

UNIVERSITY OF KENTUCKY  
*College of Agriculture*

**Plant Diseases  
in  
Kentucky**

**Plant Disease Diagnostic Laboratory  
Summary**

**2000**

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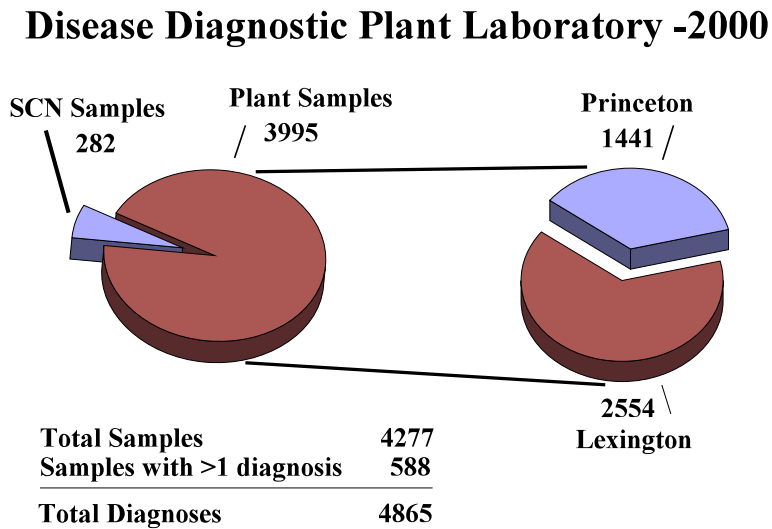
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## INTRODUCTION

The Plant Disease Diagnostic Laboratory (Lexington and Princeton) handled 3995 plant samples and 282 nematode soil samples during 2000. Samples with more than one problem numbered 588, bringing the total number of actual diagnoses to 4865. The Lexington Laboratory diagnosed 2554 specimens. The Princeton Laboratory's specimens totaled 1723; of this number 1441 were plant samples and 282 were soil samples submitted exclusively for soybean cyst nematode analysis. Samples for soybean cyst nematode analysis have dropped dramatically since funding from the Kentucky Soybean Association that had offset the cost of analysis for farmers submitting samples through the County Extension Offices was cut and a charge of \$8.50 per sample had to be imposed.

These numbers are summarized in Figure 1 below:



## HIGHLIGHTS

### *Weather:*

**January:** above normal temperatures and above normal liquid precipitation. Heavy rainfall during the first full week (Jan 2nd - 4th) lifted the entire state out of deep hydrologic drought categories according to the Palmer Drought Severity Index to MILD/MODERATE drought for the first time since late 1998.

**February:** above normal temperatures and precipitation.

**March:** above normal temperatures and below normal rainfall. A relatively mild winter helped keep Kentucky's winter wheat and barley crops in mostly good to excellent condition.

**April:** Slightly below normal temperatures and above normal rainfall. Optimism about the wheat crop had dropped because of the cool, damp weather this month and its potential for advancing disease. Freezes occurred on March 29 and April 9 (20 F. in some areas), causing peach, apple, and strawberry crop losses, especially in Central Kentucky.

**May:** above normal temperatures and near normal rainfall.

**June:** above normal temperatures and near normal rainfall. From Bowling Green west to Paducah, the rainfall was below normal. The tobacco crop looked very good going into July. Tobacco, as of June 30, was 3 percent poor, 14 percent fair, 60 percent good and 23 percent excellent.

**July:** below normal temperatures and above normal rainfall. Unlike last year when soils baked across the Bluegrass state and temperatures hit the 100 degree mark on several occasions... this July was a teddy bear with no high's of 100 and timely rainfall providing the potential for bumper crops. While the Western section of the state received less rain than the Eastern sections (nearly 2 inches less), a good soaking occurred on the last weekend of the month improving most areas' drought status. Increasing reports of blue mold became a concern mainly concentrated in the eastern part of the State.

**August:** near normal temperatures and above normal rainfall. Wide variation of weather occurred across Kentucky during August 2000. While cooler, wetter conditions dominated Eastern KY...Western KY was very hot/dry... and canceled out monthly statewide temperature/rainfall departures to near zero.

**September:** below normal temperatures and rainfall. Record low temperatures occurred on Sept. 17th (Paducah 42 degrees). Record low maximum temperatures occurred on Sept. 26 (Lexington 59 degrees).

**October:** above normal temperatures and below normal rainfall. Usually Kentucky's driest month of the year, October 2000 went into the record books as the 8th driest October since 1896. And...the very mild temperatures for October didn't keep Kentucky from having one of the earliest frosts since 1987....Oct 8, 9 &10 for most locations.

**November:** below normal temperatures and below normal precipitation. On November 2nd high temperatures soared into the low 80's (Paducah 83), and on November 22nd low temperatures plunged into the mid to upper teens.

**December:** below normal temperatures and above normal precipitation. For the period November and December 2000...it was the second coldest on record with an average temperature of 35.1 degrees.

**Overall:** With mostly normal rainfall, much of the 2000 growing season was favorable for root, stem, and foliar diseases of plants. The drought of 1999 still influenced plant health, however, for landscape plants because some vascular wilts, canker diseases, and tip blights began in 1999 during the drought stress. Last year's drought also influenced plant health of perennial or biennial fruits because some vascular wilts and canker diseases also began in 1999.

#### **Tobacco:**

The number of tobacco samples dropped 46% from 1999 (to 853 from 1581). The incidence of Blue Mold (*Peronospora tabacina*) was low, similar to 1999. Black Shank (*Phytophthora parasitica* var. *nicotianae*) sample numbers dropped from 1999. Fusarium Wilt Complex continued to be a problem due to the lack of resistance of most of the varieties planted. The number of cases of Tomato Spotted Wilt virus continued at an elevated level like that seen in 1999.

#### **Other agronomic crops:**

**Corn:** Corn diseases were relatively few with the notable exception of some areas in

western Kentucky with stalk rot problems. The growing season was very good producing a near record yield. There are many factors involved in making plants susceptible to stalk rots but most cause food energies within the plant to be transferred to the ear to the detriment of the stalk tissue which becomes weakened and thus more prone to stalk rot diseases .

**Soybean:** Sudden Death (*Fusarium solani*, A strain) was the number one soybean disease with many areas in western Kentucky showing some incidence of the disease. A few cases of Stem Canker (*Diaporthe phaseolorum*) of Soybean were seen which reflects the average for the last several years with the exception of no cases being seen in 1999. Soybean Cyst Nematode (*Heterodera glycines*) still remains the major yield-limiting disease factor in the majority of soybean producing acreage.

**Small Grains:** Problems in small grains, primarily wheat, were relatively low with two exceptions. There was an epidemic of Wheat Streak Mosaic Virus which had not been a factor since 1988. The warm winters we experienced for the last four years led to an overwintering of the wheat curl mite (*Aceria tulipae*) which vectors this virus. Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*) was more prevalent due to the cool, moist spring conditions and the mild winter temperatures. Lodging was also a problem in some fields due to Powdery Mildew and/or driving rains.

**Forages:** Forages diseases were at their usual low frequency.

#### ***Fruit and Vegetable Disease Observations:***

##### ***Tree Fruit diseases:***

Early spring rainy weather favored peach leaf curl (*Taphrina deformans*) and plum pockets (*T. communis*) and apple diseases such as scab (*Venturia inaequalis*) and the cedar rusts (*Gymnosporangium juniperi-virginianae*, *G. clavipes*, *G. globosum*). Spring frost caused apple fruits to show russeted equatorial bands later in the season. Showers and mild weather during bloom in some parts of the state were sufficient to initiate primary infections of apple and pear fire blight, but most regions had very little fire blight. Throughout the spring and into the summer, seasonal rain and long leaf wetness periods increased the incidence and severity of peach brown rot (*Monilinia fructicola*), peach scab (*Cladosporium carpophilum*), plum leaf spots (*Blumeriella jaapii*, *Xanthomonas campestris* pv. *pruni*) apple scab, frog-eye leaf spot (*Sphaeropsis malorum*), sooty blotch (*Peltaster fructicola*, *Geastrum polystigmatum*, *Leptodontium elatius*, and other fungi) and flyspeck (*Zygothia jamaicensis*), all of which are enhanced by long leaf wetness periods. By season's end, susceptible unsprayed apples were nearly defoliated by scab and fruits were covered in sooty blotch and flyspeck. Bitter rot (*Colletotrichum gloeosporioides*) was found in some apple orchards.

##### ***Small fruit diseases:***

Grape black rot (*Guignardia bidwellii*) and anthracnose (*Elsinoe ampelina*) were prevalent early in the season. Strawberry anthracnose (*Colletotrichum acutatum*), red stele (*Phytophthora fragariae*) and strawberry leaf spot (*Mycosphaerella fragariae*) occurred early in the season. Systemic orange rust (*Gymnoconia nitens*) was devastating to blackberries in some locations. Drought stress the previous season may have resulted in high levels of anthracnose (*Elsinoe veneta*) and other cane cankers on brambles. Blackberry Septoria leaf spot (*Septoria rubi*) and Verticillium wilt (*Verticillium dahliae*) were also observed. Wet weather and poorly drained soils stimulated root rot (*Phytophthora* spp.) of raspberries.

*Vegetable diseases:*

TMV (Tomato Mosaic Virus) was found in greenhouse tomatoes and INSV (Impatiens Necrotic Spot Virus) was found in tomato transplants. The virus likely came from other plants being grown in the same greenhouse. INSV may have developed as a result of vegetable transplants being produced in the same greenhouse with virus-susceptible ornamental plants such as petunia and impatiens.

Cabbage developed wirestem (*Rhizoctonia solani*) disease early in the season and stem rot caused by the same fungus later.

Tomatoes in commercial plantings were infected by several bacterial diseases including bacterial canker (*Clavibacter michiganensis*), bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*), bacterial speck (*Pseudomonas syringae* pv. *tomato*), bacterial wilt (*Ralstonia solanacearum*) and pith necrosis (*Pseudomonas corrugata*). Fungal diseases such as early blight (*Alternaria solani*), Septoria leaf spot (*Septoria lycopersici*), Fusarium wilt (*Fusarium oxysporum* f.sp. *lycopercici*), buckeye rot (*Phytophthora* spp.), southern stem blight (*Sclerotium rolfsii*), and timber rot (*Sclerotinia sclerotiorum*) took their toll. Viral diseases such as TSWV (Tomato Spotted Wilt Virus) and CMV (Cucumber Mosaic Virus) and a nematode, root knot nematode (*Meloidogyne incognita*) caused losses. Septoria leaf spot and TSWV were especially common this year.

Peppers developed bacterial leaf spot (*Xanthomonas campestris* pv. *vesicatoria*), fruit anthracnose (*Colletotrichum* spp.) and occasionally southern stem blight (*Sclerotium rolfsii*) and stem rot (*Rhizoctonia solani*).

Pumpkins and other cucurbits are becoming more popular in Kentucky, and their diseases continue to be economically important. A new disease, Phytophthora fruit rot (*Phytophthora capsici*) was found to be widespread. Like many other diseases, pumpkin fruit rot incidence is associated with a failure to use crop rotation away from other vegetables or tobacco. Fusarium (*Fusarium* spp.) fruit rots were a common problem again this year. Gummy stem blight/black rot (*Mycosphaerella melonis*), Microdochium blight (*Microdochium* sp.), and powdery mildew, (*Sphaerotheca fuliginea* or *Erysiphe cichoracearum*) were found at serious levels. Pumpkin (and squash) was found to be a host to a complex of viruses including Watermelon Mosaic Virus 2 and to bacterial diseases including angular leaf spot (*Pseudomonas syringae* pv. *lachrymans*), a bacterial fruit rot (*Xanthomonas cucurbitae*), and bacterial wilt (*Erwinia tracheiphila*), which was also widespread on other cucurbits such as cantaloupe, cucumber, and squash.

Sweet corn rust (*Puccinia graminis*) was widespread and Stewart's wilt (*Pantoea* [*Erwinia*] *stewartii* subsp. *stewartii*) was observed. Asparagus crown rot (*Fusarium* sp.), bean root and stem rot (*Rhizoctonia solani* and *Fusarium solani* f.sp. *phaseoli*), and potato scab (*Streptomyces scabies*) were also frequently observed this year.

The laboratory has been conducting a survey of the viruses infecting commercial vegetables in Kentucky for the past several years. Using ELISA tests, a broad range of virus diseases were found; no new viruses were detected in 2000. Growers are urged to bring to the attention of their County Extension Agent any observations of new outbreaks and disease trends in their fields. We want to be especially watchful of the new spectrum of microbes and diseases that may occur with changes in fungicide use patterns from broad-spectrum protectant fungicides such as Mancozeb and Bravo to new chemicals such as Quadris and Abound, which present a greater risk of pathogen resistance to the fungicide while incurring

reduced risks to human health and the environment. For example, we have noted increased bacterial diseases in tomatoes and now want to know if this is due to how we raise our crops, manage other diseases, or import seeds and transplants.

Because fruits and vegetables are high value crops, the plant disease diagnostic laboratory should be a great value to commercial growers. However, many growers are not using the plant disease diagnostic laboratory often enough or they are waiting until their disease problem has become well established. By then, it may be too late to do anything about it, or in some cases to correctly diagnose the sequence of diseases that may have led to the final outcome. Growers need to consult consistently with their County Extension Agents so that appropriate plant specimens are sent to the laboratory in a timely manner. We are urging County Extension Agents to stress in their Extension programming the need for accurate diagnosis of diseases of high-value crops. Growers can work with their Agents to see that Kentucky growers have the best possible information on fruit and vegetable diseases.

