The Plant Disease Clinic and Weed Identification Lab Annual Report 2014

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

The Plant Disease Clinic
2014 Annual Report

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Acknowledgements

The Plant Disease Clinic depends on a industrious staff of both full-time and part-time employees to prepare culture media, isolate pathogens from plant tissue, measure soil pH, extract nematodes from plant tissue, maintain records, answer the telephone, keep track of samples, and send out reports. In 2014, diagnoses in the Plant Disease Clinic in Blacksburg were performed by Mary Ann Hansen and Elizabeth Bush, with valuable assistance from Katie Dougherty and Jesse Feldberg.

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.

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

Introduction

The annual report for the Plant Disease Clinic 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 disease incitants 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 for making a control recommendation. Threshold levels have been developed in research trials for many, but not all, crops grown in Virginia.

The phrase "Cause of Problem Unknown" is used for 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 that cause unique symptoms can sometimes be diagnosed from an image or a description. Images are most useful when submitted in addition to a plant sample. 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 2014

The Plant Disease Clinic (PDC) performed 1648 diagnoses/identications on a total of 1351 plant samples in 2014. Diseases that were either prevalent in or new to Virginia in 2014, with additional detail on select diseases, are highlighted below.

Field Crops

- Soybean – target spot (*Corynespora cassiicola*)

Target spot affects leaves, stems pods, seeds, and roots of soybeans. Most cultivars adapted to growth in the Southeast are tolerant to target spot and fungicide control is generally not recommended. Wet conditions and high humidity (80% RH or higher) favored target spot in 2014.

Fruit Crops

- Apple – Japanese apple rust (*Gymnosporangium yamadae*)
- Cherry – cherry leaf spot (*Blumeriella jaapii*)
- Grape – Grapevine Leafroll Virus (GLRV*)*
- Grape – zonate leaf spot (*Cristulariella moricola)*
- Persimmon – persimmon wilt (*Nalanthamala diospyri*)
- Raspberry – late leaf rust (*Pucciniastrum americanum*)

Japanese apple rust is a relatively new disease for the United States. We have seen this disease on crabapples in Virginia since 2011; however, in 2014, we saw the disease on an unknown variety of backyard apple for the first time. Japanese apple rust is a different species of rust than the more common cedar-apple rust. It is not yet known how varieties of apple that are resistant to cedar-apple rust will respond to this new rust; however, fungicides that are registered for control of other rusts should also be effective for Japanese apple rust.


Cherry leaf spot

Cherry leaf spot, a fungal disease, caused significant leaf drop on ornamental and fruit cherries in 2014, likely due, in part, to wet weather conditions that were favorable for fungal diseases in general.

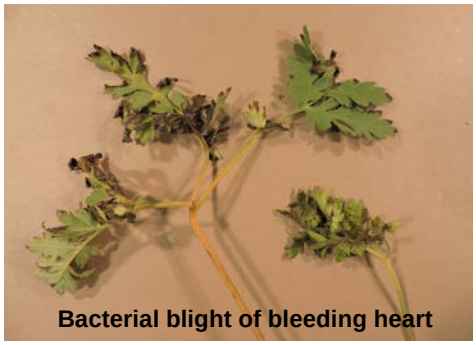
In addition to the usual fungal diseases we see on grapes, we diagnosed zonate leaf spot, a fungal disease characterized by large, beige leaf spots. Grape leafroll associated virus was detected in vineyard grapes. This disease is caused by a group of related viruses. Symptoms include delayed fruit maturity, poor color, and reduced yields. In red grape varieties, leaves turn red and roll downward in the fall. This symptom may resemble symptoms of nutrient deficiency. Symptoms are more subtle and difficult to diagnose in white varieties, and symptoms vary among rootstocks. The viruses associated with this disease are transmitted by mealybugs, which can be difficult to find and therefore difficult to control.

Persimmon wilt is a fungal vascular wilt disease. The pathogen blocks water transport and is lethal to the tree. The disease can spread by airborne spores or by root grafts. There are no controls for the disease.

Late leaf rust of raspberry has become a more serious problem on red and purple raspberry cultivars in recent years. This rust may colonize leaves, flowers, petioles, canes and fruit of red and purple raspberries, but the disease is not systemic. Black raspberries and blackberries are not susceptible to the disease.

Herbaceous Ornamentals

- Bleeding Heart – bacterial leaf spot (*Xanthomonas campestris*)
- Canna – Canna Yellow Mottle Virus (CYMV*)*
- Coneflower, Penstemon – Impatiens Necrotic Spot Virus (INSV)
- Coral Bells – bacterial leaf blight (*Pseudomonas syringae*)
- Hosta – Hosta Virus X (HVX)
- Lisianthus – Fusarium crown and stem rot (*Fusarium* sp.)


Bacterial blight of bleeding heart

- Orchid – Cymbidium Mosaic Virus (CMV)
- Pachysandra – Septoria leaf spot (*Septoria pachysandrae*)
- Whorled Rosinweed – rust (*Puccinia silphii*)

A bacterial disease of bleeding heart, resulting in black leaf spots and severe blighting of leaves, was diagnosed on plants from a commercial nursery. We had not seen this disease on bleeding heart before, but strains of the pathogen *Xanthomonas campestris* are common on a variety of herbaceous perennial species. A different bacterial disease, caused by *Pseudomonas syringae*, was seen blighting the leaves of coral bells.

Canna cv. 'Australia' with symptoms of virus infection on right; healthy plant on left

Canna cv. 'Australia' plants with unusual leaf symptoms were received from a commercial nursery. The leaves of this variety are normally solid red, but the plants submitted to the Plant Disease Clinic had alternating stripes of red and yellow. Symptoms were aptly described by the grower as "variegation on normally non-variegated plants". Plants were found to be infected by at least two different viruses, including Canna Yellow Mottle Virus. Little is known about the biology of this pathogen, but it is thought to be transmitted mechanically during propagation. Affected plants should be removed or destroyed. The virus in this case was thought to have come in on purchased plants. Hosta Virus X, another mechanically transmitted virus, was seen in hosta samples from a landscaping service. This disease was common in hostas in the 1990's, but many hosta growers have been careful to avoid propagating questionable plants since the first outbreaks of the disease, and the Plant Disease Clinic has not received many samples with this disease in recent years. Symptoms vary, depending on the cultivar. Light green cultivars may develop dark green "bleeding" centered on leaf veins. Dark green cultivars may develop mottling. Ringspots are also common. Yet another mechanically transmitted virus, Cymbidium Mosaic Virus, was diagnosed in orchids. This disease is uncommon in wild orchids, but very common in cultivated orchids. Impatiens Necrotic Spot Virus, a thrips-transmitted virus, was also seen on greenhouse-grown coneflower and penstemon.

Fusarium stem and root rot on Lisianthus

Fungal diseases diagnosed in herbaceous plants in 2014 included Fusarium crown and stem rot of *Lisianthus*, Septoria leaf spot of pachysandra, and a rust on the wildflower, whorled rosinweed.

Trees

- Douglasfir – Swiss needle cast (*Phaeocryptopus gaeumannii)*
- Eastern red cedar – Cercospora blight (*Pseudocercospora juniperi*)
- Oak – oak leaf button galls (insect)
- Ornamental Pear – pear trellis rust (*Gymnosporangium sabinae*)

On conifers, Swiss needle cast, which causes needle yellowing and drop, was seen on douglasfir. Needle symptoms typically do not appear for a year or more after infection, which takes place in spring when needles are elongating. Eastern red cedar, typically an indestructible plant in this part of the country, can develop severe needle browning due to Cercospora blight in wet seasons. Severe symptoms were seen on young plants in a landscape setting.

Many oak samples, suspected of having a leaf disease, were submitted to the Plant Disease Clinic in 2014. The severe leaf spotting and disfigurement was actually due to an insect problem: oak leaf button gall, which can easily be mistaken for a disease. These samples were forwarded to the Insect ID Lab. Apparently it was a good year for this insect!

Pear trellis rust was diagnosed for the first time for Virginia on a sample of ornamental pear from a landscape in Frederick County. This disease is relatively new to the United States, but has been present in other states since the 1990's. Pear trellis rust occurs on both fruiting and ornamental pears and is a serious disease of pear in Europe. Large, yellow to orange spots form on leaves. Infected fruit shrivel and mummify, making this a serious disease for fruit tree growers. This rust fungus requires an alternate host to complete its life cycle. Alternate hosts include many species of juniper, such as Savin juniper (*Juniperus sabinae*). Unlike galls formed on junipers by the cedar-apple rust fungus, pear trellis rust galls will produce infectious spores for several years in a row. The spores are wind-blown to the pear host in the spring where they initiate new leaf infections.


Pear trellis rust

Turfgrass

- Bermudagrass – leaf blotch (*Bipolaris cynodontis*)

Severe cases of this disease were seen in both bermudagrass grown for turfgrass and bermudagrass grown for forage in 2014. Foliar infections occur during cool, wet weather and the problem progresses to crown and root rot during warm, dry weather in the summer. A well-balanced fertilization program helps to reduce disease severity. In the case of the forage grass sample we received, potassium levels were low and this nutrient deficiency probably predisposed plants to the disease.

Vegetables

- Beet – root knot nematodes (*Meloidogyne incognita*)
- Celery – leaf curl (*Colletotrichum acutatum*)
- Pepper – Phytophthora blight (*Phytophthora capsici*)
- Pumpkin – Plectosporium blight (*Plectosphaerella cucumerinum*)
- Pumpkin – bacterial wilt (*Erwinia tracheiphila*)
- Pumpkin – ozone injury
- Tomato – late blight (*Phytophthora infestans*)
- Watermelon – Phytophthora fruit rot (*Phytophthora capsici*)


Root knot nematode galls on beet

A home grower submitted a sample of beets with severe root deformation caused by the root knot nematode, *Meloidogyne incognita*. He also complained of a bitter taste to the beets. Root knot nematodes are difficult to control in home gardens because they have a wide host range and can infect many different vegetable plants, making rotation minimally effective. Resistant varieties of some vegetables, such as tomato, are available, but they may not be resistant to all species of root knot nematode.

