A Compilation of Plant Diseases and Disorders in Indiana—1980

GAIL E. EVANS-RUHL, DONALD H. SCOTT, PAUL C. PECKNOLD

Department of Botany and Plant Pathology
Purdue University, West Lafayette, Indiana 47907

Introduction

This paper is a compilation of those plant diseases and disorders which were diagnosed at the Purdue Plant Diagnostic Clinic from January 1 through October 30, 1980. Its purpose is to show which diseases and disorders are present in Indiana, their frequency, and whether they are increasing or decreasing. Ultimately, comparisons of yearly disease-disorder problems will enable us to (1) recognize the problems and initiate timely control efforts, (2) provide information for recommending plant varieties best suited for Indiana, and (3) give additional insight to plant diseases and disorders in the past, present, and future.

Methods

Plant specimens were submitted to the Plant Diagnostic Clinic from county extension agents, homeowners, growers, nursery operators and others. Specimens were diagnosed visually or by culturing the pathogen on selected media. Once diagnosed, appropriate control measures were given for each sample submitted. A breakdown of the total number of specimens handled from January 1 through October 30, 1980 is given in Table 1.

TABLE 1. *Total Number of Specimens Handled from January 1 Through October 30, 1980.*

Plant Species	Number of Samples	Disease[1]	Disorder[2]	Chemical[3]	Number of Different Infectious Causal Agents
AGRONOMIC (21%)					
Corn	161	96	45	20	16
Soybeans	114	60	28	26	11
Small Grain	57	50	7	0	15
Forage Grasses and Legumes	20	15	5	0	7
Tobacco	2	1	0	1	1
ORNAMENTAL (35%)					
Trees-Shade & Ornamental	362	106	238	18	32
Shrubs and Groundcover	126	72	52	2	23
Flowers	43	27	9	7	14
House plants	27	9	17	1	7
FRUIT (10%)					
Tree Fruit	103	47	48	8	17
Small Fruit	59	32	24	3	15
VEGETABLE (11%)	189	104	63	22	40
TURFGRASS (5%)	89	69	19	1	12
PLANT IDENTIFICATION (12%)	205	-	-	-	-
FORWARDED TO ENTOMOLOGY (6%)	93	-	-	-	-
Total	1650	688	555	109	210

[1]Problem caused by an infectious disease causing agent e.g. fungus, bacterium, virus, mycoplasma, nematode.
[2]Problem caused by noninfectious environmental stress e.g., wind, drought, heat, soil compaction.
[3]Problem caused by herbicide or fertilizer misuse.

Results

Weather related problems were commonplace in Indiana during the 1980 growing season (Table 1). Wet weather occurred in the spring and was followed by below normal precipitation during the summer in the western half of the state. Precipitation approached normal in the eastern part. Above normal temperatures prevailed throughout the state in July, August, and September.

Disease losses were relatively light during 1980, even though some infectious diseases became widespread in drought and heat-stressed plants.

Tables 2-8 show the host plant, the disease or disorder diagnosed, the pathogen or cause of disorder, and the number of samples received.

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

Host Plant Diseases and/or Disorders	Causal Agent	Number of Samples
Abies (FIR)		
Miscellaneous Disorders		
Poor Vigor	Stress factor(s)	1
Needle Tip Burn	Heat, wind and drought	1
Acer (MAPLE)		
Anthracnose	*Gloeosporium apocryptum*	6
Wilt	*Verticillium albo-atrum*	6
Canker	Unidentified	1
Wetwood	Unidentified bacteria	2
Miscellaneous Disorders		
Scorch	Heat, wind and drought	42
Dieback	Stress factor(s)	21
Bark Shedding	Natural	1
Herbicide Injury	Spray drift	4
Frost Crack	Winter temperature extremes	1
Chlorosis	Nutrient deficiency	2
Acer (BOX ELDER)		
Miscellaneous Disorders		
Dieback	Stress factor(s)	1
Scorch	Heat, wind and drought	1
Carya (HICKORY)		
Anthracnose	*Gnomonia caryae*	1
Miscellaneous Disorder		
Scorch	Heat, wind and drought	1
Catalpa (CATALPA)		
Miscellaneous Disorder		
Scorch	Heat, wind and drought	1
Cercis (RED BUD)		
Wilt	*Verticillium albo-atrum*	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	2
Dieback	Stress factor(s)	2
Cornus (DOGWOOD)		
Canker	*Botryosphaeria* sp.	1
Leaf Spot	Unidentified fungus	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	2
Dieback	Stress factor(s)	3
Herbicide Injury	Spray drift	1

