The Plant Disease Clinic and Weed Identification Lab Annual Report 2017

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Virginia Polytechnic Institute and State University
Blacksburg, Virginia

The Plant Disease Clinic
2017 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 2017, 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 2017

The Plant Disease Clinic performed 1972 disease diagnoses and identifications on 1485 plant samples in 2017. Highlights are provided below.

Plant problems diagnosed in the Virginia Tech Plant Disease Clinic for the first time in 2017:

Field Crops

- Bromegrass (*Bromus* sp.) – head smut, caused by the fungus *Ustilago bullata*
- Hops (*Humulus lupulus*) – Rhizoctonia stem rot and aerial blight, caused by the fungus *Rhizoctonia solani*
- Hops (*Humulus lupulus*) – Calonectria stem rot, caused by the fungus *Calonectria* sp.

Rhizoctonia aerial blight on hops

Calonectria sp. conidia on hops

We continue to find new pathogens on hops, a relatively new crop for Virginia. The fungi *Rhizoctonia solani*, which is a common root and stem rot pathogen on many crops, and a species of *Calonectria* were found in stem lesions on hops bines in 2017. Related species of *Calonectria* cause stem rot on nursery cuttings of several different species of woody plants, and *Calonectria pseudonaviculata* is the causal agent of boxwood blight.

Herbaceous Ornamentals

- Balloon flower (*Platycodon grandifloras*) – Rhizoctonia stem rot, caused by the fungus *Rhizoctonia solani*
- Bee balm (*Monarda didyma*) – Botrytis stem canker, caused by the fungus *Botrytis cinerea*
- Sedge (*Carex oshimensis*) – Rhizoctonia leaf spot, caused by the fungus *Rhizoctonia solani*
- Clematis (*Clematis* sp.) – Ascochyta leaf spot, caused by the fungus *Ascochyta* sp.
- Creeping jenny (*Lysimachia nummularia*) – Web blight, caused by the fungus *Rhizoctonia solani*
- Dusty miller (*Jacobaea maritima*) – Fusarium crown and stem rot – caused by the fungus *Fusarium* sp.
- Easter lily (*Lilium longiflorum* var. *eximium*) – Kalanchoe Latent Virus, Lily Symptomless Virus (tested by Agdia, Inc.)
- Epimedium (*Epimedium* sp.) – Anthracnose (stem blight) – caused by the fungus *Colletotrichum* sp.
- Gomphrena (*Gomphrena globosa*) – Tomato Spotted Wilt Virus (stunted growth, leaf spots)
- Hellebore (*Helleborus* sp.) – Tobacco Rattle Virus (also diagnosed on peony)
- Lamium (*Lamium maculatum*) – Lamium Leaf Distortion-Associated Virus (tested by University of Minnesota Plant Disease Clinic)
- Ornamental cabbage (*Brassica oleracea*) – Black rot, caused by the bacterium *Xanthomonas campestris*
- Peony (*Paeonia* sp.) – Measles, caused by the fungus *Graphiopsis chlorocephala*
- Ranunculus (*Ranunculus* sp.) – Tomato Spotted Wilt Virus (mottling on leaves)
- Shamrock (*Oxalis triangularis*) – Oxalis rust, caused by the fungus *Puccinia oxalidis*
- Verbena (*Verbena* sp.) – Bacterial blight, caused by *Pseudomonas cichorii*
- Zinnia (*Zinnia* sp.) – Tomato Spotted Wilt Virus


Tobacco Rattle Virus on hellebore


Tobacco Rattle Virus on peony


Measles on peony


Oxalis rust on shamrock

Virus diseases were found on a variety of herbaceous ornamentals in 2017. Tomato Spotted Wilt Virus, which we diagnosed on gomphrena, ranunculus and zinnia, as well as on tomato and pepper, is transmitted by certain species of thrips, including the Western flower thrips. This species of thrips is able to overwinter in Virginia and it can be difficult to detect and control. Western flower thrips can also be present in greenhouses or on transplants purchased from warmer states south of Virginia. Virus-infected greenhouse transplants can then be transplanted to the field. Tomato Spotted Wilt Virus has a wide host range, including many herbaceous ornamental species, vegetables, and some field crops (e.g. peanuts). Symptoms vary from spotting to mottling to ring spots and unusual line patterns on leaves, black streaks on stems and, in some cases, shoot tip die back. Tobacco Rattle Virus was found on hellebores that had mottled foliage. This virus can be transmitted mechanically or by certain species of nematodes. The viruses, Kalanchoe Latent Virus, Lily Symptomless Virus, were detected on Easter lilies that were yellowed and stunted. Symptoms may have been due to both viruses. Lily Symptomless Virus causes slow emergence of Easter lily. Leaves may twist and have white stripes. Little is known about symptoms caused by Kalanchoe Latent Virus on Easter lily. Another virus, called Lamium Leaf Distortion-Associated Virus, was found causing severe distortion of Lamium leaves.

Tree Fruits

- Pawpaw (*Asimina triloba*) – Leaf blotch, caused by the fungus *Pseudocercospora asiminae*
- Plum (*Prunus* sp.) – Bacterial spot, caused by *Xanthomonas campestris*

Leaf blotch on pawpaw

Trees and Woody Shrubs

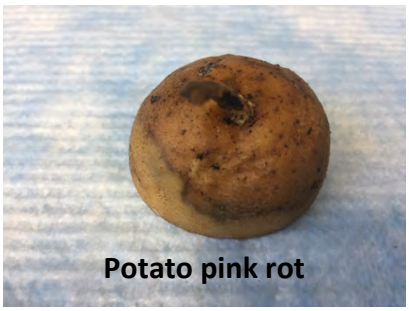
- Giant sequoia (*Sequoiadendron giganteum*) – Cercospora (Pseudocercospora) blight – caused by the fungus *Pseudocercospora juniper*
- Hornbeam (*Carpinus betulus*) – Brown felt, caused by the fungus *Septobasidium* sp.
- Prunus (unknown species) – Leaf rust, caused by the fungus *Tranzschelia* sp.

Brown felt fungus on hornbeam

Although signs of the brown felt fungus may look like a serious problem, this fungus is not a pathogen of hornbeam (or other trees). It grows in a symbiotic relationship with certain scale insects, which were also present on the hornbeam sample we received.

Vegetables and Herbs

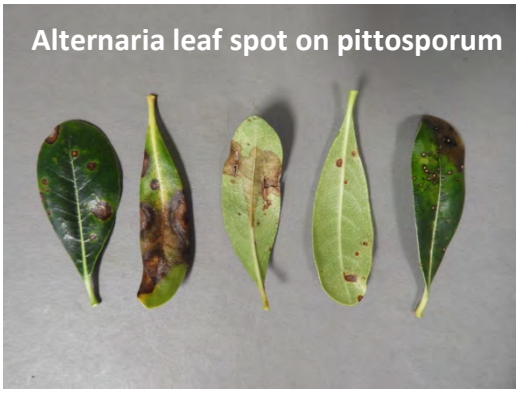
- Carrot (*Daucus carota* subsp. *sativus*) – Carrot rust fly (determined by Insect ID Lab)
- Eggplant (*Solanum melongena*) – Ascochyta leaf spot, caused by the fungus *Ascochyta* sp.
- Potato (*Solanum tuberosum*) – Pink rot, caused by the oomycete *Phytophthora erythroseptica*


Potato pink rot

Damage from the carrot rust fly can be mistaken for a disease because lesions look like those caused by certain fungal pathogens. Adult carrot rust flies lay their eggs at the crown of the plant. After the eggs hatch, the larvae tunnel into the roots, causing dark lesions on the taproots of carrots and other umbelliferous crops. Potato pink rot, which is caused by a water mold (oomycete), is a problem in wet soils.

Woody Ornamentals

- Cherrylaurel (*Prunus laurocerasus*) – Pseudomonas shoot blight, caused by the bacterium *Pseudomonas syringae*
- Pittosporum (*Pittosporum tobira*) – Alternaria leaf spot, caused by the fungus *Alternaria tenuissima*
- Spirea (*Spirea* sp.) – Bacterial leaf spot, caused by *Xanthomonas campestris*
- Sumac (*Rhus michauxii*) – Rhizoctonia root rot, caused by the fungus *Rhizoctonia solani* (research sample)


Alternaria leaf spot on pittosporum

Other Highlights

Alfalfa (Medicago sativa)

- Stem nematode, *Ditylenchus dipsaci*, has been diagnosed by the Virginia Tech Plant Disease Clinic in the past (2013, 1017), but it is not common. It is most commonly a problem in heavy soils and in locations with heavy rainfalls. Alfalfa varieties that are sold as “resistant” are not actually genetically uniform; they simply have a higher percentage of resistant seed than other varieties. A 2- to 3-year crop rotation to a non-host crop is an effective control measure - stem nematodes do not persistent in soils without an alfalfa host.


Stem nematode damage to alfalfa


Clover root curculio damage to alfalfa

- Clover root curculio can cause sunken lesions on alfalfa roots that can be mistaken for a disease. (diagnosed by Insect ID Lab)


Anthracnose on Chinese fringe tree

Chinese Fringe Tree (Chionanthus retusus)

Anthracnose, caused by the fungus *Discula fraxinea*, can cause a serious leaf blotch and leaf drop on Chinese fringe tree. We diagnosed this disease on a sample in 2013 and again in 2017.


