

CLEMSON® UNIVERSITY  
**PLANT AND PEST  
DIAGNOSTIC CLINIC**

**ANNUAL REPORT**  
**2021**



The information contained in this report is based upon work that was supported by the Southern Plant Diagnostic Network of the National Plant Diagnostic Network.

## *A message from the PPDC staff*

As a part of the Department of Plant Industry in Regulatory Services at Clemson University, Plant and Pest Diagnostic Clinic (PPDC) serves its clients by providing high-quality diagnoses and management recommendations against a variety of plant problems including diseases, pests, weeds, nematodes, and molecular specimens. PPDC also partners with Clemson Cooperative Extension as well as teaching, regulatory and research personnel to document new diseases and pests in South Carolina and provide educational and training opportunities. Under the umbrella of PPDC, there are two specialized labs, Commercial Turfgrass Clinic (CTC) and Molecular Pathogen and Pest Detection (MPPD) Lab. We provide diagnostic services on commercial turfgrass samples to golf courses, athletic fields, and other turf management professionals at CTC. The MPPD Lab employs advanced molecular assays to detect pathogens of concern. Furthermore, Nematode Assay Lab (NAL) at the Department of Plant and Environmental Sciences serves under contractual agreement with PPDC to identify plant parasitic nematodes and provide management recommendations. Annual reports of CTC, the MPPD Lab, and NAL are included as appendices.

PPDC has had change in leadership in 2021. Meg Williamson retired in the summer, while continued to lead PPDC until December 13, when Dr. Xiao Yang took the role of Lab Manager. Xiao can be reached at [xyang7@clemson.edu](mailto:xyang7@clemson.edu).

Despite the challenges during these difficult times, PPDC continued to recover from the impact caused by the pandemic during 2021. We hope that readers will find information in this annual report useful and interesting. We would also like to thank all faculty members, specialists, agents, and retired professors who devoted their time and effort to PPDC. Their names are listed in the Acknowledgements section below.



**Xiao Yang**  
Diagnostician  
Lab Manager



**Meg Williamson**  
Retired Diagnostician  
Immediate Past Lab Manager



**Diana Low**  
Lab Coordinator



**Curt Colburn**  
Diagnostician



**Predeesh Chandran**  
Entomologist

## *Acknowledgements*

We thank faculty members, specialists, agents, and retired professors who provided diagnostic services and professional consultation to PPDC in 2021.

Professors **Jeffrey Adelberg** and **Anthony Keinath** provided advice for a highbush blueberry sample that had cultural and environmental problems.

**Justin Ballew**, Commercial Horticulture Agent, provided consultations for pest and disease problems of raspberry, strawberry, and tree tomato.

**Eric Benson**, Professor, provided insect identification and control recommendations.

**Juang Chong**, Professor, provided pest identification and recommendations.

**Matthew Cutulle**, Assistant Professor, provided consultation for a watermelon specimen that had herbicide carryover problem.

**David Dewitt**, Extension Agent, provided consultation for hemp diseases.

**Timothy Drake**, State Entomologist, provided pest identification and recommendations.

**John Hains**, Associate Professor Emeritus, provided algae and aquatic plant identification.

**Cory Heaton**, Extension Assistant Professor and State Wildlife Specialist, provided aquatic weed identification and management recommendations.

**Steve Jeffers**, Professor, provided disease diagnosis and management recommendations.

**Churamani Khanal**, Assistant Professor, leads the Nematode Assay Lab (NAL). In 2021, he and **Jeanice Troutman**, Research Associate, processed more than 1,400 samples and provided nematode identification.

**Mike Marshall**, Assistant Professor, provided consultation for sunflower and rice problems.

**Lambert (Bert) McCarty**, Professor, provided weed identification and cultural management recommendations of turfgrass problems.

**Joseph Roberts**, Assistant Professor, provided consultation for turfgrass nematode and disease problems.

**Guido Schnabel**, Professor, and **Harleen Kaur** provided consultation for a strawberry disease.

**Ted Whitwell**, Professor Emeritus, provided plant identification.

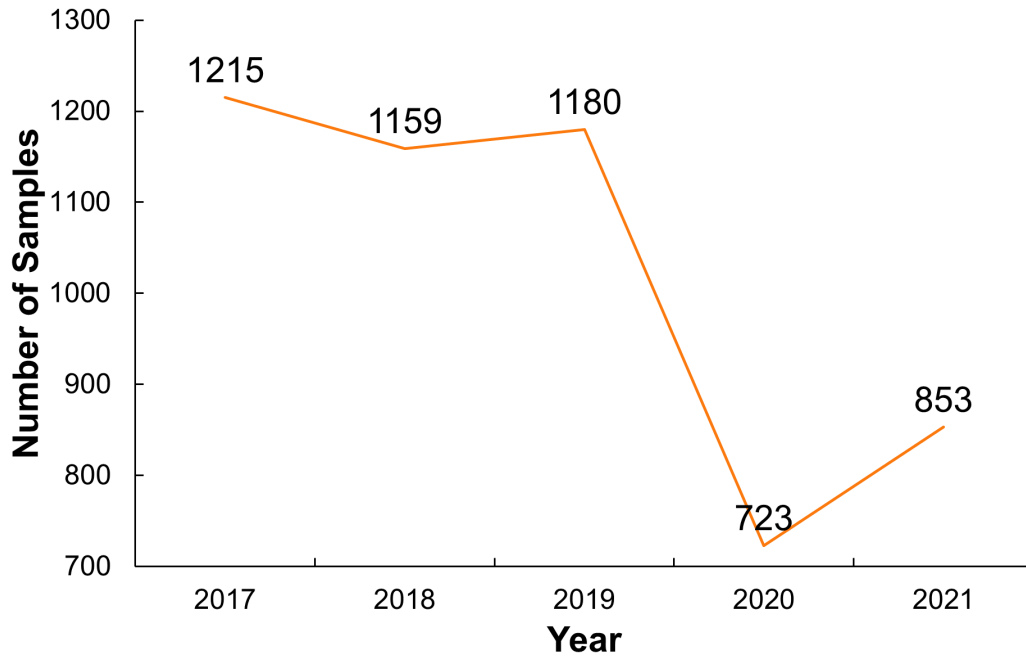
**Joey Williamson**, Retired Horticulture Extension Agent, provided diagnosis and management recommendations for a range of horticultural crops.

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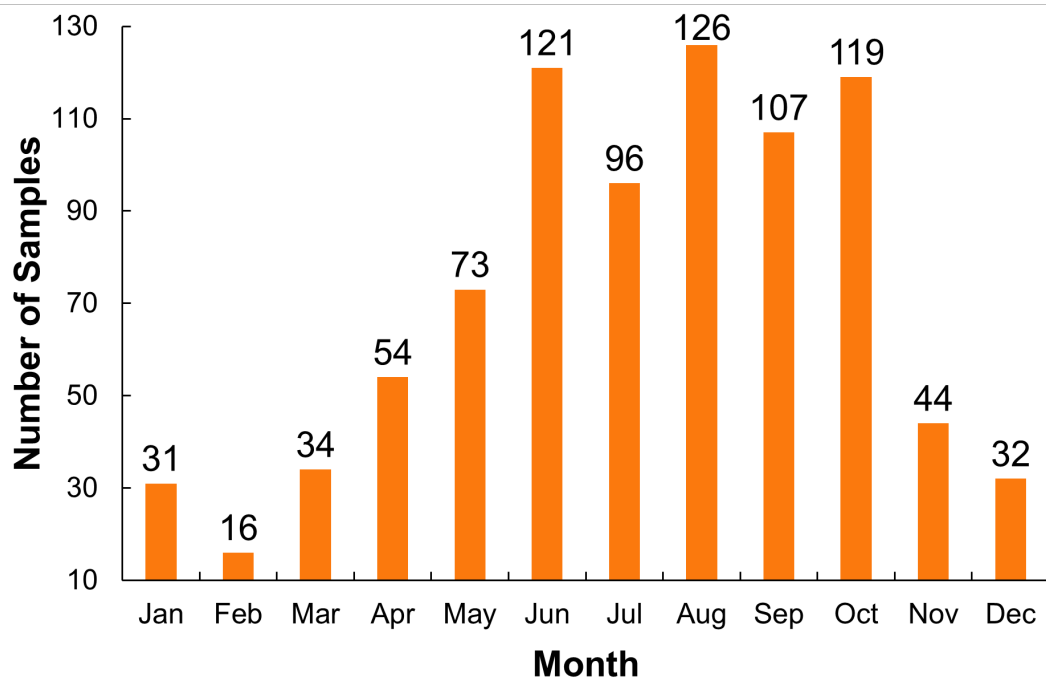
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## PPDC sample statistics

PPDC began to recover from the impact caused by the pandemic in 2020. We have processed a total of 853 samples in 2021, 18% more than the 2020 sample load (**Fig. 1**). The majority of 2021 samples were received from June to October (**Fig. 2**).



**Fig. 1** Number of samples processed at PPDC per year over the past five years



**Fig. 2** Number of samples processed at PPDC per month in 2021



PPDC samples came from various sources in 2021. Thirty-seven percent of samples came from nonextension and commercial sources, while 33% were from extension and noncommercial settings (Fig. 3). PPDC provided diagnostic services to more than 1300 clients in 2021. Homeowners, home gardeners, and clients referred by extension agents took up more than half of the client counts (Fig. 4).

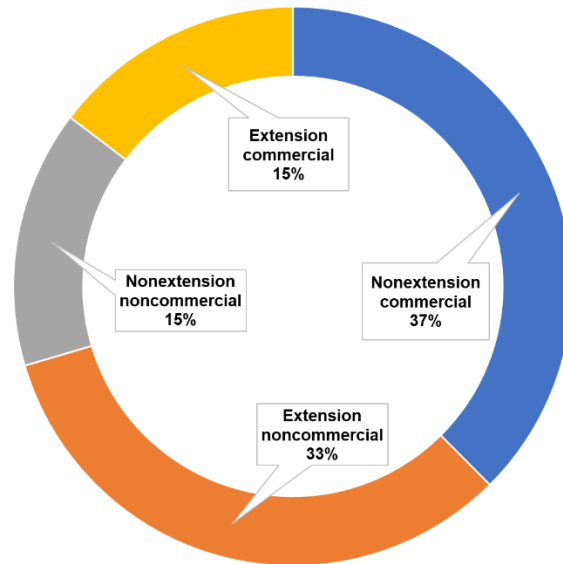


Fig. 3 Percentage of samples by source at PPDC in 2021

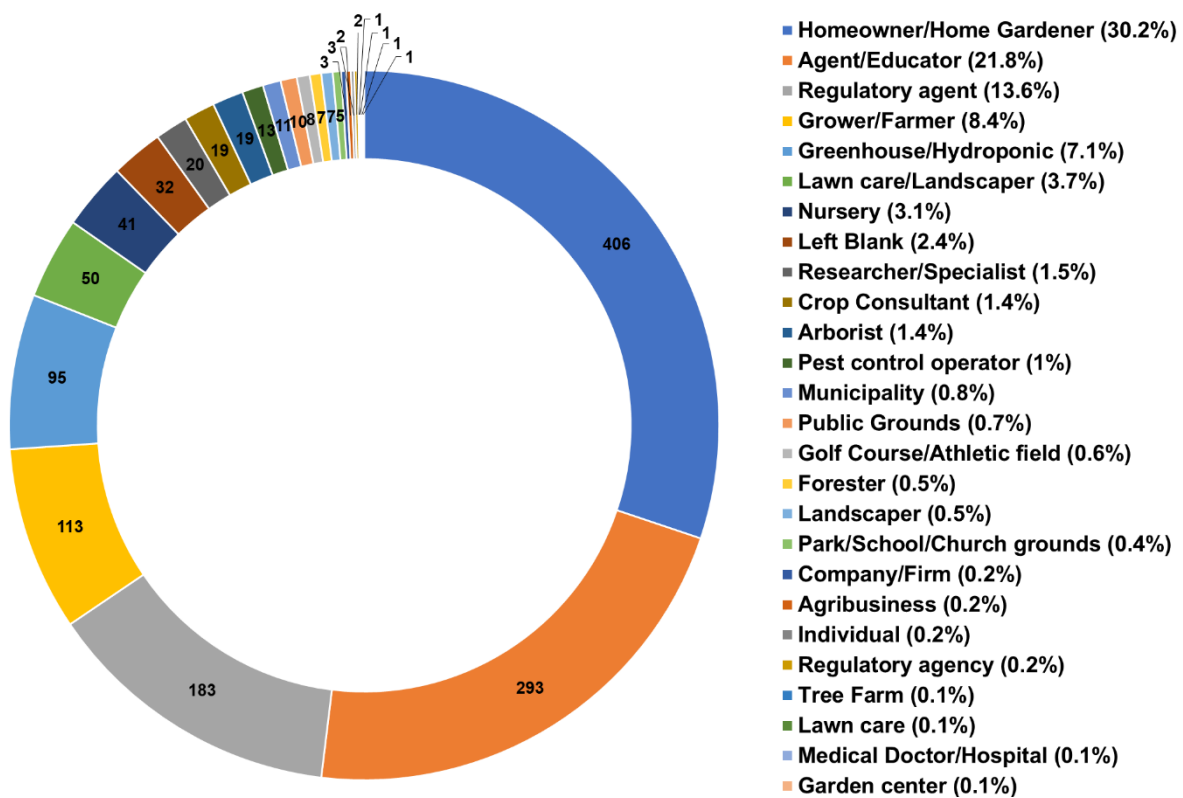
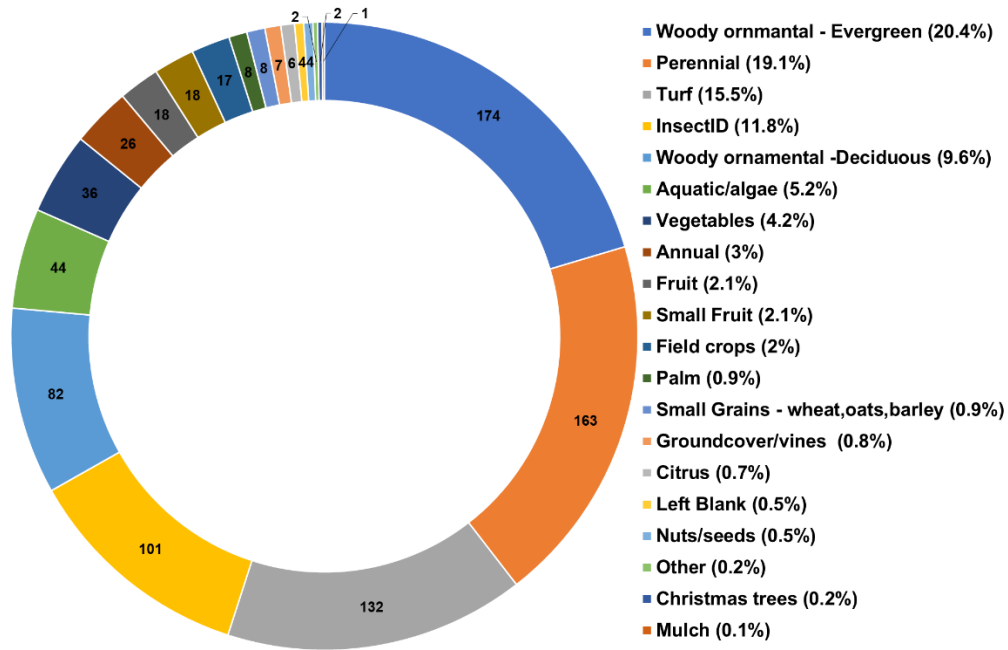


