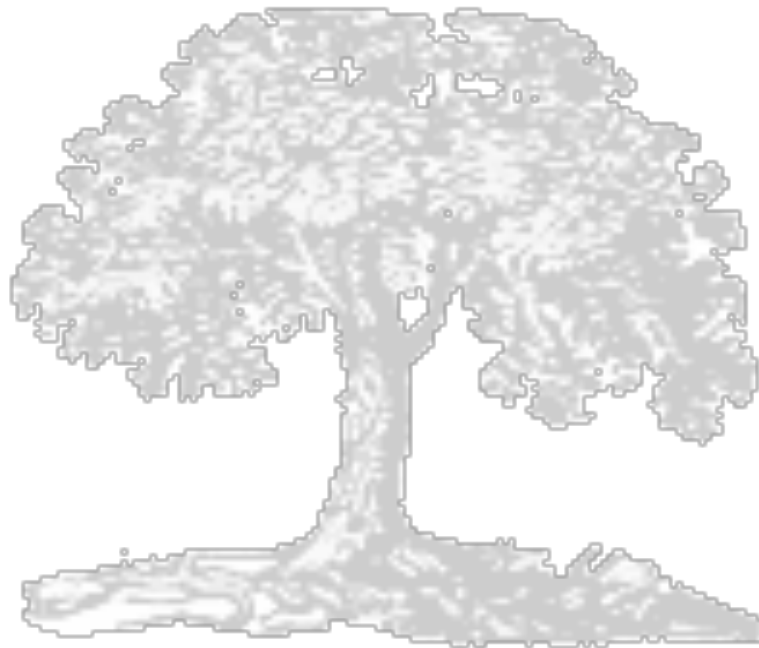


**The Plant Disease Clinic and  
Weed Identification Lab  
Annual Report 2019**



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

**The Plant Disease Clinic  
2019 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 2019, diagnoses in the Plant Disease Clinic in Blacksburg were performed by Mary Ann Hansen and Elizabeth Bush, with valuable assistance from Kate Costello, Kathryn Liu, Madeline Rowland and Abigail Bushhouse.

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>.

Abigail Bushhouse 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 Undetermined" 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 2019

The Plant Disease Clinic (PDC) performed 2225 diagnoses and identifications on 1695 plant samples in 2019. Highlights of the 2019 season are provided below.

The 2019 growing season was rainy early on, but many parts of the state experienced a prolonged drought late in the season. Dry fall conditions were less favorable for boxwood blight, caused by the fungus *Calonectria pseudonaviculata*, which is typically more active in the fall. Overall, the PDC received 295 boxwood samples in 2019, compared to 417 in 2018; 45 of the 2019 samples were positive for boxwood blight, compared to 189 in 2018 – a decrease of 24%. The drought also contributed to widespread mortality of white and chestnut oaks in many parts of the state. Although several different fungal diseases, including Phytophthora root rot, caused by *Phytophthora cinnamomi*, and Hypoxylon canker, caused by *Hypoxylon* spp., were diagnosed on oak samples submitted to the Plant Disease Clinic, no single disease was consistently found that would account for the mortality. We believe that the extremely wet season in 2018 contributed to death of fibrous roots on many trees, and, when followed by prolonged drought in 2019, many of these trees finally succumbed.

In 2019 production of agricultural hemp received federal approval, and the number of hemp growers increased exponentially in Virginia. Because this crop was only recently legalized, the PDC diagnosed many hemp diseases for the first time in 2019. Based on the number of hemp diseases we diagnosed, it appears that hemp is not a trouble-free crop, as many had previously believed! Diseases, arthropod pests and abiotic problems caused many problems for hemp farmers in 2019. One of the most common problems we saw was girdling roots, which led to decline of plants late in the season when root systems could no longer support top growth. Girdling roots are a preventable problem, most likely related to earlier propagation practices. The leaf rust pathogen, *Uredo kriegiana*, which had not been reported in the United States before, was found in one cultivar in one field of hemp in Virginia in 2019.

Other diseases of note: Rhizoctonia root rot, caused by the fungus *Rhizoctonia solani*, which has a broad host range, occurred on a wide array of vegetables and herbaceous ornamental plants in 2019. The virus, Lindera Emaravirus, was diagnosed for the first time on spicebush in 2019. The grape viruses, Grapevine Leafroll-Associated Virus-2 and -3 and Red Blotch Virus, were detected using a new test kit developed by Elizabeth Bush, with assistance from student employees, Kate Costello and Kat Liu. These viruses are detected from plant sap blotted onto filter paper by growers, eliminating the need for growers to send physical plant samples for diagnosis. The filters are processed in the lab using molecular techniques.

Diagnostic highlights from the 2019 season are listed on the following pages. Diagnoses for which images are available are listed with a numbered figure.

## Field Crops: Hemp (*Cannabis sativa*)

### Hemp Diseases (with images)

- Fig. 1. *Cristulariella* leaf spot (*Grovesinia moricola*)
- Fig. 2. Fusarium stem canker (*Fusarium* spp.)
- Fig. 3. Hemp leaf spot (*Drechslera gigantea*)
- Fig. 4. Pythium crown and root rot (*Pythium* spp.)
- Fig. 5. Rhizoctonia crown and root rot (*Rhizoctonia solani*)
- Fig. 6. Rust (*Uredo kriegeana*)
- Fig. 7. Southern blight (*Sclerotium rolfsii*)
- Fig. 8. Girdling roots (abiotic)

### Hemp Diseases (no images included)

- Botryosphaeria twig blight (*Botryosphaeria* sp.)
- Brown blight (*Alternaria alternata*)
- Charcoal rot (*Macrophomina phaseolina*)

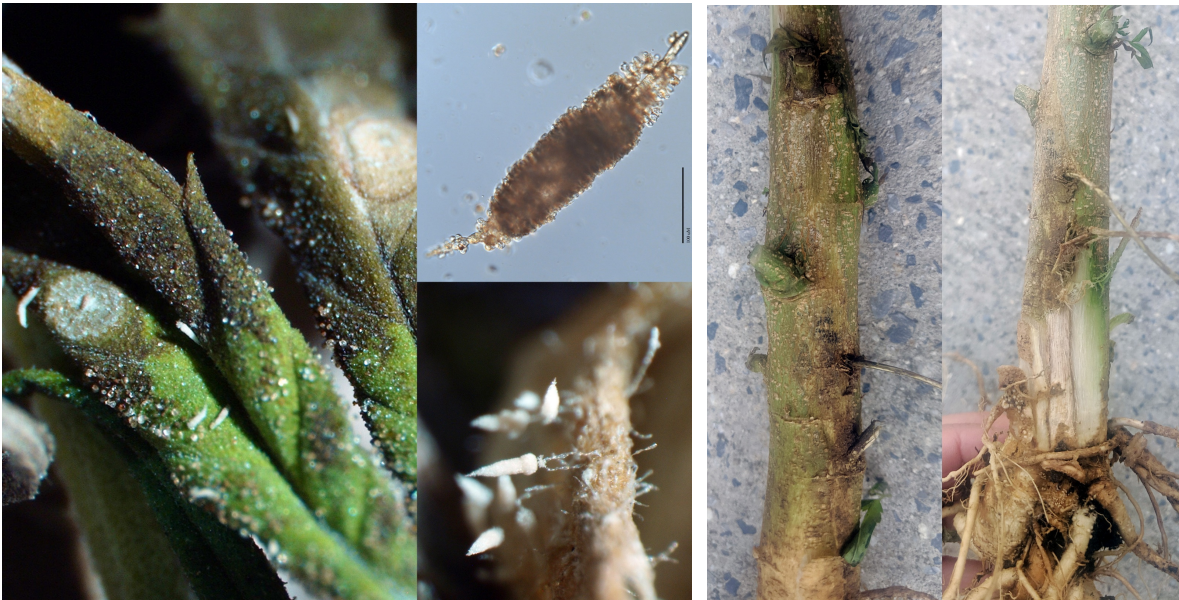


Fig. 1. *Cristulariella* Leaf Spot, showing close-ups of pyramid-shaped fungal fruiting structures.

Fig. 2. *Fusarium* Stem Canker, showing stem discoloration symptoms.



Fig. 3. Hemp Leaf Spot, showing the extremely large spores of *Drechslera gigantea*.



Fig. 4. Pythium Root Rot, showing oospores of *Pythium* sp.



Fig. 5. Rhizoctonia Root and Stem Rot, showing typical mycelium with right-angle branching.



Fig. 6. Rust, showing brightly colored urediospores of *Uredo kriegneriana*.





Fig. 7. Southern Blight, showing spherical, long-lived sclerotia of *Sclerotium rolfsii*.



Fig. 8. Girdling Roots, related to growing conditions during transplant production.

#### **Herbaceous Ornamentals and Herbs**

- Gray leaf spot on Japanese Forest Grass (*Pyricularia grisea*)
- Bacterial leaf spot on Lavender (*Xanthomonas campestris*)
- Bacterial leaf spot on Mint (*Xanthomonas campestris*)
- **Fig. 9.** Alternanthera Mosaic Virus on Polemonium
- **Fig. 10.** Psyllid damage on Rudbeckia



Fig. 9. Alternanthera Mosaic Virus symptoms on Polemonium.

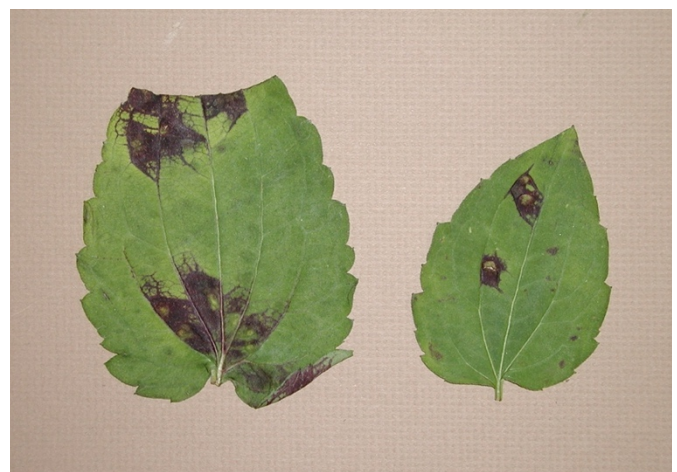


Fig. 10. Injury from feeding damage by psyllids on Rudbeckia is often mistaken for a leaf spot disease.

### Tree and Small Fruits

- **Fig. 11.** Marssonina Blotch on Apple (*Marssonina coronaria*) – causes leaf spotting and defoliation that may be confused with cedar-apple rust
- **Fig. 12.** Blueberry Leaf and Fruit Spot on Blueberry (*Exobasidium maculosum*)
- **Fig. 13-14.** Grape (*Vitis* sp.) – **New test kits for grape viruses**
  - Grapevine leaf roll associated viruses -2 and -3 (Reverse transcriptase PCR test)
  - Red blotch virus (Real time PCR test)



Fig. 11. Marssonina Leaf Blotch on Apple.