TABLE 2—Continued

Crataegus (HAWTHORN)		
Cedar-Hawthorn Rust	*Gymnosporangium globosum*	1
Elaeagnus (RUSSIAN OLIVE)		
Canker	*Fusicoccum elaeagni*	2
Wilt	*Verticillium albo-atrum*	1
Fraxinus (ASH)		
Anthracnose	*Gloeosporium aridum*	3
Canker	Unknown	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	5
Dieback	Stress factor(s)	2
Chemical Injury	Spray drift	2
Juglans (WALNUT)		
Miscellaneous Disorder		
Scorch	Heat, wind and drought	1
Juniperus virginiana (RED CEDAR)		
Twig Blight	*Phomopsis juniperovora*	2
Miscellaneous Disorders		
Dieback	Stress factor(s)	1
Liquidambar (SWEET GUM)		
Miscellaneous Disorders		
Scorch	Heat, wind and drought	3
Dieback	Stress factor(s)	3
Liriodendron (TULIP TREE)		
Powdery Mildew	Unidentified	1
Wilt	*Verticillium albo-atrum*	2
Miscellaneous Disorders		
Scorch	Heat, wind and drought	2
Leaf Yellowing/Spotting	Natural	10
Chemical Injury	Spray drift	2
Magnolia (MAGNOLIA)		
Miscellaneous Disorders		
Winter Damage	Desiccation	2
Dieback	Stress factor(s)	1
Herbicide Injury	Spray drift	1
Malus (CRABAPPLE)		
Scab	*Venturia inaequalis*	3
Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*	1
Fireblight	*Erwinia amylovora*	2
Miscellaneous Disorders		
Scorch	Wind, heat and drought	2
Dieback	Stress factor(s)	1
Picea (SPRUCE)		
Canker	*Cytospora kunzei*	2
Needle Cast	*Rhizosphaera kalkoffii*	3
Miscellaneous Disorders		
Dieback	Stress factor(s)	16
Chemical Injury	Improper uses	6
Needle Tip Burn	Heat, wind and drought	2
Mechanical damage	Unidentified	2
Pinus (PINE)		
Tip Blight	*Diplodia pinea*	14
Needle Cast	*Lophodermium pinastri*	2
Needle Blight	*Dothistroma pini*	1
Pinewood Nematode	*Bursaphelenchus lignicolus*	4

TABLE 2—Continued

Miscellaneous Disorders		
Decline	Poor drainage site-stress factor(s)	45
Air Pollution Injury	Air pollutants	1
Winter Damage	Desiccation	6
Needle Tip Burn	Heat, wind and drought	8
Sooty Mold	Insect honeydew secretions	1
Yellowing/Autumn (previous yrs growth)	Natural	7
Mechanical Damage	Unidentified	2
Platanus (SYCAMORE)		
Anthracnose	*Gnomonia veneta*	2
Populus (POPLAR, ASPEN, COTTONWOOD)		
Miscellaneous Disorders		
Dieback	Stress factor(s)	2
Prunus (PURPLE LEAF PLUM)		
Miscellaneous Disorder		
Winter Damage	Desiccation	2
Prunus (FLOWERING ALMOND)		
Fireblight	*Erwinia amylovora*	1
Prunus (ORIENTAL CHERRY)		
Miscellaneous Disorder		
Winter Damage	Desiccation	2
Quercus (OAK)		
Anthracnose	*Gnomonia quercina*	1
Oak Wilt	*Ceratocystis fagacearum*	1
Leaf Blister	*Taphrina coerulescens*	1
Leaf Spot	*Actinopelte dryina*	14
Wetwood	Unidentified bacteria	1
Miscellaneous Disorders		
Chlorosis (Pin Oak)	Iron deficiency	9
Dieback	Stress factor(s)	5
Scorch	Wind, heat and drought	2
Chemical Injury	Spray drift	1
Robinia (LOCUST)		
Miscellaneous Disorders		
Scorch	Wind, heat and drought	1
Dieback	Stress factor(s)	2
Salix (WILLOW)		
Canker	*Botryosphaeria ribis*	1
Canker	*Cytospora chrysosperma*	4
Canker	Unidentified	2
Sorbus (MOUNTAIN ASH)		
Fireblight	*Erwinia amylovora*	2
Leaf Spot	*Phyllosticta globigera*	1
Leaf Spot	*Septoria* sp.	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	1
Dieback	Stress factor(s)	2
Tilia (LINDEN)		
Miscellaneous Disorder		
Dieback	Stress factor(s)	2
Tsuga (HEMLOCK)		
Miscellaneous Disorder		
Sooty Mold	Insect honeydew secretions	1

TABLE 2—Continued

Ulmus (ELM)		
Dutch Elm Disease	*Ceratocystis ulmi*	6
Black Spot	*Gnomonia ulmea*	2
Leaf Spot	*Phyllosticta* sp.	1
Miscellaneous Disorders		
Dieback	Stress factor(s)	2
Chlorosis	Nutrient deficiency	1
Chemical Injury	Spray drift	1

TABLE 3. *Ornamentals—Diseases and Disorders*

Hose Plant Disease and/or Disorder	Causal Agent	Number of Samples
Ajuga (BUGLE-WEED)		
Miscellaneous Disorder		
Scorch	Heat, wind and drought	1
Aloe (BURN PLANT)		
Miscellaneous Disorder		
Leaf Spot	Improper cultural practices	1
Amaryllis (AMARYLLIS)		
Red Blotch	*Stagonospora curtisii*	1
Amelanchier (SERVICEBERRY)		
Root Rot	*Armillaria* sp.	1
Aquilegia (COLUMBINE)		
Miscellaneous Disorder		
Leaf Spot/Malformation	Environmental	1
Begonia (BEGONIA)		
Dieback	*Botrytis* sp.	2
Berberis (BARBERRY)		
Miscellaneous Disorder		
Dieback	Improper site/poor drainage	2
Campanula (BELLFLOWER)		
Miscellaneous Disorder		
Bud Abortion	Excess water	1
Celosia (COCKSCOMB)		
Stem Rot	*Rhizoctonia solani*	1
Cissus (GRAPE IVY)		
Miscellaneous Disorder		
Chlorosis	Improper cultural conditions	1
Clematis (CLEMATIS)		
Miscellaneous Disorder		
Scorch	Wind, heat and drought	1
Cotoneaster (COTONEASTER)		
Fireblight	*Erwinia amylovora*	1
Chrysanthemum (CHRYSANTHEMUM)		
Stem Rot	*Fusarium oxysporum*	1
Stem Rot	*Rhizoctonia solani*	1
Stem Rot	*Pythium* sp.	1
Root Rot	*Pythium* sp.	1
Bacterial Blight	*Erwinia chrysanthemi*	1
Dianthus caryophyllus (CARNATION)		
Stem Rot	*Rhizoctonia solani*	1