Samples of celery, variety 'Tango', were diagnosed with leaf curl, a fungal disease whose symptoms suggest a viral or phytoplasma disease. We have seen this disease since 2010 in Virginia, always on the variety 'Tango'. Petioles and leaves curl and twist and narrow, brown cracks develop at the base of the stalks. Broad-spectrum, protectant fungicides are reported to control the disease.

Wet conditions in 2014 were conducive to Phytophthora diseases, which were prevalent on a variety of vegetable crops, including pepper, cucurbits, and tomato. Late blight of tomato, caused by *Phytophthora infestans*, appeared late in the growing season in many parts of the state. This disease can quickly devastate an entire crop of susceptible tomatoes, causing lesions on stems, leaves and fruit. Phytophthora blight, caused by *Phytophthora capsici*, was diagnosed on peppers and cucurbits. This disease often appears first in low areas of the field after heavy rains. Motile spores quickly spread by splashing water or wind under wet, humid conditions. Anything that can be done to improve drainage and prevent splashing water, including planting on raised beds and mulching, will help reduce spread. Because infection often begins on plant parts in contact with the soil, staking plants also helps to reduce disease.

Bacterial wilt of cucurbits, which is most common on cucumber and cantaloupe, was diagnosed on pumpkins. Scattered plants in the field wilted suddenly and turned brown. The disease is transmitted from plant to plant by cucumber beetles. The fungal disease, Plectosporium blight, was also seen on pumpkins. Characteristic white, diamond-shaped lesions form on stems and leaf veins and can cause decline of whole plants in the absence of protectant fungicides. Symptoms of yellowing and browning on another pumpkin sample were diagnosed as ozone injury. Ozone is produced by the action of sunlight on products of fuel combustion. High ozone levels can occur after storms or in areas with high levels of automobile exhaust, especially on overcast, humid days with little breeze. Individual plants may differ in sensitivity, so symptoms may be scattered across the field. Yellowing of pumpkins usually starts on the older, interior leaves, which eventually turn white, with veins remaining green.

Plectosporium blight on pumpkin

Weeds

- Poison Ivy – rust (*Pileolaria brevipes*)

Although most people are more interested in getting rid of poison ivy than diagnosing its diseases, one researcher in our department is investigating diseases of poison ivy as potential biological controls for this weed. We diagnosed a rust disease that caused smalls spots on the leaves.

Woody Ornamentals

- Boxwood – Volutella blight (*Volutella buxi*)
- Boxwood – Phytophthora root rot (*Phytophthora nicotianae, P. citrophthora*)
- Boxwood – boxwood blight – (*Calonectria pseudonaviculata*)
- Cotoneaster – web blight (*Rhizoctonia solani*)
- Forsythia – bacterial leaf spot (*Xanthomonas campestris*)
- Pittosporum – Tomato Spotted Wilt Virus (TSWV)
- Various woody plants – winter injury

Volutella blight, a fungal disease that causes tip dieback of boxwood twigs, usually following stress to plants, was prevalent on boxwoods following severe winter injury to many woody plants in 2014.

Volutella blight on boxwood

Boxwood blight, a fungal disease that is relatively new to the United States, spread to several new counties in Northern Virginia in 2014. All but one of the samples we received came from landscapes in which new plant material had been introduced. The disease can be introduced on boxwood cultivars that have resistance to the disease, but have cryptic symptoms. If infected plants are planted near English or American boxwood, which are highly susceptible, the disease can spread quickly, causing severe defoliation to susceptible plants.

Dieback of large sections of boxwood plants or overall discoloration of foliage is more typically caused by root diseases. Phythophthora root rot, caused by *Phytophthora nicotianae*, is common in wet soils. This year we also detected the species *Phytophthora citrophthora* on rotted roots of boxwood.

Winter injury to boxwoods was common in 2014

On cotoneaster we diagnosed web blight, a fungal disease that typically occurs in nurseries in situations where plants are too tightly spaced and there is high humidity in the canopy. Bacterial leaf spot was diagnosed on forsythia and Tomato Spotted Wilt Virus was detected in a new host, pittosporum. TSWV is common on herbaceous crops, such as tomato and peanut. It was unusual to find it in a woody host. Symptoms on pittosporum were unusual wavy line patterns and ringspots on leaves.

Tomato Spotted Wilt Virus on Pittosporum

New Clinic Records for 2014:

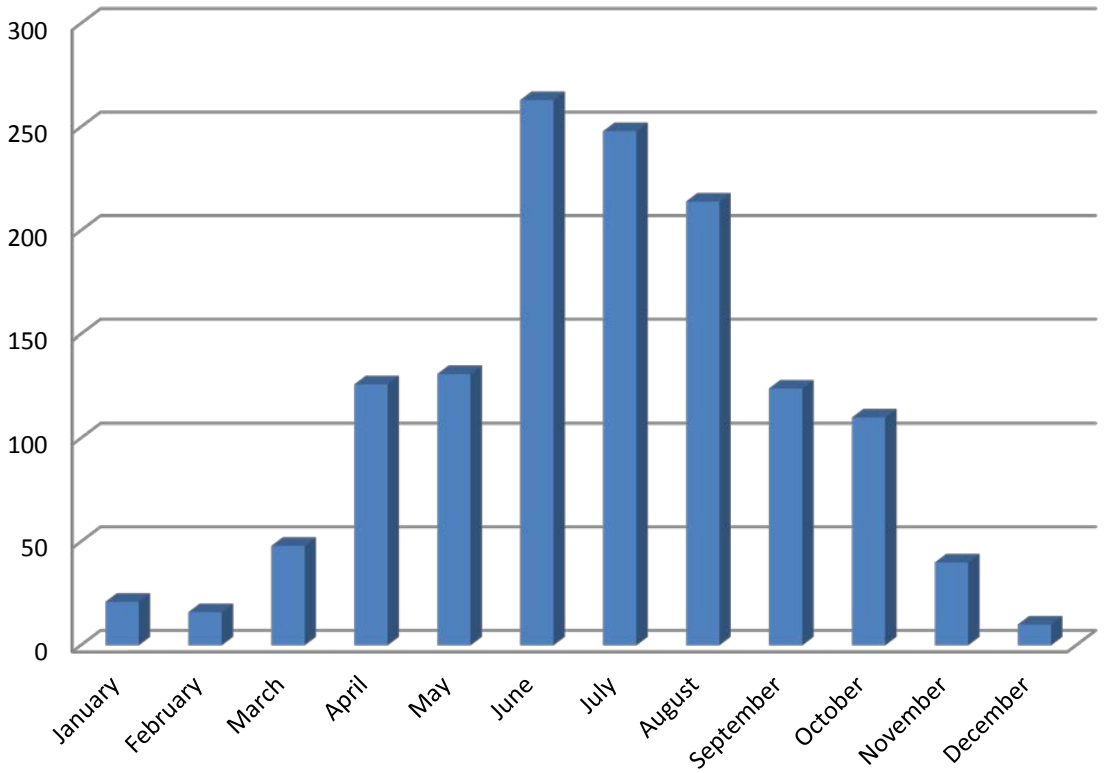
- Apple – Japanese apple rust (*Gymnosporangium yamadae*)
- Bleeding Heart – bacterial leaf spot (*Xanthomonas campestris*)
- Canna – Canna Yellow Mottle Virus (CYMV*)*
- Ornamental Pear – pear trellis rust (*Gymnosporangium sabinae*)
- Pachysandra – Septoria leaf spot (*Septoria pachysandrae)*
- Pittosporum – Tomato Spotted Wilt Virus (TSWV)
- Soybean – target spot (*Corynespora cassiicola*)
- Whorled Rosinweed – rust (*Puccinia silphii*)

Monthly Submission Summary

Number of samples received by month

Month	# Samples
January	21
February	16
March	48
April	126
May	131
June	263
July	248
August	214
September	124
October	110
November	40
December	10
Total	**1,351**