#### *Landscape Plant Disease Observations:*

*Deciduous tree diseases:* Above normal rainfall in April got foliar diseases off to a good start. Cedar rust (*Gymnosporangium juniperi-virginianae*, *G. clavipes*, *G. globosum*) infections were widespread. Rust-susceptible crabapple leaves showed significant cedar-apple rust spots and hawthorn fruits and shoots were heavily infected with cedar-quince rust. Flowering crabapple scab (*Venturia inaequalis*) was very active and most susceptible flowering crabapples were defoliated from scab by mid-summer. The maple, dogwood, ash, and sycamore anthracnose fungi (*Kabatiella*, *Discula*, and *Apiognomonina*) were also very active because of the early wetness. Dogwood anthracnose was confirmed from Harrison County for the first time. An apparently new anthracnose disease of yellowwood was found on trees in several Kentucky landscapes. Sourwood leaf spot (*Cercospora oxydendri*) was serious in some locations. Dogwood powdery mildew (*Microsphaera*, *Phyllactinia* spp.), a disease which has become important in recent years, was fairly serious in many landscapes. Crabapple powdery mildew (*Podosphaera leucotricha*) was widely evident. Bacterial leaf scorch (*Xylella fastidiosa*) was easily detected visually on red and pin oaks in late summer. Drought stress the previous season appeared to have made this disease much worse. Previously infected trees seemed to show accelerated rates of decline. In addition to branch dieback, increased numbers of large, mature pin oaks in most Kentucky urban areas are dying from bacterial leaf scorch. Bacterial leaf scorch was also diagnosed in sugar maple and London plane. Botryosphaeria canker (*Botryosphaeria dothidea*) of various woody plants and Hypoxylon canker (*Hypoxylon atropunctatum*) of oak, probably exacerbated by the previous year's drought, were more noticed. Verticillium wilt (*Verticillium dahliae*) appeared on maple, redbud, smoke-tree, and magnolia; in the latter case, symptoms were visible in previous years' wood on young, recently-planted trees. Ash yellows, a phytoplasma-caused disease, was more observable in landscapes this year.

*Needle evergreen tree diseases:* Maturing Austrian and Scots pines continue to die from tip blight (*Sphaeropsis sapinea*) and pine wilt nematode (*Bursaphelenchus xylophilus*). The drought of the previous year seemed to exacerbate these diseases. Although the drought occurred in summer last year, many needle evergreens such as pines and spruces retained their foliage and did not turn brown and die until winter or spring this year. White pine decline (linked to high pH, compacted soils with high clay content, or with root disturbance)

continues to take its toll.

***Shrub diseases:*** Black root rot (*Thielaviopsis basicola*) of holly, inkberry, Japanese holly, and boxwood remains a problem. In addition to the usual outbreaks of black spot (*Diplocarpon rosae*) and powdery mildew (*Sphaerotheca pannosa*), roses this year had additional problems with rose mosaic virus and with the devastating rose rosette disease.

***Perennial and annual plant diseases:*** Black root rot (*Thielaviopsis basicola*) of annuals such as petunia, lavender, and pansy was a problem in many flower beds in spring and again in fall. Southern blight (*Sclerotium rolfsii*) was more commonly observed this year on Hosta, Phlox, and Echinacea. Stem rot (*Rhizoctonia solani*) also affected many landscape flowers, especially impatiens, vinca, lily, and petunia. Peony, especially tree peony was afflicted with leaf spot and blight (*Cladosporium paeoniae*) and iris with leaf spot (*Heterosporium iridis*). Bacterial blights (*Pseudomonas* and *Xanthomonas spp.*) were observed on chrysanthemum, impatiens, geranium, and several other flowers. Poinsettia scab (*Sphaceloma poinsettiae*) outbreaks were noted.

***Landscape lawn diseases:*** The usual spectrum of turfgrass diseases appeared throughout the growing season. Perennial ryegrass gray leaf spot (*Pyricularia grisea*) was fairly serious this year.

#### ***A Shift in Sample Types:***

As noted above the number of tobacco samples dropped 46% from 1999 (to 853 from 1581). This drop in the number of tobacco samples was mostly offset by increases in the number of woody and herbaceous ornamental samples. An increasing number of these samples are of plant types which are less common and therefore require more work, testing, and time to provide an accurate diagnosis. Along with the diversification of crops we are seeing a diversification of diseases.

#### ***Disease Monitoring:***

In addition to the day to day diagnosis of samples, monitoring of several organisms and the diseases they cause are conducted by the diagnostic laboratory during the year. In addition to those mentioned above, the detection of soybean cyst nematodes in new areas of the state and in soil on commercial ornamental stock for export (e.g. to Canada and California) is also conducted.

#### ***Educational Resource:***

A major activity of the laboratory is to serve as an educational resource to County Extension Agents and Extension Specialists for assistance in the diagnosis of plant diseases, common, complex, and new.



## ACKNOWLEDGMENTS

Technicians within the department of Plant Pathology continued to make significant contributions. Ed Dixon, research technician in Lexington, worked with specialists in conducting research in turf, ornamentals, corn, forages, and fruits. Bernadette Amsden replaced Shari Dutton and conducted laboratory research on tobacco and ornamentals. Bernadette and Ed both helped in conducting diagnostic tests on many plant samples. Colette Laurent starting working part-time with soybean cyst nematode samples in the fall of 1999 and continued during 2000 . John Starnes provided very capable, part-time assistance in the Lexington Laboratory this past year.

Thanks also go to Pat Yancey and Sandie Waddell, staff assistants in Lexington and Princeton, respectively, for their work in mailing thousands of diagnostic forms and IPM/PDDL Surveys. Tom Priddy, Ag. Engineering - Meteorology, and his staff provided information for the summary of weather conditions for 2000.

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We also wish to thank the College of Agriculture's extension specialists and researchers who served as consultants to the diagnostic laboratory in 2000. Their services ranged from making actual diagnoses to providing answers to plant, insect, weed or pesticide questions. These individuals are too numerous to mention here (see Table 9) but we are grateful nonetheless to each for their valuable assistance.

## EXPLANATORY REMARKS

As you examine the main body of this report, you will notice three columns of numbers following the diagnosis and causal agent sections. The first column indicates the number of primary diagnoses, the second column the number of secondary diagnoses and the third column is the total of the previous two. The primary diagnosis is the main, or frequently, the only problem observed on a plant sample. If a second problem of equal or lesser importance was observed, it was entered as the secondary diagnosis. Occasionally, a problem may have only been diagnosed as a secondary problem, and not as a primary problem for this year thus a zero (0) will appear in the primary diagnosis column.

**Referrals and consultations:** Insect problems were generally identified or verified by a specialist in the Entomology Department. Chemical injuries on all commercially grown crops were diagnosed by a weed control specialist or by the crop specialist in the Agronomy or Horticulture Departments. On a number of occasions we also consulted with crop specialists in other departments to diagnose or verify abiotic problems.

**Table 1.****SUMMARY OF DIAGNOSES<sup>1</sup> BY CROP CATEGORY AND CAUSAL AGENT TYPE.**

<b>Crop Category</b>	<b>Abiotic Problems</b>	<b>Biotic<sup>2</sup> Problems</b>	<b>Chemical Injury</b>	<b>Inadequate Specimen</b>	<b>Insect Injury</b>	<b>Other<sup>3</sup></b>	<b>Total Diagnoses</b>
<b><u>Agronomic</u></b>							
Corn	65	36	25	9	22	24	181
Forages	20	28	3	7	6	10	74
Small grains	13	92	2	6	0	15	128
Soybeans	26	346*	16	4	2	40*	435
Tobacco	269	626	89	17	4	68	1073
<b><u>Fruit</u></b>							
Small fruit	18	54	6	5	9	14	106
Tree fruit	31	86	6	8	38	9	178
<b><u>Herbs</u></b>							
	6	9	0	0	1	4	20
<b><u>Identification</u></b>							
	0	52	0	3	0	1	56
<b><u>Ornamentals</u></b>							
<b>Herbaceous and</b>							
Houseplants	52	175	12	15	38	58	350
Turfgrass	12	106	3	7	0	27	155
Woody	488	496	43	46	250	236	1559
<b><u>Vegetables</u></b>							
	76	275	41	32	42	75	541
<b><u>Miscellaneous</u></b>							
	3	4	0	1	0	2	10
<b><u>Total</u></b>	<b>1079</b>	<b>2385</b>	<b>246</b>	<b>160</b>	<b>412</b>	<b>583</b>	<b>4865</b>

<sup>1</sup> All counts and totals include primary diagnoses plus secondary diagnoses.

<sup>2</sup> Refer to Table 2 for a further breakdown of this category.

<sup>3</sup> "Other" includes the causal agent categories: No disease and Unknown.

\* Numbers include samples from the Nematode Analysis Laboratory, Princeton: 249 with SCN; 33 without SCN.

**Table 2.****SUMMARY OF BIOTIC PROBLEMS BY CROP CATEGORY.**

<b>Crop Category</b>	<b>Bacterial</b>	<b>Fungal</b>	<b>Nematode</b>	<b>Virus</b>	<b>Other<sup>1</sup></b>
<b><u>Agronomic</u></b>					
Corn	0	31	0	5	0
Forages	0	27	0	1	0
Small grains	0	25	0	67	0
Soybeans	0	82	263	1	0
Tobacco	24	424	1	177	0
<b><u>Fruit</u></b>					
Small fruit	2	49	0	2	1
Tree fruit	19	67	0	0	0
<b><u>Herbs</u></b>					
	2	7	0	0	0
<b><u>Identification</u></b>					
	0	33	0	0	19
<b><u>Ornamentals</u></b>					
Herbaceous and Houseplants	19	152	0	4	0
Turfgrass	0	105	0	0	1
Woody	70	407	4	11	4
<b><u>Vegetables</u></b>					
	90	135	2	47	1
<b><u>Miscellaneous</u></b>					
	0	3	0	0	1
<b>Total</b>	<b>226</b>	<b>1547</b>	<b>270</b>	<b>315</b>	<b>27</b>

<sup>1</sup> Other includes these categories: Animal (rodent and bird damage), Plant (plant identifications), and Algae, Lichen and Phytoplasma.

**Table 3.****NUMBER OF PLANT SPECIMENS BY CROP CATEGORY, EXPRESSED AS PERCENTAGES**

<b>Crop Category</b>	<b>Number of Specimens</b>	<b>Percentage of Total Specimens</b>
Agronomic (-Tobacco)	451	11.3
Tobacco	870	21.8
Fruit	246	6.1
Herbs	21	0.5
Identifications	54	1.4
Ornamentals	1860	46.5
Vegetables	482	12.1
Miscellaneous	11	0.3
<b>Total Specimens</b>	<b>3995</b>	<b>100.0</b>

**Table 4.****SUMMARY OF DIAGNOSES BY CROP CATEGORY AND CROP.**

<b>Crop Category and Crop</b>	<b>Number of Primary Diagnoses<sup>1</sup></b>	<b>Number of Secondary Diagnoses<sup>2</sup></b>	<b>Total Diagnoses<sup>3</sup></b>
<b><u>Agronomic</u></b>			
Corn	154	27	181
Forages	63	9	72
Small grains	112	19	131
Soybeans	404	30	434
Tobacco	870	204	1074
<b><u>Fruit</u></b>			
Small fruit	94	12	106
Tree fruit	152	27	179
<b><u>Herbs</u></b>			
	21	1	22
<b><u>Identification</u></b>			
	54	0	54
<b><u>Ornamentals</u></b>			
Herbaceous and Houseplants	307	40	347
Turfgrass	139	15	154
Woody	1414	145	1559
<b><u>Vegetables</u></b>			
	482	59	541
<b><u>Miscellaneous</u></b>			
	11	0	11
<b><u>Total</u></b>			
	4277	588	4865

<sup>1</sup> The number of primary diagnoses corresponds to the number of different specimens examined.

<sup>2</sup> If a second problem was evident on the plant specimen it was considered the secondary diagnosis. See "Explanatory Remarks."

<sup>3</sup> Total diagnoses equals the number of primary plus the number of secondary diagnoses.

**Table 5.****SUMMARY OF SAMPLES RECEIVED BY GROWER TYPE AND CROP GROUP.**

Crop Group	Grower Type							
	Commercial		Homeowner		Research		Institution	
	Ext <sup>1</sup>	Non-Ext <sup>2</sup>	Ext <sup>1</sup>	Non-Ext <sup>2</sup>	Ext <sup>1</sup>	Non-Ext <sup>2</sup>	Ext <sup>1</sup>	Non-Ext <sup>2</sup>
<b><u>Agronomic</u></b>								
Corn	140	10	0	0	0	3	1	0
Forages	60	3	0	0	0	0	0	0
Small grains	89	7	0	0	7	9	0	0
Soybeans	265	29	0	0	3	107	0	0
Tobacco	774	40	0	0	46	10	0	0
<b><u>Fruit</u></b>								
Small Fruit	25	1	59	4	1	4	0	0
Tree Fruit	10	2	128	8	0	3	1	0
<b><u>Herbs</u></b>								
	13	0	6	1	0	1	0	0
<b><u>Identifications</u></b>								
	4	1	44	3	0	0	2	0
<b><u>Ornamental</u></b>								
<b>Herbaceous and</b>								
Houseplants	91	18	165	11	3	5	10	4
Turfgrass	43	9	75	1	0	2	7	2
Woody	91	11	1154	108	6	13	25	6
<b><u>Vegetable</u></b>								
	196	3	247	6	18	11	0	1
<b><u>Miscellaneous</u></b>								
	2	0	5	0	0	3	0	1
<b><u>Total</u></b>	<b>1803</b>	<b>134</b>	<b>1883</b>	<b>142</b>	<b>84</b>	<b>171</b>	<b>46</b>	<b>14</b>
<b><u>Total/Grower Type</u></b>	<b>1937</b>		<b>2025</b>		<b>255</b>		<b>60</b>	

**Total number of samples received = 4277**

<sup>1</sup> Ext = Extension samples submitted via County Extension Agents or Extension Specialists.

