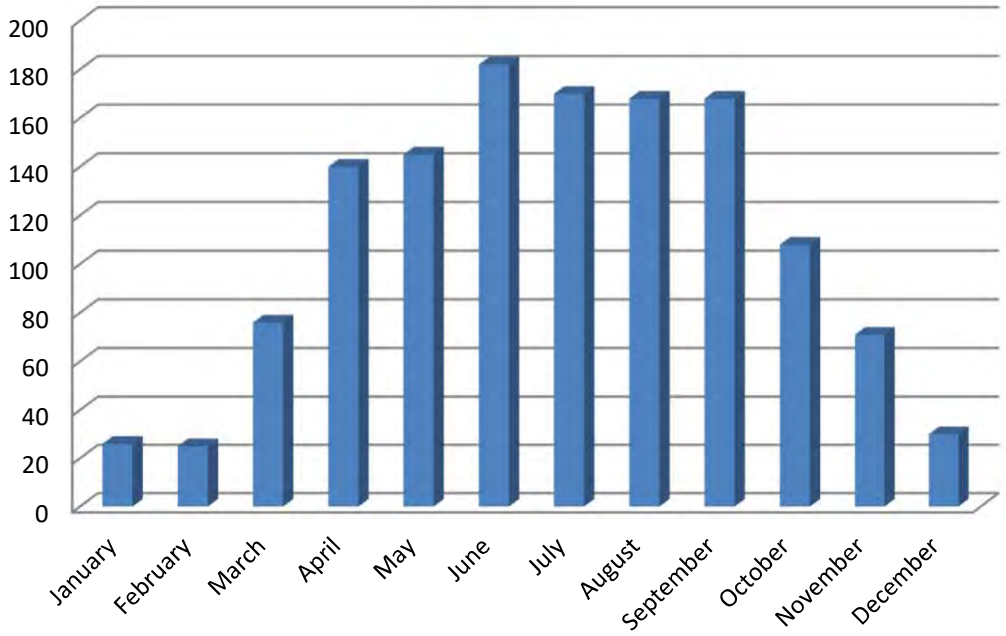

Discolored wood in dying rosebay rhododendron

Monthly Submission Summary

Number of samples received by month

Month	# Samples
January	26
February	25
March	76
April	140
May	145
June	182
July	170
August	168
September	168
October	108
November	71
December	30
Total for 2016	**1,309**

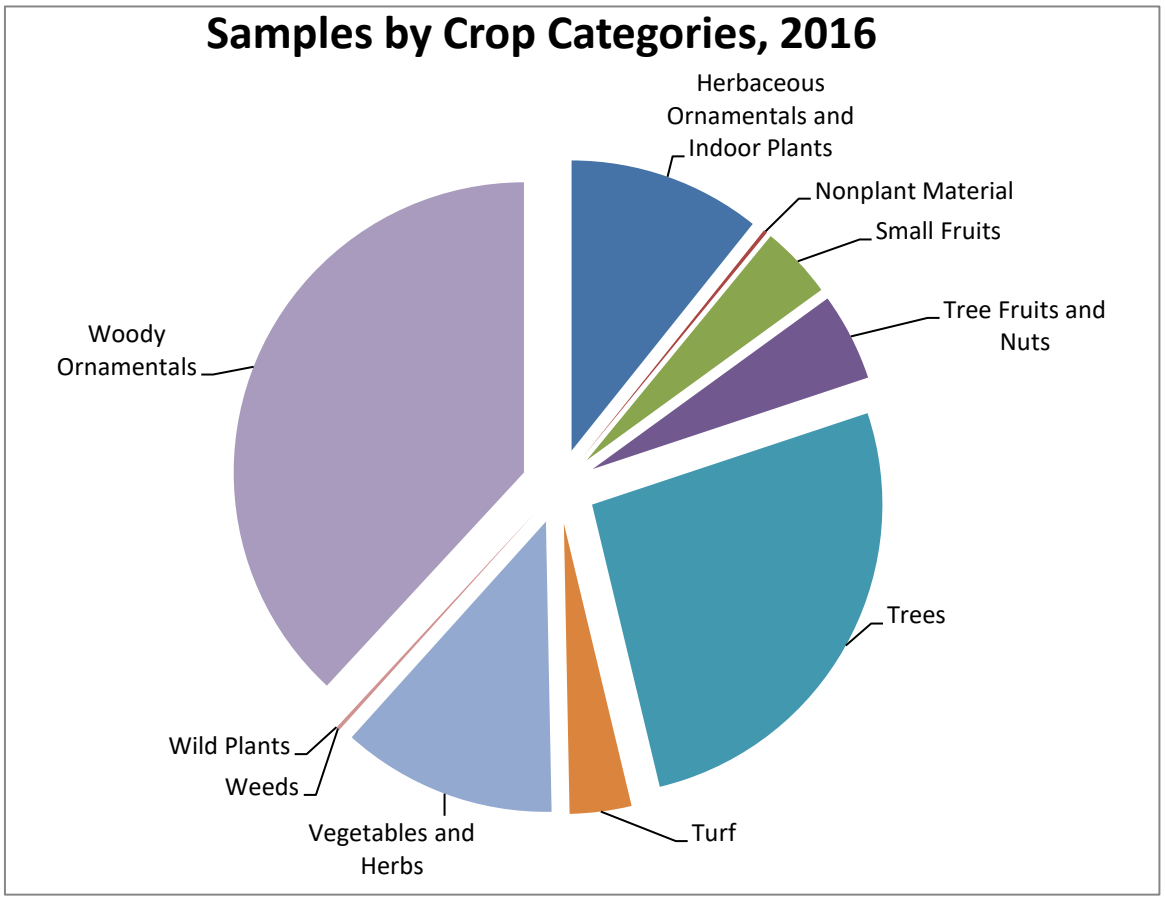
Number of Samples by Month, 2016



Samples by Crop Category

Sample totals by major crop categories, excluding plant identifications

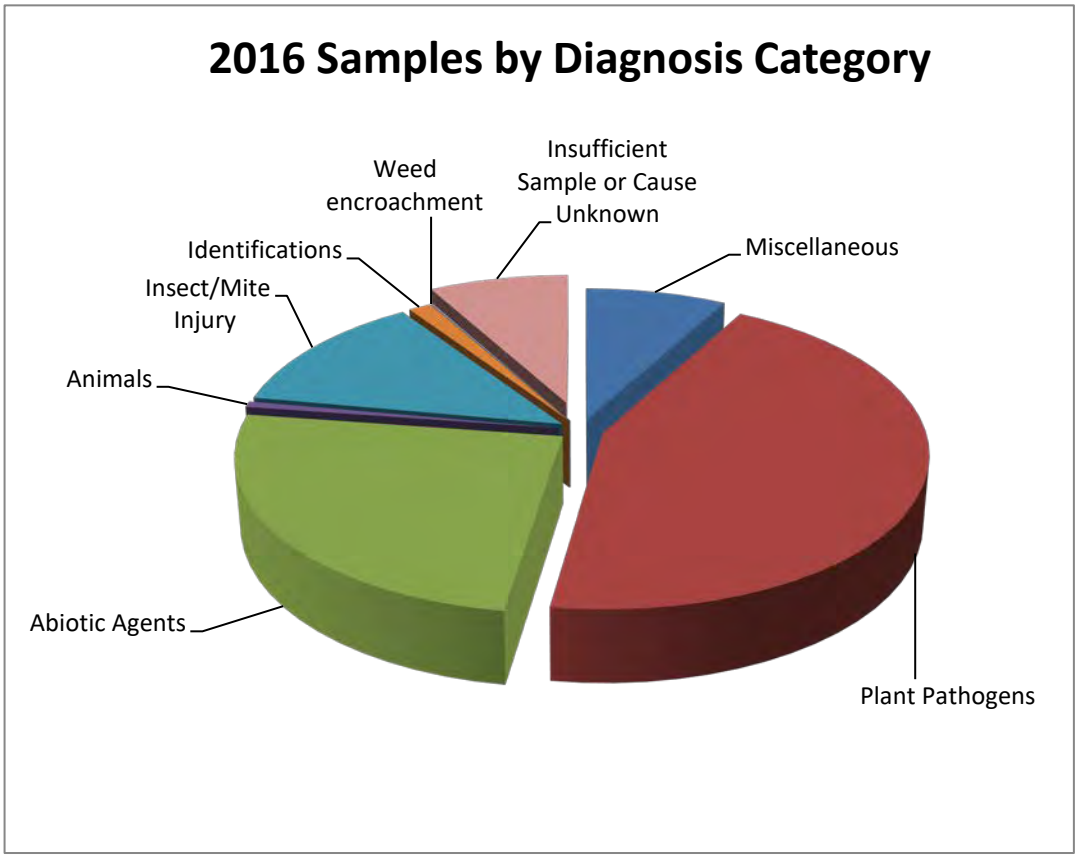
Crop Category	# of Samples	% of Total
Field Crops	55	4.3
Herbaceous Ornamentals and Indoor Plants	132	10.3
Nonplant Material	2	0.2
Small Fruits	50	3.9
Tree Fruits and Nuts	60	4.7
Trees	325	25.3
Turf	43	3.3
Vegetables and Herbs	148	11.5
Weeds	2	0.2
Woody Ornamentals	470	36.6
Total	**1,287**	

