

A Compilation of Plant Diseases and Disorders in Indiana—1974

PAUL C. PECKNOLD, WALTER R. STEVENSON, DONALD H. SCOTT
Department of Botany and Plant Pathology
Purdue University, West Lafayette, Indiana 47907

Abstract

A compilation of those plant diseases and disorders which were diagnosed at the Purdue Plant Disease Diagnostic Clinic from January 1 through September 30, 1974, is presented. Anthracnose was the dominant disease of shade trees; iron chlorosis and leaf scorch were major disorder problems. On fruit trees crown rot, scab and rust were apple diseases most commonly observed. Of the vegetable specimens received fusarium wilt and downy mildew were widespread on cantaloupe. Black Dot root rot, identified for the first time this year in Indiana, and scab were major diseases of potato.

Diseases accounted for an approximate 30% reduction in Indiana's 1974 wheat yields, representing a loss of over 15.5 million bushels and a 46.5 million dollar loss to Indiana agriculture. Disease losses were attributed mainly to take-all, scab and septoria leaf blotch. Wheat spindle streak virus was confirmed for the first time in Indiana. Barley yellow dwarf virus was prevalent on oat, wheat, barley and various grasses. Stewart's blight was widespread on dent corn. Sorghum downy mildew occurred in approximately the same areas of Posey County as first reported in 1973. *Rhizoctonia* root rot of soybeans continued to increase in incidence. Races III and IV of *Phytophthora megasperma* var. *sojae* were reported in four and one counties respectively.

Introduction

This paper is a compilation of those plant diseases and disorders which were diagnosed at the Purdue Plant Disease Diagnostic Clinic from January 1 through September 30, 1974. The purpose of this compilation is to show which diseases and disorders are now present in Indiana, their degree of occurrence, and, in conjunction with future compilations, tendencies toward increasing or decreasing occurrence. Ultimately, comparison of yearly disease-disorder problems will serve to better recognize those problems where control efforts should be placed; provide information for recommending plant varieties best suited for Indiana; and give additional insight to plant diseases and disorders in the past, present and future.

Methods

Plant specimens were submitted to the Plant Disease Diagnostic Clinic from County Agents, homeowners, growers, nursery operators and others. The specimens were diagnosed visually or by culturing of the pathogen on selected media; once diagnosed, appropriate control measures were given. A breakdown of the total number of specimens handled from January 1 through September 30, 1974 is given in Table 1.

Results

Tables 2-8 show the host plant, the disease or disorder diagnosed, the pathogen or cause of disorder, and the number of samples received. Diseases and disorders are listed in order of decreasing occurrence on

respective host plants. The sample numbers listed in Tables 2-8 do not equal the sample numbers shown in Table 1 since samples diagnosed as insect damage were not included in Tables 2-8, other samples were inadequate and could not be diagnosed.

TABLE 1. *Total Number of Specimens Handled From January 1 Through September 30, 1974.*

| Plant Species | Number of Samples |
|----------------------------|-------------------|
| Corn | 73 |
| Soybeans | 42 |
| Small Grain | 151 |
| Trees—Shade and Ornamental | 388 |
| Ornamentals | 132 |
| Forage Grasses and Legumes | 23 |
| Vegetables | 156 |
| Tree Fruit | 51 |
| Small Fruit | 48 |
| Flowers | 22 |
| Turf | 19 |
| House Plants | 13 |
| Plant Identification | 4 |
| Miscellaneous | 10 |
| Total | 1132 |

TABLE 2. *Shade and Ornamental Trees—Diseases and Disorders.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---------------------------------|----------------------|
| <i>Abies</i> (FIR) | | |
| Miscellaneous Disorders | | |
| Poor Vigor | Stress factors(s) | 1 |
| Herbicide Injury | Spray drift | 1 |
| <i>Acer</i> (MAPLE) | | |
| Anthracnose | <i>Gloeosporium apocryptum</i> | 18 |
| Wilt | <i>Verticillium albo-atrum</i> | 7 |
| Canker | <i>Steganosporium piriforme</i> | 2 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 24 |
| Dieback | Stress factor(s) | 11 |
| Bark Shedding | Natural | 4 |
| Herbicide Injury | Spray drift | 2 |
| Frost Injury | Spring freeze | 1 |
| Frost Crack | Winter temperature extremes | 1 |
| Chlorosis | Manganese deficiency | 1 |
| <i>Albizia</i> (SILK TREE) | | |
| Wilt | <i>Fusarium</i> sp. | 2 |
| <i>Betula</i> (BIRCH) | | |
| Dieback | <i>Melanconium betulinum</i> | 2 |
| Canker | <i>Dothiorella</i> sp. | 1 |
| | <i>Fusicoccum</i> sp. | 1 |
| Miscellaneous Disorders | | |
| Dieback | Stress factors(s) | 2 |
| Sooty Mold | Insect honeydew secretions | 2 |
| Herbicide Injury | Spray drift | 1 |