Fruiting bodies of the anthracnose fungus on Chinese fringe tree

Update on Boxwood Blight

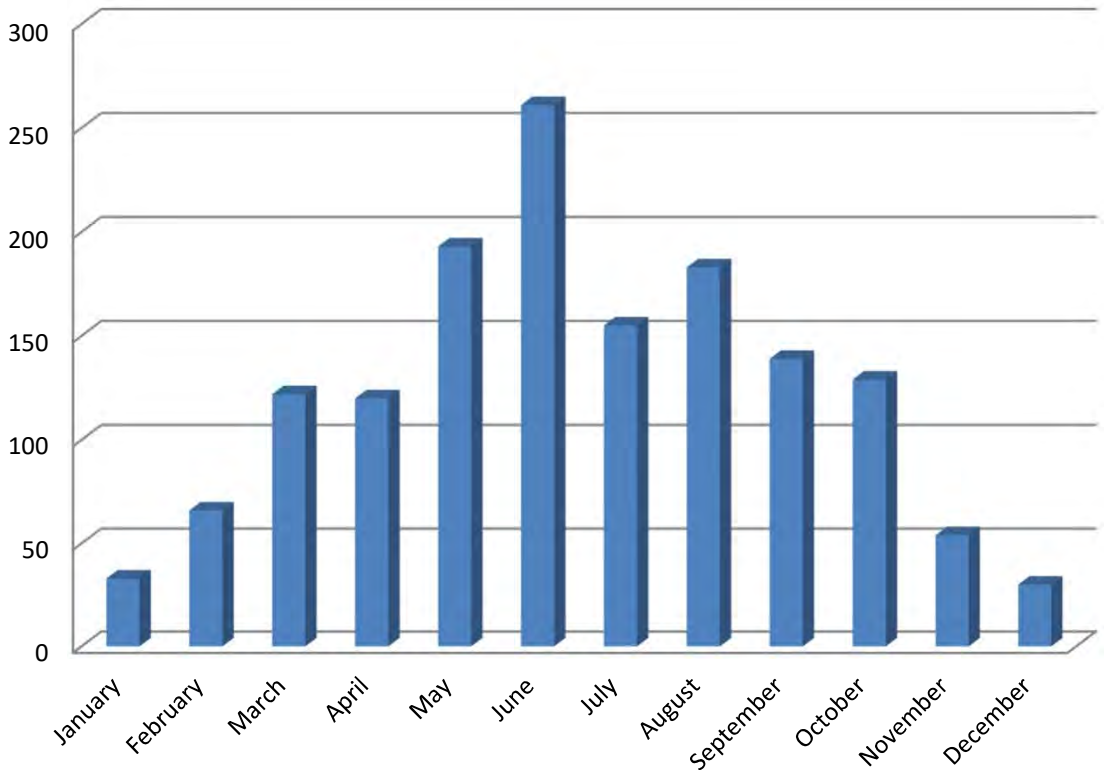
In 2017 the VT Plant Disease Clinic diagnosed 32 cases of boxwood blight on boxwood. High numbers of positive confirmations in recent years (32 positives in 2016, up from 7 confirmations in 2015) reflect secondary spread of this disease from initial introductions. In the early years after this disease was introduced to Virginia, the only way the pathogen got around was on infected plants that were introduced to a landscape or nursery because the spores of the fungal pathogen are not easily wind-dispersed. After sale of infected plants by a major retailer in 2016, the disease was present in many more locations in Virginia landscapes. We are now beginning to see instances of disease that can clearly be traced to secondary spread by pruning of healthy boxwood following pruning of infected plants, and in one case, a disease outbreak was traced to disposal of an infected holiday wreath near a boxwood hedge. Early diagnosis of this disease and remediation by removal of infected plants and leaf debris are important to reduce the spread of this disease.

Monthly Submission Summary

Number of samples received by month

Month	# Samples
January	33
February	66
March	122
April	120
May	193
June	261
July	155
August	183
September	139
October	129
November	54
December	30
Total for 2017	**1,485**

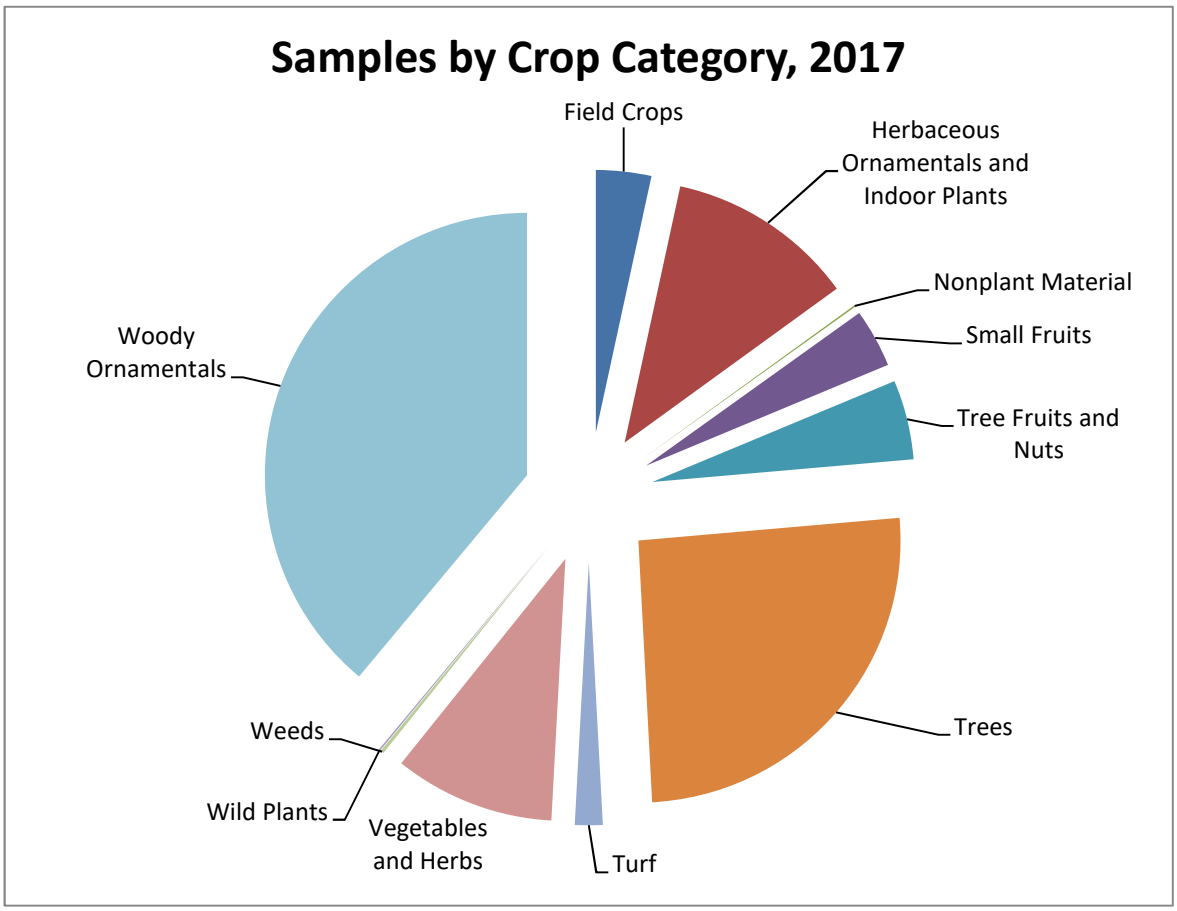
Number of Samples by Month, 2017



Samples by Crop Category

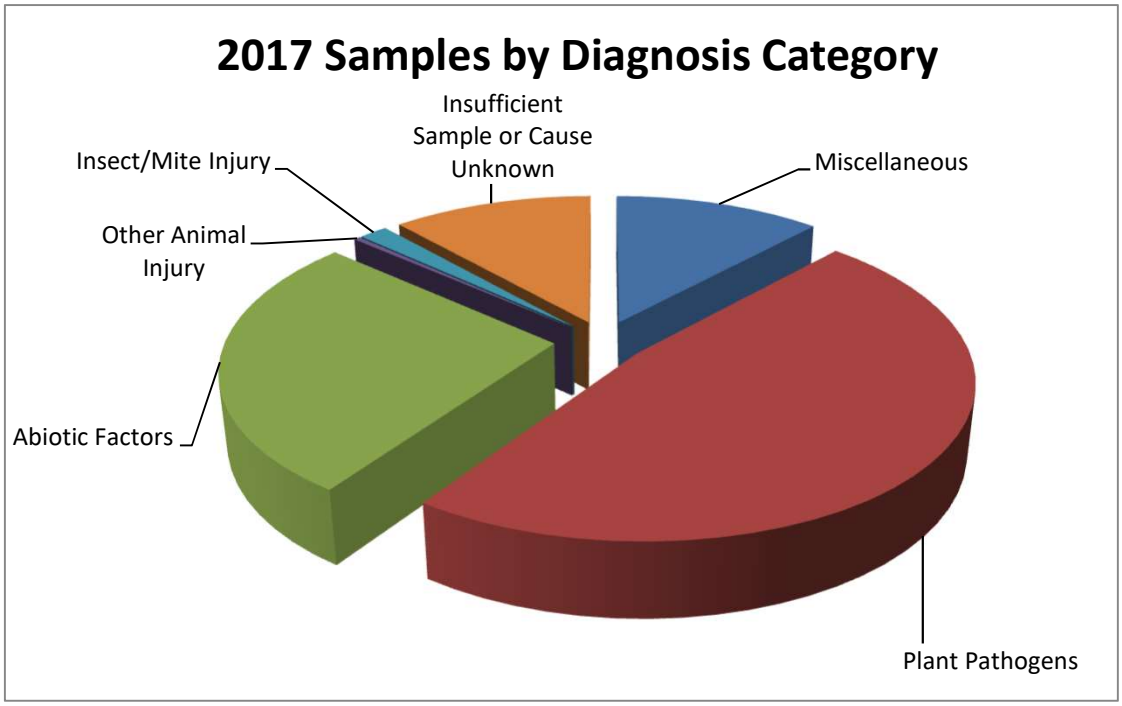
Sample totals by major crop categories, excluding plant identifications