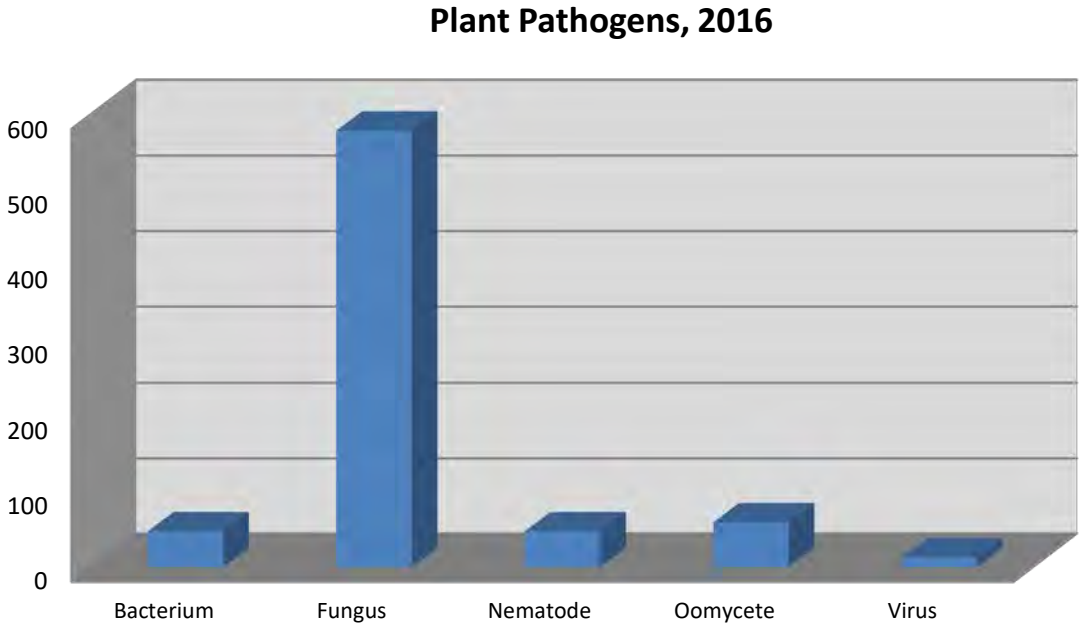


Diagnosis/ID Category Summary

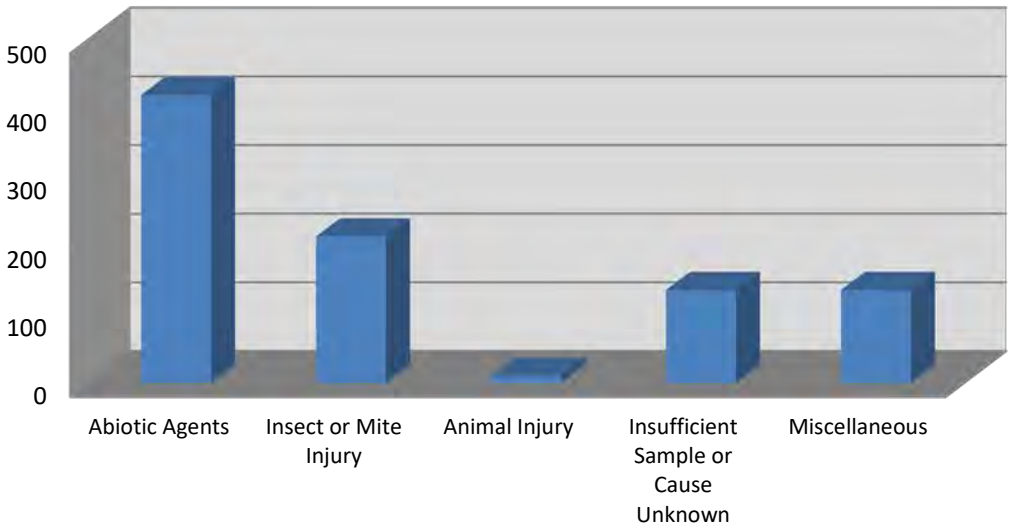
	# of Diagnoses/IDs	% of Total
Plant Pathogens	**747**	**44.4**
Bacterium	48	
Fungus	578	
Nematode	48	
Oomycete	60	
Virus	13	
Abiotic Factors	**419**	**24.9**
Chemical	33	
Environmental/Cultural	383	
Mechanical	3	
Insects or Mites	**213**	**12.7**
Insects or Mites	213	
Other Animal Injury	**10**	**0.60**
Birds	4	
Mammals	6	
Insufficient Sample or Cause Unknown	**134**	**8.00**
Insufficient sample or information	124	
Unknown	10	
Miscellaneous	**135**	**8.00**
Algae	3	
Lichen	7	
Moss	1	
Normal Condition	9	
Other	104	
Physiological/Genetic	11	
Weed Encroachment	**1**	**0.10**
Weed	1	
Identifications	**22**	**1.30**
Bacterium	2	
Fungi	6	
Plant	12	
Unable to Identify	2	
Total	**1,682**	

Other Assistance, 2016	
Type	**# of Inquires**
Digital Submissions (Email, Digital Pictures)	142
Phone Calls	66


2016 Samples by Diagnosis Category
Weed encroachment
Insufficient Sample or Cause Unknown
Identifications
Miscellaneous
Insect/Mite Injury
Animals
Abiotic Agents
Plant Pathogens


Plant Pathogens, 2016
600
500
400
300
200
100
0
Bacterium
Fungus
Nematode
Oomycete
Virus

Other Agents, 2016



County	# of Samples	County	# of Samples
Out of State	2	LOUDOUN	18
ACCOMACK	4	LOUISA	9
ALBEMARLE	67	LUNENBURG	2
ALLEGHANY	2	LYNCHBURG CITY	70
AMELIA	5	MADISON	5
AMHERST	16	MATHEWS	3
APPOMATTOX	12	MECKLENBURG	2
ARLINGTON	5	MIDDLESEX	3
AUGUSTA	40	MONTGOMERY	88
BATH	3	NELSON	65
BEDFORD	18	NEW KENT	10
BOTETOURT	8	NEWPORT NEWS CITY	18
BRUNSWICK	2	NORTHAMPTON	5
BUCHANAN	1	NORTHUMBERLAND	10
CAMPBELL	16	NOTTOWAY	7
CAROLINE	5	ORANGE	12
CARROLL	8	PAGE	6
CHARLES CITY	1	PATRICK	11
CHESAPEAKE CITY	24	PETERSBURG CITY	1
CULPEPER	6	PITTSYLVANIA	8
CUMBERLAND	1	PORTSMOUTH CITY	22
DANVILLE CITY	5	POWHATAN	21
DICKENSON	3	PRINCE EDWARD	14
DINWIDDIE	1	PRINCE GEORGE	1
ESSEX	5	PRINCE WILLIAM	18
FAIRFAX	44	PULASKI	11
FAUQUIER	8	RAPPAHANNOCK	6
FLOYD	22	RICHMOND	1
FLUVANNA	10	RICHMOND CITY	6
FRANKLIN	21	ROANOKE	16
FREDERICK	18	ROCKBRIDGE	10
GILES	12	ROCKINGHAM	4
GLOUCESTER	3	RUSSELL	5
GOOCHLAND	13	SCOTT	3
GRAYSON	6	SHENANDOAH	8
GREENE	9	SMYTH	2
GREENSVILLE	3	SOUTHAMPTON	2
HALIFAX	5	SPOTSYLVANIA	18
HAMPTON CITY	5	STAFFORD	20
HANOVER	35	SUFFOLK CITY	5
HENRICO	24	SUSSEX	3
HENRY	3	TAZEWELL	4
HIGHLAND	2	VIRGINIA BEACH	32
ISLE OF WIGHT	8	WARREN	3
JAMES CITY	40	WASHINGTON	7
KING AND QUEEN	5	WESTMORELAND	18
KING GEORGE	10	WISE	11
KING WILLIAM	2	WYTHE	2
LANCASTER	6	YORK	104
LEE	5	**Total**	**1,309**

Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops		
Alfalfa		
1	Anthracnose	*Colletotrichum trifolii*
1	Charcoal Rot	*Macrophomina phaseolina*
1	Low pH	
1	Rhizoctonia Stem Canker	*Rhizoctonia solani*
1	Spring Black Stem and Leaf Spot	*Phoma medicaginis*
5	**Total for Alfalfa**	
Corn		
1	Charcoal Rot	*Macrophomina phaseoli*
1	Environmental Stress	
1	Nutrient Deficiency	
1	Thrips	
4	**Total for Corn**	
Fescue		
1	Cultural Problem	
1	Grubs	
1	No Pathogens Found	
1	Rust	*Puccinia graminis*
4	**Total for Fescue**	
Hemp		
1	Cercospora Leaf Spot	*Cercospora sp.*
1	**Total for Hemp**	

Hops		
1	Abiotic Problem	
2	Alternaria Cone Disorder	*Alternaria alternata*
1	Charcoal Rot	*Macrophomina phaseolina*
5	Downy Mildew	*Pseudoperonospora humuli*
1	Fusarium Canker	*Fusarium oxysporum*
1	Fusarium Canker	*Fusarium sp.*
1	Fusarium Cone Blight	*Fusarium sp.*
3	Insufficient Sample	
1	Japanese Beetles	
2	Mites	
2	Negative for Disease	
2	Negative for Downy Mildew	
2	No Pathogens Found	
1	Powdery Mildew	*Oidium sp.*
1	Suspect Abiotic Problem	
1	Suspect Fusarium Canker	*Fusarium sp.*
1	Suspect Wind Damage	
2	Thrips	
30	**Total for Hops**	

Millet		
1	Cultural Problem	
1	**Total for Millet**	

Oats		
1	Loose Smut	*Ustilago avenae*
1	**Total for Oats**	

Orchardgrass		
2	Anthracnose	*Colletotrichum graminicola*
1	Environmental Stress	
3	**Total for Orchardgrass**	

Pasture		
1	Insufficient Sample	
1	Requested Tissue Analysis	
2	**Total for Pasture**	

Soybean		
2	Charcoal Rot	*Macrophomina phaseolina*
1	Essex Syndrome	*Fusarium oxysporum*
1	Fusarium Root Rot	*Fusarium solani*
1	Pythium Root and Stem Rot	*Pythium sp.*
1	Stinkbugs	
1	Suspect Brown Marmorated Stink Bug	*Halyomorpha halys*
7	**Total for Soybean**	

Tobacco		
2	Black Shank	*Phytophthora nicotianae*
1	Fusarium Wilt	*Fusarium oxysporum f. sp. nicotianae*
1	Target Leaf Spot	*Rhizoctonia solani*
4	**Total for Tobacco**	

Wheat		
2	Frost Injury	
1	Negative for Disease	
3	**Total for Wheat**	

Herbaceous Ornamentals and Indoor Plants		
African Violet		
1	No Pathogens Found	
1	Pythium Root Rot	*Pythium sp.*
2	**Total for African Violet**	
Agastache		
2	Negative for Virus	
2	Thrips	
4	**Total for Agastache**	
Artemisia		
1	Cultural Problem	
1	**Total for Artemisia**	
Butterfly Weed		
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
1	**Total for Butterfly Weed**	
Cactus		
1	Oedema	
1	**Total for Cactus**	
Calamondin Orange		
1	Suspect Cultural Problem	
1	**Total for Calamondin Orange**	
Cape Primrose		
1	Abiotic Problem	
1	**Total for Cape Primrose**	
Cardinal Flower		
1	Southern Blight	*Sclerotium rolfsii*
1	**Total for Cardinal Flower**	

Chrysanthemum		
2	Cultural Problem	
2	Fusarium Wilt	*Fusarium oxysporum*
1	Insufficient Sample	
1	Negative for Disease	
1	Negative for Virus	
1	Pythium Stem and Root Rot	*Pythium sp.*
1	Suspect Chemical Injury	
9	**Total for Chrysanthemum**	
Clematis		
1	No Pathogens Found	
1	**Total for Clematis**	
Coleus		
2	Abiotic Problem	
2	Downy Mildew	*Peronospora lamii*
2	No Pathogens Found	
6	**Total for Coleus**	
Coneflower		
4	Abiotic Problem	
1	Cultural Problem	
1	No Pathogens Found	
1	Nutrient Deficiency	
1	Physiological Leaf Spot	
8	**Total for Coneflower**	
Coreopsis		
1	Bacterial Leaf Blight	*Pseudomonas cichorii*
1	**Total for Coreopsis**	
Creeping Jenny		
1	Southern Blight	*Sclerotium rolfsii*
1	**Total for Creeping Jenny**	
Daylily		
1	Cultural Problem	
1	**Total for Daylily**	

Dianthus		
1	Alternaria Leaf Spot and Petal Blight	*Alternaria dianthicola*
1	Fusarium Stem and Root Rot	*Fusarium sp.*
1	Suspect Cultural Problem	
3	**Total for Dianthus**	

Dichondra		
1	Abiotic Problem	
1	**Total for Dichondra**	

Dracaena		
1	Mites	
1	**Total for Dracaena**	

Fern		
1	Abiotic Problem	
1	Botrytis Blight	*Botrytis cinerea*
1	Cultural Problem	
2	Suspect Environmental Stress	
5	**Total for Fern**	

Foxglove		
1	High Soluble Salts	
1	Insufficient Sample	
1	Low pH	
1	Pythium Root Rot	*Pythium sp.*
4	**Total for Foxglove**	

Heliopsis		
1	Bacterial Leaf Spot	*Pseudomonas syringae*
1	**Total for Heliopsis**	

Hellebore		
1	Bacterial Soft Rot	*Pectobacterium carotovorum ss. carotovorum*
2	Botrytis Blight	*Botrytis cinerea*
1	Fusarium Crown Rot	*Fusarium oxysporum*
1	Pythium Root Rot	*Pythium sp.*
1	Sclerotinia Crown and Root Rot	*Sclerotinia sp.*
1	Suspect Winter Injury	
7	**Total for Hellebore**	

Hosta		
1	Cercospora Leaf Spot	*Cercospora sp.*
1	**Total for Hosta**	
Ice plant		
1	No Pathogens Found	
1	**Total for Ice plant**	
Impatiens		
1	Abiotic Problem	
2	Downy Mildew	*Plasmopara obducens*
1	Negative for Disease	
1	Ramularia Leaf Spot	*Ramularia sp.*
5	**Total for Impatiens**	
Iris		
1	Frost injury	
1	Heterosporium Leaf Spot	*Heterosporium iridis*
2	**Total for Iris**	
Lavender		
2	Phytophthora Root Rot	*Phytophthora nicotianae*
2	**Total for Lavender**	
Lily		
1	Suspect Botrytis Blight	*Botrytis elliptica*
3	Suspect Virus	
4	**Total for Lily**	
Lobelia		
1	Abiotic Problem	
1	**Total for Lobelia**	
Madagascar Periwinkle		
1	Negative for Disease	
1	Phytophthora Blight	*Phytophthora nicotianae*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
3	**Total for Madagascar Periwinkle**	
Mallow		
1	Rust	*Puccinia malvacearum*
1	**Total for Mallow**	