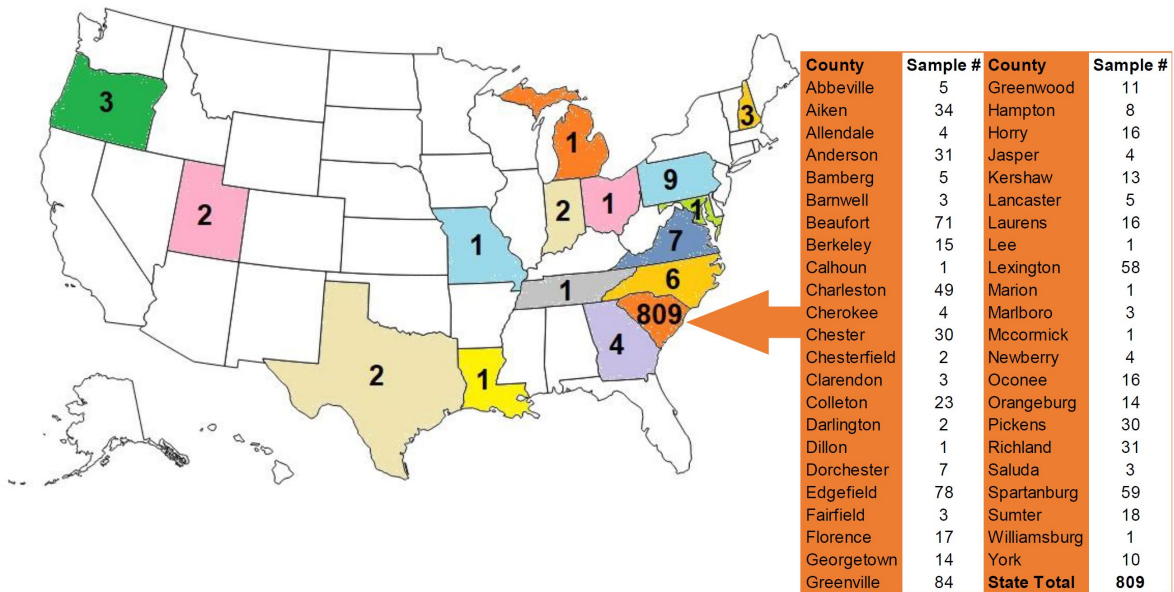
Fig. 4 Count and percentage of samples per client type at PPDC in 2021

Samples received at PPDC in 2021 belonged to at least 20 categories. More than 30% of samples were woody ornamental plants. More than 19% of samples were perennial plants. Approximately 15.5% samples were turfgrasses. It is worth to mention that an addition of 179 commercial turfgrass samples were processed at CTC (Appendix 1). More than 100 were insect samples seeking for identification (**Fig. 5**).



**Fig. 5** Count and percentage of samples per sample category at PPDC in 2021

The vast majority of the samples (95%) in 2021 were from 45 counties within SC. The remaining 44 samples were from 15 other states outside of SC (**Fig. 6**).



**Fig. 6** Count of samples per state and SC county

The following diagnosticians were involved in the processing samples for PPDC during 2021 (**Table 1**). Each sample may involve one or more diagnosticians. Hence, the total number of samples in Table 1 exceeds the total number of samples (853) processed at PPDC during 2021.

**Table 1** Number of samples processed by each diagnostician at PPDC during 2021

<b>Diagnostician Name</b>	<b>No. of Samples</b>
Meg Williamson	467
Curt Colburn	249
Predeesh Chandran	166
Ted Whitwell	39
John Hains	32
Timothy Drake	29
Xiao Yang	8
Steve Jeffers	1
Joey Williamson	1

The following advisory consultants provided advice for PPDC during 2021 (**Table 2**). Each sample may involve none, one, or more advisory consultants. Hence, this table does not represent the total number of samples processed at PPDC during 2021.

**Table 2** Number of samples advised by each advisory consultant at PPDC during 2021

<b>Advisory Consultant Name</b>	<b>No. of Samples</b>
Joey Williamson	29
Eric Benson	19
Cory Heaton	13
J. C. Chong	9
Bert McCarty	5
Ted Whitwell	4
Justin Ballew	3
Mike Marshall	2
Steve Jeffers	2
David Dewitt	1
Guido Schnabel	1
Harleen Kaur	1
Jeff Adelberg	1
Joe Roberts	1
Matt Cutulle	1
Tony Keinath	1

As the Lab Coordinator, Diana Low processed check-in for 852 out of the 853 samples received at the clinic in 2021. Meg Williamson checked in one sample. Out of the 853 samples, 848 were physical samples, while five were image-only samples.



The tables below list diagnostic results of individual host groups (**Tables 3 to 10**).

**Table 3** Diagnostic results of ornamental and tree samples received at PPDC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<i>Abelia grandiflora</i>	Glossy Abelia	Root weevils (Family Curculionidae)	0	0	1	0
		Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
<i>Acer freemanii</i>	Freeman's Maple	Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
<i>Acer griseum</i>	Paper Bark Maple	Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	1	0	0	0
<i>Acer palmatum</i>	Japanese Maple	Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Gloomy scale ( <i>Melanaspis tenebricosa</i> )	1	0	0	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
<i>Acer rubrum</i>	Red Maple	Japanese maple scale ( <i>Lopholeucaspis japonica</i> )	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	1
		Anthrachnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Phyllosticta leaf spot ( <i>Phyllosticta</i> sp./spp.)	1	0	0	0
		Bacterial identification ( <i>Pseudomonas syringae</i> )	1	0	0	0
		Leaf spot ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	0	1	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Gloomy scale ( <i>Melanaspis tenebricosa</i> )	1	0	0	0
<i>Acer sp./spp.</i>	Maple	Herbicide injury (Abiotic disorder)	0	0	1	0
		Insufficient sample (Identification Analysis)	0	1	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<i>Achillea millefolium</i>	Common Yarrow	Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<i>Acorus gramineus</i>	Japanese Rush; sweet flag	Anthrachnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Bipolaris spot blotch ( <i>Bipolaris</i> sp./spp.)	1	0	0	0
<i>Ajuga reptans</i>	Bugleweed	Phytophthora root/ stem/ crown rot ( <i>Phytophthora capsici</i> )	1	0	0	0
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0	0
		Corynespora leaf spot ( <i>Corynespora</i> sp./spp.)	1	0	0	0
<i>Amelanchier x grandiflora</i>	Apple Serviceberry	Cedar-quince rust ( <i>Gymnosporangium clavipes</i> )	1	0	0	0
		Normal plant growth (Identification Analysis)	1	0	0	0
<i>Antirrhinum</i> sp./spp. hybrids	Snapdragon	Normal plant growth (Identification Analysis)	1	0	0	0
<i>Aquilegia caerulea</i>	Rocky Mountain Columbine	Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Aquilegia x hybrida</i>	Columbine	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Armeria pseudarmeria</i>	Thrift	Unspecified pathology ( <i>Phomopsis</i> sp./spp.)	2	0	0	0
		Pythium damping off ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Phoma leaf spot ( <i>Phoma</i> sp./spp.)	1	0	0	0
<i>Asclepias cordifolia</i>	Heart Leaf Milkweed	Passalora leaf spot ( <i>Passalora</i> sp./spp.)	1	0	0	0
		Florida flower thrips ( <i>Frankliniella bispinosus</i> )	1	0	0	0
<i>Bambusa multiplex</i>	Hedge Bamboo	Noxious bamboo mealybug ( <i>Chaetococcus bambusae</i> )	1	0	0	0
		Fungal leaf spot (Unidentified Fungus)	0	0	0	1
<i>Bambusa sp./spp.</i>	Bamboo	Insufficient sample (Identification Analysis)	0	0	0	1
<i>Bambusa vulgaris</i>	Common Bamboo	Bamboo spider mite ( <i>Schizotetranychus celarius</i> )	0	0	1	0
		Leaf rust; Rust ( <i>Puccinia</i> sp./spp.)	0	0	1	0
<i>Baptisia australis</i>	Blue False Indigo	Phoma leaf spot ( <i>Phoma</i> sp./spp.)	1	0	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<b>Begonia semperflorens-cultorum</b>	<b>Wax Begonia</b>	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Anthracnose basal rot; Crown rot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Crown rot ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0	0
<b>Boehmeria cylindrica</b>	<b>Smallspike False Nettle</b>	Discula anthracnose ( <i>Discula</i> sp./spp.)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<b>Brugmansiasp./spp.</b>	<b>Angel Trumpet</b>	Tobacco mosaic (Tobacco Mosaic Virus (TMV))	1	0	0	0
<b>Buddleia davidii</b>	<b>Butterfly Bush; summer lilac</b>	Freeze; Frost; Cold damage (Abiotic disorder)	1	0	0	0
<b>Buxus microphylla var. japonica</b>	<b>Japanese Boxwood</b>	Phytophthora crown and/or root rot ( <i>Phytophthora nicotianae</i> )	2	0	0	0
		Boxwood blight; Leaf and stem blight ( <i>Calonectria pseudonaviculata</i> )	1	0	0	0
		Anthracnose ( <i>Colletotrichum</i> sp./spp.)	2	0	0	0
<b>Buxus sempervirens</b>	<b>Common Boxwood</b>	Boxwood blight; Leaf and stem blight ( <i>Calonectria pseudonaviculata</i> )	2	0	0	0
		Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Anthracnose stem blight ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Boxwood Volutella blight; Canker ( <i>Volutella buxi</i> )	1	0	0	0
<b>Buxus sempervirens 'suffruticosa'</b>	<b>Edging Boxwood</b>	Black root rot ( <i>Thielaviopsis basicola</i> )	0	1	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	1	0	0
		Boxwood blight; Leaf and stem blight ( <i>Calonectria pseudonaviculata</i> )	2	0	0	0
		Boxwood mite ( <i>Eurytetranychus buxi</i> )	0	0	1	0
<b>Buxus sinica</b>	<b>Korean Boxwood</b>	Boxwood Volutella blight; Canker ( <i>Volutella buxi</i> )	1	0	0	0
		Boxwood Macrophoma leaf spot ( <i>Dothiorella candollei</i> )	1	0	0	0
<b>Buxus sinica var. insularis</b>	<b>Korean Boxwood</b>	Boxwood Volutella blight; Canker ( <i>Volutella buxi</i> )	1	0	0	0
<b>Buxus sp./spp.</b>	<b>Boxwood</b>	Boxwood blight; Leaf and stem blight ( <i>Calonectria pseudonaviculata</i> )	3	0	0	0
		Boxwood Macrophoma leaf spot ( <i>Macrophoma candollei</i> )	2	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	2	0
		Armillaria root rot ( <i>Armillaria</i> sp./spp.)	1	0	0	0
		Boxwood mite ( <i>Eurytetranychus buxi</i> )	1	0	2	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	2	0	0
		Boxwood Volutella blight; Canker ( <i>Volutella buxi</i> )	3	0	0	0
		No pathogen found (Identification Analysis)	0	3	0	0
		Boxwood leafminer ( <i>Monarthropalpus flavus</i> (buxi))	1	0	0	0
		Nutritional deficiency (Abiotic disorder)	1	0	0	0
		<b>Calibrachoa sp./spp.</b>	<b>Million Bells</b>	Nutritional deficiency (Abiotic disorder)	1	0
<b>Callicarpa americana</b>	<b>American Beautyberry</b>	Cucumber mosaic (CMV) (Cucumovirus Cucumber Mosaic Virus)	0	1	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
		Nutrient imbalance (Abiotic disorder)	0	0	1	0
<b>Camellia sasanqua</b>	<b>Sasanqua Camellia</b>	Camellia leaf gall ( <i>Exobasidium camelliae</i> )	1	0	0	0
		Tea scale ( <i>Fiorinia theae</i> )	1	0	0	0
		Algal leaf spot ( <i>Cephaleuros virescens</i> )	1	0	0	0
<b>Camellia sp./spp.</b>	<b>Camellia</b>	Camellia leaf gall ( <i>Exobasidium camelliae</i> )	1	0	0	0
		Tea scale ( <i>Fiorinia theae</i> )	1	0	0	0
		Algal leaf spot ( <i>Cephaleuros virescens</i> )	1	0	0	0
<b>Carya illinoensis</b>	<b>Pecan</b>	Artist's conk ( <i>Ganoderma applanatum</i> )	1	0	0	0
		Wood rot fungus ( <i>Trametes hirsuta</i> )	1	0	0	0
		Leaf spot (Unknown cause)	0	0	0	1
<b>Castanea mollissima</b>	<b>Chinese Chestnut</b>	Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	0	1	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<b>Castanea sp./spp.</b>	<b>Chestnut</b>	Leaf-eating beetles (Order Coleoptera)	1	0	0	0
<b>Catalpa sp./spp.</b>	<b>Catalpa</b>	Predatory stink bug ( <i>Alcaeorrhynchus grandis</i> )	1	0	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<i>Catharanthus roseus</i>	Madagascar Periwinkle; vinca	Phytophthora root and basal stem rot ( <i>Phytophthora nicotianae</i> )	1	0	0	0
<i>Cedrus deodara</i>	Deodar Cedar	Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
<i>Cedrus libani</i>	Cedar-of-lebanon	Brown spot; Needle blight ( <i>Lecanosticta acicola</i> )	1	0	0	0
<i>Cercis canadensis</i>	Eastern Redbud	Powdery mildew ( <i>Erysiphe</i> sp./spp.)	1	0	0	0
		Verticillium wilt ( <i>Verticillium</i> sp./spp.)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	2	0
<i>Chelone glabra</i>	White Turtlehead	No pathogen found (Identification Analysis)	0	1	0	0
		Broad mite ( <i>Polyphagotarsonemus latus</i> )	1	0	0	0
<i>Chrysanthemum morifolium</i>	Florist's Chrysanthemum	Stemphylium leaf spot ( <i>Stemphylium</i> sp./spp.)	1	0	0	0
		Dipterous leafminers (General)	1	0	0	0
<i>Citrus aurantium</i>	Sour Orange	Citrus greening huanglongbing (Asian) (' <i>Candidatus</i> Liberibacter asiaticus')	0	1	0	0
<i>Citrus limon</i>	Lemon	Asiatic citrus psyllid ( <i>Diaphorina citri</i> )	1	0	0	0
		Citrus greasy spot ( <i>Mycosphaerella citri</i> )	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<i>Citrus reticulata</i>	Satsuma; Mandarin; tangerine	Black twig borer ( <i>Xylosandrus compactus</i> )	0	0	1	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Citrus sinensis</i>	Sweet Orange	Moisture stress (Abiotic disorder)	0	0	1	0
		Nutrient imbalance (Abiotic disorder)	0	0	1	0
		Citrus greening huanglongbing (Asian) (' <i>Candidatus</i> Liberibacter asiaticus')	0	1	0	0
		Citrus leafminer ( <i>Phyllocnistis citrella</i> )	1	0	0	0
<i>Cleome serrulata</i>	Rocky Mountain beeplant	Intumescence (Abiotic disorder)	0	0	1	0
<i>Conoclinium coelestinum</i>	Mistflower	Aphids; Plant lice (Family Aphididae)	1	0	0	0
<i>Coreopsis grandiflora</i>	Bigflower Coreopsis	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Cornus alba</i> 'elegantissima'	Variegated Red-twig dogwood	Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
<i>Cornus florida</i>	Flowering Dogwood	Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Latania scale ( <i>Hemiberlesia latariae</i> )	0	0	1	0
		Brown felt ( <i>Septobasidium</i> sp./spp.)	1	0	0	0
<i>Cornus</i> sp./spp.	Dogwood	2,4-D injury (Abiotic disorder)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Powdery mildew ( <i>Oidium</i> sp./spp.)	2	0	0	0
		Discula anthracnose ( <i>Discula</i> sp./spp.)	1	0	0	0
		Dogwood powdery mildew ( <i>Erysiphe pulchra</i> )	1	0	0	0
		Lecanium scales ( <i>Lecanium</i> sp./spp.)	1	0	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
<i>Cryptomeria japonica</i>	Japanese Cedar	Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
		Leaf spot ( <i>Pestalotiopsis</i> sp./spp.)	1	0	0	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Drainage problem (Abiotic disorder)	1	0	0	0
<i>Cryptomeria</i> sp./spp.	Cryptomeria	Needle blight ( <i>Phyllosticta</i> sp./spp.)	1	0	0	0
		Maskell scale ( <i>Lepidosaphes maskelli</i> )	1	0	0	0
<i>Cunninghamia lanceolata</i>	China Fir	Unspecified pathology ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
<i>Cupressus arizonica</i>	Arizona Cypress	Seiridium canker ( <i>Seiridium unicorne</i> )	1	0	0	0
<i>Cupressus arizonica</i> var. <i>glabra</i>	Carolina Sapphire cypress	Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<i>Cupressus sempervirens</i>	Italian Cypress	Spider mites (Family Tetranychidae)	1	0	0	0
		Minute cypress scale ( <i>Carulaspis minima</i> )	1	0	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<i>Cycas revoluta</i>	Sago Palm	Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Phoma leaf spot ( <i>Phoma</i> sp./spp.)	0	0	1	0
<i>Dianthus barbatus</i>	Sweet William	Leaf damage (Abiotic disorder)	1	0	0	0
		Nutritional deficiency (Abiotic disorder)	0	0	1	0
<i>Dianthus caryophyllus</i>	Clove Pink; carnation	Fusarium wilt; Fusarium wilt complex ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<i>Dianthus</i> sp./spp.	Pinks	Crown and stem rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Fusarium root rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Fusarium stem; Root rot ( <i>Fusarium</i> sp./spp.)	3	0	0	0
<i>Diospyros</i> sp./spp.	Persimmon (ornamental)	Persimmon gall mite ( <i>Aceria theospyri</i> )	1	0	0	0
<i>Echinacea purpurea</i>	Echinacea Coneflower	High temperature damage (Abiotic disorder)	0	0	1	0
<i>Eriobotrya japonica</i>	Loquat	Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
<i>Euphorbia amygdaloides</i>	Wood Spurge	Crown rot; Root rot; Stem rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
<i>Euphorbia pulcherrima</i>	Poinsettia	Phomopsis blight ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Canker (Unidentified Agent)	0	0	0	1
<i>Euphorbia x martini</i>	Spurge	Anthrachnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Cercospora leaf spot ( <i>Cercospora</i> sp./spp.)	1	0	0	0
<i>Eutrochium purpureum</i>	Joe-Pye Weed	Bacterial blight ( <i>Xanthomonas</i> sp./spp.)	1	0	0	0
<i>Ficus carica</i>	Common Fig	Root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
		Leaf spot (Unknown cause)	0	0	0	1
		Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
<i>Ficus</i> sp./spp	Fig (ornamental)	Phomopsis blight ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
<i>Gardenia jasminoides</i>	Common Gardenia; cape jasmine	Cultural/environmental problem (Abiotic disorder)	0	0	2	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Mealybugs (Family Pseudococcidae)	1	0	0	0
<i>Gardenia</i> sp./spp.	Gardenia	No pathogen found (Identification Analysis)	0	1	0	0
<i>Gomphocarpus physocarpus</i>	Balloon Milkweed	Powdery mildew ( <i>Erysiphe</i> sp./spp.)	1	0	0	0
		Twospotted spider mite ( <i>Tetranychus urticae</i> )	1	0	0	0
<i>Hamamelis virginiana</i>	American Witchhazel	Unidentified fungus (Unidentified Fungus)	0	0	0	1
<i>Hedychium</i> sp./spp.	Gingerlily	Root problem (Unknown Cause)	0	0	0	1
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Helleborus orientalis</i>	Lenten Rose	Downy mildew ( <i>Peronospora pulveracea</i> )	0	0	1	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Hibiscus mutabilis</i>	Confederate Rose	Dodder ( <i>Cuscuta</i> sp./spp.)	1	0	0	0
<i>Hosta sieboldiana</i>	Hosta	Fusarium crown rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<i>Hosta</i> sp./spp.	Hosta	Root problems (Abiotic disorder)	0	0	1	0
		Phoma leaf spot ( <i>Phoma</i> sp./spp.)	2	0	0	0
		Fusarium root rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
		No pathogen found (Identification Analysis)	0	2	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	3	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	3	0	0	0
		Unspecified pathology ( <i>Botrytis</i> sp./spp.)	1	0	0	0
		Crown and stem rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	6	0	0	0
		Fusarium crown rot ( <i>Fusarium</i> sp./spp.)	3	0	0	0
<i>Hydrangea macrophylla</i>	Bigleaf Hydrangea	No pathogen found (Identification Analysis)	0	1	0	0
		Insect feeding damage (Unidentified Insect)	0	0	1	0
		Anthrachnose ( <i>Colletotrichum gloeosporioides</i> )	1	0	0	0
		Corynespora leaf spot ( <i>Corynespora</i> sp./spp.)	1	0	0	0