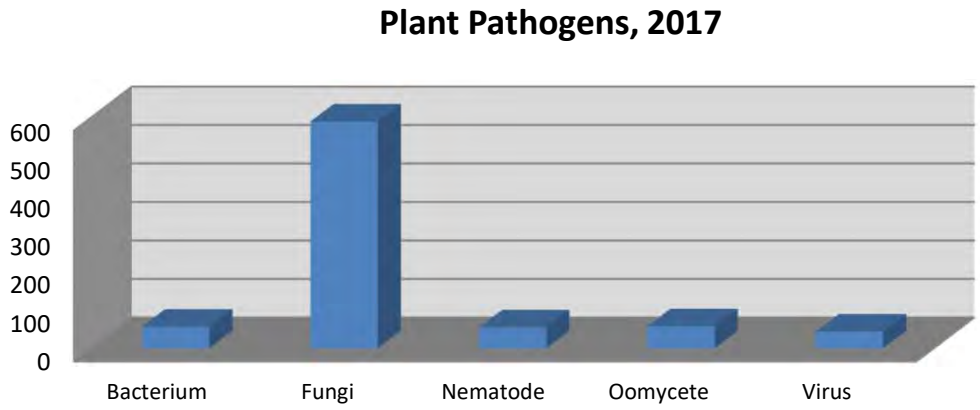
Crop Category	# of Samples	% of Total
Field Crops	50	3.4
Herbaceous Ornamentals and Indoor Plants	169	11.6
Nonplant Material	2	0.1
Small Fruits	52	3.6
Tree Fruits and Nuts	71	4.9
Trees	372	25.5
Turf	25	1.7
Vegetables and Herbs	144	9.9
Weeds	3	0.2
Wild Plants	1	0.1
Woody Ornamentals	567	38.9
Total	**1,457**	

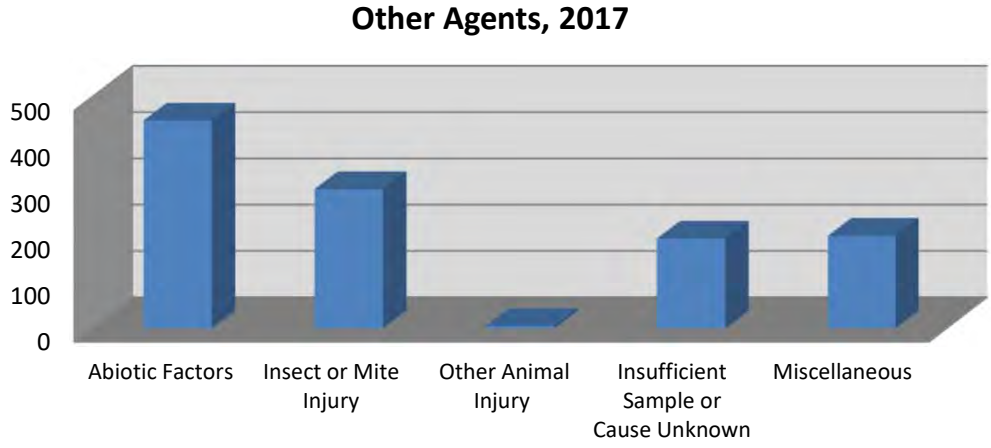


Diagnosis/ID Category Summary

	# of Diagnoses/IDs	% of Total
Plant Pathogens	**799**	**40.4**
Bacterium	56	
Fungus	589	
Nematode	54	
Oomycete	57	
Virus	43	
Abiotic Factors	**449**	**22.7**
Chemical	54	
Environmental/Cultural	392	
Mechanical	3	
Physiological/Genetic	14	
Insect or Mite Injury	**301**	**15.2**
Insects or Mites	301	
Other Animal Injury	**5**	**0.3**
Birds	3	
Mammals	2	
Insufficient Sample or Cause Unknown	**194**	**9.8**
Insufficient sample or information	175	
Unknown	19	
Miscellaneous	**200**	**10.1**
Algae	3	
Invertebrate	1	
Lichen	10	
Moss	1	
Normal Condition	18	
Other	153	
Weed Encroachment	**1**	**0.1**
Weed	1	
Identifications	**28**	**1.4**
Bacterium	1	
Fungi	3	
Other Substance	3	
Plant	18	
Unable to Identify	3	
Total	**1,977**	
Digital Submissions (Email, Digital Pictures)	126	
Phone Calls	80	


2017 Samples by Diagnosis Category
Insufficient Sample or Cause Unknown
Insect/Mite Injury
Miscellaneous
Other Animal Injury
Abiotic Factors
Plant Pathogens


Plant Pathogens, 2017
600
500
400
300
200
100
0
Bacterium
Fungi
Nematode
Oomycete
Virus


Other Agents, 2017
500
400
300
200
100
0
Abiotic Factors
Insect or Mite Injury
Other Animal Injury
Insufficient Sample or Cause Unknown
Miscellaneous

Geographic Distribution of Samples Received in 2017

County	# of Samples	County	# of Samples
Out of State	1	LOUDOUN	28
ACCOMACK	15	LOUISA	12
ALBEMARLE	113	LUNENBURG	5
ALLEGHANY	2	LYNCHBURG CITY	41
AMELIA	17	MADISON	3
AMHERST	3	MATHEWS	4
APPOMATTOX	2	MECKLENBURG	8
ARLINGTON	10	MIDDLESEX	7
AUGUSTA	30	MONTGOMERY	112
BATH	2	NELSON	85
BEDFORD	15	NEW KENT	21
BLAND	1	NEWPORT NEWS CITY	29
BOTETOURT	12	NORFOLK CITY	7
BRUNSWICK	4	NORTHAMPTON	3
BUCKINGHAM	2	NORTHUMBERLAND	19
CAMPBELL	7	NOTTOWAY	11
CAROLINE	4	ORANGE	11
CARROLL	10	PAGE	3
CHARLES CITY	1	PATRICK	4
CHARLOTTE	1	PETERSBURG CITY	1
CHESAPEAKE CITY	26	PITTSYLVANIA	4
CHESTERFIELD	2	PORTSMOUTH CITY	11
CRAIG	5	POWHATAN	24
CULPEPER	5	PRINCE EDWARD	5
CUMBERLAND	4	PRINCE GEORGE	2
DANVILLE CITY	5	PRINCE WILLIAM	12
DICKENSON	3	PULASKI	8
DINWIDDIE	3	RAPPAHANNOCK	10
FAIRFAX	42	RICHMOND	3
FAUQUIER	8	RICHMOND CITY	9
FLOYD	13	ROANOKE	27
FLUVANNA	9	ROCKBRIDGE	30
FRANKLIN	22	ROCKINGHAM	24
FREDERICK	32	RUSSELL	4
GILES	16	SCOTT	5
GLOUCESTER	3	SHENANDOAH	8
GOOCHLAND	13	SMYTH	8
GRAYSON	2	SOUTHAMPTON	10
GREENE	5	SPOTSYLVANIA	13
HAMPTON CITY	5	STAFFORD	22
HANOVER	60	SUFFOLK CITY	8
HENRICO	33	TAZEWELL	5
HENRY	12	VIRGINIA BEACH	37
HIGHLAND	2	WARREN	6
ISLE OF WIGHT	3	WASHINGTON	8
JAMES CITY	31	WESTMORELAND	15
KING AND QUEEN	3	WISE	14
KING GEORGE	3	WYTHE	9
KING WILLIAM	9	YORK	83
LANCASTER	12	**Total**	**1,485**
LEE	4		

Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops		
Alfalfa		
1	Clover Root Curculio	*Sitona hispidulus*
1	Nutrient Deficiency	
2	Stem Nematode	*Ditylenchus dipsaci*
4	**Total for Alfalfa**	
Bromegrass		
1	Head Smut	*Ustilago bullata*
1	**Total for Bromegrass**	
Cotton		
1	High Soluble Salts	
1	**Total for Cotton**	
Fescue		
2	Anthracnose	*Colletotrichum graminicola*
3	Brown Patch	*Rhizoctonia solani*
1	Helminthosporium Blight	*Drechslera dictyoides*
1	Rust	*Puccinia graminis*
1	Suspect Environmental Stress	
1	Take-All	*Gaeumannomyces graminis var. graminis*
9	**Total for Fescue**	
Hemp		
2	Cercospora Leaf Spot	*Cercospora sp.*
2	**Total for Hemp**	

Hops		
1	Abiotic Problem	
3	Downy Mildew	*Pseudoperonospora humuli*
3	Fusarium Canker	*Fusarium sp.*
1	Fusarium spp.	*Fusarium spp.*
1	High Soluble Salts	
1	Low pH	
2	Mites	
1	Negative for Disease	
1	Powdery Mildew	*Oidium sp.*
2	Rhizoctonia Stem Rot and Aerial Blight	*Rhizoctonia solani*
1	Suspect Environmental Stress	
1	Trichoderma on roots	*Trichoderma sp.*
1	Undetermined Pathogenicity	*Calonectria sp.*
19	**Total for Hops**	

Millet		
1	Gray Leaf Spot	*Pyricularia grisea*
1	**Total for Millet**	

Orchardgrass		
1	Environmental Stress	
2	Leaf Streak	*Cercosporidium graminis*
1	No Pathogens Found	
4	**Total for Orchardgrass**	

Sorghum		
1	Aphids	
1	Sooty Mold	
2	**Total for Sorghum**	

Soybean		
4	Charcoal Rot	*Macrophomina phaseolina*
1	Chemical Injury	
1	Cyst Nematodes	*Heterodera glycines*
6	**Total for Soybean**	

Tobacco		
1	Frogeye Leaf Spot	*Cercospora nicotianae*
1	Negative for Black Shank	
2	**Total for Tobacco**	

Wheat		
1	Barley Yellow Dwarf Virus	
2	Black Head Mold	*Cladosporium sp.*
1	Frost injury	
2	Low pH	
2	Take-all	*Gaeumannomyces graminis*
1	Tan Spot	*Pyrenophora tritici-repentis*
9	**Total for Wheat**	

Herbaceous Ornamentals and Indoor Plants		
Acanthus		
1	Environmental Stress	
1	**Total for Acanthus**	
Acorus		
2	Normal Condition	
2	**Total for Acorus**	
African Violet		
1	Insufficient Sample	
1	Phytophthora Root Rot	*Phytophthora sp.*
2	**Total for African Violet**	
Agastache		
1	Botrytis Blight	*Botrytis cinerea*
1	**Total for Agastache**	
Ageratum		
1	Environmental Stress	
1	Low pH	
2	**Total for Ageratum**	
Ajuga		
1	Low pH	
1	Southern Blight	*Sclerotium rolfsii*
2	**Total for Ajuga**	
Anemone		
1	Suspect Tobacco Rattle Virus	
1	**Total for Anemone**	
Astilbe		
1	Suspect Insects	
1	**Total for Astilbe**	
Balloon Flower		
1	Rhizoctonia Stem Rot	*Rhizoctonia sp.*
1	**Total for Balloon Flower**	
Bee Balm		
1	Botrytis Stem Canker	*Botrytis cinerea*
1	Mites	
2	**Total for Bee Balm**	

