



COOPERATIVE EXTENSION SERVICE  
UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE

# *PLANT DISEASES* *in* *KENTUCKY*

Plant Disease Diagnostic Laboratory Summary

1993

by:

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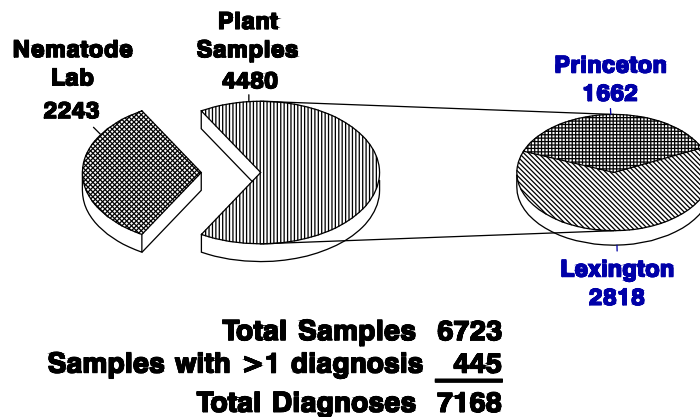
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## INTRODUCTION

The Plant Disease Diagnostic Lab (Lexington and Princeton) handled 4480 plant samples and 2243 nematode soil samples during 1993. Samples with more than one problem numbered 445, bringing the total number of actual diagnoses to 7168. The Lexington Lab diagnosed 2818 specimens. The Princeton Lab's specimens totaled 3905; of this number 1662 were plant samples and 2243 were soil samples submitted, exclusively, for soybean cyst nematode analysis. A total of 764 of the nematode samples were submitted by researchers and 1479 were submitted by commercial growers through the county Extension offices or by Kentucky Seed Improvement Association scouts.

These numbers are summarized in Figure 1 below:

### PLANT DISEASE DIAGNOSTIC LAB, TOTALS 1993



## HIGHLIGHTS

The year of 1993, overall, was a rather uneventful year weather-wise with only a few periods that were not favorable for good plant growth. The winter months, overall were mild, as were the winter months for the two previous years, 1991 and 1992. The only cold snap was in mid-February when the temperature dipped into the single digits for two days. Spring was characterized by average monthly temperatures just below normal but there were no periods of wide fluctuations in temperature as seen in 1992. Summer weather showed periods of above normal temperature and below normal precipitation which led to drought stress and/or heat stress conditions. Most field crops and landscape plants suffered to varying degrees because of these stressful conditions. Dogwood samples with scorched or leaves with various symptoms of stress were plentiful. Rains and cooler temperatures returned in mid-September in time for planting of small grains but later than required for optimum germination of newly-seeded forage crops. The remainder of the calendar year was fairly normal in temperature and rainfall which allowed for steady growth of small grains and gradual hardening-off for landscape plants.

The tobacco "float system" seemed to be the dominant production method of tobacco transplants, in 1993, based on the number of samples that came from the float system versus the traditional plant bed system. Cultural and managerial problems (e.g. proper filling of trays with soilless mix; use of old, dirty trays; over and under fertilization; general temperature and humidity control; use of plug and transfer plants from out-of-state, etc.) both outnumber and favor the growth of pathogens over that of the plants. **Blue Mold** was not nearly as extensive as it was in 1992, especially in western Kentucky. Many of the infections occurred with tobacco plants produced in local greenhouses or out-of-state transplants funneled through Kentucky greenhouses.

**Black Shank**, was even a more severe problem, this year, in fields across the state, many for the first time. Tobacco infected with viruses such as **Tobacco Etch, Streak, Virus Complex,** and **Tomato Spotted Wilt** were not nearly as numerous as in 1992.

Corn diseases were relatively few but a period of drought and heat stress hastened the maturation of many fields. **Gray Leaf Spot** continued to be a problem with certain varieties and the practice of reduced tillage. **Diplodia Ear Rot** once again became prevalent later in the year, in some areas of the state.

Soybean diseases, as noted for the last few years, were at a low level. **Soybean Cyst Nematode** remains the major yield-limiting disease factor in the majority of soybean producing acreage.

Problems in small grain, primarily wheat, were at a low level, except for **Barley Yellow Dwarf Virus**. The incidence of the virus was at its greatest level since the spring of 1983. There were only a few cold spells so there was not as much damaged tissue for colonization by the fungi which cause diseases such as **Septoria Leaf Complex,** and **Glume Blotch**. Head Scab levels were similar to 1992 which is to say they were very much reduced from 1991 levels.

Forages, in general, did not suffer from any major disease problems. *Sclerotinia* Crown Rot was found in several fields of fall-seeded alfalfa, but, overall the incidence was light.

The incidence of diseases on vegetable crops was also light but the notable exception was **Bacterial Spot** on pepper. **Late Blight** on tomato was also observed and this potentially devastating disease, which also occurs on potato, will continue to be monitored closely.

**Monitoring for Dogwood**

**Anthracnose** (caused by *Discula destructiva*) increased dramatically this year. Steps were taken to survey many eastern Kentucky counties which were suspected of having diseased dogwoods but which had not been confirmed. This potentially destructive disease was first diagnosed in Kentucky in 1989. We will continue to monitor the incidence of this disease in the state and educate the ornamental industries and public as to the presence of the disease and control recommendations.

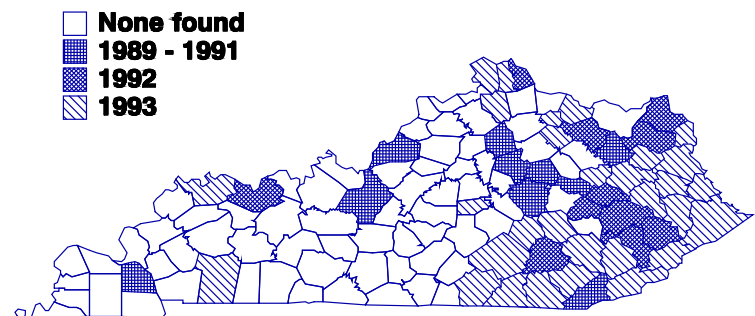


Figure 2. Incidence of Dogwood Anthracnose in Kentucky through 1993.

Two new hosts of **Bacterial leaf scorch** (caused by *Xylella fastidiosa*) were confirmed in 1993; Bur Oak and Red Maple. This is the first report of infection of Bur Oak with this pathogen in the U.S. and the first report on Red Maple in Kentucky.

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 Dogwood Anthracnose and Bacterial Leaf Scorch mentioned above, Blue Mold on tobacco is watched very closely because of its destructive potential. The viruses Tomato Spotted Wilt and Impatiens Necrotic Spot are also monitored to alert tobacco and commercial vegetable growers and the floral greenhouse industry, respectively. The detection of soybean cyst nematodes in new areas of the state and on commercial ornamental stock for export is also conducted. In all, 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.

## 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 never as a primary problem (e.g. Lophodermium needlecast on Pine). In these cases, a zero (0) will appear in the primary diagnosis column to indicate the absence of samples with that particular problem.

No disease: This indicates that no pathogen was observed on the specimen submitted, and that based on the sample and information provided, we were unable to pinpoint an exact abiotic or biotic cause of the problem, if there was one.

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.

Root problems: Samples designated as having a "root problem" had above ground symptoms suggestive of root dysfunction and/or evidence of root degeneration, however, a specific biotic or abiotic cause could not be determined.

## ACKNOWLEDGEMENTS

Two technicians within the department of Plant Pathology have made significant contributions to the Plant Diagnostic Laboratories. As the technician in charge of performing all soybean cyst nematode extractions and counting, Debbie Morgan has been dutifully carrying out her responsibilities since 1985 in the Nematode Laboratory in Princeton. Rusty Wigglesworth has been working at the Lexington Laboratory since 1990, performing many valuable services such as computer database management, mailing diagnostic responses and other tasks as needed, all of which contribute to the efficiency of the lab. Jack Doney and Diane Perkins are two other technicians, which although have research responsibilities primarily, do contribute in many ways to the performance of the laboratories.

We wish to thank Freddie Higgins for his assistance in the computer operation of the lab. We would also like to thank the College of Agriculture's extension specialists and researchers who served as consultants to the diagnostic lab in 1993. 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.

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> |
|----------------------------|-------------------------|------------------------------------|------------------------|----------------------------|----------------------|--------------------------|------------------------|
| <u>Agronomic</u>           |                         |                                    |                        |                            |                      |                          |                        |
| Corn                       | 36                      | 56                                 | 13                     | 8                          | 14                   | 16                       | 143                    |
| Forages                    | 11                      | 33                                 | 3                      | 1                          | 0                    | 12                       | 60                     |
| Rapeseed (Canola)          | 0                       | 0                                  | 0                      | 0                          | 0                    | 0                        | 0                      |
| Small grains               | 18                      | 50                                 | 3                      | 1                          | 1                    | 14                       | 87                     |
| Soybeans                   | 24                      | 2279*                              | 22                     | 3                          | 8                    | 12                       | 2348                   |
| Tobacco                    | 530                     | 922                                | 118                    | 34                         | 36                   | 224                      | 1864                   |
| <u>Fruit</u>               |                         |                                    |                        |                            |                      |                          |                        |
| Small fruit                | 13                      | 50                                 | 6                      | 8                          | 16                   | 16                       | 109                    |
| Tree fruit                 | 20                      | 134                                | 6                      | 7                          | 44                   | 28                       | 239                    |
| <u>Herbs</u>               |                         |                                    |                        |                            |                      |                          |                        |
|                            | 1                       | 19                                 | 0                      | 1                          | 4                    | 0                        | 24                     |
| <u>Identification</u>      |                         |                                    |                        |                            |                      |                          |                        |
|                            | 0                       | 48                                 | 0                      | 3                          | 0                    | 1                        | 53                     |
| <u>Ornamentals</u>         |                         |                                    |                        |                            |                      |                          |                        |
| Herbaceous and Houseplants | 55                      | 107                                | 6                      | 12                         | 30                   | 79                       | 289                    |
| Turfgrass                  | 18                      | 84                                 | 1                      | 5                          | 1                    | 19                       | 128                    |
| Woody                      | 311                     | 332                                | 49                     | 66                         | 235                  | 309                      | 1302                   |
| <u>Vegetables</u>          |                         |                                    |                        |                            |                      |                          |                        |
|                            | 113                     | 195                                | 33                     | 22                         | 42                   | 95                       | 500                    |
| <u>Miscellaneous</u>       |                         |                                    |                        |                            |                      |                          |                        |
|                            | 2                       | 6                                  | 0                      | 3                          | 2                    | 9                        | 22                     |
| <u>Total</u>               |                         |                                    |                        |                            |                      |                          |                        |
|                            | 1152                    | 4315                               | 260                    | 174                        | 433                  | 834                      | 7168                   |

<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.

\* Includes 2243 samples sent to the Nematode Analysis Laboratory in Princeton.

**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> |
|-------------------------------|------------------|---------------|-----------------|--------------|--------------------------|
| <u>Agronomic</u>              |                  |               |                 |              |                          |
| Corn                          | 6                | 48            | 0               | 2            | 0                        |
| Forages                       | 1                | 32            | 0               | 0            | 0                        |
| Rapeseed (Canola)             | 0                | 0             | 0               | 0            | 0                        |
| Small grains                  | 1                | 19            | 0               | 30           | 0                        |
| Soybeans                      | 0                | 30            | 2249            | 0            | 0                        |
| Tobacco                       | 115              | 729           | 4               | 68           | 6                        |
| <u>Fruit</u>                  |                  |               |                 |              |                          |
| Small fruit                   | 0                | 49            | 0               | 1            | 0                        |
| Tree fruit                    | 18               | 116           | 0               | 0            | 0                        |
| <u>Herbs</u>                  |                  |               |                 |              |                          |
|                               | 0                | 18            | 1               | 0            | 0                        |
| <u>Identification</u>         |                  |               |                 |              |                          |
|                               | 0                | 13            | 0               | 0            | 35                       |
| <u>Ornamentals</u>            |                  |               |                 |              |                          |
| Herbaceous and<br>Houseplants | 15               | 73            | 3               | 15           | 1                        |
| Turfgrass                     | 0                | 82            | 0               | 0            | 2                        |
| Woody                         | 20               | 297           | 4               | 3            | 8                        |
| <u>Vegetables</u>             |                  |               |                 |              |                          |
|                               | 46               | 129           | 3               | 17           | 0                        |
| <u>Miscellaneous</u>          |                  |               |                 |              |                          |
|                               | 0                | 5             | 0               | 0            | 1                        |
| <u>Total</u>                  | 222              | 1640          | 2264            | 136          | 53                       |

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

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

| <b>Crop Category</b>   | <b>Number of Specimens</b> | <b>Percentage of Total Specimens</b> |
|------------------------|----------------------------|--------------------------------------|
| Agronomic (-Tobacco)   | 2569                       | 38.2                                 |
| Tobacco                | 1656                       | 24.6                                 |
| Fruit                  | 315                        | 4.7                                  |
| Herbs                  | 22                         | 0.3                                  |
| Identifications        | 51                         | 0.8                                  |
| Ornamentals            | 1626                       | 24.2                                 |
| Vegetables             | 463                        | 6.9                                  |
| Miscellaneous          | 21                         | 0.3                                  |
| <b>Total Specimens</b> | <b>6723</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> |
|-------------------------------|------------------------------------------------|--------------------------------------------------|------------------------------------|
| <u>Agronomic</u>              |                                                |                                                  |                                    |
| Corn                          | 116                                            | 27                                               | 143                                |
| Forages                       | 56                                             | 4                                                | 60                                 |
| Rapeseed (Canola)             | 0                                              | 0                                                | 0                                  |
| Small grains                  | 74                                             | 13                                               | 87                                 |
| Soybeans                      | 2323                                           | 25                                               | 2348                               |
| Tobacco                       | 1656                                           | 208                                              | 1864                               |
| <u>Fruit</u>                  |                                                |                                                  |                                    |
| Small fruit                   | 103                                            | 6                                                | 109                                |
| Tree fruit                    | 212                                            | 27                                               | 239                                |
| <u>Herbs</u>                  |                                                |                                                  |                                    |
|                               | 24                                             | 0                                                | 24                                 |
| <u>Identification</u>         |                                                |                                                  |                                    |
|                               | 53                                             | 0                                                | 53                                 |
| <u>Ornamentals</u>            |                                                |                                                  |                                    |
| Herbaceous and Houseplants    | 274                                            | 15                                               | 289                                |
| Turfgrass                     | 117                                            | 11                                               | 128                                |
| Woody                         | 1235                                           | 67                                               | 1302                               |
| <u>Vegetables</u>             |                                                |                                                  |                                    |
|                               | 463                                            | 37                                               | 500                                |
| <u>Miscellaneous</u>          |                                                |                                                  |                                    |
|                               | 17                                             | 5                                                | 22                                 |
| <u>Total</u>                  |                                                |                                                  |                                    |
|                               | 6723                                           | 445                                              | 7168                               |

<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> |
| <u>Agronomic</u>              |                  |                      |                  |                      |                  |                      |                  |                      |
| Corn                          | 113              | 2                    | 0                | 0                    | 1                | 0                    | 0                | 0                    |
| Forages                       | 52               | 3                    | 0                | 0                    | 1                | 0                    | 0                | 0                    |
| Small grains                  | 74               | 0                    | 0                | 0                    | 0                | 0                    | 0                | 0                    |
| Soybeans                      | 1304             | 251                  | 0                | 0                    | 768              | 0                    | 0                | 0                    |
| Tobacco                       | 1562             | 74                   | 0                | 0                    | 19               | 0                    | 1                | 0                    |
| <u>Fruit</u>                  |                  |                      |                  |                      |                  |                      |                  |                      |
| Small Fruit                   | 22               | 0                    | 69               | 7                    | 5                | 0                    | 0                | 0                    |
| Tree Fruit                    | 40               | 5                    | 152              | 10                   | 5                | 0                    | 0                | 0                    |
| <u>Herbs</u>                  | 16               | 2                    | 6                | 0                    | 0                | 0                    | 0                | 0                    |
| <u>Identification</u>         | 1                | 0                    | 44               | 1                    | 2                | 0                    | 1                | 0                    |
| <u>Ornamental</u>             |                  |                      |                  |                      |                  |                      |                  |                      |
| Herbaceous and<br>Houseplants | 122              | 24                   | 104              | 11                   | 5                | 0                    | 8                | 0                    |
| Turfgrass                     | 53               | 9                    | 48               | 1                    | 2                | 0                    | 2                | 2                    |
| Woody                         | 85               | 26                   | 1012             | 48                   | 33               | 0                    | 25               | 6                    |
| <u>Vegetable</u>              | 225              | 4                    | 211              | 6                    | 16               | 0                    | 1                | 0                    |
| <u>Miscellaneous</u>          | 12               | 1                    | 7                | 0                    | 1                | 0                    | 0                | 0                    |
| <u>Total</u>                  | 3681             | 401                  | 1653             | 84                   | 858              | 0                    | 38               | 8                    |
| <u>Total/Grower Type</u>      | 4082             |                      | 1737             |                      | 858              |                      | 46               |                      |