Fig. 12. Fruit spots on blueberry caused by *Exobasidium maculosum*.



Fig. 13. Symptoms of Grapevine Leafroll-Associated Virus-3 on Cabernet Franc grapes.

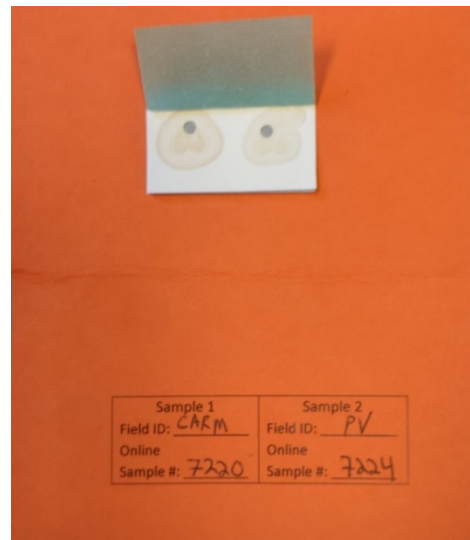


Fig. 14. Virus test kit showing filter paper blotted with grape plant sap by grower.

### **Trees and Woody Ornamentals**

- **Fig. 15.** Linderia Emaravirus on Spicebush (symptoms = vein clearing, mosaic and leaf distortion)
- Bacterial Scorch on Hackberry (*Xylella fastidiosa*)
- Brown Felt Fungus on Maple (*Septobasidium* sp.)
- Nectria Canker on Barberry (*Nectria cinnabarina*)
- **Fig. 16.** Colletotrichum Dieback on Boxwood (*Colletotrichum theobromicola*)
- **Fig. 17.** Phytophthora Dieback on Hydrangea (*Phytophthora palmivora*)



Fig. 15. Linderia Emaravirus on Spicebush.



Fig. 16. Colletotrichum Dieback on Boxwood, showing black fungal fruiting structures on stems.



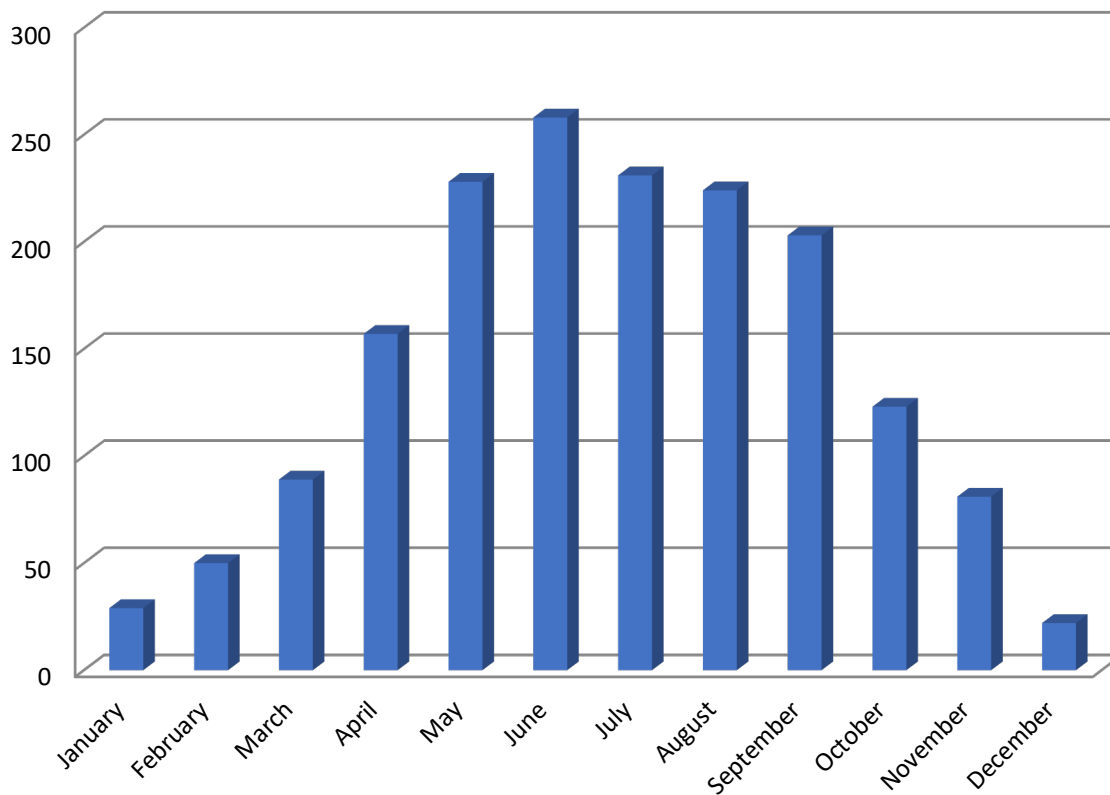
Fig. 17. Phytophthora Dieback on Hydrangea.

## Monthly Submission Summary

*Number of samples received by month*

Month	# Samples
January	29
February	50
March	89
April	157
May	228
June	258
July	231
August	224
September	203
October	123
November	81
December	22
<b>Total</b>	<b>1,695</b>

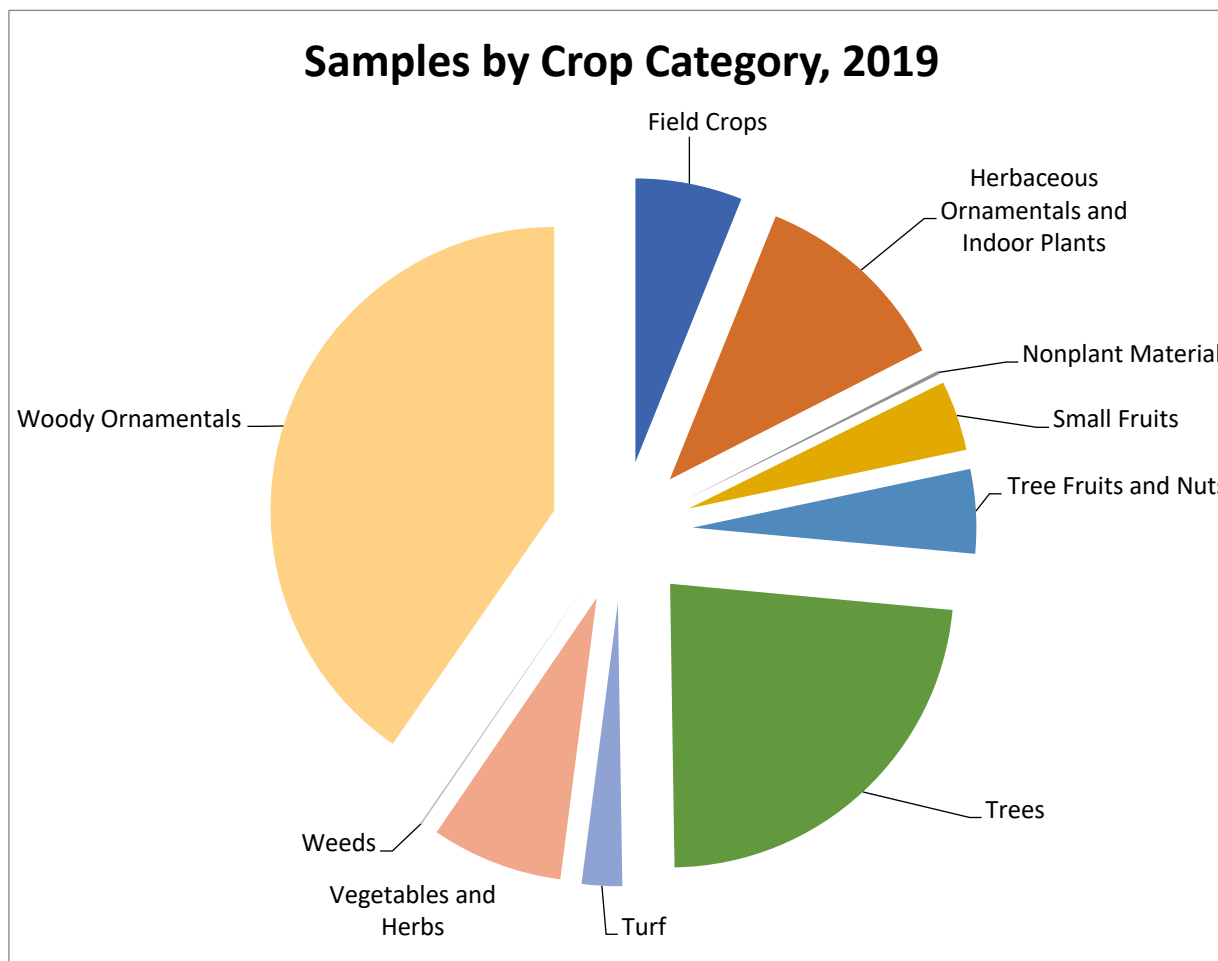
## Number of Samples by Month, 2019



## Samples by Crop Category

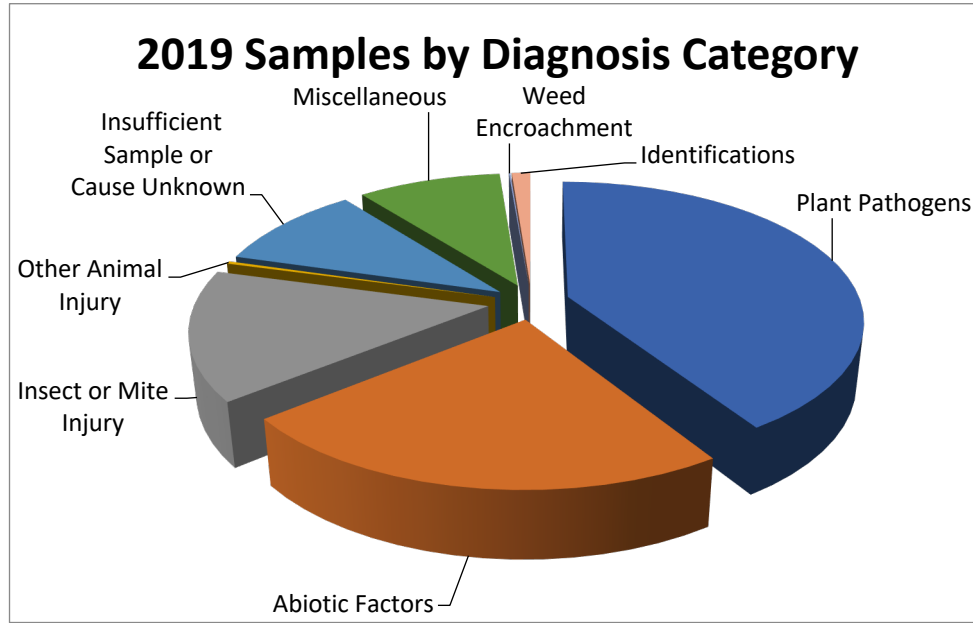
Sample totals by major crop categories, excluding plant identifications