Milkweed		
1	Bacterial Blight	*Xanthomonas campestris*
1	**Total for Milkweed**	
Mint		
1	Suspect Environmental Stress	
1	**Total for Mint**	
Miscanthus		
1	Crown Sheath Rot	*Gaeumannomyces graminis*
1	**Total for Miscanthus**	
Orchid		
2	Anthracnose	*Colletotrichum sp.*
1	Cymbidium Mosaic Virus	
1	Negative for Virus	
4	**Total for Orchid**	
Ornamental Kale		
1	Black Rot	*Xanthomonas campestris pv. campestris*
1	**Total for Ornamental Kale**	
Pachysandra		
1	Suspect Cultural Problem	
1	Volutella Blight	*Volutella pachysandrae*
2	**Total for Pachysandra**	
Pansy		
1	Low pH	
1	Negative for Root Disease	
1	Pythium Root Rot	*Pythium sp.*
3	**Total for Pansy**	
Peony		
1	Borers	
1	Botrytis Blight	*Botrytis cinerea*
1	Cladosporium Stem and Leaf Blotch	*Cladosporium paeoniae*
1	Foliar Nematodes	*Aphelenchoides sp.*
1	Healthy	
5	**Total for Peony**	

Petunia		
1	Chemical Injury	
1	Environmental Stress	
1	Negative for Phytophthora Root Rot	
3	**Total for Petunia**	

Phlox		
1	Anthracnose	*Colletotrichum sp.*
1	Black Root Rot	*Thielaviopsis basicola*
2	Botrytis Blight	*Botrytis cinerea*
1	Phytophthora Root and Stem Rot	*Phytophthora nicotianae*
1	Soft Rot	*Erwinia carotovora*
1	Suspect Cultural Problem	
1	Web Blight	*Rhizoctonia solani*
8	**Total for Phlox**	

Physostegia		
1	Negative for Root Disease	
1	**Total for Physostegia**	

Plants, Miscellaneous		
1	Suspect Chemical Injury	
1	**Total for Plants, Miscellaneous**	

Poinsettia		
1	Suspect Cultural Problem	
1	**Total for Poinsettia**	

Prairie Dropseed		
1	Environmental Stress	
1	**Total for Prairie Dropseed**	

Ranunculus		
1	Aphids	
1	Blue Mold Rot	*Penicillium sp.*
1	Pythium Root Rot	*Pythium sp.*
1	Suspect Chemical Injury	
4	**Total for Ranunculus**	

Red Hot Poker		
1	Thrips	
1	**Total for Red Hot Poker**	

Salvia		
1	Bacterial Leaf Spot	*Pseudomonas cichorii*
1	Insufficient Sample	
2	**Total for Salvia**	

Schefflera		
1	Suspect Cultural Problem	
1	**Total for Schefflera**	

Sedum		
1	Anthracnose	*Colletotrichum sp.*
1	Sooty Mold	
1	Suspect Abiotic Problem	
3	**Total for Sedum**	

Snapdragon		
2	Pythium Root Rot	*Pythium sp.*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia sp.*
1	Suspect Chemical Injury	
4	**Total for Snapdragon**	

Sneezeweed		
1	Micro-nutrient Toxicity	
1	**Total for Sneezeweed**	

Sunflower		
1	Powdery Mildew	*Oidium sp.*
1	Thrips	
2	**Total for Sunflower**	

Sweet Woodruff		
1	Abiotic Problem	
1	Botrytis Blight	*Botrytis cinerea*
2	**Total for Sweet Woodruff**	

Tickseed		
1	No Pathogens Found	
1	**Total for Tickseed**	

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

Veronica		
1	Abiotic Problem	
1	**Total for Veronica**	
Violet		
1	Black Root Rot	*Thielaviopsis basicola*
1	Pythium Root Rot	*Pythium sp.*
2	**Total for Violet**	
Wax Plant		
1	Cultural Problem	
1	**Total for Wax Plant**	
Zinnia		
1	Bacterial Leaf Spot	*Xanthomonas campestris pv. zinneae*
1	Botrytis Stem Canker	*Botrytis cinerea*
1	Cercospora Leaf Spot	*Cercospora zinniae*
3	**Total for Zinnia**	

Small Fruits		
Blackberry		
3	Borers	
1	Cane and Leaf Rust	*Kuehneola uredinis*
1	Crown Borers	
1	Dagger Nematode	*Xiphinema sp.*
2	Insufficient Sample	
1	Mechanical Injury	
1	Mites	
1	Negative for Root Disease	
1	Septoria Leaf Spot	*Sphaerulina westendorpii*
1	Spur Blight	*Didymella applanata*
2	Suspect Cane Blight	*Coniothyrium fuckelii*
1	Suspect Virus	
16	**Total for Blackberry**	
Blueberry		
1	Cultural Problem	
2	Insects	
3	Insufficient Sample	
2	Low pH	
1	Negative for Nematodes	
1	Negative for Phytophthora Root Rot	
1	Phyllosticta Leaf Spot	*Phyllosticta sp.*
1	Suspect Cultural Problem	
12	**Total for Blueberry**	
Fig		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	**Total for Fig**	

Grape		
1	Alternaria Berry Rot	*Alternaria alternata*
2	Beetles	
1	Bitter Rot	*Greeneria uvicola*
3	Black Rot	*Guignardia bidwellii*
1	Crown Gall	*Rhizobium (Agrobacterium) vitis*
1	Downy Mildew	*Plasmopara viticola*
1	Insects	
1	Leaf Blight	*Pseudocercospora vitis*
2	Macrophoma Rot	*Macrophoma sp.*
1	No Pathogens Found	
1	Positive for Phomopsis	*Phomopsis viticola*
1	Ripe Rot	*Colletotrichum gloeosporioides*
1	Saprophyte	*Fusarium sp.*
1	Suspect Abiotic Problem	
1	Suspect Crown Gall	*Agrobacterium (Rhizobium) vitis*
19	**Total for Grape**	

Raspberry		
1	Borers	
2	Cane Blight	*Coniothyrium fuckellii*
1	Mites	
1	Mycosphaerella (Cercospora) Leaf Blotch	*Mycosphaerella confusa*
1	Scales	
2	Suspect Chemical Injury	
8	**Total for Raspberry**	

Strawberry		
2	Anthracnose Crown Rot	*Colletotrichum gloeosporioides*
1	Phomopsis Leaf Blight	*Phomopsis obscurans*
1	Rootworms	
1	Suspect Abiotic Problem	
5	**Total for Strawberry**	

Tree Fruits and Nuts		
Apple		
1	Aphids	
2	Bitter Rot	*Glomerella cingulata*
9	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
5	Fire Blight	*Erwinia amylovora*
1	Frost Injury	
3	Insects	
1	Insufficient Sample	
1	Lichens	
1	Mites	
1	No Pathogens Found	
1	Phoma Leaf Spot	*Phoma sp.*
1	Stinkbugs	
1	Suspect Black Rot	*Botryosphaeria obtusa*
1	Suspect Cedar-Quince Rust	*Gymnosporangium clavipes*
1	Suspect Phomopsis Fruit Decay	*Diaporthe perniciosa*
1	White Rot	*Botryosphaeria dothidea*
31	**Total for Apple**	
Cherry		
2	Cercospora Leaf Spot	*Cercospora circumscissa*
1	Insufficient Sample	
1	Lesion Nematodes	*Pratylenchus sp.*
1	Phomopsis Dieback	*Phomopsis sp.*
1	Suspect Cherry Leaf Spot	*Blumeriella jaapii*
6	**Total for Cherry**	
Crabapple		
1	Fire Blight	*Erwinia amylovora*
1	**Total for Crabapple**	
Fruit Trees, Misc.		
1	Insufficient Sample	
1	**Total for Fruit Trees, Misc.**	
Lemon		
1	Suspect Cultural Problem	
1	**Total for Lemon**	