<sup>2</sup> Non-Ext = Non-extension samples submitted directly by the grower or other non-extension clients.

**Table 6.**

**NUMBER OF SAMPLES REFERRED TO OTHER DEPARTMENTS,  
UK LABORATORY FACILITIES OR OUTSIDE AGENCIES FOR DIAGNOSIS.\***

Department, Facility or outside agency	Crop Category					Total
	Agronomic	Fruit	Ornamental	Vegetable	Other	
AgDia, Inc.	88	1	2	18	0	107
Agronomy Department	36	1	0	1	2	40
Entomology Department	11	17	41	6	0	75
Horticulture Department	0	1	12	15	1	29
North Carolina State University	0	0	0	15	0	15
					<u>Total</u>	266
					<u>Total number of plant samples</u>	3995
					<u>Percent of plant samples referred outside Diagnostic Lab for diagnosis</u>	6.7

\* Numbers do not reflect the total number of diagnoses and/or consultations conducted by other departments (See Table 9).

**TABLE 7.****SPECIAL LABORATORY TESTS PERFORMED  
BY PLANT DISEASE DIAGNOSTIC LABORATORY.**

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<b>Test</b>	<b>Number of Cases</b>
<b>Culturing</b>	<b>37</b>
<b>Enzyme-linked Immunosorbent Assay (ELISA)</b>	<b>187</b>
<b>Grow out</b>	<b>3</b>
<b>Incubation</b>	<b>321</b>
<b>Indicator plants</b>	<b>39</b>
<b>Nematode extraction (total = 288)</b>	
<b>Miscellaneous</b>	<b>0</b>
<b>Pinewood nematode</b>	<b>6</b>
<b>Soybean cyst nematode</b>	<b>282</b>
<b>Soil tests (total = 369)</b>	
<b>Alkalinity</b>	<b>0</b>
<b>pH</b>	<b>175</b>
<b>Saturated Media Extract/pH</b>	<b>3</b>
<b>Soluble salts</b>	<b>5</b>
<b>pH/Soluble Salts</b>	<b>102</b>
<b>Tissue Test (total = 0)</b>	
<b>Quick Nitrate Test</b>	<b>0</b>
<b>Quick Nitrate/ Soluble Salts</b>	<b>0</b>

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Table 8.

**NUMBER OF PLANT SAMPLES RECEIVED BY COUNTY AND CROP CATEGORY  
(KY AND OUT-OF-STATE SOURCES).**

COUNTY	Total	Agronomic <sup>1</sup>	Tobacco	Fruit	Ornamental	Vegetable	Other
ADAIR	0	0	0	0	0	0	0
ALLEN	15	0	1	1	11	2	0
ANDERSON	9	0	4	2	3	0	0
BALLARD	38	13	16	0	6	2	1
BARREN	15	1	8	0	5	0	1
BATH	33	1	11	2	16	3	0
BELL	11	0	0	1	8	2	0
BOONE	45	1	2	6	32	4	0
BOURBON	32	1	7	2	16	4	2
BOYD	45	0	0	2	41	2	0
BOYLE	35	5	9	0	19	2	0
BRACKEN	6	0	1	0	3	2	0
BREATHITT	41	0	26	0	7	8	0
BRECKINRIDGE	77	11	25	5	24	10	2
BULLITT	37	1	1	7	20	5	3
BUTLER	14	5	3	0	3	2	0
CALDWELL	71	14	15	9	25	5	3
CALLOWAY	128	11	80	5	21	7	4
CAMPBELL	15	0	1	1	8	5	0
CARLISLE	27	1	10	1	12	3	0
CARROLL	20	0	4	2	13	1	0
CARTER	28	1	8	3	12	0	4
CASEY	31	7	10	0	2	12	0
CHRISTIAN	90	11	23	3	35	17	1
CLARK	30	1	13	1	14	1	0
CLAY	2	0	1	1	0	0	0
CLINTON	10	3	3	0	4	0	0
CRITTENDEN	37	5	0	9	15	5	3
CUMBERLAND	8	0	3	2	1	1	1
DAVIESS	240	39	30	9	91	68	3
EDMONSON	15	0	8	1	6	0	0
ELLIOTT	27	0	12	3	9	3	0
ESTILL	17	1	4	3	4	5	0
FAYETTE	485	22	41	26	351	35	10
FLEMING	35	2	18	1	11	1	2
FLOYD	9	0	0	1	7	1	0
FRANKLIN	67	0	8	3	47	8	1
FULTON	10	5	0	0	5	0	0
GALLATIN	4	2	2	0	0	0	0
GARRARD	8	0	1	0	5	1	1
GRANT	37	0	7	2	25	2	1
GRAVES	34	6	17	3	4	4	0
GRAYSON	22	4	0	0	15	1	2
GREEN	10	2	3	0	5	0	0
GREENUP	8	0	2	0	4	2	0
HANCOCK	23	6	7	3	4	1	2
HARDIN	32	5	11	1	14	3	0
HARLAN	5	0	0	0	3	1	1
HARRISON	20	2	2	1	11	3	1
HART	17	1	5	1	2	8	0
HENDERSON	43	12	3	2	15	11	0
HENRY	24	4	9	2	5	4	0
HICKMAN	10	4	0	1	2	3	0
HOPKINS	55	6	3	6	29	9	2
JACKSON	20	4	0	5	10	1	0
JEFFERSON	60	1	0	1	52	6	0
JESSAMINE	36	0	7	1	24	4	0
JOHNSON	12	0	3	1	5	2	1
KENTON	63	0	4	6	45	7	1
KNOTT	0	0	0	0	0	0	0
KNOX	8	1	3	1	3	0	0



COUNTY	Total	Agronomic <sup>1</sup>	Tobacco	Fruit	Ornamental	Vegetable	Other
LARUE	24	8	9	0	5	2	0
LAUREL	21	0	1	0	16	4	0
LAWRENCE	6	1	1	0	2	2	0
LEE	0	0	0	0	0	0	0
LESLIE	13	0	0	5	5	2	1
LETCHER	10	0	0	2	4	3	1
LEWIS	24	2	11	2	4	5	0
LINCOLN	15	1	5	1	7	1	0
LIVINGSTON	11	3	0	1	4	3	0
LOGAN	66	20	22	2	12	9	1
LYON	14	2	5	1	5	1	0
McCRACKEN	65	0	1	8	37	18	1
McCREARY	3	1	0	0	2	0	0
McLEAN	13	7	2	1	3	0	0
MADISON	52	1	19	3	24	4	1
MAGOFFIN	5	0	2	1	0	2	0
MARION	43	10	5	1	23	3	1
MARSHALL	51	1	6	1	38	4	1
MARTIN	6	0	0	1	4	1	0
MASON	10	1	2	2	4	1	0
MEADE	51	12	6	0	27	6	0
MENIFEE	7	0	2	3	1	1	0
MERCER	14	2	2	0	8	2	0
METCALFE	7	2	2	0	3	0	0
MONROE	8	2	3	1	0	2	0
MONTGOMERY	48	0	15	3	23	5	2
MORGAN	31	1	14	3	6	3	4
MUHLENBERG	32	2	15	0	11	2	2
NELSON	29	5	5	3	12	4	0
NICHOLAS	10	1	6	0	1	2	0
OHIO	11	2	3	1	4	1	0
OLDHAM	17	0	2	1	9	5	0
OWEN	15	1	8	2	4	0	0
OWSLEY	3	0	1	1	1	0	0
PENDELTON	3	0	2	0	1	0	0
PERRY	4	1	0	0	3	0	0
PIKE	7	0	0	1	6	0	0
POWELL	5	0	2	1	2	0	0
PULASKI	78	4	5	2	40	17	10
ROBERTSON	14	1	8	1	4	0	0
ROCKCASTLE	0	0	12	0	2	1	1
ROWAN	45	1	10	1	29	1	3
RUSSELL	24	3	4	2	10	6	1
SCOTT	29	1	6	1	7	14	0
SHELBY	105	8	26	2	63	6	0
SIMPSON	50	17	16	0	14	3	0
SPENCER	19	2	8	0	9	0	0
TAYLOR	24	8	5	2	6	3	0
TODD	68	16	25	4	16	7	0
TRIGG	52	23	7	3	13	4	2
TRIMBLE	4	0	1	1	1	1	0
UNION	12	7	1	0	4	0	0
WARREN	98	18	11	8	58	3	0
WASHINGTON	25	4	2	0	16	3	0
WAYNE	44	7	17	3	10	7	0
WEBSTER	32	11	4	4	9	4	0
WHITLEY	16	2	2	2	6	3	1
WOLFE	8	1	7	0	0	0	0
WOODFORD	56	4	9	10	31	2	0
Out-of-State	31	2	22	1	5	1	0
<b>TOTALS</b>	<b>3995</b>	<b>451</b>	<b>870</b>	<b>246</b>	<b>1860</b>	<b>482</b>	<b>86</b>

<sup>1</sup> Agronomic crops include corn, soybeans, forages, and small grains but in this particular case, it excludes tobacco.

Table 9.

**THE NUMBER OF CASES IN WHICH EXTENSION SPECIALISTS, DIAGNOSTICIANS OR RESEARCHERS WERE INVOLVED IN MAKING A PRIMARY DIAGNOSIS AND THE NUMBER OF CASES IN WHICH THEY SERVED AS CONSULTANTS.**

Specialists, Researchers, Diagnosticians	Department	Number of cases	
		Primary Diagnosis <sup>1</sup>	Consultations <sup>2</sup>
<b>LEXINGTON</b>			
Anderson, RG	Horticulture	6	19
Bale, Sharon	Horticulture	1	0
Beale, JW (Diagnostician)	Plant Pathology	2046	21
Bessin, RT	Entomology	21	5
Bitzer, MJ	Agronomy	2	1
Durham, RE	Horticulture	1	0
Fountain, WM	Horticulture	1	6
Green, JD	Agronomy	17	12
Hartman, JR	Plant Pathology	121	11
Henning, JC	Agronomy	4	4
Nesmith, WC	Plant Pathology	142	44
Palmer, GK	Agronomy	24	0
Pearce, RC	Agronomy	2	3
Powell, AJ	Agronomy	0	1
Rowell, AB	Horticulture	1	12
Strang, JG	Horticulture	1	4
Townsend, LH	Entomology	47	16
Vincelli, PC	Plant Pathology	130	20
Wells, KL	Agronomy	0	1
<b>PRINCETON</b>			
Bachi, PR (Diagnostician)	Plant Pathology	1139	161
Brown, GR	Horticulture	1	2
Dunwell, WC	Horticulture	29	25
Herbek, JH	Agronomy	8	12
Hershman, DE	Plant Pathology	31	7
Johnson, DW	Entomology	13	10
Lacefield, GD	Agronomy	8	0
Martin, JR	Agronomy	73	23
Murdock, LW	Agronomy	28	10
Maksymowicz, WC	Agronomy	92	15
Rasnake, M	Agronomy	6	2

<sup>1</sup> The specialist or diagnostician signing the Plant Diagnostic Form was considered the primary diagnoser.

<sup>2</sup> In some cases, more than one person was consulted, however, only one name can be entered into the computer database. Therefore, these numbers may indicate fewer consultations than were actually performed.

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<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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**AGRONOMIC CROPS**

**CORN (Zea)**

Anthracnose	- Colletotrichum	0	1	1
Chemical injury	- herbicide	21	2	23
	- unknown	2	0	2
Cultural	- poor soil	1	0	1
	- unknown	1	0	1
Ear/Kernel rots	- Fusarium	0	1	1
	- Gibberella	0	1	1
	- Stenocarpella	5	0	5
Environmental	- stresses	10	1	11
Gray leaf spot	- Cercospora	3	2	5
Inadequate specimen, no disease		33		33
Insect injury		15	7	22
Nutritional	- acid soil	5	2	7
	- fertilizer burn	4	0	4
	- general	1	0	1
	- manganese toxicity	3	1	4
	- nitrogen deficiency	1	2	3
	- phosphorus deficiency	2	1	3
	- potassium deficiency	5	0	5
	- soluble salts	3	0	3
	- zinc deficiency	18	0	18
	Pollination problem	- unknown	1	0
Root problem	- unknown	2	0	2
Root rot	- Pythium	3	0	3
Rust, common	- Puccinia	1	1	2
Seedling rot	- unknown	1	0	1
Southern leaf blight	- Cochilobulus	2	0	2
Stalk rot	- Gibberella	6	1	7
	- Stenocarpella	1	1	2
	- unknown	1	1	2
Virus	- complex	2	0	2
	- Maize chlorotic dwarf	0	2	2
	- Maize dwarf mosaic	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<u>FORAGES</u>					
<b>ALFALFA (Medicago)</b>					
	Chemical injury	- herbicide	1	0	1
		- unknown	2	0	2
	Crown/root rot	- Fusarium	1	0	1
	Crown/stem rot	- Sclerotinia	1	0	1
	Environmental stresses		8	0	8
	Inadequate specimen, no disease		14		14
	Insect injury		6	0	6
	Leaf spot	- Cercospora	2	0	2
		- Leptosphaerulina	3	2	5
		- Stemphyllium	1	0	1
	Nutritional	- acid soil	1	0	1
		- boron deficiency	2	2	4
		- general	1	0	1
		- nitrogen deficiency	1	0	1
		- potassium deficiency	1	0	1
	Root rot	- Pythium	2	0	2
	Rust	- Uromyces	1	0	1
	Seedling blight	- Aphanomyces	0	1	1
	Spring black stem	- Phoma	0	1	1
	Stem canker	- Rhizoctonia	1	2	3
<b>BROMEGRASS (Bromus)</b>					
	Powdery mildew	- Erysiphe	1	0	1
<b>CLOVER (Trifolium)</b>					
	Powdery mildew	- Erysiphe	1	0	1
<b>FESCUE (Fescuta)</b>					
	Anthracnose	- Colletotrichum	1	0	1
	Environmental	- compaction	0	1	1
	Rust	- Puccinia	1	0	1
<b>ORCHARDGRASS (Dactylis)</b>					
	Brown stripe	- Cercosporidium	3	0	3
	Environmental	- frost injury	1	0	1
	Ergot	- Claviceps	1	0	1
	No disease		2		2
<b>TIMOTHY (Phleum)</b>					
	Environmental	- drought	1	0	1
	No disease		1		1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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SOYBEAN