Crop Category	# of Samples	% of Total
Field Crops	101	6.1
Herbaceous Ornamentals and Indoor Plants	190	11.4
Nonplant Material	3	0.2
Small Fruits	66	4
Tree Fruits and Nuts	80	4.8
Trees	389	23.3
Turf	38	2.3
Vegetables and Herbs	125	7.5
Weeds	1	0.1
Woody Ornamentals	674	40.4
<b>Total</b>	<b>1,667</b>	

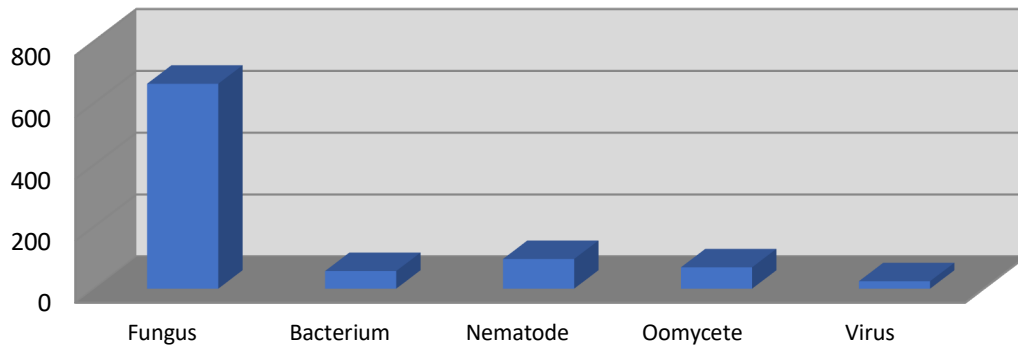


### Diagnosis/ID Category Summary

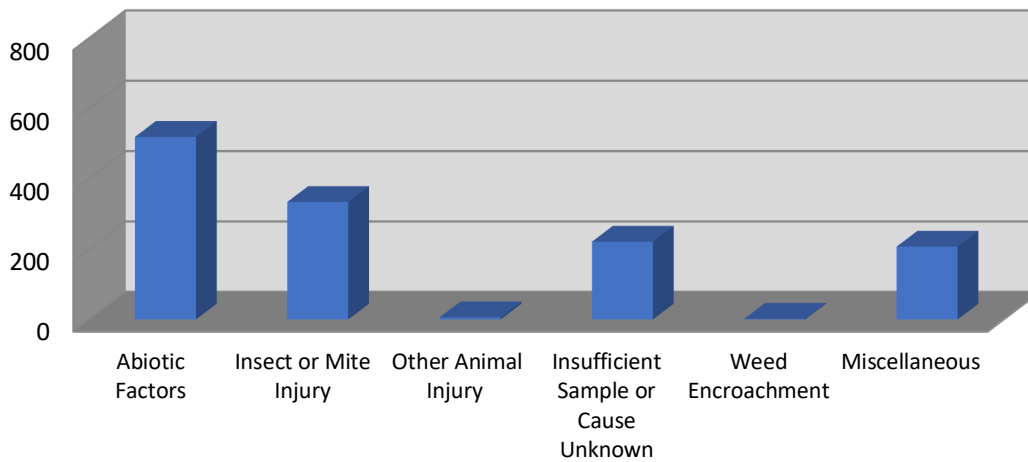
	# of Diagnoses/IDs	% of Total
<b>Plant Pathogens</b>	<b>909</b>	<b>40.9</b>
Bacterium	57	
Fungus	663	
Nematode	96	
Oomycete	69	
Virus	24	
<b>Abiotic Factors</b>	<b>519</b>	<b>23.3</b>
Chemical	49	
Environmental/Cultural	461	
Mechanical	9	
<b>Insect or Mite Injury</b>	<b>334</b>	<b>15</b>
Insects or Mites	334	
<b>Other Animal Injury</b>	<b>6</b>	<b>0.3</b>
Birds	5	
Mammals	1	
<b>Insufficient Sample or Cause Unknown</b>	<b>221</b>	<b>9.9</b>
Insufficient sample or information	204	
Unknown	17	
<b>Miscellaneous</b>	<b>207</b>	<b>9.3</b>
Algae	6	
Lichen	4	
Moss	2	
Normal Condition	7	
Other	169	
Physiological/Genetic	19	
<b>Weed Encroachment</b>	<b>2</b>	<b>0.1</b>
Weed	2	
<b>Identifications</b>	<b>27</b>	<b>1.2</b>
Fungi	6	
Plant	17	
Unable to Identify	3	
Other Substance	1	
<b>Total</b>	<b>2225</b>	
Other Assistance, 2019		
Type	# of Inquires	
Digital Submissions (Email, Digital Pictures)	128	
Phone Calls	133	



**Plant Pathogens, 2019**



**Other Agents, 2019**





### Geographic Distribution of Samples Received in 2019

County	# of Samples	County	# of Samples
Out of State	4	LYNCHBURG CITY	61
ACCOMACK	2	MADISON	4
ALBEMARLE	116	MATHEWS	4
ALEXANDRIA CITY	1	MECKLENBURG	2
ALLEGHANY	1	MIDDLESEX	7
AMELIA	10	MONTGOMERY	119
ARLINGTON	17	NELSON	163
AUGUSTA	21	NEW KENT	12
BATH	2	NEWPORT NEWS CITY	16
BEDFORD	23	NORFOLK CITY	5
BLAND	1	NORTHAMPTON	4
BOTETOURT	12	NORTHUMBERLAND	17
CAMPBELL	8	NOTTOWAY	4
CAROLINE	12	ORANGE	11
CARROLL	27	PAGE	5
CHARLOTTE	6	PATRICK	6
CHESAPEAKE CITY	28	PITTSYLVANIA	9
CLARKE	9	PORTSMOUTH CITY	12
CRAIG	8	POWHATAN, VA	2
CULPEPER	16	PRINCE EDWARD	9
CUMBERLAND	5	PRINCE GEORGE	5
DANVILLE CITY	4	PRINCE WILLIAM	43
DICKENSON	1	PULASKI	14
ESSEX	9	RAPPAHANNOCK	21
FAIRFAX	41	RICHMOND	2
FAUQUIER	16	RICHMOND CITY	4
FLOYD	30	ROANOKE	27
FLUVANNA	17	ROCKBRIDGE	31
FRANKLIN	12	ROCKINGHAM	21
FREDERICK	10	RUSSELL	4
GILES	12	SCOTT	2
GLOUCESTER	6	SHENANDOAH	3
GOOCHLAND	16	SMYTH	2
GRAYSON	1	SOUTHAMPTON	3
GREENE	10	SPOTSYLVANIA	11
HALIFAX	13	STAFFORD	34
HAMPTON CITY	6	SUFFOLK CITY	7
HANOVER	53	SURRY	2
HENRICO	89	TAZEWELL	2
HENRY	1	VIRGINIA BEACH	11
HIGHLAND	1	WASHINGTON	4
ISLE OF WIGHT	14	WESTMORELAND	13
JAMES CITY	55	WISE	10
KING GEORGE	3	WYTHE	15
LANCASTER	4	YORK	128
LEE	3		
LOUDOUN	26		
LOUISA	21		
LUNENBURG	1	<b>Total</b>	<b>1,695</b>

## Diagnosis Appendix

Information about diseases/pests diagnosed by the laboratory

Field Crops	
<b>Alfalfa</b>	
1 Insects	
1 Insufficient Sample	
1 Leptosphaerulina Leaf Spot	<i>Leptosphaerulina briosiana</i>
<b>3 Total for Alfalfa</b>	
<b>Barley</b>	
1 Sharp Eyespot	<i>Rhizoctonia cerealis</i>
<b>1 Total for Barley</b>	
<b>Clover</b>	
1 Cause of Problem Undetermined	
1 Insufficient Sample	
<b>2 Total for Clover</b>	
<b>Corn</b>	
1 Cultural Problem	
1 Damping-off	<i>Rhizoctonia solani</i>
1 Gray Leaf Spot	<i>Cercospora zea-maydis</i>
1 Northern Corn Leaf Blight	<i>Setosphaeria turcica</i>
<b>4 Total for Corn</b>	
<b>Fescue</b>	
1 Brown Patch	<i>Rhizoctonia solani</i>
1 Environmental Stress	
1 Insufficient Sample	
1 Low pH	
<b>4 Total for Fescue</b>	

## Hemp

1	Abiotic Problem	
1	Borers	
1	Botryosphaeria Twig Blight	<i>Botryosphaeria sp.</i>
1	Brown Blight	<i>Alternaria alternata</i>
3	Charcoal Rot	<i>Macrophomina phaseolina</i>
1	Chemical Injury	
1	Cristulariella Leaf Spot	<i>Grovesinia moricola</i>
1	Eriophyid Mites	
3	Fusarium Foot Rot and Root Rot	<i>Fusarium solani</i>
3	Fusarium Stem Canker	<i>Fusarium sp.</i>
2	Genetic Disorder	
9	Girdling Roots	
5	Hemp Leaf Spot	<i>Drechslera gigantea</i>
1	High pH	
1	High Soluble Salts	
1	Insects	
13	Insufficient Sample	
3	Low pH	
4	Mites	
2	No Pathogens Found	
1	Powdery Mildew	<i>Oidium sp.</i>
3	Pythium Root and Crown Rot	<i>Pythium sp.</i>
4	Pythium Root Rot	<i>Pythium sp.</i>
1	Rhizoctonia Crown and Root Rot	<i>Rhizoctonia sp.</i>
2	Rhizoctonia Root Rot	<i>Rhizoctonia solani</i>
2	Russet Mites	<i>Aceria anthocoptes</i>
1	Rust	<i>Uredo kriegiana</i>
5	Southern Blight	<i>Sclerotium rolfsii</i>
1	Suspect Abiotic Problem	
5	Suspect Cultural Problem	
1	Suspect Nutrient Deficiency	
1	Adequate, Sample and Information	
1	No Diagnosis Entered	

**85 Total for Hemp**

## Hops

- |   |                              |                                 |
|---|------------------------------|---------------------------------|
| 1 | Cercospora Leaf Spot         | <i>Cercospora sp.</i>           |
| 2 | Downy Mildew                 | <i>Pseudoperonospora humuli</i> |
| 1 | Genetic Abnormality          |                                 |
| 1 | Insects                      |                                 |
| 2 | No Pathogens Found           |                                 |
| 1 | Suspect Environmental Stress |                                 |

**8 Total for Hops**

## Oats

- 1 Aphids
- 1 Suspect Barley Yellow Dwarf Virus

**2 Total for Oats**

## Orchardgrass

- |   |                      |                                |
|---|----------------------|--------------------------------|
| 1 | Drechslera Leaf Spot | <i>Drechslera dactylidis</i>   |
| 2 | Leaf Streak          | <i>Cercosporidium graminis</i> |