TABLE 3 – Continued

Miscellaneous Disorder		
Stem Rot	High soluble salts	1
Dieffenbachia (DIEFFENBACHIA)		
Anthracnose Leaf Spot	*Colletotrichum* sp.	1
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	1
Euonymus (BURNING BUSH)		
Crown Gall	*Agrobacterium tumefaciens*	2
Powdery Mildew	Not identified	1
Dieback/Canker	*Sclerotinia sclerotiorum*	1
Dieback	Nectria/cold	2
Miscellaneous Disorder		
Dieback	Stress factors	5
Herbicide Injury	Spray drift	1
Euphorbia (SNOW ON THE MOUNTAINS)		
Root Rot	*Rhizoctonia solani*	1
Ficus (WEEPING FIG)		
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	2
Ficus (RUBBER PLANT)		
Anthracnose Leaf Spot	*Glomerella cingulata*	1
Miscellaneous Disorder		
Edema	High soil moisture-retarded transpiration	1
Forsythia (GOLDEN BELLS)		
Crown Gall	*Agrobacterium tumefaciens*	2
Miscellaneous Disorder		
Dieback	Stress factors	2
Hedera (ENGLISH IVY)		
Miscellaneous Disorder		
Leaf Spot	Improper cultural care	1
Hemerocallis (DAYLILLY)		
Dieback	*Botrytis* sp.	1
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	1
Hibiscus (ROSE-OF-SHARON)		
Root Rot	Not identified	1
Hosta (PLANTAIN-LILY)		
Leaf Spot	*Phyllosticta* sp.	1
Ilex (HOLLY)		
Leaf Spot	*Phyllosticta* spp.	2
Miscellaneous Disorders		
Winter Damage	Desiccation	2
Chlorosis	Iron deficiency	4
Juniperus (JUNIPER)		
Twig Blight	*Phomopsis juniperovora*	11
Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*	2
Cedar-Hawthorne Rust	*Gymnosporangium globosum*	1
Miscellaneous Disorders		
Dieback	Shading out	3
Dieback	Dog injury	1
Ligustrum (PRIVET)		
Miscellaneous Disorder		
Dieback	Heat, wind and drought	1

TABLE 3—Continued

Lonicera (HONEYSUCKLE)		
Miscellaneous Disorder		
Scorch	Heat, wind and drought	2
Winter Damage	Desiccation	1
Orchid (ORCHID)		
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	1
Pachysandra (PACHYSANDRA)		
Leaf Blight	*Volutella pachysandrae*	1
Root/Stem Canker	*Rhizoctonia solani*	1
Miscellaneous Disorder		
Dieback	Stress factor(s)	1
Paeonia (PEONY)		
Red Spot (measles)	*Cladosporium paeoniae*	1
Botrytis Blight	*Botrytis cinerea*	2
Crown Rot	*Phytophthora cactorum*	1
Leaf Spot	*Alternaria* sp.	1
Miscellaneous Disorder		
Herbicide Injury	Spray drift	1
Parthenocissus (BOSTON IVY)		
Leaf Spot	*Guignardia bidwelli*	1
Pelargonium (GERANIUM)		
Stem Canker	*Rhizoctonia solani*	1
Blackleg	*Pythium* sp.	1
Bacterial Blight	*Xanthomonas pelargonii*	2
Miscellaneous Disorders		
Chlorosis	Improper cultural conditions	4
Root Rot	Soluble salt injury	2
Persea (AVOCADO)		
Edema	High soil moisture-retarded transpiration	1
Petunia (PETUNIA)		
Miscellaneous Disorder		
Root Rot	Soluble salt injury	1
Philodendron (PHILODENDRON)		
Anthracnose	*Colletotrichum* sp.	1
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	2
Polypodium (FERN)		
Root/Stem Canker	*Rhizoctonia solani*	1
Miscellaneous Disorder		
Root Rot	Soluble salt injury	2
Leaf Spot	Spore formation	2
Pyracantha (FIRETHORN)		
Scab	*Fusicladium pyracanthae*	3
Rhododendron (AZALEA and RHODODENDRON)		
Crown Rot	*Phytophthora* spp.	2
Leaf Spot	*Pestalotia* sp.	2
Leaf Spot	*Coryneum* sp.	1
Miscellaneous Disorders		
Winter Scorch	Desiccation	5
Chlorosis	Improper cultural conditions	1
Rosa (ROSE)		
Blackspot	*Diplocarpon rosae*	1