Begonia		
3	Botrytis Blight	*Botrytis cinerea*
1	Insufficient Sample	
1	No Pathogens Found	
5	**Total for Begonia**	
Bells-of-Ireland		
1	Cercospora Leaf Spot	*Cercospora sp.*
1	**Total for Bells-of-Ireland**	
Bluestar		
1	Rhizoctonia Stem Rot	*Rhizoctonia sp.*
1	**Total for Bluestar**	
Brugmansia		
1	Tobacco Mosaic Virus	*Tobacco Mosaic Virus*
1	**Total for Brugmansia**	
Brunnera		
2	Abiotic Problem	
2	**Total for Brunnera**	
Cactus		
1	Botrytis Blight	*Botrytis sp.*
1	Insufficient Sample	
2	**Total for Cactus**	
Calibrachoa		
1	Aphids	
1	Physiological Leaf Spot	
2	**Total for Calibrachoa**	
Canna Lily		
1	Insects	
1	No Disease Found	
2	**Total for Canna Lily**	
Cape Primrose		
1	Excess Soluble Salts	
1	**Total for Cape Primrose**	

Chrysanthemum		
1	Abiotic Problem	
1	Cultural Problem	
1	Excess Soluble Salts	
1	Fusarium Wilt	*Fusarium oxysporum*
1	Insects	
1	Negative for Root Disease	
1	Rust	*Puccinia chrysanthemi*
1	Septoria Leaf Spot	*Septoria sp.*
1	Suspect Abiotic Problem	
9	**Total for Chrysanthemum**	
Clematis		
1	Ascochyta Leaf Spot	*Ascochyta sp.*
1	**Total for Clematis**	
Coleus		
1	Abiotic Problem	
1	**Total for Coleus**	
Columbine		
1	Black Root Rot	*Thielvaiopsis basicola*
1	**Total for Columbine**	
Coneflower		
1	Cause of Problem Undetermined	
1	Cercospora Leaf Spot	*Cercospora sp.*
1	High Soluble Salts	
1	Mites	
1	Negative for Cucumber Mosaic Virus	
1	Negative for Impatiens Necrotic Spot Virus	
1	Negative for Potyvirus Group	
1	Negative for Tomato Spotted Wilt Virus	
1	Nematodes	
1	Pythium Root Rot	*Pythium sp.*
1	Referred to Private Testing Lab	
1	Suspect Chemical Injury	
1	Suspect Environmental Stress	
1	Suspect Virus	
14	**Total for Coneflower**	
Coral Bells		
1	Abiotic Problem	
1	Cause of Problem Undetermined	
1	Phytophthora Crown and Root Rot	*Phytophthora cinnamomi*
3	**Total for Coral Bells**	

Coreopsis		
1	Negative for Virus	
1	Referred to Private Testing Lab	
1	Thrips	
3	**Total for Coreopsis**	
Creeping Jenny		
1	Web Blight	*Rhizoctonia solani*
1	**Total for Creeping Jenny**	
Daisy		
1	Insufficient Sample	
1	**Total for Daisy**	
Dead Nettle		
1	Botrytis Blight	*Botrytis sp.*
1	Lamium Leaf Distortion-Associated Virus	*Lamium maculatum*
2	**Total for Dead Nettle**	
Dianthus		
1	Abiotic Problem	
1	Anthracnose	*Colletotrichum sp.*
1	Fusarium Stem and Root Rot	*Fusarium sp.*
1	Fusarium Stem Rot	*Fusarium sp.*
2	Pythium Root Rot	*Pythium sp.*
1	Suspect Environmental Stress	
7	**Total for Dianthus**	
Dichondra		
1	Suspect Cold Injury	
1	**Total for Dichondra**	
Dusty Miller		
1	Fusarium Crown and Stem Rot	*Fusarium sp.*
1	**Total for Dusty Miller**	
Easter Lily		
1	Carlavirus Group	
1	Kalanchoe Latent Virus	
1	Lily Symptomless Virus	
1	Potexvirus Group	
4	**Total for Easter Lily**	
Epimedium		
1	Anthracnose Stem Blight	*Colletotrichum sp.*
1	**Total for Epimedium**	

Euphorbia		
1	Suspect Virus	
1	**Total for Euphorbia**	
Fern		
1	Abiotic Problem	
1	**Total for Fern**	
Foamybells		
1	Botrytis Blight	*Botrytis sp.*
1	Thrips	
2	**Total for Foamybells**	
Gazania		
1	Fusarium Stem Rot	*Fusarium sp.*
1	Insects	
2	**Total for Gazania**	
Geranium		
1	Bacterial Leaf Spot	*Pseudomonas cichorii*
1	Bacterial Soft Rot	*Pectobacterium carotovorum pv. carotovorum*
1	Botrytis Blight	*Botrytis sp.*
1	Pythium Root Rot	*Pythium sp.*
4	**Total for Geranium**	
Gerbera Daisy		
1	No Pathogens Found	
1	**Total for Gerbera Daisy**	
Gomphrena		
1	Tomato Spotted Wilt Virus	
1	**Total for Gomphrena**	
Hellebore		
2	Abiotic Problem	
1	Cold Injury	
1	Fusarium Crown Rot	*Fusarium oxysporum*
1	Healthy	
1	Tobacco Rattle Virus	
6	**Total for Hellebore**	
Hollyhock		
2	Rust	*Puccinia malvacearum*
2	**Total for Hollyhock**	

Hosta		
1	Negative for Hosta Virus X	
1	**Total for Hosta**	
Impatiens		
1	Phytophthora Root and Stem Rot	*Phytophthora nicotianae*
1	Pythium Root Rot	*Pythium sp.*
1	Pythium Stem Rot	*Pythium sp.*
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
1	Suspect Chemical Injury	
5	**Total for Impatiens**	
Iris		
1	Heterosporium Leaf Spot	*Heterosporium iridis*
1	No Pathogens Found	
1	No Diagnosis or Sample Quality Entered	
3	**Total for Iris**	
Lavender		
1	Charcoal Rot	*Macrophomina sp.*
1	Fusarium Stem Rot	*Fusarium sp.*
1	Insufficient Sample	
1	Negative for Disease	
2	Negative for Phytophthora Root Rot	
1	Phytophthora Crown and Root Rot	*Phytophthora nicotianae*
7	**Total for Lavender**	
Liriope		
1	Anthracnose	*Colletotrichum sp.*
2	Cultural Problem	
2	Fusarium Crown and Leaf Rot	*Fusarium sp.*
1	Inonotus Root and Butt Decay	*Inonotus sp.*
2	Scales	
8	**Total for Liriope**	
Lisianthus		
1	Suspect Cultural Problem	
1	**Total for Lisianthus**	
Lobelia		
1	Abiotic Problem	
1	**Total for Lobelia**	
Madagascar Periwinkle		
1	Phytophthora Blight	*Phytophthora nicotianae*
1	**Total for Madagascar Periwinkle**	

Mint		
1	Suspect Virus	
1	Thrips	
2	**Total for Mint**	
Mondograss		
1	Anthracnose	*Colletotrichum sp.*
1	**Total for Mondograss**	
Nemesia		
1	Abiotic Problem	
1	Negative for Virus	
2	**Total for Nemesia**	
Orange		
1	Suspect Cultural Problem	
1	**Total for Orange**	
Orchid		
1	Anthracnose	*Collectotrichum gloeosporiodes*
2	Cause of Problem Undetermined	
2	Cultural Problem	
3	Cymbidium Mosaic Virus	
1	Negative for Virus	
1	Odontoglossum Ringspot Virus	
1	Suspect Mesophyll Cell Collapse	
11	**Total for Orchid**	
Ornamental Cabbage		
1	Black Rot	*Xanthomonas campestris*
1	**Total for Ornamental Cabbage**	
Ornamental Kale		
1	Xanthomonas Leaf Spot	*Xanthomonas campestris*
1	**Total for Ornamental Kale**	
Pachysandra		
1	Negative for Boxwood Blight	
4	Volutella Blight	*Volutella pachysandrae*
5	**Total for Pachysandra**	
Pansy		
1	Black Root Rot	*Thielaviopsis basicola*
1	Negative for Black Root Rot	
1	Phytophthora Crown and Root Rot	*Phytophthora sp.*
3	**Total for Pansy**	

Penstemon		
1	Abiotic Problem	
1	European Pepper Moth	*Duponchelia fovealis fovealis*
1	Pythium Root and Stem Rot	*Pythium sp.*
1	Suspect Pythium Root and Stem Rot	*Pythium sp.*
4	**Total for Penstemon**	

Peony		
1	Abiotic Problem	
1	Bacterial Leaf Spot	*Xanthomonas hortorum*
2	Cladosporium Stem and Leaf Blotch	*Cladosporium paeoniae*
1	Crown Rot	
1	Measles	*Graphiopsis chlorocephala*
1	Negative for Disease	
1	Rhizoctonia Stem Rot	*Rhizoctonia solani*
1	Suspect Chemical Injury	
1	Suspect Tobacco Rattle Virus	
1	Suspect Vole Damage	*Microtus sp.*
1	Thrips	
12	**Total for Peony**	

Periwinkle		
1	Phomopsis Dieback	*Phomopsis lirella*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia sp.*
2	**Total for Periwinkle**	

Petunia		
2	Abiotic Problem	
1	Insufficient Sample	
1	Low pH	
1	Negative for Disease	
1	Phytophthora Root and Stem Rot	*Phytophthora nicotianae*
1	Rhizoctonia Stem Rot	*Rhizoctonia solani*
1	Snails	
1	Thrips	
9	**Total for Petunia**	