Total number of samples received = 6723

<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,<br>Facility or<br>outside agency | Crop Category |       |            |           |                                                                                       | Total |
|----------------------------------------------|---------------|-------|------------|-----------|---------------------------------------------------------------------------------------|-------|
|                                              | Agronomic     | Fruit | Ornamental | Vegetable | Other                                                                                 |       |
| Agronomy<br>Department                       | 2             | 1     | 1          | 0         | 1                                                                                     | 5     |
| Entomology<br>Department                     | 5             | 8     | 56         | 10        | 4                                                                                     | 83    |
| Horticulture<br>Department                   | 0             | 6     | 2          | 3         | 2                                                                                     | 13    |
|                                              |               |       |            |           | <u>Total</u>                                                                          | 101   |
|                                              |               |       |            |           | <u>Total number of plant samples</u>                                                  | 4480  |
|                                              |               |       |            |           | <u>Percent of plant samples referred<br/>outside Diagnostic Lab for<br/>diagnosis</u> | 2.3%  |

\* 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.**

---

| <b>Test Number of Cases</b>        |      |
|------------------------------------|------|
| Culturing                          | 28   |
| Incubation                         | 242  |
| Nematode extraction (total = 2249) |      |
| Pinewood nematode                  | 5    |
| Soybean cyst nematode              | 2244 |
| Soil tests (total = 176)           |      |
| pH                                 | 159  |
| Soluble salts                      | 3    |
| pH/Soluble Salts                   | 13   |
| Soil bioassays                     | 1    |
| Virus assays (total = 55)          |      |
| Electron Microscope                | 7    |
| ELISA                              | 41   |
| Indicator plants                   | 7    |

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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        | 14    | 4                      | 8       | 0     | 2          | 0         | 0     |
| ALLEN        | 63    | 2                      | 32      | 3     | 17         | 7         | 2     |
| ANDERSON     | 21    | 0                      | 15      | 0     | 5          | 1         | 0     |
| BALLARD      | 12    | 4                      | 4       | 1     | 1          | 2         | 0     |
| BARREN       | 39    | 6                      | 20      | 2     | 10         | 0         | 1     |
| BATH         | 41    | 1                      | 16      | 3     | 18         | 3         | 0     |
| BELL         | 16    | 0                      | 0       | 2     | 8          | 6         | 0     |
| BOONE        | 61    | 0                      | 5       | 6     | 38         | 11        | 1     |
| BOURBON      | 54    | 3                      | 40      | 0     | 8          | 3         | 0     |
| BOYD         | 7     | 0                      | 1       | 0     | 6          | 0         | 0     |
| BOYLE        | 38    | 6                      | 10      | 2     | 20         | 0         | 0     |
| BRACKEN      | 14    | 0                      | 11      | 0     | 1          | 2         | 0     |
| BREATHITT    | 12    | 0                      | 5       | 0     | 5          | 2         | 0     |
| BRECKINRIDGE | 130   | 16                     | 89      | 3     | 18         | 11        | 1     |
| BULLITT      | 62    | 1                      | 5       | 12    | 34         | 4         | 6     |
| BUTLER       | 19    | 1                      | 12      | 3     | 1          | 1         | 1     |
| CALDWELL     | 106   | 20                     | 34      | 12    | 30         | 6         | 4     |
| CALLOWAY     | 86    | 6                      | 37      | 8     | 21         | 11        | 3     |
| CAMPBELL     | 12    | 0                      | 1       | 1     | 10         | 0         | 0     |
| CARLISLE     | 50    | 8                      | 14      | 13    | 10         | 5         | 0     |
| CARROLL      | 17    | 0                      | 15      | 0     | 2          | 0         | 0     |
| CARTER       | 28    | 1                      | 13      | 5     | 8          | 0         | 1     |
| CASEY        | 18    | 2                      | 9       | 0     | 2          | 5         | 0     |
| CHRISTIAN    | 182   | 11                     | 60      | 20    | 71         | 19        | 1     |
| CLARK        | 35    | 2                      | 12      | 1     | 17         | 2         | 1     |
| CLAY         | 14    | 0                      | 4       | 0     | 3          | 6         | 1     |
| CLINTON      | 14    | 2                      | 9       | 0     | 0          | 3         | 0     |
| CRITTENDEN   | 16    | 2                      | 0       | 2     | 8          | 1         | 3     |
| CUMBERLAND   | 16    | 0                      | 9       | 0     | 4          | 3         | 0     |
| DAVISS       | 236   | 21                     | 52      | 5     | 59         | 97        | 2     |
| EDMONSON     | 45    | 2                      | 28      | 6     | 5          | 4         | 0     |
| ELLIOTT      | 4     | 0                      | 0       | 1     | 2          | 0         | 1     |
| ESTILL       | 14    | 0                      | 6       | 0     | 6          | 1         | 1     |
| FAYETTE      | 451   | 8                      | 87      | 21    | 291        | 36        | 8     |
| FLEMING      | 57    | 3                      | 32      | 6     | 11         | 5         | 0     |
| FLOYD        | 12    | 0                      | 0       | 3     | 9          | 0         | 0     |
| FRANKLIN     | 61    | 1                      | 15      | 4     | 41         | 0         | 0     |
| FULTON       | 8     | 6                      | 0       | 0     | 2          | 0         | 0     |
| GALLATIN     | 11    | 0                      | 4       | 2     | 2          | 2         | 1     |
| GARRARD      | 8     | 0                      | 4       | 2     | 0          | 1         | 1     |
| GRANT        | 31    | 0                      | 18      | 2     | 9          | 2         | 0     |
| GRAVES       | 81    | 5                      | 43      | 10    | 17         | 3         | 3     |
| GRAYSON      | 37    | 6                      | 17      | 1     | 11         | 2         | 0     |
| GREEN        | 5     | 0                      | 4       | 0     | 1          | 0         | 0     |
| GREENUP      | 18    | 1                      | 6       | 1     | 8          | 2         | 0     |
| HANCOCK      | 5     | 0                      | 4       | 0     | 1          | 0         | 0     |
| HARDIN       | 64    | 5                      | 19      | 2     | 31         | 7         | 0     |
| HARLAN       | 5     | 0                      | 0       | 1     | 4          | 0         | 0     |
| HARRISON     | 23    | 0                      | 20      | 0     | 2          | 0         | 1     |
| HART         | 43    | 3                      | 28      | 2     | 2          | 8         | 0     |
| HENDERSON    | 35    | 10                     | 6       | 4     | 12         | 3         | 0     |
| HENRY        | 36    | 5                      | 22      | 1     | 5          | 3         | 0     |
| HICKMAN      | 18    | 8                      | 2       | 0     | 8          | 0         | 0     |
| HOPKINS      | 66    | 7                      | 10      | 6     | 36         | 4         | 3     |
| JACKSON      | 24    | 0                      | 8       | 5     | 5          | 4         | 2     |
| JEFFERSON    | 81    | 1                      | 5       | 1     | 68         | 3         | 3     |
| JESSAMINE    | 34    | 0                      | 8       | 2     | 22         | 2         | 0     |
| JOHNSON      | 5     | 0                      | 0       | 0     | 3          | 2         | 0     |
| KENTON       | 36    | 0                      | 2       | 3     | 29         | 1         | 1     |
| KNOTT        | 6     | 0                      | 0       | 0     | 5          | 1         | 0     |
| KNOX         | 7     | 0                      | 2       | 0     | 4          | 1         | 0     |

| COUNTY        | Total       | Agronomic <sup>1</sup> | Tobacco     | Fruit      | Ornamental  | Vegetable  | Other     |
|---------------|-------------|------------------------|-------------|------------|-------------|------------|-----------|
| LARUE         | 20          | 2                      | 12          | 0          | 2           | 3          | 1         |
| LAUREL        | 20          | 0                      | 13          | 3          | 2           | 2          | 0         |
| LAWRENCE      | 9           | 0                      | 4           | 2          | 3           | 0          | 0         |
| LEE           | 8           | 0                      | 1           | 1          | 4           | 1          | 1         |
| LESLIE        | 10          | 0                      | 0           | 0          | 3           | 7          | 0         |
| LETCHER       | 4           | 1                      | 0           | 1          | 2           | 0          | 0         |
| LEWIS         | 18          | 2                      | 8           | 2          | 3           | 2          | 1         |
| LINCOLN       | 11          | 0                      | 7           | 1          | 1           | 2          | 0         |
| LIVINGSTON    | 35          | 4                      | 1           | 9          | 18          | 3          | 0         |
| LOGAN         | 55          | 3                      | 23          | 7          | 13          | 8          | 1         |
| LYON          | 12          | 0                      | 4           | 2          | 4           | 1          | 1         |
| McCRACKEN     | 60          | 3                      | 7           | 8          | 29          | 11         | 2         |
| McCREARY      | 2           | 0                      | 0           | 0          | 1           | 1          | 0         |
| McLEAN        | 22          | 3                      | 9           | 3          | 1           | 6          | 0         |
| MADISON       | 103         | 0                      | 75          | 1          | 24          | 1          | 2         |
| MAGOFFIN      | 1           | 0                      | 0           | 0          | 1           | 0          | 0         |
| MARION        | 26          | 2                      | 9           | 0          | 14          | 1          | 0         |
| MARSHALL      | 80          | 3                      | 13          | 8          | 39          | 14         | 3         |
| MARTIN        | 4           | 0                      | 0           | 1          | 3           | 0          | 0         |
| MASON         | 18          | 1                      | 13          | 0          | 2           | 2          | 0         |
| MEADE         | 26          | 3                      | 4           | 3          | 13          | 2          | 1         |
| MENIFEE       | 9           | 0                      | 3           | 2          | 2           | 2          | 0         |
| MERCER        | 37          | 3                      | 18          | 1          | 9           | 3          | 3         |
| METCALFE      | 5           | 0                      | 3           | 0          | 0           | 2          | 0         |
| MONROE        | 4           | 1                      | 2           | 0          | 0           | 1          | 0         |
| MONTGOMERY    | 70          | 2                      | 28          | 3          | 23          | 9          | 5         |
| MORGAN        | 26          | 0                      | 16          | 1          | 4           | 4          | 1         |
| MUHLENBERG    | 38          | 3                      | 14          | 5          | 12          | 3          | 1         |
| NELSON        | 17          | 3                      | 8           | 0          | 6           | 0          | 0         |
| NICHOLAS      | 15          | 0                      | 13          | 0          | 2           | 0          | 0         |
| OHIO          | 18          | 0                      | 14          | 1          | 1           | 2          | 0         |
| OLDHAM        | 18          | 1                      | 1           | 1          | 14          | 1          | 0         |
| OWEN          | 32          | 1                      | 28          | 1          | 1           | 0          | 1         |
| OWSLEY        | 7           | 0                      | 5           | 1          | 0           | 1          | 0         |
| PENDELTON     | 9           | 0                      | 7           | 0          | 2           | 0          | 0         |
| PERRY         | 4           | 0                      | 0           | 0          | 2           | 2          | 0         |
| PIKE          | 3           | 0                      | 0           | 0          | 3           | 0          | 0         |
| POWELL        | 8           | 0                      | 6           | 0          | 2           | 0          | 0         |
| PULASKI       | 40          | 2                      | 11          | 7          | 20          | 0          | 0         |
| ROBERTSON     | 20          | 2                      | 15          | 0          | 2           | 0          | 1         |
| ROCKCASTLE    | 18          | 1                      | 5           | 1          | 9           | 2          | 0         |
| ROWAN         | 3           | 0                      | 0           | 0          | 3           | 0          | 0         |
| RUSSELL       | 50          | 0                      | 10          | 5          | 18          | 14         | 3         |
| SCOTT         | 17          | 1                      | 7           | 0          | 5           | 3          | 1         |
| SHELBY        | 69          | 5                      | 21          | 2          | 35          | 3          | 3         |
| SIMPSON       | 32          | 6                      | 17          | 1          | 7           | 1          | 0         |
| SPENCER       | 21          | 1                      | 4           | 1          | 14          | 0          | 1         |
| TAYLOR        | 63          | 11                     | 36          | 4          | 7           | 5          | 0         |
| TODD          | 43          | 8                      | 21          | 3          | 8           | 2          | 1         |
| TRIGG         | 44          | 4                      | 30          | 0          | 7           | 1          | 2         |
| TRIMBLE       | 8           | 0                      | 1           | 1          | 4           | 2          | 0         |
| UNION         | 42          | 25                     | 0           | 3          | 7           | 6          | 1         |
| WARREN        | 93          | 10                     | 28          | 7          | 46          | 2          | 0         |
| WASHINGTON    | 52          | 3                      | 17          | 2          | 26          | 3          | 1         |
| WAYNE         | 71          | 7                      | 39          | 5          | 12          | 8          | 0         |
| WEBSTER       | 27          | 7                      | 4           | 4          | 9           | 3          | 0         |
| WHITLEY       | 23          | 0                      | 9           | 7          | 6           | 1          | 0         |
| WOLFE         | 7           | 0                      | 5           | 0          | 1           | 0          | 1         |
| WOODFORD      | 53          | 2                      | 21          | 4          | 24          | 2          | 0         |
| Out-of-State  | 48          | 0                      | 44          | 0          | 2           | 0          | 2         |
| <b>TOTALS</b> | <b>4480</b> | <b>326</b>             | <b>1656</b> | <b>315</b> | <b>1626</b> | <b>463</b> | <b>94</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,<br>Researchers, Diagnosticians | Department      | Number of cases                   |                            |
|---------------------------------------------|-----------------|-----------------------------------|----------------------------|
|                                             |                 | Primary<br>Diagnosis <sup>1</sup> | Consultations <sup>2</sup> |
| <b>LEXINGTON</b>                            |                 |                                   |                            |
| Anderson, RG                                | Horticulture    | 7                                 | 12                         |
| Bitzer, MJ                                  | Agronomy        | 4                                 | 2                          |
| Bessin, RT                                  | Entomology      | 13                                | 6                          |
| Doney, JC                                   | Plant Pathology | 4                                 | 0                          |
| Eshenaur, BC (Diagnostician)                | Plant Pathology | 1880                              | 59                         |
| Fountain, WF                                | Horticulture    | 2                                 | 3                          |
| Green, JD                                   | Agronomy        | 21                                | 13                         |
| Hartman, JR                                 | Plant Pathology | 149                               | 8                          |
| Jarlors, UE                                 | Plant Pathology | 0                                 | 6                          |
| Jones, TR                                   | Horticulture    | 0                                 | 1                          |
| Nesmith, WC                                 | Plant Pathology | 401                               | 30                         |
| Palmer, GK                                  | Agronomy        | 140                               | 13                         |
| Pirone, TP                                  | Plant Pathology | 0                                 | 2                          |
| Powell, AJ                                  | Agronomy        | 0                                 | 1                          |
| Strang, JG                                  | Horticulture    | 23                                | 7                          |
| Townsend, LH                                | Entomology      | 78                                | 23                         |
| Vincelli, PC                                | Plant Pathology | 113                               | 13                         |
| Wigglesworth, MD                            | Plant Pathology | 0                                 | 1                          |
| <b>PRINCETON</b>                            |                 |                                   |                            |
| Bachi, PR (Diagnostician)                   | Plant Pathology | 1494                              | 92                         |
| Brown, GR                                   | Horticulture    | 6                                 | 13                         |
| Dunwell, WC                                 | Horticulture    | 14                                | 68                         |
| Herbek, JH                                  | Agronomy        | 4                                 | 11                         |
| Hershman, DE                                | Plant Pathology | 53                                | 28                         |
| Johnson, DJ                                 | Entomology      | 5                                 | 7                          |
| Lacefield, GD                               | Agronomy        | 1                                 | 8                          |
| Martin, JR                                  | Agronomy        | 12                                | 33                         |
| Murdock, LW                                 | Agronomy        | 2                                 | 11                         |
| Maksymowicz, WC                             | Agronomy        | 52                                | 80                         |
| Rasnake, M                                  | Agronomy        | 2                                 | 0                          |

<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.

| <i>CROP</i> | <i>DIAGNOSIS</i> | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-------------|------------------|---------------------|-----------------|-----------------|--------------|
|-------------|------------------|---------------------|-----------------|-----------------|--------------|