TABLE 2. *Shade and Ornamental Trees—Diseases and Disorders—Continued.*

| Host plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|---|---|----------------------|
| <i>Carya</i> (HICKORY) | | |
| Miscellaneous Disorder | | |
| Decline | Soil grade change | 1 |
| <i>Catalpa</i> (CATALPA) | | |
| Wilt | <i>Verticillium albo-atrum</i> | 1 |
| <i>Celtis</i> (HACKBERRY) | | |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 1 |
| Sooty Mold | Insect honeydew secretions | 1 |
| <i>Cercis</i> (REDBUD) | | |
| Canker | <i>Botryosphaeria ribis chromogena</i> | 2 |
| Wilt | <i>Verticillium albo-atrum</i> | 1 |
| Leafspot | Unidentified fungus | 1 |
| Miscellaneous Disorders | | |
| Herbicide Injury | Spray drift | 3 |
| Frost Injury | Spring freeze | 1 |
| | Heat, wind and drought | 1 |
| Dieback | Stress factors(s) | 1 |
| <i>Cornus</i> (DOGWOOD) | | |
| Spot Anthracnose | <i>Elisnoe corni</i> | 3 |
| Crown Canker | <i>Phytophthora cactorium</i> | 1 |
| Root Rot | <i>Armillaria mellea</i> | 1 |
| Canker | <i>Steganosporium</i> sp. | 1 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 3 |
| Dieback | Stress factor(s) | 1 |
| Herbicide Injury | Spray drift | 1 |
| <i>Cotinus</i> (SMOKE-TREE) | | |
| Wilt | <i>Verticillium albo-atrum</i> | 1 |
| <i>Crataegus</i> (HAWTHORN) | | |
| Cedar-Quince Rust | <i>Gymnosporangium clavipes</i> | 3 |
| Cedar-Hawthorn Rust | <i>Gymnosporangium globosum</i> | 2 |
| Leaf Blight | <i>Fabraea maculata</i> | 2 |
| <i>Elaeagnus</i> (RUSSIAN-OLIVE) | | |
| Canker | <i>Fusicoccum elaeagni</i> | 3 |
| Wilt | <i>Verticillium albo-atrum</i> | 2 |
| <i>Fagus</i> (BEECH) | | |
| Miscellaneous Disorders | | |
| Trunk Sunscald | Winter temperature extremes | 2 |
| <i>Fraxinus</i> (ASH) | | |
| Anthracnose | <i>Gloeosporium aridum</i> | 5 |
| Canker | Unknown | 1 |
| Miscellaneous Disorders | | |
| Air Pollution Injury | Sulfur dioxide | 1 |
| Scorch | Heat, wind and drought | 1 |
| Dieback | Stress factor(s) | 1 |
| <i>Gleditsia</i> (HONEY LOCUST) | | |
| Miscellaneous Disorders | | |
| Cold Injury | Low Temperature | 1 |
| Dieback | Stress factors(s) | 1 |
| <i>Juglans</i> (WALNUT) | | |
| Anthracnose | <i>Gnomonia leptostyla</i> | 1 |
| Bacterial Blight | <i>Xanthomonas juglandis</i> | 1 |
| <i>Juniperus virginiana</i> (RED CEDAR) | | |
| Cedar-Apple Rust | <i>Gymnosporangium juniperi-virginianae</i> | 3 |
| Cedar-Quince Rust | <i>Gymnosporangium clavipes</i> | 2 |
| Twig Blight | <i>Phomopsis juniperovora</i> | 2 |

TABLE 2. *Shade and Ornamental Trees—Diseases and Disorders—Continued.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---------------------------------|----------------------|
| <i>Koelreuteria</i> (GOLDENRAIN TREE) | | |
| Canker | <i>Nectria cinnabarina</i> | 1 |
| Miscellaneous Disorders | | |
| Herbicide Injury | Spray drift | 1 |
| <i>Liquidambar</i> (SWEETGUM) | | |
| Bleeding Necrosis | <i>Botryosphaeria dothidea</i> | 1 |
| Leaf Spot | <i>Cercospora liquidambaris</i> | 1 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 2 |
| <i>Liriodendron</i> (TULIP TREE) | | |
| Leaf Spot | Unidentified | 2 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 3 |
| Leaf Yellowing | Natural | 3 |
| Sooty Mold | Insect honeydew secretions | 2 |
| <i>Magnolia</i> (MAGNOLIA) | | |
| Leaf Spot | <i>Phyllosticta cookei</i> | 1 |
| Canker | <i>Nectria</i> sp. | 1 |
| Miscellaneous Disorders | | |
| Winter Damage | Desiccation | 2 |
| Scorch | Heat, wind and drought | 2 |
| Herbicide Injury | Spray drift | 1 |
| <i>Malus</i> (CRABAPPLE) | | |
| Scab | <i>Venturia inaequalis</i> | 3 |
| Powdery Mildew | <i>Podosphaera leucotricha</i> | 1 |
| Canker | <i>Phoma mali</i> | 1 |
| Miscellaneous Disorders | | |
| Cold Injury | Low temperatures | 1 |
| <i>Picea</i> (SPRUCE) | | |
| Canker | <i>Cytospora kunzei</i> | 4 |
| Miscellaneous Disorders | | |
| Dieback | Stress factor(s) | 2 |
| Chemical Injury | Improper use | 2 |
| Air Pollution Injury | Fluoride | 1 |
| <i>Pinus</i> (PINE) | | |
| Tip Blight | <i>Diplodia pinea</i> | 5 |
| Needle Cast | <i>Lophodermium pinastri</i> | 4 |
| Needle Blight | <i>Dothistroma pini</i> | 2 |
| Miscellaneous Disorders | | |
| Decline | Poor drainage-stress factor(s) | 6 |
| Air Pollution Injury | Air pollutants | 3 |
| Winter Damage | Desiccation | 2 |
| Needle Tip Burn | Heat, wind and drought | 1 |
| Sooty Mold | Insect honeydew secretions | 1 |
| Dropsy (Edema) | Unknown | 1 |
| <i>Platanus</i> (SYCAMORE) | | |
| | <i>Gnomonia veneta</i> | 2 |
| <i>Populus</i> (POPLAR, ASPEN, COTTONWOOD) | | |
| Rust | <i>Melampsora</i> sp. | 1 |
| Canker | Unidentified fungus | 1 |
| <i>Quercus</i> (OAK) | | |
| Anthraxnose | <i>Gnomonia quercina</i> | 10 |
| Oak Wilt | <i>Ceratocystis fagacearum</i> | 4 |
| Canker | Not identified | 4 |
| | <i>Fusicoccum</i> sp. | 1 |
| | <i>Dothiorella</i> sp. | 1 |
| Leaf Blister | <i>Taphrina coerulescens</i> | 1 |
| Leaf Spot | <i>Actinopelte dryina</i> | 1 |