Phlox		
1	Abiotic Problem	
1	Cause of Problem Unknown	
1	Cultural Problem	
1	Fertilizer Burn	
4	**Total for Phlox**	

Pineapple		
1	Normal Condition	
1	**Total for Pineapple**	
Plant, Unknown		
1	Suspect Chemical Injury	
1	**Total for Plant, Unknown**	
Ranunculus		
1	Tomato Spotted Wilt Virus	
1	**Total for Ranunculus**	
Rudbeckia		
1	Abiotic Problem	
1	Rudbeckia Psyllid	
2	**Total for Rudbeckia**	
Russian Sage		
1	Phoma Stem Canker	*Phoma sp.*
1	**Total for Russian Sage**	
Sea Thrift		
1	Environmental Stress	
1	**Total for Sea Thrift**	
Sedge		
1	Rhizoctonia Aerial Blight	*Rhizoctonia sp.*
1	**Total for Sedge**	
Shamrock		
1	Oxalis Rust	*Puccinia oxalidis*
1	**Total for Shamrock**	
Snapdragon		
1	Excess Soluble Salts	
1	Low pH	
1	Pythium Root Rot	*Pythium sp.*
3	**Total for Snapdragon**	
Solomon's Seal		
1	Fusarium on roots	*Fusarium sp.*
1	**Total for Solomon's Seal**	
Spurge		
1	Insufficient Sample	
1	**Total for Spurge**	

Sunflower		
1	No Pathogens Found	
1	**Total for Sunflower**	
Verbena		
1	Bacterial Blight	*Pseudomonas cichorii*
1	**Total for Verbena**	
Violet		
1	Black Root Rot	*Thielaviopsis basicola*
1	Cercospora Leaf Spot	*Cercospora sp.*
1	Mites	
3	**Total for Violet**	
Wallflower		
1	Thrips	
1	**Total for Wallflower**	
Wishbone Flower		
1	Negative for Disease	
1	**Total for Wishbone Flower**	
Zinnia		
1	Chemical Injury	
1	Tomato Spotted Wilt Virus	
2	**Total for Zinnia**	

Small Fruits		
Blackberry		
1	Cane Blight	*Coniothyrium fuckellii*
1	Downy Mildew	*Peronospora sparsa*
1	Insufficient Sample	
1	Mites	
1	Negative for Nematodes	
1	No Pathogens Found	
6	**Total for Blackberry**	
Blueberry		
3	Insufficient Sample	
1	Physiological Leaf Spot	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Ripe Rot	*Colletotrichum gloeosporioides*
6	**Total for Blueberry**	
Fig		
1	Abiotic Problem	
1	Insects	
1	No Pathogens Found	
1	Winter Injury	
4	**Total for Fig**	
Grape		
1	Alternaria	*Alternaria alternata*
2	Anthracnose	*Elsinoe ampelina*
1	Bitter Rot	*Greeneria uvicola*
5	Black Rot	*Guignardia bidwellii*
2	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cause of Problem Undetermined	
2	Chemical Injury	
3	Crown Gall	*Rhizobium (Agrobacterium) vitis*
1	Insufficient Information	
3	Insufficient Sample	
1	Macrophoma Rot	*Macrophoma sp.*
6	Negative for Pierce's Disease	
1	Nutrient Deficiency	
1	Sunburn	
1	Suspect Chemical Injury	
1	Suspect Cold Injury	
1	Suspect Nutrient Deficiency	
1	Suspect Virus	
1	Suspect Winter Injury	
35	**Total for Grape**	

Raspberry		
1	Insufficient Sample	
1	No Pathogens Found	
2	**Total for Raspberry**	

Strawberry		
2	High Soluble Salts	
1	Mites	
1	Negative for Disease	
1	Phytophthora Crown and Root Rot	*Phytophthora cactorum*
5	**Total for Strawberry**	

Tree Fruits and Nuts

Apple

1	Alternaria Blotch	*Alternaria mali*
1	Aphids	
1	Beetles	
2	Bitter Pit	
5	Bitter Rot	*Glomerella cingulata*
3	Black Rot	*Diplodia seriata*
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cause of Problem Undetermined	
4	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
3	Chemical Injury	
1	Curculios	
1	Environmental Stress	
6	Fire Blight	*Erwinia amylovora*
1	Hail Injury	
1	Insects	
1	Lichens	
1	Maggots	
1	Negative for Root Disease	
1	No Pathogens Found	
1	Phomopsis Dieback	*Phomopsis sp.*
1	Sooty Blotch	*Gloeodes pomigena*
1	Stinkbugs	
1	Suspect Fire Blight	*Erwinia amylovora*
1	Suspect Frogeye Leaf Spot	*Physalospora obtusa*
1	White Rot	*Botryosphaeria dothidea*
1	Woolly Apple Aphids	
1	No Diagnosis or Sample Quality Entered	
46	**Total for Apple**	

Beautyberry

1	Negative for Cucumber Mosaic Virus
1	Negative for Impatiens Necrotic Spot Virus
1	Negative for Potyvirus Group
1	Negative for Tomato Spotted Wilt Virus
1	Referred to Private Testing Lab
1	Suspect Virus
6	**Total for Beautyberry**

Cherry		
1	Cercospora Leaf Spot	*Cercospora circumscissa*
1	Cherry Leaf Spot	*Blumeriella jaapii*
1	Insects	
1	Insufficient Sample	
1	Japanese Beetles	
1	Shothole	
1	Wood Decay	
7	**Total for Cherry**	
Crabapple		
1	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
1	Insufficient Sample	
2	**Total for Crabapple**	
Filbert		
1	Eastern Filbert Blight	*Anisogramma anomala*
1	**Total for Filbert**	
Lemon		
1	Insects	
1	Thrips	
2	**Total for Lemon**	
Nectarine		
1	Abiotic Problem	
1	Brown Rot	*Monilinia fructicola*
2	Curculios	
1	Gummosis	*Botryosphaeria sp.*
1	Suspect Environmental Stress	
6	**Total for Nectarine**	
Pawpaw		
1	Insects	
1	Leaf Blotch	*Pseudocercospora asiminae*
1	Normal Condition	
1	Poor Pollination	
1	Sooty Blotch and Flyspeck	
5	**Total for Pawpaw**	

Peach		
1	Bacterial Spot	*Xanthomonas campestris*
1	Brown Rot	*Monilinia fructicola*
1	Cicadas	
2	Curculios	
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
1	Lichens	
1	No Pathogens Found	
2	Scab	*Cladosporium carpophilum*
1	Suspect Armillaria Root Rot	*Armillaria sp.*
14	**Total for Peach**	

Pear		
2	Abiotic Problem	
1	Fire Blight	*Erwinia amylovora*
1	Frost Injury	
1	Pear Leaf Blister Mites	
1	Suspect Fire Blight	*Erwinia amylovora*
6	**Total for Pear**	

Persimmon		
1	Environmental Stress	
1	Phomopsis Canker	*Phomopsis sp.*
1	Suspect Persimmon Wilt	*Nalanthamala diospyri*
3	**Total for Persimmon**	

Plum		
1	Bacterial Spot	*Xanthomonas campestris*
1	Black Knot	*Dibotryon morbosum*
1	Suspect Environmental Stress	
1	Suspect Hail Injury	
1	Suspect Insects	
1	Wood Decay	
6	**Total for Plum**	

Walnut		
1	Negative for Thousand Cankers Disease	
1	**Total for Walnut**	

Trees		
Alder		
1	Sooty Mold	*Scorias spongiosa*
1	**Total for Alder**	
Arborvitae		
1	Abiotic Problem	
1	Cultural Problem	
1	Environmental Stress	
3	Insufficient Sample	
3	Leafminers	
9	Mites	
7	Negative for Disease	
3	Normal Senescence	
1	Pestalotiopsis Needle Blight	*Pestalotiopsis sp.*
2	Pestalotiopsis Twig Blight	*Pestalotiopsis funerea*
1	Phomopsis	*Phomopsis sp.*
1	Scales	
2	Seasonal Needle Drop	
1	Suspect Environmental Stress	
1	Suspect Winter Injury	
37	**Total for Arborvitae**	
Ash		
3	Borers	
1	Insects	
1	Insufficient Sample	
5	**Total for Ash**	
Beech		
1	Anthracnose	*Gloeosporium sp.*
1	**Total for Beech**	
Birch		
2	Insects	
2	**Total for Birch**	
Black Gum		
1	Botryosphaeria Canker	*Botryosphaeria ribis*
1	Scales	
2	Sooty Mold	
4	**Total for Black Gum**	
Cedar		
1	Insufficient Sample	
1	**Total for Cedar**	

Cherry		
1	Borers	
1	Shothole Borers	
1	Sooty Mold	*Scorias spongiosa*
3	**Total for Cherry**	

Chestnut		
2	Insects	
1	Insufficient Sample	
3	**Total for Chestnut**	

Chinafir		
1	Abiotic Problem	
1	**Total for Chinafir**	

Cryptomeria		
1	Borers	
1	No Pathogens Found	
3	Scales	
1	Suspect Cultural Problem	
6	**Total for Cryptomeria**	

Cypress		
2	Bagworms	
1	Cercospora (Passalora) Needle Blight	*Passalora sequoiae*
4	Insufficient Sample	
1	Negative for Disease	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
5	Seiridium Canker	*Seiridium sp.*
11	Suspect Seiridium Canker	*Seiridium sp.*
25	**Total for Cypress**	

Dogwood		
1	Abiotic Problem	
1	Beetles	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Chemical Injury	
1	Cylindrocladium Root Rot	*Cylindrocladium sp.*
4	Insufficient Sample	
1	Lichens	
1	No Pathogens Found	
1	Pestalotia	*Pestalotia sp.*
4	Powdery Mildew	*Oidium sp.*
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
3	Spot Anthracnose	*Elsinoe corni*
1	Suspect Chemical Injury	
21	**Total for Dogwood**	

Douglasfir		
1	Swiss Needle Cast	*Phaeocryptopus gaeumannii*
1	**Total for Douglasfir**	