**3 Total for Orchardgrass**

## Pea

- 1 Chemical Injury

**1 Total for Pea**

## Reed Canarygrass

- |   |                                    |                             |
|---|------------------------------------|-----------------------------|
| 1 | Suspect Helminthosporium Leaf Spot | <i>Helminthosporium sp.</i> |
|---|------------------------------------|-----------------------------|

**1 Total for Reed Canarygrass**

## Soybean

- |   |                             |                                |
|---|-----------------------------|--------------------------------|
| 2 | Charcoal Rot                | <i>Macrophomina phaseolina</i> |
| 1 | Cyst Nematodes              | <i>Heterodera glycines</i>     |
| 1 | No Pathogens Found          |                                |
| 1 | Phytophthora Root Rot       | <i>Phytophthora sp.</i>        |
| 1 | Root Knot Nematodes         | <i>Meloidogyne incognita</i>   |
| 1 | Soybean Vein Necrosis Virus |                                |
| 1 | Stinkbugs                   |                                |

**8 Total for Soybean**

## Tobacco

- 1 Abiotic Problem

**1 Total for Tobacco**

## Wheat

1 Cephalosporium Stripe

*Cephalosporium gramineum*

1 Insufficient Sample

**2 Total for Wheat**

## Herbaceous Ornamentals and Indoor Plants

### Allium

- 1 Cause of Problem Undetermined

**1 Total for Allium**

### Aster

- 1 No Pathogens Found
- 1 Thrips

**2 Total for Aster**

### Bluestar

- 1 Rhizoctonia Stem Rot *Rhizoctonia sp.*
- 1 Rust *Coleosporium apocynaceum*

**2 Total for Bluestar**

### Brunnera

- 1 Black Root Rot *Thielaviopsis basicola*
- 1 Insufficient Sample

**2 Total for Brunnera**

### Butterfly Weed

- 1 Bacterial Blight *Xanthomonas campestris*

**1 Total for Butterfly Weed**

### Calibrachoa

- 1 Botrytis Blight *Botrytis sp.*

**1 Total for Calibrachoa**

### Carnation

- 1 Suspect Abiotic Problem
- 1 Thrips

**2 Total for Carnation**

### Celosia

- 1 Root Knot Nematodes *Meloidogyne sp.*

**1 Total for Celosia**

### China Aster

- 1 Botrytis Blight *Botrytis cinerea*
- 1 No Diagnosis Entered

**2 Total for China Aster**

## Chrysanthemum

- 2 Fusarium Wilt *Fusarium oxysporum*
- 1 High pH
- 1 Insects
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*

### 5 Total for Chrysanthemum

## Clematis

- 1 Ascochyta Leaf Spot *Ascochyta sp.*
- 1 Botrytis Blight *Botrytis sp.*
- 1 Insects
- 1 No Pathogens Found
- 1 Phoma Leaf Spot and Stem Canker *Phoma sp.*

### 5 Total for Clematis

## Coneflower

- 2 Cercospora Leaf Spot *Cercospora sp.*
- 1 High Soluble Salts

### 3 Total for Coneflower

## Coral Bells

- 1 Abiotic Problem
- 1 Colletotrichum Leaf Spot *Colletotrichum sp.*
- 1 Fusarium Crown Rot *Fusarium sp.*
- 1 Low pH
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*

### 5 Total for Coral Bells

## Coreopsis

- 1 Bacterial Leaf Blight *Pseudomonas cichorii*
- 1 Suspect Bacterial Blight *Pseudomonas sp.*
- 1 Suspect Bacterial Leaf Blight *Pseudomonas cichorii*

### 3 Total for Coreopsis

## Corydalis

- 1 Downy Mildew *Peronospora sp.*

### 1 Total for Corydalis

## Crown of Thorns

- 1 Insufficient Sample

### 1 Total for Crown of Thorns

### Dahlia

- 1 Botrytis Blight *Botrytis sp.*
- 1 Cause of Problem Undetermined
- 1 Thrips

**3 Total for Dahlia**

### Datura

- 1 Insufficient Sample

**1 Total for Datura**

### Daylily

- 1 Abiotic Problem
- 1 Daylily Rust *Puccinia hemerocallidis*
- 1 Leaf Streak *Aureobasidium microstictum*
- 1 Thrips

**4 Total for Daylily**

### Dead Nettle

- 1 Abiotic Problem
- 1 Pythium Root and Stem Rot *Pythium sp.*

**2 Total for Dead Nettle**

### Dianthus

- 1 Abiotic Problem
- 2 Anthracnose *Colletotrichum sp.*
- 1 Aphids
- 1 Fusarium Root Rot *Fusarium sp.*
- 1 Fusarium Stem and Root Rot *Fusarium sp.*
- 2 Low pH
- 1 No Pathogens Found
- 1 Suspect Abiotic Problem
- 1 Thrips

**11 Total for Dianthus**

### Dracaena

- 1 Pythium Root Rot *Pythium sp.*

**1 Total for Dracaena**

### Easter Lily

- 1 Abiotic Problem
- 1 Suspect Virus

**2 Total for Easter Lily**



### Elephant's Ear

- 1 Environmental Stress

**1 Total for Elephant's Ear**

### Epimedium

- 1 Spine Spot
- 1 Suspect Environmental Stress

**2 Total for Epimedium**

### False Indigo

- 3 Cylindrocladium Blight *Cylindrocladium scoparium*

**3 Total for False Indigo**

### Fern

- 1 Foliar Nematodes *Aphelenchoides sp.*
- 1 Suspect Cercospora Leaf Spot *Cercospora sp.*
- 1 Unspecified Pathology *Acidovorax konjaci*

**3 Total for Fern**

### Forget-me-not

- 1 Cause of Problem Undetermined

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

### Groundcherry

- 1 Intumescence

**1 Total for Groundcherry**

### Hellebore

- 5 Abiotic Problem
- 1 Botrytis Blight *Botrytis cinerea*
- 4 Chemical Injury
- 1 Fusarium Crown Rot *Fusarium sp.*
- 1 No Pathogens Found
- 2 Pythium Root Rot *Pythium sp.*
- 1 Southern Blight *Sclerotium rolfsii*
- 1 Suspect Chemical Injury
- 1 Suspect Virus

**17 Total for Hellebore**

### Hosta

- 1 No Pathogens Found

**1 Total for Hosta**

### Impatiens

- |   |                      |                               |
|---|----------------------|-------------------------------|
| 1 | Bacterial Leaf Spot  | <i>Xanthomonas campestris</i> |
| 1 | Environmental Stress |                               |
| 1 | Pythium Root Rot     | <i>Pythium sp.</i>            |

### 3 Total for Impatiens

### Ivy Geranium

- |   |                 |  |
|---|-----------------|--|
| 1 | Abiotic Problem |  |
|---|-----------------|--|

### 1 Total for Ivy Geranium

### Japanese Forest Grass

- |   |                |                           |
|---|----------------|---------------------------|
| 1 | Gray Leaf Spot | <i>Pyricularia grisea</i> |
|---|----------------|---------------------------|

### 1 Total for Japanese Forest Grass

### Larkspur

- |   |                         |                           |
|---|-------------------------|---------------------------|
| 1 | Fusarium Stem Rot       | <i>Fusarium solani</i>    |
| 1 | No Pathogens Found      |                           |
| 1 | Southern Blight         | <i>Sclerotium rolfsii</i> |
| 1 | Suspect Abiotic Problem |                           |

### 4 Total for Larkspur

### Lavender

- |   |                            |                               |
|---|----------------------------|-------------------------------|
| 2 | Bacterial Leaf Spot        | <i>Xanthomonas campestris</i> |
| 1 | Fusarium Root and Stem Rot | <i>Fusarium sp.</i>           |
| 1 | Fusarium Root Rot          | <i>Fusarium sp.</i>           |
| 1 | No Pathogens Found         |                               |

### 5 Total for Lavender

### Liriope

- |   |                             |                           |
|---|-----------------------------|---------------------------|
| 2 | Anthrachnose                | <i>Colletotrichum sp.</i> |
| 2 | Fusarium Crown and Leaf Rot | <i>Fusarium sp.</i>       |
| 2 | Fusarium Root Rot           | <i>Fusarium sp.</i>       |
| 1 | Mites                       |                           |

### 7 Total for Liriope

### Lisianthus

- |   |                   |                     |
|---|-------------------|---------------------|
| 1 | Fusarium Root Rot | <i>Fusarium sp.</i> |
| 1 | Pythium Root Rot  | <i>Pythium sp.</i>  |

### 2 Total for Lisianthus

### Lithodora

- 1 Abiotic Problem
- 1 No Pathogens Found

**2 Total for Lithodora**

### Madagascar Periwinkle

- 1 Botrytis Blight *Botrytis cinerea*
- 1 Cultural Problem
- 1 Fusarium Stem Rot *Fusarium sp.*

**3 Total for Madagascar Periwinkle**

### Marigold

- 2 Insufficient Sample
- 1 Mites
- 1 Suspect Abiotic Problem

**4 Total for Marigold**

### Milkweed

- 1 Bacterial Blight *Xanthomonas campestris*

**1 Total for Marigold**

### Mint

- 1 Bacterial Leaf Spot *Xanthomonas campestris*
- 1 Insects

**2 Total for Mint**

### Miscanthus

- 1 Anthracnose *Colletotrichum dematium*
- 1 Bipolaris Leaf Spot *Bipolairs sp.*

**2 Total for Miscanthus**

### Mistflower

- 1 Environmental Stress

**1 Total for Mistflower**

### Orchid

- 1 Odontoglossum Ringspot Virus

**1 Total for Orchid**

### Pachysandra

- 1 Suspect Chemical Injury
- 7 Volutella Blight *Volutella pachysandrae*

**8 Total for Pachysandra**

## Pansy

3	Abiotic Problem	
2	Anthrachnose	<i>Colletotrichum sp.</i>
2	Cause of Problem Undetermined	
1	Excess Soluble Salts	
3	No Pathogens Found	
1	Pythium Crown Rot	<i>Pythium sp.</i>
1	No Diagnosis Entered	

### 13 Total for Pansy

## Peony

2	Anthrachnose	<i>Gloeosporium sp.</i>
1	Bud Blast	
1	Environmental Stress	
1	Measles	<i>Graphiopsis chlorocephala</i>
1	Normal Condition	

### 6 Total for Peony

## Perennials, Miscellaneous

1	Rhizoctonia Root Rot	<i>Rhizoctonia solani</i>
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### 1 Total for Perennials, Miscellaneous

## Periwinkle

1	Abiotic Problem	
3	Phoma Dieback	<i>Phoma sp.</i>
1	Rhizoctonia Stem and Root Rot	<i>Rhizoctonia sp.</i>
1	Web Blight	<i>Rhizoctonia solani</i>