**SOYBEAN (Glycine)**

Anthracnose	- Colletotrichum	0	1	1
Brown spot	- Septoria	0	1	1
Charcoal rot	- Macrophomina	2	3	5
Chemical injury	- herbicide, growth reg.	11	5	16
Downy mildew	- Peronospora	0	1	1
Environmental stresses		5	1	6
Frogeye	- Cercospora	3	0	3
Inadequate specimen, no disease		11		11
Insect injury		0	2	2
Nutritional	- acid soil	4	1	5
	- manganese deficiency	4	1	5
	- nitrogen deficiency	1	0	1
	- poor nodulation	1	0	1
	- potassium deficiency	5	1	6
Physical injury	- unknown	1	0	1
Physiological	- maturity	1	0	1
Pod and stem blight	- Diaporthe	1	0	1
Purple seed	- Cercospora	3	0	3
Root knot nematode	- Meloidogyne	1	0	1
Root rot	- Fusarium	2	1	3
	- Pythium	1	0	1
Root/stem rot	- Rhizoctonia	8	2	10
Slime mold	- species	1	0	1
Southern blight	- Sclerotium	1	0	1
Soybean cyst nematode - on plant samples		6	7	13
Heterodera	* in soil samples	249		249
	* absent in soil samples	33		33
	(*soil submitted to Nematode Analysis Laboratory)			
Stem canker	- Diaporthe	5	2	7
Stem rot	- Fusarium	4	0	4
Sudden death	- Fusarium	38	1	39
Virus	- unknown	1	0	1
Wilt	- Phytophthora	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<u>SMALL GRAINS</u>					
<b>OAT (Avena)</b>					
	Virus	- Barley yellow dwarf	1	0	1
<b>RYE (Secale)</b>					
	Nutritional	- nitrogen deficiency	1	0	1
<b>SORGHUM (Sorghum)</b>					
	No disease		1		1
	Stalk rot	- Fusarium	1	0	1
	Virus	- Maize dwarf mosaic	3	0	3
<b>WHEAT (Triticum)</b>					
	Anthraxnose	- Colletotrichum	0	1	1
	Chemical injury	- herbicide	2	0	2
	Environmental	- cold injury	8	0	8
	Glume blotch	- Stagonospora	1	0	1
	Head blight	- Fusarium	1	0	1
	Leaf blotch	- Staganospora	1	1	2
	Leaf spot	- Septoria	0	1	1
	Inadequate specimen, no disease		19		19
	Nutritional	- acid soil	4	0	4
		- fertilizer burn	1	0	1
		- nitrogen deficiency	1	0	1
	Powdery mildew	- Erysiphe	9	1	10
	Take-all	- Gaeumannomyces	8	1	9
	Tan spot	- Pyrenophora	1	0	1
	Virus	- Barley yellow dwarf	8	3	11
		- potyvirus	0	3	3
		- Wheat soil-borne mosaic	2	0	2
		- Wheat spindle streak mosaic	20	4	24
		- Wheat streak mosaic	19	5	24

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<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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TOBACCO

**TOBACCO (Nicotiana)**

Angular leaf spot	- Pseudomonas	8	0	8
Bacterial soft rot	- Erwinia	3	2	5
Black root rot	- Thielaviopsis	7	5	12
Black shank	- Phytophthora	156	9	165
Blackleg	- Erwinia	5	0	5
Blue mold	- Peronospora	30	7	37
Brown spot	- Alternaria	0	4	4
Chemical injury	- fungicide	4	0	4
	- growth regulator	9	1	10
	- herbicide	48	5	53
	- sucker agent	6	0	6
	- unknown	17	2	19
Collar rot	- Sclerotinia	2	0	2
Cultural	- various problems	29	6	35
Damping-off	- Rhizoctonia	1	2	3
Early flowering	- environmental	1	0	1
Environmental	- cold injury	5	1	6
	- compaction	6	5	11
	- driving rain	1	0	1
	- hail injury	1	0	1
	- lightning	5	1	6
	- stress	8	4	12
	- weather scald	6	0	6
	- wet feet	3	1	4
Frogeye	- Cercospora	4	1	5
Hollow stalk	- Erwinia	4	2	6
Improper curing	- greening	1	0	1
Inadequate specimen, no disease		82		82
Insect injury		4	0	4
Leaf breakoff	- unknown	1	0	1
Nutritional	- acid soil	24	33	57
	- calcium deficiency	0	1	1
	- fertilizer burn	7	1	8
	- general	11	1	12
	- iron deficiency	1	0	1
	- manganese toxicity	42	1	43
	- nitrogen deficiency	4	1	5
	- potassium deficiency	15	0	15
	- phosphorus deficiency	4	1	5
	- pH high	0	1	1
	- soluble salts	3	3	6
- temp. phosphorus def.	7	6	13	
Physical injuries		2	1	3
Physiological	- leaf breakdown	4	0	4
	- leaf spot	3	1	4
Root knot nematode	- Meloidogyne	0	1	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
Root rot		- Fusarium	0	4	4
		- Pythium	52	12	64
Root/stem rot		- Rhizoctonia	5	3	8
Soft rot		- Pythium	1	0	1
Sore shin		- Rhizoctonia	25	18	43
Stem girdling		- Rhizoctonia	7	1	8
Stem rot		- Fusarium	3	3	6
Storage mold		- Aspergillus	1	0	1
		- fungal	1	0	1
Stunting		- unknown	1	0	1
Target spot		- Rhizoctonia	26	7	33
Virus		- Alfalfa mosaic	7	6	13
		- Cucumber mosaic	12	1	13
		- complex	7	3	10
		- Impatiens necrotic spot	1	1	2
		- Potato virus Y	1	0	1
		- Poty virus	4	9	13
		- Tobacco etch	5	4	9
		- Tobacco mosaic	9	0	9
		- Tobacco ringspot	3	2	5
		- Tobacco streak	11	3	14
		- Tobacco vein mottling	3	1	4
		- Tomato spotted wilt	65	7	72
		- unknown	11	1	12
Weather fleck		- ozone	2	0	2
Wilt		- Fusarium	21	7	28



<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>FRUIT CROPS</b>					
<u>SMALL FRUITS</u>					
<b>BLUEBERRY (<i>Vaccinium</i>)</b>					
Environmental	- drought		0	1	1
	- transplant shock		1	0	1
No disease			1		1
Nutritional	- iron deficiency		3	0	3
	- manganese toxicity		1	0	1
	- pH high		0	1	1
<b>BRAMBLES - BLACKBERRY, and RASPBERRY (<i>Rubus</i>)</b>					
Anthracnose	- Elsinoe		4	1	5
Cane and Leaf rust	- Kuehneola		1	0	1
Cane blight	- Coniothyrium		1	0	1
Canker	- unknown		1	0	1
Chemical injury	- growth regulator		2	0	2
Crown gall	- Agrobacterium		0	1	1
Environmental stresses			4	0	4
Fruit rot	- Alternaria		1	0	1
Gray mold	- Botrytis		2	1	3
Inadequate specimen, no disease			10		10
Insect injury			4	2	6
Leaf spot	- Septoria		2	0	2
Nutritional	- general		1	0	1
Physiological	- white druplet		2	1	31
Root rot	- Phytophthora		2	0	2
Rust, orange	- Gymnoconia		2	1	3
Virus	- sterility		1	0	1
	- Tobacco ringspot virus		1	0	1
Wilt	- Verticillium		1	0	1
<b>CURRENT and GOOSEBERRY (<i>Ribes</i>)</b>					
Powdery mildew	- Oidium		1	0	1
	- Sphaerotheca		1	0	1
Insect injury			2	0	2
Lichen	- species		1	0	1
<b>GRAPE (<i>Vitis</i>)</b>					
Anthracnose	- Elsinoe		3	0	3
Black rot	- Guignardia		13	2	15
Chemical injury	- growth regulator		2	0	2
	- unknown		1	0	1
Crown gall	- Agrobacterium		1	0	1
Environmental	- stress		0	1	1
Inadequate specimen, no disease			2		2
Insect injury			2	0	2
Nutritional	- potassium deficiency		1	0	1
Root rot	- Fusarium		1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>STRAWBERRY (Fragaria)</b>					
	Anthracnose	- Colletotrichum	3	0	3
	Blight	- Botrytis	1	0	1
	Chemical injury	- herbicide	1	0	1
	Inadequate specimen, no disease		6		6
	Leaf spot	- Mycosphaerella	2	0	2
		- Septoria	1	0	1
	Root rot	- Phytophthora	1	0	1
<u>TREE FRUITS</u>					
<b>APPLE (Malus)</b>					
	Bitter rot	- Glomerella	4	0	4
	Black rot	- Botryosphaeria	1	0	1
	Blotch	- Phyllosticta	1	0	1
	Cedar apple rust	- Gymnosporangium	13	3	16
	Chemical injury	- fungicide	1	0	1
		- herbicide	1	0	1
	Cultural	- transplant shock	0	1	1
	Environmental stresses		5	1	6
	Fire blight	- Erwinia	12	2	14
	Flyspeck	- Schizothyrium	0	1	1
	Frogeye	- Botryosphaeria	4	1	5
	Inadequate specimen, no disease		5		5
	Insect injury		11	5	16
	Leaf spot	- physiological	1	0	1
	Necrotic leaf blotch	- Glomerella	3	0	3
	Nutritional	- unknown	0	1	1
	Physical injury	- unknown	0	1	1
	Powdery mildew	- Podosphaera	1	0	1
	Root rot	- Rhizoctonia	1	0	1
	Scab	- Venturia	7	0	7
	Sooty blotch	- Gloeodes	2	0	2
	Zonate spot	- Cristulariella	1	0	1
<b>CHERRY (Prunus)</b>					
	Bacterial canker	- Pseudomonas	1	0	1
	Cultural	- transplant shock	2	0	2
	Environmental stresses		3	1	4
	Insect injury		0	1	1
	Inadequate specimen, no disease		3		3
	Nutritional	- general	1	0	1
<b>PAWPAW (Asimina)</b>					
	Chemical injury	- growth regulator	1	0	1
	Cultural	- transplant shock	1	0	1
	Inadequate specimen		1	0	1
	Leaf spot	- Phyllosticta	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>PEACH and NECTARINE (Prunus)</b>					
	Bacterial spot	- Xanthomonas	1	0	1
	Brown rot	- Monilinia	2	1	3
	Canker	- Leucostoma	0	1	1
	Chemical injury	- herbicide	1	0	1
	Cultural	- improper depth	1	0	1
		- transplant shock	0	1	1
	Inadequate specimen, no disease		4		4
	Insect injury		9	0	9
	Leaf curl	- Taphrina	5	0	5
	Leaf scorch	- unknown	1	0	1
	Nutritional	- nitrogen deficiency	1	0	1
	Physical injury	- unknown	0	1	1
	Scab	- Fusicladium	2	2	4
<b>PEAR (Pyrus)</b>					
	Chemical injury	- growth regulator	1	0	1
	Cork spot	- calcium deficiency	1	0	1
	Cultural	- transplant shock	3	0	3
	Fire blight	- Erwinia	3	0	3
	Insect injury		4	0	4
	Leaf scorch	- unknown	1	0	1
	No disease		3		3
	Sooty mold	- species	1	0	1
<b>PECAN (Carya)</b>					
	Inadequate specimen		1		1
	Insect injury		6	1	7
	Nut rot	- Fusarium	0	1	1
	Physiological	- internal breakdown	2	0	2
	Scab	- Cladosporium	2	0	2
<b>PLUM (Prunus)</b>					
	Bacterial spot	- Xanthomonas	1	0	1
	Black knot	- Apiosporina	1	0	1
	Chemical injury	- growth regulator	0	1	1
	Cultural	- transplant shock	0	1	1
	Insect injury		1	0	1
	Leaf spot	- Blumeriella	1	0	1
	Plum pockets	- Taphrina	4	0	4
<b>HERBS</b>					
<b>BASIL (Ocimum)</b>					
	Environmental	- frost injury	1	0	1
	Stem canker	- Fusarium	1	0	1
<b>DILL (Anethum)</b>					
	Nutritional	- soluble salts	1	0	1