TABLE 3—Continued

Brand Canker	*Coniothyrium wernsdorffiae*	2
Blossom Blight	*Botrytis cinerea*	3
Miscellaneous Disorders		
Herbicide Injury	Spray drift	2
Cold Injury	Low temperatures	1
Saintpaulia (AFRICAN VIOLET)		
Miscellaneous Disorders		
Root Rot	Soluble salt injury	1
Leaf Spot	Improper cultural conditions	2
Salix (PUSSY WILLOW)		
Twig Blight	*Phomopsis* sp.	1
Schefflera (AUSTRALIAN UMBRELLA TREE)		
Miscellaneous Disorders		
Leaf Spot	Improper cultural conditions	3
Root Rot	Overwatering	4
Sinningia (GLOXINIA)		
Corm Rot	*Rhizoctonia solani*	1
Syringa (LILAC)		
Powdery Mildew	*Microsphaera alni*	2
Bacterial Blight	*Pseudomonas syringae*	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	3
Herbicide Injury	Spray drift	1
Tagetes (MARIGOLD)		
Miscellaneous Disorder		
Low Germination Rate	Poor seed quality	1
Taxus (YEW)		
Root Rot-Dieback	*Phytophthora*-poor drainage complex	22
Miscellaneous Disorders		
Herbicide Injury	Spray drift	1
Winter Damage	Desiccation	1
Dieback	Dog injury	1
Thuja (ARBORVITAE)		
Twig Dieback	*Phomopsis juniperovora*	2
Root Rot	*Phytophthora* sp.	1
Miscellaneous Disorders		
Winter Injury	Desiccation	2
Inner Leaf Browning/Autumn	Natural phenomenon	12
Tradescantia (WANDERING JEW)		
Miscellaneous Disorder		
Leaf Spot	Improper cultural conditions	1
Tulipa (TULIP)		
Miscellaneous Disorder		
Chemical Injury	Improper use	1
Viburnum (VIBURNUM)		
Miscellaneous Disorder		
Scorch	Wind, heat and drought	2
Vinca (PERIWINKLE)		
Stem Blight	*Phoma exigua* var.*exigua*	2
Yucca (YUCCA)		
Leaf Spot	*Coniothyrium concentricum*	1

TABLE 3—Continued

Zinnia (ZINNIA)		
Powdery Mildew	*Erysiphe cichoracearum*	3
Alternaria Blight	*Alternaria zinniae*	1

TABLE 4. *Fruit Trees—Diseases and Disorders*

Host Plant Disease and/or Disorder	Causal Agent	Number of Samples
Malus sylvestris (APPLE)		
Crown Rot	*Phytophthora cactorum*	1
Scab	*Venturia inaequalis*	3
Cedar-Apple Rust	*Gymnosporangium juniperi-virginianae*	2
Quince Rust	*Gymnosporangium clavipes*	1
Fire Blight	*Erwinia amylovora*	8
Frogeye Leaf Spot	*Physalospora obtusa*	2
Canker	*Phoma* sp.	1
Sooty Blotch	*Gloeodes pomigena*	2
Flyspeck	*Microthyriella rubi*	1
Blister Spot	*Pseudomonas syringae*	1
Black Rot	*Physalospora obtusa*	1
Miscellaneous Disorders		
Fruit Crack	Water fluctuation extremes	2
Dieback	Stress Factor(s)	6
Measles	Manganese toxicity	1
Chemical Injury	Improper use	2
Frost Crack	Winter temperature extremes	1
Scorch	Heat, wind and drought	6
Bitter Pit	Unknown—physiological	2
Moldy Core	Improper calyx closing	1
Prunus americana (PLUM)		
Black Knot	*Dibotryon morbosum*	4
Miscellaneous Disorders		
Cold Injury	Low temperatures	5
Chemical Injury	Improper use	1
Prunus armeniaca (APRICOT)		
Bacterial Leaf Spot	*Xanthomonas pruni*	1
Scab	*Cladosporium carpophilum*	1
Brown Rot	*Monilinia fructicola*	2
Miscellaneous Disorders		
Chemical Injury	Improper use	1
Prunis avium (CHERRY)		
Cherry Leaf Spot	*Coccomyces hiemalis*	2
Brown Rot	*Monilinia fructicola*	1
Miscellaneous Disorders		
Scorch	Wind, heat and drought	1
Root Rot	Wet site location	3
Dieback	Stress factor(s)	4
Fruit Rot	Improper pollination	3
Prunis persica (PEACH)		
Bacterial Spot	*Xanthomonas pruni*	7
Scab	*Cladosporium carpophilum*	7
Miscellaneous Disorders		
Scorch	Wind, heat and drought	2
Root Rot	Wet site location	1

TABLE 4—Continued

Prunus persica var. *nectarina* (NECTARINE)		
Bacterial Leaf Spot	*Xanthomonas pruni*	1
Scab	*Cladosporium carpophilum*	1
Pyrus communis (PEAR)		
Fireblight	*Erwinia amylovora*	2
Leaf Blight	*Fabraea maculata*	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	4
Chemical Injury	Improper use	4
Poor Growth	Improper fertility	6

TABLE 5. *Small Frutis—Diseases and Disorders*

Host Plant Diseases and/or Disorder	Causal Agent	Number of Samples
Fragaria grandiflora (STRAWBERRY)		
Black Root Rot	Specific pathogen(s) not known	6
Leaf Scorch	*Diplocarpon earliana*	2
Leaf Blight	*Dendrophoma obscurans*	1
Gray Mold Rot	*Botrytis cinerea*	1
Slime Mold	*Physarum cinereum*	1
Miscellaneous Disorders		
Scorch	Heat, wind and drought	1
Root Rot	Insect-borer	1
Ribes grossularia (GOOSEBERRY)		
Powdery Mildew	*Sphaerotheca mors-uvae*	1
Ribes sativum (CURRANT)		
Leaf Mottle	Virus	1
Rubus (RASPBERRY)		
Anthracnose	*Elsinoe veneta*	6
Crumbly Berry	Virus	1
Verticillium Wilt	*Verticillium albo-atrum*	3
Leaf Spot	*Septoria darrowi*	1
Rust	*Gymnoconia peckiana*	2
Leaf Curl	Virus	1
Miscellaneous Disorders		
Cold Injury	Late freezes	8
Vaccinium (BLUEBERRY)		
Miscellaneous Disorders		
Cold Injury	Low temperatures	1
Scorch	Site location	4
Vitis (GRAPE)		
Black Rot	*Guignardia bidwelli*	1
Leaf Curl	Virus	1
Downy Mildew	*Plasmopara viticola*	1
Powdery Mildew	*Uncinula necator*	2
Miscellaneous Disorders		
Herbicide Injury	Spray drift	3
Cold Injury	Low temperatures	5
Improper Ripening	Lack of CHO accumulation	4