### 6 Total for Periwinkle

## Phlox

3	Abiotic Problem	
2	Anthrachnose	<i>Colletotrichum sp.</i>
1	Black Root Rot	<i>Thielaviopsis basicola</i>
1	No Pathogens Found	
2	Suspect Abiotic Problem	

### 9 Total for Phlox

## Plants, Miscellaneous

2	Chemical Injury	
2	Insufficient Sample	
1	Mites	
1	Powdery Mildew	<i>Oidium sp.</i>

### 6 Total for Plants, Miscellaneous

### Plumbago

1 Rhizoctonia Root Rot *Rhizoctonia solani*

**1 Total for Plumbago**

### Poinsettia

1 Scab *Sphaceloma poinsettiae*

**1 Total for Poinsettia**

### Polemonium

1 Alternanthera mosaic Virus (AltMV)

**1 Total for Polemonium**

### Rudbeckia

1 Borers

1 Psyllids

1 Southern Blight *Sclerotium rolfsii*

**3 Total for Rudbeckia**

### Salvia

1 Fusarium Stem Rot *Fusarium oxysporum*

1 Insufficient Sample

1 Low pH

1 Suspect Bacterial Leaf Spot *Pseudomonas cichorii*

**4 Total for Salvia**

### Sedge

1 Abiotic Problem

3 Anthracnose *Colletotrichum sp.*

1 Insects

1 Rhizoctonia Aerial Blight *Rhizoctonia sp.*

1 Thrips

**7 Total for Sedge**

### Sedum

1 Anthracnose *Colletotrichum sp.*

1 Bacterial Soft Rot *Pectobacterium carotovora*

1 Powdery Mildew *Oidium sp.*

1 Rhizoctonia Stem and Root Rot *Rhizoctonia solani*

**4 Total for Sedum**

### Shamrock

- 1 Insufficient Sample
- 1 Rhizoctonia Root Rot

*Rhizoctonia solani*

**2 Total for Shamrock**

### Slipper Flower; Pouch Flower

- 1 Abiotic Problem

**1 Total for Slipper Flower; Pouch Flower**

### Snapdragon

- 1 Fusarium Stem Rot

*Fusarium sp.*

**1 Total for Snapdragon**

### Solomon's Seal

- 1 Botrytis Blight
- 1 No Pathogens Found
- 2 Thrips

*Botrytis cinerea*

**4 Total for Solomon's Seal**

### St. John's Wort

- 1 Insufficient Sample

**1 Total for St. John's Wort**

### Sunflower

- 1 Insufficient Sample

**1 Total for Sunflower**

### Sweet Potato

- 1 Abiotic Problem

**1 Total for Sweet Potato**

### Switchgrass

- 1 Powdery Mildew

*Oidium sp.*

**2 Total for Switchgrass**

### Toad Lily

- 1 Environmental Stress

**1 Total for Toad Lily**

### Trillium

- 1 Rust

*Uromyces sp.*

**1 Total for Trillium**

### Tulip

1 Bacterial Soft Rot

*Pectobacterium carotovora*

**1 Total for Tulip**

### Veronica

1 Abiotic Problem

**1 Total for Veronica**

### Yellow Archangel

1 Abiotic Problem

**1 Total for Yellow Archangel**

### Zamioculcas

1 Suspect Cultural Problem

**1 Total for Zamioculcas**

## Nonplant Material

### Soil

2 Insufficient Sample

1 Suspect Chemical Injury

**3 Total for Soil**

## Small Fruits

### Blackberry

- 1 Borers
- 1 Cane Blight *Paraconiothyrium fuckellii*
- 1 Crown Borers
- 2 Insufficient Sample
- 1 No Pathogens Found
- 1 Orange Rust *Arthuriomyces peckianus*

### 7 Total for Blackberry

### Blueberry

- 3 Abiotic Problem
- 2 Blueberry Leaf and Fruit Spot *Exobasidium maculosum*
- 1 Cercospora Leaf Spot *Cercospora sp.*
- 1 Cultural Problem
- 1 High pH
- 1 High Soluble Salts
- 5 Insufficient Sample
- 1 Low pH
- 1 Phytophthora Root Rot *Phytophthora cinnamomi*
- 1 Suspect Mechanical Injury

### 17 Total for Blueberry

### Fig

- 1 Environmental Stress
- 1 Wood Decay

### 2 Total for Fig



## Grape

1	Alternaria	<i>Alternaria sp.</i>
3	Black Rot	<i>Guignardia bidwellii</i>
1	Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
4	Crown Gall	<i>Rhizobium (Agrobacterium) vitis</i>
1	Cultural Problem	
1	Dagger Nematodes	
2	Grape Berry Moths	
1	Grapevine Leafroll Associated Virus-2 (GLRaV-2)	
1	Grapevine Leafroll Associated Virus-3 (GLRaV-3)	
1	Grapevine Red Blotch Associated Virus (GRBaV)	
1	Insects	
3	Insufficient Sample	
1	Low pH	
1	Nematodes	
1	Phomopsis Cane and Leaf Blight	<i>Phomopsis viticola</i>
6	Pierce's Disease	<i>Xylella fastidiosa</i>
1	Ripe Rot	<i>Colletotrichum gloeosporioides</i>
1	Sour Rot	
1	Stinkbugs	
2	Suspect Environmental Stress	
1	Undetermined Pathogenicity	<i>Paraconiothyrium brasiliense</i>
1	No Diagnosis Entered	

### 36 Total for Grape

## Raspberry

1 Cane Borers

### 1 Total for Raspberry

## Strawberry

2	Anthraxnose	<i>Collectotrichum sp.</i>
1	Anthraxnose Crown Rot	<i>Collectotrichum sp.</i>
1	Botrytis Blight	<i>Botrytis cinerea</i>
1	Crown Rot-Cause Unknown	
2	Gray Mold	<i>Botrytis cinerea</i>
1	Mites	
1	Phytophthora Crown Rot	<i>Phytophthora cactorum</i>
3	Pythium Root Rot	<i>Pythium sp.</i>
1	Suspect Cultural Problem	

### 13 Total for Strawberry

## Tree Fruits and Nuts

### Apple

1	Abiotic Problem	
2	Bitter Rot	<i>Glomerella cingulata</i>
1	Botryosphaeria Dieback	<i>Botryosphaeria sp.</i>
6	Cedar-Apple Rust	<i>Gymnosporangium juniperi-virginianae</i>
1	Cedar-Quince Rust	<i>Gymnosporangium clavipes</i>
1	Codling Moths	
1	Frost Cracking	
5	Insects	
1	Insufficient Sample	
1	Japanese Apple Rust	<i>Gymnosporangium yamadae</i>
1	Marssonina Blotch	<i>Marssonina coronaria</i>
1	Mites	
1	No Pathogens Found	
1	Phoma Leaf Spot	<i>Phoma sp.</i>
1	Phomopsis Canker	<i>Phomopsis sp.</i>
1	Sooty Blotch	<i>Gloeodes pomigena</i>
1	Stinkbugs	
1	Suspect Black Rot	<i>Botryosphaeria obtusa</i>
3	Suspect Chemical Injury	
1	Suspect Cultural Problem	

**32 Total for Apple**

### Apricot

1	Insufficient Sample
1	Physiological Condition

**2 Total for Apricot**

### Cherry

3	Cercospora Leaf Spot	<i>Cercospora circumscissa</i>
1	Chemical Injury	
2	Cherry Leaf Spot	<i>Blumeriella jaapii</i>
1	Cold Injury	
1	Environmental Stress	
1	Insects	
2	Insufficient Sample	
2	Shothole	

**13 Total for Cherry**

### Chestnut

- 1 Abiotic Problem
- 1 Chestnut Blight *Cryphonectria parasitica*
- 1 Environmental Stress
- 2 Insufficient Sample
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*

**6 Total for Chestnut**

### Fruit Trees, Misc.

- 1 Insufficient Sample
- 1 Lichens

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

### Jujube

- 1 Abiotic Problem

**1 Total for Jujube**

### Lemon

- 1 Anthracnose *Colletotrichum sp.*

**1 Total for Lemon**

### Nectarine

- 1 Curculios
- 1 Gummosis *Botryosphaeria sp.*

**2 Total for Nectarine**

### Pawpaw

- 1 No Pathogens Found

**1 Total for Pawpaw**

## Peach

3	Abiotic Problem	
1	Borers	
6	Brown Rot	<i>Monilinia fructicola</i>
1	Chemical Injury	
1	Cultural Problem	
1	Curculios	
1	Gummosis	<i>Botryosphaeria sp.</i>
1	Insects	
1	Insufficient Sample	
1	Peach Leaf Curl	<i>Taphrina deformans</i>
1	Physiological Leaf Spot	
1	Scab	<i>Cladosporium carpophilum</i>

### 19 Total for Peach

## Pear

1	Bitter Rot	<i>Colletotrichum gloeosporioides</i>
1	Cedar-Quince Rust	<i>Gymnosporangium clavipes</i>
1	Curculios	
1	Entomosporium Leaf Spot	<i>Entomosporium mespili</i>
1	Fire Blight	<i>Pectobacterium amylovora</i>
2	Insects	
2	Insufficient Sample	
1	No Pathogens Found	
1	Pear Leaf Blister Mites	<i>Eriophyes pyri</i>
1	Suspect Chemical Injury	
1	Thread Blight	<i>Ceratobasidium ochroleucum</i>

### 13 Total for Pear

## Pecan

1	Insufficient Sample	
1	Premature Nut Drop and Failure to Fill	
2	Scab	<i>Cladosporium caryigenum</i>
1	Suspect Abiotic Problem	

### 5 Total for Pecan

## Persimmon

1	No Pathogens Found	
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### 1 Total for Persimmon

## Plum

1	Black Knot	<i>Dibotryon morbosum</i>
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### 1 Total for Plum

## Trees

### Arborvitae

2	Abiotic Problem	
2	Bagworms	
3	Environmental Stress	
2	Insufficient Information	
6	Insufficient Sample	
3	Leafminers	
6	Mites	
5	No Pathogens Found	
8	Pestalotiopsis Twig Blight	<i>Pestalotiopsis funerea</i>
1	Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
2	Scales	
1	Suspect Winter Injury	

### 41 Total for Arborvitae

### Ash

1	Anthracnose	<i>Discula fraxinea</i>
1	Emerald Ash Borer	
1	Inconclusive Diagnosis	
1	Insects	
1	Rust	<i>Puccinia sp.</i>

### 5 Total for Ash

### Beech

4	Anthracnose	<i>Discula sp.</i>
2	Eriophyid Mites	
1	Insects	
1	Powdery Mildew	<i>Microsphaera penicillata</i>
1	Sooty Mold	<i>Scorias spongiosa</i>