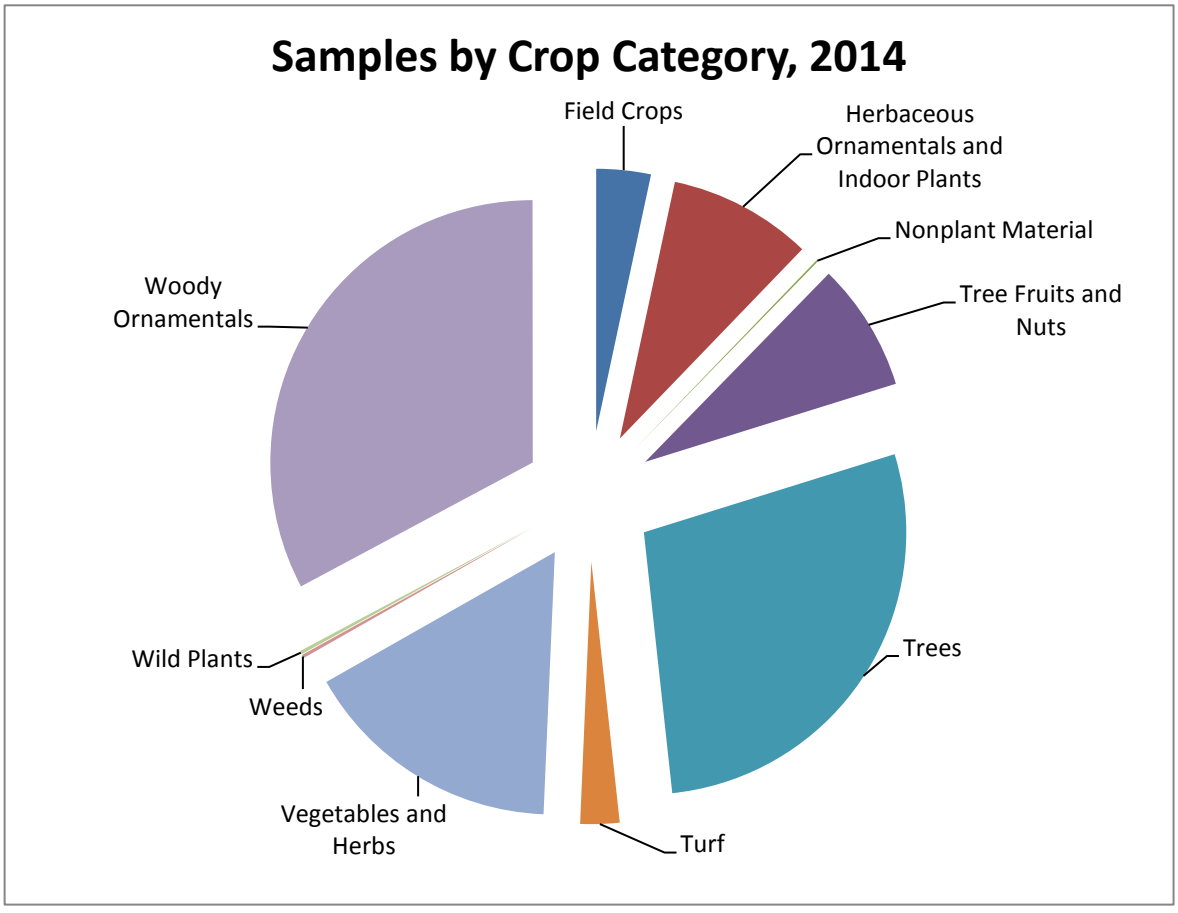
Number of Samples by Month, 2014



Samples by Crop Category

Sample totals by major crop categories, excluding plant identifications

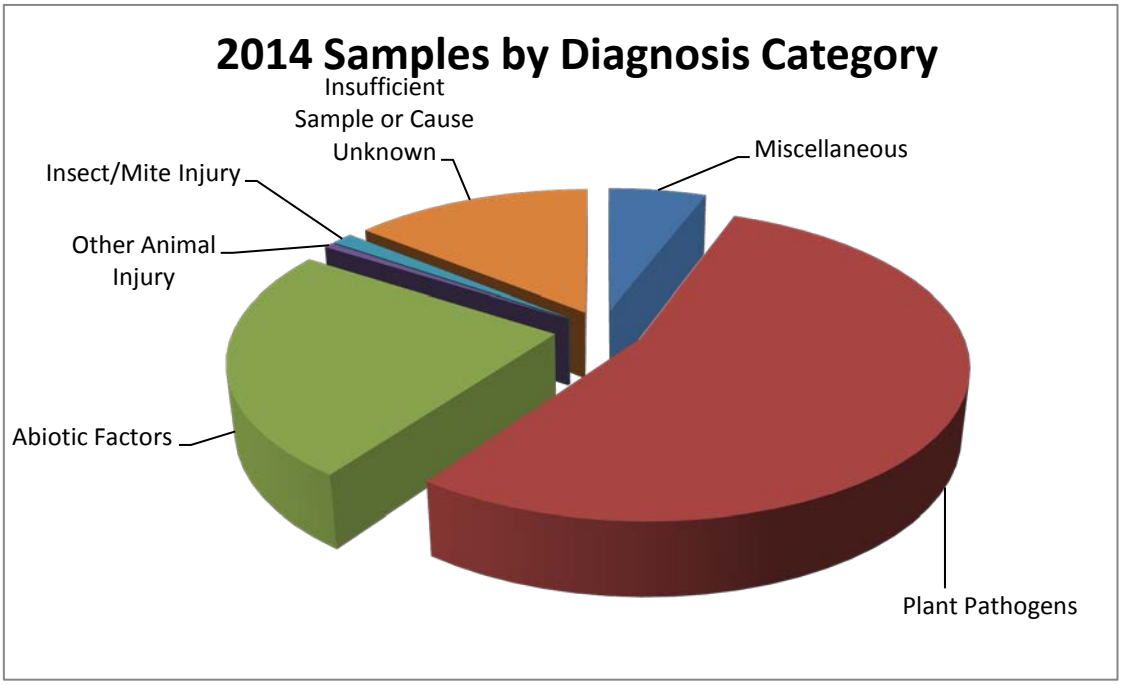
Crop Category	# of Samples	% of Total
Field Crops	43	3.2
Herbaceous Ornamentals and Indoor Plants	112	8.4
Nonplant Material	1	0.1
Tree Fruits and Nuts	100	7.5
Trees	356	26.7
Turf	30	2.3
Vegetables and Herbs	204	15.3
Weeds	2	0.2
Wild Plants	2	0.2
Woody Ornamentals	416	31.2
Total	**1,332**	

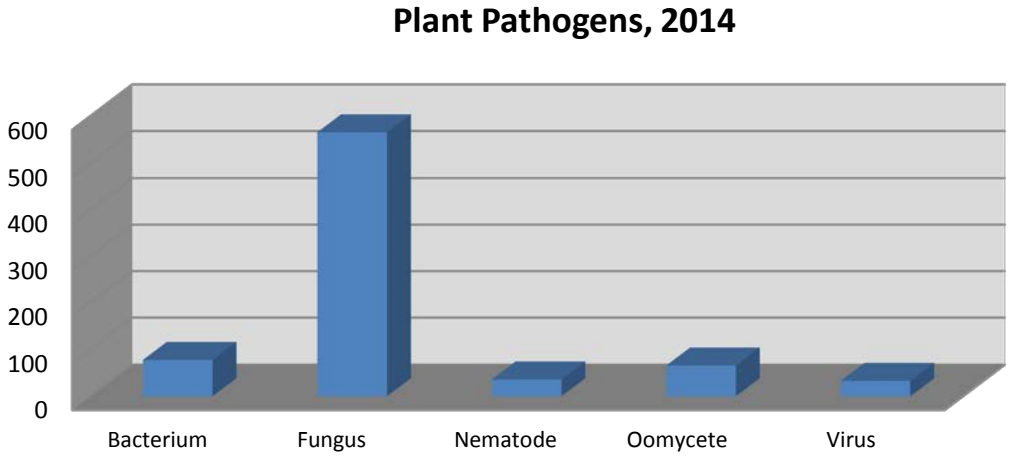


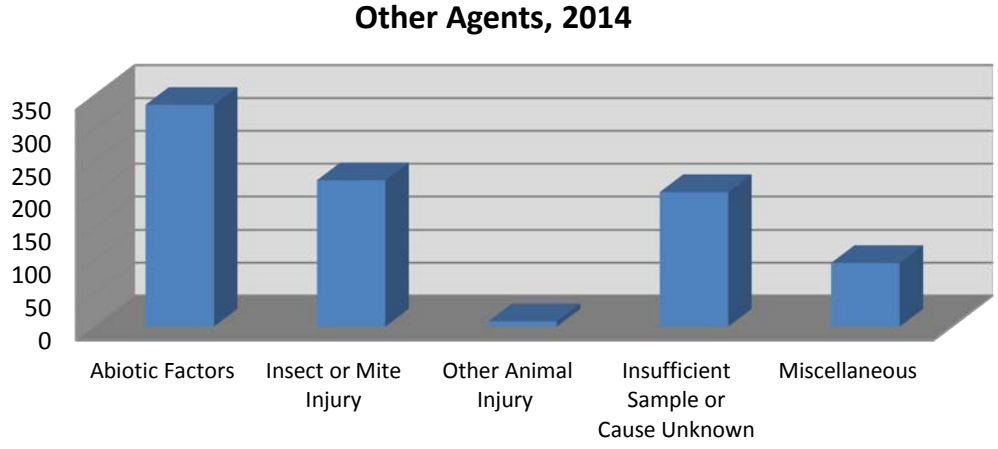
Diagnosis/ID Category Summary

	# of Diagnoses/IDs	% of Total
Plant Pathogens	**778**	**46.8**
Bacterium	78	
Fungus	565	
Nematode	36	
Oomycete	66	
Virus	33	
Abiotic Factors	**349**	**20.9**
Chemical	53	
Environmental/Cultural	276	
Mechanical	8	
Physiological/Genetic	12	
Insect or Mite Injury	**222**	**13.3**
Insects or Mites	222	
Other Animal Injury	**8**	**0.5**
Birds	4	
Mammals	4	
Insufficient Sample or Cause Unknown	**204**	**12.2**
Insufficient sample or information	182	
Unknown	22	
Miscellaneous	**83**	**5**
Lichen	6	
Normal Condition	19	
Other	58	
Weed Encroachment	**2**	**0.1**
Weed	2	
Identifications	**18**	**1.1**
Fungi	3	
Plant	14	
Other	1	
Total	**1664**	

Other Assistance, 2014	
Type	**# of Inquires**
Digital Submissions (Email, Digital Pictures)	226
Phone Calls	80


2014 Samples by Diagnosis Category
Insufficient Sample or Cause Unknown
Miscellaneous
Insect/Mite Injury
Other Animal Injury
Abiotic Factors
Plant Pathogens


Plant Pathogens, 2014
600
500
400
300
200
100
0
Bacterium
Fungus
Nematode
Oomycete
Virus


Other Agents, 2014
350
300
250
200
150
100
50
0
Abiotic Factors
Insect or Mite Injury
Other Animal Injury
Insufficient Sample or Cause Unknown
Miscellaneous