TABLE 2. *Shade and Ornamental Trees—Diseases and Disorders—Continued.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|-----------------------------|----------------------|
| Powdery Mildew | <i>Phyllactinia corylea</i> | 1 |
| Rot Rot | <i>Armillaria mellea</i> | 1 |
| Miscellaneous Disorders | | |
| Chlorosis (Pin Oak) | Iron deficiency | 20 |
| Dieback | Soil grade change | 3 |
| | Stress factor(s) | 2 |
| Sooty Mold | Insect honeydew secretions | 1 |
| <i>Robinia</i> (LOCUST) | | |
| Canker | Unknown | 1 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 1 |
| Chlorosis | Iron deficiency | 1 |
| <i>Salix</i> (WILLOW) | | |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 2 |
| Dieback | Stress factor(s) | 1 |
| <i>Sorbus</i> (MOUNTAIN ASH) | | |
| Canker—Sunscald Complex | <i>Cytospora</i> sp. | 4 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 4 |
| Chlorosis | Iron deficiency | 1 |
| Herbicide Injury | Spray drift | 1 |
| <i>Tsuga</i> (HEMLOCK) | | |
| Miscellaneous Disorders | | |
| Dieback | Stress factor(s) | 2 |
| Winter Damage | Desiccation | 1 |
| <i>Ulmus</i> (ELM) | | |
| Dutch Elm Disease | <i>Ceratocystis ulmi</i> | 5 |
| Phloem Necrosis | Virus | 1 |
| Miscellaneous Disorder | | |
| Dieback | Stress factor(s) | 1 |

Shade and Ornamental Trees

Diseases: Anthracnose was the dominant disease this year as in past years (Table 2) (5). Maple, oak, ash and sycamore were most commonly affected. The yearly reoccurrence of anthracnose, especially on sycamore, has resulted in progressive dieback and eventual mortality of numerous trees throughout Indiana. Verticillium wilt ranked second in occurrence, being especially prevalent on maples. Dutch elm disease and oak wilt continue to occur sporadically resulting in further elimination of elm and oak.

Disorders: Leaf scorch, primarily due to a combination of heat, wind and drought, was excessive this year; the extreme drought experienced the past summer being the main cause of scorch. A gradual decline of maples continues to occur throughout Indiana. The cause of the decline is not known, probable causes indicate it may be related to unfavorable environmental conditions. Iron deficiency was the major problem of oak and was confined mainly to pin oak. The severity of iron chlorosis on pin oak resulted in many cases of dieback and extreme poor growth. The advisability of recommending pin oak as a landscape tree is becoming questionable in those areas of Indiana where soil pH is high.