Eastern Red Cedar		
1	Abiotic Problem	
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
1	No Pathogens Found	
4	**Total for Eastern Red Cedar**	

Eleagnus		
1	No Pathogens Found	
1	**Total for Eleagnus**	

Elm		
1	Beetles	
2	Black Spot	*Stegophora ulmea*
1	Insects	
2	Insufficient Sample	
1	No Pathogens Found	
7	**Total for Elm**	

Falsecypress		
1	Negative for Root Disease	
1	Normal Needle Senescence	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
1	Phomopsis Needle Blight	*Phomopsis juniperovora*
1	Seiridium Canker	*Seiridium sp.*
1	Suspect Cultural Problem	
6	**Total for Falsecypress**	

Fir		
1	Girdling Roots	
1	Insufficient Sample	
1	Mechanical Injury	
3	Negative for Disease	
1	No Pathogens Found	
3	Phytophthora Root Rot	*Phytophthora cinnamomi*
2	Rhizosphaera Needle Cast	*Rhizosphaera sp.*
2	Scales	
1	Spruce Mites	
1	Unable to Diagnose	
16	**Total for Fir**	
Fothergilla		
1	Suspect Environmental Stress	
1	**Total for Fothergilla**	
Fringe Tree		
1	Anthracnose	*Discula fraxinea*
1	Lacebugs	
1	Stem Girdling Roots	
1	Suspect Cultural Problem	
4	**Total for Fringe Tree**	
Giant Sequoia		
1	Cercospora Blight	*Pseudocercospora juniperi*
1	**Total for Giant Sequoia**	
Hawthorn		
1	Cedar-Hawthorn Rust	*Gymnosporangium globosum*
1	Cedar-Quince Rust	*Gymnosporangium clavipes*
2	**Total for Hawthorn**	
Hemlock		
1	Lichens	
1	Mites	
2	**Total for Hemlock**	
Hickory		
1	Gnomonia Leaf Spot	*Gnomonia caryae*
2	Insufficient Sample	
3	**Total for Hickory**	

Hornbeam		
1	Brown Felt	*Septobasidium sp.*
1	Scales	
2	**Total for Hornbeam**	

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

Magnolia		
1	Insufficient Sample	
1	Negative for Root Disease	
2	Powdery Mildew	*Oidium sp.*
1	Sapsucker Injury	
1	Scales	
1	Suspect Environmental Stress	
7	**Total for Magnolia**	

Maple		
1	Abiotic Problem	
2	Anthracnose	*Colletotrichum gloeosporioides*
1	Anthracnose	*Discula sp.*
1	Beetles	
1	Borers	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
3	Chemical Injury	
3	Cultural Problem	
2	Insects	
7	Insufficient Sample	
1	Japanese Beetles	
1	Mites	
3	Negative for Bacterial Scorch	
1	Negative for Disease	
1	Negative for Phytophthora Root Rot	
4	No Pathogens Found	
1	Normal Condition	
1	Phomopsis	*Phomopsis sp.*
4	Powdery Mildew	*Oidium sp.*
11	Purple-eye Leaf Spot	*Phyllosticta minima*
3	Scales	
1	Scorch	
1	Southwest Injury	
1	Suspect Anthracnose	
1	Suspect Cold Injury	
1	Suspect Cultural Problem	
1	Suspect Girdling Roots	
1	Suspect Purple-eye Leaf Spot	*Phyllosticta minima*
2	Suspect Winter Injury	
1	Tip Moths	
2	Verticillium Wilt	*Verticillium dahliae*
1	Winter Injury	
3	Wood Decay	
69	**Total for Maple**	

Oak		
3	Abiotic Problem	
2	Anthracnose	*Discula sp.*
17	Bacterial Scorch	*Xylella fastidiosa*
3	Botryosphaeria Twig Canker	*Botryosphaeria quercuum*
1	Cause of Problem Undetermined	
3	Chemical Injury	
1	Cicada Injury	
1	Hypoxylon Canker	*Hypoxylon atropunctatum*
9	Insects	
6	Insufficient Sample	
1	Iron Chlorosis	
4	Leafminers	
1	Mites	
10	Negative for Bacterial Scorch	
1	Negative for Phytophthora	
1	Negative for Phytophthora Root Rot	
6	No Pathogens Found	
1	Oak Leaf Blister	*Taphrina caerulescens*
2	Oak Leaf Button Galls	
1	Pine-Oak Gall Rust	*Cronartium quercuum*
2	Powdery Mildew	*Phyllactinia corylea*
2	Suspect Bacterial Wetwood	
1	Suspect Chemical Injury	
1	Suspect Cultural Problem	
9	Tubakia Leaf Spot	*Tubakia dryina*
3	Wood Decay	
1	No Diagnosis or Sample Quality Entered	
93	**Total for Oak**	

Ornamental Cherry		
1	Beetles	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cercospora Leaf Spot	*Pseudocercospora (Cercospora) circumscissa*
1	Cicada Injury	
1	Insufficient Sample	
1	Negative for Root Disease	
1	Suspect Cultural Problem	
7	**Total for Ornamental Cherry**	

Ornamental Pear		
1	Lichens	
1	No Pathogens Found	
1	Pear Leaf Blister Mites	
1	Phoma Leaf Spot	*Phoma pomorum*
1	Xylaria Root Rot	*Xylaria polymorpha*
5	**Total for Ornamental Pear**	
Palm		
1	No Pathogens Found	
1	**Total for Palm**	
Pine		
1	Abiotic Problem	
1	Atropellis Twig Canker	*Atropellis sp.*
1	Diplodia Tip Blight	*Diplodia pinea*
2	Dothistroma Needle Blight	*Dothistroma pini*
1	Fusiform Rust	*Cronartium quercuum f.sp. fusiform*
1	Insufficient Sample	
1	Mites	
1	Negative for Root Disease	
1	No Pathogens Found	
1	Normal Condition	
1	Phomopsis Canker	*Phomopsis sp.*
1	Pine Sawyers	
1	Pitch Mass Borers	
1	Sapsucker Injury	
3	Scales	
1	Sooty Mold	
1	Suspect Environmental Stress	
2	Suspect Procerum Root Disease	*Leptographium procerum*
1	Tip Moths	
23	**Total for Pine**	
Plum		
1	Insufficient Sample	
1	**Total for Plum**	
Poinciana		
1	Cultural Problem	
1	**Total for Poinciana**	

Poplar		
1	Insufficient Sample	
1	No Pathogens Found	
1	Physiological Leaf Spot	
1	Suspect Chemical Injury	
1	Thrips	
5	**Total for Poplar**	
Prunus		
2	Black Knot	*Dibotryon morbosum*
1	Cercospora Leaf Spot	*Cercospora circumscissa*
1	Leaf Rust	*Tranzschelia sp.*
4	**Total for Prunus**	
Redbud		
1	Insects	
1	Suspect Botryosphaeria Dieback	*Botryosphaeria dothidea*
2	**Total for Redbud**	
Snowbell		
1	Insufficient Sample	
1	**Total for Snowbell**	
Spruce		
2	Abiotic Problem	
1	Cause of Problem Unknown	
7	Mites	
6	No Pathogens Found	
20	Rhizosphaera Needle Cast	*Rhizosphaera kalkhoffii*
1	Scales	
9	Stigmina Needle Cast	*Stigmina lautii*
2	Suspect Cytospora Canker	*Cytospora sp.*
1	Suspect Environmental Stress	
1	Suspect Sapsucker Injury	
1	Suspect Wood Decay	
51	**Total for Spruce**	
Sweet Gum		
1	Negative for Bacterial Scorch	
1	**Total for Sweet Gum**	
Sycamore		
1	Bacterial Scorch	*Xylella fastidiosa*
1	Negative for Bacterial Scorch	
1	Powdery Mildew	*Oidium sp.*
3	**Total for Sycamore**	

Thorny Olive		
1	Suspect Environmental Stress	
1	Thrips	
2	**Total for Thorny Olive**	

Tree, Unknown		
3	Insufficient Sample	
3	**Total for Tree, Unknown**	

Tulip Tree		
1	Armillaria Root Rot	*Armillaria sp.*
1	Chemical Injury	
1	Insects	
1	Insufficient Sample	
1	Suspect Chemical Injury	
1	Suspect Fusarium Canker	*Fusarium solani*
6	**Total for Tulip Tree**	

Umbrella Pine		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	**Total for Umbrella Pine**	

Willow		
1	Black Canker	*Glomerella miyabeana*
1	Botryosphaeria Canker	*Botryosphaeria dothidea*
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cytospora Canker	*Cytospora sp.*
1	Insects	
2	Insufficient Sample	
1	Negative for Root Disease	
1	Rust	*Melampsora sp.*
1	Sphaeropsis Dieback	*Sphaeropsis sp.*
10	**Total for Willow**	

Zelkova		
1	Normal Condition	
1	**Total for Zelkova**	

Turf		
Bentgrass		
2	Abiotic Problem	
1	Negative for Nematodes	
3	**Total for Bentgrass**	
Bluegrass		
1	Red Thread	*Laetisaria fuciformis*
1	**Total for Bluegrass**	
Centipedegrass		
1	No Pathogens Found	
1	**Total for Centipedegrass**	
Fescue		
4	Brown Patch	*Rhizoctonia solani*
1	Crabgrass Encroachment	*Digitaria sp.*
1	Helminthosporium Blight	*Drechslera dictyoides*
1	High pH	
1	Moss	
1	No Pathogens Found	
1	Red Thread	*Laetisaria fuciformis*
1	Rhizoctonia Blight	*Rhizoctonia solani*
11	**Total for Fescue**	
Ryegrass		
1	Leaf Rust	*Puccinia graminis*
1	**Total for Ryegrass**	
St. Augustinegrass		
2	Gray Leaf Spot	*Pyricularia grisea*
3	Take-All	*Gaeumannomyces graminis var. graminis*
5	**Total for St. Augustinegrass**	
Turfgrass		
1	Algae	
2	Brown Patch	*Rhizoctonia solani*
1	Helminthosporium Blight	*Drechslera dictyoides*
1	Insufficient Sample	
1	Leaf Rust	*Puccinia graminis*
1	Low pH	
3	No Pathogens Found	
10	**Total for Turfgrass**	