<b>CROP</b>	<b>DIAGNOSIS</b>	<b>CAUSAL AGENT</b>	<b>#1° DIAGs</b>	<b>#2° DIAGs</b>	<b>TOTAL</b>
<b>GINSENG (Panax)</b>					
	Blight	- Alternaria	2	0	2
<b>GOLDENSEAL (Hydrastis)</b>					
	No disease		1		1
<b>LAVENDER (Lavandula)</b>					
	Black root rot	- Thielaviopsis	1	0	1
	Cultural	- overwatering	1	0	1
	Root rot	- Pythium	1	0	1
<b>MINT (Mentha)</b>					
	Insect injury		1	0	1
	Nutritional	- soluble salts	1	0	1
<b>OREGANO (Origanum)</b>					
	Bacterial spot	- unknown	1	0	1
<b>PARSLEY (Petroselinum)</b>					
	Crown rot	- Erwinia	1	0	1
	Root/stem rot	- Rhizoctonia	0	1	1
<b>ROSEMARY (Rosemarinus)</b>					
	No disease		3		3
	Nutritional	- fertilizer burn	1	0	1
	Powdery mildew	- Oidium	2	0	2
<b>ST. JOHN'S WORT (Hypericum)</b>					
	Nutritional	- pH high	1	0	1
<b>YARROW (Achillea)</b>					
	No disease		1		1
<b>IDENTIFICATIONS</b>					
<b>FUNGAL IDENTIFICATION</b>					
	Basidiomycete	- species	10		10
	Calvatia	- species	2		2
	Cantharellus	- species	1		1
	Cyathus	- striatus	1		1
	Hydnum	- caput-ursi	1		1
	Hygrophorus	- species	1		1
	Inadequate specimen		3		3
	Mold	- unknown	1		1
	Mutinus	- caninus	1		1
	Polyporus	- frondosus	2		2
		- squamosus	1		1
	Slime mold	- species	9		9
	Sphaerobolus	- species	1		1
	Trametes	- versicolor	1		1
	Trichoderma	- species	1		1

<b>CROP</b>	<b>DIAGNOSIS</b>	<b>CAUSAL AGENT</b>	<b>#1° DIAGs</b>	<b>#2° DIAGs</b>	<b>TOTAL</b>
<b>LICHEN</b>					
		- species	1		1
<b>PLANT IDENTIFICATIONS</b>					
	Artemesia	- vulgaris	1		1
	Callicarpa	- dichotoma	1		1
	Cornus	- racemosa	1		1
	Eleagnus	- umbellata	1		1
	Euphorbia	- maculata	1		1
	Fraxinus	- americana	1		1
	Hypericum	- species	1		1
	Lathyrus	- hirsutus	1		1
	Lemna	- species	1		1
	Liverwort	- species	2		2
	Nandina	- domestica	1		1
	Perilla	- frutescens	1		1
	Prunus	- serotina	1		1
	Pyrus	- species	2		2
	Sedum	- species	1		1
	Staphylea	- trifolia	1		1
<b>MISCELLANEOUS</b>					
<b>ARABIDOPSIS (Arabidopsis)</b>					
	Root rot	- Pythium	1	0	1
<b>POTATO FRUIT</b>					
		- normal	1	0	1
<b>MULCH</b>					
	Fermented bark	- acid	1	0	1
<b>NICOTIANA (Nicotiana)</b>					
	Leaf spot	- Alternaria	1	0	1
	No disease		1		1
<b>ROOF MATERIAL</b>					
	Brown rot	- Basidiomycete			
<b>SICKLE-POD (Arabis)</b>					
	Root rot	- Pythium	1	0	1
<b>SOIL</b>					
	No disease		1		1
	Nutritional	- acid soil	1	0	1
		- soluble salts	1	0	1
<b>UNKNOWN</b>					
	Inadequate specimen		1		1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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**ORNAMENTALS**

HERBACEOUS ORNAMENTALS and INDOOR PLANTS

<b>AFRICAN VIOLET (Saintpaulia)</b>					
	Powdery mildew	- Oidium	1	0	1
<b>ALLAMANDA (Allamanda)</b>					
	No disease		1		1
<b>ALYSSUM (Alyssum)</b>					
	Crown rot	- Sclerotinia	1	0	1
	Inadequate specimen		2		2
<b>ANGELONIA (Angelonia)</b>					
	Stem rot	- Sclerotinia	1	0	1
<b>ASTER (Aster)</b>					
	Environmental	- stress	1	0	1
	Gray mold	- Botrytis	0	1	1
	No disease		1		1
<b>ASTILBE (Astilbe)</b>					
	Black root rot	- Thielaviopsis	1	0	1
	Insect injury		1	0	1
<b>BACHELOR'S BUTTON (Centaurea)</b>					
	Insect injury		1	0	1
<b>BEGONIA (Begonia)</b>					
	Bacterial leaf spot	- Xanthomonas	1	0	1
	Cultural	- oedema	0	1	0
		- transplant shock	1	0	1
	Gray mold	- Botrytis	1	0	1
	Insect injury		1	0	1
	No disease		1		1
<b>BENJAMIN FIG (Ficus)</b>					
	Insect injury		1	0	1
	No disease		1		1
<b>BERGAMOT (Monarda)</b>					
	Powdery mildew	- species	1	0	1
<b>BISHOP'S FLOWER (Amni)</b>					
	No disease				
<b>BIRD OF PARADISE (Strelitzia)</b>					
	Insect injury		1	0	1
	Root problem	- unknown	1	0	1
<b>BUTTERCUP (Ranunculus)</b>					
	Downy mildew	- Peronospora	1	0	1

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<b>CABBAGE (Brassica)</b>	Nutritional	- general	1	0	1
<b>CACTUS (various)</b>	Inadequate specimen		1		1
	Insect injury		2	0	2
	Root rot	- Pythium	1	0	1
<b>CALYBROCHOA (Calybrochoa)</b>	Black root rot	- Thielaviopsis	1	0	1
	Nutritional	- pH high	1	0	1
<b>CANNA (Canna)</b>	No disease		1		1
<b>CENTURY PLANT (Agave)</b>	Insect injury		1	0	1
<b>CHRYSANTHEMUM (Chrysanthemum)</b>	Blight	- Botrytis	2	1	3
	Chemical injury	- unknown	1	0	1
	Environmental	- stress	1	0	1
	Fading	- genetic	1	0	1
	Inadequate specimen, no disease		3		3
	Insect injury		2	1	3
	Leaf spot	- Pseudomonas	1	0	1
	Nutritional	- fertilizer burn	0	2	2
		- soluble salts	1	0	1
	Root rot	- Pythium	8	0	8
	Root/stem rot	- Rhizoctonia	1	0	1
<b>CLEMATIS (Clematis)</b>	No disease		1		1
	Scorch	- unknown	1	0	1
<b>CONEFLOWER, PURPLE (Echinacea)</b>	Crown rot	- Fusarium	1	0	1
	No disease		1		1
	Southern blight	- Sclerotium	1	0	1
<b>COREOPSIS (Coreopsis)</b>	Root rot	- Fusarium	1	0	1
	Stem rot	- Rhizoctonia	0	1	1
<b>CYCLAMEN (Cyclamen)</b>	Root rot	- Fusarium	0	1	1
		- Pythium	1	0	1
<b>DAHLIA (Dahlia)</b>	Insect injury		2	0	2

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<b>DAISY (Gerbera)</b>					
	Cultural	- overwatering	1	0	1
	Insect injury		1	0	1
	Root rot	- Pythium	0	1	1
<b>DAYLILY (Hemerocallis)</b>					
	Leaf spot	- Aureobasidium	1	0	1
		- fungal	2	0	2
	No disease		2		2
	Root rot	- Cylandrocladium	1	0	1
		- Pythium	1	0	1
		- Rhizoctonia	0	1	1
<b>DELPHINIUM (Delphinium)</b>					
	Basal rot	- Fusarium	1	0	1
<b>DIANTHUS (Dianthus)</b>					
	Anthracnose	- Colletotrichum	1	0	1
<b>DIEFFENBACHIA (Dieffenbachia)</b>					
	Inadequate specimen		1		1
<b>DIPLODENIA (Diplodenia)</b>					
	No disease		1		1
<b>DRACAENA (Dracaena)</b>					
	Cultural	- insufficient water	1	0	1
	No disease		1		1
<b>ELEPHANT'S EAR (Caladium)</b>					
	No disease		1		1
<b>EPIMEDIUM (Epimedium)</b>					
	Bacterial leaf spot	- Xanthomonas	1	0	1
<b>EUSTOMA (Eustoma)</b>					
	Gray mold	- Botrytis	1	0	1
<b>FALSE SOLOMON'S SEAL (Smilacina)</b>					
	Leaf spot	- Phyllosticta	1	0	1
<b>FERN (various)</b>					
	Anthracnose	- Colletotrichum	2	0	2
	Chemical injury	- herbicide	2	0	2
	Environmental	- stress	1	0	1
	No disease		2		2
	Root rot	- Rhizoctonia	1	0	1
<b>FORGET ME NOT (Myosotis)</b>					
	Insect injury		1	0	1
<b>FUCHSIA (Fuchsia)</b>					
	Chemical injury	- growth regulator	1	0	1



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<b>GARDENIA (Gardenia)</b>					
	No disease		1		1
<b>GERANIUM (Pelargonium)</b>					
	Bacterial blight	- Xanthomonas	2	0	2
	Bacterial leaf spot	- Pseudomonas	1	0	1
	Chemical injury	- herbicide	1	0	1
	Cultural	- oedema	0	2	2
	Inadequate specimen, no disease		4		4
	Insect injury		1	0	1
	Nutritional	- acid soil	1	0	1
		- nitrogen deficiency	0	1	1
		- pH high	2	0	2
	Root rot	- Pythium	2	1	3
		- Rhizoctonia	1	1	2
<b>GILLARDIA (Gillardia)</b>					
	Black root rot	- Thielaviopsis	1	0	1
<b>GLADIOLUS (Gladiolus)</b>					
	Dry rot	- Botrytis	1	0	1
<b>GLOXINIA (Gloxinia)</b>					
	Environmental	- sunscald	1	0	1
	No disease		1		1
<b>HEUCHERA (Heuchera)</b>					
	Bacterial leaf spot	- Pseudomonas	1	0	1
<b>HOLLYHOCK (Althaea)</b>					
	Chemical injury	- growth regulator	1	0	1
	Insect injury		1	0	1
	No disease		1		1
	Nutritional	- unknown	1	0	1
	Rust	- Puccinia	1	0	1
<b>HOSTA (Hosta)</b>					
	Bacterial soft rot	- Erwinia	1	0	1
	Environmental stresses		2	0	2
	Insect injury		1	0	1
	Root rot	- Rhizoctonia	1	0	1
	Southern blight	- Sclerotium	1	0	1
<b>IMPATIENS (Impatiens)</b>					
	Bacterial leaf spot	- Pseudomonas	1	0	1
	Cultural	- overwatering	1	0	1
	Inadequate specimen, no disease		5		5
	Insect injury		4	0	4
	Nutritional	- fertilizer burn	2	0	2
	Root rot	- Pythium	0	1	1
	Root/stem rot	- Rhizoctonia	7	0	7
	Virus	- Impatiens necrotic spot	1	0	1