Geographic Distribution of Samples Received in 2014

County	# of Samples	County	# of Samples
ACCOMACK	11	LEE	12
ALBEMARLE	31	LOUDOUN	14
ALLEGHANY	5	LOUISA	25
AMELIA	1	LUNENBURG	4
AMHERST	3	LYNCHBURG CITY	30
APPOMATTOX	4	MADISON	4
ARLINGTON	15	MATHEWS	10
AUGUSTA	28	MECKLENBURG	1
BATH	5	MIDDLESEX	7
BEDFORD	9	MONTGOMERY	161
BLAND	6	NELSON	49
BOTETOURT	24	NEW KENT	12
BRUNSWICK	1	NEWPORT NEWS CITY	29
BUCHANAN	1	NORFOLK CITY	4
BUCKINGHAM	3	NORTHAMPTON	1
CAMPBELL	15	NORTHUMBERLAND	30
CAROLINE	3	NOTTOWAY	1
CARROLL	2	ORANGE	4
CHARLES CITY	10	PAGE	3
CHESAPEAKE CITY	23	PATRICK	4
CRAIG	1	PITTSYLVANIA	11
CULPEPER	5	PORTSMOUTH CITY	19
DANVILLE CITY	6	POWHATAN	19
DICKENSON	5	PRINCE EDWARD	7
DINWIDDIE	5	PRINCE GEORGE	5
ESSEX	3	PRINCE WILLIAM	24
FAIRFAX	26	PULASKI	11
FAUQUIER	6	RAPPAHANNOCK	9
FLOYD	26	RICHMOND CITY	8
FLUVANNA	28	ROANOKE	36
FRANKLIN	10	ROCKBRIDGE	17
FREDERICK	16	ROCKINGHAM	26
GILES	10	RUSSELL	9
GLOUCESTER	2	SCOTT	5
GOOCHLAND	19	SHENANDOAH	2
GRAYSON	1	SMYTH	2
GREENE	9	SPOTSYLVANIA	34
HALIFAX	3	STAFFORD	27
HAMPTON CITY	32	SUFFOLK CITY	2
HANOVER	24	SUSSEX	1
HENRICO	39	TAZEWELL	9
HENRY	4	VIRGINIA BEACH	40
HIGHLAND	3	WARREN	2
ISLE OF WIGHT	13	WASHINGTON	8
JAMES CITY	27	WESTMORELAND	36
KING AND QUEEN	2	WISE	9
KING GEORGE	9	WYTHE	3
KING WILLIAM	3	YORK	15
LANCASTER	13	**Total**	**1,351**

Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops		
Alfalfa		
1	Insufficient Sample	
1	Spring Black Stem and Leaf Spot	*Phoma medicaginis*
2	**Total for Alfalfa**	
Barley		
1	Spot Blotch	*Bipolaris sorokiniana*
1	**Total for Barley**	
Corn		
2	Low pH	
2	**Total for Corn**	
Fescue		
1	Anthracnose	*Colletotrichum graminicola*
1	Brown Patch	*Rhizoctonia solani*
2	**Total for Fescue**	
Hops		
1	Negative for Disease	
1	**Total for Hops**	
Orchardgrass		
6	Anthracnose	*Colletotrichum graminicola*
1	Environmental Stress	
3	Leaf Streak	*Cercosporidium graminis*
1	No Disease Found	
1	Suspect Environmental Stress	
12	**Total for Orchardgrass**	
Rice		
1	Suspect Environmental Stress	
1	**Total for Rice**	

Soybean		
3	Chemical Injury	
1	Cultural Problem	
1	Cyst Nematodes	*Heterodera glycines*
1	Heat Stress	
1	Negative for Disease	
1	Nematodes	
1	Pod and Stem Blight	*Phomopsis sp.*
1	Possible Nematode Problem	
2	Potassium Deficiency	
1	Soybean Mosaic Virus	
1	Suspect Insects	
1	Target Spot	*Corynespora cassiicola*
2	Thrips	
17	**Total for Soybean**	

Switchgrass		
1	Suspect Bipolaris Leaf Spot	*Bipolaris sp.*
1	**Total for Switchgrass**	

Tobacco		
2	Black Shank	*Phytophthora nicotianae*
1	High pH	
1	Sore Shin	*Rhizoctonia sp.*
1	Thrips	
5	**Total for Tobacco**	

Wheat		
1	Ascochyta Leaf Spot	*Ascochyta tritici*
1	High pH	
1	Negative for Disease	
1	Nutrient Deficiency	
1	Suspect Wheat Soilborne Mosaic Virus	
1	Thrips	
6	**Total for Wheat**	

Herbaceous Ornamentals and Indoor Plants		
African Violet		
1	High pH	
1	Insufficient Sample	
2	**Total for African Violet**	
Ajuga		
1	Insufficient Sample	
1	Southern Blight	*Sclerotium rolfsii*
2	**Total for Ajuga**	
Amaranth		
1	Damping-off	*Pythium sp.*
1	**Total for Amaranth**	
Anemone		
1	Four-lined Plant Bugs	
1	**Total for Anemone**	
Bee Balm		
1	Powdery Mildew	*Oidium sp.*
1	**Total for Bee Balm**	
Begonia		
1	High Soluble Salts	
1	**Total for Begonia**	
Bleeding Heart		
1	Bacterial Blight	*Xanthomonas campestris pv. phaseoli*
1	**Total for Bleeding Heart**	
Brunnera		
1	Phytophthora Root Rot	*Phytophthora sp.*
1	**Total for Brunnera**	
Cactus		
1	Abiotic Problem	
1	**Total for Cactus**	

Calamondin Orange		
1	Algae	
1	Mites	
2	**Total for Calamondin Orange**	

Calibrachoa		
1	Chemical Injury	
1	High pH	
2	**Total for Calibrachoa**	

Canna Lily		
1	Canna Yellow Mottle Virus	
1	Potyvirus	
2	**Total for Canna Lily**	

Celosia		
1	Fusarium Root Rot	*Fusarium solani*
1	**Total for Celosia**	

Clematis		
1	Insufficient Sample	
1	Suspect Root Problem	
2	**Total for Clematis**	

Clivia		
1	Cultural Problem	
1	**Total for Clivia**	

Coleus		
1	Downy Mildew	*Peronospora lamii*
1	**Total for Coleus**	

Coneflower		
1	Cause of Problem Unknown	
1	Impatiens Necrotic Spot Virus	
1	Negative for Virus	
2	No Disease Found	
3	Thrips	
8	**Total for Coneflower**	

Coral Bells		
1	Bacterial Leaf Blight	*Pseudomonas syringae*
1	Botrytis Blight	*Botrytis cinerea*
2	**Total for Coral Bells**	

Creeping Jenny		
1	Insufficient Sample	
1	**Total for Creeping Jenny**	

Dahlia		
1	Insufficient Sample	
1	**Total for Dahlia**	

Daisy		
1	Fusarium Stem Rot	*Fusarium oxysporum*
1	**Total for Daisy**	

Daylily		
1	Cause of Problem Unknown	
1	Suspect Chemical Injury	
2	**Total for Daylily**	

Dianthus		
1	Fusarium Stem and Root Rot	*Fusarium sp.*
1	**Total for Dianthus**	

Fern		
5	Abiotic Problem	
2	Negative for Foliar Nematodes	
7	**Total for Fern**	

Gardenia		
1	Abiotic Problem	
1	Cold Injury	
1	Insects	
3	**Total for Gardenia**	

Geranium		
1	Edema	
1	Negative for Bacterial Blight	
2	**Total for Geranium**	

Goldenrod		
1	Midge Galls	*Astermyia carbonifera*
1	**Total for Goldenrod**	
Hellebore		
1	Abiotic Problem	
1	Oedema	
1	Suspect Cold Injury	
1	Suspect Virus	
4	**Total for Hellebore**	
Hosta		
1	Abiotic Problem	
1	Hosta Virus X	
2	Negative for Hosta Virus X	
1	Soft Rot	*Erwinia carotovora*
3	Suspect Ozone Injury	
8	**Total for Hosta**	
Impatiens		
1	Environmental Stress	
1	**Total for Impatiens**	
Iris		
1	Healthy	
1	**Total for Iris**	
Japanese Knotweed		
1	Suspect Chemical Injury	
1	**Total for Japanese Knotweed**	
Lavender		
1	Botrytis Blight	*Botrytis cinerea*
1	Cultural Problem	
1	Negative for Phytophthora Root Rot	
1	Phytophthora Root Rot	*Phytophthora nicotianae*
4	**Total for Lavender**	

Lemon		
1	Insects	
1	**Total for Lemon**	
Liriope		
1	Anthracnose	*Colletotrichum sp.*
1	**Total for Liriope**	
Lisianthus		
1	Fusarium Crown and Stem Rot	*Fusarium sp.*
1	**Total for Lisianthus**	
Madagascar Periwinkle		
2	Phytophthora Blight	*Phytophthora nicotianae*
1	Slime Mold	*Fuligo septica*
3	**Total for Madagascar Periwinkle**	
Mandevilla		
1	Phytophthora Root Rot	*Phytophthora nicotianae*
1	**Total for Mandevilla**	
Mayapple		
1	Rust	*Puccinia podophylii*
1	**Total for Mayapple**	
Mondograss		
1	Insufficient Sample	
1	**Total for Mondograss**	
Morning Glory		
1	Suspect Environmental Stress	
1	**Total for Morning Glory**	
Norfolk Island Pine		
1	Suspect Cultural Problem	
1	**Total for Norfolk Island Pine**	
Orchid		
1	Cymbidium Mosaic Virus	
1	**Total for Orchid**	