AGRONOMIC CROPS

**CORN (Zea)**

|                                 |                         |    |   |    |
|---------------------------------|-------------------------|----|---|----|
| Anthracnose                     | - Colletotrichum        | 5  | 0 | 5  |
| Bacterial spot                  | - bacterial             | 1  | 0 | 1  |
| Brown spot                      | - Physoderma            | 1  | 1 | 2  |
| Chemical injury                 | - herbicide, unknown    | 9  | 4 | 13 |
| Crazy top                       | - Sclerophthora         | 1  | 0 | 1  |
| Crown/Stem Rot                  | - Fusarium              | 1  | 0 | 1  |
| Ear/Kernel rots                 | - Diplodia              | 10 | 0 | 10 |
|                                 | - Penicillium           | 0  | 1 | 1  |
| Environmental                   | - compaction            | 3  | 1 | 4  |
|                                 | - other stresses        | 1  | 2 | 3  |
| Gray leaf spot                  | - Cercospora            | 13 | 1 | 14 |
| Holcus spot                     | - Pseudomonas           | 2  | 1 | 3  |
| Inadequate specimen, no disease |                         | 24 |   | 24 |
| Insect injury                   |                         | 10 | 4 | 14 |
| Nutritional                     | - acid soil             | 4  | 3 | 7  |
|                                 | - Zinc deficiency       | 10 | 1 | 11 |
|                                 | - others                | 9  | 1 | 10 |
| Purple leaf sheath              | - complex               | 0  | 1 | 1  |
| Root rot                        | - Pythium               | 0  | 1 | 1  |
| Rust, common                    | - Puccinia              | 1  | 0 | 1  |
| southern                        | - Puccinia              | 3  | 0 | 3  |
| Seedling blight                 | - unknown               | 1  | 0 | 1  |
| Southern leaf blight            | - Cochliobus            | 1  | 0 | 1  |
| Stalk rots                      | - Diplodia              | 2  | 1 | 3  |
|                                 | - Gibberella            | 2  | 1 | 3  |
| Stewart's wilt                  | - Erwinia               | 1  | 0 | 1  |
| Virus                           | - maize chlorotic dwarf | 0  | 1 | 1  |
|                                 | - maize dwarf mosaic    | 1  | 0 | 1  |

FORAGES

**ALFALFA (Medicago)**

|                                 |                    |    |   |    |
|---------------------------------|--------------------|----|---|----|
| Air pollution                   | - Sulfur dioxide   | 1  | 0 | 1  |
| Chemical injury                 | - herbicide        | 3  | 0 | 3  |
| Crown/stem rot                  | - Sclerotinia      | 12 | 0 | 12 |
| Downy mildew                    | - Peronospora      | 1  | 0 | 1  |
| Environmental stresses          |                    | 2  | 0 | 2  |
| Inadequate specimen, no disease |                    | 9  |   | 9  |
| Leaf spot                       | - Leptosphaerulina | 6  | 0 | 6  |
|                                 | - Pseudopeziza     | 0  | 1 | 1  |
| Nutritional                     | - Boron deficiency | 1  | 0 | 1  |
|                                 | - other            | 5  | 1 | 6  |
| Root rot                        | - Aphanomyces      | 2  | 0 | 2  |
|                                 | - Phytophthora     | 1  | 0 | 1  |
|                                 | - Pythium          | 2  | 0 | 2  |
| Southern blight                 | - Athelia          | 1  | 0 | 1  |
| Spring black stem               | - Phoma            | 1  | 1 | 2  |

| <i>CROP</i>                    | <i>DIAGNOSIS</i>                                  | <i>CAUSAL AGENT</i>      | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|--------------------------------|---------------------------------------------------|--------------------------|-----------------|-----------------|--------------|
| <b>CLOVER (Trifolium)</b>      |                                                   |                          |                 |                 |              |
|                                | Leaf spot                                         | - Pseudomonas            | 0               | 1               | 1            |
|                                | Powdery mildew                                    | - Erysiphe               | 1               | 0               | 1            |
| <b>MILLET (Panicum)</b>        |                                                   |                          |                 |                 |              |
|                                | Blast                                             | - Pyricularia            | 2               | 0               | 2            |
| <b>ORCHARDGRASS (Dactylis)</b> |                                                   |                          |                 |                 |              |
|                                | No disease                                        |                          | 3               |                 | 3            |
|                                | Nutritional                                       | - Nitrogen deficiency    | 1               | 0               | 1            |
| <b>SUDANGRASS (Sorghum)</b>    |                                                   |                          |                 |                 |              |
|                                | No disease                                        |                          | 1               | 0               | 1            |
|                                | Stalk rot                                         | - Fusarium               | 1               | 0               | 1            |
| <u><b>SOYBEAN</b></u>          |                                                   |                          |                 |                 |              |
| <b>SOYBEAN (Glycine)</b>       |                                                   |                          |                 |                 |              |
|                                | Anthracnose                                       | - Colletotrichum         | 1               | 1               | 2            |
|                                | Brown spot                                        | - Septoria               | 3               | 0               | 3            |
|                                | Charcoal rot                                      | - Macrophomina           | 3               | 2               | 5            |
|                                | Chemical injury                                   | - herbicide, growth reg. | 10              | 8               | 18           |
|                                |                                                   | - unknown                | 3               | 1               | 4            |
|                                | Downy mildew                                      | - Peronospora            | 1               | 0               | 1            |
|                                | Environmental stresses                            |                          | 12              | 4               | 16           |
|                                | Inadequate specimen, no disease                   |                          | 15              |                 | 15           |
|                                | Insect injury                                     |                          | 6               | 2               | 8            |
|                                | Nutritional                                       | - Potassium deficiency   | 2               | 1               | 3            |
|                                |                                                   | - Manganese deficiency   | 1               | 0               | 1            |
|                                |                                                   | - poor nodulation        | 1               | 0               | 1            |
|                                |                                                   | - Iron deficiency        | 0               | 1               | 1            |
|                                | Physical injury                                   | - unknown                | 1               | 0               | 1            |
|                                | Pod and stem blight                               | - Diaporthe              | 0               | 1               | 1            |
|                                | Powdery mildew                                    | - Microsphaera           | 1               | 0               | 1            |
|                                | Root/stem rot                                     | - Phytophthora           | 2               | 0               | 2            |
|                                |                                                   | - Rhizoctonia            | 2               | 1               | 3            |
|                                | Soybean cyst nematode - on plant samples          |                          | 6               | 0               | 6            |
|                                | heterodera                                        | * in soil samples        | 1514            |                 | 1514         |
|                                |                                                   | * absent in soil samples | 729             |                 | 703          |
|                                | (*soil submitted to Nematode Analysis Laboratory) |                          |                 |                 |              |
|                                | Southern blight                                   | - Athelia                | 1               | 1               | 2            |
|                                | Stem canker                                       | - Diaporthe              | 1               | 0               | 1            |
|                                | Stem rot                                          | - Fusarium               | 0               | 1               | 1            |
|                                |                                                   | - Rhizoctonia            | 0               | 1               | 1            |
|                                | Sudden death syndrome                             | - Fusarium               | 7               | 0               | 7            |



| <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>BARLEY (Hordeum)</b> |                                 |                         |                 |                 |              |
|                         | Chemical injury                 | - herbicide             | 1               | 0               | 1            |
|                         | Nutritional                     | - Nitrogen deficiency   | 1               | 0               | 1            |
|                         | Scald                           | - Rhynchosporium        | 1               | 0               | 1            |
| <b>OAT (Avena)</b>      |                                 |                         |                 |                 |              |
|                         | Environmental                   | - stress                | 1               | 0               | 1            |
| <b>RYE (Secale)</b>     |                                 |                         |                 |                 |              |
|                         | Environmental                   | - cold injury           | 1               | 0               | 1            |
| <b>WHEAT (Triticum)</b> |                                 |                         |                 |                 |              |
|                         | Black head mold                 | - Cladosporium          | 0               | 1               | 1            |
|                         | Black point                     | - Alternaria            | 1               | 0               | 1            |
|                         | Bacterial streak                | - Xanthomonas           | 0               | 1               | 1            |
|                         | Chemical injury                 | - herbicide             | 1               | 0               | 1            |
|                         |                                 | - unknown               | 1               | 0               | 1            |
|                         | Environmental                   | - cold injury           | 7               | 1               | 8            |
|                         |                                 | - wet feet              | 1               | 1               | 2            |
|                         | Head scab                       | - Fusarium              | 1               | 1               | 2            |
|                         | Glume blotch                    | - Septoria              | 2               | 0               | 2            |
|                         | Inadequate specimen, no disease |                         | 14              |                 | 14           |
|                         | Insect injury                   |                         | 1               | 0               | 1            |
|                         | Leaf blotch                     | - Septoria              | 3               | 0               | 3            |
|                         | Leaf spot                       | - Septoria              | 0               | 2               | 2            |
|                         | Nutritional                     | - acid soil             | 1               | 0               | 1            |
|                         |                                 | - Nitrogen deficiency   | 1               | 0               | 1            |
|                         |                                 | - Phosphorus deficiency | 1               | 0               | 1            |
|                         | Powdery mildew                  | - Erysiphe              | 1               | 0               | 1            |
|                         | Take-all                        | - Gaeumannomyces        | 7               | 0               | 7            |
|                         | Tan spot                        | - Pyrenophora           | 1               | 0               | 1            |
|                         | Virus                           | - Barley yellow dwarf   | 19              | 3               | 22           |
|                         |                                 | - Spindle streak mosaic | 2               | 3               | 5            |
|                         |                                 | - unknown               | 3               | 0               | 3            |

| <i>CROP</i>                              | <i>DIAGNOSIS</i> | <i>CAUSAL AGENT</i>     | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|------------------------------------------|------------------|-------------------------|-----------------|-----------------|--------------|
| <u>TOBACCO</u>                           |                  |                         |                 |                 |              |
| <b>TOBACCO (Nicotiana)</b>               |                  |                         |                 |                 |              |
| Algae                                    |                  | - Blue-green            | 6               | 0               | 6            |
| Angular leaf spot                        |                  | - Pseudomonas           | 42              | 5               | 47           |
| Anthracnose                              |                  | - Colletotrichum        | 2               | 1               | 3            |
| Bacterial soft rot                       |                  | - Erwinia               | 21              | 1               | 22           |
| Blackleg                                 |                  | - Erwinia               | 14              | 22              | 36           |
| Black root rot                           |                  | - Chalara               | 26              | 8               | 34           |
| Black shank                              |                  | - Phytophthora          | 386             | 3               | 389          |
| Blue mold                                |                  | - Peronospora           | 76              | 8               | 84           |
| Brown spot                               |                  | - Alternaria            | 4               | 4               | 8            |
| Chemical injury                          |                  | - Boron                 | 1               | 0               | 1            |
|                                          |                  | - burn                  | 3               | 0               | 3            |
|                                          |                  | - disinfectant          | 1               | 0               | 1            |
|                                          |                  | - fungicide             | 5               | 0               | 5            |
|                                          |                  | - growth regulator      | 39              | 0               | 39           |
|                                          |                  | - herbicide             | 30              | 4               | 34           |
|                                          |                  | - solvent               | 1               | 0               | 1            |
|                                          |                  | - sucker agent          | 1               | 0               | 1            |
|                                          |                  | - unknown               | 29              | 2               | 31           |
| Crown/stem rot                           |                  | - Rhizoctonia           | 25              | 27              | 52           |
|                                          |                  | - Sclerotinia           | 25              | 2               | 27           |
| Cultural                                 |                  | - transplant shock      | 36              | 2               | 38           |
|                                          |                  | - other                 | 14              | 1               | 15           |
| Damping-off                              |                  | - Pythium               | 2               | 0               | 2            |
|                                          |                  | - Rhizoctonia           | 9               | 1               | 10           |
| Early flowering                          |                  | - environmental         | 1               | 0               | 1            |
| Environmental                            |                  | - cold injury           | 50              | 6               | 56           |
|                                          |                  | - compaction            | 13              | 1               | 14           |
|                                          |                  | - lightning             | 25              | 2               | 27           |
|                                          |                  | - wet feet              | 10              | 4               | 14           |
|                                          |                  | - weather scald         | 29              | 9               | 38           |
|                                          |                  | - other                 | 33              | 11              | 44           |
| False broomrape                          |                  | - unknown               | 1               | 2               | 3            |
| Frenching                                |                  | - metabolites           | 1               | 0               | 1            |
| Frogeye                                  |                  | - Cercospora            | 24              | 6               | 30           |
| Gray mold                                |                  | - Botrytis              | 4               | 0               | 4            |
| Hollow stalk                             |                  | - Erwinia               | 7               | 2               | 9            |
| Houseburn                                |                  | - Bacterial             | 1               | 0               | 1            |
| Improper curing                          |                  | - greening              | 1               | 0               | 1            |
| Inadequate specimen, no disease, unknown |                  | 258                     |                 | 258             |              |
| Insect injury                            |                  |                         | 24              | 12              | 36           |
| Leaf spot                                |                  | - Alternaria            | 0               | 2               | 2            |
|                                          |                  | - physiological         | 4               | 0               | 4            |
| Nutritional                              |                  | - acid soil             | 38              | 6               | 44           |
|                                          |                  | - fertilizer burn       | 56              | 1               | 57           |
|                                          |                  | - Potassium deficiency  | 15              | 3               | 18           |
|                                          |                  | - Manganese toxicity    | 56              | 2               | 58           |
|                                          |                  | - Nitrogen deficiency   | 43              | 5               | 48           |
|                                          |                  | - Phosphorus deficiency | 17              | 7               | 24           |
|                                          |                  | - other                 | 6               | 5               | 11           |

| <i>CROP</i>           | <i>DIAGNOSIS</i>        | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-----------------------|-------------------------|---------------------|-----------------|-----------------|--------------|
| <b>TOBACCO (cont)</b> |                         |                     |                 |                 |              |
| Physical injuries     |                         |                     | 8               | 2               | 10           |
| Ragged spot           | - Ascochyta             |                     | 1               | 0               | 1            |
| Root knot nematode    | - Meloidogyne           |                     | 1               | 3               | 4            |
| Root rot              | - Pythium               |                     | 18              | 8               | 26           |
|                       | - Rhizoctonia           |                     | 2               | 0               | 2            |
| Slime mold            | - species               |                     | 1               | 0               | 1            |
| Storage mold          | - Aspergillus           |                     | 2               | 0               | 2            |
|                       | - Penicillium           |                     | 0               | 2               | 2            |
|                       | - multiple species      |                     | 1               | 0               | 1            |
| Target spot           | - Rhizoctonia           |                     | 36              | 4               | 40           |
| Variiegation          | - genetic               |                     | 3               | 0               | 3            |
| Virus                 | - Alfalfa mosaic        |                     | 4               | 1               | 5            |
|                       | - complex               |                     | 4               | 0               | 4            |
|                       | - Tobacco etch          |                     | 7               | 4               | 11           |
|                       | - Tobacco mosaic        |                     | 2               | 0               | 2            |
|                       | - Tobacco ringspot      |                     | 1               | 1               | 2            |
|                       | - Tobacco streak        |                     | 4               | 0               | 4            |
|                       | - Tobacco vein mottling |                     | 2               | 1               | 3            |
|                       | - Tomato spotted wilt   |                     | 30              | 3               | 33           |
|                       | - unknown               |                     | 4               | 0               | 4            |
| Weather fleck         | - ozone                 |                     | 0               | 1               | 1            |
| Wilt                  | - Fusarium              |                     | 7               | 1               | 8            |

FRUIT CROPS

SMALL FRUITS

**BLUEBERRY (Vaccinium)**

|               |                   |   |   |   |
|---------------|-------------------|---|---|---|
| Anthracnose   | - Gloeosporium    | 0 | 1 | 1 |
| Canker        | - Fusicoccum      | 1 | 0 | 1 |
| Environmental | - stress          | 2 | 0 | 2 |
| Insect injury |                   | 2 | 0 | 2 |
| No disease    |                   | 2 |   | 2 |
| Nutritional   | - Acid soil       | 1 | 0 | 1 |
|               | - Iron deficiency | 2 | 0 | 2 |