Mulberry		
1	Abiotic Problem	
1	**Total for Mulberry**	

Peach		
1	Abiotic Problem	
2	Brown Rot	*Monilinia fructicola*
1	Cicada Injury	
1	Environmental Stress	
1	Gummosis	*Botryosphaeria sp.*
1	Insufficient Sample	
1	Lesion Nematodes	*Pratylenchus sp.*
1	Sapsucker Injury	
9	**Total for Peach**	

Pear		
1	Abiotic Problem	
1	Fire Blight	*Erwinia amylovora*
1	Insects	
1	No Pathogens Found	
1	Pear Leaf Blister Mites	
5	**Total for Pear**	

Pecan		
1	Mites	
2	Pops	
1	Scab	*Cladosporium caryigenum*
1	Sooty Mold	
5	**Total for Pecan**	

Persimmon		
1	No Pathogens Found	
1	**Total for Persimmon**	

Plum		
1	Abiotic Problem	
1	Black Knot	*Dibotryon morbosum*
1	Borers	
1	Coniothyrium Leaf Spot	*Coniothyrium sp.*
1	Frost injury	
1	Suspect Chemical Injury	
6	**Total for Plum**	

Trees		
Arborvitae		
1	Abiotic Problem	
1	Bagworms	
1	Cultural Problem	
3	Environmental Stress	
1	Insects	
2	Insufficient Sample	
2	Leafminers	
5	Mites	
2	Negative for Root Disease	
3	No Pathogens Found	
1	Normal Senescence	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis funerea*
1	Seasonal Needle Drop	
1	Suspect Chemical Injury	
1	Suspect Environmental Stress	
1	Suspect Nutrient Deficiency	
27	**Total for Arborvitae**	
Beech		
1	Abiotic Problem	
1	Beech Bark Disease	*Nectria coccinea var. faginata*
1	Insects	
1	Mites	
1	Negative for Beech Bark Disease	
1	Suspect Environmental Stress	
6	**Total for Beech**	
Birch		
1	Insufficient Sample	
1	Septoria Leaf Spot	*Septoria betulicola*
1	Suspect Bleeding Canker	*Phytophthora sp.*
3	**Total for Birch**	
Black Gum		
2	Anthracnose	*Colletotrichum sp.*
1	Insufficient Sample	
1	Negative for Root Disease	
1	Suspect Nectria Canker	*Nectria sp.*
5	**Total for Black Gum**	

Boxelder		
1	Insufficient Sample	
1	**Total for Boxelder**	

Cedar		
1	Insufficient Sample	
1	No Pathogens Found	
1	Phytophthora Root Rot	*Phytophthora nicotianae*
3	**Total for Cedar**	

Cryptomeria		
1	Environmental Stress	
1	No Pathogens Found	
1	Pestalotiopsis Tip Blight	*Pestalotiopsis sp.*
1	Suspect Cultural Problem	
4	**Total for Cryptomeria**	

Cypress		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cultural Problem	
1	Insects	
7	Insufficient Sample	
2	Negative for Root Pathogens	
8	No Pathogens Found	
1	Normal Condition	
2	Pestalotiopsis Tip Blight	*Pestalotiopsis sp.*
1	Seasonal Needle Drop	
11	Seiridium Canker	*Seiridium sp.*
1	Sphaeropsis Canker	*Sphaeropsis sp.*
2	Suspect Cultural Problem	
10	Suspect Seiridium Canker	*Seiridium sp.*
48	**Total for Cypress**	

Dogwood		
1	Cultural Problem	
2	Environmental Stress	
1	Insufficient Sample	
2	No Disease Found	
3	Powdery Mildew	*Oidium sp.*
1	Scorch	
1	Septoria Leaf Spot	*Septoria cornicola*
2	Spot Anthracnose	*Elsinoe corni*
13	**Total for Dogwood**	

Douglasfir		
1	Swiss Needle Cast	*Phaeocryptopus gaeumannii*
1	**Total for Douglasfir**	
Eastern Red Cedar		
1	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
1	Crystalline Exudate	
1	Mites	
1	Negative for Disease	
1	Negative for Foliar Disease	
1	Sphaeropsis Dieback	*Sphaeropsis sp.*
1	Suspect Cercospora Blight	*Pseudocercospora juniperi*
7	**Total for Eastern Red Cedar**	
Eleagnus		
1	Normal Condition	
1	**Total for Eleagnus**	
Elm		
1	Bacterial Scorch	*Xylella fastidiosa*
1	Suspect Cultural Problem	
2	**Total for Elm**	
Falsecypress		
1	Abiotic Problem	
1	Environmental Stress	
1	Mites	
1	Negative for Root Disease	
2	Normal Needle Senescence	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Sapsucker Injury	
1	Suspect Seiridium Canker	*Seiridium sp.*
1	Web Blight	*Rhizoctonia solani*
11	**Total for Falsecypress**	

Fir		
1	Frost Injury	
1	Girdling Roots	
1	Insects	
1	Insufficient Sample	
1	Lichens	
1	Mites	
1	Negative for Disease	
1	Negative for Root Disease	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Rootbound	
1	Suspect Frost Injury	
11	**Total for Fir**	

Hawthorn		
1	No Pathogens Found	
1	**Total for Hawthorn**	

Hemlock		
1	Mites	
1	No Pathogens Found	
2	**Total for Hemlock**	

Honeylocust		
1	Cold Injury	
1	**Total for Honeylocust**	

Hornbeam		
1	Cultural Problem	
1	Witches' Broom	*Taphrina carpini*
2	**Total for Hornbeam**	

Juniper		
1	Suspect Cultural Problem	
1	**Total for Juniper**	

Linden		
1	Wood Decay	*Schizophyllum commune*
1	**Total for Linden**	

Live Oak		
1	Insects	
1	No Pathogens Found	
2	**Total for Live Oak**	

Magnolia		
2	Abiotic Problem	
1	Beetles	
2	Environmental Stress	
2	Frost injury	
1	Lichens	
2	Sooty Mold	
2	Weevils	
4	Winter Injury	
16	**Total for Magnolia**	

Maple		
2	Anthracnose	*Kabatiella apocrypta*
1	Botryosphaeria Dieback	*Botryosphaeria obtusa*
1	Chemical Injury	
4	Insects	
7	Insufficient Sample	
1	Negative for Bacterial Scorch	
1	Negative for Root Pathogens	
2	No Pathogens Found	
1	Powdery Mildew	*Oidium sp.*
5	Purple-eye Leaf Spot	*Phyllosticta minima*
1	Scales	
1	Scorch	
1	Suspect Frost Injury	
1	Suspect Girdling Roots	
1	Verticillium Wilt	*Verticillium dahliae*
1	White Rot	*Irpex lacteus*
1	Wood Decay	
32	**Total for Maple**	

Misc. Tree		
1	Jelly Fungus	
1	**Total for Misc. Tree**	

Oak		
1	Abiotic Problem	
1	Anthracnose	*Apiognomonia errabunda*
1	Anthracnose	*Discula sp.*
1	Armillaria Root Rot	*Armillaria sp.*
6	Bacterial Scorch	*Xylella fastidiosa*
1	Bacterial Wetwood	
1	Cicada Injury	
1	Discula Leaf Spot	*Discula sp.*
1	Eriophyid Mites	
3	Frost Injury	
2	Hypoxylon Canker	*Hypoxylon atropunctatum*
3	Insect Galls	
3	Insects	
2	Insufficient Sample	
2	Iron Chlorosis	
1	Lichens	
2	Monochaetia Leaf Blotch	*Monochaetia monochaeta*
5	Negative for Bacterial Scorch	
2	No Pathogens Found	
2	Oak Leaf Blister	*Taphrina caerulescens*
7	Oak Leaf Button Galls	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Sooty Mold	
1	Suspect Hypoxylon Dieback	*Hypoxylon sp.*
1	Suspect Wind Damage	
14	Tubakia Leaf Spot	*Tubakia dryina*
2	Wood Decay	
1	Wood Decay - Laetiporus sulphureus	*Laetiporus sulphureus*
69	**Total for Oak**	