Vegetables and Herbs		
Bean		
1	Alternaria Leaf and Pod Spot	*Alternaria alternata*
1	Cercospora Leaf Spot and Blotch	*Cercospora sp.*
1	Charcoal Rot	*Macrophomina phaseolina*
1	Fusarium Root Rot	*Fusarium solani*
1	Insects	
4	Insufficient Sample	
1	Low pH	
1	Pythium Root Rot	*Pythium sp.*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Thrips	
13	**Total for Bean**	
Broccoli		
1	Cabbage Maggots	
1	No Pathogens Found	
1	Suspect Chemical Injury	
1	Suspect Nutrient Deficiency	
4	**Total for Broccoli**	
Cantaloupe		
2	Chemical Injury	
1	Excess Soluble Salts	
3	**Total for Cantaloupe**	
Carrot		
1	Carrot Rust Fly	
1	**Total for Carrot**	
Chives		
1	Abiotic Problem	
1	Thrips	
2	**Total for Chives**	
Cilantro		
1	Pythium Root Rot	*Pythium sp.*
1	**Total for Cilantro**	
Cole Crops		
1	Insects	
1	Suspect Nutrient Deficiency	
2	**Total for Cole Crops**	

Collards		
1	Black Rot	*Xanthomonas campestris*
1	**Total for Collards**	

Cucumber		
1	Algae	
1	Cucumber Beetles	
1	Downy Mildew	*Pseudoperonospora cubensis*
1	Fusarium Foot Rot	*Fusarium solani*
1	Insufficient Sample	
5	**Total for Cucumber**	

Eggplant		
1	Ascochyta Leaf Spot	*Ascochyta sp.*
1	**Total for Eggplant**	

Garlic		
1	Bulb Mites	
1	Insects	
1	Rhizoctonia Rot	*Rhizoctonia sp.*
3	**Total for Garlic**	

Kale		
1	Insects	
1	**Total for Kale**	

Lima Bean		
1	Root Knot Nematodes	*Meloidogyne sp.*
1	**Total for Lima Bean**	

Okra		
1	Insects	
1	No Pathogens Found	
1	Root Knot Nematodes	*Meloidogyne sp.*
3	**Total for Okra**	

Pepper		
1	Bacterial Spot	*Xanthomonas campestris pv. vesicatoria*
2	Chemical Injury	
1	Negative for Disease	
1	Negative for Virus	
1	No Pathogens Found	
1	Suspect Bacterial Spot	*Xanthomonas campestris pv. vesicatoria*
1	Suspect Environmental Stress	
1	Thrips	
9	**Total for Pepper**	

Potato		
2	Blackleg	*Dickeya sp.*
1	Chemical Injury	
1	Fusarium Dry Rot	*Fusarium sp.*
1	High pH	
1	Hollow Heart	
1	Insufficient Sample	
2	Leafhoppers	
1	Pink Rot	*Phytophthora erythroseptica*
10	**Total for Potato**	

Pumpkin		
1	Bacterial Wilt	*Erwinia tracheiphila*
1	Cucumber Beetles	
1	Fusarium Foot Rot	*Fusarium solani*
1	Fusarium Fruit Rot	*Fusarium sp.*
1	Insufficient Sample	
1	Ozone Injury	
4	Powdery Mildew	*Sphaerotheca fuliginea*
1	Squash Vine Borers	
1	Sunscald	
12	**Total for Pumpkin**	

Rosemary		
1	Insufficient Sample	
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia sp.*
2	**Total for Rosemary**	

Spinach		
1	Abiotic Problem	
1	Environmental Stress	
2	**Total for Spinach**	

Squash		
1	Bacterial Wilt	*Erwinia tracheiphila*
1	Cucumber Beetles	
2	Downy Mildew	*Pseudoperonospora cubensis*
1	Insufficient Sample	
1	Negative for Phytophthora Root Rot	
1	Squash Vine Borers	
7	**Total for Squash**	
Sweet Corn		
1	Anthracnose Leaf Blight	*Colletotrichum graminicola*
1	Negative for Disease	
1	Nutrient Deficiency	
1	Phosphorus Deficiency	
1	Suspect Chemical Injury	
5	**Total for Sweet Corn**	
Sweet Potato		
1	Scurf	*Monilochaetes infuscans*
1	**Total for Sweet Potato**	
Swiss Chard		
1	Cercospora Leaf Spot	*Cercospora beticola*
1	Pythium Root Rot	*Pythium sp.*
2	**Total for Swiss Chard**	
Tarragon		
1	Abiotic Problem	
1	Fusarium Crown and Root Rot	*Fusarium sp.*
1	Rhizoctonia Web Blight	*Rhizoctonia sp.*
2	Rust	*Puccinia dracunculina*
5	**Total for Tarragon**	

Tomato		
1	Abiotic Problem	
4	Aphids	
1	Bacterial Spot	*Xanthomonas campestris*
1	Bacterial Wilt	*Ralstonia solanacearum*
1	Cause of Problem Undetermined	
8	Chemical Injury	
1	Chemical Residue Injury	
1	Cultural Problem	
4	Environmental Stress	
1	Eriophyid Mites	
1	Fusarium Basal Stem Rot	*Fusarium oxysporum*
1	Fusarium Crown and Root Rot	*Fusarium oxysporum*
1	Fusarium Wilt	*Fusarium oxysporum*
1	High pH	
7	Insufficient Sample	
3	Late Blight	*Phytophthora infestans*
1	Low pH	
1	Negative for Disease	
1	Negative for Tomato Spotted Wilt	
1	No Pathogens Found	
1	Normal Condition	
3	Nutrient Deficiency	
1	Physiological Leaf Roll	
2	Physiological Leaf Spot	
1	Pythium Root Rot	*Pythium sp.*
1	Rhizoctonia Fruit Rot	*Rhizoctonia solani*
1	Root Knot Nematodes	*Meloidogyne sp.*
2	Septoria Leaf Spot	*Septoria lycopersici*
1	Southern Blight	*Sclerotium rolfsii*
1	Stinkbugs	
2	Suspect Cultural Problem	
1	Thrips	
2	Tomato Spotted Wilt Virus	
1	Whiteflies	
61	**Total for Tomato**	

Turnip		
1	Anthracnose	*Colletotrichum higginsianum*
1	**Total for Turnip**	

Watermelon		
1	Insufficient Sample	
1	**Total for Watermelon**	

Zucchini		
1	Borers	
2	Insufficient Sample	
1	Powdery Mildew	*Sphaerotheca fuliginea*
4	**Total for Zucchini**	

Weeds		
Weed		
1	Slime Mold	
1	**Total for Weed**	

Woody Ornamentals		
Aucuba		
1	Insufficient Sample	
1	**Total for Aucuba**	
Azalea		
1	Abiotic Problem	
1	Beetles	
1	Cold Injury	
1	High pH	
1	Insufficient Sample	
8	Lacebugs	
1	Leaf and Flower Gall	*Exobasidium vaccinii*
2	Lichens	
3	Negative for Disease	
3	Negative for Root Disease	
1	Scales	
1	Suspect Cold Injury	
24	**Total for Azalea**	
Bamboo		
1	Insufficient Sample	
1	Low pH	
1	No Pathogens Found	
3	**Total for Bamboo**	
Barberry		
1	Insects	
1	Insufficient Sample	
1	Webworms	
3	**Total for Barberry**	
Bay Laurel		
1	Algal Leaf Spot	*Cephaleuros virescens*
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Insects	
1	Negative for Root Pathogens	
4	**Total for Bay Laurel**	

Boxwood		
5	Abiotic Problem	
1	Artillery Fungus	*Sphaerobolus stellatus*
32	Boxwood Blight	*Calonectria pseudonaviculata*
1	Cold Injury	
1	Colletotrichum Dieback	*Colletotrichum sp.*
1	Cultural Problem	
10	English Boxwood Decline	*Paecilomyces buxi*
6	Environmental Stress	
1	Insects	
35	Insufficient Sample	
1	Lance Nematodes	*Hoplolaimus sp.*
23	Leafminers	
2	Lesion Nematodes	*Pratylenchus sp.*
3	Lichens	
1	Low pH	
28	Macrophoma Leaf Spot	*Macrophoma candollei*
52	Mites	
68	Negative for Boxwood Blight	
1	Negative for Foliar Disease	
24	Negative for Nematodes	
1	Negative for Phytophthora Root Rot	
12	Negative for Root Disease	
55	Negative for Root Rot Fungi	
22	Nematodes	
1	No Pathogens Found	
14	Phytophthora Root Rot	*Phytophthora nicotianae*
16	Possible Nematode Problem	
2	Psyllids	
2	Ring Nematodes	*Mesocriconema sp.*
1	Sooty Mold	
4	Spiral Nematodes	*Rotylenchus buxophilus*
1	Suspect Abiotic Problem	
1	Suspect Cultural Problem	
2	Suspect Environmental Stress	
1	Suspect Nutrient Deficiency	
2	Suspect Winter Injury	
72	Volutella Blight	*Volutella buxi*
3	No Diagnosis or Sample Quality Entered	
508	**Total for Boxwood**	

Burning Bush		
1	Scales	
1	Suspect Chemical Injury	
2	**Total for Burning Bush**	

Butterfly Bush		
1	Downy Mildew	*Peronospora harrotii*
2	Negative for Root Disease	
3	**Total for Butterfly Bush**	
Camellia		
1	Environmental Stress	
3	Insufficient Sample	
1	Mites	
1	Negative for Disease	
1	Negative for Root Disease	
1	No Pathogens Found	
1	Phomopsis Dieback	*Phomopsis sp.*
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Scales	
2	Suspect Abiotic Problem	
1	Suspect Cold Injury	
2	Suspect Winter Injury	
2	Winter Injury	
18	**Total for Camellia**	
Cherry		
1	Curculios	
1	Phyllosticta Leaf Spot	*Phyllosticta sp.*
2	**Total for Cherry**	
Cherrylaurel		
2	Black Vine Weevils	
1	Insects	
2	Insufficient Sample	
1	Mites	
2	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
2	Negative for Disease	
3	Negative for Root Disease	
1	Negative for Root Pathogens	
1	Phoma Leaf Spot	*Phoma sp.*
1	Phomopsis Dieback	*Phomopsis sp.*
1	Pseudomonas Shoot Blight	*Pseudomonas syringae*
2	Scales	
3	Shothole	
1	Suspect Cultural Problem	
23	**Total for Cherrylaurel**	
Cleyera		
1	Insufficient Sample	
1	**Total for Cleyera**	