<b>CROP</b>	<b>DIAGNOSIS</b>	<b>CAUSAL AGENT</b>	<b>#1° DIAGs</b>	<b>#2° DIAGs</b>	<b>TOTAL</b>
<b>IRIS (Iris)</b>					
	Bacterial soft rot	- Erwinia	1	0	1
	Chemical injury	- herbicide	1	0	1
	Leaf spot	- Didymellina	2	1	3
		- Heterosporium	3	0	3
	No disease		1		1
	Physical injury	- unknown	1	0	1
	Root rot	- Pythium	0	1	1
		- Rhizoctonia	1	0	1
	Rust	- Puccinia	1	0	1
<b>IVY (Hedera and others)</b>					
	Bacterial spot	- Xanthomonas	8	0	8
	Insect injury		0	1	1
<b>JACK-IN-THE-PULPIT (Arisaema)</b>					
	Rust	- Uromyces	1	0	1
<b>JADE PLANT (Crassula)</b>					
	Cultural	- insufficient water	1	0	1
<b>LILY (Lilium)</b>					
	No disease		2		2
	Root rot	- Rhizoctonia	2	0	2
<b>LIRIOPE (Liriope)</b>					
	Anthrachnose	- Colletotrichum	1	0	1
<b>LYCHNIS (Lychnis)</b>					
	Basal rot	- Fusarium	1	0	1
	Stem rot	- Rhizoctonia	0	1	1
<b>MALLOW (Malva)</b>					
	Basal rot	- Fusarium	1	1	2
	Physical injury	- unknown	1	0	1
<b>MARIGOLD (Tagetes)</b>					
	Insect injury		2	0	2
	Leaf spot	- Alternaria	2	0	2
	No disease		2		2
	Nutritional	- nitrogen deficiency	0	1	1
		- phosphorus deficiency	1	0	1
	Root/stem rot	- Rhizoctonia	1	0	1
<b>MELAMPODIUM (Melampodium)</b>					
	Chemical injury	- growth regulator	1	0	1
	Insect injury		1	0	1
<b>MERMAID VINE (Rhoicissus)</b>					
	Inadequate specimen		1		1
<b>MORNING GLORY (Ipomoea)</b>					
	No disease		1		1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>NORFOLK ISLAND PINE (<i>Araucaria</i>)</b>					
	No disease		2		2
<b>ORCHID (various)</b>					
	Anthrachnose	- <i>Gloeosporium</i>	1	0	1
	Inadequate specimen		1		1
	Insect injury		1	0	1
	Root rot	- <i>Pythium</i>	1	0	1
		- <i>Rhizoctonia</i>	0	1	1
<b>PACHYSANDRA (<i>Pachysandra</i>)</b>					
	Leaf/stem blight	- <i>Pseudonectria</i>	2	0	2
<b>PALM (various)</b>					
	Insect injury		1	0	1
	Leaf spot	- physiological	1	0	1
	No disease		1		1
<b>PAMPAS GRASS (<i>Cortaderia</i>)</b>					
	No disease		1		1
<b>PANSY (<i>Viola</i>)</b>					
	Black root rot	- <i>Thielaviopsis</i>	2	0	2
	Environmental	- stress	1	0	1
	Nutritional	- general	1	0	1
	Root rot	- <i>Pythium</i>	1	0	1
<b>PEONY (<i>Paeonia</i>)</b>					
	Anthrachnose	- <i>Gloeosporium</i>	1	0	1
	Chemical injury	- unknown	1	0	1
	Gray mold	- <i>Botrytis</i>	1	1	2
	Insect injury		1	0	1
	No disease		2		2
	Red spot	- <i>Cladosporium</i>	5	1	6
	Root/stem rot	- <i>Rhizoctonia</i>	1	0	1
<b>PERIWINKLE (<i>Vinca</i>)</b>					
	Insect injury		1	0	1
	Root/stem rot	- <i>Rhizoctonia</i>	1	0	1
	Southern blight	- <i>Sclerotium</i>	1	0	1
<b>PETUNIA (<i>Petunia</i>)</b>					
	Air pollution	- ethylene	1	0	1
	Black root rot	- <i>Thielaviopsis</i>	1	1	2
	Chemical injury	- insecticide	1	0	1
	Cultural	- overwatering	1	0	1
	Gray mold	- <i>Botrytis</i>	1	0	1
	No disease		1		1
	Nutritional	- general	0	2	2
		- pH high	0	1	1
	Root rot	- <i>Pythium</i>	1	2	3
	Root/stem rot	- <i>Rhizoctonia</i>	7	0	7
	Virus	- <i>impatiens necrotic spot</i>	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>PHILODENDRON (Philodendron)</b>					
	Insect injury		1	0	1
	No disease		2		2
	Virus	- cucumber mosaic	1	0	1
<b>PHLOX (Phlox)</b>					
	Chemical injury	- herbicide	1	0	1
	Environmental	- stress	1	0	1
	Leaf spot	- physiological	2	0	2
	No disease		2		2
	Root rot	- Pythium	1	0	1
	Southern blight	- Sclerotium	1	0	1
	Stem canker	- Colletotrichum	3	0	3
<b>POINSETTIA (Euphorbia)</b>					
	Blight	- Botrytis	2	0	2
	No disease		3		3
	Nutritional	- general	1	0	1
		- soluble salts	0	1	1
	Physical injury	- unknown	1	0	1
	Root rot	- Pythium	5	0	5
		- unknown	1	0	1
	Scab	- Sphaceloma	2	0	2
<b>PRIMROSE (Primula)</b>					
	Insect injury		1	0	1
	No disease		1		1
<b>RUBBER PLANT (Ficus)</b>					
	Anthraxnose	- Colletotrichum	1	0	1
<b>RUDBECKIA (Rudbeckia)</b>					
	Bacterial leaf spot	- Pseudomonas	1	0	1
	Inadequate specimen		1		1
	Stem rot	- Fusarium	1	0	1
<b>SALVIA (Salvia)</b>					
	Insect injury		1	0	1
<b>SCHEFFLERA (Brassaia)</b>					
	No disease		2		2
<b>SEDUM (Sedum)</b>					
	No disease		1		1
	Root rot	- Rhizoctonia	1	0	1
	Stem rot	- Colletotrichum	0	1	1
<b>SNAPDRAGON (Antirrhinum)</b>					
	Insect injury		1	0	1
	Root/stem rot	- Rhizoctonia	1	0	1
<b>STAR OF BETHLEHEM (Ornithogalum)</b>					
	Chemical injury	- growth regulator	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>STEPHANOTIS (Stephanotis)</b>					
	No disease		1		1
<b>VERBENA (Verbena)</b>					
	Dieback	- unknown	1	0	1
	No disease		1		1
<b>VERONICA (Veronica)</b>					
	No disease		1		1
<b>VINCA (Vinca)</b>					
	Aerial blight	- Phytophthora	0	1	1
	Canker	- Botrytis	0	1	1
	Cultural	- low temperature	1	0	1
	Inadequate specimen		1		1
	Nutritional	- acid soil	1	0	1
		- iron deficiency	1	0	1
	Leaf stem blight	- Alternaria	1	2	3
	No disease		2		2
	Root rot	- Rhizoctonia	3	0	3
	Southern blight	- Sclerotium	1	0	1
	Stem canker	- Rhizoctonia	3	0	3
	Virus	- impatiens necrotic spot	1	0	1
	Wilt	- Phytophthora	1	0	1
<b>VIOLA (Viola)</b>					
	Leaf spot	- Alternaria	0	1	1
	Stem rot	- Rhizoctonia	1	0	1
<b>WATER LILY (Nymphaea)</b>					
	No disease		1		1
<b>YUCCA (Yucca)</b>					
	Insect injury		1	0	1
	Leaf spot	- Coniothyrium	1	0	1
		- Kellermania	0	1	1
<b>ZINNIA (Zinnia)</b>					
	Bacterial leaf spot	- Xanthomonas	2	0	2
	Blight	- Botrytis	1	0	1
	Inadequate specimen		1		1
	Powdery mildew	- species	0	1	1
	Stem rot	- Rhizoctonia	1	0	1

TURFGRASS

**BENTGRASS (Agrostis)**

Algae	- blue-green	1	0	1
Anthrachnose	- Colletotrichum	4	2	6
Blight	- Pythium	1	0	1
Chemical injury	- herbicide	1	0	1
Cultural	- heavy thatch	1	0	1
	- high temperature	1	0	1
Dollar spot	- Sclerotinia	0	1	1
Environmental	- drought	1	0	1
No disease		5		5
Red leaf spot	- Drechslera	1	0	1
Root rot	- Pythium	1	0	1
	- unknown	1	0	1
Saprophytes	- unknown	1	0	1
Summer patch	- Magnaporthe	0	1	1
Take-all	- Gaeumannomyces	3	0	3
Yellow patch	- Rhizoctonia	3	0	3

**BERMUDAGRASS (Cynodon)**

Crown rot	- Rhizoctonia	1	0	1
Decline	- Gaeumannomyces	1	0	1
Leaf blight	- Bipolaris	1	0	1
Leaf spot	- Curvularia	0	1	1
	- Drechslera	2	0	2

**BLUEGRASS (Poa)**

Anthrachnose	- Colletotrichum	1	0	1
Brown patch	- Rhizoctonia	1	0	1
Dollar spot	- Sclerotinia	0	1	1
Environmental	- stress	1	0	1
Inadequate specimen, no disease		6		6
Leaf spot	- Bipolaris	1	0	1
Necrotic ring spot	- Leptosphaeria	4	0	4
Nutritional	- acid soil	1	0	1
Root rot	- Pythium	1	0	1
Rust	- Puccinia	7	2	9
Slime mold	- species	2	0	2
Summer patch	- Magnaporthe	2	0	2
Yellow patch	- Rhizoctonia	1	0	1

**FESCUE (Festuca)**

Anthrachnose	- Colletotrichum	4	0	4
Brown patch	- Rhizoctonia	16	0	16
Inadequate specimen, no disease	- Colletotrichum	8		8
Leaf spot	- Drechslera	1	0	1
Loose smut	- Ustilago	1	0	1
Nutritional	- acid soil	1	0	1
Rust	- Puccinia	1	1	2
Slime mold	- species	3	0	3
Summer patch	- Magnaporthe	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>RYEGRASS (Lolium)</b>					
	Anthracnose	- Colletotrichum	2	0	2
	Brown patch	- Rhizoctonia	2	0	2
	Chemical injury	- herbicide	1	0	1
	Crown rot	- Pythium	1	0	1
	Dollar spot	- Sclerotinia	1	0	1
	Environmental	- stress	1	0	1
	Gray leaf spot	- Pyricularia	3	0	3
	Leaf blight	- Bipolaris	1	0	1
		- Leptosphaerulina	0	1	1
	Leaf spot	- Curvularia	1	0	1
	No disease		2		2
	Nutritional	- acid soil	0	1	1
	Rust	- Puccinia	1	2	3
<b>TURF (unspecified)</b>					
	Brown patch	- Rhizoctonia	1	0	1
	Chemical injury	- dog urine	1	0	1
	Inadequate specimen, no disease		11		11
	Local dry spot	- environmental	1	0	1
	Loose smut	- Ustilago	1	0	1
	Nutritional	- pH high	1	0	1
	Root rot	- Pythium	1	0	1
		- Rhizoctonia	1	0	1
	Rust	- Puccinia	2	0	2
	Slime mold	- species	2	0	2
	Summer patch	- Magnaporthe	1	0	1
	Take-all	- Gaeumannomyces	1	1	2
	Yellow patch	- Rhizoctonia	1	0	1
<b>ZOYSIA (Zoysia)</b>					
	Blight	- Curvularia	0	1	1
	Environmental	- drought	1	0	1
	Large patch	- Rhizoctonia	1	0	1
	No disease		1		1
	Nutritional	- acid soil	1	0	1
	Rust	- Puccinia	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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WOODY ORNAMENTALS

**ARBORVITAE (Thuja)**

Cultural	- transplant shock	1	1	2
Environmental stresses		4	1	5
Inadequate specimen, no disease		6		6
Insect injury		6	0	6

**ASH (Fraxinus)**

Anthracnose	- Apiognomonina	5	1	6
Ash yellows	- Phytoplasma	2	0	2
Cultural	- transplant shock	1	0	1
Insect injury		3	2	5
Leaf scorch	- unknown	1	0	1
No disease		1		1

**AUSTREE (Salix, hybrid)**

Canker	- fungal	1	0	1
Cultural	- transplant shock	0	1	1

**AZALEA - See listing under RHODODENDRON**

**BALD CYPRESS (Taxodium)**

Cultural	- transplant shock	1	0	1
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**BARBERRY (Berberis)**

Bacterial leaf spot	- Pseudomonas	1	0	1
Environmental	- frost injury	1	0	1
No disease		2		2
Powdery mildew	- Oidium	2	0	2
Root rot	- Phytophthora	1	0	1
Wilt	- Verticillium	1	0	1

**BAYBERRY (Myrica)**

Leaf spot	- fungal	1	0	1
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**BEECH (Fagus)**

Environmental	- drought	1	0	1
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**BIRCH (Betula)**

Anthracnose	- Discula	1	1	2
Environmental	- stress	2	0	2
Insect injury		7	0	7
Leaf spot	- Cryptocline	1	0	1
	- Marssonina	1	0	1
	- Phyllosticta	2	0	2
Nutritional	- general	1	0	1
	- iron deficiency	1	0	1
Sooty mold	- species	1	0	1
Twig canker	- Phomopsis	1	0	1