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<b>Hydrangea sp./spp.</b>	<b>Hydrangea</b>	Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
<b>Hypericum perforatum</b>	<b>St. Johnswort; klamath weed</b>	Hypericum rust ( <i>Uromyces hypericifronidosi</i> )	0	0	1	0
<b>Hypericum sp./spp.</b>	<b>St. Johnswort</b>	No pathogen found (Identification Analysis)	0	1	0	0
<b>Iberis sempervirens</b>	<b>Candytuft</b>	Pythium damping off ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Nutrient imbalance (Abiotic disorder)	0	0	1	0
		Stemphylium leaf spot ( <i>Stemphylium</i> sp./spp.)	1	0	0	0
		Black leg ( <i>Phoma</i> sp./spp.)	1	0	0	0
<b>Ilex aquifolium x cornuta 'Nellie R. Stevens'</b>	<b>Nellie R. stevens holly</b>	Anthraco-nose; Twig dieback ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Black root rot ( <i>Thielaviopsis basicola</i> )	0	1	0	0
<b>Ilex cornuta 'burfordii'</b>	<b>Burford Holly</b>	Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Glyphosate injury (Abiotic disorder)	0	0	1	0
		Oedema; Edema (Abiotic disorder)	0	0	1	0
		Tea scale ( <i>Fiorinia theae</i> )	1	0	0	0
		Hydrophobic soil/planting mix/media (Abiotic disorder)	1	0	0	0
<b>Ilex crenata</b>	<b>Japanese Holly</b>	Black root rot ( <i>Thielaviopsis basicola</i> )	2	0	0	0
		Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
		Greedy scale ( <i>Hemiberlesia rapax</i> )	1	0	0	0
<b>Ilex crenata 'helleri'</b>	<b>Heller Holly; mushroom holly</b>	Macrophoma leaf spot ( <i>Macrophoma</i> sp./spp.)	1	0	0	0
<b>Ilex glabra</b>	<b>Inkberry</b>	Black root rot ( <i>Thielaviopsis basicola</i> )	1	0	0	0
<b>Ilex sp./spp.</b>	<b>Holly</b>	Herbicide injury (Abiotic disorder)	0	0	1	0
		Cottony camellia scale ( <i>Pulvinaria floccifera</i> )	1	0	0	0
		Spider mites (Family Tetranychidae)	1	0	0	0
		No pathogen found (Identification Analysis)	0	2	0	0
		Imazapyr herbicide injury (Abiotic disorder)	1	0	0	0
		Sooty mold (Unidentified Fungus)	0	0	0	1
		Tea scale ( <i>Fiorinia theae</i> )	2	0	0	0
		Pollen (Abiotic disorder)	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	2	0	0	0
		Leaf spot ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Glyphosate injury (Abiotic disorder)	0	0	1	0
<b>Ilex vomitoria</b>	<b>Yaupon</b>	Yaupon psyllid ( <i>Gyropsylla ilicis</i> )	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	1	0	0	0
		Spring cankerworm ( <i>Paleacrita vernata</i> )	0	0	1	0
		Seasonal leaf drop (Abiotic disorder)	1	0	0	0
		Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
<b>Ilex x HL10-90</b>	<b>Christmas Jewel Holly</b>	Tea scale ( <i>Fiorinia theae</i> )	1	0	0	0
		Armored scales (Family Diaspididae)	0	0	0	1
		Bacterial soft rot ( <i>Pectobacterium carotovorum</i> subsp. <i>carotovorum</i> )	2	0	0	0
<b>Illiciumsp./spp.</b>	<b>Anise Tree</b>	No pathogen found (Identification Analysis)	1	0	0	0
		Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
		Iris leaf spot ( <i>Heterosporium iridis</i> )	1	0	0	0
<b>Iris sp./spp.</b>	<b>Iris</b>	Potyvirus Group ( <i>Potyvirus</i> sp./spp.)	0	0	0	1
<b>Iris tectorum</b>	<b>Roof Iris</b>	Tobacco ringspot (Tobacco Ringspot Virus (TRSV))	1	0	0	0
<b>Itea sp./spp.</b>	<b>Itea; Sweetspire</b>	Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0

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<i>Juniperus horizontalis</i> 'wiltonii'	Wilton Carpet; blue rug juniper	Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		No pathogen found (Identification Analysis)	0	1	0	0
<i>Juniperus</i> sp./spp.	Juniper	Kabatina tip blight; Needle blight ( <i>Kabatina juniperi</i> )	1	0	0	0
		Juniper scale ( <i>Carulaspis juniperi</i> )	1	0	0	0
		Pestalotiopsis canker/ dieback ( <i>Pestalotiopsis</i> sp./spp.)	1	0	0	0
		Spider mites (Family Tetranychidae)	0	0	0	1
		Spruce spider mite ( <i>Oligonychus ununguis</i> )	1	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Juniperus virginiana</i>	Eastern Red cedar	Spruce spider mite ( <i>Oligonychus ununguis</i> )	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	0	0	1	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Lagerstroemia indica</i>	Crape Myrtle	Cercospora leaf spot ( <i>Cercospora</i> sp./spp.)	1	0	0	0
		No insect found (Identification Analysis)	0	1	0	0
		Adventitious buds (Abiotic disorder)	0	0	1	0
		Crapemyrtle bark scale ( <i>Acanthococcus lagerstroemiae</i> )	3	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	1
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Leucanthemum x superbum</i>	Shasta Daisy	Leaf damage (Abiotic disorder)	0	0	0	1
		Canker (Unidentified Fungus)	0	0	0	1
<i>Ligustrum</i> sp./spp.	Privet	Nutritional deficiency (Abiotic disorder)	0	0	1	0
		Phytophthora crown and/or root rot ( <i>Phytophthora nicotianae</i> )	1	0	0	0
		Root problem (Unknown Cause)	0	0	0	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0	0
		Wood rot; Parchment fungus ( <i>Stereum complicatum</i> )	1	0	0	0
		Armillaria root rot ( <i>Armillariella</i> sp./spp.)	1	0	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	1	0	0
		Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
		Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
		2,4-D injury (Abiotic disorder)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Dicamba injury (Abiotic disorder)	0	0	1	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	0	1	0	0
		Leaf spot ( <i>Pseudocercospora ligustri</i> )	1	0	0	0
		Leaf spot ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
		<i>Ligustrum texanum</i>	Wax-leaf Privet	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0
Wood boring insect damage (Unidentified Wood Boring Insect)	0			0	0	1
<i>Lindera benzoin</i>	Spice Bush	No pathogen found (Identification Analysis)	0	1	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
<i>Liquidambar</i> sp./spp.	Sweetgum	Septoria leaf blight ( <i>Septoria</i> sp./spp.)	1	0	0	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	2	0	0	0
<i>Lisianthus</i> sp./spp.	Lisianthus	Phoma blight; Dieback; Rot ( <i>Phoma</i> sp./spp.)	1	0	0	0
<i>Lithodora diffusa</i>	Grace Ward lithodora	Unspecified pathology ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		No pathogen found (Identification Analysis)	0	0	0	1
<i>Loropetalum</i> sp./spp.	Chinese Fringe-flower	Bacterial gall ( <i>Pseudomonas savastanoi</i> )	0	0	1	0
		Anthracnose stem blight ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
<i>Lupinus polyphyllus</i>	Garden Lupine	Common thrips (Family Thripidae)	0	0	1	0
<i>Lupinus</i> sp./spp.	Lupine	Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0