Cotoneaster		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Low pH	
2	**Total for Cotoneaster**	

Crape Myrtle		
1	Chemical Injury	
2	Cultural Problem	
1	Frost injury	
1	Lightning Injury	
1	Sooty Mold	
6	**Total for Crape Myrtle**	

Elaeagnus		
1	Mites	
1	**Total for Elaeagnus**	

English Ivy		
1	Anthracnose	*Colletotrichum trichellum*
1	Phytophthora Root Rot	*Phytophthora nicotianae*
1	Suspect Environmental Stress	
1	Winter Injury	
4	**Total for English Ivy**	

Euonymus		
1	Adventitious Roots	
1	Anthracnose	*Colletotrichum gloeosporioides*
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Crown Gall	*Agrobacterium tumefaciens*
1	Insects	
1	Insufficient Sample	
3	Scales	
9	**Total for Euonymus**	

False Arborvitae		
1	Environmental Stress	
1	**Total for False Arborvitae**	

Flowering Quince		
1	Scales	
1	**Total for Flowering Quince**	

Fothergilla		
2	Environmental Stress	
2	**Total for Fothergilla**	

Hibiscus		
1	Phyllosticta Leaf Spot	*Phyllosticta sp.*
1	**Total for Hibiscus**	
Holly		
1	Abiotic Problem	
3	Anthracnose	*Gloeosporium sp.*
19	Black Root Rot	*Thielaviopsis basicola*
1	Black Vine Weevils	
2	Chemical Injury	
1	Environmental Stress	
1	Girdling Roots	
17	Insufficient Sample	
1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
1	Negative for Disease	
1	Negative for Phytophthora Root Rot	
7	Negative for Root Disease	
1	No Pathogens Found	
1	Normal Condition	
1	Rust	*Chrysomyxa ilicina*
3	Scales	
1	Sooty Mold	
1	Spine Spot	
5	Suspect Black Root Rot	*Thielaviopsis basicola*
1	Suspect Chemical Injury	
1	Suspect Cultural Problem	
2	Suspect Environmental Stress	
1	Suspect Winter Injury	
1	Winter Injury	
74	**Total for Holly**	
Honeysuckle		
1	Powdery Mildew	*Oidium sp.*
1	**Total for Honeysuckle**	
Hydrangea		
2	Anthracnose	*Colletotrichum sp.*
1	Chemical Injury	
1	Insufficient Sample	
1	Negative for Foliar Disease	
1	Negative for Root Disease	
1	No Pathogens Found	
1	Phoma Leaf Spot	*Phoma exigua*
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
9	**Total for Hydrangea**	

Hypericum		
1	Abiotic Problem	
1	**Total for Hypericum**	

Indian Hawthorn		
1	Insufficient Sample	
1	Suspect Entomosporium Leaf Spot	*Entomosporium mespili*
2	**Total for Indian Hawthorn**	

Japanese Plum Yew		
1	Negative for Root Disease	
1	Suspect Cultural Problem	
2	**Total for Japanese Plum Yew**	

Jasmine		
1	Insufficient Sample	
1	Sooty Mold	
2	**Total for Jasmine**	

Juniper		
2	Abiotic Problem	
2	Cultural Problem	
1	Environmental Stress	
4	Insufficient Sample	
1	Kabatina Tip Blight	*Kabatina juniperi*
1	Low pH	
10	Mites	
2	Negative for Root Disease	
5	No Pathogens Found	
1	Pestalotiopsis Needle Blight	*Pestalotiopsis sp.*
3	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
3	Scales	
1	Suspect Vole Injury	
36	**Total for Juniper**	

Leucothoe		
1	Environmental Stress	
1	Physiological Leaf Spot	
2	**Total for Leucothoe**	

Lilac		
1	Environmental Stress	
1	Negative for Disease	
1	Wood Decay	*Phellinus sp.*
3	**Total for Lilac**	

Loropetalum		
1	Insufficient Sample	
1	**Total for Loropetalum**	
Mountain Laurel		
1	Suspect Rhododendron Necrotic Ringspot Virus	
1	Suspect Chemical Injury	
2	**Total for Mountain Laurel**	
Nandina		
1	Environmental Stress	
1	Physiological Leaf Spot	
1	Suspect Cold Injury	
1	Suspect Winter Injury	
1	Whiteflies	
5	**Total for Nandina**	
Ninebark		
1	Insufficient Sample	
1	**Total for Ninebark**	
Osmanthus		
1	Insufficient Sample	
1	Negative for Root Disease	
1	Suspect Environmental Stress	
1	Winter Injury	
4	**Total for Osmanthus**	
Palm		
1	Scales	
1	**Total for Palm**	
Photinia		
4	Entomosporium Leaf Spot	*Entomosporium mespili*
1	Sooty Mold	
5	**Total for Photinia**	
Pieris		
1	Negative for Root Disease	
1	**Total for Pieris**	
Pittosporum		
1	Alternaria Leaf Spot	*Alternaria tenuissima*
1	**Total for Pittosporum**	

Privet		
2	Chemical Injury	
1	Environmental Stress	
1	Normal Condition	
1	Phyllosticta Leaf Spot	*Phyllosticta sp.*
1	Suspect Cold Injury	
1	Suspect Winter Injury	
1	Winter Injury	
8	**Total for Privet**	
Pyracantha		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Lacebugs	
2	**Total for Pyracantha**	
Quince		
1	Suspect Frost Injury	
1	**Total for Quince**	
Rhododendron		
1	Borers	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Botrytis Blight	*Botrytis cinerea*
1	Cause of Problem Unknown	
1	Cercospora Leaf Spot	*Cercospora handelii*
1	Girdling Roots	
1	Insufficient Sample	
1	Lacebugs	
1	Low pH	
1	Negative for Disease	
3	Negative for Root Disease	
1	Oedema	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Scorch	
1	Suspect Botryosphaeria Dieback	*Botryosphaeria sp.*
17	**Total for Rhododendron**	

Rose		
3	Black Spot	*Diplocarpon rosae*
1	Borers	
2	Botrytis Blight	*Botrytis cinerea*
1	Cercospora Leaf Spot	*Cercospora rosicola*
1	Common Canker	*Coniothyrium fuckelii*
1	Insects	
4	Insufficient Sample	
1	Japanese Beetles	
2	Mites	
3	Negative for Rose Rosette Virus	
2	No Pathogens Found	
1	Pollen	
1	Powdery Mildew	*Sphaerotheca pannosa*
4	Rose Rosette Virus	
1	Suspect Chemical Injury	
1	Suspect Cold Injury	
2	Thrips	
31	**Total for Rose**	
Rose-of-Sharon		
1	No Pathogens Found	
1	Thrips	
2	**Total for Rose-of-Sharon**	
Skimmia		
1	Weevils	
1	**Total for Skimmia**	
Spicebush		
1	Insufficient Sample	
1	Negative for Cucumber Mosaic Virus	
1	Negative for Impatiens Necrotic Spot Virus	
1	Negative for Potyvirus Group	
1	Negative for Tomato Spotted Wilt Virus	
1	Referred to Private Testing Lab	
6	**Total for Spicebush**	
Spiraea		
1	Insufficient Sample	
1	**Total for Spiraea**	
Spirea		
1	Bacterial Leaf Spot	*Xanthomonas campestris*
1	**Total for Spirea**	

Sumac		
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
1	**Total for Sumac**	
Sweetspire		
1	Chemical Injury	
1	Mycosphaerella Leaf Spot	*Mycosphaerella sp.*
2	**Total for Sweetspire**	
Viburnum		
1	Frost injury	
1	Insects	
3	Insufficient Sample	
2	No Pathogens Found	
1	Pestalotia	*Pestalotia sp.*
1	Sapwood Rot	*Schizophyllum commune*
1	Suspect Environmental Stress	
1	Suspect Winter Injury	
1	Winter Injury	
12	**Total for Viburnum**	
Wax Myrtle		
1	Abiotic Problem	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Insufficient Sample	
3	**Total for Wax Myrtle**	
Yew		
1	High pH	
1	Negative for Root Disease	
2	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Suspect Chemical Injury	
5	**Total for Yew**	

Nonplant Material		
Soil		
2	Mold	
2	**Total for Soil**	

Identification Appendix

1. Higher Plants

Family: Caprifoliaceae	
Valeriana officinalis	Garden Valerian
Family: Cupressaceae	
Chamaecyparis pisifera	Boulevard Falsecypress
Juniperus virginiana	Eastern Red Cedar
Family: Moraceae	
Broussonetia papyrifera	Paper Mulberry
Family: Poaceae	
Paspalum dilatatum	Dallisgrass
Paspalum pubiflorum	Hairy Seed Paspalum
Zoysia sp.	Zoysia
Family: Rosaceae	
Prunus sp.	Suspect Ornamental Cherry
Prunus sp.	Prunus
Pyrus sp.	Pear
Stephanandra incisa	Laceshrub
Family: Saururaceae	
Houittuynia cordata 'Chameleon'	Chameleon Plant
Family: Solanaceae	
Brugmansia sp.	Angel Trumpet
Unable to Identify (3)	

2. Fungi

Family: Trichocomaceae	
Aspergillus spp.	Aspergillus sp.
Family: Agaricaceae	
Coprinus sp.	Inky Cap
Unable to Indentify (1)	

3. Other

Family: Nostocaceae	
Nostoc sp.	Nostoc
Unable to Identify (3)	