Ornamental Cherry		
2	Borers	
2	Cercospora Leaf Spot	*Pseudocercospora circumscissa*
1	Insects	
1	Insufficient Sample	
2	No Pathogens Found	
1	Suspect Cercospora Leaf Spot	*Pseudocercospora circumscissa*
1	Suspect Cold Injury	
10	**Total for Ornamental Cherry**	

Ornamental Pear		
1	Abiotic Problem	
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
2	Fire Blight	*Erwinia amylovora*
1	Suspect Chemical Injury	
1	Thread Blight	*Ceratobasidium ochroleucum*
7	**Total for Ornamental Pear**	

Pine		
2	Abiotic Problem	
1	Environmental Stress	
1	Insufficient Sample	
3	No Pathogens Found	
1	Pales Weevils	
1	Phomopsis Canker	*Phomopsis sp.*
1	Ploioderma Needle Cast	*Ploioderma lethale*
2	Suspect Environmental Stress	
1	Suspect Phytophthora Root Rot	*Phytophthora cinnamomi*
3	Suspect Procerum Root Disease	*Leptographium procerum*
16	**Total for Pine**	

Poplar		
1	Abiotic Problem	
1	**Total for Poplar**	

Prunus		
2	Black Knot	*Dibotryon morbosum*
1	Curculios	
1	Insufficient Sample	
4	**Total for Prunus**	

Redbud		
1	Anthracnose	*Kabatiella sp.*
1	Botrytis Blight	*Botrytis cinerea*
1	Cause of Problem Unknown	
1	Environmental Stress	
2	Insects	
1	Negative for Disease	
2	Suspect Botryosphaeria Dieback	*Botryosphaeria dothidea*
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	Suspect Ozone Injury	
12	**Total for Redbud**	

Silverbell		
1	Wood Decay	
1	**Total for Silverbell**	
Snowbell		
1	Insects	
1	**Total for Snowbell**	
Sourwood		
1	Beetles	
1	Physiological Leaf Spot	
1	Scorch	
3	**Total for Sourwood**	
Spruce		
5	Abiotic Problem	
1	Bagworms	
1	Cultural Problem	
1	Insects	
2	Insufficient Sample	
2	Mites	
1	No Disease Found	
3	No Pathogens Found	
10	Rhizosphaera Needle Cast	*Rhizosphaera kalkhoffii*
5	Stigmina Needle Cast	*Stigmina lautii*
1	Suspect Environmental Stress	
1	Suspect Rhizosphaera Needle Cast	*Rhizosphaera kalkhoffii*
33	**Total for Spruce**	
Sweet Gum		
2	Insects	
1	No Pathogens Found	
3	**Total for Sweet Gum**	
Sycamore		
1	Anthracnose	*Gnomonia platani*
1	**Total for Sycamore**	
Trees, Miscellaneous		
1	Chemical Injury	
1	Insufficient Sample	
1	Phomopsis Canker	*Phomopsis sp.*
3	**Total for Trees, Miscellaneous**	

Willow		
1	Black Canker	*Glomerella miyabeana*
1	Insects	
1	Phomopsis Canker	*Phomopsis sp.*
1	Physalospora Twig Dieback	*Physalospora sp.*
1	Scab	*Venturia saliciperda*
1	Suspect Cercospora Leaf Spot	*Cercospora sp.*
6	**Total for Willow**	

Yellowwood		
1	Anthracnose	*Gloeosporium sp.*
1	Mites	
2	**Total for Yellowwood**	

Zelkova		
1	Cercospora Leaf Spot	*Cercospora sp.*
1	Suspect Wood Decay	
2	**Total for Zelkova**	

Turf		
Bentgrass		
2	Cyanobacteria	
1	Suspect Abiotic Problem	
3	**Total for Bentgrass**	
Bermudagrass		
1	Spring Dead Spot	*Ophiosphaerella herpotricha*
1	Suspect Environmental Stress	
2	**Total for Bermudagrass**	
Fescue		
1	Abiotic Problem	
1	Algae	
7	Brown Patch	*Rhizoctonia solani*
1	Cause of Problem Unknown	
1	Cultural Problem	
2	Environmental Stress	
1	Helminthosporium Leaf Spot	*Bipolaris sorokiniana*
1	No Pathogens Found	
1	Rust	*Puccinia graminis*
1	Suspect Fairy Ring	
17	**Total for Fescue**	
Ryegrass		
1	Suspect Environmental Stress	
1	**Total for Ryegrass**	
St. Augustinegrass		
1	Brown Patch	*Rhizoctonia solani*
2	Gray Leaf Spot	*Pyricularia grisea*
1	Suspect Take-All	*Gaeumannomyces graminis var. graminis*
4	Take-All	*Gaeumannomyces graminis var. graminis*
8	**Total for St. Augustinegrass**	

Turfgrass		
4	Brown Patch	*Rhizoctonia solani*
1	Cultural Problem	
1	Gray Leaf Spot	*Pyricularia grisea*
1	Helminthosporium Leaf Spot	*Bipolaris sorokiniana*
2	Insufficient Sample	
2	Leaf Rust	*Puccinia graminis*
1	Moss	
1	Negative for Disease	
1	No Pathogens Found	
1	Powdery Mildew	*Erysiphe graminis*
1	Red Thread	*Laetisaria fuciformis*
1	Weed Encroachment	
17	**Total for Turfgrass**	

Zoysia		
1	Insufficient Sample	
1	**Total for Zoysia**	

Vegetables and Herbs		
Asparagus		
1	Frost Injury	
2	Fusarium Crown and Root Rot	*Fusarium oxysporum*
3	**Total for Asparagus**	
Basil		
2	Abiotic Problem	
3	Downy Mildew	*Peronospora belbahrii*
1	Insufficient Sample	
6	**Total for Basil**	
Bean		
1	Abiotic Problem	
2	Anthracnose	*Colletotrichum lindemuthianum*
1	Bean Beetles	
1	Charcoal Rot	*Macrophomina phaseolina*
1	Environmental Stress	
1	High Soluble Salts	
1	Low pH	
1	Negative for Disease	
2	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Suspect Fusarium Root Rot	*Fusarium solani*
12	**Total for Bean**	
Broccoli		
1	Environmental Stress	
1	Root Knot Nematodes	*Meloidogyne sp.*
2	**Total for Broccoli**	
Brussels Sprouts		
1	Black Rot	*Xanthomonas campestris*
1	**Total for Brussels Sprouts**	
Cabbage		
1	Cabbage Maggot	
1	Wirestem	*Rhizoctonia solani*
2	**Total for Cabbage**	

Cantaloupe		
1	Abiotic Problem	
1	Angular Leaf Spot	*Pseudomonas syringae pv. lachrymans*
1	Damping-off	*Pythium sp.*
1	Insufficient Sample	
1	Physiological Problem	
5	**Total for Cantaloupe**	
Celery		
1	Southern Root Knot Nematodes	*Meloidogyne incognita*
1	**Total for Celery**	
Cucumber		
1	Anthracnose	*Colletotrichum lagenarium*
1	Downy Mildew	*Pseudoperonospora cubensis*
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
1	Lack of Pollination	
1	Thrips	
8	**Total for Cucumber**	
Eggplant		
1	Bacterial Wilt	*Ralstonia solanacearum*
1	Suspect Cultural Problem	
2	**Total for Eggplant**	
Fava Bean		
1	Aphids	
1	Fusarium Root Rot	*Fusarium solani*
1	Rhizoctonia Root Rot	*Rhizoctonia sp.*
3	**Total for Fava Bean**	
Ginger		
1	Bacterial Wilt	*Ralstonia solanacearum*
1	Negative for Ralstonia solanacearum R3 b2	
2	**Total for Ginger**	
Kale		
1	Insects	
1	**Total for Kale**	