**BRAMBLES - BLACKBERRY, RASPBERRY, and LOGANBERRY (Rubus)**

|                                 |                 |    |   |    |
|---------------------------------|-----------------|----|---|----|
| Anthracnose                     | - Elsinoe       | 1  | 0 | 1  |
| Chemical injury                 | - herbicide     | 1  | 0 | 1  |
|                                 | - unknown       | 1  | 0 | 1  |
| Double blossom                  | - Cercospora    | 2  | 0 | 2  |
| Environmental                   | - White druplet | 1  | 0 | 1  |
|                                 | - winter injury | 1  | 0 | 1  |
| Inadequate specimen, no disease |                 | 14 |   | 14 |
| Insect injury                   |                 | 7  | 2 | 9  |
| Leaf spot                       | - Sphaerulina   | 1  | 0 | 1  |
| Orange rust                     | - Gymnoconia    | 1  | 0 | 1  |
| Root rot                        | - Phytophthora  | 2  | 0 | 2  |
| Virus                           | - Sterility     | 1  | 0 | 1  |
| Wilt                            | - Verticillium  | 2  | 0 | 2  |
| Yellow rust                     | - Phragmidium   | 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>GOOSEBERRY (<i>Ribes</i>)</b>    |                                 |                      |                 |                 |              |
|                                     | Pollination problem             | - no bees            | 1               | 0               | 1            |
| <b>GRAPE (<i>Vitis</i>)</b>         |                                 |                      |                 |                 |              |
|                                     | Anthracnose                     | - Elsinoe            | 2               | 0               | 2            |
|                                     | Bitter rot                      | - Melanconium        | 1               | 0               | 1            |
|                                     | Black rot                       | - Guignardia         | 15              | 1               | 16           |
|                                     | Chemical injury                 | - growth regulator   | 4               | 0               | 4            |
|                                     | Environmental                   | - stress             | 2               | 0               | 2            |
|                                     | Inadequate specimen, no disease |                      | 3               | 0               | 3            |
|                                     | Insect injury                   |                      | 4               | 0               | 4            |
|                                     | Physical injury                 | - wind               | 1               | 0               | 1            |
| <b>STRAWBERRY (<i>Fragaria</i>)</b> |                                 |                      |                 |                 |              |
|                                     | Anthracnose                     | - Colletotrichum     | 1               | 0               | 1            |
|                                     |                                 | - Gloeosporium       | 1               | 0               | 1            |
|                                     | Black root rot                  | - Rhizoctonia        | 1               | 0               | 1            |
|                                     | Cultural                        | - unknown            | 1               | 0               | 1            |
|                                     | Environmental                   | - stress             | 0               | 1               | 1            |
|                                     | Gray mold                       | - Botrytis           | 1               | 0               | 1            |
|                                     | Inadequate specimen, no disease |                      | 4               |                 | 4            |
|                                     | Insect injury                   |                      | 1               | 1               | 2            |
|                                     | Leaf blight                     | - Phomopsis          | 1               | 0               | 1            |
|                                     | Leaf scorch                     | - Diplocarpon        | 1               | 0               | 1            |
|                                     | Leaf spot                       | - Mycosphaerella     | 10              | 1               | 11           |
|                                     | Red stele                       | - Phytophthora       | 1               | 0               | 1            |
| <u>TREE FRUITS</u>                  |                                 |                      |                 |                 |              |
| <b>APPLE (<i>Malus</i>)</b>         |                                 |                      |                 |                 |              |
|                                     | Bitter rot                      | - Glomerella         | 2               | 1               | 3            |
|                                     | Black rot                       | - Botryosphaeria     | 2               | 0               | 2            |
|                                     | Canker                          | - Botryosphaeria     | 1               | 0               | 1            |
|                                     | Cedar hawthorn rust             | - Gymnosporangium    | 14              | 0               | 14           |
|                                     | Cedar quince rust               | - Gymnosporangium    | 0               | 1               | 1            |
|                                     | Chemical injury                 | - growth regulator   | 1               | 0               | 1            |
|                                     |                                 | - herbicide          | 1               | 0               | 1            |
|                                     | Collar rot                      | - Phytophthora       | 1               | 0               | 1            |
|                                     | Cultural                        | - desiccation        | 1               | 0               | 1            |
|                                     | Environmental stresses          |                      | 5               | 0               | 5            |
|                                     | Fire blight                     | - Erwinia            | 10              | 0               | 10           |
|                                     | Flyspeck                        | - Schizothyrium      | 3               | 1               | 4            |
|                                     | Frogeye                         | - Botryosphaeria     | 10              | 1               | 11           |
|                                     | Insect injury                   |                      | 13              | 7               | 20           |
|                                     | Internal bark necrosis          | - Manganese toxicity | 1               | 0               | 1            |
|                                     | No disease                      |                      | 11              |                 | 11           |
|                                     | Powdery mildew                  | - Podosphaera        | 2               | 0               | 2            |
|                                     | Russet                          | - unknown            | 0               | 1               | 1            |
|                                     | Scab                            | - Venturia           | 4               | 0               | 4            |

| <i>CROP</i>                                  | <i>DIAGNOSIS</i>                | <i>CAUSAL AGENT</i>   | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|----------------------------------------------|---------------------------------|-----------------------|-----------------|-----------------|--------------|
| <b>APPLE (cont)</b>                          |                                 |                       |                 |                 |              |
|                                              | Sooty blotch                    | - Gloeodes            | 1               | 7               | 8            |
|                                              | Thread blight                   | - Ceratobasidium      | 2               | 0               | 2            |
|                                              | White rot                       | - Botryosphaeria      | 1               | 0               | 1            |
| <b>CHERRY (Prunus)</b>                       |                                 |                       |                 |                 |              |
|                                              | Brown rot                       | - Monilinia           | 2               | 0               | 2            |
|                                              | Chemical injury                 | - herbicide           | 1               | 0               | 1            |
|                                              | Environmental                   | - wet feet            | 0               | 1               | 1            |
|                                              | Inadequate specimen, no disease |                       | 4               |                 | 4            |
|                                              | Insect injury                   |                       | 1               | 0               | 1            |
|                                              | Physical injury                 | - mechanical          | 1               | 0               | 1            |
|                                              | Pollen problem                  | - environment         | 1               | 0               | 1            |
| <b>PEACH, NECTARINE and APRICOT (Prunus)</b> |                                 |                       |                 |                 |              |
|                                              | Black knot                      | - Apiosporina         | 1               | 0               | 1            |
|                                              | Brown rot                       | - Monilinia           | 10              | 0               | 10           |
|                                              | Canker                          | - Leucostoma          | 2               | 0               | 2            |
|                                              | Chemical injury                 | - herbicide           | 1               | 0               | 1            |
|                                              | Cracking                        | - physiological       | 1               | 0               | 1            |
|                                              | Inadequate specimen, no disease |                       | 12              |                 | 12           |
|                                              | Insect injury                   |                       | 8               | 0               | 8            |
|                                              | Leaf curl                       | - Taphrina            | 15              | 0               | 15           |
|                                              | Nutritional                     | - Nitrogen deficiency | 2               | 1               | 3            |
|                                              | Scab                            | - Cladosporium        | 4               | 3               | 7            |
| <b>PEAR (Pyrus)</b>                          |                                 |                       |                 |                 |              |
|                                              | Chemical injury                 | - herbicide, unknown  | 2               | 0               | 2            |
|                                              | Cultural                        | - transplant shock    | 1               | 0               | 1            |
|                                              | Environmental                   | - stress              | 2               | 0               | 2            |
|                                              | Fire blight                     | - Erwinia             | 8               | 0               | 8            |
|                                              | Inadequate specimen, no disease |                       | 6               |                 | 6            |
|                                              | Insect injury                   |                       | 3               | 0               | 3            |
| <b>PECAN (Carya)</b>                         |                                 |                       |                 |                 |              |
|                                              | Chemical injury                 | - herbicide           | 1               | 0               | 1            |
|                                              | Environmental                   | - cold injury         | 1               | 0               | 1            |
|                                              | Insect injury                   |                       | 8               | 1               | 9            |
| <b>PLUM (Prunus)</b>                         |                                 |                       |                 |                 |              |
|                                              | Black knot                      | - Apiosporina         | 18              | 0               | 18           |
|                                              | Canker                          | - Cytospora           | 0               | 1               | 1            |
|                                              | Insect injury                   |                       | 3               | 0               | 3            |
|                                              | No disease                      |                       | 2               |                 | 2            |
|                                              | Plum pockets                    | - Taphrina            | 5               | 0               | 5            |
|                                              | Sooty mold                      | - species             | 0               | 1               | 1            |

| <i>CROP</i>                 | <i>DIAGNOSIS</i>    | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-----------------------------|---------------------|---------------------|-----------------|-----------------|--------------|
| <u>HERBS</u>                |                     |                     |                 |                 |              |
| <b>BASIL (Ocimum)</b>       |                     |                     |                 |                 |              |
|                             | Gray mold           | - Botrytis          | 1               | 0               | 1            |
|                             | Root rot            | - Rhizoctonia       | 1               | 0               | 1            |
|                             | Stem rot            | - Fusarium          | 1               | 1               | 2            |
| <b>GINSENG (Panax)</b>      |                     |                     |                 |                 |              |
|                             | Black root rot      | - Chalara           | 0               | 1               | 1            |
|                             | Inadequate specimen |                     | 1               |                 | 1            |
|                             | Insect injury       |                     | 1               | 0               | 1            |
|                             | Papery spot         | - environmental     | 1               | 0               | 1            |
|                             | Root knot nematode  | - Meloidogyne       | 1               | 0               | 1            |
|                             | Root rot            | - Phytophthora      | 9               | 0               | 9            |
|                             |                     | - Pythium           | 1               | 0               | 1            |
| <b>LAVENDAR (Lavendula)</b> |                     |                     |                 |                 |              |
|                             | Root rot            | - Ramularia         | 1               | 0               | 1            |
| <b>MINT (Mentha)</b>        |                     |                     |                 |                 |              |
|                             | Insect injury       |                     | 3               | 0               | 3            |
| <b>SAGE (Salvia)</b>        |                     |                     |                 |                 |              |
|                             | Downy mildew        | - Peronospora       | 0               | 1               | 1            |
|                             | Root rot            | - Pythium           | 1               | 0               | 1            |

| <i>CROP</i> | <i>DIAGNOSIS</i> | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-------------|------------------|---------------------|-----------------|-----------------|--------------|
|-------------|------------------|---------------------|-----------------|-----------------|--------------|

IDENTIFICATIONS

**FUNGAL IDENTIFICATION**

|                     |                 |   |   |   |
|---------------------|-----------------|---|---|---|
| Agaricus            | - campestris    | 1 | 0 | 1 |
| Aspergillus         | - species       | 0 | 1 | 1 |
| Calvatia            | - species       | 2 | 0 | 2 |
| Cyathus             | - striatus      | 1 | 0 | 1 |
| Inadequate specimen |                 | 3 | 0 | 3 |
| Morella             | - esculenta     | 1 | 0 | 1 |
| Panaeolus           | - foenicicii    | 1 | 0 | 1 |
| Slime mold          | - species       | 5 | 0 | 5 |
| Wood decay          | - basidiomycete | 1 | 0 | 1 |

**PLANT IDENTIFICATIONS**

|              |                |   |   |   |
|--------------|----------------|---|---|---|
| Acer         | - negundo      | 1 | 0 | 1 |
| Ailanthus    | - altissima    | 1 | 0 | 1 |
| Amaranthus   | - retroflexus  | 1 | 0 | 1 |
| Botrychum    | - obliquum     | 1 | 0 | 1 |
| Castanea     | - mollissima   | 1 | 0 | 1 |
| Coffea       | - arabica      | 1 | 0 | 1 |
| Elaeagnus    | - umbellata    | 2 | 0 | 2 |
| Euonymus     | - alata        | 1 | 0 | 1 |
| Fraxinus     | - americana    | 1 | 0 | 1 |
| Hordeum      | - pricillum    | 1 | 0 | 1 |
| Koelreuteria | - paniculata   | 1 | 0 | 1 |
| Liverwort    | - species      | 3 | 0 | 3 |
| Lonicera     | - tartarica    | 1 | 0 | 1 |
| Lycopodium   | - obscurum     | 1 | 0 | 1 |
| Malus        | - domestica    | 1 | 0 | 1 |
| Morus        | - rubra        | 1 | 0 | 1 |
| Paulownia    | - tomentosa    | 1 | 0 | 1 |
| Pinus        | - virginia     | 1 | 0 | 1 |
| Prunus       | - species      | 3 | 0 | 3 |
| Pyrus        | - calleryana   | 3 | 0 | 3 |
| Rubus        | - species      | 2 | 0 | 2 |
| Thuja        | - occidentalis | 1 | 0 | 1 |
| Viburnum     | - plicatum     | 1 | 0 | 1 |

MISCELLANEOUS

**MULCH**

|                 |                |   |   |   |
|-----------------|----------------|---|---|---|
| Chemical injury | - fermentation | 1 | 0 | 1 |
|-----------------|----------------|---|---|---|

**SOIL**

|            |              |   |   |   |
|------------|--------------|---|---|---|
| Algae      | - blue-green | 1 | 0 | 1 |
| No disease |              | 6 |   | 6 |