TABLE 3. *Ornamentals—Diseases and Disorders.*

| Host Plant Disease and/or Disorder | Causal Agent | Number of Samples |
|---|---|----------------------|
| <i>Bauhinia</i> (ORCHID TREE) | | |
| Leaf Spot | <i>Leptosphaeria</i> sp. | 1 |
| <i>Begonia</i> (BEGONIA) | | |
| Root Rot | <i>Pythium ultimum</i> | 1 |
| <i>Berberis</i> (BARBERRY) | | |
| Wilt | <i>Verticillium albo-atrum</i> | 3 |
| <i>Cotoneaster</i> (COTONEASTER) | | |
| Fireblight | <i>Erwinia amylovora</i> | 2 |
| <i>Chrysanthemum</i> (CHRYSANTHEMUM) | | |
| Powdery Mildew | <i>Erysiphe cichoracearum</i> | 1 |
| <i>Delphinium</i> (LARKSPUR) | | |
| Bacterial Collar Rot | <i>Erwinia carotovora</i> | 1 |
| <i>Enonymus</i> (BURNING BUSH) | | |
| Crown Gall | <i>Agrobacterium tumefaciens</i> | 4 |
| Powdery Mildew | Not identified | 2 |
| Miscellaneous Disorder | | |
| Dieback | Stress factor(s) | 2 |
| <i>Forsythia</i> (GOLDEN BELLS) | | |
| Crown Gall | <i>Agrobacterium tumefaciens</i> | 1 |
| <i>Hedera helix</i> (ENGLISH IVY) | | |
| Bacterial Leaf Spot | <i>Xanthomonas hederae</i> | 2 |
| Leaf Spot | <i>Amerosporium trichellum</i> | 1 |
| <i>Hibiscus</i> (ROSE-OF-SHARON) | | |
| Miscellaneous Disorder | | |
| Herbicide Injury | Spray drift | 1 |
| <i>Ilex</i> (HOLLY) | | |
| Leaf Spot | <i>Phyllosticta</i> spp. | 2 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 4 |
| Seedling Dieback Complex | Heat plus ammonia toxicity | 2 |
| Winter Damage | Desiccation | 2 |
| Spine Spot | Spine punctures | 1 |
| Chlorosis | Iron deficiency | 1 |
| <i>Juniperus</i> (JUNIPER) | | |
| Twig Blight | <i>Phomopsis juniperovora</i> | 2 |
| Cedar-Apple Rust | <i>Gymnosporangium juniperi-virginianae</i> | 1 |
| Cedar-Quince Rust | <i>Gymnosporangium clavipes</i> | 1 |
| <i>Lonicera</i> (HONEYSUCKLE) | | |
| Leaf Blight | <i>Herpobasidium deformans</i> | 2 |
| <i>Lupinus</i> (LUPINE) | | |
| Leaf Spot | <i>Alternaria</i> sp. | 1 |
| <i>Pachysandra</i> (PACHYSANDRA) | | |
| Leaf Blight | <i>Volutella pachysandrae</i> | 1 |
| <i>Paeonia</i> (PEONY) | | |
| Red Spot (Measles) | <i>Cladosporium paeoniae</i> | 4 |
| Root Rot | <i>Rhizoctonia solani</i> | 1 |
| <i>Pelargonium</i> (GERANIUM) | | |
| Rust | <i>Puccinia pelargonii-zonalis</i> | 1 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 2 |
| Edema | High soil moisture-retarded transpiration | 1 |
| <i>Pyracantha</i> (FIRETHORN) | | |
| Scab | <i>Fusicladium pyracanthae</i> | 2 |
| <i>Rhododendron</i> (AZALEA and RHODODENDRON) | | |
| Crown Rot | <i>Phytophthora</i> spp. | 2 |

TABLE 3. *Ornamentals—Diseases and Disorders—Continued.*

| Host Plant Disease and/or Disorder | Causal Agent | Number of Samples |
|--|--|----------------------|
| Miscellaneous Disorder | | |
| Winter Scorch | Desiccation | 2 |
| <i>Rosa</i> (ROSE) | | |
| Powdery Mildew | <i>Sphaerotheca pannosa</i> | 2 |
| Blackspot | <i>Diplocarpon rosae</i> | 2 |
| Rust | <i>Phragmidium</i> sp. | 1 |
| Canker | Unidentified | 1 |
| Miscellaneous Disorder | | |
| Cold Injury | Low temperatures | 1 |
| <i>Schefflera</i> (AUSTRALIAN UMBRELLA TREE) | | |
| Leaf Spot | Unidentified fungus | 1 |
| Ring Spot | Virus | 1 |
| Miscellaneous Disorder | | |
| Root Rot | Overwatering | 3 |
| <i>Syringa</i> (LILAC) | | |
| Powdery Mildew | <i>Microsphaera alni</i> | 2 |
| Bacterial Blight | <i>Pseudomonas syringae</i> | 1 |
| Canker | <i>Phoma</i> sp. | 1 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 2 |
| Herbicide Injury | Spray drift | 1 |
| <i>Taxus</i> (YEW) | | |
| Root Rot-Dieback | <i>Phytophthora</i> -poor drainage complex | 4 |
| Miscellaneous Disorders | | |
| Herbicide Injury | Spray drift | 2 |
| Winter Damage | Desiccation | 3 |
| Root Rot | Poor drainage | 2 |
| <i>Viburnum</i> (VIBURNUM) | | |
| Wilt | <i>Verticillium albo-atrum</i> | 1 |
| Miscellaneous Disorder | | |
| Scorch | Heat reflection | 2 |
| <i>Yucca</i> (YUCCA) | | |
| Leaf Spot | <i>Coniothyrium concentricum</i> | 1 |
| <i>Zinnia</i> (ZINNIA) | | |
| Powdery Mildew | <i>Erysiphe cichoracearum</i> | 1 |

Ornamentals

Diseases: No single disease was dominant on ornamentals (Table 3). Rust, leaf spots, powdery mildew and twig blight were present as in past years (5). Of interest was geranium rust, *Puccinia pelargonizonalis*, which had not previously been reported in Indiana.