### 9 Total for Beech

### Birch

1	Aphids	
1	Insufficient Sample	

### 2 Total for Birch

### Black Gum

2	Felt Fungus	<i>Septobasidium fumigatum</i>
1	Physiological Leaf Spot	
1	Suspect Felt Fungus	<i>Septobasidium sp.</i>

### 4 Total for Black Gum

### Catalpa

1 Botryosphaeria Canker *Botryosphaeria sp.*

**1 Total for Catalpa**

### Cedar

1 Brown Spot *Lecanosticta acicola*

1 Environmental Stress

1 Freeze Damage

2 Insects

1 Sapsucker Injury

**6 Total for Cedar**

### Crabapple

1 Botryosphaeria Canker *Botryosphaeria dothidea*

1 Insufficient Sample

1 Marssonina Blotch *Marssonina sp.*

3 Scab *Venturia inaequalis*

**6 Total for Crabapple**

### Cryptomeria

1 Botryosphaeria Canker *Botryosphaeria sp.*

1 Insufficient Sample

2 Mites

3 Scales

1 No Diagnosis Entered

**8 Total for Cryptomeria**

### Cypress

1 Abiotic Problem

2 Bagworms

1 Deep Planting

1 Environmental Stress

4 Insufficient Sample

3 No Pathogens Found

1 Phyllosticta Tip Blight *Phyllosticta sp.*

5 Seiridium Canker *Seiridium sp.*

1 Suspect Environmental Stress

8 Suspect Seiridium Canker *Seiridium sp.*

**27 Total for Cypress**

### Dawn Redwood

- 1 Insects
- 1 Suspect Abiotic Problem

### 2 Total for Dawn Redwood

### Dogwood

- 1 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Cultural Problem
- 1 Environmental Stress
- 1 Golden Canker *Aurantioportha corni*
- 3 Insufficient Sample
- 13 Powdery Mildew *Oidium sp.*
- 1 Septoria Leaf Spot *Septoria cornicola*
- 5 Spot Anthracnose *Elsinoe corni*
- 1 Suspect Chemical Injury
- 1 Suspect Environmental Stress
- 1 Thrips

### 29 Total for Dogwood

### Eastern Red Cedar

- 1 Mites
- 1 No Pathogens Found

### 2 Total for Eastern Red Cedar

### Eleagnus

- 1 Cercospora Leaf Spot *Cercospora sp.*
- 1 Insects

### 2 Total for Eleagnus

### Elm

- 2 Black Spot *Gloeosporium ulmeum*
- 1 Insufficient Sample
- 2 No Pathogens Found
- 1 Suspect Black Spot *Stegophora ulmea*
- 1 Suspect Cultural Problem

### 7 Total for Elm

## Falsecypress

- 1 Abiotic Problem
- 1 Bagworms
- 1 Insufficient Sample
- 1 Mites
- 2 No Pathogens Found
- 1 Seasonal Needle Drop
- 1 Suspect Environmental Stress
- 1 Suspect Seasonal Needle Drop

**9 Total for Falsecypress**

## Fir

- 2 Cultural Problem
- 1 Environmental Stress
- 2 Insufficient Sample
- 1 Low pH
- 1 Mechanical Injury
- 4 Phytophthora Root Rot *Phytophthora cinnamomi*
- 1 Phytophthora Root Rot *Phytophthora sp.*
- 1 Rhizosphaera Needle Cast *Rhizosphaera pini*
- 1 Suspect Environmental Stress
- 1 Weevils

**15 Total for Fir**

## Fringe Tree

- 1 Botryosphaeria Canker *Botryosphaeria sp.*
- 1 Lacebugs
- 1 No Pathogens Found

**3 Total for Fringe Tree**

## Ginkgo

- 1 Suspect Chemical Injury

**1 Total for Ginkgo**

## Hackberry

- 1 Bacterial Scorch *Xylella fastidiosa*
- 1 Mites
- 1 Powdery Mildew *Pleochaeta polychaeta*
- 1 Suspect Bacterial Wetwood
- 1 Wood Decay

**5 Total for Hackberry**



## Hemlock

- 1 Insects
- 1 Mites
- 2 No Pathogens Found
- 3 Scales

**7 Total for Hemlock**

## Kentucky Coffee Tree

- 1 Mites

**1 Total for Kentucky Coffee Tree**

## Magnolia

- 1 Abiotic Problem
- 1 Physiological Leaf Spot
- 1 Powdery Mildew
- 1 Scales
- 1 Suspect Abiotic Problem
- 3 Suspect Chemical Injury
- 1 Weevils

*Oidium sp.*

**9 Total for Magnolia**

## Maple

3	Abiotic Problem	
6	Anthracnose	<i>Kabatiella apocrypta</i>
1	Aphids	
3	Beetles	
1	Brown Felt Fungus	<i>Septobasidium sp.</i>
1	Cultural Problem	
1	Environmental Stress	
3	Insects	
5	Insufficient Sample	
1	Leafhoppers	
1	Mites	
1	Pestalotia	<i>Pestalotia sp.</i>
1	Phomopsis Dieback	<i>Phomopsis sp.</i>
9	Purple-eye Leaf Spot	<i>Phyllosticta minima</i>
1	Scales	
1	Sooty Mold	
3	Suspect Abiotic Problem	
3	Suspect Chemical Injury	
1	Suspect Environmental Stress	
1	Suspect Girdling Roots	
1	Suspect Purple-eye Leaf Spot	<i>Phyllosticta minima</i>
1	Suspect Wood Decay	
1	Wood Decay	
1	No Diagnosis Entered	

### 51 Total for Maple

## Mimosa

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

## Misc. Tree

1	Suspect Environmental Stress	
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### 1 Total for Misc. Tree

## Oak

1	Abiotic Problem	
1	Anthracnose	<i>Apiognomonina sp.</i>
1	Anthracnose	<i>Discula sp.</i>
1	Armillaria Root Rot	<i>Armillaria sp.</i>
16	Bacterial Scorch	<i>Xylella fastidiosa</i>
2	Bacterial Wetwood	
1	Borers	
1	Cause of Problem Undetermined	
1	Chemical Injury	
1	Coryneum Twig Blight	<i>Coryneum sp.</i>
1	Eriophyid Mites	
1	Gall Insects	
1	Hypoxylon Canker	<i>Hypoxylon atropunctatum</i>
1	Inonotus Root and Butt Rot	<i>Inonotus dryadeus</i>
7	Insects	
7	Insufficient Sample	
1	Iron Chlorosis	
1	Lacebugs	
5	Mites	
1	No Pathogens Found	
5	Oak Leaf Button Galls	
2	Phomopsis	<i>Phomopsis sp.</i>
1	Phyllosticta Leaf Spot	<i>Phyllosticta sp.</i>
1	Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
1	Pine-Oak Gall Rust	<i>Cronartium quercuum</i>
3	Suspect Abiotic Problem	
1	Suspect Tubakia Leaf Spot	<i>Tubakia dryina</i>
10	Tubakia Leaf Spot	<i>Tubakia dryina</i>

### 76 Total for Oak

## Ornamental Cherry

1	Botryosphaeria Canker	<i>Botryosphaeria sp.</i>
1	Environmental Stress	
2	Insufficient Sample	
4	No Pathogens Found	
1	Suspect Chemical Injury	

### 9 Total for Ornamental Cherry

### Ornamental Pear

1	Cedar-Hawthorn Rust	<i>Gymnosporangium globosum</i>
1	Cedar-Quince Rust	<i>Gymnosporangium clavipes</i>
1	Cultural Problem	
1	No Pathogens Found	
1	Pear Leaf Blister Mites	<i>Eriphyes pyri</i>
1	Pear Trellis Rust	<i>Gymnosporangium sabinae</i>
1	Sapsucker Injury	

**7 Total for Ornamental Pear**

### Osage-orange

1	No Pathogens Found	
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**1 Total for Osage-orange**

### Pine

2	Abiotic Problem	
2	Diplodia Tip Blight	<i>Diplodia pinea</i>
4	Dothistroma Needle Blight	<i>Dothistroma pini</i>
2	Environmental Stress	
1	Insects	
3	Insufficient Sample	
1	No Pathogens Found	
1	Pales Weevils	
2	Scales	
1	Squirrel Injury	<i>Sciurus sp.</i>
5	Suspect Cultural Problem	
1	Suspect Environmental Stress	
1	Suspect Frost Injury	
1	Suspect Procerum Root Disease	<i>Leptographium procerum</i>
1	Web Blight	<i>Rhizoctonia solani</i>

**28 Total for Pine**

### Redbud

2	Mites	
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**2 Total for Redbud**

### Sassafras

1	No Pathogens Found	
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**1 Total for Sassafras**

### Smoke Tree

1 Insufficient Sample

**1 Total for Smoke Tree**

### Snowbell

1 Cercospora Leaf Spot *Cercospora sp.*

1 Suspect Environmental Stress

**2 Total for Snowbell**

### Spruce

2 Abiotic Problem

1 Brown Spot *Lecanosticta acicola*

1 Fasciation

3 Insufficient Sample

4 Mites

4 No Pathogens Found

1 Possible Insect Problem

1 Rhizoctonia Root Rot *Rhizoctonia solani*

7 Rhizosphaera Needle Cast *Rhizosphaera kalkhoffii*

1 Seasonal Needle Drop

4 Stigmina Needle Cast *Stigmina lautii*

1 Suspect Cytospora Canker *Cytospora sp.*

1 Suspect Environmental Stress

1 Web Blight *Rhizoctonia solani*

**32 Total for Spruce**

### Sweet Gum

1 Botryosphaeria Canker *Botryosphaeria sp.*

1 Cause of Problem Undetermined

1 Insects

1 Pestalotia *Pestalotia sp.*

1 Septoria Leaf Spot *Septoria sp.*

1 Suspect Chemical Injury

**6 Total for Sweet Gum**

### Sycamore

1 Anthracnose *Gnomonia platani*

**1 Total for Sycamore**

### Tree, Unknown

1 Mites

**1 Total for Tree, Unknown**

### Tulip Tree

- 1 Insects
- 2 Suspect Chemical Injury
- 2 Weevils

**5 Total for Tulip Tree**

### Umbrella Tree

- 1 Cultural Problem

**1 Total for Umbrella Tree**

### Willow

- 1 Black Canker *Glomerella miyabeana*
- 1 Cercospora Leaf Spot *Cercospora salicina*
- 1 Phoma Canker *Phoma sp.*

**3 Total for Willow**

### Zelkova

- 1 Abiotic Problem
- 1 Cercospora Leaf Spot *Cercospora sp.*

**2 Total for Zelkova**

### Bentgrass

1	Anthracnose	<i>Colletotrichum graminicola</i>
1	Dollar Spot	<i>Sclerotinia homeocarpa</i>
4	Environmental Stress	
1	Pythium Root Rot	<i>Pythium sp.</i>