**WEED**

|                                 |             |   |   |   |
|---------------------------------|-------------|---|---|---|
| Inadequate specimen, no disease |             | 5 |   | 5 |
| Insect injury                   |             | 2 | 0 | 2 |
| Leaf spot                       | - fungal    | 2 | 0 | 2 |
|                                 | - Ramularia | 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>ORNAMENTALS</u>                              |                        |                           |                 |                 |              |
| <u>HERBACEOUS ORNAMENTALS and INDOOR PLANTS</u> |                        |                           |                 |                 |              |
| <b>AESCHYANTHUS (Aeschyanthus)</b>              | Insect injury          |                           | 1               | 0               | 1            |
| <b>AGERATUM (Ageratum)</b>                      | No disease             |                           | 1               | 0               | 1            |
| <b>AGLAONEMA (Aglaonema)</b>                    | Environmental          | - sunscald                | 1               | 0               | 1            |
| <b>AJUGA (Ajuga)</b>                            | Southern blight        | - Athelia                 | 1               | 0               | 1            |
| <b>ARALIA (Polyscias)</b>                       | Insect injury          |                           | 1               | 0               | 1            |
| <b>ASTER (Aster)</b>                            | Gray mold              | - Botrytis                | 1               | 0               | 1            |
|                                                 | Rust                   | - Coleosporium            | 1               | 0               | 1            |
| <b>BABYS BREATH (Gypsophila)</b>                | Root rot               | - Pythium                 | 1               | 0               | 1            |
| <b>BEGONIA (Begonia)</b>                        | Anthracnose            | - Colletotrichum          | 1               | 0               | 1            |
|                                                 | Gray mold              | - Botrytis                | 1               | 0               | 1            |
|                                                 | No disease             |                           | 6               |                 | 6            |
|                                                 | Root knot nematode     | - Meloidogyne             | 1               | 0               | 1            |
|                                                 | Root rot               | - Pythium                 | 1               | 0               | 1            |
|                                                 | Root/stem rot          | - Rhizoctonia             | 1               | 0               | 1            |
|                                                 | Virus                  | - Impatiens necrotic spot | 1               | 0               | 1            |
| <b>BENJAMIN FIG (Ficus)</b>                     | Insect injury          |                           | 1               | 0               | 1            |
|                                                 | No disease             |                           | 1               |                 | 1            |
| <b>BIRD OF PARADISE (Strelitzia)</b>            | Downy mildew           | - unknown                 | 1               | 0               | 1            |
| <b>CACTUS (various)</b>                         | No disease             |                           | 1               |                 | 1            |
|                                                 | Root/stem rot          | - Erwinia                 | 1               | 0               | 1            |
| <b>CANNA (Canna)</b>                            | Environmental stresses |                           | 2               | 0               | 2            |
| <b>CARNATION (Dianthus)</b>                     | Environmental          | - wet feet                | 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>CATCHFLY (Silene)</b>             | No disease                      |                             | 1               |                 | 1            |
| <b>CHRYSANTHEMUM (Chrysanthemum)</b> | Bacterial leaf spot             | - Pseudomonas               | 1               | 0               | 1            |
|                                      | Chemical injury                 | - herbicide                 | 1               | 0               | 1            |
|                                      | Cultural injury                 | - overwatering, poor plants | 2               | 2               | 4            |
|                                      | Inadequate specimen, no disease |                             | 8               |                 | 8            |
|                                      | Insect injury                   |                             | 2               | 0               | 2            |
|                                      | Nutritional                     | - Calcium deficiency        | 2               | 0               | 2            |
|                                      |                                 | - fertilizer burn           | 1               | 0               | 1            |
|                                      |                                 | - unknown                   | 2               | 0               | 2            |
|                                      | Root/stem rot                   | - Pythium                   | 3               | 0               | 3            |
|                                      |                                 | - Phytophthora              | 1               | 0               | 1            |
|                                      |                                 | - Rhizoctonia               | 1               | 0               | 1            |
|                                      | Wilt                            | - Fusarium                  | 2               | 0               | 2            |
| <b>CHRYSOGONUM (Chrysogonum)</b>     | Southern blight                 | - Athelia                   | 1               | 0               | 1            |
| <b>CLEMATIS (Clematis)</b>           | No disease                      |                             | 1               |                 | 1            |
| <b>COLUMNEA (Columnea)</b>           | No disease                      |                             | 1               |                 | 1            |
| <b>COREOPSIS (Coreopsis)</b>         | No disease                      |                             | 1               |                 | 1            |
| <b>CROTON (Croton)</b>               | Insect injury                   |                             | 1               | 0               | 1            |
| <b>CYCLAMEN (Cyclamen)</b>           | No disease                      |                             | 1               | 0               | 1            |
| <b>DAFFODIL (Narcissus)</b>          | Virus                           | - Poty-like                 | 1               | 0               | 1            |
| <b>DAHLIA (Dahlia)</b>               | Inadequate specimen             |                             | 1               |                 | 1            |
|                                      | Insect injury                   |                             | 4               | 0               | 4            |
| <b>DAISY (Chrysanthemum)</b>         | No disease                      |                             | 1               |                 | 1            |
| <b>DAYLILY (Hemerocallis)</b>        | Bacterial soft rot              | - Erwinia                   | 0               | 1               | 1            |
|                                      | Environmental                   | - dry soil                  | 1               | 0               | 1            |
|                                      | Insect injury                   |                             | 1               | 1               | 2            |
| <b>DIPLADENIA (Dipladenia)</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>DRACAENA (Dracaena)</b>             |                                 |                           |                 |                 |              |
|                                        | Cultural                        | - oedema                  | 1               | 0               | 1            |
|                                        | No disease                      |                           | 1               |                 | 1            |
| <b>EUPHORBIA (Euphorbia)</b>           |                                 |                           |                 |                 |              |
|                                        | Powdery mildew                  | - unknown                 | 1               | 0               | 1            |
| <b>EVOLVULUS (Evolvulus)</b>           |                                 |                           |                 |                 |              |
|                                        | Root/stem rot                   | - Rhizoctonia             | 2               | 0               | 2            |
| <b>FERN (various)</b>                  |                                 |                           |                 |                 |              |
|                                        | Cultural                        | - unknown                 | 1               | 0               | 1            |
|                                        | Insect injury                   |                           | 2               | 0               | 2            |
|                                        | No disease                      |                           | 1               |                 | 1            |
|                                        | Sooty mold                      | - species                 | 0               | 1               | 1            |
| <b>FIG (Ficus)</b>                     |                                 |                           |                 |                 |              |
|                                        | Insect injury                   |                           | 1               | 0               | 1            |
|                                        | No disease                      |                           | 2               | 0               | 2            |
| <b>FIRECRACKER FLOWER (Crossandra)</b> |                                 |                           |                 |                 |              |
|                                        | Virus                           | - Impatiens necrotic spot | 1               | 0               | 1            |
| <b>FOAMFLOWER (Tiarella)</b>           |                                 |                           |                 |                 |              |
|                                        | Gray mold                       | - Botrytis                | 1               | 0               | 1            |
| <b>FUCHSIA (Fuchsia)</b>               |                                 |                           |                 |                 |              |
|                                        | Environmental                   | - sunscald                | 1               | 0               | 1            |
|                                        | Inadequate specimen, no disease |                           | 3               |                 | 3            |
| <b>GARDENIA (Gardenia)</b>             |                                 |                           |                 |                 |              |
|                                        | Environmental                   | - cold injury             | 1               | 0               | 1            |
|                                        | Gall                            | - Phomopsis               | 0               | 1               | 1            |
|                                        | Insect injury                   |                           | 2               | 0               | 2            |
| <b>GERANIUM (Pelargonium)</b>          |                                 |                           |                 |                 |              |
|                                        | Bacterial blight                | - Xanthomonas             | 5               | 0               | 5            |
|                                        | Cultural                        | - oedema                  | 6               | 0               | 6            |
|                                        |                                 | - stress                  | 1               | 0               | 1            |
|                                        | Gray mold                       | - Botrytis                | 3               | 0               | 3            |
|                                        | Inadequate specimen, no disease |                           | 6               |                 | 6            |
|                                        | nutritional                     | - Iron deficiency         | 1               | 0               | 1            |
|                                        |                                 | - general                 | 3               | 1               | 4            |
|                                        |                                 | - Nitrogen deficiency     | 1               | 0               | 1            |
|                                        | Root rot                        | - Fusarium                | 1               | 0               | 1            |
|                                        |                                 | - Pythium                 | 1               | 0               | 1            |
|                                        |                                 | - Rhizoctonia             | 1               | 0               | 1            |
| <b>GEUM (Geum)</b>                     |                                 |                           |                 |                 |              |
|                                        | Bacterial soft rot              | - Erwinia                 | 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>GLADIOLUS (Gladiolus)</b> |                                 |                           |                 |                 |              |
|                              | Dry rot                         | - Fusarium                | 1               | 0               | 1            |
|                              | Insect injury                   |                           | 1               | 0               | 1            |
|                              | No disease                      |                           | 1               |                 | 1            |
| <b>GLOXINIA (Gloxinia)</b>   |                                 |                           |                 |                 |              |
|                              | Virus                           | - Impatiens necrotic spot | 1               | 0               | 1            |
| <b>HOLLYHOCK (Althaea)</b>   |                                 |                           |                 |                 |              |
|                              | Chemical injury                 | - herbicide               | 1               | 0               | 1            |
|                              | Insect injury                   |                           | 1               | 0               | 1            |
| <b>HOSTA (Hosta)</b>         |                                 |                           |                 |                 |              |
|                              | Environmental stress            |                           | 3               | 0               | 3            |
|                              | No disease                      |                           | 2               |                 | 2            |
|                              | Slime mold                      | - species                 | 1               | 0               | 1            |
| <b>IMPATIENS (Impatiens)</b> |                                 |                           |                 |                 |              |
|                              | Damping-off                     | - Rhizoctonia             | 1               | 0               | 1            |
|                              | Environmental                   | - wet feet                | 1               | 0               | 1            |
|                              | Inadequate specimen, no disease |                           | 11              |                 | 11           |
|                              | Insect injury                   |                           | 2               | 0               | 2            |
|                              | Nutritional                     | - general                 | 1               | 0               | 1            |
|                              | Root knot nematode              | - Meloidogyne             | 2               | 0               | 2            |
|                              | Root rot                        | - Pythium                 | 1               | 0               | 1            |
|                              |                                 | - Rhizoctonia             | 6               | 0               | 6            |
|                              | Virus                           | - Impatiens necrotic spot | 3               | 0               | 3            |
| <b>IRIS (Iris)</b>           |                                 |                           |                 |                 |              |
|                              | Bacterial soft rot              | - Erwinia                 | 1               | 0               | 1            |
|                              | Bacterial spot                  | - Xanthomonas             | 1               | 0               | 1            |
|                              | Chemical injury                 | - herbicide               | 1               | 0               | 1            |
|                              | Insect injury                   |                           | 1               | 0               | 1            |
| <b>IVY (various)</b>         |                                 |                           |                 |                 |              |
|                              | Bacterial spot                  | - Xanthomonas             | 1               | 0               | 1            |
|                              | Environmental                   | - winter injury           | 1               | 0               | 1            |
|                              | Leaf spot                       | - Colletotrichum          | 0               | 1               | 1            |
|                              | No disease                      |                           | 2               |                 | 2            |
| <b>JADE PLANT (Crassula)</b> |                                 |                           |                 |                 |              |
|                              | Chemical injury                 | - unknown                 | 1               | 0               | 1            |
|                              | Inadequate specimen             |                           | 1               |                 | 1            |
| <b>LILY (Lilium)</b>         |                                 |                           |                 |                 |              |
|                              | No disease                      |                           | 2               |                 | 2            |
|                              | Root rot                        | - Pythium                 | 1               | 0               | 1            |
| <b>MARIGOLD (Tagetes)</b>    |                                 |                           |                 |                 |              |
|                              | Dieback                         | - Alternaria              | 1               | 0               | 1            |
|                              | Environmental                   | - stress                  | 0               | 1               | 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> |
|----------------------------------------|---------------------|---------------------------|-----------------|-----------------|--------------|
| <b>MARIGOLD (cont)</b>                 |                     |                           |                 |                 |              |
|                                        | Nutritional         | - general                 | 1               | 0               | 1            |
|                                        | Wilt                | - Fusarium                | 1               | 0               | 1            |
| <b>NORFOLK ISLAND PINE (Araucaria)</b> |                     |                           |                 |                 |              |
|                                        | No disease          |                           | 1               |                 | 1            |
| <b>ORCHID (various)</b>                |                     |                           |                 |                 |              |
|                                        | Insect injury       |                           | 1               | 0               | 1            |
|                                        | No disease          |                           | 2               |                 | 2            |
| <b>PACHYSANDRA (Pachysandra)</b>       |                     |                           |                 |                 |              |
|                                        | Insect injury       |                           | 1               | 0               | 1            |
| <b>PALM (Livistona)</b>                |                     |                           |                 |                 |              |
|                                        | Insect injury       |                           | 1               | 0               | 1            |
| <b>PANSY (Viola)</b>                   |                     |                           |                 |                 |              |
|                                        | No disease          |                           | 2               |                 | 2            |
| <b>PEONY (Paeonia)</b>                 |                     |                           |                 |                 |              |
|                                        | Gary mold           | - Botrytis                | 1               | 0               | 1            |
|                                        | Leaf spot           | - Phyllosticta            | 1               | 0               | 1            |
|                                        | Red spot            | - Cladosporium            | 2               | 0               | 2            |
| <b>PETUNIA (Petunia)</b>               |                     |                           |                 |                 |              |
|                                        | Root/stem rot       | - Rhizoctonia             | 4               | 0               | 4            |
|                                        | Slime mold          | - species                 | 1               | 0               | 1            |
| <b>PHILODENDRON (Philodendron)</b>     |                     |                           |                 |                 |              |
|                                        | Cultural            | - oedema                  | 1               | 0               | 1            |
| <b>PHLOX (Phlox)</b>                   |                     |                           |                 |                 |              |
|                                        | Black root rot      | - Charlara                | 1               | 0               | 1            |
|                                        | Environmental       | - cold injury             | 1               | 0               | 1            |
|                                        | No disease          |                           | 2               |                 | 2            |
|                                        | Powdery mildew      | - species                 | 1               | 0               | 1            |
| <b>POINSETTIA (Euphorbia)</b>          |                     |                           |                 |                 |              |
|                                        | Anthraxnose         | - Colletotrichum          | 1               | 0               | 1            |
|                                        | Black root rot      | - Chalara                 | 1               | 0               | 1            |
|                                        | Insect injury       |                           | 1               | 0               | 1            |
|                                        | Nutritional         | - soluble salts           | 2               | 0               | 2            |
|                                        | Root rot            | - Pythium                 | 6               | 0               | 6            |
| <b>POPPY (Papaver)</b>                 |                     |                           |                 |                 |              |
|                                        | Inadequate specimen |                           | 1               |                 | 1            |
| <b>PORTULACA (Portulaca)</b>           |                     |                           |                 |                 |              |
|                                        | No disease          |                           | 4               |                 | 4            |
|                                        | Virus               | - Impatiens necrotic spot | 1               | 0               | 1            |
|                                        |                     | - unknown                 | 5               | 1               | 6            |

| <i>CROP</i>                          | <i>DIAGNOSIS</i> | <i>CAUSAL AGENT</i>       | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|--------------------------------------|------------------|---------------------------|-----------------|-----------------|--------------|
| <b>POTHOS (Pothos)</b>               | No disease       |                           | 1               |                 | 1            |
| <b>RUDBECKIA (Rudbeckia)</b>         | Environmental    | - wet feet                | 1               | 0               | 1            |
|                                      | Insect injury    |                           | 1               | 0               | 1            |
|                                      | Root rot         | - Pythium                 | 0               | 1               | 1            |
| <b>SALVIA (Salvia)</b>               | Chemical injury  | - growth regulator        | 1               | 0               | 1            |
|                                      | No disease       |                           | 1               |                 | 1            |
| <b>SCHEFFLERA (Brassaia)</b>         | Cultural         | - overwatering            | 1               | 0               | 1            |
| <b>SEDUM (Sedum)</b>                 | Chemical injury  | - growth regulator        | 1               | 0               | 1            |
|                                      | No disease       |                           | 1               |                 | 1            |
|                                      | Root rot         | - Pythium                 | 1               | 0               | 1            |
| <b>SIDALCEA (Sidalcea)</b>           | Insect injury    |                           | 1               | 0               | 1            |
| <b>SNAPDRAGON (Antirrhinum)</b>      | No disease       |                           | 2               |                 | 2            |
|                                      | Root/stem rot    | - Rhizoctonia             | 1               | 0               | 1            |
|                                      | Virus            | - Impatiens necrotic spot | 1               | 0               | 1            |
| <b>SPANISH-MOSS (Tillandsia)</b>     | Insect injury    |                           | 1               | 0               | 1            |
| <b>SPATHIPHYLLUM (Spathiphyllum)</b> | No disease       |                           | 3               |                 | 3            |
| <b>STREPTOCARPUS (Streptocarpus)</b> | No disease       |                           | 1               |                 | 1            |
| <b>SUNFLOWER (Helianthus)</b>        | Leaf spot        | - Cercospora              | 2               | 0               | 2            |
|                                      | No disease       |                           | 1               |                 | 1            |
| <b>TULIP (Tulipa)</b>                | Basal rot        | - Fusarium                | 1               | 0               | 1            |
|                                      | Chemical injury  | - unknown                 | 1               | 0               | 1            |
|                                      | Stem rot         | - Sclerotinia             | 0               | 1               | 1            |
| <b>VERBENA (Verbena)</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>VINCA (Vinca)</b>             |                                 |                     |                 |                 |              |
|                                  | Environmental                   | - wet feet          | 1               | 0               | 1            |
|                                  |                                 | - stress            | 0               | 1               | 1            |
|                                  | Gray mold                       | - Botrytis          | 1               | 0               | 1            |
|                                  | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                  | Nutritional                     | - general           | 1               | 0               | 1            |
|                                  | Root rot                        | - Rhizoctonia       | 1               | 0               | 1            |
|                                  | Stem blight                     | - Fusarium          | 1               | 0               | 1            |
| <b>WATER HYACINTH (Hyacinth)</b> |                                 |                     |                 |                 |              |
|                                  | Environmental                   | - cold injury       | 1               | 0               | 1            |
| <b>WOOD SORREL (Oxalis)</b>      |                                 |                     |                 |                 |              |
|                                  | No disease                      |                     | 1               |                 | 1            |
| <b>ZINNIA (Zinnia)</b>           |                                 |                     |                 |                 |              |
|                                  | Bacterial leaf spot             | - Xanthomonas       | 2               | 1               | 3            |
|                                  | Blight                          | - Alternaria        | 1               | 0               | 1            |
|                                  | Environmental                   | - wet feet          | 1               | 0               | 1            |
|                                  | No disease                      |                     | 2               |                 | 2            |