Orchid Cactus		
1	Soft Rot	*Erwinia carotovora*
1	**Total for Orchid Cactus**	
Ornamental Grass		
1	Suspect Winter Injury	
1	**Total for Ornamental Grass**	
Pachysandra		
1	Abiotic Problem	
1	Septoria Leaf Spot	*Septoria pachysandrae*
2	**Total for Pachysandra**	
Papyrus		
1	Physiological Leaf Spot	
1	**Total for Papyrus**	
Passionflower		
1	Abiotic Problem	
1	**Total for Passionflower**	
Penstemon		
1	Cultural Problem	
3	Impatiens Necrotic Spot Virus	
1	No Disease Found	
1	Southern Blight	*Sclerotium rolfsii*
6	**Total for Penstemon**	
Peony		
1	Botrytis Blight	*Botrytis cinerea*
1	Cladosporium Stem and Leaf Blotch	*Cladosporium paeoniae*
1	Powdery Mildew	*Erisyphe polygoni*
3	**Total for Peony**	
Petunia		
1	Negative for Root Pathogens	
2	Phytophthora Root and Stem Rot	*Phytophthora nicotianae*
2	Phytophthora Root Rot	*Phytophthora nicotianae*
5	**Total for Petunia**	

Phlox		
1	Anthracnose	*Colletotrichum sp.*
1	Four-lined Plant Bugs	
1	Fusarium Stem Rot	*Fusarium sp.*
3	**Total for Phlox**	
Plants, Miscellaneous		
2	Mites	
1	Powdery Mildew	*Oidium sp.*
3	**Total for Plants, Miscellaneous**	
Rudbeckia		
1	Insufficient Sample	
1	Negative for Disease	
1	Psyllids	
3	**Total for Rudbeckia**	
Sedum		
1	Abiotic Problem	
1	Anthracnose	*Colletotrichum sp.*
1	Web Blight	*Rhizoctonia solani*
3	**Total for Sedum**	
Snake Plant		
1	Suspect Environmental Stress	
1	**Total for Snake Plant**	
Spiderwort		
1	Healthy	
1	**Total for Spiderwort**	
Ti Plant		
1	Insects	
1	**Total for Ti Plant**	
Wandering Jew		
1	Abiotic Problem	
1	**Total for Wandering Jew**	
Whorled Rosinweed		
1	Rust	*Puccinia silphii*
1	**Total for Whorled Rosinweed**	

Small Fruits		
Blackberry		
2	Cane Blight	*Coniothyrium fuckellii*
1	Insects	
3	**Total for Blackberry**	
Blueberry		
1	Abiotic Problem	
1	Insufficient Sample	
1	Lichens	
1	Low pH	
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Scales	
1	Sooty Mold	
1	Suspect Abiotic Problem	
1	Suspect Cultural Problem	
1	Suspect Winter Injury	
1	Thread Blight	*Ceratobasidium ochroleucum*
11	**Total for Blueberry**	
Currant		
1	Cultural Problem	
1	Mites	
2	**Total for Currant**	
Fig		
1	Alternaria Leaf Spot	*Alternaria sp.*
1	Insufficient Sample	
1	No Pathogens Found	
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Suspect Fig Mosaic Virus	
5	**Total for Fig**	
Goji Berry		
1	Anthracnose	*Colletotrichum acutatum*
1	Mites	
1	Negative for Disease	
3	**Total for Goji berry**	

Grape		
1	Abiotic Problem	
1	Anthracnose	*Elsinoe ampelina*
7	Black Rot	*Guignardia bidwellii*
2	Chemical Injury	
1	Cold Injury	
2	Downy Mildew	*Plasmopara viticola*
2	Environmental Stress	
1	Galls	
1	Grape Leafroll Associated Virus	
1	Leaf Blight	*Pseudocercospora vitis*
1	Normal Condition	
2	Phomopsis Cane and Leaf Blight	*Phomopsis viticola*
2	Ripe Rot	*Colletotrichum gloeosporioides*
1	Suspect Black Rot	*Guignardia bidwellii*
1	Suspect Environmental Stress	
1	Thrips	
1	White Rot	*Coniella diplodiella*
1	Zonate Leaf Spot	*Cristulariella moricola*
29	**Total for Grape**	

Raspberry		
1	Dagger Nematodes	*Xiphinema sp.*
2	Insects	
5	Insufficient Sample	
1	Late Leaf Rust	*Pucciniastrum americanum*
2	Mites	
2	Negative for Disease	
13	**Total for Raspberry**	

Strawberry		
1	Abiotic Problem	
1	Botrytis Blight	*Botrytis cinerea*
1	Cause of Problem Unknown	
1	Cold Injury	
1	Dendrophoma Leaf Blight	*Dendrophoma obscurans*
1	Insufficient Sample	
1	Mites	
1	Negative for Disease	
1	Phomopsis Leaf Blight	*Phomopsis obscurans*
1	Powdery Mildew	*Sphaerotheca macularis*
2	Suspect Cold Injury	
2	Suspect Environmental Stress	
14	**Total for Strawberry**	

Tree Fruits and Nuts		
Apple		
1	Bitter Rot	*Glomerella cingulata*
1	Burrknot	
5	Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*
1	Chemical Injury	
1	Cicada Injury	
16	Fire Blight	*Erwinia amylovora*
1	Fly Speck	*Schizothyrium pomi*
1	Frogeye Leaf Spot	*Physalospora obtusa*
4	Insects	
3	Insufficient Sample	
1	Japanese Apple Rust	*Gymnosporangium yamadae*
2	Normal Condition	
1	Plum Curculios	
1	Pythium Root Rot	*Pythium sp.*
1	Scales	
2	Sooty Blotch	*Gloeodes pomigena*
1	Suspect Chemical Injury	
1	Suspect Fire Blight	*Erwinia amylovora*
44	**Total for Apple**	
Asian Pear		
1	Fire Blight	*Erwinia amylovora*
1	**Total for Asian Pear**	
Cherry		
1	Black Knot	*Dibotryon morbosum*
2	Cherry Leaf Spot	*Blumeriella jaapii*
1	Cicada Injury	
1	Cicadas	
1	Cultural Problem	
2	Insects	
1	Insufficient Sample	
1	Sapwood Rot	
1	Suspect Root Problem	
11	**Total for Cherry**	

Crabapple		
1	Cicadas	
1	Fire Blight	*Erwinia amylovora*
1	Frogeye Leaf Spot	*Physalospora obtusa*
2	Insufficient Sample	
2	Japanese Apple Rust	*Gymnosporangium yamadae*
1	Rust	*Gymnosporangium sp.*
2	Scab	*Venturia inaequalis*
10	**Total for Crabapple**	
Filbert		
1	Eastern Filbert Blight	*Anisogramma anomala*
1	**Total for Filbert**	
Fruit Trees, Misc.		
1	Physiological Leaf Spot	
1	**Total for Fruit Trees, Misc.**	
Mulberry		
1	Cercospora Leaf Spot	*Cercospora sp.*
1	Environmental Stress	
1	Lichens	
3	**Total for Mulberry**	
Nectarine		
1	Curculios	
1	**Total for Nectarine**	
Peach		
1	Abiotic Problem	
2	Brown Rot	*Monilinia fructicola*
1	Cultural Problem	
2	Curculios	
1	Gummosis	*Botryosphaeria sp.*
1	Insufficient Sample	
2	Peach Leaf Curl	*Taphrina deformans*
1	Scab	*Cladosporium carpophilum*
1	Suspect Brown Rot	*Monilinia fructicola*
1	Suspect Nitrogen Deficiency	
1	Vole Injury	
14	**Total for Peach**	

Pear		
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
1	Chemical Injury	
1	Cicadas	
6	Fire Blight	*Erwinia amylovora*
1	Frost Cracking	
1	Pestalotia	*Pestalotia sp.*
12	**Total for Pear**	
Pecan		
1	Insufficient Sample	
1	Mites	
1	Negative for Bacterial Scorch	
1	No Pathogens Found	
2	Pops	
2	Scab	*Cladosporium caryigenum*
1	Suspect Environmental Stress	
9	**Total for Pecan**	
Persimmon		
1	Persimmon Wilt	*Nalanthamala diospyri*
1	Psyllids	
2	**Total for Persimmon**	
Plum		
2	Black Knot	*Dibotryon morbosum*
1	Cicada Injury	
1	Insufficient Sample	
1	Lichens	
1	Oriental Fruit Moths	
1	Shothole	
1	Suspect Chemical Injury	
8	**Total for Plum**	
Pomegranate		
1	Insufficient Sample	
1	**Total for Pomegranate**	
Walnut		
1	Suspect Environmental Stress	
1	**Total for Walnut**	

Trees		
Alaska Cedar		
1	Insufficient Sample	
1	Pestalotiopsis Needle Blight	*Pestalotiopsis sp.*
2	**Total for Alaska Cedar**	
Arborvitae		
2	Abiotic Problem	
1	Cold Injury	
1	Cultural Problem	
2	Environmental Stress	
3	Insufficient Sample	
1	Leafminers	
1	Mammalian Injury	
3	Mites	
1	Negative for Disease	
1	Negative for Foliar Disease	
1	Negative for Root Disease	
1	Pestalotiopsis Needle Blight	*Pestalotiopsis sp.*
1	Pestalotiopsis Twig Blight	*Pestalotiopsis funerea*
2	Seasonal Needle Drop	
1	Suspect Deer Damage	
2	Winter Injury	
24	**Total for Arborvitae**	
Ash		
1	Anthracnose	*Gnomoniella fraxini*
2	Insects	
1	Suspect Chemical Injury	
1	Wood Decay	
5	**Total for Ash**	
Beech		
1	Insufficient Sample	
1	**Total for Beech**	
Birch		
1	Abiotic Problem	
1	Cryptocline Leaf Spot	*Cryptocline betularum*
1	Inonotus Root and Butt Decay	*Inonotus sp.*
2	Insufficient Sample	
1	Iron Chlorosis	
1	Suspect Chemical Injury	
7	**Total for Birch**	

Boxelder		
1	No Disease Found	
1	**Total for Boxelder**	

Cedar		
2	Weevils	
2	**Total for Cedar**	

Cryptomeria		
2	Insufficient Sample	
1	Negative for Disease	
1	Pestalotiopsis Tip Blight	*Pestalotiopsis sp.*
1	Scales	
1	Suspect Environmental Stress	
6	**Total for Cryptomeria**	