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<i>Magnolia grandiflora</i>	Southern Magnolia	Bacterial leaf spot (Unidentified Bacteria)	0	0	1	0
		False oleander scale ( <i>Pseudaulacaspis cockerelli</i> )	1	0	0	0
<i>Magnolia grandiflora</i>		Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
<i>Magnolia</i> sp./spp.	Magnolia	Powdery mildew ( <i>Erysiphe</i> sp./spp.)	1	0	0	0
		Herbicide drift (Abiotic disorder)	0	0	1	0
<i>Magnolia stellata</i>	Star Magnolia	Phomopsis leaf spot ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
<i>Magnolia x soulangiana</i>	Saucer Magnolia	Powdery mildew ( <i>Microsphaera</i> sp./spp.)	1	0	0	0
<i>Malus sylvestris</i>	Common Apple	Dieback; Canker ( <i>Diplodia</i> sp./spp.)	1	0	0	0
		Fire blight ( <i>Erwinia amylovora</i> )	1	0	0	0
<i>Maranta leuconeura</i>	Maranta Red; prayer plant	No insect found (Identification Analysis)	0	1	0	0
<i>Metasequoia glyptostroboides</i>	Dawn Redwood	Passalora leaf spot ( <i>Passalora</i> sp./spp.)	1	0	0	0
		Dieback; Canker ( <i>Seiridium</i> sp./spp.)	1	0	0	0
<i>Miscanthus sinensis</i>	Eulalia	Leaf spot ( <i>Exserohilum</i> sp./spp.)	1	0	0	0
<i>Monarda didyma</i>	Bee Balm	Freeze; Frost; Cold damage (Abiotic disorder)	0	0	2	0
		Aster yellows Phytoplasma (' <i>Candidatus</i> Phytoplasma asteris')	0	1	0	0
		Twospotted spider mite ( <i>Tetranychus urticae</i> )	1	0	0	0
<i>Muhlenbergia capillaris</i>	Pink Muhly Grass	Leafspot crown and root rot ( <i>Bipolaris sorokiniana</i> )	1	0	0	0
<i>Musa acuminata</i>	Wild banana	No pathogen found (Identification Analysis)	0	0	0	1
<i>Narcissus pseudonarcissus</i>	Daffodil	Tuber rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
		Garden and greenhouse millipedes (Family Paradoxosomatidae)	0	0	0	1
<i>Narcissus pseudonarcissus</i>		Fusarium dry rot; Bulb rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<i>Nipponanthemum nipponicum</i>	Nippon Daisy	Stemphylium leaf spot ( <i>Stemphylium</i> sp./spp.)	1	0	0	0
		Alternaria leaf blight ( <i>Alternaria</i> sp./spp.)	1	0	0	0
<i>Ophiopogon japonicus</i>	Mondgrass; Dwarf lily turf	Anthrachnose ( <i>Colletotrichum</i> sp./spp.)	3	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Fern scale ( <i>Pinnaspis aspidistrae</i> )	1	0	0	0
<i>Osmanthus fragrans</i>	Sweet Olive; tea olive	Flatid planthoppers (Family Flatidae)	1	0	0	0
<i>Paeonia lactiflora</i>	Peony	Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
<i>Paeonia</i> sp./spp.	Peony	Butterflies; Moths; Caterpillars (Order Lepidoptera)	1	0	0	0
		Anthrachnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Common thrips (Family Thripidae)	1	0	0	0
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	No pathogen found (Identification Analysis)	0	1	0	0
		Pollen (Abiotic disorder)	1	0	0	0
<i>Pedilanthus tithymaleoides</i>	Devil's Backbone	Powdery mildew ( <i>Oidium</i> sp./spp.)	1	0	0	0
<i>Pelargonium x hortorum</i>	House Geranium	Oedema; Edema (Abiotic disorder)	1	0	0	0
<i>Persea americana</i>	Avocado	Oedema; Edema (Abiotic disorder)	0	0	1	0
		Nutrient imbalance (Abiotic disorder)	0	0	1	0
		No pathogen found (Identification Analysis)	0	1	0	0
<i>Phlox paniculata</i>	Perennial Phlox	Alternanthera mosaic (Alternanthera Mosaic Virus (AltMV))	0	2	0	0
		Alternaria leaf spot ( <i>Alternaria</i> sp./spp.)	1	0	0	0
		Butterflies; Moths; Caterpillars (Order Lepidoptera)	1	0	0	0
		Phytophthora crown and/or root rot ( <i>Phytophthora nicotianae</i> )	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	2	0
<i>Phlox</i> sp./spp.	Phlox	Root rot ( <i>Thielaviopsis</i> sp./spp.)	1	0	0	0
		Alternanthera mosaic (Alternanthera Mosaic Virus (AltMV))	1	0	0	0
		Hydrophobic soil/planting mix/media (Abiotic disorder)	1	0	0	0
<i>Phoenix sylvestris</i>	Wild Date	Rachis blight ( <i>Serenomyces</i> sp./spp.)	1	0	0	0
<i>Picea glauca</i> var. <i>albertiana</i>	Alberta Spruce	Velvetbean caterpillar ( <i>Anticarsia gemmatilis</i> )	1	0	0	0
<i>Pinus strobus</i>	Eastern White pine	Bark beetles; Ambrosia beetles (Family Scolytidae)	1	0	0	0
<i>Pinus taeda</i>	Loblolly Pine	Algae (Unidentified Algae)	0	0	1	0

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<i>Pinus thunbergiana</i>	Japanese Black pine	Pine wilt nematode (Pinewood) ( <i>Bursaphelenchus xylophilus</i> )	1	0	0	0
<i>Pittosporum</i> sp./spp.	Pittosporum	Tomato spotted wilt (Tomato Spotted Wilt Virus (TSWV))	1	0	0	0
		2,4-D injury (Abiotic disorder)	0	0	1	0
		Root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
<i>Pittosporum tobira</i>	Japanese Pittosporum	Anthraxnose; Colletotrichum leaf spot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Alternaria leaf spot ( <i>Alternaria</i> sp./spp.)	1	0	0	0
<i>Platanus occidentalis</i>	American Sycamore	Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Lace bugs (Family Tingidae)	1	0	0	0
		Sycamore anthracnose ( <i>Discula platani</i> )	1	0	0	0
<i>Pleioblastus distichus</i>	Dwarf Fernleaf bamboo	Bamboo spider mite ( <i>Schizotetranychus celarius</i> )	0	0	1	0
		Anthraxnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	1	0	0	0
		Mealybugs (Family Pseudococcidae)	0	0	0	1
<i>Podocarpus</i> sp./spp.	Japanese Yew	Leaf blight and dieback ( <i>Pestalotiopsis podocarpi</i> )	1	0	0	0
		Root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
<i>Prunus laurocerasus</i>	Cherry laurel	Planting too deep (Abiotic disorder)	1	0	0	0
		Bark beetles; Ambrosia beetles (Family Scolytidae)	0	0	0	1
		Shothole (Various Pathogens)	0	0	0	1
<i>Prunus serrulata</i>	Japanese Flowering cherry	Leaf spot; Shothole ( <i>Blumeriella</i> sp./spp.)	1	0	0	0
<i>Psidium guajava</i>	Common Guava	Root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
<i>Pyrus communis</i>	Pear	Fire blight ( <i>Erwinia amylovora</i> )	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Unknown (General)	0	0	0	1
<i>Quercus alba</i>	White Oak	Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	0	0	1	0
		Leaf spot ( <i>Tubakia dryina</i> )	1	0	0	0
		Jumping oak gall wasp ( <i>Neuroterus saltatorius</i> )	1	0	0	0
		Herbicide drift (Abiotic disorder)	0	0	1	0
		Leaf spot ( <i>Tubakia</i> sp./spp.)	1	0	0	0
		Wood boring insect damage (Unidentified Wood Boring Insect)	1	0	0	0
		Canker ( <i>Hypoxyton</i> sp./spp.)	1	0	0	0
		Gall wasps (Family Cynipidae)	0	0	1	0
		Oak skeletonizer ( <i>Bucculatrix ainsliella</i> )	1	0	0	0
<i>Quercus falcata</i>	Red Oak	Leaf spot ( <i>Tubakia dryina</i> )	1	0	0	0
		Oak leaf blister ( <i>Taphrina caerulescens</i> )	1	0	0	0
<i>Quercus hemisphaerica</i>	Laurel Oak	Oak skeletonizer ( <i>Bucculatrix ainsliella</i> )	0	0	1	0
<i>Quercus ilex</i>	Holm Oak; evergreen oak	Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Twig blight ( <i>Cryptocline cinerescens</i> )	1	0	0	0
<i>Quercus laurifolia</i>	Laurel Oak	Phytophthora canker ( <i>Phytophthora</i> sp./spp.)	0	2	0	0
		Wood boring insect damage (Unidentified Wood Boring Insect)	0	0	1	0
		Discula anthracnose ( <i>Discula</i> sp./spp.)	1	0	0	0
		Oak wilt ( <i>Bretziella fagacearum</i> )	0	1	0	0
		Septoria leaf spot ( <i>Septoria</i> sp./spp.)	1	0	0	0
		Gall wasps (Family Cynipidae)	1	0	0	0
		Leaf spot ( <i>Tubakia dryina</i> )	1	0	0	0
<i>Quercus nigra</i>	Water Oak	Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	2
		Oak wilt ( <i>Bretziella fagacearum</i> )	2	2	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<b>Quercus palustris</b>	<b>Pin Oak</b>	Obscure scale ( <i>Melanaspis obscura</i> )	1	0	0	0
		Solitary oak leafminer ( <i>Cameraria hamadryadella</i> )	1	0	0	0
		Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	1	0	0	0
<b>Quercus phellos</b>	<b>Willow Oak</b>	Oak spider mite ( <i>Oligonychus bicolor</i> )	1	0	0	0
		Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Seasonal leaf drop (Abiotic disorder)	1	0	0	0
		Wood decay fungus (Unidentified Fungus)	0	0	0	1
<b>Quercus rubra</b> <b>Quercus sp./spp.</b>	<b>Northern Red oak</b> <b>Oak</b>	Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
		Actinopelte leaf spot ( <i>Actinopelte dryina</i> )	1	0	0	0
<b>Quercus virginiana</b>	<b>Live Oak</b>	No insect found (Identification Analysis)	0	1	0	0
		Butterflies; Moths; Caterpillars (Order Lepidoptera)	0	0	0	1
		Fomitiporia dryophila	1	0	0	0
		Wood rot fungus ( <i>Ganoderma applanatum</i> )	3	0	0	0
		Cynipid gall wasps ( <i>Acraspis</i> sp./spp.)	1	0	0	0
		Wood rot fungus; White rot; Heart rot ( <i>Phellinus gilvus</i> )	1	0	0	0
		Wood rot fungus ( <i>Ganoderma</i> sp./spp.)	1	0	0	0
		Oak skeletonizer ( <i>Bucculatrix ainsliella</i> )	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Unspecified pathology ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
<b>Ranunculus asiaticus</b>	<b>Persian Buttercup</b>	Unspecified pathology ( <i>Botrytis</i> sp./spp.)	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Entomosporium leaf spot ( <i>Entomosporium</i> sp./spp.)	1	0	0	0
		Flower blight ( <i>Pseudomonas caricapapayae</i> )	1	0	0	0
		Phytophthora leaf blight ( <i>Phytophthora cactorum</i> )	1	0	0	0
<b>Rhododendron sp./spp.</b>	<b>Azalea; Rhododendron</b>	Leaf spot ( <i>Entomosporium maculatum</i> )	1	0	0	0
		Leaf spot ( <i>Phyllosticta</i> sp./spp.)	0	1	0	0
		Mite damage (Unidentified Mite)	1	0	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	1	0	0
		Lace bugs (Family Tingidae)	2	0	0	0
		Mealybugs (Family Pseudococcidae)	1	0	0	0
		Southern red mite ( <i>Oligonychus ilicis</i> )	1	0	0	0
		Spider mites (Family Tetranychidae)	1	0	0	0
		2,4-D injury (Abiotic disorder)	0	0	1	0
		Canker; Stem blight; Dieback ( <i>Botryosphaeria dothidea</i> )	1	0	0	0
		Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
		Non-pathogenic; Saprophyte (Secondary Agents; Saprophytes; Unspecif.)	0	0	0	1
		Anthraxnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Herbicide drift (Abiotic disorder)	0	0	1	0
		Japanese beetle ( <i>Popillia japonica</i> )	0	0	1	0
		Leaf chewing damage (insect unidentified)	1	0	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
		Root problem (Unknown Cause)	0	0	0	1
		<b>Rhododendron sp./spp.</b>	<b>Rhododendron</b>	Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0
Armillaria root rot ( <i>Armillaria</i> sp./spp.)	1			0	0	0
<b>Rosa sp./spp.</b>	<b>Rose</b>	Flower thrips ( <i>Frankliniella tritici</i> )	1	0	0	0
		Dieback; Canker ( <i>Coniothyrium</i> sp./spp.)	1	0	0	0
		Phomopsis dieback; Tip blight; Canker ( <i>Phomopsis</i> sp./spp.)	1	0	0	0
		Wood boring insect damage (Unidentified Wood Boring Insect)	0	0	0	1