TABLE 6. *Turf—Diseases and Disorders*

Host Plant Diseases and/or Disorder	Causal Agent	Number of samples
Poa pratensis (BLUEGRASS)		
Leaf Spot	*Helminthosporium* spp.	32
Fusarium Blight	*Fusarium roseum* complex	4
Dollar Spot	*Sclerotinia homoeocarpa*	2
Stripe Smut	*Ustilago striiformis*	1
Flag Smut	*Urocystis agropyri*	1
Rhizoctonia (warm weather)	*Rhizoctonia solani*	5
Slime Mold	*Physarum cinereum*	5
Cottony Blight	*Pythium aphanidermatum*	5
Anthracnose	*Colletotrichum graminicola*	3
Stunt Nematode	*Tylenchorhynchus* sp.	1
Lesion Nematode	*Pratylenchus* sp.	1
Fairy Ring	Basidiomycetes	2
Miscellaneous Disorders		
Chemical Injury	Improper use	1
Excessive Thatch	Improper cultural care	8
Scorch	Drought	7
Agrostis tenuis (BENTGRASS)		
Snowmold	*Typhula itoana*	1
Rhizoctonia (Cool weather)	*Rhizoctonia* sp.	3
Blue wilt/dieback	unknown	7

TABLE 7. *Vegetables—Diseases and Disorders*

Host Plant Diseases and/or Disorder	Causal Agent	Number of Samples
Allium cepa (ONION)		
Damping Off	*Pythium* sp.	1
Asparagus officinalis (ASPARAGUS)		
Needle Blight	*Cercospora asparagi*	3
Rust	*Puccinia asparagi*	1
Beta vulgaris (BEET)		
Crater Rot	*Rhizoctonia solani*	2
Brassica oleracea var. *botrytis* (CAULIFLOWER)		
Downy Mildew	*Peronospora parasitica*	2
Wirestem	*Rhizoctonia solani*	1
Brassica oleracea var. *capitata* (CABBAGE)		
Black Rot	*Xanthomonas campestris*	3
Miscellaneous Disorders		
Leaf Spot	Physiological	2
Chemical Injury	Spray drift	2
Brassica rapa (TURNIP)		
Miscellaneous Disorder		
Root Girdling	Soluble salts	1
Brassica ruvo (BROCCOLI)		
Clubroot	*Plasmodiophora brassicae*	1
Capsicum frutescens (PEPPER)		
Bacterial Spot	*Xanthomonas vesicatoria*	1
Damping Off	*Pythium* sp.	1
Wilt	*Fusarium* sp.	1
Leaf Mottle	Unidentified virus	1

TABLE 7—Continued

Miscellaneous Disorders		
Leaf Damage	Cold injury	1
Leaf Yellows and Curls	Nutrient deficiency	1
Fruit Injury	Sunscald	3
Chemical Injury	Salt toxicity	1
Citrullus vulgaris (WATERMELON)		
Fusarium Wilt	*Fusarium oxysporum*	3
Miscellaneous Disorders		
Chemical Injury	Spray drift	4
Leaf Damage	Wind injury	2
Chlorosis	Nutrient deficiency	1
Cucumis melo (CANTALOUPE)		
Downy Midlew	*Pseudoperonospora cubensis*	5
Leaf Spot	*Alternaria cucumerina*	1
Bacterial Wilt	*Erwinia tracheiphila*	1
Miscellaneous Disorders		
Leaf Damage	Wind injury	1
Chemical Injury	Spray drift	3
Cucumis sativus (CUCUMBER)		
Mosaic	Cucumber mosaic virus	1
Anthracnose	*Colletotrichum lagenarium*	1
Wilt	*Pythium* sp.	1
Slime Mold	*Physarum cinereum*	1
Miscellaneous Disorders		
Leaf Damage	Wind burn	5
Cucurbita moschata (PUMPKIN)		
Wilt	*Fusarium* sp.	1
Miscellaneous Disorder		
Chemical Injury	Spray drift	1
Cucurbita pepo (ZUCCHINI)		
Miscellaneous Disorder		
Blossom End Rot	Physiological	1
Ipomoea batatas (SWEET POTATO)		
Scurf	*Monilochaetes infuscans*	5
Soil Rot/Pox	*Streptomyces ipomoea*	1
Lactuca sativa var. *crispa* (LEAF LETTUCE)		
Bottom Rot	*Rhizoctonia solani*	1
Lycopersicon esculentum (TOMATO)		
Septoria Leaf Spot	*Septoria lycopersici*	5
Early Blight	*Alternaria solani*	2
Stem Canker	*Rhizoctonia solani*	2
Fusarium Wilt	*Fusarium oxysporium* f. sp. *lycopersici*	4
Late Blight	*Phytophthora infestans*	1
Black-Dot-Root-Rot (Hydroponics)	*Colletotrichum coccodes*	1
Sclerotium Wilt	*Sclerotinia sclerotiorum*	1
Bacterial Spot	*Xanthomonas vesicatoria*	4
Bacterial Speck	*Pseudomonas tomato*	1
Anthracnose (fruit)	*Colletotrichum coccodes*	2
Mosaic	Unidentified virus	1
Damping Off (Hydroponics)	*Pythium aphanidermatum*	5
Miscellaneous Disorders		
Chemical Injury	Spray drift	4
Chemical Injury (hydroponics)	Heater fumes	3
Blossom End Rot	Physiological	8
Walnut Wilt	Walnut tree excretions	1