**BITTERSWEET (Celastrus)**

No disease		1		1
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<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>BLACKGUM (Nyssa)</b>	Inadequate specimen		1		1
<b>BOXELDER (Acer)</b>	Leaf spot	- Phyllosticta	1	0	1
<b>BOXWOOD (Buxus)</b>	Black root rot	- Thielaviopsis	1	0	1
	Canker	- Pseudonectria	2	0	2
	Cultural	- transplant shock	1	0	1
	Environmental stresses		3	0	3
	Inadequate specimen, no disease		5		5
	Insect injury		3	0	3
	Root rot	- Phytophthora	1	0	1
<b>BUCKEYE (Aesculus)</b>	Insect injury		1	0	1
<b>BUTTERFLY BUSH (Buddleja)</b>	Environmental	- frost injury	1	0	1
	Insect injury		3	0	3
<b>BUTTONWOOD (Conocarpus)</b>	Insect injury		1	0	1
	Physiological	- oedema	0	1	1
<b>CHAMAECYPARIS (Chamaecyparis)</b>	Insect injury		2	0	2
<b>CATALPA (Catalpa)</b>	Wilt	- Verticillium	1	0	1
<b>CHERRY (Prunus)</b>	Black knot	- Dibotryon	1	0	1
	Cultural	- transplant shock	3	0	3
	Environmental stresses		7	1	8
	Inadequate specimen, no disease		3		3
	Insect injury		6	2	8
	Leaf spot	- Coccoomyces	1	0	1
	Powdery mildew	- Oidium	1	0	1
<b>CHESTNUT (Castanea)</b>	Chemical injury	- fungicide	1	0	1
		- insecticide	1	0	1
	No disease		3		3
	Root rot	- Phytophthora	4	0	4
		- Pythium	1	0	1
<b>CLETHRA (Clethra)</b>	Root rot	- Phytophthora	1	0	1
<b>COTONEASTER (Cotoneaster)</b>	Insect injury		1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>CRABAPPLE (Malus)</b>					
	Cultural	- transplant shock	3	0	3
	Decline	- unknown	2	0	2
	Environmental stresses		5	1	6
	Fire blight	- Erwinia	1	0	1
	Frogeye	- Sphaeropsis	1	0	1
	Lichen	- species	1	0	1
	No disease		1		1
	Powdery mildew	- Podosphaera	1	0	1
	Scab	- Venturia	26	3	29
	Scorch	- stress	1	0	1
<b>CRAPEMYRTLE (Lagerstroemia)</b>					
	Insect injury		1	0	1
	Powdery mildew	- Erysiphe	1	0	1
	Sooty mold	- species	0	1	1
<b>CYPRESS (Cupressocyparis)</b>					
	Environmental	- drought	1	0	1
	No disease		1		1
	Root problem	- unknown	1	0	1
<b>DOGWOOD (Cornus)</b>					
	Anthraxnose	- Discula	11	0	11
	Chemical injury	- growth regulator	1	0	1
	Cultural	- deep planting	1	0	1
		- poor site	1	0	1
		- transplant shock	4	0	4
	Decline	- unknown	3	0	3
	Environmental stresses		15	3	18
	Inadequate specimen, no disease		14		14
	Insect injury		3	1	4
	Leaf scorch	- drought	1	0	1
		- unknown	2	0	2
	Leaf spot	- Septoria	1	0	1
	Powdery mildew	- Oidium	17	1	18
	Spot anthracnose	- Elsinoe	6	1	7
<b>DOUGLAS FIR (Pseudotsuga)</b>					
	Canker	- Cytospora	1	0	1
	Environmental stresses		3	1	4
<b>ELM (Ulmus)</b>					
	Black leaf spot	- Stegophora	1	0	1
	Chemical injury	- herbicide	1	0	1
	Dutch elm disease	- Ceratocystis	2	0	2
	Environmental	- drought	1	0	1
	Inadequate specimen, no disease		4		4
	Insect injury		2	1	3
	Leaf spot	- Gloeosporium	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>EUONYMUS (Euonymus)</b>					
	Anthracnose	- Colletotrichum	1	0	1
	Crown gall	- Agrobacterium	2	0	2
	Cultural	- transplant shock	4	0	4
	Environmental stresses		4	0	4
	Insect injury		16	3	19
	No disease		1		1
	Powdery mildew	- Microsphaera	6	1	7
<b>FIR (Abies)</b>					
	Environmental	- drought	2	0	2
<b>FORSYTHIA (Forsythia)</b>					
	Environmental	- stress	1	0	1
	Inadequate, no disease		3		3
<b>GINGKO (Gingko)</b>					
	Environmental	- cold injury	1	0	1
	No disease		1		1
	Sooty mold	- species	1	0	1
<b>GOLDENRAINTREE (Koelreuteria)</b>					
	No disease		1		1
<b>HACKBERRY (Celtis)</b>					
	No disease		1		1
<b>HAWTHORN (Crataegus)</b>					
	Cedar-quince rust	- Gymnosporangium	11	0	11
	Cultural	- transplant shock	1	0	1
	Environmental	- drought	1	0	1
	Inadequate specimen		1		1
	Insect injury		4	1	5
	Leaf scorch	- environmental	1	0	1
	Leaf spot	- Entomosporium	1	0	1
<b>HEMLOCK (Tsuga)</b>					
	Chemical injury	- growth regulator	1	0	1
	Environmental stresses		8	1	9
	Insect injury		3	0	3
	No disease		4		4
	Nutritional	- unknown	1	0	1
<b>HIBISCUS (Hibiscus)</b>					
	Cultural	- overwatering	1	0	1
		- transplant shock	2	0	2
	Environmental	- stress	1	0	1
	Leaf spot	- Cercospora	1	0	1
		- fungal	1	0	1
		- unknown	1	0	1
	No disease		1		1
	Nutritional	- nitrogen deficiency	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>HICKORY (Carya)</b>					
	Insect injury		6	0	6
	Leaf spot	- Gnomonia	1	0	1
<b>HOLLY and INKBERRY (Ilex)</b>					
	Black root rot	- Thielaviopsis	19	1	20
	Canker	- Phomopsis	0	1	1
	Cultural	- transplant shock	2	1	3
	Decline	- unknown	1	0	1
	Environmental stresses		18	1	19
	Inadequate specimen, no disease		25		25
	Insect injury		2	1	3
	Leaf spot	- Phyllosticta	1	0	1
		- unknown	1	0	1
	Nutritional	- iron deficiency	0	1	1
		- soluble salts	1	0	1
	Spine spot	- spine injury	1	1	2
<b>HONEYLOCUST (Gleditsia)</b>					
	Canker	- Thyronectria	2	0	2
	No disease		1		1
<b>HONEYSUCKLE (Lonicera)</b>					
	Chemical injury	- growth regulator	1	0	1
	Downy mildew	- Peronospora	1	0	1
	Insect injury		2	0	2
	No disease		1		1
	Powdery mildew	- Microsphaera	1	0	1
<b>HORSECHESTNUT (Aesculus)</b>					
	Leaf blotch	- Guignardia	1	0	1
<b>HYDRANGEA (Hydrangea)</b>					
	Basal canker	- Fusarium	1	0	1
	Cultural	- overwatering	0	1	1
	Insect injury		2	0	2
	Leaf spot	- Cercospora	2	0	2
	No disease		3		3
	Nutritional	- fertilizer burn	1	0	1
		- general	1	0	1
		- magnesium deficiency	1	0	1
	Powdery mildew	- Erysiphe	2	0	2
	Root rot	- Pythium	1	0	1
<b>JUNIPER and RED CEDAR (Juniperus)</b>					
	Cedar/Apple rust	- Gymnosporangium	2	0	2
	Cedar/Hawthorne rust	- Gymnosporangium	0	1	1
	Cultural	- transplant shock	2	1	3
	Environmental stresses		7	1	8
	Insect injury		6	0	6
	No disease		8		8
	Twig blight	- Kabatina	2	1	3
		- Phomopsis	4	1	5

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>KY COFFEE TREE (Gymnocladus)</b>					
	Environmental	- stress	1	0	1
<b>LARCH (Larix)</b>					
	Cultural	- transplant shock	1	0	1
<b>LAUREL (Laurus)</b>					
	Bacterial spot	- Xanthomonas	1	0	1
<b>LILAC (Syringa)</b>					
	Chemical injury	- herbicide	2	0	2
	Cultural	- transplant shock	1	0	1
	Dieback	- Botryosphaeria	1	0	1
	Environmental stresses		3	1	4
	Inadequate specimen, no disease		3		3
	Leaf scorch	- unknown	1	0	1
	Powdery mildew	- Microsphaera	3	1	4
	Root rot	- Pythium	1	01	
<b>LINDEN (Tilia)</b>					
	Canker	- Botryosphaeria	1	0	1
<b>LOCUST (Robinia)</b>					
	Insect injury		1	0	1
<b>MAGNOLIA (Magnolia)</b>					
	Chemical injury	- growth regulator	1	0	1
	Cultural	- transplant shock	1	0	1
	Environmental stresses		9	1	10
	Insect injury		4	0	4
	Leaf spot	- fungal	1	0	1
	No disease		5		5
	Nutritional	- iron deficiency	1	0	1
	Powdery mildew	- species	1	0	1
	Sooty mold	- species	0	2	2
	Wilt	- Verticillium	2	0	2
<b>MAHONIA (Mahonia)</b>					
	Environmental	- stress	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>MAPLE (Acer)</b>					
	Adventitious roots	- unknown	1	0	1
	Anthracnose	- Discula	4	1	5
		- Kabatiella	48	3	51
	Bacterial scorch	- Xylella	5	0	5
	Canker	- Fusicoccum	1	0	1
	Chemical injury	- growth regulator	1	0	1
		- unknown	1	0	1
	Cultural	- girdling root	2	0	2
		- transplant shock	4	1	5
	Decline	- environmental	2	0	2
		- unknown	4	0	4
	Environmental stresses		42	6	48
	Inadequate specimen, no disease		21		21
	Insect injury		8	0	8
	Leaf drop	- unknown	1	0	1
	Leaf scorch	- construction	1	0	1
		- drought	3	0	3
		- unknown	1	0	1
	Leaf spot	- Phyllosticta	5	0	5
		- unknown	2	0	2
	Nutritional	- magnesium deficiency	1	0	1
	Wilt	- Verticillium	3	0	3
<b>MIMOSA (Albizzia)</b>					
	Inadequate specimen		1		1
	Insect injury		1	0	1
<b>MOUNTAIN ASH (Sorbus)</b>					
	Fire blight	- Erwinia	1	0	1
<b>MULBERRY (Morus)</b>					
	Canker	- Nectria	1	0	1
	Leaf spot	- Cercospora	2	0	2
		- Phloeospora	2	0	2
	Insect injury		0	1	1
	Slime mold	- species	0	1	1
<b>NANDINA (Nandina)</b>					
	No disease		1		1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>OAK (Quercus)</b>					
	Anthracnose	- Apiognomonia	1	2	3
	Bacterial scorch	- Xylella	45	0	45
	Branch dieback	- drought	0	1	1
	Butt rot	- Ganoderma	2	0	2
	Canker	- Botryosphaeria	1	0	1
		- Hypoxylon	1	0	1
	Chemical injury	- growth regulator	5	0	5
		- unknown	1	0	1
	Cultural	- transplant shock	0	1	1
	Decline	- environmental	1	0	1
		- unknown	1	0	1
	Environmental stresses		7	3	10
	Inadequate specimen, no disease		30		30
	Insect injury		30	6	36
	Leaf blister	- Taphrina	7	1	8
	Leaf scorch	- environmental	3	0	3
		- unknown	2	1	3
	Leaf spot	- Tubakia	16	3	19
	Nutritional	- iron deficiency	9	0	9
		- pH high	0	1	1
	Powdery mildew	- species	3	3	6
	Spot anthracnose	- Elsinoe	1	0	1
	Wood decay	- Basidiomycete	1	0	1
<b>OSAGE ORANGE (Maclura)</b>					
	No disease		1		1
<b>PAULOWNIA ( Paulownia)</b>					
	Cultural	- transplant shock	1	0	1
	Inadequate specimen		1		1
<b>PEACH (Prunus)</b>					
	Insect injury		1	0	1
<b>PEAR (Pyrus)</b>					
	Chemical injury	- growth regulator	1	0	1
		- herbicide	3	0	3
		- unknown	2	0	2
	Cultural	- transplant shock	5	1	6
	Decline	- unknown	0	1	1
	Environmental stresses		4	0	4
	Fire blight	- Erwinia	5	0	5
	Inadequate specimen, no disease		5		5
	Insect injury		3	0	3
	Leaf scorch	- unknown	2	0	2
	Leaf spot	- Phyllosticta	1	0	1
		- unknown	2	0	2
	Nutritional	- general	1	0	1
<b>PERSIMMON (Diospyros)</b>					
	Insect injury		1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>PHOTINIA (Photinia)</b>					
	Chemical injury	- growth regulator	1	0	1
	Leaf spot	- Entomosporium	4	0	4
<b>PIERIS (Pieris)</b>					
	Insect injury		1	1	2
	Sooty mold	- species	1	0	1
<b>PINE (Pinus)</b>					
	Air pollution	- ozone	2	0	2
	Blue stain	- Ceratocystis	1	0	1
	Branch dieback	- unknown	1	1	1
	Canker	- Cytospora	1	0	1
	Chemical injury	- blacktop	1	0	1
		- chlorine	1	0	1
	Cultural	- girdling root	1	0	1
		- transplant shock	2	1	3
	Environmental stresses		16	3	19
	Inadequate specimen, no disease		27		27
	Insect injury		6	5	11
	Needle drop	- normal	9	0	9
	Physical injury	- sapsucker	1	0	1
		- unknown	1	0	1
	Pinewood nematode	- Bursaphelencus	4	0	4
	Tip blight	- Sphaeropsis	8	0	8
	Tip burn	- unknown	6	0	6
	White pine decline	- environmental	21	1	22
<b>PLUM (Prunus)</b>					
	Black knot	- Apiosporina	5	0	5
	Insect injury		1	0	1
<b>POPLAR, COTTONWOOD and ASPEN (Populus)</b>					
	Decline	- unknown	1	0	1
	Insect injury		2	0	2
	Leaf spot	- Marssonina	1	0	1
	No disease		1		1
<b>POTENTILLA (Potentilla)</b>					
	Chemical injury	- herbicide	1	0	1
<b>PRIMROSE (Primula)</b>					
	Powdery mildew	- Erysiphe	1	0	1
<b>PRIVET (Ligustrum)</b>					
	Environmental	- stress	1	0	1
	Insect injury		2	0	2
	No disease		3		3
<b>PYRACANTHA (Pyracantha)</b>					
	No disease		1		1
	Scab	- Spilocaea	1	0	1