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
		Powdery mildew ( <i>Oidium</i> sp./spp.)	1	0	0	0
		Rose rosette disease (Rose Rosette Virus (RRV))	0	0	2	0
		Black spot (Rose) ( <i>Marssonina rosae</i> )	2	0	0	0
		No pathogen found (Identification Analysis)	0	0	0	1
<b>Sabal palmetto</b>	<b>Cabbage Palm; blue palm</b>	Nutrient imbalance (Abiotic disorder)	0	0	1	0
		Phosphorus deficiency (Abiotic disorder)	0	0	1	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<b>Sabal sp./spp.</b>	<b>Palmetto</b>	Insufficient sample (Identification Analysis)	0	0	0	1
		Mite damage (Unidentified Mite)	1	0	0	0
		Palmetto scale ( <i>Comstockiella sabalis</i> )	1	0	0	0
<b>Sabal sp./spp.</b>	<b>Palms (Mixed species)</b>	Palmetto scale ( <i>Comstockiella sabalis</i> )	1	0	0	0
<b>Sagina subulata</b>	<b>Irish Moss</b>	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<b>Salicornia europaea</b>	<b>Common Glasswort</b>	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<b>Salvia greggii</b>	<b>Autumn Sage</b>	Root and/or pot bound (Abiotic disorder)	1	0	0	0
		Phytophthora root and basal stem rot ( <i>Phytophthora nicotianae</i> )	1	0	0	0
		Anthraxnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
<b>Sedum sp./spp.</b>	<b>Stonecrop</b>	Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<b>Sedum telephium</b>	<b>Stonecrop</b>	Fusarium root; Crown rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<b>Setcreasea purpurea</b>	<b>Purple Queen</b>	Leaf spot (Unknown cause)	0	0	0	1
<b>Symphotrichum novi-belgii</b>	<b>New York Aster</b>	Stem rot; Southern blight ( <i>Sclerotium rolfsii</i> )	1	0	0	0
<b>Tagetes patula</b>	<b>French Marigold</b>	Common thrips (Family Thripidae)	0	0	1	0
		No pathogen found (Identification Analysis)	0	1	0	0
<b>Taxus cuspidata</b>	<b>Japanese Yew</b>	Iron deficiency (Abiotic disorder)	0	0	1	0
<b>Thuja occidentalis</b>	<b>North American White Cedar</b>	Maskell scale ( <i>Lepidosaphes maskelli</i> )	1	0	0	0
		Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	1	0	0	0
<b>Thuja standishii x plicata</b>	<b>Green Giant arborvitae</b>	Canker; Dieback; Leaf blight ( <i>Fusicoccum</i> sp./spp.)	1	0	0	0
		Pestalotiopsis canker/ dieback ( <i>Pestalotiopsis</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Needle blight ( <i>Phyllosticta</i> sp./spp.)	1	0	0	0
		Armillaria root rot ( <i>Armillaria</i> sp./spp.)	1	0	1	0
		Armillaria root rot; Butt rot ( <i>Armillaria</i> sp./spp.)	1	0	0	0
<b>Thujasp./spp.</b>	<b>Arborvitae</b>	No pathogen found (Identification Analysis)	0	0	0	1
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	2	0	0	0
		Mite damage (Unidentified Mite)	1	0	1	0
		Unspecified pathology ( <i>Phoma</i> sp./spp.)	1	0	0	0
		Macrophoma blight; Dieback ( <i>Macrophoma</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	2	0
<b>Tilia caroliniana</b>	<b>Basswood</b>	Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
<b>Trachelospermum asiaticum</b>	<b>Asiatic Jasmine</b>	No pathogen found (Identification Analysis)	0	0	0	1
		Rhizoctonia stem and root rot ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
<b>Trachelospermum jasminoides</b>	<b>Confederate (star-j) jasmine</b>	Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
<b>Trachycarpus fortunei</b>	<b>Windmill Palm</b>	Nutritional deficiency (Abiotic disorder)	0	0	1	0
<b>Trifolium repens</b>	<b>White Clover</b>	Pea aphid ( <i>Acyrtosiphon pisum</i> )	1	0	0	0
<b>Tsuga canadensis</b>	<b>Eastern Hemlock</b>	Hemlock-blueberry rust ( <i>Thekopsora minima</i> )	0	0	1	0
<b>Ulmus sp./spp.</b>	<b>Elm</b>	Lace bugs (Family Tingidae)	1	0	0	0
<b>Viburnum odoratissimum</b>	<b>Sweet Viburnum</b>	Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Macrophoma leaf spot ( <i>Macrophoma</i> sp./spp.)	1	0	0	0
<b>Viburnum sp./spp.</b>	<b>Viburnum</b>	Crown and root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
		Phoma leaf spot ( <i>Phoma</i> sp./spp.)	1	0	0	0
		No pathogen found (Identification Analysis)	0	1	0	0
<b><i>Viburnum suspensum</i></b>	<b>Sandankwa Viburnum</b>	Flower thrips ( <i>Frankliniella</i> spp.)	1	0	0	0
<b><i>Viola wittrockiana</i></b>	<b>Pansy</b>	Black root rot ( <i>Thielaviopsis basicola</i> )	1	0	0	0
		Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
<b>x <i>Cupressocyparis leylandii</i></b>	<b>Leyland Cypress</b>	Cultural/environmental problem (Abiotic disorder)	2	0	5	0
		Root damage (Abiotic disorder)	0	0	1	0
		Seiridium canker ( <i>Seiridium unicorne</i> )	3	0	0	0
		Wood boring insect damage (Unidentified Wood Boring Insect)	0	0	1	0
		Eastern subterranean termite ( <i>Reticulitermes flavipes</i> )	1	0	0	0
		Needle blight ( <i>Phyllosticta</i> sp./spp.)	1	0	0	0
		Arborvitae; Cypress twig blight ( <i>Passalora sequoiae</i> )	1	0	0	0
		Black twig borer ( <i>Xylosandrus compactus</i> )	1	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	0	0	1	0
		Mechanical damage (Abiotic disorder)	1	0	0	0
		Conifer needle blight ( <i>Passalora sequoiae</i> )	1	0	0	0
		Crown gall ( <i>Agrobacterium vitis</i> )	1	0	0	0
		Passalora leaf spot ( <i>Passalora</i> sp./spp.)	1	0	0	0
		Needle cast; Blight ( <i>Passalora sequoiae</i> )	2	0	0	0

\* "No pathogen found" and "No insect found" results are not shown.

**Table 4** Diagnostic results of fruit and nut samples received at PPDC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<i>Carya illinoensis</i>	Pecan	Pecan; Hickory scab ( <i>Fusicladium caryigenum</i> )	2	0	0	0
<i>Citrullus lanatus</i>	Watermelon	Agromyzid melon leafminer ( <i>Liriomyza</i> sp./spp.)	0	0	1	0
		Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
		Insect damage (Unidentified Insect)	0	0	0	1
		Cucurbit downy mildew ( <i>Pseudoperonospora cubensis</i> )	1	0	0	0
		Cucurbit gummy stem blight ( <i>Didymella bryoniae</i> )	1	0	0	0
		Herbicide carryover (Abiotic disorder)	0	0	1	0
		Leaf damage (Abiotic disorder)	0	0	1	0
		Phoma leaf spot ( <i>Phoma</i> sp./spp.)	1	0	0	0
		Fusarium wilt; Fusarium wilt complex ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Stem rot (Unidentified Agent)	0	0	0	1
<i>Cucumis melo</i> var. <i>cantalupensis</i>	Cantalope; Cantaloupe	Crown and stem rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Fragaria x ananassa</i>	Commercial Strawberry; garden strawberry	Fusarium root rot ( <i>Fusarium</i> sp./spp.)	2	0	0	0
		Twospotted spider mite ( <i>Tetranychus urticae</i> )	2	0	0	0
		Leaf blotch ( <i>Gnomonia comari</i> )	2	0	0	0
		Root rot ( <i>Phytophthora</i> sp./spp.)	1	0	0	0
		Fusarium wilt; Fusarium wilt complex ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Leaf spot ( <i>Neopestalotiopsis</i> sp./spp.)	0	0	1	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Leaf /stem/twig blight; Rot; Gray mold ( <i>Botrytis cinerea</i> )	1	0	0	0
		Phytophthora root and crown rot ( <i>Phytophthora cactorum</i> )	2	0	0	0
		Leaf scorch ( <i>Diplocarpon earlianum</i> )	1	0	0	0
<i>Malus sylvestris</i>	Common Apple	Bitter rot ( <i>Colletotrichum gloeosporioides</i> )	1	0	0	0
<i>Prunus persica</i>	Peach	Sour rot ( <i>Geotrichum candidum</i> )	1	0	0	0
<i>Rubus idaeus</i>	Raspberry	Japanese beetle ( <i>Popillia japonica</i> )	0	0	1	0
		Southern red mite ( <i>Oligonychus ilicis</i> )	1	0	0	0
<i>Rubus</i> sp./spp.	Blackberry	Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
<i>Vaccinium ashei</i>	Rabbit-eye Blueberry	Cultural/environmental problem (Abiotic disorder)	0	0	2	0
<i>Vaccinium corymbosum</i>	Highbush Blueberry	Non-pathogenic; Saprophyte (Secondary Agents; Saprophytes; Unspecif.)	0	0	0	1
		Cultural/environmental problem (Abiotic disorder)	1	0	0	0
<i>Vaccinium</i> sp./spp.	Blueberry	Canker; Stem blight; Dieback ( <i>Botryosphaeria dothidea</i> )	1	0	0	0
		Phytophthora root and crown rot ( <i>Phytophthora cinnamomi</i> )	3	0	0	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	1	0	0	0
		Glyphosate injury (Abiotic disorder)	0	0	1	0
<i>Vitis rotundifolia</i>	Muscadine Grape	Black rot ( <i>Guignardia bidwellii</i> )	1	0	0	0
		Bitter rot ( <i>Greeneria uvicola</i> )	1	0	0	0

\* “No pathogen found” and “No insect found” results are not shown.



**Table 5** Diagnostic results of vegetable and herb samples received at PPDC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<i>Amaranthus cruentus</i>	Red Amaranth	Pythium damping off ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Beta vulgaris</i>	Garden Beet	Damping off ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<i>Brassica chinensis</i> var. <i>chinensis</i>	Bok Choy; chinese cabbage	Brown girdling root rot ( <i>Rhizoctonia solani</i> )	1	0	0	0
		Bacterial soft rot (Unidentified Bacteria)	0	0	0	1
<i>Brassica oleracea</i> var. <i>botrytis</i>	Broccoli	Cabbage aphid ( <i>Brevicoryne brassicae</i> )	1	0	0	0
		Unknown (General)	0	0	0	1
<i>Brassica rapa</i>	Turnip	White leaf spot; Gray stem ( <i>Pseudocercospora capsellae</i> )	1	0	0	0
		Crucifer gray leaf spot ( <i>Alternaria brassicae</i> )	1	0	0	0
		Crucifer clubroot ( <i>Plasmodiophora brassicae</i> )	0	0	1	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Cannabis sativa</i>	Hemp	Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
		Dieback; Canker; Twig blight ( <i>Botryosphaeria</i> sp./spp.)	2	0	0	0
		Corynespora leaf spot ( <i>Corynespora</i> sp./spp.)	3	0	0	0
		Leaf spot ( <i>Pseudocercospora</i> sp./spp.)	1	0	0	0
		Natural senescence (Abiotic disorder)	0	0	1	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Septoria leaf spot ( <i>Septoria</i> sp./spp.)	1	0	0	0
		Tobacco ringspot (Tobacco Ringspot Virus (TRSV))	0	2	0	0
		Fusarium blight ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Planting too deep (Abiotic disorder)	1	0	0	0
		Cercospora leaf spot ( <i>Cercospora</i> sp./spp.)	3	0	0	0
		Anthraxnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Leaf spot ( <i>Bipolaris</i> sp./spp.)	3	0	0	0
		Root girdling (Abiotic disorder)	1	0	0	0
		Southern red mite ( <i>Oligonychus ilicis</i> )	1	0	0	0
<i>Capsicum annuum</i>	Pepper	Leaf Spot ( <i>Alternaria alternata</i> )	1	0	0	0
		Phytophthora blight; Root rot ( <i>Phytophthora capsici</i> )	1	0	0	0
		Tomato spotted wilt (Tomato Spotted Wilt Virus (TSWV))	1	0	0	0
		Phytophthora root/ stem/ crown rot ( <i>Phytophthora capsici</i> )	1	0	0	0
		Crown and stem rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<i>Capsicum chinense</i>	Habanero Pepper; datil pepper	Bacterial leaf spot ( <i>Xanthomonas campestris</i> )	1	0	0	0
<i>Cucumis sativus</i>	Cucumber	Cucurbit bacterial wilt ( <i>Erwinia tracheiphila</i> )	0	0	1	0
		Cucurbit downy mildew ( <i>Pseudoperonospora cubensis</i> )	1	0	0	0
<i>Cucurbita moschata</i> 'butternut'	Butternut Squash	Angular leaf spot ( <i>Pseudomonas syringae</i> )	1	0	0	0
<i>Cucurbita pepo</i>	Yellow Squash	Blossom end rot (Abiotic disorder)	1	0	0	0
<i>Cucurbita</i> sp./spp.	Squash	Phytophthora root/ stem/ crown rot ( <i>Phytophthora capsici</i> )	1	0	0	0
<i>Daucus carota</i> subsp. <i>sativus</i>	Carrot	Alternaria leaf blight and spot ( <i>Alternaria dauci</i> )	1	0	0	0
		Insufficient sample (Identification Analysis)	0	0	0	1
<i>Eruca vesicaria</i>	Arugula	Pythium damping off ( <i>Pythium</i> sp./spp.)	1	0	0	0
<i>Eruca vesicaria</i> subsp. <i>sativa</i>	Arugula	Crown rot ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
<i>Ipomoea batatas</i>	Sweetpotato	Oedema; Edema (Abiotic disorder)	1	0	1	0
<i>Lavandula angustifolia</i>	English Lavender	PhytoPythium root rot ( <i>Phytophythium</i> sp./spp.)	0	0	1	0
		Unspecified pathology ( <i>Phytophythium</i> sp./spp.)	2	0	0	0
		Root rot ( <i>Phytophthora</i> sp./spp.)	1	1	0	0
		Unspecified pathology ( <i>Botrytis</i> sp./spp.)	1	0	0	0
		Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	10	0	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	2	0	0	0