TABLE 7—Continued

Leaf Yellowing and Curling (Hydroponics)	Nutrient imbalance	7
Leaf Necrosis	Wind injury	4
Corky Root	High soluble salt level	2
Fruit Injury	Sunscald	2
Wilt	Lightening	1
Leaf Roll	Physiological	3
Pastinaca sativa (PARSNIP)		
Miscellaneous Disorder		
Minimal Root Development	Nutritional imbalance	1
Phaseolus vulgaris (SNAP BEAN)		
Root Rot	*Rhizoctonia solani*	4
Root Rot	*Fusarium* sp.	5
Root Rot	*Pythium* sp.	2
Anthracnose	*Colletotrichum lindemuthianum*	1
Stem Rot	*Sclerotinia sclerotiorum*	1
Common Blight	*Xanthomonas phaseoli*	2
Miscellaneous Disorders		
Chemical Injury	Spray drift	4
Leaf Yellowing/Bronzing	Mites	2
Stem Damage	Hail	1
Leaf Damage	Wind injury, sunscald	8
Pisum sativum (PEA)		
Bacterial Blight	*Pseudomonas pisi*	1
Sooty spot	*Heterosporium* sp.	1
Rheum spp. (RHUBARB)		
Ascochyta Leaf Spot	*Ascochyta rhei*	3
Anthracnose Leaf Spot	*Colletotrichum erumpens*	1
Crown Rot	*Phytophthora* sp.	2
Solanum melongena (EGGPLANT)		
Wilt and Yellow	Cold damage	1
Yellow Fruit Spot	Sunscald	1
Solanum tuberosum (POTATO)		
Tuber Rot	*Fusarium* sp.	2
Bacterial Soft Rot	*Erwinia carotovora*	2
Rhizoctonia	*Rhizoctonia solani*	2
Late Blight	*Phytophthora infestans*	1
Common Scab	*Streptomyces scabies*	2
Blackleg	*Erwinia atroseptica*	3
Miscellaneous Disorders		
Hollow Heart	Heat injury	2
Enlarged lenticels	Excess water	1

TABLE 8. *Agronomic Crops—Diseases and Disorders*

Host Plant Diseases and/or Disorder	Causal Agent	Number of Samples
Triticum (WHEAT)		
Root Rot (see below)	Various (see below)	9
Rhizoctonia	*Rhizoctonia solani*	3
Take-All	*Ophiobolus graminis*	2
Fusarium Root Rot	*Fusarium* spp.	4
Wheat Spindle Streak	Wheat Sprindle Streak Virus	2
Barley Yellow Dwarf	Barley Yellow Dwarf Virus	1

TABLE 8—Continued

Septoria Glume Blotch	*Septoria nodorum*	4
Scab	*Gibberella zeae*	7
Septoria Leaf Blotch	*Septoria tritici*	2
Helminthosporium Leaf Spot	*Helminthosporium sativum*	2
Powdery Mildew	*Erysiphe graminis*	6
Rhizoctonia Sharp Eye	*Rhizoctonia solani*	2
Loose Smut	*Ustilago tritici*	1
Miscellaneous Disorders		
Improper Root Development	Too shallow planting	1
Chlorosis	Nutrient Deficiency	5
Leaf Discoloration	Frost	1
Avena (OAT)		
Halo Blight	*Pseudomonas coronafaciens*	3
Blasting	*Fusarium* sp.	1
Hordeum (BARLEY)		
Loose Smut	*Ustilago nuda*	1
Zea (Dent Corn)		
Seedling Blights (see below)	Various (see below)	4
Gib Seedling Blight	*Gibberella zeae*	2
Pythium	*Pythium aphanidermatum*	2
Anthracnose	*Colletotrichum graminicola*	6
Northern Corn Leaf Blight	*Exserohilum turcicum*	5
Northern Corn Leaf Spot	*Bipolaris carbonum* (race II)	7
Common Smut	*Ustilago maydis*	4
Common Rust	*Puccinia sorghi*	2
Stewart's Blight	*Erwinia stewartii*	9
Ear Rots (see below)	Various (see below)	16
Fusarium Kernel Rot	*Fusarium moniliforme*	9
Fusarium Kernel Rot	*Gibberella zeae*	1
Kernel Rot	*Penicillium* sp.	4
Kernel Rot	*Celphalosporium* sp.	2
Stalk Rots (see below)	Various (see below)	3
Fusarium Stalk Rot	*Fusarium moniliforme*	1
Gib Stalk Rot	*Gibberella zeae*	1
Helminthosporium Stalk Rot	*Bipolaris carbonum*	1
Southern Corn Leaf Blight	*Bipolaris maydis* (Race 0)	5
Holcus Spot	*Pseudomonas syringae*	6
Miscellaneous Disorders		
Tall corn/Short corn	Environmental factors	20
Chemical Injury	Wet Weather	20
Chlorosis/striping	Nutrient deficiency	14
Root restriction	Soil compaction	11
Silvering of leaves	Cold injury	8
Clubbed Roots	Too deep planting	2
Glycine (SOYBEAN)		
Rhizoctonia Root Rot	*Rhizoctonia solani*	16
Phytophthora Root Rot	*Phytophthora megasperma* var. *sojae*	5
Pythium Root Rot	*Pythium aphanidermatum*	14
Bacterial Blight	*Pseudomonas glycinea*	3
Pod & Stem Blight	*Diaporthe phaseolorum* var. *sojae*	2
Brown Stem Rot	*Cephalosporium gregatum*	2
Purple Seed Stain	*Cercospora kikuchii*	1
Anthracnose	*Colletotrichum graminicola*	1
Charcoal Rot	*Macrophomina phaseolina*	4
Brown Spot	*Septoria glycines*	10
Soybean Cyst Nematode	*Heterodera glycines*	2