| <i>CROP</i>                   | <i>DIAGNOSIS</i>                | <i>CAUSAL AGENT</i>     | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-------------------------------|---------------------------------|-------------------------|-----------------|-----------------|--------------|
| <u>TURFGRASS</u>              |                                 |                         |                 |                 |              |
| <b>BENTGRASS (Agrostis)</b>   |                                 |                         |                 |                 |              |
|                               | Algae                           | - green                 | 2               | 0               | 2            |
|                               | Anthracnose                     | - Colletotrichum        | 2               | 0               | 2            |
|                               | Brown patch                     | - Rhizoctonia           | 1               | 0               | 1            |
|                               | Cottony blight                  | - Pythium               | 4               | 0               | 4            |
|                               | Dollar spot                     | - Lanzia./Moell.        | 1               | 0               | 1            |
|                               | Environmental                   | - poor soil             | 1               | 0               | 1            |
|                               |                                 | - stress                | 1               | 0               | 1            |
|                               | Fading out                      | - Curvularia            | 1               | 0               | 1            |
|                               | No disease                      |                         | 8               |                 | 8            |
|                               | Nutritional                     | - Phosphorus deficiency | 1               | 0               | 1            |
|                               | Pink snow mold                  | - Fusarium              | 2               | 0               | 2            |
|                               | Root rot                        | - Pythium               | 3               | 3               | 6            |
|                               | Snow mold                       | - unknown               | 1               | 0               | 1            |
|                               | Summer patch                    | - Magnaporthe           | 1               | 0               | 1            |
|                               | Take-all                        | - Gaeumannomyces        | 7               | 0               | 7            |
|                               | Yellow patch                    | - Rhizoctonia           | 2               | 0               | 2            |
| <b>BERMUDAGRASS (Cynodon)</b> |                                 |                         |                 |                 |              |
|                               | Spring dead spot                | - Leptosphaeria         | 1               | 0               | 1            |
| <b>BLUEGRASS (Poa)</b>        |                                 |                         |                 |                 |              |
|                               | Blight                          | - Nigrospora            | 1               | 0               | 1            |
|                               |                                 | - Pythium               | 1               | 0               | 1            |
|                               | Brown patch                     | - Rhizoctonia           | 6               | 1               | 7            |
|                               | Cultural                        | - heavy thatch          | 1               | 0               | 1            |
|                               | Dollar spot                     | - Lanzia./Moell.        | 1               | 0               | 1            |
|                               | Environmental                   | - stress                | 1               | 0               | 1            |
|                               | Fairy ring                      | - Basidiomycete         | 1               | 0               | 1            |
|                               | Inadequate specimen, no disease |                         | 7               | 0               | 7            |
|                               | Necrotic ring spot              | - Leptosphaeria         | 1               | 0               | 1            |
|                               | Powdery mildew                  | - Erysiphe              | 1               | 0               | 1            |
|                               | Red thread                      | - Laetisaria            | 3               | 0               | 3            |
|                               | Root rot                        | - Pythium               | 1               | 0               | 1            |
|                               |                                 | - Rhizoctonia           | 1               | 0               | 1            |
|                               | Summer patch                    | - Magnaporthe           | 3               | 0               | 3            |
| <b>FESCUE (Festuca)</b>       |                                 |                         |                 |                 |              |
|                               | Brown patch                     | - Rhizoctonia           | 10              | 0               | 10           |
|                               | Cultural                        | - heavy thatch          | 2               | 0               | 2            |
|                               | Environmental stresses          |                         | 2               | 0               | 2            |
|                               | Inadequate specimen, no disease |                         | 4               |                 | 4            |
|                               | Insect injury                   |                         | 0               | 1               | 1            |
|                               | Nutritional                     | - acid soil             | 0               | 1               | 1            |
|                               | Red thread                      | - Laetisaria            | 1               | 0               | 1            |
|                               | Root rot                        | - Pythium               | 1               | 0               | 1            |
|                               | Yellow patch                    | - Rhizoctonia           | 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 (<i>Lolium</i>)</b>      |                                 |                      |                 |                 |              |
|                                      | Blight                          | - Pythium            | 1               | 0               | 1            |
|                                      | Brown patch                     | - Rhizoctonia        | 0               | 1               | 1            |
|                                      | Environmental                   | - stress             | 0               | 1               | 1            |
|                                      | Fading out                      | - Curvularia         | 1               | 0               | 1            |
|                                      | Leaf spot                       | - Drechslera         | 1               | 0               | 1            |
|                                      | No disease                      |                      | 1               |                 | 1            |
| <b>TURF (various)</b>                |                                 |                      |                 |                 |              |
|                                      | Blight                          | - Pythium            | 2               | 0               | 2            |
|                                      | Brown patch                     | - Rhizoctonia        | 1               | 0               | 1            |
|                                      | Burn                            | - mulch fermentation | 2               | 0               | 2            |
|                                      | Chemical                        | - herbicide          | 1               | 0               | 1            |
|                                      | Cultural                        | - heavy thatch       | 3               | 0               | 3            |
|                                      | Environmental stresses          |                      | 2               | 0               | 2            |
|                                      | Fairy ring                      | - Basidiomycete      | 1               | 0               | 1            |
|                                      | Inadequate specimen, no disease |                      | 4               |                 | 4            |
|                                      | Necrotic ring spot              | - Leptosphaeria      | 1               | 0               | 1            |
|                                      | Root rot                        | - Pythium            | 2               | 1               | 3            |
|                                      | Slime mold                      | - species            | 2               | 0               | 2            |
|                                      | Summer patch                    | - Phialophora        | 1               | 0               | 1            |
|                                      | Yellow patch                    | - Rhizoctonia        | 0               | 1               | 1            |
| <b>ZOYSIA (<i>Zoysia</i>)</b>        |                                 |                      |                 |                 |              |
|                                      | Blight                          | - Pythium            | 1               | 0               | 1            |
|                                      | Leaf blight                     | - Curvularia         | 1               | 0               | 1            |
| <u><b>WOODY ORNAMENTALS</b></u>      |                                 |                      |                 |                 |              |
| <b>ABELIA (<i>Abelia</i>)</b>        |                                 |                      |                 |                 |              |
|                                      | Sooty mold                      | - species            | 1               | 0               | 1            |
| <b>ALDER (<i>Alnus</i>)</b>          |                                 |                      |                 |                 |              |
|                                      | No disease                      |                      | 1               |                 | 1            |
| <b>ARALIA (<i>Aralia</i>)</b>        |                                 |                      |                 |                 |              |
|                                      | No disease                      |                      | 1               |                 | 1            |
| <b>ALLSPICE (<i>Calycanthus</i>)</b> |                                 |                      |                 |                 |              |
|                                      | No disease                      |                      | 2               |                 | 2            |
| <b>ARBORVITAE (<i>Thuja</i>)</b>     |                                 |                      |                 |                 |              |
|                                      | Environmental                   | - stress             | 1               | 0               | 1            |
|                                      | Insect injury                   |                      | 5               | 0               | 5            |
|                                      | No disease                      |                      | 1               |                 | 1            |
|                                      | Needle drop                     | - normal             | 4               | 0               | 4            |
|                                      | Twig blight                     | - Kabatina           | 2               | 0               | 2            |
| <b>ASH (<i>Fraxinus</i>)</b>         |                                 |                      |                 |                 |              |
|                                      | Anthraxnose                     | - Discula            | 11              | 0               | 11           |
|                                      | Ash decline                     | - environmental      | 1               | 0               | 1            |
|                                      | Insect injury                   |                      | 4               | 0               | 4            |



| <i>CROP</i>                                    | <i>DIAGNOSIS</i>                | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|------------------------------------------------|---------------------------------|---------------------|-----------------|-----------------|--------------|
| <b>AZALEA - See listing under RHODODENDRON</b> |                                 |                     |                 |                 |              |
| <b>BARBERRY (Berberis)</b>                     |                                 |                     |                 |                 |              |
|                                                | Inadequate specimen, no disease |                     | 6               |                 | 6            |
|                                                | Insect injury                   |                     | 1               | 0               | 1            |
|                                                | Powdery mildew                  | - Phyllactinia      | 1               | 0               | 1            |
| <b>BEECH (Fagus)</b>                           |                                 |                     |                 |                 |              |
|                                                | Chemical injury                 | - growth regulator  | 1               | 0               | 1            |
|                                                | Cultural                        | - transplant shock  | 1               | 0               | 1            |
| <b>BIRCH (Betula)</b>                          |                                 |                     |                 |                 |              |
|                                                | Anthraxnose                     | - Gloeosporium      | 1               | 0               | 1            |
|                                                | Chemical injury                 | - unknown           | 1               | 0               | 1            |
|                                                | Environmental                   | - stress            | 1               | 0               | 1            |
|                                                | Inadequate specimen, no disease |                     | 3               |                 | 3            |
|                                                | Insect injury                   |                     | 2               | 1               | 3            |
|                                                | Leaf spot                       | - Discula           | 1               | 0               | 1            |
|                                                |                                 | - Gloeosporium      | 1               | 0               | 1            |
| <b>BLACKGUM (Nyssa)</b>                        |                                 |                     |                 |                 |              |
|                                                | Environmental                   | - wet feet          | 1               | 0               | 1            |
| <b>BOXELDER (Acer)</b>                         |                                 |                     |                 |                 |              |
|                                                | Dieback                         | - Sphaeropsis       | 1               | 0               | 1            |
|                                                | Insect injury                   |                     | 1               | 0               | 1            |
|                                                | Leaf spot                       | - Macrophoma        | 0               | 1               | 1            |
|                                                | No disease                      |                     | 2               |                 | 2            |
| <b>BOXWOOD (Buxus)</b>                         |                                 |                     |                 |                 |              |
|                                                | Environmental stresses          |                     | 3               | 0               | 3            |
|                                                | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                                | Insect injury                   |                     | 1               | 0               | 1            |
|                                                | Leaf spot                       | - Macrophoma        | 1               | 0               | 1            |
|                                                | Physical injury                 | - unknown           | 1               | 0               | 1            |
| <b>CEDAR - See listing under JUNIPER</b>       |                                 |                     |                 |                 |              |
| <b>CEDRUS (Cedrus)</b>                         |                                 |                     |                 |                 |              |
|                                                | No disease                      |                     | 2               |                 | 2            |
| <b>CHERRY (Prunus)</b>                         |                                 |                     |                 |                 |              |
|                                                | Inadequate specimen, no disease |                     | 6               |                 | 6            |
|                                                | Insect injury                   |                     | 1               | 0               | 1            |
|                                                | Leaf spot                       | - Coccomyces        | 1               | 0               | 1            |
| <b>CHESTNUT (Castanea)</b>                     |                                 |                     |                 |                 |              |
|                                                | No disease                      |                     | 1               |                 | 1            |
| <b>CLETHRA (Clethra)</b>                       |                                 |                     |                 |                 |              |
|                                                | Black root rot                  | - Chalara           | 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>COTTONWOOD (Populus)</b>        |                                 |                     |                 |                 |              |
|                                    | Insect injury                   |                     | 1               | 0               | 1            |
|                                    | No disease                      |                     | 1               |                 | 1            |
| <b>CRABAPPLE (Malus)</b>           |                                 |                     |                 |                 |              |
|                                    | Chemical injury                 | - herbicide         | 1               | 0               | 1            |
|                                    | Cultural                        | - transplant shock  | 1               | 0               | 1            |
|                                    | Environmental                   | - stress            | 1               | 0               | 1            |
|                                    | Fire blight                     | - Erwinia           | 1               | 0               | 1            |
|                                    | inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                    | Scab                            | - venturia          | 8               | 0               | 8            |
| <b>CRAPEMYRTLE (Lagerstroemia)</b> |                                 |                     |                 |                 |              |
|                                    | Environmental                   | - stress            | 1               | 0               | 1            |
|                                    | Insect injury                   |                     | 2               | 0               | 2            |
| <b>CYPRUS (Cupressocyparis)</b>    |                                 |                     |                 |                 |              |
|                                    | Environmental                   | - sunscald          | 1               | 0               | 1            |
|                                    | Insect injury                   |                     | 1               | 0               | 1            |
| <b>DOGWOOD (Cornus)</b>            |                                 |                     |                 |                 |              |
|                                    | Anthracnose                     | - Discula           | 45              | 0               | 45           |
|                                    | Canker                          | - Macrophoma        | 1               | 0               | 1            |
|                                    |                                 | - Phomopsis         | 0               | 1               | 1            |
|                                    | Chemical injury                 | - growth regulator  | 1               | 0               | 1            |
|                                    |                                 | - herbicide         | 1               | 0               | 1            |
|                                    | Cultural                        | - improper depth    | 1               | 0               | 1            |
|                                    |                                 | - transplant shock  | 14              | 0               | 14           |
|                                    | Environmental stresses          |                     | 44              | 2               | 46           |
|                                    | Inadequate specimen, no disease |                     | 42              |                 | 42           |
|                                    | Insect injury                   |                     | 3               | 0               | 3            |
|                                    | Leaf blotch                     | - Discula           | 1               | 0               | 1            |
|                                    | Leaf scorch                     | - environmental     | 5               | 0               | 5            |
|                                    |                                 | - unknown           | 7               | 1               | 8            |
|                                    | Leaf spot                       | - Pestalotia        | 0               | 1               | 1            |
|                                    |                                 | - Septoria          | 4               | 0               | 4            |
|                                    | Nutritional                     | - Iron deficiency   | 1               | 0               | 1            |
|                                    | Physical injury                 | - unknown           | 1               | 0               | 1            |
|                                    | Powdery mildew                  | - Phyllactinia      | 9               | 0               | 1            |
|                                    | Slime mold                      | - species           | 1               | 0               | 1            |
|                                    | Spot anthracnose                | - Elsinoe           | 10              | 0               | 10           |
| <b>ELM (Ulmus)</b>                 |                                 |                     |                 |                 |              |
|                                    | Dutch elm disease               | - Ceratocystis      | 1               | 0               | 1            |
|                                    | Insect injury                   |                     | 3               | 0               | 3            |
|                                    | No disease                      |                     | 4               |                 | 4            |

| <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>           |                                 |                     |                 |                 |              |
|                                      | Chemical injury                 | - growth regulator  | 1               | 0               | 1            |
|                                      | Crown gall                      | - Agrobacterium     | 3               | 0               | 3            |
|                                      | Cultural                        | - transplant shock  | 1               | 0               | 1            |
|                                      | Insect injury                   |                     | 11              | 3               | 14           |
|                                      | No disease                      |                     | 4               |                 | 4            |
|                                      | Physical injury                 | - unknown           | 1               | 0               | 1            |
|                                      | Powdery mildew                  | - Microsphaera      | 2               | 0               | 2            |
| <b>FIR (Abies)</b>                   |                                 |                     |                 |                 |              |
|                                      | Cultural                        | - transplant shock  | 1               | 0               | 1            |
|                                      | Environmental                   | - stress            | 1               | 0               | 1            |
|                                      | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                      | Tip blight                      | - Sphaeropsis       | 1               | 0               | 1            |
| <b>FORSYTHIA (Forsythia)</b>         |                                 |                     |                 |                 |              |
|                                      | Crown gall                      | - Agrobacterium     | 1               | 0               | 1            |
|                                      | Insect injury                   |                     | 2               | 0               | 2            |
|                                      | No disease                      |                     | 1               |                 | 1            |
| <b>FRINGETREE (Chionanthus)</b>      |                                 |                     |                 |                 |              |
|                                      | No disease                      |                     | 1               |                 | 1            |
| <b>GINKO (Ginko)</b>                 |                                 |                     |                 |                 |              |
|                                      | No disease                      |                     | 1               |                 | 1            |
| <b>GOLDENRAINTREE (Koelreuteria)</b> |                                 |                     |                 |                 |              |
|                                      | No disease                      |                     | 1               |                 | 1            |
| <b>HACKBERRY (Celtis)</b>            |                                 |                     |                 |                 |              |
|                                      | Insect injury                   |                     | 1               | 0               | 1            |
| <b>HAWTHORN (Crataegus)</b>          |                                 |                     |                 |                 |              |
|                                      | Cedar-quince rust               | - Gymnosporangium   | 7               | 0               | 7            |
|                                      | Inadequate specimen, no disease |                     | 2               |                 | 2            |
|                                      | Insect injury                   |                     | 4               | 0               | 4            |
| <b>HEMLOCK (Tsuga)</b>               |                                 |                     |                 |                 |              |
|                                      | Environmental                   | - stress            | 5               | 0               | 5            |
|                                      | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                      | Insect injury                   |                     | 2               | 0               | 2            |
| <b>HIBISCUS (Hibiscus)</b>           |                                 |                     |                 |                 |              |
|                                      | Chemical injury                 | - growth regulator  | 1               | 0               | 1            |
|                                      | Environmental                   | - stress            | 1               | 0               | 1            |
|                                      | Leaf spot                       | - Alternaria        | 0               | 1               | 1            |
| <b>HICKORY (Carya)</b>               |                                 |                     |                 |                 |              |
|                                      | Insect injury                   |                     | 4               | 0               | 4            |
|                                      | Sapwood rot                     | - Trametes          | 1               | 0               | 1            |
|                                      | Wood decay                      | - unknown           | 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>HOLLY (Ilex)</b>                      |                                 |                      |                 |                 |              |
|                                          | Anthracnose                     | - Gloeosporium       | 1               | 0               | 1            |
|                                          | Black root rot                  | - Chalara            | 7               | 0               | 7            |
|                                          | Cultural                        | - transplant shock   | 5               | 0               | 5            |
|                                          | Environmental stresses          |                      | 7               | 0               | 7            |
|                                          | Inadequate specimen, no disease |                      | 21              |                 | 21           |
|                                          | Insect injury                   |                      | 1               | 1               | 2            |
|                                          | Leaf drop                       | - normal             | 1               | 0               | 1            |
|                                          | Leaf spot                       | - fungal             | 1               | 0               | 1            |
|                                          | Physical injury                 | - weed eater         | 1               | 0               | 1            |
|                                          | Sooty mold                      | - species            | 0               | 1               | 1            |
| <b>HONEYLOCUST (Gleditsia)</b>           |                                 |                      |                 |                 |              |
|                                          | Leaf spot                       | - Septoria           | 1               | 0               | 1            |
|                                          | No disease                      |                      | 1               |                 | 1            |
| <b>HONEYSUCKLE (Lonicera)</b>            |                                 |                      |                 |                 |              |
|                                          | Chemical injury                 | - herbicide          | 1               | 0               | 1            |
|                                          | No disease                      |                      | 2               |                 | 2            |
| <b>HORNBEAM (Carpinus)</b>               |                                 |                      |                 |                 |              |
|                                          | No disease                      |                      | 1               |                 | 1            |
| <b>HYDRANGEA (Hydrangea)</b>             |                                 |                      |                 |                 |              |
|                                          | Cultural                        | - transplant shock   | 1               | 0               | 1            |
|                                          | Insect injury                   |                      | 3               | 0               | 3            |
| <b>JUNIPER and RED CEDAR (Juniperus)</b> |                                 |                      |                 |                 |              |
|                                          | Burn                            | - mulch fermentation | 1               | 0               | 1            |
|                                          | Cedar/apple rust                | - Gymnosporangium    | 2               | 0               | 2            |
|                                          | Cultural                        | - transplant shock   | 1               | 0               | 1            |
|                                          | Environmental stresses          |                      | 4               | 1               | 5            |
|                                          | Inadequate specimen, no disease |                      | 15              |                 | 15           |
|                                          | Insect injury                   |                      | 12              | 0               | 12           |
|                                          | Physical injury                 | - unknown            | 2               | 0               | 2            |
|                                          | Root rot                        | - Phytophthora       | 2               | 0               | 2            |
|                                          | Twig blight                     | - Kabatina           | 4               | 0               | 4            |
| <b>KENTUCKY COFFEETREE (Gymnocladus)</b> |                                 |                      |                 |                 |              |
|                                          | Insect injury                   |                      | 1               | 0               | 1            |
| <b>LEUCOTHOE (Leucothoe)</b>             |                                 |                      |                 |                 |              |
|                                          | Leaf spot                       | - unknown            | 1               | 0               | 1            |
| <b>LILAC (Syringa)</b>                   |                                 |                      |                 |                 |              |
|                                          | Bacterial blight                | - Pseudomonas        | 1               | 0               | 1            |
|                                          | Environmental                   | - stress             | 2               | 0               | 2            |
|                                          | Inadequate specimen, no disease |                      | 2               |                 | 2            |
|                                          | Powdery mildew                  | - Microsphaera       | 4               | 0               | 4            |