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected	Undetermined
<b>Lavandula sp./spp.</b>	<b>Lavender</b>	Stem rot (Unidentified Agent)	0	0	0	1
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Botrytis blight ( <i>Botrytis</i> sp./spp.)	3	0	0	0
		Crown and stem rot ( <i>Fusarium</i> sp./spp.)	1	0	0	0
		Root rot ( <i>Phytophthora</i> sp./spp.)	2	2	0	0
		Unspecified pathology ( <i>Phytophythium</i> sp./spp.)	2	0	0	0
		Unspecified pathology ( <i>Pythium</i> sp./spp.)	2	0	0	0
		Crown and root rot ( <i>Phytophthora</i> sp./spp.)	0	9	0	0
		Crown rot; Root rot; Stem rot ( <i>Phytophthora</i> sp./spp.)	0	3	0	0
		Root girdling (Abiotic disorder)	1	0	0	0
<b>Lavandula stoechas</b>	<b>Spanish Lavender</b>	Phytophthora crown and/or root rot ( <i>Phytophthora nicotianae</i> )	3	0	0	0
		Botrytis blight ( <i>Botrytis</i> sp./spp.)	1	0	0	0
<b>Lycopersicon esculentum</b>	<b>Tomato</b>	Bacterial wilt ( <i>Ralstonia solanacearum</i> )	6	0	0	0
		Nutritional deficiency (Abiotic disorder)	0	0	1	0
		Tomato spotted wilt (Tomato Spotted Wilt Virus (TSWV))	1	1	0	0
		Grey leaf spot ( <i>Stemphylium solani</i> )	1	0	0	0
		Insect feeding damage (Unidentified Insect)	0	0	1	0
		Early blight; Leaf spot ( <i>Alternaria solani</i> )	1	0	0	0
		Phoma rot ( <i>Phoma destructiva</i> )	1	0	0	0
		Herbicide drift (Abiotic disorder)	0	0	4	0
		Leaf spot (Unknown cause)	0	0	0	1
		Sweetpotato armyworm moth ( <i>Spodoptera dolichos</i> )	1	0	0	0
		Bacterial leaf spot ( <i>Xanthomonas campestris</i> )	0	0	1	0
<b>Petroselinum crispum</b>	<b>Parsley</b>	Unspecified pathology ( <i>Enterobacter cowanii</i> )	1	0	0	0
		Root girdling (Abiotic disorder)	1	0	0	0
<b>Phaseolus vulgaris</b>	<b>Snap Bean; green bean</b>	Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0	0
<b>Raphanus sativus</b>	<b>Radish</b>	Rhizoctonia root rot ( <i>Rhizoctonia solani</i> )	1	0	0	0
		Black root ( <i>Aphanomyces raphani</i> )	0	0	1	0
<b>Rosmarinus officinalis</b>	<b>Rosemary</b>	Anthraxnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<b>Salicornia europaea</b>	<b>Glasswort</b>	Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Unspecified pathology ( <i>Fusarium</i> sp./spp.)	1	0	0	0
<b>Solanum macranthum</b>	<b>Tomatillo; Tree tomato</b>	Lace bugs (Family Tingidae)	1	0	0	0

\* "No pathogen found" and "No insect found" results are not shown.

**Table 6** Diagnostic results and weed identifications of turfgrasses and other grasses received at PPDC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results	Confirmed	Not Detected	Suspected	Undetermined
<b>Agrostis sp./spp.</b>	<b>Bentgrass</b>	Algae (Unidentified Algae)	1	0	0	2
		Unspecified Pathology ( <i>Pyricularia</i> sp./spp.)	2	0	0	0
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	3	0
		Bacterial leaf spot ( <i>Acidovorax avenae</i> subsp. <i>avenae</i> )	1	0	0	0
<b>Cynodon sp./spp.</b>	<b>Bermudagrass</b>	Dollar spot ( <i>Clariireedia homoeocarpa</i> )	3	0	0	0
		Fall armyworm ( <i>Spodoptera frugiperda</i> )	1	0	0	0
		Leaf rust; Rust ( <i>Puccinia</i> sp./spp.)	1	0	0	0
		Bacterial leaf scorch ( <i>Xylella fastidiosa</i> )	0	1	0	0
		Field violet ( <i>Viola arvensis</i> )	1	0	0	0
		Lovegrass ( <i>Eragrostis</i> sp./spp.)	1	0	0	0
		Shortleaf spikesedge ( <i>Kyllinga (Cyperus) brevifolius</i> )	1	0	0	0
		Root decline of warm season grasses ( <i>Gaeumannomyces graminis</i> var. <i>graminis</i> )	1	0	1	0
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	2	0	0	0
		Bermudagrass scale ( <i>Odonaspis ruthae</i> )	1	0	0	0
		Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Smooth crabgrass ( <i>Digitaria ischaemum</i> )	1	0	0	0
		<b>Eremochloa ophiuroides</b>	<b>Centipedegrass</b>	Basidiomycete (Phylum Basidiomycota)	1	0
Bermudagrass scale ( <i>Odonaspis ruthae</i> )	1			0	0	0
Cultural/environmental problem (Abiotic disorder)	2			0	7	0
Poor leaf emergence (Abiotic disorder)	2			0	2	0
Root problem (Unknown Cause)	0			0	1	3
Smallflower buttercup ( <i>Ranunculus abortivus</i> )	1			0	0	0
Tall fescue ( <i>Festuca arundinacea</i> )	1			0	0	0
Animal urine damage (Vertebrate Damage)	0			0	1	0
Chemical; Environmental injury (Abiotic disorder)	1			0	0	0
Leaf and sheath spot ( <i>Rhizoctonia oryzae</i> )	1			0	0	0
Brown patch ( <i>Rhizoctonia solani</i> )	3			0	0	0
Dollar spot ( <i>Clariireedia homoeocarpa</i> )	4			0	0	0
Dormancy (Abiotic disorder)	0			0	2	0
Perennial ryegrass ( <i>Lolium perenne</i> )	1			0	0	0
Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1			0	0	0
Field burrweed; Spurweed ( <i>Soliva sessilis (pterosperma)</i> )	1			0	0	0
Knawel; German knotgrass ( <i>Scleranthus annuus</i> )	1			0	0	0
Purple everlasting; Purple cudweed ( <i>Gamochaeta pupurea</i> )	1			0	0	0
Common Lespedeza ( <i>Lespedeza striata</i> )	1			0	0	0
Field violet ( <i>Viola arvensis</i> )	1			0	0	0
Marsh pennywort ( <i>Hydrocotyle sibthorpioides</i> )	1			0	0	0
Insect feeding damage (Unidentified Insect)	0			0	0	1
Large crabgrass; Hairy crabgrass ( <i>Digitaria sanguinalis</i> )	1			0	0	0
Large patch ( <i>Rhizoctonia solani</i> )	1			0	0	0
Low pH; Nutrient imbalance (Abiotic disorder)	0			0	1	0
Anthracnose ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0		

Host Scientific Name	Host Common Name	Diagnostic Results	Confirmed	Not Detected	Suspected	Undetermined
		Herbicide injury (Abiotic disorder)	1	0	0	0
		Shortleaf spikesedge ( <i>Kyllinga (Cyperus) brevifolius</i> )	1	0	0	0
		Anthracnose; Colletotrichum leaf spot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
		Brown patch ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
		Virginia buttonweed ( <i>Diodia virginiana</i> )	1	0	0	0
<b>Festuca arundinacea</b>	<b>Tall Fescue</b>	Pythium blight; Cottony blight ( <i>Pythium</i> sp./spp.)	1	0	0	0
		Gray leaf spot ( <i>Pyricularia grisea</i> )	1	0	0	0
		Brown patch ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
		Leptosphaerulina leaf spot ( <i>Leptosphaerulina</i> sp./spp.)	1	0	0	0
		Anthracnose; Colletotrichum leaf spot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
<b>Festuca arundinacea</b>	<b>Turfgrass (mixed species)</b>	American burnweed ( <i>Erechtites hieraciifolia</i> )	1	0	0	0
		Doveweed ( <i>Murdannia nudiflora</i> )	1	0	0	0
		Chamberbitter ( <i>Phyllanthus urinaria</i> )	1	0	0	0
		Purple everlasting; Purple cudweed ( <i>Gamochaeta pupurea</i> )	1	0	0	0
<b>Festuca spp.</b>	<b>Fescues</b>	Brown patch ( <i>Rhizoctonia solani</i> )	1	0	0	0
		Parsley piert ( <i>Aphanes</i> sp./spp.)	1	0	0	0
		Common chickweed ( <i>Stellaria media</i> )	1	0	0	0
		Leptosphaerulina leaf spot; Blight ( <i>Leptosphaerulina trifolii</i> )	1	0	0	0
		Centipedegrass ( <i>Eremochloa ophiuroides</i> ) ()	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	0	0	1	0
<b>Lolium sp./spp.</b>	<b>Ryegrass</b>	Rustweed ( <i>Polypremum procumbens</i> )	1	0	0	0
<b>Paspalum notatum</b>	<b>Bahiagrass</b>	Blue-green algae ( <i>Nostoc</i> sp./spp.)	1	0	0	0
<b>Paspalum sp./spp.</b>	<b>Paspalum; Bahiagrass</b>	Rushes (Family Juncaceae)	1	0	0	0
<b>Spartina alterniflora</b>	<b>Salt Marsh cord grass</b>	Ash rust ( <i>Puccinia sparganioides</i> )	1	0	0	0
<b>Stenotaphrum secundatum</b>	<b>St. Augustinegrass</b>	Cultural/environmental problem (Abiotic disorder)	0	0	2	0
		Poor leaf emergence (Abiotic disorder)	1	0	0	0
		Root problem (Unknown Cause)	0	0	0	1
		Chinch bug ( <i>Blissus arenarius</i> )	1	0	0	0
		Chinch bug complex ( <i>Blissus</i> sp./spp.)	1	0	0	0
		Gray leaf spot ( <i>Pyricularia grisea</i> )	10	0	0	0
		Iron; Manganese deficiency (Abiotic disorder)	0	0	1	0
		Root decline of warm season grasses ( <i>Gaeumannomyces graminis</i> var. <i>graminis</i> )	3	0	0	0
		Large patch ( <i>Rhizoctonia solani</i> )	3	0	0	0
		Panicum mosaic (Panicum Mosaic Virus (PMV))	0	0	1	0
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1	0	0	0
		Brown patch ( <i>Rhizoctonia</i> sp./spp.)	2	0	0	0
		Herbicide injury (Abiotic disorder)	0	0	2	0
<b>Uniola paniculata</b>	<b>Sea Oats</b>	Pyricularia leaf spot ( <i>Pyricularia</i> sp./spp.)	1	0	0	0
<b>Zoysia sp./spp.</b>	<b>Zoysia Grass</b>	Crambus sod webworm ( <i>Crambus</i> sp./spp.)	1	0	0	0
		Cultural/environmental problem (Abiotic disorder)	1	0	5	0
		Dallisgrass ( <i>Paspalum dilatatum</i> )	1	0	0	0
		ETRI ectotrophic root infecting fungi (Complex of Fungi)	0	0	0	1
		Sheath blight ( <i>Rhizoctonia</i> sp./spp.)	3	0	0	0
		Zoysia Grass ( <i>Zoysia</i> sp./spp.)	1	0	0	0
		Orchardgrass ( <i>Dactylis glomerata</i> )	1	0	0	0
		Root problem (Unknown Cause)	1	0	0	3

Host Scientific Name	Host Common Name	Diagnostic Results	Confirmed	Not Detected	Suspected	Undetermined
		Brown patch ( <i>Rhizoctonia</i> sp./spp.)	1	0	0	0
		Curvularia blight; Leaf spot ( <i>Curvularia</i> sp./spp.)	6	0	0	0
		Dollar spot ( <i>Sclerotinia homoeocarpa</i> )	1	0	0	0
		Dormancy (Abiotic disorder)	0	0	1	0
		Annual ryegrass; Italian ryegrass ( <i>Lolium perenne</i> subsp. <i>multiflorum</i> )	1	0	0	0
		Dollar spot ( <i>Claviceps homoeocarpa</i> )	4	0	0	0
		Bahiagrass ( <i>Paspalum notatum</i> )	1	0	0	0
		Leaf rust; Rust ( <i>Puccinia</i> sp./spp.)	3	0	0	0
		Zoysia grass ( <i>Zoysia</i> sp./spp.)	1	0	0	0
		Large patch ( <i>Rhizoctonia solani</i> )	3	0	0	0

\* “No pathogen found” and “No insect found” results are not shown.

**Table 7** Diagnostic results of field crops and pastures received at PPDC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results*	Confirmed	Not Detected	Suspected
<i>Avena sativa</i>	Oats	Oat leaf spot; Seedling blight ( <i>Drechslera avenae</i> )	1	0	0
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	1	0	0
		Crown rust; Rust ( <i>Puccinia coronata</i> )	1	0	0
		Barley yellow dwarf (BYDV) (Luteovirus Barley Yellow Dwarf Virus)	0	0	1
<i>Glycine max</i>	Soybean	Phoma leaf spot ( <i>Phoma</i> sp./spp.)	2	0	0
		Nutrient imbalance (Abiotic disorder)	0	0	2
		Fusarium wilt; Fusarium wilt complex ( <i>Fusarium</i> sp./spp.)	1	0	0
		Charcoal rot ( <i>Macrophomina</i> sp./spp.)	1	0	0
<i>Helianthus annuus</i>	Sunflower	Soybean anthracnose ( <i>Colletotrichum destructivum</i> )	1	0	0
		Alternaria leaf spot and blight ( <i>Alternaria helianthi</i> )	1	0	0
		Boron deficiency (Abiotic disorder)	1	0	0
		Herbicide injury (Abiotic disorder)	0	0	1
<i>Oryza glaberrima</i>	Carolina Gold Rice	Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0
		Nutritional deficiency (Abiotic disorder)	1	0	0
<i>Oryza sativa</i>	Rice	Dudaim melon; Muskmelon ( <i>Cucumis melo</i> var. <i>dudaim</i> )	1	0	0
<i>Panicum miliaceum</i>	Proso Millet	Rice flatsedge ( <i>Cyperus iria</i> )	1	0	0
		Ground beetles (Family Carabidae)	1	0	0
<i>Phaseolus</i> sp./spp.	Bean	Bacterial blight ( <i>Pantoea</i> sp./spp.)	1	0	0
<i>Phleum pratense</i>	Timothy	Timothy ( <i>Phleum pratense</i> )	0	0	1
		Composites (Family Asteraceae)	0	0	1
<i>Triticum aestivum</i>	Winter Wheat	Crown rot ( <i>Rhizoctonia</i> sp./spp.)	1	0	0
<i>Vigna unguiculata</i>	Cowpea	Insect feeding damage (Unidentified Insect)	0	0	1
		Ascochyta leaf spot ( <i>Phoma rhei</i> )	1	0	0
<i>Zea mays</i>	Field Corn	Penicillium ear rot ( <i>Penicillium</i> sp./spp.)	1	0	0
		Silver Y moth ( <i>Autographa gamma</i> )	0	1	0
		Bollworm; Corn earworm ( <i>Helicoverpa</i> ( <i>Heliothis</i> ) <i>zea</i> )	5	0	0
		Soybean looper ( <i>Chrysodeixis includens</i> )	2	0	0
		Gray looper moth ( <i>Rachiplusia ou</i> )	1	0	0
		Curvularia blight; Leaf spot ( <i>Curvularia</i> sp./spp.)	1	0	0
		Bollworm; Budworm; Complex ( <i>Helicoverpa zea</i> )	5	0	0
		Sweetpotato armyworm moth ( <i>Spodoptera dolichos</i> )	1	0	0

\* “No pathogen found” and “No insect found” results are not shown.