TABLE 8—Continued

Miscellaneous Diseases and Disorders		
Chemical Injury	Various causes	26
Chlorosis	Nutrient deficiency	3
Root Restriction	Soil compaction	2
Leaf Discoloration	Sunscald	2
Various Problems	Environmental factors	12
Leaf Bronzing/Defoliation	Mites	9
Trifolium (CLOVER)		
Root Rot	*Fusarium* sp.	1
Miscellaneous Disorder		
Leaf Discoloration	Environmental factors	1
Medicago (ALFALFA)		
Sclerotinia Crown & Stem Rot	*Sclerotinia trifoliorum*	2
Downy Mildew	*Peronospora trifoliorum*	1
Spring Blackstem	*Phoma medicaginis*	1
Leptosphaerilina Leaf Spot	*Leptosphaerulina briosiana*	4
Rhizoctonia Root Rot	*Rhizoctonia solani*	3
Anthracnose	*Colletotrichum trifolii*	1
Miscellaneous Disorders		
Leaf Discoloration	Environmental factors	2
White edges on leaves/ curling	Frost	3
Nicotiana (TOBACCO)		
Blue Mold	*Peronospora tabacina*	1
Miscellaneous Disorder		
Chemical Injury	Improper use	1

Shade and Ornamental Trees

Diseases: As in the past years (2, 3) anthracnose of sycamore, maple, ash and white oak was the most common leaf disease of shade trees (Table 2). The late spring infection of sycamore resulted in excessive leaf drop during May and early June. *Actinopelte* leaf spot of oak was prevalent during late summer in those areas of the state which experienced excessive rainfall during August. *Verticillium* was isolated from a number of shade trees, e.g. maple, catalpa, and ash, but was most frequently found on hard maple. *Diplodia* tip blight was common throughout the state, causing lower limb death in Scotch, Austrian and Red pine. A disease of pine trees, pinewood nematode, caused by the nematode, *Bursaphelenchus lignicolus*, was recorded for the first time in Indiana. The disease was found in 8 counties of Indiana. It appears this disease has been present in Indiana, and throughout the Midwest, for a number of years but was not detected.

Disorders: Maple trees throughout Indiana had an exceptionally heavy seed set which resulted in very sparse growth during the early spring months. The heavy seed set was attributed to a combination of the previous mild winter and lack of late spring freezes. A lower branch dieback of ash trees was noted in southern Indiana. Cause of the dieback was associated with stem cankering from anthracnose plus severe drought conditions. Leaf scorch was prevalent from late May through the summer. Early spring scorch was especially severe due to dry, hot, windy periods during late May and early June. Along with scorch, tree decline continued to be the most frequent problem of shade trees, especially maples. Site location and weather stress appeared to be major factors contributing to decline.

Ornamentals

Diseases: Juniper tip blight occurred in epidemic proportion in many areas of the state (Table 3). Current season growth was especially hard hit, however, older (mature) growth was relatively unaffected. Powdery mildew was prevalent on a number of ornamentals (lilac, rose, euonymus) during the late summer-early fall period. As in past years (2, 3), numerous samples of yew (*Taxus*) were received showing general dieback symptoms (Table 3). Yew dieback was most commonly associated with root injury due to wet site locations and/or *Phytophthora* sp.

Disorders: The majority of disorders were related to a combination of poor site location along with drought stress.

Tree Fruits

Diseases: Apple scab, rust and fire blight were the most common diseases on apple (Table 4). Fire blight was most severe in the LaPorte fruit-growing area. Also on apple, collar rot, caused by *Phytophthora cactorum*, was more damaging than in previous years. Bacterial spot of peach and nectarine caused more damage than in recent years, however, damage was generally confined to leaves with little fruit infection.

Disorders: Premature fruit drop of cherry, apricot, and plum was a major disorder. Cause of the premature drop was related to several factors, e.g. heavy fruit set, poor pollination, and insect injury. Many stone fruits showed decline symptoms as a result of the cold injury during previous winters (1977 thru 1979).

Small Fruits

Diseases: Bramble diseases were especially prevalent during 1980 (Table 5). Anthracnose and orange rust were common. Orange rust on blackberries has been especially widespread both this year and last year. *Verticillium* wilt of raspberries was frequently diagnosed as a problem in areas which previously had been planted in solanaceous crops. Though black root rot was the most common root problem of strawberry, fewer samples were received than in previous years (2,3). Black rot and downy mildew were the two most common grape diseases but were infrequent.