Disorders: Winter injury of evergreens due to desiccation was prominent but not severe. The severe summer drought period resulted in scorching of foliage, however scorch was less severe than that seen on trees. Herbicide spray drift was frequently observed indicating improper and/or careless application and the increasing use of herbicides by both commercial grower and homeowner.

Turfgrass

Diseases: Turfgrass diseases were not prominent this year (Table 4). Helminthosporium leaf spot was the most commonly observed disease as it has been in the past (5).

TABLE 4. *Turfgrass—Diseases and Disorders.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|--------------------------------|----------------------|
| <i>Poa pratensis</i> (BLUEGRASS) | | |
| Leaf Spot | <i>Helminthosporium</i> spp. | 7 |
| Fusarium Blight | <i>Fusarium roseum</i> complex | 3 |
| Dollar Spot | <i>Sclerotinia homoeocarpa</i> | 2 |
| Stripe Smut | <i>Ustilago striiformis</i> | 2 |
| Flag Smut | <i>Urocystis agropyri</i> | 1 |
| Rhizoctonia | <i>Rhizoctonia solani</i> | 1 |
| Powdery Mildew | <i>Erysiphe graminis</i> | 1 |
| Rust | <i>Puccinia graminis</i> | 1 |
| Slime Mold | <i>Phyvarum cinereum</i> | 1 |

Fruit Trees

Diseases: Crown rot, apple scab and rust were the apple diseases most commonly received and observed (Table 5). The prevalence of crown rot was due, in part, to wet spring weather and increased planting of the more susceptible dwarfing rootstocks. Severe infections of apple scab occurred throughout Indiana resulting from numerous wet weather periods in late spring. Extreme rust infection was prevalent from the middle of Indiana southward. Fireblight was moderate in occurrence, no severe outbreaks were reported. Infrequent reports of powdery mildew were confined mainly to the middle and southern portions of Indiana; however, a mild outbreak was reported in northern Indiana, apparently due to infected nursery stock. Other diseases of pome and stone fruits were scarce. This was mostly due to late spring freezes which killed flower buds resulting in less fruit and less diseases.

Disorders: Problems of cold injury and leaf scorch on tree fruits were similar to those observed on shade trees and ornamentals.

Small Fruits

Diseases: Black root rot was the most serious disease of strawberries (Table 6). A complex of several soil fungi and *Pratylenchus* sp. nematodes along with winter injury seems to be the cause (3). Raspberry anthracnose was prevalent as in past years (5). Mummyberry of blueberry was severe in areas of northern Indiana resulting in significant reductions in yields.

Disorders: Herbicide spray drift injury to grape was prevalent in home yards where lawn herbicides were applied.

Vegetables

Diseases: Specimens of cucurbit crops, potato, and tomato comprised the bulk of vegetable crops received (Table 7). Diseases of cucurbit crops that represent important and continuing problems include Fusarium wilt, downy mildew, and Alternaria leaf spot. Of interest were the four cucurbit specimens with mosaic symptoms indicating virus infection. Blossom end rot of tomato was primarily

attributed to wide spread drought-like conditions. These same conditions contributed to relatively few foliar diseases of most crops. Of great interest was the identification of *Colletotrichum coccodes*—the causal agent of potato black dot root rot—in 10 potato specimens from 6 widely dispersed Indiana counties. This was the first identification of this pathogen in Indiana. Further studies of this disease are being undertaken.

Disorders: An unusually high number of samples were examined where the disorder was diagnosed as chemical injury. The majority of these specimens originated in home gardens exposed to herbicide drift from a variety of sources.

Agronomic Crops

Diseases: Damaging weather conditions were directly or indirectly related to an increased severity of several agronomic crop diseases

TABLE 5. *Fruit Trees—Diseases and Disorders.*

| Host Plant Disease and/or Disorder | Causal Agent | Number of Samples |
|---------------------------------------|---|----------------------|
| <i>Malus sylvestris</i> (APPLE) | | |
| Crown Rot | <i>Phytophthora cactorum</i> | 5 |
| Scab | <i>Venturia inaequalis</i> | 4 |
| Cedar-Apple Rust | <i>Gymnosporangium juniperi-virginianae</i> | 3 |
| Fire Blight | <i>Erwinia amylovora</i> | 3 |
| Powdery Mildew | <i>Podosphaera leucotricha</i> | 2 |
| Bot Rot | <i>Botryosphaeria ribis</i> | 1 |
| Frogeye Leaf Spot | <i>Physalospora obtusa</i> | 1 |
| Canker | <i>Phoma</i> sp. | 1 |
| Sooty Blotch | <i>Glocodes pomigena</i> | 1 |
| Flyspeck | <i>Microthyriella rubi</i> | 1 |
| Miscellaneous Disorders | | |
| Fruit Crack | Water fluctuation extremes | 2 |
| Dieback | Stress factor(s) | 2 |
| Measles | Manganese toxicity | 1 |
| Chemical Injury | Improper use | 1 |
| Frost Crack | Winter temperature extremes | 1 |
| <i>Prunus americana</i> (PLUM) | | |
| Black Knot | <i>Dibotryon morbosum</i> | 2 |
| Brown Rot | <i>Sclerotinia fructicola</i> | 1 |
| Leafspot | <i>Coccomyces prunophorae</i> | 1 |
| Plum Pockets | <i>Taphrina communis</i> | 1 |
| <i>Prunus avium</i> (CHERRY) | | |
| Cherry Leaf Spot | <i>Coccomyces hiemalis</i> | 2 |
| <i>Prunus persica</i> (PEACH) | | |
| Brown Rot | <i>Sclerotinia fructicola</i> | 2 |
| Bacterial Spot | <i>Xanthomonas pruni</i> | 2 |
| Leaf Curl | <i>Taphrina deformans</i> | 2 |
| Perennial Canker | <i>Leucostoma cincta</i> | 1 |
| Miscellaneous Disorder | | |
| Cold Injury | Low temperatures | 1 |
| <i>Pyrus communis</i> (PEAR) | | |
| Fireblight | <i>Erwinia amylovora</i> | 3 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 4 |
| Chemical Injury | Improper use | 1 |