### 7 Total for Bentgrass

### Bermudagrass

1	Billbugs	
1	No Pathogens Found	

### 2 Total for Bermudagrass

### Fescue

1	Brown Patch	<i>Rhizoctonia solani</i>
1	Helminthosporium Blight	<i>Drechslera dictyoides</i>
1	No Pathogens Found	
1	Red Thread	<i>Laetisaria fuciformis</i>
1	Slime Mold	<i>Physarum sp.</i>

### 5 Total for Fescue

### St. Augustinegrass

1	Gray Leaf Spot	<i>Pyricularia grisea</i>
3	Take-All	<i>Gaeumannomyces graminis</i> <i>var. graminis</i>

### 4 Total for St. Augustinegrass

### Turfgrass

2	Brown Patch	<i>Rhizoctonia solani</i>
2	Environmental Stress	
1	Excess Thatch	
1	Grubs	
1	Helminthosporium Blight	<i>Drechslera dictyoides</i>
1	Insects	
1	Insufficient Sample	
1	Low pH	
1	Moss	
1	Mushroom	
2	No Pathogens Found	
1	Red Thread	<i>Laetisaria fuciformis</i>
1	Suspect Algae	
1	Suspect Environmental Stress	
1	Waitea Patch; Brown Ring Patch	<i>Waitea circinata var. circinata</i>
2	Weed Encroachment	

**20 Total for Turfgrass**

**Zoysia**

1	Cultural Problem	
1	Cyanobacteria	<i>Lyngbya sp.</i>
1	Ink Spot	<i>Curvularia malina</i>
1	Low pH	
1	No Pathogens Found	
1	Suspect Cultural Problem	
1	Suspect Fungal Leaf Spot	

**7 Total for Zoysia**



## Vegetables and Herbs

### Bean

- 1 Insects
- 1 Insufficient Sample
- 1 Suspect Environmental Stress

**3 Total for Bean**

### Broccoli

- 1 Pythium Root Rot *Pythium sp.*

**1 Total for Broccoli**

### Brussels Sprouts

- 1 High Soluble Salts

**1 Total for Brussels Sprouts**

### Cabbage

- 1 Bottom Rot *Rhizoctonia solani*
- 1 Cabbage Maggot
- 1 Environmental Stress

**3 Total for Cabbage**

### Collards

- 1 Wirestem *Rhizoctonia solani*

**1 Total for Collards**

### Cowpea

- 1 Insufficient Sample

**1 Total for Cowpea**

### Cucumber

- 1 Abiotic Problem
- 1 Insufficient Sample
- 1 Pythium Root Rot *Pythium sp.*

**3 Total for Cucumber**

### Fava Bean

- 1 Anthracnose *Colletotrichum sp.*
- 1 Insufficient Sample
- 1 Rhizoctonia Stem Rot *Rhizoctonia sp.*

**3 Total for Fava Bean**

## Garlic

- 1 Abiotic Problem
- 1 Bulb Mites
- 2 Cultural Problem
- 1 Insufficient Sample
- 1 White Rot *Sclerotium cepivorum*

**6 Total for Garlic**

## Ginseng

- 1 Phytophthora Blight *Phytophthora cactorum*

**1 Total for Ginseng**

## Lavender

- 1 Fusarium Root Rot *Fusarium sp.*
- 1 Insufficient Sample
- 1 No Pathogens Found
- 2 Rhizoctonia Root Rot *Rhizoctonia sp.*

**5 Total for Lavender**

## Leek

- 1 No Pathogens Found
- 1 Suspect Nutrient Deficiency

**2 Total for Leek**

## Mint

- 1 Abiotic Problem
- 1 Insects
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*
- 1 Web Blight *Rhizoctonia solani*

**4 Total for Mint**

## Onion

- 1 Purple Blotch *Alternaria porri*
- 1 Thrips

**2 Total for Onion**

## Oregano

- 1 Abiotic Problem
- 1 Leafhoppers

**2 Total for Oregano**

## Parsley

- 1 Thrips
- 1 Unspecified Pathology *Mucor sp.*

### 2 Total for Parsley

## Pea

- 1 Fusarium Root Rot *Fusarium solani*
- 1 Insufficient Sample
- 1 Rhizoctonia Stem and Root Rot *Rhizoctonia solani*

### 3 Total for Pea

## Pepper

- 2 Bacterial Spot *Xanthomonas campestris*
- 1 Charcoal Rot *Macrophomina phaseolina*
- 1 Cultural Problem
- 1 Excess Soluble Salts
- 1 Fusarium Stem Rot *Fusarium solani*
- 1 Insufficient Sample
- 1 No Pathogens Found
- 1 Normal Coloration
- 1 Pythium Root Rot *Pythium sp.*
- 1 Rhizoctonia Root Rot *Rhizoctonia solani*
- 1 Suspect Bacterial Spot *Xanthomonas vesicatoria*
- 1 Thrips

### 13 Total for Pepper

## Plants, Miscellaneous

- 1 Insufficient Sample

### 1 Total for Plants, Miscellaneous

## Potato

- 1 Abiotic Problem
- 1 Common Scab *Streptomyces scabies*
- 1 Insufficient Sample
- 1 Normal Condition
- 1 Rhizoctonia Canker *Rhizoctonia solani*
- 1 Soft Rot *Pectobacterium carotovora*
- 1 Suspect Chemical Injury

### 7 Total for Potato

## Shallot

- 1 Suspect Nitrogen Deficiency

### 1 Total for Shallot

## Squash

1	Fusarium Foot Rot	<i>Fusarium solani</i>
1	Phytophthora Root Rot	<i>Phytophthora capsici</i>

### 2 Total for Squash

## Tomato

5	Abiotic Problem	
2	Algae	
4	Bacterial Wilt	<i>Ralstonia solanacearum</i>
1	Blossom End Rot	
1	Charcoal Rot	<i>Macrophomina phaseolina</i>
6	Chemical Injury	
1	Cultural Problem	
1	Excess Soluble Salts	
2	Flea Beetles	
4	Fusarium Crown and Root Rot	<i>Fusarium oxysporum</i>
2	Fusarium Wilt	<i>Fusarium oxysporum</i>
1	High pH	
1	High Soluble Salts	
1	Insects	
6	Insufficient Sample	
1	Intumescence	
1	Mites	
4	No Pathogens Found	
1	Physiological Leaf Roll	
1	Pith Necrosis	<i>Pseudomonas corrugata</i>
3	Pythium Root Rot	<i>Pythium sp.</i>
1	Rhizoctonia Stem and Root Rot	<i>Rhizoctonia solani</i>
1	Root Knot Nematodes	<i>Meloidogyne arenaria</i>
4	Septoria Leaf Spot	<i>Septoria lycopersici</i>
1	Southern Blight	<i>Sclerotium rolfsii</i>
3	Suspect Chemical Injury	
2	Suspect Cultural Problem	
1	Suspect Nutrient Deficiency	
1	Suspect Walnut Wilt	
1	Thrips	
2	Tobacco Mosaic Virus	
1	Tomato Spotted Wilt Virus	
1	Walnut Wilt	

### 68 Total for Tomato

**Vegetables, Miscellaneous**

1 Excess Soluble Salts

**1 Total for Vegetables, Miscellaneous**

**Watermelon**

1 Insects

**1 Total for Watermelon**

## Woody Ornamentals

### Abelia

- 1 Suspect Abiotic Problem

**1 Total for Abelia**

### Aucuba

- 1 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Cultural Problem
- 1 Environmental Stress
- 1 Insufficient Sample
- 1 Root Knot Nematodes *Meloidogyne incognita*

**5 Total for Aucuba**

### Azalea

- 1 Anthracnose *Colletotrichum gloeosporioides*
- 4 Environmental Stress
- 2 High pH
- 2 Insects
- 4 Insufficient Sample
- 6 Lacebugs
- 1 Leaf and Flower Gall *Exobasidium vaccinii*
- 3 Mites
- 1 No Pathogens Found
- 2 Physiological Leaf Spot
- 2 Phytophthora Root Rot *Phytophthora cinnamomi*
- 1 Sooty Mold
- 1 Suspect Abiotic Problem
- 1 Suspect Chemical Injury

**31 Total for Azalea**

### Bamboo

- 1 Mealybugs

**1 Total for Bamboo**

### Barberry

- 1 Insects
- 2 Insufficient Sample
- 1 Nectria Canker *Nectria cinnabarina*
- 1 Suspect Environmental Stress
- 1 Webworms

**6 Total for Barberry**

## Beautyberry

1 Insufficient Sample

**1 Total for Beautyberry**

## Boxwood

2 Abiotic Problem

45 Boxwood Blight *Calonectria pseudonaviculata*

2 Colletotrichum Dieback *Colletotrichum sp.*

5 Colletotrichum Dieback *Colletotrichum theobromicola*

1 Cultural Problem

9 English Boxwood Decline *Paecilomyces buxi*

3 Environmental Stress

2 Frost injury

4 Insects

32 Insufficient Sample

25 Leafminers

4 Lesion Nematodes *Pratylenchus sp.*

2 Lichens

34 Macrophoma Leaf Spot *Macrophoma candollei*

65 Mites

1 Moss

39 Nematodes

2 No Pathogens Found

6 Phytophthora Root Rot *Phytophthora nicotianae*

16 Possible Nematode Problem

1 Ring Nematodes *Mesocriconema sp.*

1 Scales

8 Spiral Nematodes *Rotylenchus buxophilus*

3 Suspect Abiotic Problem

1 Suspect Frost Injury

1 Suspect Nutrient Deficiency

3 Suspect Winter Injury

71 Volutella Blight *Volutella buxi*

1 Winter Injury

1 Poor

**390 Total for Boxwood**

### Butterfly Bush

- 1 Abiotic Problem
- 1 Cylindrocladium Blight *Cylindrocladium sp.*
- 3 Downy Mildew *Peronospora harrotii*
- 1 Foliar Nematodes *Aphelenchoides sp.*

**6 Total for Butterfly Bush**

### Buttonbush

- 1 Abiotic Problem

**1 Total for Buttonbush**

### Camellia

- 2 Algal Leaf Spot *Cephaleuros virescens*
- 2 Eriophyid Mites
- 1 No Pathogens Found
- 1 Pestalotia Flower Blight *Pestalotia sp.*
- 1 Suspect Camellia Yellow Mottle Virus
- 1 Suspect Environmental Stress

**8 Total for Camellia**

### Cherrylaurel

- 9 Black Vine Weevils
- 2 Borers
- 3 Insufficient Sample
- 2 Mites
- 1 Mycosphaerella Leaf Spot *Mycosphaerella sp.*
- 1 Phytophthora Root Rot *Phytophthora cinnamomi*
- 1 Scales
- 6 Shothole- no pathogen found
- 2 Shothole *Blumeriella jaapii*

**27 Total for Cherrylaurel**

### Cotoneaster

- 1 Botryosphaeria Dieback *Botryosphaeria sp.*

**1 Total for Cotoneaster**



### Crape Myrtle

- 2 Callus Tissue
- 1 Environmental Stress
- 1 Insects
- 1 Insufficient Sample
- 1 No Pathogens Found
- 1 Powdery Mildew *Erysiphe lagerstroemiae*
- 2 Sooty Mold
- 2 Suspect Chemical Injury