Cypress		
2	Bagworms	
1	Diplodia Dieback	*Diplodia sp.*
7	Insufficient Sample	
1	Kabatina Tip Blight	*Kabatina sp.*
1	Lichens	
1	Mechanical Injury	
1	Mites	
1	Negative for Disease	
4	Negative for Root Disease	
2	No Disease Found	
1	Pestalotiopsis Tip Blight	*Pestalotiopsis funerea*
1	Pestalotiopsis Tip Blight	*Pestalotiopsis sp.*
1	Scales	
16	Seiridium Canker	*Seiridium sp.*
1	Suspect Cultural Problem	
19	Suspect Seiridium Canker	*Seiridium sp.*
60	**Total for Cypress**	

Dawn Redwood		
1	Normal Condition	
1	**Total for Dawn Redwood**	

Dogwood		
1	Abiotic Problem	
1	Botryosphaeria Canker	*Botryosphaeria sp.*
1	Chemical Injury	
1	Cicada Injury	
1	Colletotrichum Leaf Spot	*Colletotrichum sp.*
1	Environmental Stress	
1	Insects	
7	Insufficient Sample	
1	Negative for Disease	
11	Powdery Mildew	*Oidium sp.*
1	Rhizoctonia Root Rot	*Rhizoctonia solani*
2	Septoria Leaf Spot	*Septoria cornicola*
5	Spot Anthracnose	*Elsinoe corni*
34	**Total for Dogwood**	

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

Eastern Red Cedar		
1	Cercospora Blight	*Pseudocercospora juniperi*
1	Insufficient Sample	
2	**Total for Eastern Red Cedar**	

Eleagnus		
1	Environmental Stress	
1	**Total for Eleagnus**	

Elm		
3	Insufficient Sample	
1	Negative for Dutch Elm Disease	
1	Scales	
5	**Total for Elm**	

Falsecypress		
1	Environmental Stress	
1	Insects	
1	Negative for Foliar Disease	
1	Normal Interior Needle Browning	
1	Scales	
5	**Total for Falsecypress**	

Fir		
2	Abiotic Problem	
1	No Disease Found	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	Phytophthora Root Rot	*Phytophthora sp.*
1	Seasonal Needle Drop	
6	**Total for Fir**	
Fringe Tree		
1	Insects	
1	Lichens	
1	Moss	
3	**Total for Fringe Tree**	
Hawthorn		
2	Cedar-Quince Rust	*Gymnosporangium clavipes*
2	**Total for Hawthorn**	
Hemlock		
1	Abiotic Problem	
1	Insects	
1	Insufficient Sample	
1	No Pathogens Found	
1	Suspect Abiotic Problem	
1	Suspect Environmental Stress	
6	**Total for Hemlock**	
Larch		
1	Sapsucker Injury	
1	**Total for Larch**	
London Planetree		
1	Frost Cracking	
1	**Total for London Planetree**	

Magnolia		
2	Anthracnose	*Colletotrichum sp.*
1	Botryosphaeria Canker	*Botryosphaeria sp.*
2	Environmental Stress	
1	Insects	
1	Insufficient Sample	
1	Mites	
1	Powdery Mildew	*Oidium sp.*
1	Sapsucker Injury	
1	Scales	
1	Septoria Leaf Spot	*Septoria sp.*
1	Sooty Mold	
1	Suspect Chemical Injury	
2	Winter Injury	
16	**Total for Magnolia**	

Maple		
1	Abiotic Problem	
2	Anthracnose	*Kabatiella apocrypta*
1	Bacterial Wetwood	
1	Bark Shedding - Normal Condition	
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Chemical Injury	
1	Deep Planting	
1	Environmental Stress	
1	Ganoderma Root and Butt Rot	*Ganoderma sp.*
4	Insects	
10	Insufficient Sample	
1	Japanese Beetles	
1	Mites	
1	Negative for Root Pathogens	
1	Negative for Verticillium Wilt	
2	No Disease Found	
2	Phomopsis Dieback	*Phomopsis sp.*
1	Phytophthora Root Rot	*Phytophthora nicotianae*
1	Powdery Mildew	*Oidium sp.*
4	Purple-eye Leaf Spot	*Phyllosticta minima*
2	Scales	
2	Scorch	
1	Sooty Mold	
1	Stem Girdling Roots	
1	Suspect Cultural Problem	
1	Suspect Vole Injury	
1	Suspect Wood Decay	
3	Verticillium Wilt	*Verticillium dahliae*
1	Winter Injury	
51	**Total for Maple**	

Mountain Ash		
1	Insufficient Sample	
1	**Total for Mountain Ash**	

Oak		
1	Abiotic Problem	
3	Anthracnose	*Discula sp.*
8	Bacterial Scorch	*Xylella fastidiosa*
1	Bacterial Wetwood	
1	Brown Rot	*Laetiporus sulphureus*
1	Cultural Problem	
2	Gall Insects	
1	Inky Caps	*Coprinus sp.*
3	Insect Galls	
8	Insects	
3	Insufficient Sample	
1	Iron Chlorosis	
2	Mites	
7	Negative for Bacterial Scorch	
1	Negative for Phytophthora Root Rot	
1	No Disease Found	
2	Oak Leaf Blister	*Taphrina caerulescens*
5	Oak Leaf Button Galls	
1	Powdery Mildew	*Oidium sp.*
1	Scales	
2	Suspect Bacterial Wetwood	
1	Suspect Oak Leaf Blister	*Taphrina caerulescens*
2	Suspect Tubakia Leaf Spot	*Tubakia dryina*
5	Tubakia Leaf Spot	*Tubakia dryina*
1	Tubakia on Stems	*Tubakia dryina*
1	Twig Girdlers	
3	Wood Decay	
68	**Total for Oak**	

Ornamental Cherry		
4	Cherry Leaf Spot	*Blumeriella jaapii*
1	Insects	
1	Insufficient Sample	
5	**Total for Ornamental Cherry**	

Ornamental Pear		
4	Cedar-Quince Rust	*Gymnosporangium clavipes*
2	Deep Planting	
4	Fire Blight	*Erwinia amylovora*
1	Pear Leaf Blister Mites	
1	Pear Trellis Rust	*Gymnosporangium sabinae*
12	**Total for Ornamental Pear**	

Ornamental Plum		
1	Insects	
1	Normal Coloration	
2	**Total for Ornamental Plum**	

Persimmon		
1	Anthracnose	*Colletotrichum sp.*
1	**Total for Persimmon**	

Pine		
1	Diplodia Tip Blight	*Diplodia pinea*
4	Dothistroma Needle Blight	*Dothistroma pini*
3	Environmental Stress	
1	Insects	
2	Insufficient Sample	
1	Negative for Diplodia	
2	Negative for Disease	
1	Negative for Foliar Disease	
1	Negative for Needle Cast	
1	Seasonal Needle Drop	
1	Suspect Atropellis Twig Canker	*Atropellis apiculata*
1	Suspect Chemical Injury	
3	Suspect Environmental Stress	
1	Tip Moths	
1	Weevils	
24	**Total for Pine**	

Poplar		
1	Insufficient Sample	
1	Lichens	
1	Oyster Mushroom	*Pleurotus ostreatus*
3	**Total for Poplar**	

Prunus		
1	Insects	
1	Insufficient Sample	
1	Oedema	
3	**Total for Prunus**	

Quaking Aspen		
1	Cicada Injury	
1	Suspect Environmental Stress	
2	**Total for Quaking Aspen**	
Redbud		
1	Negative for Disease	
1	Phomopsis Leaf Spot	*Phomopsis sp.*
2	**Total for Redbud**	
Sassafras		
1	Negative for Disease	
1	**Total for Sassafras**	
Snowbell		
2	Phomopsis Canker	*Phomopsis sp.*
2	**Total for Snowbell**	
Spruce		
1	Abiotic Problem	
1	Environmental Stress	
1	Lightning Injury	
5	Mites	
10	Rhizosphaera Needle Blight	*Rhizosphaera kalkhoffii*
1	Scales	
1	Seasonal Needle Drop	
6	Stigmina Needle Cast	*Stigmina lautii*
26	**Total for Spruce**	
Sycamore		
1	Anthracnose	*Gnomonia platani*
1	Bacterial Scorch	*Xylella fastidiosa*
2	**Total for Sycamore**	
Tree, Unknown		
1	Insects	
1	Insufficient Sample	
2	**Total for Tree, Unknown**	
Trees, Miscellaneous		
1	Chemical Injury	
1	Negative for Oak Wilt	
1	Suspect Winter Injury	
3	**Total for Trees, Miscellaneous**	

Tupelo		
1	Insects	
1	**Total for Tupelo**	
Umbrella Pine		
1	Environmental Stress	
1	**Total for Umbrella Pine**	
Willow		
1	Environmental Stress	
1	Ganoderma Root and Butt Rot	*Ganoderma sp.*
3	Insufficient Sample	
5	**Total for Willow**	
Zelkova		
2	Wood Decay	
2	**Total for Zelkova**	

Turf		
Bentgrass		
1	Negative for Disease	
1	Nematodes	
1	Suspect Cultural Problem	
1	Suspect Yellow Spot	
4	**Total for Bentgrass**	
Bermudagrass		
1	Bipolaris Leaf Spot and Crown Rot	*Bipolaris cynodontis*
1	Cultural Problem	
1	Leaf Blotch	*Bipolaris cynodontis*
1	Pythium Blight	*Pythium sp.*
1	Root Decline (Take-all)	*Gaeumannomyces graminis var graminis*
5	**Total for Bermudagrass**	
Fescue		
4	Brown Patch	*Rhizoctonia solani*
1	Environmental Stress	
2	High pH	
1	Insufficient Sample	
1	Low pH	
7	Negative for Disease	
1	Suspect Chemical Injury	
1	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	Suspect Grubs	
1	Suspect Summer Patch	*Harpophora graminicola*
21	**Total for Fescue**	
Turfgrass		
1	Abiotic Problem	
1	Insufficient Sample	
1	Low pH	
1	Moss	
1	Negative for Disease	
1	Slime Mold	
2	Weed Encroachment	
8	**Total for Turfgrass**	
Zoysia		
1	No Pathogens Found	
1	**Total for Zoysia**	