<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>QUINCE (Chaenomeles)</b>					
	No disease		1		1
<b>REDBUD (Cercis)</b>					
	Chemical injury	- herbicide	2	0	2
	Environmental stresses		3	0	3
	Inadequate specimen, no disease		3		3
	Insect injury		0	1	1
	Leaf spot	- fungal	1	0	1
		- Phyllosticta	1	0	1
	Wilt	- Verticillium	3	0	3
<b>RHODODENDRON and AZALEA (Rhododendron)</b>					
	Canker	- Botryosphaeria	1	0	1
	Crown/root rot	- Phytophthora	1	0	1
	Cultural	- drying	1	0	1
		- transplant shock	10	1	11
	Environmental stresses		14	5	19
	Inadequate specimen, no disease		13		13
	Insect injury		22	2	24
	Leaf death	- unknown	0	1	1
	Leaf/flower gall	- Exobasidium	2	0	2
	Leaf spot	- Cercospora	0	1	1
		- Gloeosporium	1	0	1
		- Pestalotia	4	1	5
		- physiological	1	0	1
	Nutritional	- general	1	0	1
		- iron deficiency	3	1	4
<b>ROSE (Rosa)</b>					
	Black spot	- Diplocarpon	8	0	8
	Blight	- Botrytis	2	0	2
	Canker	- unknown	1	0	1
	Chemical injury	- growth regulator	1	0	1
		- herbicide	3	0	3
		- unknown	1	1	2
	Dieback	- unknown	1	0	1
	Environmental	- frost injury	2	0	2
	Inadequate specimen, no disease		7		7
	Insect injury		11	1	12
	Nutritional	- general	1	0	1
	Powdery mildew	- Sphaerotheca	3	0	3
	Root rot	- Phytophthora	2	0	2
	Sooty mold	- species	0	1	1
	Virus	- Rose mosaic	4	1	5
		- rosette	6	0	6
<b>SASSAFRAS (Sassafras)</b>					
	Canker	- Nectria	1	0	1
	Leaf scorch	- unknown	1	0	1
<b>SERVICEBERRY (Amelanchier)</b>					
	Insect injury		1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>SMOKETREE (Cotinus)</b>					
	Leaf scorch	- unknown	1	0	1
	Wilt	- Verticillium	2	0	2
<b>SNOWBELL (Styrax)</b>					
	Insect injury		1	0	1
<b>SOURWOOD (Oxydendrum)</b>					
	Leaf spot	- Cercospora	1	0	1
<b>SPIREA (Spirea)</b>					
	Cultural	- overwatering	1	0	1
	Root rot	- Rhizoctonia	1	0	1
<b>SPRUCE (Picea)</b>					
	Canker	- Cytospora	3	1	4
	Chemical injury	- growth regulator	1	0	1
		- herbicide	3	0	3
	Cultural	- deep planting	1	0	1
		- transplant shock	8	0	8
	Dieback	- unknown	1	0	1
	Environmental stresses		43	9	52
	Inadequate specimen, no disease		23		23
	Insect injury		26	7	33
	Needle cast	- Rhizosphaera	3	1	4
	Root rot	- Phytophthora	1	0	1
	Sooty mold	- species	0	1	1
<b>SUMAC (Rhus)</b>					
	Cultural	- transplant shock	1	0	1
	Leaf spot	- fungal	0	1	1
<b>SWEETGUM (Liquidambar)</b>					
	No disease		2		2
	Nutritional	- iron deficiency	1	0	1
	Wood decay	- unknown	1	0	1
<b>SYCAMORE and PLANETREE (Platanus)</b>					
	Anthraxnose	- Apiognomonina	1	0	1
	Bacterial scorch	- Xylella	4	0	4
	Leaf scorch	- environmental	1	0	1
	No disease		2		2
<b>TAXUS (Taxus)</b>					
	Chemical	- herbicide	1	0	1
	Cultural	- transplant shock	1	0	1
	Environmental stresses		5	1	6
	No disease		17		17
	Physical injury	- pruning	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>TULIPTREE (Liriodendron)</b>					
	Anthracnose	- Gloeosporium	1	0	1
	Chemical injury	- growth regulator	1	0	1
	Decline	- unknown	1	0	1
	Environmental	- cold injury	2	0	2
	Inadequate specimen, no disease		4		4
	Insect injury		6	1	7
	Leaf spot	- fungal	1	0	1
	Powdery mildew	- species	0	1	1
	Sooty mold	- species	2	1	3
<b>UNKNOWN</b>					
	Insect injury		1	0	1
<b>VIBURNUM (Viburnum)</b>					
	Bacterial leaf spot	- Pseudomonas	3	0	3
	Canker	- Cytospora	1	0	1
	Environmental	- wet feet	1	0	1
	Inadequate specimen, no disease		2		2
	Insect injury		3	0	3
	Sooty mold	- species	1	0	1
<b>WALNUT (Juglans)</b>					
	Inadequate specimen		1		1
	Insect injury		4	0	4
	Root rot	- Phytophthora	1	0	1
<b>WEIGELA (Weigela)</b>					
	Cultural	- transplant shock	1	0	1
	No disease		1		1
<b>WILLOW (Salix)</b>					
	Canker	- Botryosphaeria	3	0	3
	Chemical injury	- growth regulator	1	0	1
	Crown gall	- Agrobacterium	1	0	1
	Environmental stresses		2	0	2
	Insect injury		1	0	1
	Leaf spot	- Cercospora	2	0	2
	Physical injury	- mower	0	1	1
<b>WISTERIA (Wisteria)</b>					
	Chemical injury	- growth regulator	1	0	1
	Leaf spot	- Phyllosticta	1	0	1
<b>YELLOWWOOD (Cladrastis)</b>					
	Anthracnose	- Gloeosporium	2	0	2
	Cultural	- transplant shock	1	0	1
	Environmental	- stress	1	0	1
<b>ZELCOVA (Zelcova)</b>					
	Cultural	- improper depth	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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**VEGETABLES**

<b>ARRUGALA (Arrugala)</b>					
	No disease		1		1
<b>ASPARAGUS (Asparagus)</b>					
	Crown rot	- Fusarium	2	0	2
	Environmental	- stress	0	1	1
	No disease		1		1
<b>BEAN (Phaseolus)</b>					
	Anthracnose	- Colletotrichum	1	0	1
	Canker	- Fusarium	1	0	1
	Environmental stresses		2	1	3
	Insect injury		4	0	4
	Leaf scorch	- unknown	1	0	1
	No disease		5		5
	Nutritional	- general	2	2	4
	Root/stem rot	- Fusarium	3	0	3
		- Rhizoctonia	6	1	7
	Rust	- Uromyces	1	1	2
<b>BROCCOLI - See listing under CRUCIFERS</b>					
<b>BRUSSEL SPROUTS - See listing under CRUCIFERS</b>					
<b>CABBAGE - See listing under CRUCIFERS</b>					
<b>CANTALOUPE - See listing under CUCURBITS</b>					
<b>CELERY (Apium)</b>					
	Leaf spot	- Septoria	1	0	1
<b>CORN, SWEET (Zea)</b>					
	Chemical injury	- unknown	3	0	3
	Insect injury		3	0	3
	No disease		6		6
	Nutritional	- acid soil	1	0	1
		- zinc deficiency	2	0	2
	Rust	- Puccinia	6	2	8
	Smut	- Ustilago	2	0	2
	Stewart's wilt	- Erwinia	1	0	1
	Virus	- complex	1	1	2
		- maize dwarf mosaic	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
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**CRUCIFERS - BROCCOLI, BRUSSEL SPROUTS, CABBAGE, KALE, MUSTARD and TURNIP (Brassica)**

Bacterial soft rot	- Erwinia	2	0	2
Black rot	- Xanthomonas	2	0	2
Damping-off	- Pythium	1	0	1
Downy mildew	- Peronospora	0	1	1
Environmental	- stress	1	0	1
Inadequate specimen, no disease		5		5
Insect injury		2	0	2
No disease		1		1
Nutritional	- acid soil	1	0	1
	- boron deficiency	1	0	1
	- calcium deficiency	1	1	2
	- pH high	1	0	1
Powdery mildew	- Erysiphe	1	0	1
Wire stem	- Rhizoctonia	3	0	2

**CUCUMBER - See listing under CUCURBITS**

**CUCURBITS - CANTALOUPE, CUCUMBER (Cucumis), PUMPKIN, SQUASH, GOURD (Cucurbita) and WATERMELON (Citrullis)**

Angular leaf spot	- Pseudomonas	2	1	3
Anthracnose	- Colletotrichum	2	1	3
Bacterial fruit rot	- Xanthomonas	1	0	1
Bacterial soft rot	- Erwinia	1	2	3
Bacterial wilt	- Erwinia	10	1	11
Black root rot	- Thielaviopsis	1	0	1
Blight	- Microdochium	1	1	1
Chemical injury	- growth regulator	1	1	2
	- herbicide	5	0	5
Damping-off	- Pythium	1	0	1
Environmental stresses		2	0	2
Fruit decay	- Choanephora	1	2	3
	- Fusarium	3	0	3
	- Phytophthora	2	0	2
Gummy stem blight	- Didymella	5	0	5
Inadequate specimen, no disease		23		23
Insect injury		12	1	13
Leaf blight	- Alternaria	2	0	2
Leaf scorch	- unknown	1	1	2
Nutritional	- general	3	0	3
	- magnesium deficiency	1	0	1
	- manganese toxicity	1	0	1
Pollination problem	- unknown	3	0	3
Powdery mildew	- Erysiphe	2	0	2
	- Sphaerotheca	2	1	3
Root/stem rot	- Fusarium	2	1	3
	- Rhizoctonia	1	0	1
Virus	- complex	7	0	7
	- Squash mosaic	1	0	1
	- Tobacco ringspot virus	1	0	1
	- unknown	2	0	2
	- Watermelon mosaic II	2	1	3
Wilt	- Fusarium	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>EGGPLANT (Solanum)</b>					
	Early blight	- Alternaria	1	0	1
	Environmental	- sunscald	1	0	1
	Insect injury		0	1	1
	Leaf spot	- Phyllosticta	0	1	1
	No disease		2		2
	Nutritional	- magnesium deficiency	1	0	1
	Physical injury	- unknown	1	0	1
<b>GOURD - See listing under CUCURBITS</b>					
<b>KALE - See listing under CRUCIFERS</b>					
<b>LETTUCE (Lactuca)</b>					
	Bacterial soft rot	- Erwinia	1	0	1
	Drop	- Sclerotinia	1	0	1
	Root rot	- Pythium	2	0	2
	Root/stem rot	- Fusarium	1	0	1
<b>MELON, honeydew - See listing under CUCURBITS</b>					
<b>OKRA (Hibiscus)</b>					
	Insect injury		1	0	1
	No disease		2		2
	Wilt	- Verticillium	1	0	1
<b>ONION (Allium)</b>					
	No disease		2		2
<b>PEA (Pisum)</b>					
	Inadequate specimen, no disease		3		3
	Root rot	- Fusarium	1	0	1
<b>PEPPER (Capsicum)</b>					
	Anthrachnose	- Colletotrichum	2	0	2
	Bacterial spot	- Xanthomonas	24	1	25
	Blossom end rot	- calcium deficiency/dry	1	0	1
	Chemical injury	- growth regulator	1	0	1
		- herbicide	2	0	2
		- unknown	2	0	2
	Environmental stresses		1	1	2
	Inadequate specimen, no disease		14		14
	Insect injury		1	0	1
	Nutritional	- potassium deficiency	1	0	1
	Physical injury	- plastic	1	0	1
	Root/stem rot	- Fusarium	1	0	1
		- Rhizoctonia	3	0	3
	Southern blight	- Sclerotium	1	0	1
	Stem rot	- Fusarium	2	0	2
	Virus	- alfalfa mosaic	1	0	1
		- Tomato spotted wilt	6	0	6
	Wilt	- Fusarium	2	0	2

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>POTATO (Solanum)</b>					
	Blackleg	- Erwinia	1	0	1
	Chemical injury	- herbicide	1	0	1
	Growth crack	- environmental	1	0	1
	Inadequate specimen, no disease		4		4
	Insect injury		1	0	1
	Physical injury	- unknown	1	0	1
	Root rot	- unknown	0	1	1
	Scab	- Streptomyces	2	0	2
	Wilt	- unknown	1	0	1
<b>PUMPKIN - See listing under CUCURBITS</b>					
<b>RHUBARB (Rheum)</b>					
	Crown rot	- Erwinia	1	0	1
	Inadequate specimen		1		1
<b>SQUASH - See listing under CUCURBITS</b>					
<b>SWEET POTATO (Ipomoea)</b>					
	Insect injury		1	0	1
	No disease		1		1
	Scurf	- Monilochaetes	1	0	1
	Soft rot	- Rhizopus	1	0	1

<i>CROP</i>	<i>DIAGNOSIS</i>	<i>CAUSAL AGENT</i>	<i>#1° DIAGs</i>	<i>#2° DIAGs</i>	<i>TOTAL</i>
<b>TOMATO (Lycopersicon)</b>					
	Air pollution	- ethylene	2	0	2
	Anthrachnose	- Colletotrichum	1	0	1
	Aster yellows	- Phytoplasma	1	0	1
	Bacterial canker	- Clavibacter	5	0	5
	Bacterial speck	- Pseudomonas	12	5	17
	Bacterial spot	- Xanthomonas	4	0	4
	Bacterial soft rot	- Erwinia	3	1	4
	Bacterial wilt	- Pseudomonas	2	0	2
	Basal canker	- Fusarium	3	0	3
	Blossom end rot	- calcium deficiency/dry	2	0	2
	Buckeye rot	- Phytophthora	1	0	1
	Catfacing	- environmental	4	0	4
	Chemical injury	- burn	1	0	1
		- growth regulator	13	1	14
		- herbicide	6	0	6
	Damping-off	- Pythium	1	0	1
	Early blight	- Alternaria	13	0	13
	Environmental stresses		5	0	5
	Inadequate specimen, no disease		27		27
	Insect injury		9	5	14
	Leaf mold	- Cladosporium	1	0	1
	Leaf scorch	- unknown	3	0	3
	Leaf spot	- Septoria	7	3	10
	Nutritional	- fertilizer burn	1	0	1
		- general	5	1	6
		- magnesium deficiency	4	0	4
		- manganese toxicity	1	0	1
		- nitrogen deficiency	1	0	1
	Physical injury	- bird	1	0	1
	Physiological	- internal white tissue	1	0	1
		- skin cracking	1	0	1
		- yellow shoulder	1	1	2
	Pith necrosis	- Pseudomonas	2	0	2
	Powdery mildew	- Oidium	1	0	1
	Root knot nematode	- Meloidogyne	2	0	2
	Root rot	- Pythium	1	1	2
	Southern blight	- Sclerotium	3	0	3
	Sour rot	- Geotrichum	1	1	2
	Stem rot	- Sclerotinia	3	0	3
	Virus	- cucumber mosaic	1	0	1
		- impatiens necrotic spot	1	0	1
		- Tobacco mosaic	1	0	1
		- Tomato spotted wilt	17	1	18
		- unknown	1	1	2
	Walnut wilt	- juglone	1	0	1
	Wilt	- Fusarium	5	1	6

**TURNIP - See listing under CRUCIFERS**

**WATERMELON - See listing under CUCURBITS**

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**TOTALS** **4277** **588** **4865**