**Table 8** Identification results of insect and other arthropod samples received at PPDC in 2021

Pest Scientific Classification	Pest Common Name	Confirmed	Not Detected	Suspected	Undetermined
<i>Aleyrodidae</i> (Family)	Whiteflies	1	0	0	0
<i>Amblyomma americanum</i>	Lone star tick	1	0	0	0
<i>Anagasta kuehniella</i>	Mediterranean flour moth	1	0	0	0
<i>Anatis lecontei</i>	Ladybird beetle	1	0	0	0
Anobiidae (Family)	Powderpost beetle	0	0	1	0
<i>Auplopus mellipes</i>	Pompilid wasp	1	0	0	0
<i>Blattella germanica</i>	German cockroach	2	0	0	0
Carabidae (Family)	Ground beetles	3	0	0	0
<i>Cimex lectularius</i>	Bed bug	2	0	0	0
<i>Clogmia albipunctata</i>	Psychodid drain fly	1	0	0	0
Coccinellidae (Family)	Ladybird beetles	0	0	1	0
Collembola (Order)	Springtails	2	0	0	0
<i>Coptotermes formosanus</i>	Formosan subterranean termite	3	0	1	0
<i>Crematogaster</i> sp./spp.	Acrobat ants	1	0	0	0
Curculionidae (Family)	Nut weevils	1	0	0	0
<i>Cydalima perspectalis</i>	Box tree moth	0	1	0	0
Dermaptera (Order)	Earwigs	1	0	0	0
Dermaptera (Order)	Earwigs	2	0	0	0
<i>Dermatobia hominis</i>	Torsalo fly	1	0	0	0
Dermeistidae (Family)	Carpet beetles	2	0	0	0
Diptera (Order)	Flies	1	0	0	0
Elateridae (Family)	Wireworms (Click beetles)	1	0	0	0
Formicidae (Family)	Ants	1	0	1	0
<i>Frankliniella occidentalis</i>	Western flower thrips	1	0	0	0
<i>Frankliniella tritici</i>	Flower thrips	1	0	0	0
<i>Ixodes dammini</i>	Deer tick	0	0	1	0
Kalotermitidae (Family)	Drywood termites	1	0	0	0
Lepidoptera (Order)	Butterflies; Moths; Caterpillars	1	0	0	0
<i>Linepithema humile</i>	Argentine ant	2	0	0	0
<i>Loxosceles reclusa</i>	Brown recluse spider	1	0	0	0
Miridae (Family)	Plant bugs	1	0	0	0
<i>Nysius raphanus</i>	False chinch bug	1	0	0	0
<i>Oryzaephilus surinamensis</i>	Sawtoothed grain beetle	1	0	0	0
<i>Oxidus gracilis</i>	Garden millipede	1	0	0	0
Pentatomidae (Family)	Stink bugs	1	0	0	0
<i>Periplaneta fuliginosa</i>	Smoky brown cockroach	2	0	0	0
Phoridae (Family)	Humpbacked flies	4	0	0	0
Psocoptera (Order)	Barklice	0	0	0	1
<i>Pyralis farinalis</i>	Meal moth	2	0	0	0
Reduviidae (Family)	Assassin bugs	1	0	0	0
<i>Reticulitermes flavipes</i>	Eastern subterranean termite	1	0	0	0
<i>Scirtothrips dorsalis</i>	Chilli thrips; Yellow tea thrips	0	1	0	0
Scolytidae (Family)	Bark beetles; Ambrosia beetles	0	0	1	0
<i>Scutigera coleoptrata</i>	House centipede	1	0	0	0
<i>Scytodes</i> sp./spp.	Spitting spider	1	0	0	0

<b>Pest Scientific Classification</b>	<b>Pest Common Name</b>	<b>Confirmed</b>	<b>Not Detected</b>	<b>Suspected</b>	<b>Undetermined</b>
<i>Sitotroga cerealella</i>	Angoumois grain moth	0	0	1	0
<i>Steatoda triangulosa</i>	Triangulate cobweb spider	1	0	0	0
<i>Stegobium paniceum</i>	Drugstore beetle	3	0	0	0
Tineidae (Family)	Clothes moths	0	0	1	0
Triatominae (Subfamily)	Kissing bugs	1	0	0	0
<i>Vespa crabro</i>	European hornet	1	0	0	0
<i>Vespula maculifrons</i>	Eastern yellowjacket	1	0	0	0

\* "No insect found" results are not shown.

**Table 9** Identification results of terrestrial and aquatic plant and algae samples received at PPDC in 2021

Sample Group	Pest Scientific Classification	Pest Common Name	Confirmed	Suspected	Undetermined	
Plant Id request (general)	<i>Commelina benghalensis</i>	Tropical spiderwort; Benghal dayflower	2	0	0	
	<i>Cynodon sp./spp.</i>	Bermuda grass	1	0	0	
	<i>Diospyros kaki</i>	Persimmon	1	0	0	
	<i>Ilex glabra</i>	Inkberry Holly	1	0	0	
	<i>Imperata cylindrica</i>	Cogongrass	5	0	0	
	<i>Kyllinga sp./spp.</i>	Spikesedge	1	0	0	
	<i>Lythrum salicaria</i>	Purple loosestrife	1	0	0	
	<i>Ranunculus abortivus</i>	Smallflower buttercup	1	0	0	
	<i>Rottboellia cochinchinensis</i>	Itchgrass	1	0	0	
	<i>Smilax sp./spp.</i>	Greenbriar	1	0	0	
	Unidentified Species	Bamboo	0	0	1	
	<i>Zoysia japonica</i>	Zoysia grass	2	0	0	
	Ponds; Lakes; impounded waters (Aquatic habitat)	<i>Anabaena sp./spp.</i>	Blue-green algae	1	0	0
		<i>Apios americana</i>	Groundnut; American potatobean	1	0	0
		<i>Cladophora sp./spp.</i>	Filamentous green algae Spirogyra; Oedogonium;	1	0	0
		<i>Cyperus sp./spp.</i>	Sedge	1	0	0
		<i>Desmidium sp./spp.</i>	Filamentous Green Algae	1	0	0
		<i>Diluchium arundinaceum</i>	Three-way sedge	1	0	0
		<i>Eleocharis sp./spp.</i>	Spikerush	3	0	0
		<i>Eremosphaera sp./spp</i>	Green algae	1	0	0
<i>Eremosphaera sp./spp.</i>		Green algae	0	1	0	
<i>Eremosphaera viridis</i>		Green alga	1	0	0	
<i>Euglena sp./spp.</i>		Euglena	1	0	0	
Family Chlorophyceae		Green algae	3	0	0	
Family Poaceae		Grasses	0	1	0	
genus unknown		Cyanobacteria	0	0	1	
<i>Juncus sp./spp.</i>		Rush	1	1	0	
<i>Landoltia punctata</i>		Dotted duckweed	1	0	0	
<i>Lyngbya sp./spp.</i>		Filamentous blue-green algae	2	0	0	
<i>Microcystis sp./spp.</i>		Blue-green algae	3	0	0	
<i>Najas minor</i>		Brittle naiad	1	0	0	
<i>Peridinium sp./spp.</i>		Dinoflagellate	1	0	0	
Phylum Bacillariophyta		Diatoms	1	0	0	
<i>Polygonum amphibium</i>		Water smartweed; Swamp smartwd	2	0	0	
<i>Polygonum hydropiperoides</i>		Swamp smartweed	2	0	0	
<i>Potamogeton diversifolius</i>		Waterthread pondweed	1	0	0	
<i>Potamogeton pectinatus</i>		Sago pondweed	0	1	0	
<i>Potamogeton pusillus</i>		Small pondweed	2	0	0	
<i>Schoenoplectus sp./spp.</i>		Bul-rush	1	0	0	
<i>Sparganium sp./spp.</i>		Bur-reed	1	0	0	
<i>Spirodela punctata</i>		Dotted duckweed	2	0	0	
<i>Strombomonas sp./spp.</i>		Strombomonas	1	0	0	
<i>Trachelomonas sp./spp.</i>		Euglenoid algae	1	0	0	
<i>Ulothrix sp./spp.</i>		Green algae	1	0	0	
<i>Utricularia sp./spp.</i>		Bladderwort	1	0	0	

Sample Group	Pest Scientific Classification	Pest Common Name	Confirmed	Suspected	Undetermined
	<i>Woffia brasiliensis</i>	Brazilian watermeal	1	0	0
	<i>Woffia papulifera</i>	Brazilian watermeal	2	0	0
Potting Soil; growing media (nursery)	Unidentified Algae	Algae	0	0	2

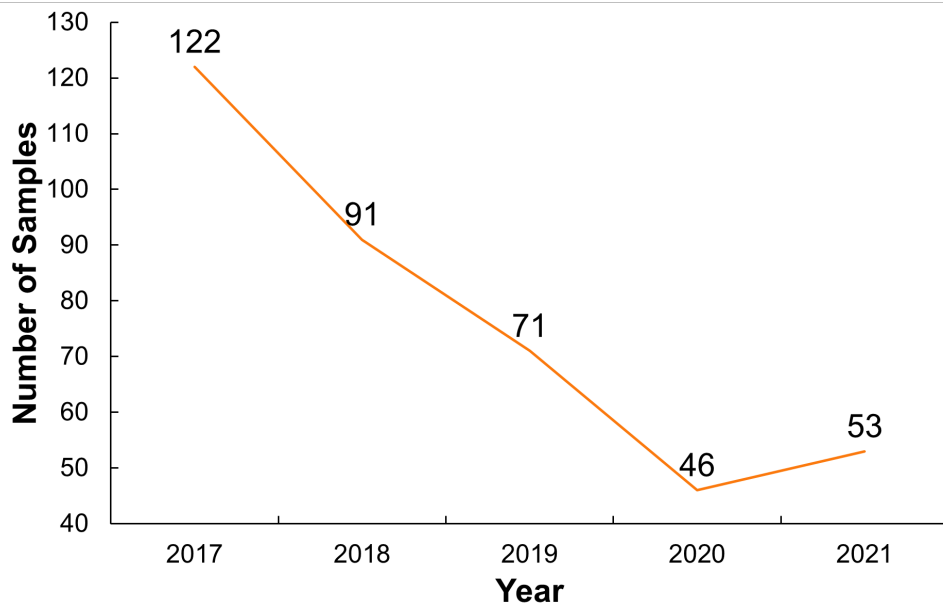
\* “Insufficient sample” results are not shown.

*Appendix 1 Commercial Turfgrass Clinic  
Annual Report 2021*

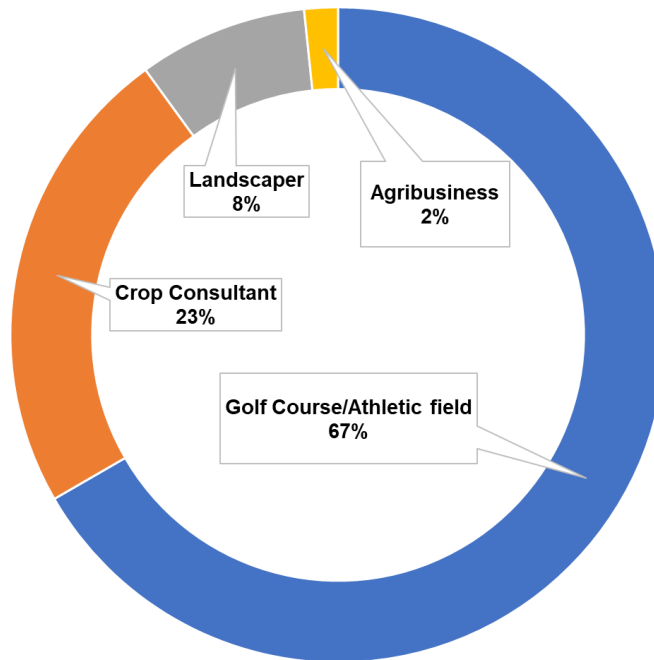


The information contained in this report is based upon work that was supported by the Southern Plant Diagnostic Network of the National Plant Diagnostic Network.

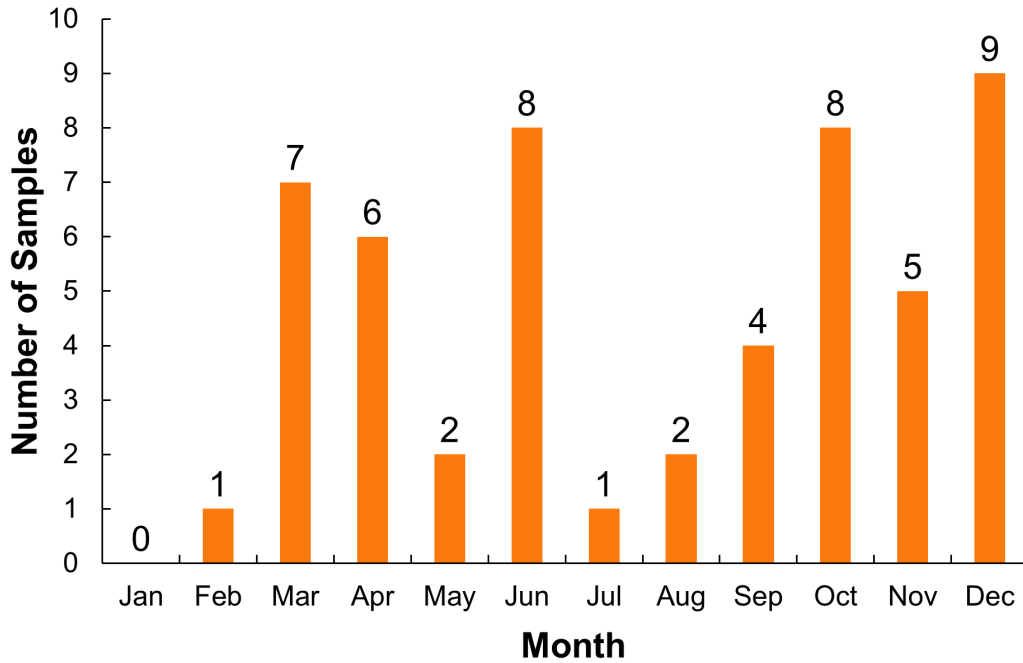
Although the sample number declined from 2017 to 2020, the Commercial Turfgrass Clinic (CTC) received 53 samples in 2021, which was a 15% increase from that in 2020 (**Fig. A1**). All 2021 samples were from nonextension, commercial sources with golf course/athletic field being CTC's largest client group (**Fig. A2**). At least eight samples were received in each of June, October, and December (**Fig. A3**).