Vegetables and Herbs		
Asparagus		
1	Fusarium Crown and Root Rot	*Fusarium oxysporum*
1	**Total for Asparagus**	
Basil		
1	Abiotic Problem	
1	Cause of Problem Unknown	
1	Downy Mildew	*Plasmopara belbahrii*
1	High Soluble Salts	
1	Insects	
5	**Total for Basil**	
Bean		
1	Anthracnose	*Colletotrichum lindemuthianum*
1	Environmental Stress	
1	Fusarium Root Rot	*Fusarium solani*
3	Insufficient Sample	
2	Mites	
2	Negative for Disease	
1	No Disease Found	
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Root Knot Nematodes	*Meloidogyne sp.*
1	Suspect Abiotic Problem	
1	Suspect Nutrient Deficiency	
15	**Total for Bean**	
Beet		
1	Root Knot Nematodes	*Meloidogyne incognita*
1	**Total for Beet**	
Broccoli		
1	Black Rot	*Xanthomonas campestris pv. campestris*
1	Cold Injury	
1	Damping-off	*Pythium sp.*
1	Damping-off	*Rhizoctonia solani*
1	Insects	
5	**Total for Broccoli**	
Brussels Sprouts		
1	Black Rot	*Xanthomonas campestris*
1	Nutrient Deficiency	
2	**Total for Brussels Sprouts**	

Cabbage		
1	Club Root	*Plasmodiophora brassicae*
1	Damping-off	*Pythium sp.*
1	Insufficient Sample	
1	No Pathogens Found	
4	**Total for Cabbage**	
Cantaloupe		
2	Bacterial Wilt	*Erwinia tracheiphila*
1	Cucumber Beetles	
1	Downy Mildew	*Pseudoperonospora cubensis*
4	**Total for Cantaloupe**	
Celery		
1	Blackheart	
1	Damping-off	*Pythium sp.*
2	Leaf Curl	*Colletotrichum acutatum*
4	**Total for Celery**	
Collards		
1	Cold Injury	
1	Insects	
2	**Total for Collards**	
Cowpea		
1	Insufficient Sample	
1	**Total for Cowpea**	
Cucumber		
2	Anthracnose	*Colletotrichum lagenarium*
1	Aphids	
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
2	Negative for Foliar Disease	
9	**Total for Cucumber**	
Cucurbits, miscellaneous		
1	Nutrient Deficiency	
1	**Total for Cucurbits, miscellaneous**	
Eggplant		
1	Insects	
1	Insufficient Sample	
2	**Total for Eggplant**	

Garlic		
1	Fusarium Basal Plate Rot	*Fusarium oxysporum*
1	Insufficient Sample	
1	Negative for Disease	
3	White Rot	*Sclerotium cepivorum*
6	**Total for Garlic**	
Ginger		
1	Bacterial Soft Rot	*Pectobacterium carotovorum ss carotovor*
1	Pythium Root Rot	*Pythium sp.*
2	**Total for Ginger**	
Herbs, Miscellaneous		
1	Four-lined Plant Bugs	
1	**Total for Herbs, Miscellaneous**	
Kale		
1	Black Rot	*Xanthomonas campestris*
1	**Total for Kale**	
Lavender		
1	Bacterial Leaf Spot	*Xanthomonas campestris*
1	Negative for Disease	
2	**Total for Lavender**	
Leek		
1	No Disease Found	
1	**Total for Leek**	
Lettuce		
1	Botrytis Blight	*Botrytis cinerea*
1	Thrips	
2	**Total for Lettuce**	
Melon		
1	Insufficient Sample	
1	**Total for Melon**	
Mint		
1	High pH	
1	Mites	
1	Negative for Disease	
3	**Total for Mint**	

Okra		
1	Verticillium Wilt	*Verticillium albo-atrum*
1	**Total for Okra**	
Onion		
1	Cause of Problem Unknown	
1	**Total for Onion**	
Pea		
1	Suspect Chemical Injury	
1	**Total for Pea**	
Pepper		
1	Abiotic Problem	
5	Bacterial Spot	*Xanthomonas campestris pv. vesicatoria*
1	Blossom End Rot	
1	Environmental Stress	
1	Insufficient Sample	
1	Negative for Disease	
1	Phytophthora Blight	*Phytophthora capsici*
1	Poor Pollination	
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Southern Blight	*Sclerotium rolfsii*
1	Sunscald	
15	**Total for Pepper**	
Potato		
1	Chemical Injury	
2	Common Scab	*Streptomyces scabies*
1	Cultural Problem	
1	Environmental Stress	
1	Fusarium Dry Rot	*Fusarium sp.*
1	Insufficient Sample	
1	Negative for Disease	
2	Negative for Late Blight	
1	Soft Rot	*Erwinia carotovora*
11	**Total for Potato**	
Potato Bean		
1	Mites	
1	**Total for Potato Bean**	

Pumpkin		
1	Abiotic Problem	
1	Air Pollution	
1	Bacterial Wilt	*Erwinia tracheiphila*
1	Downy Mildew	*Pseudoperonospora cubensis*
1	Genetic Trait	
1	Negative for Foliar Disease	
1	Phytophthora Crown and Root Rot	*Phytophthora sp.*
1	Plectosporium Blight	*Plectosphaerella cucumerinum*
1	Rhizopus Soft Rot	*Rhizopus stolonifer*
1	Suspect Abiotic Problem	
1	Suspect Virus	
11	**Total for Pumpkin**	

Romanesco		
1	Cold Injury	
1	**Total for Romanesco**	

Squash		
1	Bacterial Leaf Spot	*Xanthomonas campestris pv. cucurbitae*
1	Bacterial Wilt	*Erwinia tracheiphila*
1	Cucumber Beetles	
1	Genetic Trait	
1	Insufficient Sample	
1	Pythium Stem Rot	*Pythium sp.*
1	Suspect Chemical Injury	
7	**Total for Squash**	

Tatsoi		
1	Damping-off	*Pythium sp.*
1	**Total for Tatsoi**	

Tomato		
6	Abiotic Problem	
4	Bacterial Wilt	*Ralstonia solanacearum*
1	Cercospora Leaf Mold	*Cercospora sp.*
10	Chemical Injury	
1	Chemical Residue Injury	
1	Cultural Problem	
3	Fusarium Crown and Root Rot	*Fusarium oxysporum*
3	Fusarium Wilt	*Fusarium oxysporum*
1	Gray Leaf Mold	*Fulvia fulva*
1	High pH	
2	Insects	
14	Insufficient Sample	
4	Late Blight	*Phytophthora infestans*
1	Low Soluble Salts	
1	Mites	
4	Negative for Disease	
1	Negative for Foliar Disease	
2	Nutrient Deficiency	
1	Physiological Leaf Roll	
1	Powdery Mildew	*Oidium sp.*
2	Pythium Root Rot	*Pythium sp.*
1	Rhizoctonia Stem and Root Rot	*Rhizoctonia solani*
1	Root Knot Nematodes	*Meloidogyne incognita*
13	Septoria Leaf Spot	*Septoria lycopersici*
2	Southern Blight	*Sclerotium rolfsii*
1	Suspect Buckeye Rot	*Phytophthora sp.*
2	Suspect Chemical Injury	
2	Suspect Cultural Problem	
1	Suspect Fertilizer Burn	
2	Suspect Septoria Leaf Spot	*Septoria lycopersici*
2	Suspect Walnut Wilt	
1	Thrips	
4	Tomato Spotted Wilt Virus	
96	**Total for Tomato**	

Vegetables, Miscellaneous		
2	Abiotic Problem	
1	Aphids	
3	**Total for Vegetables, miscellaneous**	

Watermelon		
1	Anthracnose	*Colletotrichum orbiculare*
1	Phytophthora Fruit Rot	*Phytophthora capsici*
2	**Total for Watermelon**	

Zucchini		
1	Chemical Injury	
1	**Total for Zucchini**	

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

Horse Nettle		
1	Negative for Late Blight	
1	**Total for Horse Nettle**	

Wild Plants		
Poison Ivy		
1	Insects	
1	Midge Galls	
1	Rust	*Pileolaria brevipes*
3	**Total for Poison Ivy**	

Woody Ornamentals		
Alexandrian Laurel		
1	Scales	
1	**Total for Alexandrian Laurel**	
Aucuba		
1	Abiotic Problem	
1	Negative for Root Disease	
1	Scales	
3	**Total for Aucuba**	
Azalea		
3	Anthracnose	*Colletotrichum gloeosporioides*
2	Insects	
5	Insufficient Sample	
3	Lacebugs	
1	Leaf and Flower Gall	*Exobasidium vaccinii*
1	Low pH	
3	Negative for Phytophthora Root Rot	
2	Negative for Root Disease	
1	No Disease Found	
2	Normal Condition	
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
2	Phytophthora Root Rot	*Phytophthora nicotianae*
1	Root Rot-Cause Unknown	
1	Sooty Mold	
1	Suspect Insects	
29	**Total for Azalea**	
Bluebeard		
1	Cultural Problem	
1	**Total for Bluebeard**	