Kohlrabi		
1	Downy Mildew	*Hyaloperonospora parasitica*
1	**Total for Kohlrabi**	
Lima Bean		
1	Suspect Cultural Problem	
1	**Total for Lima Bean**	
Parsley		
1	Cultural Problem	
1	Septoria Leaf Spot	*Septoria petroselini*
2	**Total for Parsley**	
Pea		
1	Fusarium Root Rot	*Fusarium solani*
1	Pythium Root Rot	*Pythium sp.*
2	**Total for Pea**	
Pepper		
3	Bacterial Spot	*Xanthomonas campestris pv. vesicatoria*
1	Blossom End Rot	
1	Insects	
1	Insufficient Sample	
1	Negative for Disease	
1	Phytophthora Blight	*Phytophthora capsici*
1	Rodents	
1	Southern Blight	*Sclerotium rolfsii*
1	Sunscald	
1	Suspect Bacterial Spot	*Xanthomonas vesicatoria*
1	Suspect Cultural Problem	
2	Thrips	
15	**Total for Pepper**	
Potato		
1	Blackleg	*Dickeya dianthicola*
1	Environmental Stress	
1	Fusarium Dry Rot	*Fusarium solani*
1	Growth Cracks	
4	**Total for Potato**	

Pumpkin		
2	Fusarium Fruit Rot	*Fusarium sp.*
1	Insufficient Sample	
1	Phytophthora Crown and Root Rot	*Phytophthora capsici*
1	Plectosporium Blight	*Plectosphaerella cucumerinum*
1	Suspect Chemical Injury	
1	Suspect Mechanical Injury	
1	Suspect Virus	
8	**Total for Pumpkin**	
Rhubarb		
1	Phytophthora Crown Rot	*Phythophthora sp.*
1	**Total for Rhubarb**	
Rosemary		
1	Adventitious Roots	
1	Insufficient Sample	
2	**Total for Rosemary**	
Squash		
3	Abiotic Problem	
1	Excess Soluble Salts	
1	Fusarium Foot Rot	*Fusarium solani*
5	**Total for Squash**	
Sweet Corn		
1	Northern Corn Leaf Blight	*Setosphaeria turcica*
1	**Total for Sweet Corn**	
Sweet Potato		
1	Fusarium Surface Rot	*Fusarium solani*
1	Wireworms	
2	**Total for Sweet Potato**	

Tomato		
3	Abiotic Problem	
1	Algae	
1	Bacterial Canker	*Clavibacter michiganensis*
2	Bacterial Speck	*Pseudomonas syringae pv. tomato*
1	Bacterial Spot	*Xanthomonas campestris*
3	Bacterial Wilt	*Ralstonia solanacearum*
1	Botryosporium Leaf Mold	*Botryosporium sp.*
1	Botrytis Blight	*Botrytis cinerea*
8	Chemical Injury	
1	Chemical Residue Injury	
2	Cucumber Mosaic Virus	
3	Cultural Problem	
3	Fusarium Crown and Root Rot	*Fusarium oxysporum*
3	Fusarium Wilt	*Fusarium oxysporum*
1	Gray Mold	*Botrytis cinerea*
1	Insects	
9	Insufficient Sample	
2	Late Blight	*Phytophthora infestans*
3	Leaf Mold	*Fulvia fulva*
1	Low pH	
1	Negative for Foliar Disease	
1	Negative for Nematodes	
2	Negative for Tomato Spotted Wilt	
1	No Pathogens Found	
1	Nutrient Deficiency	
1	Physiological Spotting	
1	Pythium Root Rot	*Pythium sp.*
6	Septoria Leaf Spot	*Septoria lycopersici*
3	Suspect Chemical Injury	
1	Suspect Nutrient Deficiency	
2	Suspect Septoria Leaf Spot	*Septoria lycopersici*
1	Suspect Walnut Wilt	
1	Thrips	
72	**Total for Tomato**	

Vegetables, Miscellaneous		
1	Suspect Chemical Injury	
1	Thrips	
2	**Total for Vegetables, Miscellaneous**	

Watermelon		
1	Abiotic Problem	
1	Chemical Injury	
1	Environmental Stress	
1	Insufficient Sample	
1	Thrips	
5	**Total for Watermelon**	

Zucchini		
1	Environmental Stress	
1	Normal Condition	
1	Poor Pollination	
3	**Total for Zucchini**	

Weeds		
Dead Nettle		
1	Downy Mildew	*Peronospora lamii*
1	**Total for Dead Nettle**	

Foxtail		
1	Normal Condition	
1	**Total for Foxtail**	

Woody Ornamentals		
Aucuba		
1	Black Vine Weevils	
2	Negative for Root Disease	
1	Suspect Cultural Problem	
4	**Total for Aucuba**	
Azalea		
2	High pH	
6	Insufficient Sample	
2	Lacebugs	
1	Leaf and Flower Gall	*Exobasidium vaccinii*
1	Lichens	
1	Mites	
2	Negative for Disease	
2	Negative for Root Disease	
1	Phomopsis Dieback	*Phomopsis sp.*
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Suspect Chemical Injury	
2	Suspect Environmental Stress	
22	**Total for Azalea**	
Bamboo		
1	Insects	
1	**Total for Bamboo**	
Bay Laurel		
1	Pestalotia	*Pestalotia sp.*
1	**Total for Bay Laurel**	
Bayberry		
1	Suspect Environmental Stress	
1	**Total for Bayberry**	
Bluebeard		
1	Abiotic Problem	
1	Fusarium Root and Stem Rot	*Fusarium sp.*
2	**Total for Bluebeard**	

Boxwood		
1	Abiotic Problem	
32	Boxwood Blight	*Calonectria pseudonaviculata*
1	Chemical Injury	
3	Colletotrichum Dieback	*Colletotrichum sp.*
3	Cultural Problem	
17	English Boxwood Decline	*Paecilomyces buxi*
1	Excess Soluble Salts	
3	Frost Injury	
1	Insects	
13	Insufficient Sample	
24	Leafminers	
1	Lesion Nematodes	*Pratylenchus sp.*
1	Lichens	
2	Low pH	
15	Macrophoma Leaf Spot	*Macrophoma candollei*
36	Mites	
92	Negative for Boxwood Blight	
1	Negative for Foliar Disease	
16	Negative for Nematodes	
1	Negative for Phytophthora Root Rot	
4	Negative for Root Disease	
25	Negative for Root Rot Fungi	
25	Nematodes	
4	No Pathogens Found	
2	Oedema	
5	Phytophthora Root Rot	*Phytophthora nicotianae*
6	Possible Nematode Problem	
2	Psyllids	
1	Root Knot Nematodes	*Meloidogyne sp.*
3	Scales	
2	Spiral Nematodes	*Rotylenchus buxophilus*
1	Suspect Abiotic Problem	
1	Suspect Chemical Injury	
2	Suspect Cultural Problem	
1	Suspect Insects	
81	Volutella Blight	*Volutella buxi*
1	Webworms	
430	**Total for Boxwood**	

Burning Bush		
1	Abiotic Problem	
1	Insufficient Sample	
2	**Total for Burning Bush**	

Butterfly Bush		
2	Abiotic Problem	
1	Mites	
3	**Total for Butterfly Bush**	
Camellia		
1	Abiotic Problem	
1	Algal Leaf Spot	*Cephaleuros virescens*
1	Environmental Stress	
1	Eriophyid Mites	
2	Insufficient Sample	
1	Mites	
1	No Pathogens Found	
1	Phytophthora Root Rot	*Phytophthora sp.*
2	Scales	
1	Suspect Phytophthora Root Rot	*Phytophthora sp.*
12	**Total for Camellia**	
Cherrylaurel		
1	Black Vine Weevils	
1	Cause of Problem Unknown	
1	Cytospora canker	*Cytospora sp.*
2	Insects	
1	Insufficient Sample	
1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
3	Negative for Root Disease	
1	Negative for Root Pathogens	
1	Scales	
1	Shothole	
1	Suspect Environmental Stress	
1	Suspect Insects	
1	Suspect Phytophthora Root Rot	*Phytophthora sp.*
2	Suspect Winter Injury	
1	Winter Injury	
19	**Total for Cherrylaurel**	
Cleyera		
1	Negative for Disease	
1	**Total for Cleyera**	