TABLE 6. *Small Fruits—Diseases and Disorders.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---------------------------------------|----------------------|
| <i>Fragaria grandiflora</i> (STRAWBERRY) | | |
| Black Root Rot | Specific pathogen(s) not known | 4 |
| Leaf Scorch | <i>Diplocarpon earliana</i> | 3 |
| Leaf Blight | <i>Dendrophoma obscurans</i> | 2 |
| Gray Mold Rot | <i>Botrytis cinerea</i> | 2 |
| Miscellaneous Disorders | | |
| Scorch | Heat, wind and drought | 2 |
| Cold Injury | Late freezes | 2 |
| Tip Burn | Fluctuating temperatures | 1 |
| Chemical Injury | Improper use | 1 |
| <i>Rubus</i> (RASPBERRY) | | |
| Anthraxnose | <i>Elsinoe veneta</i> | 4 |
| Cane Gall | <i>Agrobacterium rubi</i> | 2 |
| Orange Rust | <i>Gymnoconia peckiana</i> | 1 |
| Miscellaneous Disorders | | |
| Cold Injury | Late freezes | 2 |
| Fasciation | Unknown | 1 |
| <i>Vaccinium</i> (BLUEBERRY) | | |
| Mummyberry Fungus | <i>Sclerotinia vaccinii-corymbosi</i> | 3 |
| <i>Vitis</i> (GRAPE) | | |
| Black Rot | <i>Guignardia bidwellii</i> | 2 |
| Powdery Mildew | <i>Uncinula necator</i> | 1 |
| Spot Anthracnose | <i>Elsinoe ampelina</i> | 1 |
| Miscellaneous Disorders | | |
| Herbicide Injury | Spray drift | 4 |
| Cold Injury | Low temperatures | 2 |

(Table 8). Wheat yield was reduced by over 30% due to a combination of various diseases; take-all, scab and Septoria leaf blotch were the most damaging diseases noted. Wheat in the southern portion of Indiana suffered the greatest loss from diseases; however, diseases and subsequent wheat loss were felt throughout the state. Take-all was the most damaging disease. It was especially severe in southern Indiana and on lighter or nitrogen deficient soils in northern Indiana. The increased occurrence of scab was due to wet and cool weather during the flowering period. Septoria leaf blotch developed to epiphytotic proportions in many northern Indiana wheat fields but was not severely damaging in southern Indiana.

Wheat spindle streak virus was confirmed for the first time in Indiana (2). Symptoms of this disease were evident throughout the state but most noticeable in the southern half of Indiana. The widespread occurrence of this disease suggests that the virus has been present in the state for several years.

Stewart's disease of corn was more widespread in 1974 than in 1973, due to the third successive mild winter and the resulting high flea beetle populations. The wilt phase of this disease caused economic losses in some fields of young corn in eastern Indiana. Generally, Stewart's disease did not cause economic losses, except in fields planted with highly susceptible dent or popcorn hybrids. Sorghum downy mildew of corn occurred in approximately the same area of