| <i>CROP</i>                    | <i>DIAGNOSIS</i>                | <i>CAUSAL AGENT</i> | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|--------------------------------|---------------------------------|---------------------|-----------------|-----------------|--------------|
| <b>LINDEN (Tilia)</b>          |                                 |                     |                 |                 |              |
|                                | Chemical injury                 | - herbicide         | 1               | 0               | 1            |
| <b>LOCUST (Robinia)</b>        |                                 |                     |                 |                 |              |
|                                | Insect injury                   |                     | 3               | 0               | 3            |
| <b>MAGNOLIA (Magnolia)</b>     |                                 |                     |                 |                 |              |
|                                | bacterial leaf spot             | - Pseudomonas       | 1               | 0               | 1            |
|                                | Cultural                        | - thick mulch       | 1               | 0               | 1            |
|                                |                                 | - transplant shock  | 1               | 0               | 1            |
|                                | Environmental                   | - stress            | 4               | 0               | 4            |
|                                | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                | Insect injury                   |                     | 13              | 3               | 16           |
|                                | Leaf scorch                     | - winter drying     | 1               | 0               | 1            |
|                                | Leaf spot                       | - fungal            | 1               | 0               | 1            |
|                                | Physical injury                 | - bird              | 1               | 0               | 1            |
| <b>MAHONIA (Mahonia)</b>       |                                 |                     |                 |                 |              |
|                                | Leaf scorch                     | - winter drying     | 1               | 0               | 1            |
| <b>MAPLE (Acer)</b>            |                                 |                     |                 |                 |              |
|                                | Air pollution                   | - ozone             | 1               | 0               | 1            |
|                                | Anthracnose                     | - Discula           | 8               | 1               | 9            |
|                                |                                 | - fungal            | 1               | 0               | 1            |
|                                |                                 | - Kabatiella        | 4               | 0               | 4            |
|                                | Bacterial scorch                | - Xylella           | 2               | 0               | 2            |
|                                | Canker                          | - Cytospora         | 0               | 1               | 1            |
|                                |                                 | - Nectria           | 1               | 0               | 1            |
|                                | Chemical injury                 | - growth regulator  | 2               | 0               | 2            |
|                                |                                 | - herbicide         | 5               | 0               | 5            |
|                                | Cultural                        | - girdling root     | 3               | 0               | 3            |
|                                |                                 | - high temperature  | 0               | 1               | 1            |
|                                |                                 | - transplant shock  | 6               | 0               | 6            |
|                                | Damping-off                     | - Pythium           | 1               | 0               | 1            |
|                                | Decline                         | - environmental     | 6               | 0               | 6            |
|                                | Environmental stresses          |                     | 12              | 1               | 13           |
|                                | Inadequate specimen, no disease |                     | 32              |                 | 32           |
|                                | Insect injury                   |                     | 25              | 3               | 28           |
|                                | Leaf scorch                     | - unknown           | 3               | 0               | 3            |
|                                | Leaf spot                       | - Cylindrosporium   | 1               | 0               | 1            |
|                                |                                 | - Phyllosticta      | 7               | 0               | 7            |
|                                | Physical injury                 | - topping           | 1               | 0               | 1            |
|                                | Root rot                        | - Ganoderma         | 1               | 0               | 1            |
|                                | Sooty mold                      | - species           | 0               | 1               | 1            |
|                                | Wilt                            | - Verticillium      | 7               | 0               | 7            |
|                                | Woody decay                     | - Basidiomycete     | 1               | 0               | 1            |
| <b>MICROBIOTA (Microbiota)</b> |                                 |                     |                 |                 |              |
|                                | No disease                      |                     | 1               |                 | 1            |
| <b>MIMOSA (Albizzia)</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>MOUNTAIN LAUREL (<i>Kalmia</i>)</b> |                                 |                          |                 |                 |              |
|                                        | No disease                      |                          | 1               |                 | 1            |
| <b>NANDINA (<i>Nandina</i>)</b>        |                                 |                          |                 |                 |              |
|                                        | No disease                      |                          | 2               |                 | 2            |
| <b>OAK (<i>Quercus</i>)</b>            |                                 |                          |                 |                 |              |
|                                        | Anthracnose                     | - <i>Apiognomonia</i>    | 8               | 0               | 8            |
|                                        | Bacterial scorch                | - <i>Xylella</i>         | 11              | 0               | 11           |
|                                        | Chemical injury                 | - growth regulator       | 3               | 0               | 3            |
|                                        |                                 | - herbicide              | 6               | 1               | 7            |
|                                        |                                 | - unknown                | 1               | 0               | 1            |
|                                        | Decline                         | - environmental, unknown | 2               | 0               | 2            |
|                                        | Environmental                   | - stress                 | 6               | 0               | 6            |
|                                        | Inadequate specimen, no disease |                          | 8               |                 | 8            |
|                                        | Insect injury                   |                          | 33              | 6               | 39           |
|                                        | Leaf blister                    | - <i>Taphrina</i>        | 3               | 1               | 4            |
|                                        | Leaf spot                       | - <i>Elsinoe</i>         | 1               | 0               | 1            |
|                                        |                                 | - fungal                 | 0               | 1               | 1            |
|                                        |                                 | - <i>Gloeosporium</i>    | 1               | 0               | 1            |
|                                        |                                 | - <i>Tubakia</i>         | 9               | 2               | 11           |
|                                        | Nutritional                     | - Iron deficiency        | 4               | 2               | 6            |
|                                        | Physical injury                 | - unknown                | 2               | 0               | 2            |
|                                        | Powdery mildew                  | - <i>Phyllactinia</i>    | 1               | 0               | 1            |
|                                        |                                 | - species                | 2               | 1               | 3            |
|                                        | Wood decay                      | - Basidiomycete          | 1               | 0               | 1            |
|                                        |                                 | - unknown                | 2               | 0               | 2            |
| <b>PAULOWNIA (<i>Paulownia</i>)</b>    |                                 |                          |                 |                 |              |
|                                        | No disease                      |                          | 1               |                 | 1            |
| <b>PAWPAW (<i>Asimina</i>)</b>         |                                 |                          |                 |                 |              |
|                                        | Chemical injury                 | - herbicide              | 1               | 0               | 1            |
|                                        | Environmental                   | - stress                 | 1               | 0               | 1            |
|                                        | Leaf blotch                     | - <i>Discula</i>         | 0               | 1               | 1            |
| <b>PEAR (<i>Pyrus</i>)</b>             |                                 |                          |                 |                 |              |
|                                        | Chemical injury                 | - growth regulator       | 2               | 0               | 2            |
|                                        |                                 | - herbicide              | 2               | 0               | 2            |
|                                        | Cultural                        | - transplant shock       | 2               | 0               | 2            |
|                                        | Environmental stresses          |                          | 4               | 0               | 4            |
|                                        | Insect injury                   |                          | 1               | 1               | 2            |
|                                        | No disease                      |                          | 4               |                 | 4            |
| <b>PERSIMMON (<i>Diospyros</i>)</b>    |                                 |                          |                 |                 |              |
|                                        | Insect injury                   |                          | 2               | 0               | 2            |
|                                        | Physical injury                 | - unknown                | 1               | 0               | 1            |
| <b>PHOTINIA (<i>Photinia</i>)</b>      |                                 |                          |                 |                 |              |
|                                        | Dieback                         | - <i>Botryosphaeria</i>  | 0               | 1               | 1            |
|                                        | Environmental                   | - winter injury          | 1               | 0               | 1            |
|                                        | Leaf spot                       | - <i>Entomosporium</i>   | 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>PIERIS (Pieris)</b>    |                                 |                     |                 |                 |              |
|                           | Cultural                        | - transplant shock  | 2               | 0               | 2            |
|                           | Environmental                   | - stress            | 2               | 0               | 2            |
|                           | Inadequate specimen             |                     | 1               |                 | 1            |
| <b>PINE (Pinus)</b>       |                                 |                     |                 |                 |              |
|                           | Air pollution                   | - ozone             | 1               | 0               | 1            |
|                           | Brown spot                      | - Mycosphaerella    | 1               | 0               | 1            |
|                           | Chemical injury                 | - growth regulator  | 1               | 0               | 1            |
|                           |                                 | - herbicide         | 3               | 0               | 3            |
|                           |                                 | - unknown           | 1               | 0               | 1            |
|                           | Cultural                        | - improper depth    | 1               | 0               | 1            |
|                           |                                 | - transplant shock  | 8               | 1               | 9            |
|                           | Environmental stresses          |                     | 15              | 0               | 15           |
|                           | Inadequate specimen, no disease |                     | 64              |                 | 64           |
|                           | Insect injury                   |                     | 23              | 9               | 32           |
|                           | Needle blight                   | - Dothistroma       | 0               | 1               | 1            |
|                           | Needle cast                     | - Naemacyclus       | 1               | 0               | 1            |
|                           |                                 | - Plioderma         | 1               | 0               | 1            |
|                           | Needle drop                     | - normal            | 9               | 0               | 9            |
|                           |                                 | - drought           | 1               | 0               | 1            |
|                           | Needle rust                     | - Coleosporium      | 2               | 0               | 2            |
|                           | Physical injury                 | - bird              | 0               | 1               | 1            |
|                           |                                 | - construction      | 1               | 0               | 1            |
|                           |                                 | - unknown           | 2               | 1               | 3            |
|                           | Pinewood nematode               | - Bursaphelencus    | 3               | 1               | 4            |
|                           | Sooty mold                      | - species           | 2               | 1               | 3            |
|                           | Tip blight                      | - Sphaeropsis       | 28              | 0               | 28           |
|                           | Tip burn                        | - unknown           | 0               | 1               | 1            |
|                           | White pine decline              | - environmental     | 7               | 0               | 7            |
| <b>PLUM (Prunus)</b>      |                                 |                     |                 |                 |              |
|                           | Black knot                      | - Apiosporina       | 6               | 0               | 6            |
| <b>POPLAR (Populus)</b>   |                                 |                     |                 |                 |              |
|                           | Insect injury                   |                     | 2               | 0               | 2            |
|                           | No disease                      |                     | 1               |                 | 1            |
| <b>PRIVET (Ligustrum)</b> |                                 |                     |                 |                 |              |
|                           | No disease                      |                     | 3               |                 | 3            |
| <b>REDBUD (Cercis)</b>    |                                 |                     |                 |                 |              |
|                           | Chemical injury                 | - herbicide         | 1               | 0               | 1            |
|                           | Environmental                   | - stress            | 1               | 0               | 1            |
|                           | Inadequate specimen, no disease |                     | 11              |                 | 11           |
|                           | Virus                           | - unknown           | 1               | 0               | 1            |
|                           | Wilt                            | - Verticillium      | 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>RHODODENDRON and AZALEA (Rhododendron)</b> |                  |                      |                 |                 |              |
| Cultural                                      |                  | - improper depth     | 2               | 0               | 2            |
|                                               |                  | - oedema             | 0               | 1               | 1            |
|                                               |                  | - transplant shock   | 1               | 0               | 1            |
|                                               |                  | - wet feet           | 3               | 0               | 3            |
| Dieback                                       |                  | - Botryosphaeria     | 6               | 0               | 6            |
| Environmental stresses                        |                  |                      | 3               | 0               | 3            |
| Inadequate specimen, no disease               |                  |                      | 24              |                 | 24           |
| Insect injury                                 |                  |                      | 16              | 1               | 17           |
| Leaf/flower gall                              |                  | - Exobasidium        | 5               | 0               | 5            |
| Nutritional                                   |                  | - fertilizer burn    | 1               | 0               | 1            |
|                                               |                  | - Iron deficiency    | 1               | 0               | 1            |
| Powdery mildew                                |                  | - Microsphaera       | 2               | 0               | 2            |
| Root rot                                      |                  | - Rhizoctonia        | 1               | 0               | 1            |
| <b>ROSE (Rosa)</b>                            |                  |                      |                 |                 |              |
| Chemical injury                               |                  | - growth regulator   | 3               | 0               | 3            |
| Cultural                                      |                  | - improper depth     | 1               | 0               | 1            |
|                                               |                  | - transplant shock   | 2               | 0               | 2            |
| Environmental stresses                        |                  |                      | 3               | 0               | 3            |
| Inadequate specimen, no disease               |                  |                      | 8               |                 | 8            |
| Insect injury                                 |                  |                      | 6               | 1               | 7            |
| Leaf scorch                                   |                  | - unknown            | 0               | 1               | 1            |
| Nutritional                                   |                  | - high pH            | 1               | 0               | 1            |
| Powdery mildew                                |                  | - Sphaerotheca       | 4               | 0               | 4            |
| Root rot                                      |                  | - Pythium            | 1               | 0               | 1            |
| Rosette                                       |                  | - unknown            | 6               | 0               | 6            |
| Virus                                         |                  | - Rose mosaic        | 2               | 0               | 2            |
| <b>SERVICEBERRY (Amelanchier)</b>             |                  |                      |                 |                 |              |
| Rust                                          |                  | - Gymnosporangium    | 1               | 0               | 1            |
| <b>SMOKETREE (Cotinus)</b>                    |                  |                      |                 |                 |              |
| No disease                                    |                  |                      | 1               |                 | 1            |
| <b>SPIREA (Spirea)</b>                        |                  |                      |                 |                 |              |
| Leaf spot                                     |                  | - Cylindrosporium    | 0               | 1               | 1            |
| Powdery mildew                                |                  | - Oidium             | 2               | 0               | 2            |
| <b>SPRUCE (Picea)</b>                         |                  |                      |                 |                 |              |
| Burn                                          |                  | - mulch fermentation | 1               | 0               | 1            |
| Chemical injury                               |                  | - herbicide          | 1               | 0               | 1            |
|                                               |                  | - unknown            | 1               | 0               | 1            |
| Cultural                                      |                  | - transplant shock   | 6               | 0               | 6            |
| Environmental stresses                        |                  |                      | 9               | 1               | 10           |
| Inadequate specimen, no disease               |                  |                      | 31              |                 | 31           |
| Insect injury                                 |                  |                      | 13              | 1               | 14           |
| Needle cast                                   |                  | - Lophodermium       | 1               | 0               | 1            |
|                                               |                  | - Rhizosphaera       | 6               | 0               | 6            |
| Needle drop                                   |                  | - normal             | 4               | 0               | 4            |
| Nutritional                                   |                  | - unknown            | 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>STYLOPHORUM (Stylophorum)</b>         |                                 |                     |                 |                 |              |
|                                          | Southern blight                 | - Athelia           | 1               | 0               | 1            |
| <b>SWEETGUM (Liquidambar)</b>            |                                 |                     |                 |                 |              |
|                                          | Anthraxnose                     | - Gloeosporium      | 1               | 0               | 1            |
|                                          | No disease                      |                     | 3               |                 | 3            |
| <b>SYCAMORE and PLANETREE (Platanus)</b> |                                 |                     |                 |                 |              |
|                                          | Chemical injury                 | - herbicide         | 1               | 0               | 1            |
|                                          | No disease                      |                     | 2               |                 | 2            |
| <b>TAXUS (Taxus)</b>                     |                                 |                     |                 |                 |              |
|                                          | Chemical injury                 | - herbicide         | 2               | 0               | 2            |
|                                          |                                 | - insecticide       | 1               | 0               | 1            |
|                                          | Cultural                        | - improper depth    | 1               | 0               | 1            |
|                                          |                                 | - pruning           | 1               | 0               | 1            |
|                                          | Environmental stresses          |                     | 9               | 0               | 9            |
|                                          | Inadequate specimen, no disease |                     | 18              |                 | 18           |
|                                          | Nutritional                     | - acid soil         | 1               | 1               | 2            |
|                                          | Physical injury                 | - unknown           | 1               | 0               | 1            |
|                                          | Root rot                        | - Phytophthora      | 2               | 0               | 2            |
|                                          |                                 | - Pythium           | 1               | 0               | 1            |
| <b>TULIPTREE (Liriodendron)</b>          |                                 |                     |                 |                 |              |
|                                          | Inadequate specimen, no disease |                     | 4               |                 | 4            |
|                                          | Insect injury                   |                     | 7               | 1               | 8            |
|                                          | Powdery mildew                  | - species           | 3               | 0               | 3            |
|                                          | Wilt                            | - Verticillium      | 1               | 0               | 1            |
| <b>VIBURNUM (Viburnum)</b>               |                                 |                     |                 |                 |              |
|                                          | Insect injury                   |                     | 1               | 0               | 1            |
|                                          | No disease                      |                     | 5               |                 | 5            |
| <b>WALNUT (Juglans)</b>                  |                                 |                     |                 |                 |              |
|                                          | Anthraxnose                     | - Gnomonia          | 1               | 0               | 1            |
|                                          | Chemical injury                 | - herbicide         | 1               | 0               | 1            |
|                                          | Insect injury                   |                     | 3               | 0               | 3            |
|                                          | No disease                      |                     | 3               |                 | 3            |
| <b>WEIGELA (Weigela)</b>                 |                                 |                     |                 |                 |              |
|                                          | No disease                      |                     | 1               |                 | 1            |
| <b>WILLOW (Salix)</b>                    |                                 |                     |                 |                 |              |
|                                          | Environmental                   | - stress            | 1               | 0               | 1            |
|                                          | Inadequate specimen, no disease |                     | 2               |                 | 2            |
|                                          | Insect injury                   |                     | 0               | 1               | 1            |
| <b>YELLOWWOOD (Cladrastis)</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> |
|-------------|------------------|---------------------|-----------------|-----------------|--------------|
|-------------|------------------|---------------------|-----------------|-----------------|--------------|