#### 11 Total for Crape Myrtle

### English Ivy

- 1 Abiotic Problem
- 1 Anthracnose *Colletotrichum trichellum*
- 1 Bacterial Leaf Spot *Xanthomonas hederae*
- 1 Insufficient Sample
- 1 Low pH

#### 5 Total for English Ivy

### Euonymus

- 2 Abiotic Problem
- 1 Anthracnose *Colletotrichum gloeosporioides*
- 1 No Pathogens Found
- 2 Scales

#### 6 Total for Euonymus

### Ficus

- 1 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Suspect Cultural Problem

#### 2 Total for Ficus

### Filbert

- 1 Eastern Filbert Blight *Anisogramma anomala*

#### 1 Total for Filbert

### Flowering Quince

- 1 Cedar-Quince Rust *Gymnosporangium clavipes*
- 1 Mites

#### 2 Total for Flowering Quince

### Forsythia

- 1 Phomopsis *Phomopsis sp.*

#### 1 Total for Forsythia

## Gardenia

- 1 Pestalotia *Pestalotia sp.*
- 1 Suspect Abiotic Problem

### 2 Total for Gardenia

## Hibiscus

- 1 Aphids
- 1 Environmental Stress
- 1 Insufficient Sample
- 1 Suspect Cultural Problem

### 4 Total for Hibiscus

## Holly

- 1 Abiotic Problem
- 1 Algal Leaf Spot *Cephaleuros sp.*
- 1 Anthracnose *Glomerella sp.*
- 24 Black Root Rot *Thielaviopsis basicola*
- 1 Black Vine Weevils
- 1 Botryosphaeria Dieback *Botryosphaeria sp.*
- 1 Cercospora Leaf Spot *Cercospora sp.*
- 1 Environmental Stress
- 1 Insects
- 12 Insufficient Sample
- 1 Lichens
- 2 Low pH
- 3 Mites
- 4 No Pathogens Found
- 1 Normal Leaf Senescence
- 2 Oedema
- 1 Phomopsis Dieback *Phomopsis sp.*
- 2 Phytophthora Root Rot *Phytophthora cinnamomi*
- 2 Potbound
- 1 Rust *Chrysomyxa ilicina*
- 1 Sapsucker Injury
- 4 Scales
- 1 Seasonal Leaf Drop
- 1 Sooty Mold
- 1 Suspect Chemical Injury
- 1 Winter Injury

### 72 Total for Holly

## Hydrangea

2	Anthracnose	<i>Colletotrichum sp.</i>
2	Cercospora Leaf Spot	<i>Cercospora hydrangeae</i>
1	Cultural Problem	
1	Insects	
1	Insufficient Sample	
2	Mites	
1	No Pathogens Found	
1	Phytophthora Dieback	<i>Phytophthora sp.</i>
1	Pythium Root Rot	<i>Pythium sp.</i>
1	Rhizoctonia Root Rot	<i>Rhizoctonia sp.</i>
1	Suspect Environmental Stress	

### 14 Total for Hydrangea

## Hypericum

2	Abiotic Problem	
2	Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
1	Pythium Root Rot	<i>Pythium sp.</i>
1	Suspect Environmental Stress	

### 6 Total for Hypericum

## Japanese Plum Yew

1	Suspect Abiotic Problem	
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### 1 Total for Japanese Plum Yew

## Japanese Snowball

1	Botrytis Blight	<i>Botrytis cinerea</i>
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### 1 Total for Japanese Snowball

## Juniper

1	Bagworms	
1	Cultural Problem	
1	Cytospora Blight	<i>Cytospora sp.</i>
2	Environmental Stress	
1	Insects	
7	Insufficient Sample	
1	Kabatina Tip Blight	<i>Kabatina juniperi</i>
5	Mites	
5	No Pathogens Found	
1	Phomopsis Tip Blight	<i>Phomopsis juniperovora</i>
2	Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
2	Scales	
1	Suspect Cedar-Quince Rust	<i>Gymnosporangium clavipes</i>
2	Suspect Cultural Problem	
3	Web Blight	<i>Rhizoctonia solani</i>

### 35 Total for Juniper

## Laurel

1	Phytophthora Root Rot	<i>Phytophthora cinnamomi</i>
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### 1 Total for Laurel

## Leucothoe

1	Cylindrocladium Stem Canker	<i>Calonectria sp.</i>
1	Phyllosticta Leaf Spot	<i>Phyllosticta sp.</i>

### 2 Total for Leucothoe

## Lilac

1	Abiotic Problem	
1	Environmental Stress	
2	Insufficient Sample	
2	No Pathogens Found	
1	Oedema	
1	Powdery Mildew	<i>Microsphaera pencillata</i>

### 8 Total for Lilac

## Loropetalum

2	Anthracoze	<i>Colletotrichum gloeosporioides</i>
2	Pseudocercospora Leaf Spot	<i>Pseudocercospora sp.</i>

### 4 Total for Loropetalum

### Mahonia

- 1 No Pathogens Found

**1 Total for Mahonia**

### Mountain Laurel

- 1 Insufficient Sample
- 1 Mites
- 1 Phytophthora Root Rot *Phytophthora sp.*
- 1 Pseudocercospora Leaf Spot *Pseudocercospora kalmiae*
- 1 Scales
- 1 Suspect Chemical Injury

**6 Total for Mountain Laurel**

### Nandina

- 2 Cylindrocladium Blight *Cylindrocladium sp.*
- 1 Insufficient Sample
- 1 Suspect Chemical Injury

**4 Total for Nandina**

### Ninebark

- 1 Insufficient Sample
- 1 Mites

**2 Total for Ninebark**

### Osmanthus

- 1 Abiotic Problem

**1 Total for Osmanthus**

### Photinia

- 1 Entomosporium Leaf Spot *Entomosporium mespili*

**1 Total for Photinia**

### Pieris

- 1 Colletotrichum Leaf Spot *Colletotrichum sp.*
- 1 Mites
- 1 Physiological Leaf Spot
- 2 Phytophthora Root Rot *Phytophthora cinnamomi*
- 1 Phytophthora Stem Canker *Phytophthora sp.*
- 1 Suspect Environmental Stress

**7 Total for Pieris**

## Plants, Miscellaneous

2 Insufficient Sample

**2 Total for Plants, Miscellaneous**

## Privet

1 No Pathogens Found  
1 Suspect Chemical Injury  
1 Winter Injury

**3 Total for Privet**

## Pyracantha

1 Botryosphaeria Dieback *Botryosphaeria sp.*  
1 Lacebugs

**2 Total for Pyracantha**

## Rhododendron

3 Abiotic Problem  
3 Cercospora Leaf Spot *Cercospora handelii*  
1 Environmental Stress  
3 Insufficient Sample  
1 Mites  
3 No Pathogens Found  
1 Phomopsis *Phomopsis sp.*  
4 Phytophthora Root Rot *Phytophthora cinnamomi*  
2 Powdery Mildew *Oidium sp.*  
3 Suspect Botryosphaeria Dieback *Botryosphaeria sp.*  
1 Suspect Environmental Stress

**25 Total for Rhododendron**

## Rose

1 Black Spot *Diplocarpon rosae*  
1 Botryosphaeria Dieback *Botryosphaeria ribis*  
2 Cercospora Leaf Spot *Cercospora rosicola*  
2 Common Canker *Coniothyrium fuckelii*  
2 Insects  
8 Insufficient Sample  
3 Mites  
3 No Pathogens Found  
5 Powdery Mildew *Sphaerotheca pannosa*  
10 Rose Rosette Virus  
1 Suspect Abiotic Problem

**38 Total for Rose**

### Shrub, Unknown

- 1 Insufficient Sample
- 1 Powdery Mildew *Oidium sp.*
- 1 Insects

#### **3 Total for Shrub, Unknown**

### Spicebush

- 1 Linderia Emaravirus *Emaravirus*

#### **1 Total for Spicebush**

### Spirea

- 1 Anthracnose *Collectotrichum sp.*

#### **1 Total for Spirea**

### Sumac

- 1 Abiotic Problem

#### **1 Total for Sumac**

### Sweetspire

- 1 Anthracnose *Colletotrichum sp.*

#### **1 Total for Sweetspire**

### Viburnum

- 1 Botryosphaeria Dieback *Botryosphaeria dothidea*
- 1 Cold Injury
- 1 Insects
- 2 Insufficient Sample
- 2 No Pathogens Found
- 1 Pestalotia *Pestalotia sp.*
- 1 Sapsucker Injury
- 1 Wood Decay - Turkey Tails *Trametes versicolor*

#### **10 Total for Viburnum**

### Wax Myrtle

- 1 Suspect Botryosphaeria Dieback *Botryosphaeria sp.*

#### **1 Total for Wax Myrtle**

### Weigela

- 1 Abiotic Problem
- 1 Rhizoctonia Root and Stem Rot *Rhizoctonia sp.*

#### **2 Total for Weigela**

### Winterberry

1 Abiotic Problem

**1 Total for Winterberry**

### Wisteria

1 Colletotrichum Leaf Spot

*Colletotrichum sp.*

**1 Total for Wisteria**

### Witchhazel

1 Insects

**1 Total for Witchhazel**

### Yellow Jessamine

1 Suspect Cold Injury

**1 Total for Yellow Jessamine**

### Yew

1 Insects

6 Insufficient Sample

2 No Pathogens Found

1 Phytophthora Root Rot

*Phytophthora cinnamomi*

1 Sapsucker Injury

2 Scales

**13 Total for Yew**



## Identification Appendix

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### 1. Higher Plants

Family: Aceraceae		
Acer negundo		Boxelder
Family: Berberidaceae		
Berberis thunbergii		Asian Barberry
Berberis julianae		Wintergreen Barberry
Family: Celastraceae		
Celastrus sp.		Bittersweet
Family: Gramineae		
Poa pratensis		Kentucky Bluegrass
Family: Poaceae		
Lolium arundinaceum		Tall Fescue
Paspalum setaceum		Thin Paspalum
Poa trivialis		Rough Bluegrass
Cynodon dactylon		Bermudagrass
Family: Rosaceae		
Pyrus pyrifolia		Asian Pear
Pyrus calleryana		Pear
Family: Salicaceae		
Populus grandidentata		Bigtooth Aspen
Family: Scrophulariaceae		
Verbascum thapsus		Common Mullein
Unable to Identify (2)		

### 2. Fungi

Family: Gasteromycetes		
Calostoma lutescens		Gelatinous Stalked Puffball
Lycoperdon sp.		Puffball
Family: Polyporaceae		
Phellinus sp.		Phellinus
Family: Ganodermataceae		
Ganoderma sp.		Ganoderma

### 3. Other

Unable to Identify (4)