Boxwood		
5	Abiotic Problem	
9	Boxwood Blight	*Calonectria pseudonaviculata*
2	Cultural Problem	
5	English Boxwood Decline	*Paecilomyces buxi*
1	Environmental Stress	
26	Insufficient Sample	
5	Leafminers	
2	Lesion Nematodes	*Pratylenchus sp.*
25	Macrophoma Leaf Spot	*Macrophoma candollei*
1	Mechanical Injury	
21	Mites	
51	Negative for Boxwood Blight	
4	Negative for Nematodes	
1	Negative for Phytophthora	
2	Negative for Root Disease	
30	Negative for Root Rot Fungi	
10	Nematodes	
2	Oedema	
1	Phytophthora Root Rot	*Phytophthora citrophthora*
7	Phytophthora Root Rot	*Phytophthora nicotianae*
2	Phytophthora Root Rot	*Phytophthora sp.*
4	Possible Nematode Problem	
2	Psyllids	
1	Ring Nematodes	*Mesocriconema sp.*
1	Scales	
1	Sooty Mold	
9	Spiral Nematodes	*Rotylenchus buxophilus*
64	Volutella Blight	*Volutella buxi*
1	Winter Injury	
1	Wood Decay	
1	Insufficient	
297	**Total for Boxwood**	

Butterfly Bush		
2	Mites	
1	Suspect Cold Injury	
3	**Total for Butterfly Bush**	

Camellia		
1	Abiotic Problem	
1	Environmental Stress	
4	Insufficient Sample	
1	Mites	
2	Negative for Root Disease	
1	Sapsucker Injury	
1	Scales	
11	**Total for Camellia**	

Cherrylaurel		
2	Black Vine Weevils	
2	Borers	
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
1	Mechanical Injury	
1	Negative for Root Disease	
1	Phomopsis Dieback	*Phomopsis sp.*
5	Shothole	
2	Winter Injury	
18	**Total for Cherrylaurel**	

Cigar Flower		
1	Cultural Problem	
1	**Total for Cigar Flower**	

Cleyera		
1	Scales	
1	**Total for Cleyera**	

Cotoneaster		
1	Insufficient Sample	
1	Suspect Cultural Problem	
1	Web Blight	*Rhizoctonia solani*
3	**Total for Cotoneaster**	

Crape Myrtle		
1	Cultural Problem	
1	Insufficient Sample	
1	Winter Injury	
3	**Total for Crape Myrtle**	

Daphne		
1	Botrytis Blight	*Botrytis cinerea*
1	Scales	
2	Suspect Environmental Stress	
4	**Total for Daphne**	

English Ivy		
3	Anthracnose	*Colletotrichum trichellum*
1	Insects	
1	Negative for Disease	
5	**Total for English Ivy**	

Euonymus		
2	Chemical Injury	
2	Insufficient Sample	
1	Suspect Environmental Stress	
5	**Total for Euonymus**	

Fatsia		
1	Insufficient Sample	
1	**Total for Fatsia**	

Filbert		
1	Mites	
1	**Total for Filbert**	

Forsythia		
1	Bacterial Leaf Spot	*Xanthomonas campestris*
1	Insufficient Sample	
1	Normal Condition	
3	**Total for Forsythia**	

Hibiscus		
1	Sooty Mold	
1	**Total for Hibiscus**	

Holly		
1	Abiotic Problem	
22	Black Root Rot	*Thielaviopsis basicola*
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Cultural Problem	
3	Insects	
13	Insufficient Sample	
3	Mites	
4	Negative for Root Disease	
1	Nematodes	
1	Phytophthora Root Rot	*Phytophthora nicotianae*
1	Poor Drainage	
1	Sapsucker Injury	
2	Scales	
2	Sooty Mold	
1	Suspect Black Root Rot	*Thielaviopsis basicola*
2	Suspect Cultural Problem	
1	Winter Injury	
1	Wood Decay	
61	**Total for Holly**	

Hydrangea		
1	Anthracnose	*Colletotrichum sp.*
3	Insufficient Sample	
1	Negative for Root Disease	
1	Pythium Root Rot	*Pythium sp.*
6	**Total for Hydrangea**	

Hypericum		
1	Bacterial Leaf Spot	*Xanthomonas campestris*
1	**Total for Hypericum**	

Indian Hawthorn		
1	Winter Injury	
1	**Total for Indian Hawthorn**	

Jasmine		
1	Insects	
1	**Total for Jasmine**	

Juniper		
1	Cultural Problem	
1	High pH	
4	Insufficient Sample	
1	Kabatina Tip Blight	*Kabatina juniperi*
2	Low pH	
3	Mechanical Injury	
8	Mites	
4	Negative for Disease	
1	Negative for Foliar Disease	
4	Negative for Root Disease	
1	Pestalotiopsis Twig Blight	*Pestalotiopsis sp.*
1	Scales	
2	Suspect Cultural Problem	
2	Suspect Environmental Stress	
1	Suspect Vole Injury	
1	Suspect Winter Injury	
37	**Total for Juniper**	

Laurel		
1	Insects	
1	**Total for Laurel**	

Leucothoe		
1	Powdery Mildew	*Microsphaera sp.*
1	**Total for Leucothoe**	

Lilac		
1	Abiotic Problem	
1	Bacterial Blight	*Pseudomonas syringae*
1	Insufficient Sample	
1	Mites	
1	Negative for Phytophthora Root Rot	
2	Phytophthora Root Rot	*Phytophthora nicotianae*
2	Scorch	
9	**Total for Lilac**	

Mahonia		
1	Physiological Problem	
1	Spine Spot	
2	**Total for Mahonia**	

Medinilla		
1	Suspect Environmental Stress	
1	**Total for Medinilla**	

Mountain Laurel		
1	Anthracnose	*Colletotrichum sp.*
1	**Total for Mountain Laurel**	
Nandina		
2	Cucumber Mosaic Virus	
1	Insufficient Sample	
3	**Total for Nandina**	
Osmanthus		
1	Negative for Disease	
1	**Total for Osmanthus**	
Pieris		
1	Anthracnose	*Colletotrichum sp.*
1	Insufficient Sample	
2	**Total for Pieris**	
Pittosporum		
2	Tomato Spotted Wilt Virus	
2	**Total for Pittosporum**	
Privet		
1	Chemical Injury	
1	Mycosphaerella Leaf Spot	*Pseudocercospora lisgustri*
1	Poor Drainage	
3	**Total for Privet**	
Pyracantha		
1	Scab	*Spilocaea pyracanthae*
1	**Total for Pyracantha**	
Quince		
1	Insects	
1	**Total for Quince**	

Rhododendron		
1	High pH	
2	Insufficient Sample	
1	Negative for Phytophthora Root Rot	
1	Negative for Root Disease	
1	Phytophthora Root and Crown Rot	*Phytophthora citricola*
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
3	Suspect Botryosphaeria Dieback	*Botryosphaeria sp.*
10	**Total for Rhododendron**	

Rose		
3	Abiotic Problem	
4	Botrytis Blight	*Botrytis cinerea*
1	Chemical Injury	
1	Downy Mildew	*Peronospora sparsa*
1	Environmental Stress	
4	Insects	
2	Insufficient Sample	
1	Low pH	
2	Mites	
2	Negative for Leaf Disease	
7	Rose Rosette Disease	
1	Rose Slugs	
1	Suspect Chemical Injury	
2	Suspect Rose Rosette Disease	
32	**Total for Rose**	

Shrub, Unknown		
2	Insufficient Sample	
1	Scales	
3	**Total for Shrub, Unknown**	

Shrubs, Miscellaneous		
1	Suspect Winter Injury	
1	**Total for Shrubs, Miscellaneous**	

Spirea		
1	Scales	
1	Suspect Chemical Injury	
2	**Total for Spirea**	

Stewartia		
1	Suspect Cultural Problem	
1	**Total for Stewartia**	

Summersweet		
1	Chemical Injury	
1	Crystalline Exudate	
1	Cylindrocladium Crown and Root Rot	*Cylindrocladium sp.*
3	**Total for Summersweet**	

Viburnum		
1	Botryosphaeria Dieback	*Botryosphaeria sp.*
1	Healthy	
1	Insects	
2	Insufficient Sample	
2	Mites	
1	Negative for Root Disease	
1	Suspect Chemical Injury	
9	**Total for Viburnum**	

Wax Myrtle		
1	Phytophthora Root Rot	*Phytophthora cinnamomi*
1	**Total for Wax Myrtle**	

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

Yew		
1	Negative for Disease	
1	Negative for Root Pathogens	
1	Ring Nematode	*Mesocriconema sp.*
3	**Total for Yew**	

Yucca		
1	Anthracnose	*Colletotrichum gloeosporioides*
1	Cercospora Leaf Spot	*Cercospora sp.*
2	**Total for Yucca**	

Nonplant Material		
Mulch		
1	pH Test	
1	**Total for Mulch**	

Identification Appendix

1. Higher Plants

Family: Adoxaceae	
Viburnum plicatum var. tomentosum	Doublefile Viburnum
Family: Aquifoliaceae	
Ilex sp.	Holly
Family: Caprifoliaceae	
Viburnum sp.	Viburnum
Family: Celastraceae	
Euonymus alatus	Winged Euonymus
Family: Fagaceae	
Quercus altissima	Sawtooth Oak
Quercus nigra	Water Oak
Family: Lamiaceae	
Salvia sp.	Sage
Family: Lauraceae	
Liquidambar styraciflua	Sweet Gum
Family: Oleaceae	
Chionanthus virginicus	Fringe Tree
Family: Onagraceae	
Oenothera biennis complex	Common Evening Primrose
Family: Paeoniaceae	
Paeonia sp.	Peony
Family: Santalaceae	
Pyrularia pubera	Buffalo Nut
Family: Simaroubaceae	
Ailanthus altissima	Tree-of-Heaven
Family: Violaceae	
Viola sororia	Common Blue Violet

2. Fungi

Family: Unknown	
	Symbiotic Fungus
	Wood Decay Fungus
	Decay Fungus
	Insufficient Sample