VEGETABLES

**ASPARAGUS (Asparagus)**

|               |  |  |   |   |   |
|---------------|--|--|---|---|---|
| Insect injury |  |  | 2 | 0 | 2 |
| No disease    |  |  | 2 |   | 2 |

**BEAN (Phaseolus)**

|                                 |                      |  |   |   |   |
|---------------------------------|----------------------|--|---|---|---|
| Air pollution                   | - ozone              |  | 1 | 0 | 1 |
| Anthraxnose                     | - Colletotrichum     |  | 4 | 0 | 4 |
| Chemical injury                 | - unknown            |  | 1 | 0 | 1 |
| Common blight                   | - Xanthomonas        |  | 1 | 1 | 2 |
| Damping-off                     | - Rhizoctonia        |  | 1 | 0 | 1 |
| Environmental stresses          |                      |  | 4 | 0 | 4 |
| Inadequate specimen, no disease |                      |  | 4 |   | 4 |
| Insect injury                   |                      |  | 4 | 3 | 7 |
| Leaf/pod spot                   | - Cladosporium       |  | 1 | 0 | 1 |
| Nutritional                     | - fertilizer burn    |  | 1 | 0 | 1 |
| Root knot nematode              | - Meloidogyne        |  | 1 | 0 | 1 |
| Root rot                        | - Fusarium           |  | 1 | 0 | 1 |
| Root/stem rot                   | - Rhizoctonia        |  | 5 | 0 | 5 |
| Virus                           | - Bean yellow mosaic |  | 6 | 0 | 6 |
|                                 | - unknown            |  | 1 | 0 | 1 |
| White mold                      | - Sclerotinia        |  | 1 | 0 | 1 |

**BEET (Beta)**

|            |  |  |   |  |   |
|------------|--|--|---|--|---|
| No disease |  |  | 1 |  | 1 |
|------------|--|--|---|--|---|

**BROCCOLI - See listing under CRUCIFERS**

**CABBAGE - See listing under CRUCIFERS**

**CANTALOUPE - See listing under CUCURBITS**

**CAULIFLOWER - See listing under CRUCIFERS**

**CORN, SWEET (Zea)**

|                                 |               |  |   |   |   |
|---------------------------------|---------------|--|---|---|---|
| Bacterial stalk rot             | - Erwinia     |  | 2 | 0 | 2 |
| Blue eye                        | - Penicillium |  | 1 | 0 | 1 |
| Gray leaf spot                  | - Cercospora  |  | 2 | 0 | 2 |
| Inadequate specimen, no disease |               |  | 6 |   | 6 |
| Insect injury                   |               |  | 4 | 0 | 4 |
| Root rot                        | - Rhizoctonia |  | 1 | 0 | 1 |
| Smut                            | - Ustilago    |  | 3 | 0 | 3 |
| Stalk rot                       | - Pythium     |  | 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>CRUCIFERS - BROCCOLI, CABBAGE, CAULIFLOWER, KALE, MUSTARD and TURNIP (Brassica)</b>                           |                                  |                       |                 |                 |              |
|                                                                                                                  | Black rot                        | - Xanthomonas         | 6               | 0               | 6            |
|                                                                                                                  | Bottom rot                       | - Rhizoctonia         | 2               | 0               | 2            |
|                                                                                                                  | Chemical injury                  | - growth regulator    | 1               | 0               | 1            |
|                                                                                                                  |                                  | - herbicide           | 1               | 0               | 1            |
|                                                                                                                  | Cultural                         | - oedema              | 0               | 1               | 1            |
|                                                                                                                  |                                  | - unknown             | 1               | 0               | 1            |
|                                                                                                                  | Environmental                    | - stress              | 1               | 0               | 1            |
|                                                                                                                  | Inadequate specimens, no disease |                       | 10              |                 | 10           |
|                                                                                                                  | Mutation                         | - genetic             | 1               | 0               | 1            |
|                                                                                                                  | Nutritional                      | - Nitrogen deficiency | 1               | 0               | 1            |
|                                                                                                                  | Physiological                    | - oedema              | 1               | 0               | 1            |
|                                                                                                                  | Stem rot                         | - Fusarium            | 0               | 1               | 1            |
|                                                                                                                  | Tip burn                         | - Calcium deficiency  | 2               | 0               | 2            |
|                                                                                                                  | White rust                       | - Albugo              | 1               | 0               | 1            |
|                                                                                                                  | White spot                       | - Cercospora          | 0               | 1               | 1            |
|                                                                                                                  | Wire stem                        | - Rhizoctonia         | 3               | 0               | 3            |
| <b>CUCUMBER - See listing under CUCURBITS</b>                                                                    |                                  |                       |                 |                 |              |
| <b>CUCURBITS - CANTALOUPE, CUCUMBER (Cucumis), PUMPKIN, SQUASH, GOURD (Cucurbita) and WATERMELON (Citrullis)</b> |                                  |                       |                 |                 |              |
|                                                                                                                  | Anthraxnose                      | - Colletotrichum      | 2               | 0               | 2            |
|                                                                                                                  | Bacterial wilt                   | - Erwinia             | 3               | 0               | 3            |
|                                                                                                                  | chemical injury                  | - unknown             | 2               | 0               | 2            |
|                                                                                                                  | cultural                         | - transplant shock    | 1               | 0               | 1            |
|                                                                                                                  | damping-off                      | - Pythium             | 1               | 0               | 1            |
|                                                                                                                  |                                  | - Rhizoctonia         | 1               | 0               | 1            |
|                                                                                                                  | downy mildew                     | - Pseudoperonospora   | 2               | 1               | 3            |
|                                                                                                                  | Environmental stresses           |                       | 2               | 0               | 2            |
|                                                                                                                  | Fruit decay                      | - Fusarium            | 1               | 0               | 1            |
|                                                                                                                  | fruit rot                        | - Choanephora         | 1               | 1               | 2            |
|                                                                                                                  | Gummy stem blight                | - Didymella           | 3               | 0               | 3            |
|                                                                                                                  | Inadequate specimen, no disease  |                       | 15              |                 | 15           |
|                                                                                                                  | Insect injury                    |                       | 7               | 2               | 9            |
|                                                                                                                  | Leaf spot                        | - Alternaria          | 2               | 0               | 2            |
|                                                                                                                  | Nutritional                      | - fertilizer burn     | 1               | 0               | 1            |
|                                                                                                                  | Powdery mildew                   | - Sphaerotheca        | 2               | 0               | 2            |
|                                                                                                                  | Root rot                         | - Pythium             | 1               | 0               | 1            |
|                                                                                                                  | Stem rot                         | - Fusarium            | 1               | 0               | 1            |
|                                                                                                                  | Virus                            | - unknown             | 1               | 0               | 1            |
|                                                                                                                  | Wilt                             | - Fusarium            | 1               | 0               | 1            |
| <b>LETTUCE (Lactuca)</b>                                                                                         |                                  |                       |                 |                 |              |
|                                                                                                                  | Air pollution                    | - unknown             | 1               | 0               | 1            |
|                                                                                                                  | Environmental                    | - cold injury         | 1               | 0               | 1            |
|                                                                                                                  | No disease                       |                       | 1               |                 | 1            |
|                                                                                                                  | Nutritional                      | - soluble salts       | 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>MUSTARD - See listing under CRUCIFERS</b> |                                 |                          |                 |                 |              |
| <b>OKRA (Hibiscus)</b>                       |                                 |                          |                 |                 |              |
|                                              | No disease                      |                          | 1               |                 | 1            |
|                                              | Root rot                        | - Rhizoctonia            | 1               | 0               | 1            |
| <b>PEA (Pisum)</b>                           |                                 |                          |                 |                 |              |
|                                              | Chemical injury                 | - unknown                | 1               | 0               | 1            |
|                                              | Insect injury                   |                          | 1               | 0               | 1            |
|                                              | Root rot                        | - Rhizoctonia            | 3               | 0               | 3            |
| <b>PEPPER (Capsicum)</b>                     |                                 |                          |                 |                 |              |
|                                              | Bacterial spot                  | - Xanthomonas            | 21              | 0               | 21           |
|                                              | Blight                          | - Phytophthora           | 1               | 0               | 1            |
|                                              | Blossom end rot                 | - Calcium deficiency/dry | 4               | 0               | 4            |
|                                              | Chemical injury                 | - growth regulator       | 2               | 1               | 3            |
|                                              |                                 | - herbicide              | 3               | 0               | 3            |
|                                              |                                 | - unknown                | 1               | 0               | 1            |
|                                              | Environmental stresses          |                          | 14              | 2               | 16           |
|                                              | Insect injury                   |                          | 4               | 5               | 9            |
|                                              | Leaf scorch                     | - unknown                | 1               | 0               | 1            |
|                                              | No disease                      |                          | 15              |                 | 15           |
|                                              | Nutritional                     | - fertilizer burn        | 1               | 0               | 1            |
|                                              |                                 | - Manganese deficiency   | 2               | 0               | 2            |
|                                              | Physical injury                 | - unknown                | 4               | 0               | 4            |
|                                              | Root rot                        | - Pythium                | 1               | 0               | 1            |
|                                              | Root/stem rot                   | - Rhizoctonia            | 1               | 0               | 1            |
|                                              | Southern blight                 | - Athelia                | 3               | 0               | 3            |
|                                              | Stem rot                        | - unknown                | 1               | 0               | 1            |
|                                              | Virus                           | - Tomato spotted wilt    | 2               | 0               | 2            |
| <b>POTATO (Solanum)</b>                      |                                 |                          |                 |                 |              |
|                                              | Black leg                       | - Erwinia                | 4               | 0               | 4            |
|                                              | Chemical injury                 | - growth regulator       | 2               | 0               | 2            |
|                                              | Dry rot                         | - Fusarium               | 2               | 0               | 2            |
|                                              | Inadequate specimen, no disease |                          | 4               |                 | 4            |
|                                              | Insect injury                   |                          | 1               | 0               | 1            |
|                                              | Root knot nematode              | - Meloidogyne            | 1               | 0               | 1            |
|                                              | Root/stem rot                   | - fungal                 | 1               | 0               | 1            |
|                                              | Scab                            | - Streptomyces           | 3               | 0               | 3            |
| <b>PUMPKIN - See listing under CUCURBITS</b> |                                 |                          |                 |                 |              |
| <b>RHUBARB (Rheum)</b>                       |                                 |                          |                 |                 |              |
|                                              | Inadequate specimen, no disease |                          | 4               |                 | 4            |
|                                              | Southern blight                 | - Athelia                | 1               | 0               | 1            |
| <b>SQUASH - See listing under CUCURBITS</b>  |                                 |                          |                 |                 |              |
| <b>SWEET POTATO (Ipomoea)</b>                |                                 |                          |                 |                 |              |
|                                              | Scurf                           | - Monilochaete           | 5               | 0               | 5            |

| <i>CROP</i>                         | <i>DIAGNOSIS</i>                | <i>CAUSAL AGENT</i>      | <i>#1 DIAGs</i> | <i>#2 DIAGs</i> | <i>TOTAL</i> |
|-------------------------------------|---------------------------------|--------------------------|-----------------|-----------------|--------------|
| <b>TOMATO (<i>Lycopersicon</i>)</b> |                                 |                          |                 |                 |              |
|                                     | Bacterial canker                | - Clavibacter            | 3               | 0               | 3            |
|                                     | Bacterial soft rot              | - Erwinia                | 1               | 0               | 1            |
|                                     | Bacterial speck                 | - Pseudomonas            | 1               | 0               | 1            |
|                                     | Bacterial spot                  | - Xanthomonas            | 2               | 1               | 3            |
|                                     | Blossom end rot                 | - Calcium deficiency/dry | 5               | 0               | 5            |
|                                     | Buckeye rot                     | - Phytophthora           | 1               | 1               | 2            |
|                                     | Chemical injury                 | - burn                   | 1               | 0               | 1            |
|                                     |                                 | - growth regulator       | 11              | 1               | 12           |
|                                     |                                 | - herbicide              | 5               | 2               | 7            |
|                                     |                                 | - unknown                | 2               | 0               | 2            |
|                                     | Cultural                        | - poor soil              | 1               | 0               | 1            |
|                                     |                                 | - transplant shock       | 2               | 4               | 6            |
|                                     | Early blight                    | - Alternaria             | 19              | 1               | 20           |
|                                     | Environmental stresses          |                          | 21              | 2               | 23           |
|                                     | Fruit rot                       | - Colletotrichum         | 1               | 0               | 1            |
|                                     | Inadequate specimen, no disease |                          | 53              |                 | 53           |
|                                     | Insect injury                   |                          | 7               | 1               | 8            |
|                                     | Late blight                     | - Phytophthora           | 6               | 0               | 6            |
|                                     | Leaf roll                       | - physiological          | 5               | 0               | 5            |
|                                     | Leaf scorch                     | - unknown                | 1               | 2               | 3            |
|                                     | Leaf spot                       | - Septoria               | 9               | 3               | 12           |
|                                     | Nutritional                     | - fertilizer burn        | 6               | 0               | 6            |
|                                     |                                 | - general                | 7               | 0               | 7            |
|                                     |                                 | - Manganese deficiency   | 1               | 0               | 1            |
|                                     |                                 | - Phosphorus deficiency  | 1               | 0               | 1            |
|                                     |                                 | - soluble salts          | 3               | 0               | 3            |
|                                     |                                 | - unknown                | 2               | 0               | 2            |
|                                     |                                 | - unknown                | 1               | 0               | 1            |
|                                     | Physiological                   | - unknown                | 1               | 0               | 1            |
|                                     | Root knot nematode              | - Meloidogyne            | 0               | 1               | 1            |
|                                     | Root rot                        | - Pythium                | 0               | 1               | 1            |
|                                     | Root/stem rot                   | - Rhizoctonia            | 2               | 0               | 2            |
|                                     | Skin check                      | - physiological          | 1               | 0               | 1            |
|                                     | Southern blight                 | - Athelia                | 3               | 0               | 3            |
|                                     | Stem rot                        | - Sclerotinia            | 9               | 0               | 0            |
|                                     | Virus                           | - Cucumber mosaic        | 2               | 0               | 2            |
|                                     |                                 | - Tomato spotted wilt    | 1               | 0               | 1            |
|                                     |                                 | - unknown                | 4               | 0               | 4            |
|                                     | Walnut wilt                     | - juglone                | 1               | 0               | 1            |
|                                     | Wilt                            | - Fusarium               | 3               | 0               | 3            |
|                                     |                                 | - unknown                | 3               | 0               | 3            |

**WATERMELON - See listing under CUCURBITS**

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**TOTALS** **6723** **445** **7168**

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