TABLE 7. *Vegetables—Diseases and Disorders.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|---|---|----------------------|
| <i>Allium cepa</i> (ONION) | | |
| Black Mold | <i>Aspergillus niger</i> | 1 |
| Miscellaneous Disorder | | |
| Seedling Dieback | Water damage | 3 |
| <i>Beta vulgaris</i> (BEET) | | |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 1 |
| <i>Brassica nigra</i> (MUSTARD) | | |
| White Rust | <i>Albugo candida</i> | 1 |
| <i>Brassica oleracea</i> var. <i>capitata</i> (CABBAGE) | | |
| Black Rot | <i>Xanthomonas campestris</i> | 4 |
| Yellows | <i>Fusarium oxysporum</i> f. sp. <i>conglutinans</i> | 1 |
| Wirestem | <i>Rhizoctonia solani</i> | 1 |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 1 |
| <i>Brassica rapa</i> (TURNIP) | | |
| Root Lesion | <i>Alternaria</i> sp. | 2 |
| Root Soft Rot | Unidentified bacterial isolate | 1 |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 1 |
| <i>Capsicum frutescens</i> (PEPPER) | | |
| Bacterial Spot | <i>Xanthomonas vesicatoria</i> | 1 |
| Miscellaneous Disorders | | |
| Fruit Injury | Sunscald | 3 |
| Chemical Injury | Spray drift | 1 |
| <i>Citrullus vulgaris</i> (WATERMELON) | | |
| Fusarium Wilt | <i>Fusarium oxysporum</i> f. sp. <i>niveum</i> | 3 |
| Mosaic | Unidentified virus | 2 |
| Miscellaneous Disorders | | |
| Chemical Injury | Spray drift | 3 |
| Blossom End Rot | Insufficient moisture | 2 |
| <i>Cucumis melo</i> (CANTALOUPE) | | |
| Fusarium Wilt | <i>Fusarium oxysporum</i> f. sp. <i>cubensis</i> | 5 |
| Downy Mildew | <i>Pseudoperonospora cubensis</i> | 5 |
| Leaf Spot | <i>Alternaria cucumerina</i> | 4 |
| Bacterial Wilt | <i>Erwinia tracheiphila</i> | 2 |
| Mosaic | Unidentified virus | 2 |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 4 |
| <i>Cucumis sativus</i> (CUCUMBER) | | |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 3 |
| <i>Lycopersicon esculentum</i> (TOMATO) | | |
| Leaf Spot | <i>Septoria lycopersici</i> | 4 |
| Early Blight | <i>Alternaria solani</i> | 4 |
| Transplant Soft Rot | Unidentified bacterial isolate | 3 |
| Verticillium Wilt | <i>Verticillium albo-atrum</i> | 3 |
| Buckeye Rot | <i>Phytophthora</i> sp. | 3 |
| Gray Mold | <i>Botrytis cinerea</i> | 3 |
| Stem Canker | <i>Rhizoctonia solani</i> | 2 |
| Fusarium Wilt | <i>Fusarium oxysporum</i> f. sp. <i>lycopersici</i> | 2 |
| Bacterial Wilt | <i>Pseudomonas solanacearum</i> | 1 |
| Miscellaneous Disorders | | |
| Chemical Injury | Spray drift | 3 |
| Blossom End Rot | Physiological | 5 |
| Walnut Wilt | Walnut tree excretions | 3 |

TABLE 7. *Vegetables—Diseases and Disorders—Continued.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---|----------------------|
| Leaf Necrosis | Wind injury | 2 |
| Corky Root | Cause unidentified | 2 |
| Fruit Injury | Sunscald | 1 |
| <i>Phaseolus vulgaris</i> (SNAP BEAN) | | |
| Root Rot | <i>Rhizoctonia solani</i> | 3 |
| Root Rot | <i>Fusarium</i> sp. | 1 |
| Root Rot | <i>Pythum</i> sp. | 1 |
| Anthraxnose | <i>Colletotrichum lindemuthianum</i> | 1 |
| Rust | <i>Uromyces phaseoli</i> var. <i>typica</i> | 2 |
| Sooty Mold | Unidentified fungus | 1 |
| Miscellaneous Disorders | | |
| Chemical Injury | Spray drift | 6 |
| Leaf Damage | Wind injury | 2 |
| <i>Rheum</i> spp. (RHUBARB) | | |
| Leaf Spot | <i>Alternaria</i> sp. | 1 |
| Gray Mold | <i>Botrytis cinerea</i> | 1 |
| Crown Rot | Unidentified | 1 |
| <i>Solanum tuberosum</i> (POTATO) | | |
| Root Rot | <i>Colletotrichum coccodes</i> | 10 |
| Scab | <i>Streptomyces scabies</i> | 8 |
| Black Leg | <i>Erwinia atroseptica</i> | 4 |
| Miscellaneous Disorder | | |
| Chemical Injury | Spray drift | 2 |
| <i>Solanum melongena</i> (EGGPLANT) | | |
| Wilt | <i>Verticillium albo-atrum</i> | 1 |

TABLE 8. *Agronomic Crops—Diseases and Disorders.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---|----------------------|
| <i>Triticum</i> (WHEAT) | | |
| Root Rot—see below | Various—(see below) | 45 |
| Take-All | <i>Ophiobolus graminis</i> | (40) |
| Fusarium Root Rot | <i>Fusarium</i> spp. | (5) |
| Wheat Spindle Streak | Wheat Spindle Streak Virus | 23 |
| Barley Yellow Dwarf | Barley Yellow Dwarf Virus | 14 |
| Septoria Glume Blotch | <i>Septoria nodorum</i> | 11 |
| Scab | <i>Gibberella zeae</i> | 11 |
| Septoria Leaf Blotch | <i>Septoria tritici</i> | 10 |
| Ergot | <i>Claviceps purpurea</i> | 3 |
| Rhizoctonia Sharp Eye | <i>Rhizoctonia solani</i> | 2 |
| Rust (leaf) | <i>Puccinia rubigo-vera</i> f. sp. <i>tritici</i> | 1 |
| Rust (stem) | <i>Puccinia graminis</i> f. sp. <i>tritici</i> | 1 |
| Bunt | <i>Tilletia foetida</i> | 1 |
| Loose Smut | <i>Ustilago tritici</i> | 1 |
| <i>Avena</i> (OAT) | | |
| Barley Yellow Dwarf | Barley Yellow Dwarf Virus | 22 |
| <i>Hordeum</i> (BARLEY) | | |
| Scald | <i>Rhynchosporium secalis</i> | 5 |
| Barley Yellow Dwarf | Barley Yellow Dwarf Virus | 1 |
| <i>Zea</i> (DENT CORN) | | |
| Stewarts Blight | <i>Erwinia stewartii</i> | 17 |
| Ear Rot—see below | Various—(see below) | 7 |
| Gib Ear Rot | <i>Gibberella zeae</i> | (2) |