Cotoneaster		
1	Scales	
1	Suspect Vole Injury	
2	**Total for Cotoneaster**	

Crape Myrtle		
1	Suspect Cultural Problem	
1	**Total for Crape Myrtle**	

Daphne		
2	Insufficient Sample	
1	Negative for Root Disease	
3	**Total for Daphne**	

English Ivy		
2	Anthracnose	*Colletotrichum trichellum*
1	High pH	
2	Negative for Disease	
5	**Total for English Ivy**	

Euonymus		
1	Adventitious Roots	
1	Aphids	
1	Scales	
2	Suspect Cultural Problem	
5	**Total for Euonymus**	

Ficus		
2	Suspect Cultural Problem	
2	**Total for Ficus**	

Flowering Quince		
1	Cedar-Quince Rust	*Gymnosporangium clavipes*
1	**Total for Flowering Quince**	

Gardenia		
1	Adventitious Roots	
1	Cultural Problem	
1	Insufficient Sample	
1	Sooty Mold	
4	**Total for Gardenia**	

Hibiscus		
1	Abiotic Problem	
1	Mites	
1	Suspect Nutrient Deficiency	
3	**Total for Hibiscus**	

Holly		
2	Anthracnose	*Gloeosporium sp.*
21	Black Root Rot	*Thielaviopsis basicola*
1	Black Vine Weevils	
3	Cultural Problem	
1	Insects	
14	Insufficient Sample	
1	Mites	
2	Negative for Black Root Rot	
2	Negative for Root Disease	
1	No Pathogens Found	
1	Phomopsis Dieback	*Phomopsis sp.*
1	Poor Drainage	
1	Root Knot Nematodes	*Meloidogyne sp.*
2	Sapsucker Injury	
2	Scales	
2	Sooty Mold	
3	Suspect Black Root Rot	*Thielaviopsis basicola*
5	Suspect Cultural Problem	
1	Winter Injury	
66	**Total for Holly**	

Hydrangea		
1	Environmental Stress	
1	Pythium Root Rot	*Pythium sp.*
1	Scorch	
3	**Total for Hydrangea**	

Hypericum		
1	Insufficient Sample	
1	Negative for Disease	
1	Rust	*Uromyces triquestrus*
3	**Total for Hypericum**	

Juniper		
3	Cultural Problem	
1	Environmental Stress	
2	Insufficient Sample	
2	Negative for Root Disease	
1	Negative for Tip Blight	
5	No Pathogens Found	
1	Pestalotiopsis Needle Blight	*Pestalotiopsis sp.*
1	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
1	Phomopsis Tip Blight	*Phomopsis juniperovora*
1	Scales	
3	Suspect Environmental Stress	
3	Suspect Vole Injury	
24	**Total for Juniper**	

Lilac		
1	Ascochyta Blight	*Ascochyta syringae*
4	Insufficient Sample	
1	Negative for Bacterial Scorch	
1	No Pathogens Found	
7	**Total for Lilac**	

Loropetalum		
1	Bacterial Gall	*Pseudomonas savastonoi*
1	**Total for Loropetalum**	

Mountain Laurel		
1	Cercospora Leaf Spot	*Cercospora kalmiae*
1	**Total for Mountain Laurel**	

Osmanthus		
1	No Pathogens Found	
1	**Total for Osmanthus**	

Photinia		
1	Abiotic Problem	
3	Entomosporium Leaf Spot	*Entomosporium mespili*
1	Insufficient Sample	
1	Negative for Root Disease	
1	No Pathogens Found	
7	**Total for Photinia**	

Pieris	
1 Insufficient Sample	
1 Phytophthora Root Rot	*Phytophthora cinnamomi*
1 Rootbound	
3 Total for Pieris	

Pittosporum	
1 Scales	
1 Total for Pittosporum	

Poets Jasmine	
1 Negative for Disease	
1 Total for Poets Jasmine	

Privet	
1 Frost injury	
1 Low pH	
1 Suspect Environmental Stress	
1 Winter Injury	
4 Total for Privet	

Pyracantha	
1 Lacebugs	
1 Total for Pyracantha	

Rhododendron		
1	Aphids	
1	Artillery Fungus	*Sphaerobolus stellatus*
1	Black Vine Weevils	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
2	Cause of Problem Unknown	
1	Cercospora Leaf Spot	*Cercospora handelii*
1	Cultural Problem	
1	Environmental Stress	
3	Insufficient Sample	
1	Lacebugs	
1	Negative for Phytophthora Root Rot	
2	Negative for Root Disease	
2	Nematodes	
1	No Pathogens Found	
1	Pestalotia Leaf Spot	*Pestalotia sp.*
1	Phomopsis Dieback	*Phomopsis sp.*
1	Physiological Leaf Spot	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
2	Ring Nematode	*Mesocriconema sp.*
1	Rootbound	
1	Suspect Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Suspect Winter Injury	
28	**Total for Rhododendron**	

Rose		
1	Abiotic Problem	
1	Borers	
1	Botrytis Blight	*Botrytis cinerea*
4	Common Canker	*Coniothyrium fuckelii*
2	Insufficient Sample	
1	Mites	
1	Negative for Disease	
1	Negative for Root Disease	
5	Negative for Rose Rosette Virus	
2	Nematodes	
1	Phomopsis Cane Canker	*Phomopsis sp.*
1	Pythium Root Rot	*Pythium sp.*
3	Rose Rosette Virus	
1	Suspect Chemical Injury	
1	Suspect Environmental Stress	
26	**Total for Rose**	

Rose-of-Sharon		
1	Lichens	
1	**Total for Rose-of-Sharon**	

Sarcococca		
1	Environmental Stress	
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	Volutella Blight	*Volutella sp.*
4	**Total for Sarcococca**	

Sweetshrub		
1	Suspect Frost Injury	
1	**Total for Sweetshrub**	

Viburnum		
1	No Pathogens Found	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Suspect Environmental Stress	
1	Suspect Frost Injury	
1	Vole Injury	
6	**Total for Viburnum**	

Weigela		
1	Environmental Stress	
1	Insufficient Sample	
2	**Total for Weigela**	

Witchhazel		
1	Suspect Phyllosticta Leaf Blight	*Phyllosticta hamamelidis*
1	**Total for Witchhazel**	

Yellow Jessamine		
1	Frost injury	
1	**Total for Yellow Jessamine**	

Yew		
1	Abiotic Problem	
1	No Pathogens Found	
2	**Total for Yew**	

Yucca		
1	Anthracnose	*Colletotrichum gloeosporioides*
1	Coniothyrium Leaf Spot	*Coniothyrium concentricum*
2	**Total for Yucca**	

Nonplant Material		
Nonplant		
1	Insufficient Sample	
1	Unknown	
2	**Total for Nonplant**	

Identification Appendix

1. Higher Plants

Family: Asparagaceae	
Liriope muscari	Lilyturf
Family: Cupressaceae	
Juniperus virginiana	Eastern Red Cedar
Family: Elaeagnaceae	
Elaeagnus umbellata	Autumn Olive
Family: Euphorbiaceae	
Euphorbia lathyris	Caper Spurge
Family: Hypericaceae	
Hypericum sp.	St. Johnswort
Family: Lamiaceae	
Stachys floridana	Florida Betony
Family: Moraceae	
Ficus sp.	Fig
Family: Poaceae	
Eremochloa ophiuroides	Centipede Grass
Lolium arundinaceum	Tall Fescue
Muhlenbergia schreberi	Nimblewill
Family: Rosaceae	
Pyrus sp.	Pear

Unable to Identify (1)

2. Fungi

Family: Meripilaceae	
Grifola frondosa	Hen of the Woods
Family: Rhizopogonaceae	
Rhizopogon sp.	False truffle
Family: Strophariaceae	
Hypholoma tuberosum	Hypholoma
Family: Tricholomataceae	
Xeromphalina sp.	Xeromphalina
Unable to Identify (2)	