Disorders: Cold injury continued to be a major disorder of brambles. While the past winter was mild, cold injury from the previous two winters continued to cause plant dieback; however, dieback was not as excessive as during the 1979 growing season.

Uneven ripening of grapes was reported frequently in the early part of the fall season. This disorder was attributed to a lack of carbohydrate accumulation which was apparently due to various factors such as excessive fruit crops (too little foliage), lack of adequate light intensity, high humidity, overpruning, powdery and downy mildew and an overall lack of functional foliage.

Turfgrasses

Diseases: Helminthosporium leaf spot and *Helminthosporium* melting out caused by *Helminthosporium* spp. were the most widespread and serious diseases of Kentucky bluegrass (Table 6). *Helminthosporium* melting out coupled with excessive thatch and environmental stress were responsible for killing large areas of turf in many lawns. Sporocarps of fairy ring fungi were common. An unidentified problem occurred on at least three Indiana golf courses on Toronto C-15 bentgrass. The problem first appeared as a blue-wilt of lower leaf tips and progressed to

entire leaves and then all leaves of an individual plant. Affected leaves then yellowed and died. Affected plants occurred in small circular patches (1 to 3 inches in diameter), similar to dollar spot. Individual patches often coalesced killing large, irregular areas of turf. Laboratory studies failed to confirm the causal agent. Cool weather brown patch caused by *Rhizoctonia* was observed on both bentgrass and bluegrass in early spring.

Disorders: Hot, dry weather resulted in poor root development and often caused plant death, especially where plants were further stressed by excessive thatch or disease.

Vegetables

Diseases: Specimens of cucurbit crops, snap bean, tomato and potato comprised the bulk of vegetable crops received (Table 7). Downy mildew was prevalent on muskmelon, as in past years (2,3). However, other foliar leaf spots were not significant. Heavy rainfall early in the growing season followed by widespread drought-like conditions, contributed to a high incidence of "first crop" blossom-end rot of tomato, pepper and squash. Bacterial spot (*Xanthomonas vesicatoria*) was a problem early in the season on both pepper and tomato crops due to heavy rainfall and ample inoculum dispersal. An increased incidence of *Fusarium* and *Rhizoctonia* root rot of garden snap beans and sweet potato scurf (*Monilochaetes infuscans*) indicates the need for garden rotation and the use of resistant varieties where available (1). Hydroponic tomato operations in Indiana still are plagued with Pythium and black dot root rot.

Disorders: As in previous years (2,3) a high number of vegetable samples were diagnosed as chemical injury. The majority of specimens originated in home gardens exposed to herbicide drift from a variety of sources. Clippings of herbicide-treated grass, used as a mulch around vegetable plants, also caused many injury problems. Environmental factors such as sun scald and wind injury caused a large share of scorch symptoms found on vegetable foliage and fruit.

Agronomic Crops

Agronomic Diseases: Damaging weather conditions were directly or indirectly related to an increased severity of several agronomic crop diseases (Table 8).

Diseases—Wheat: Wheat spindle streak was widespread throughout the state in early spring, but yield losses were estimated to be less than 3 bu/acre.

Septoria leaf blotch and powdery mildew were widespread with early spring rain, but they failed to develop to damaging proportions as drier weather conditions prevailed in late spring. Scab was widespread throughout the state, with some southeastern Indiana fields reaching up to 50% infection. Minor outbreaks of loose smut and, to a greater extent, bunt were reported.

Disorders: The most common disorder was chlorosis due to nitrogen deficiency. Nitrogen loss was especially acute in southwestern Indiana.

Disease—Oats: Halo blight caused by *Pseudomonas coronafaciens* was widespread. It was more prevalent than it has been in many years, but yield losses were minimal.

Diseases—Corn: Seedling blights were common in early planted corn or where plants were stressed by soil compaction. Early season anthracnose leaf blight was widespread throughout the state in fields where corn followed corn. This phase of the disease was observed to be more severe than any previous year at the 3 to 6 leaf stage of plant development. This stage of the disease did not affect yields,

even though some anthracnose leaf blight was noted after tasseling. Holcus spot was observed in northern Indiana, but the disease did not develop to damaging proportions. Southern corn leaf blight, anthracnose leaf blight, Stewart's disease—leaf blight phase, and common rust were observed in numerous fields, but disease development was light. Minor yield losses from leaf blights occurred only in a few eastern and southwestern Indiana corn fields. Stalk rots were widespread and severe throughout the state. Some fields had up to 90% stalk rot. Ideal harvest conditions permitted early harvest, and yield losses from lodged corn was held to a minimum. Yield losses from stalk rots could have been severe with less than ideal harvest conditions.

Disorders: The tall corn-short corn syndrome, caused by any factor that impedes root development, was a widespread and common complaint (Table 8). Soil compaction appeared to be a major factor in the development of this problem. Considerable dinitroaniline carryover damage was observed, but this was felt to have been accentuated by the soil compaction problems. Drought and/or high temperatures caused some pollination problem.

Disease—Soybeans: Phytophthora and *Pythium* seedling blights were severe and reduced stands in areas where excessive rainfall occurred shortly after planting. *Rhizoctonia* root rot was common but yield losses were slight. The soybean cyst nematode was found in additional fields in White and Cass counties. Bacterial blight and brown spot were common. Bacterial blight did not reduce yields. Fields severely affected with brown spot were prematurely defoliated and suffered some yield loss. Charcoal rot was commonly found in fields stressed by hot, dry weather.

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