TABLE 8. *Agronomic Crops—Diseases and Disorders—Continued.*

| Host Plant Diseases and/or Disorder | Causal Agent | Number of Samples |
|--|---|----------------------|
| Fusarium Kernel Rot | <i>Fusarium moniliforme</i> | (2) |
| Diplodia Ear Rot | <i>Diplodia maydis</i> | (1) |
| Cob Rot | <i>Niprosopora oryzae</i> | (1) |
| Anthracnose | <i>Colletotrichum graminicola</i> | (1) |
| Stalk Rots—see below | Various—(see below) | 5 |
| Gib Stalk Rot | <i>Gibberella zeae</i> | (2) |
| Diplodia Stalk Rot | <i>Diplodia maydis</i> | (2) |
| Charcoal Rot | <i>Macrophomina phaseoli</i> | (1) |
| Anthracnose | <i>Collectotrichum graminicola</i> | 3 |
| Crazy Top | <i>Sclerophthora macrospora</i> | 2 |
| Northern Corn Leaf Blight | <i>Helminthosporium turcicum</i> | 2 |
| MDM | Maize Dwarf Mosaic Virus | 2 |
| MCDM | Maize Chlorotic Dwarf Mosaic Virus | 2 |
| Northern Corn Leaf Spot | <i>Helminthosporium carbonum</i> (race II) | 1 |
| Common Smut | <i>Ustilago maydis</i> | 1 |
| Common Rust | <i>Puccinia sorghi</i> | 1 |
| Sorghum Downy Mildew | <i>Sclerospora sorghi</i> | 1 |
| Southern Corn Leaf Blight | <i>Helminthosporium maydis</i> (race 0) | 1 |
| Miscellaneous Disorders | | |
| Various Problems | Environmental factors | 23 |
| Chemical Injury | Wet Weather | 5 |
| <i>Glycine</i> (SOYBEAN) | | |
| Rhizoctonia Root Rot | <i>Rhizoctonia solani</i> | 14 |
| Phytophthora Root Rot | <i>Phytophthora megasperma</i> var. <i>sojae</i> (races III or IV) | 4 |
| | <i>Phytophthora megasperma</i> var. <i>sojoc</i> (race II) | 3 |
| Bacterial Blight | <i>Pseudomonas glycinea</i> | 2 |
| Pod & Stem Blight | <i>Diaporthe phaseolorum</i> var. <i>sojoe</i> | 2 |
| Downy Mildew | <i>Peronospora manshurica</i> | 1 |
| Powdery Mildew | <i>Erysiphe polygoni</i> | 1 |
| Brown Stem Rot | <i>Cephalosporium gregatum</i> | 1 |
| Miscellaneous Diseases and Disorders | | |
| Chemical Injury | Various causes | 10 |
| Chlorosis | Potash deficiency | 5 |

Posey County as first reported in 1973 (4). The disease was not as severe as in 1973, however, shatter cane and sorghum were heavily infected in those areas where the disease occurred.

Rhizoctonia root rot of soybeans was more widespread this year than last. While this disease has continued to increase over the past few years, economic losses have been small. Phytophthora root rot was moderately severe in some northern and northeastern fields. Races III and IV of the pathogen, *Phytophthora megasperma* var. *sojae* were reported (1). Powdery mildew, downy mildew, bacterial blight and brown spot were widespread but not damaging.

Disorders: Excessively wet spring weather followed by a severe drought and one of the earliest killing frosts on record resulted in substantial crop damage in 1974. Poor root development, especially on corn, was a frequent occurrence in the northern two-thirds of the state. This condition was due to the excessive spring rainfall which

resulted in saturated and/or flooded fields and was compounded in severity by the following summer drought.

Literature Cited

1. ATHOW, K. L., F. A. LAVIOLETTE and T. S. ABNEY. 1974. Reaction of Soybean Germplasm Strains to Four Physiologic Races of *Phytophthora megasperma* var. *sojae*. Plant Dis. Rptr. 58:789-792.
2. JACKSON, A. O., C. E. BRACKER, D. M. HUBER, D. H. SCOTT and G. E. SHANER. 1974. Wheat Spindle Streak Virus in Indiana. Plant Dis. Repr. (in Press)
3. RAMSDELL, D. C., C. W. LAUGHLIN, J. B. TATTER and H. J. BELTER. 1973. Strawberry Soil Fumigation for Black Root Rot Control, Michigan State University. Plant Disease Report 25:17-18.
4. WARREN, H. L., D. H. SCOTT and R. L. NICHOLSON. 1974. Occurrence of Sorghum Downy Mildew on Maize in Indiana. Plant Dis. Repr. 58:430-432.
5. WOLF, S. C. 1972. Plant Diseases in Indiana in 1972. Proc. Indiana Acad. Sci. 82:101-108.