**Fig. A1** Number of samples processed at CTC per year over the past five years

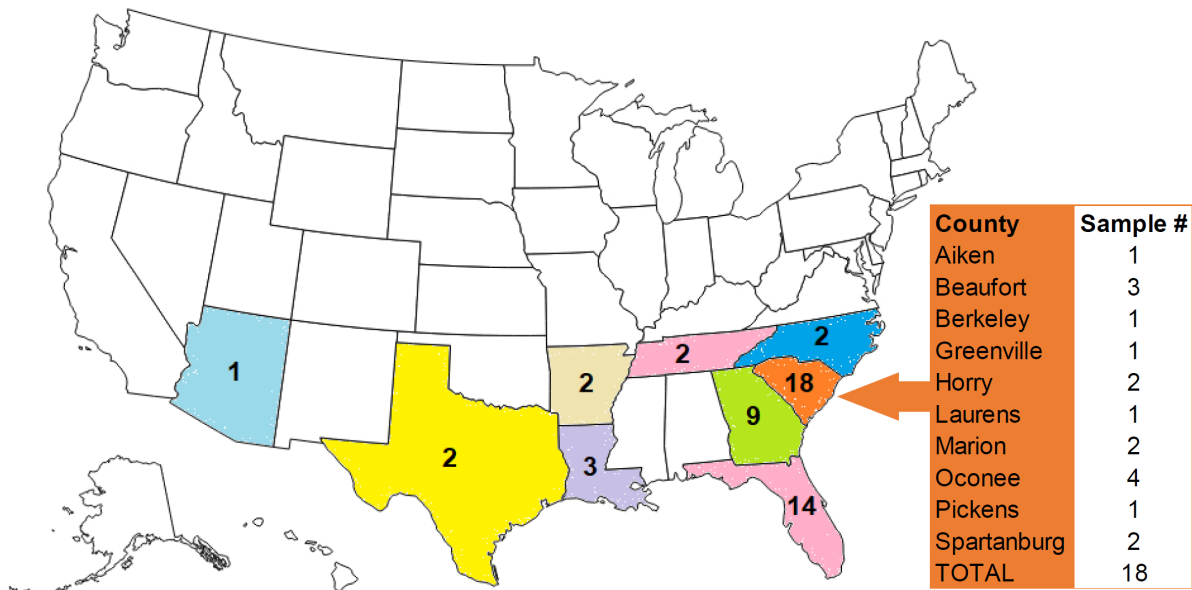


**Fig. A2** Count and Percentage of samples by client type at CTC in 2021



**Fig. A3** Number of samples processed at CTC per month in 2021

A total of 18 CTC samples originated from 10 SC counties. The other samples were from eight states outside of SC (**Fig. A4**).



**Fig. A4** Count of CTC samples per state and SC county



Meg Williamson processed all 53 samples, while Diana Low provided checked-in services for all samples. Joe Roberts and Bert McCarty gave advice for 4 and 1 sample(s), respectively. Diagnostic results of commercial turfgrass samples in 2021 are listed below (**Table A1**).

**Table A1** Diagnostic results of 53 samples received at CTC in 2021

Host Scientific Name	Host Common Name	Diagnostic Results	Confirmed	Suspected	Undetermined		
<b><i>Agrostis</i> sp./spp.</b>	Bentgrass	Leptosphaerulina leaf spot; Blight ( <i>Leptosphaerulina trifolii</i> )	1	0	0		
		Cultural/environmental problem (Abiotic disorder)	0	2	0		
		Leaf spot ( <i>Bipolaris</i> sp./spp.)	1	0	0		
		Pythium root dysfunction ( <i>Pythium</i> sp./spp.)	1	0	0		
		ETRI ectotrophic root infecting fungi (Complex of Fungi)	0	0	1		
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	4	0	0		
		Pythium blight; Cottony blight ( <i>Pythium</i> sp./spp.)	1	0	0		
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2	0	0		
		Pink snow mold; Fusarium patch ( <i>Microdochium nivale</i> )	1	0	0		
		Drainage problem (Abiotic disorder)	0	1	0		
<b><i>Cynodon dactylon</i></b>	Bermudagrass	Unspecified pathology ( <i>Pythium</i> sp./spp.)	2	0	0		
		Cultural/environmental problem (Abiotic disorder)	0	4	0		
		Awl nematode ( <i>Dolichodorus</i> sp./spp.)	2	0	0		
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	5	0	0		
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1	0	0		
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	3	0	0		
		ETRI ectotrophic root infecting fungi (Complex of Fungi)	4	0	6		
		Fairy ring (Various Fungi)	1	0	0		
		Pythium root and/or crown rot ( <i>Pythium</i> sp./spp.)	2	0	0		
		Soil compaction (Abiotic disorder)	1	0	0		
		Algae (General)	0	0	1		
		Pythium blight; Cottony blight ( <i>Pythium</i> sp./spp.)	3	0	0		
		Dollar spot ( <i>Clarireedia homoeocarpa</i> )	1	0	0		
		Leaf rust; Rust ( <i>Puccinia</i> sp./spp.)	1	0	0		
		Root problem; root damage (Unidentified Agent)	0	1	0		
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	3	0	0		
		Cream leaf blight ( <i>Limonomyces roseipellis</i> )	0	1	0		
		Nutrient imbalance (Abiotic disorder)	0	1	0		
		Pink snow mold; Fusarium patch ( <i>Microdochium nivale</i> )	6	0	0		
		Rhodesgrass mealybug ( <i>Antonina graminis</i> )	2	0	0		
		Undetermined injury (Identification Analysis)	0	0	1		
		Leaf and sheath spot ( <i>Rhizoctonia oryzae</i> )	1	0	0		
		Leaf spot ( <i>Microdochium</i> sp./spp.)	2	0	0		
		Red leaf and sheath spot ( <i>Rhizoctonia zeae</i> )	2	4	0		
		Root decline of warm season grasses ( <i>Gaeumannomyces graminis</i> var. <i>graminis</i> )	1	0	0		
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	13	0	0		
		<b><i>Eremochloa ophiuroides</i></b>	Centipedegrass	Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1	0	0
				Poor leaf emergence (Abiotic disorder)	0	1	0
<b><i>Lolium</i> sp./spp.</b>	Ryegrass	Leptosphaerulina leaf spot; Blight ( <i>Leptosphaerulina trifolii</i> )	1	0	0		
		Cultural/environmental problem (Abiotic disorder)	0	1	0		

Host Scientific Name	Host Common Name	Diagnostic Results	Confirmed	Suspected	Undetermined
		Leaf spot ( <i>Bipolaris</i> sp./spp.)	1	0	0
		Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0
<b><i>Stenotaphrum secundatum</i></b>	St. Augustinegrass	Gray leaf spot ( <i>Pyricularia grisea</i> )	1	0	0
<b><i>Zoysia</i> sp./spp.</b>	Zoysia Grass	Pink snow mold; Fusarium patch ( <i>Microdochium nivale</i> )	1	0	0
		Cultural/environmental problem (Abiotic disorder)	0	1	0
		ETRI ectotrophic root infecting fungi (Complex of Fungi)	0	0	1
		Unspecified pathology ( <i>Pythium</i> sp./spp.)	1	0	0
		Cottony snow mold ( <i>Coprinopsis psychromorbida</i> )	0	1	0
		Fertilizer injury (Abiotic disorder)	1	0	0
		Pythium blight ( <i>Pythium</i> sp./spp.)	1	0	0
		Leaf blotch ( <i>Bipolaris cynodontis</i> )	1	0	0

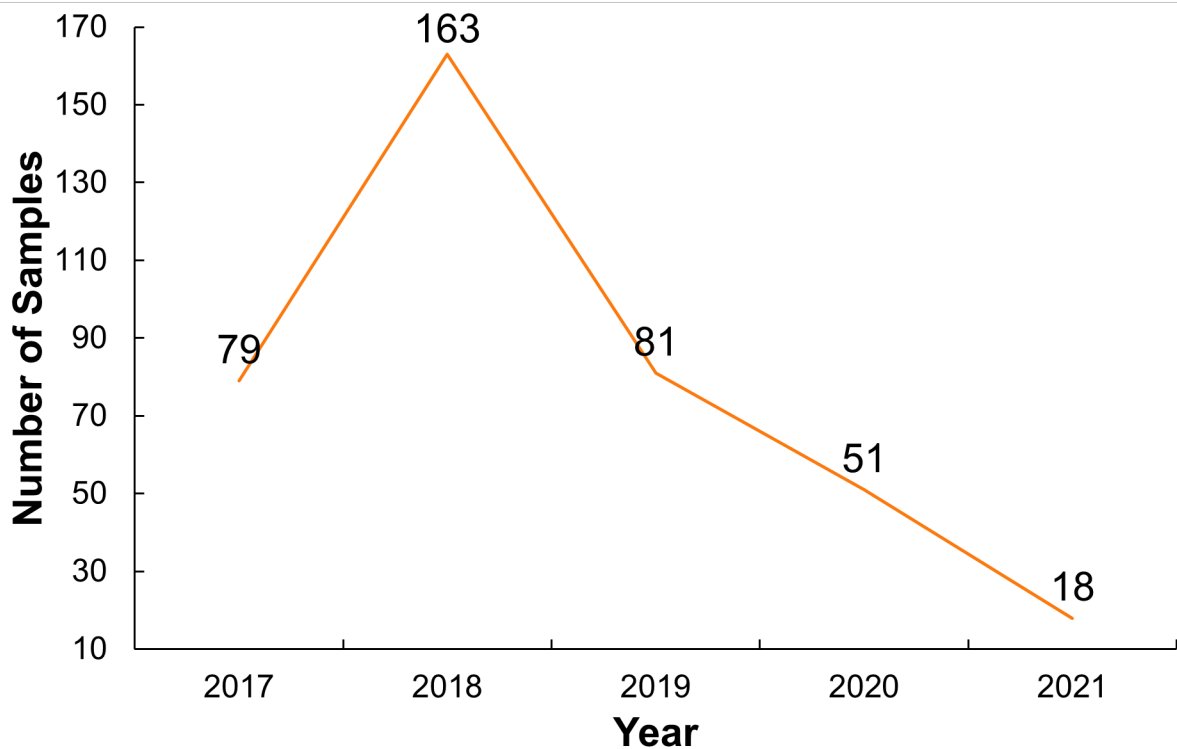
*Appendix 2 Molecular Pathogen and Pest Detection Lab  
Annual Report 2021*



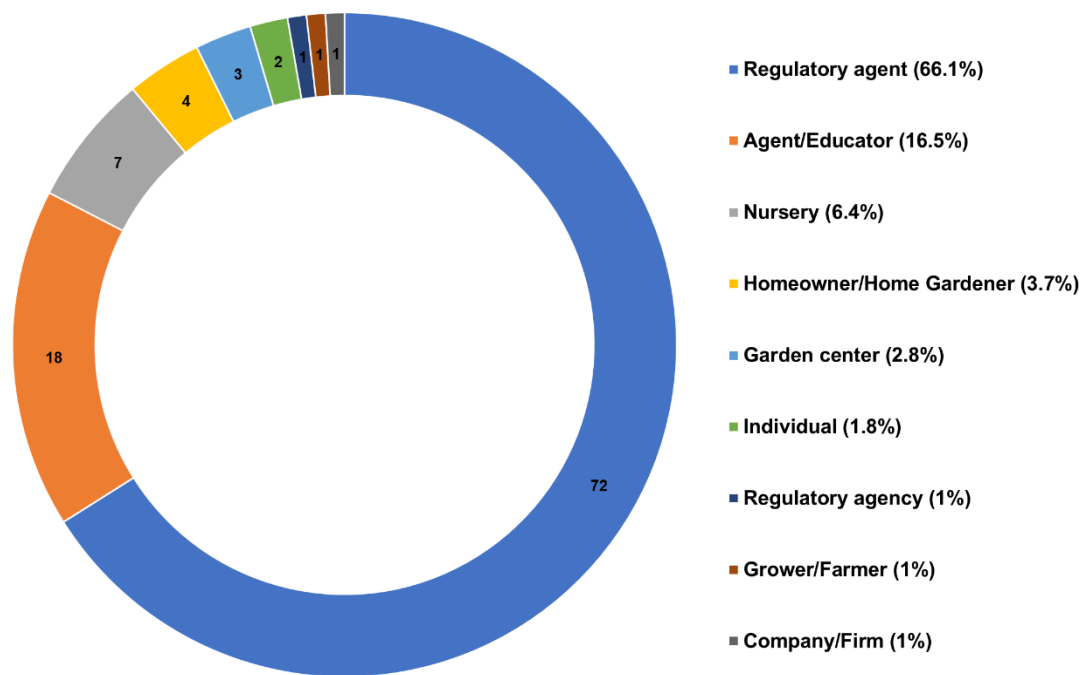
The information contained in this report is based upon work that was supported by the Southern Plant Diagnostic Network of the National Plant Diagnostic Network.

The Molecular Pathogen and Pest Detection (MPPD) Lab utilizes conventional polymerase chain reaction (PCR) and real-time PCR to detect and identify plant pathogens and pests (e.g. Africanized honeybees) based on their genetic information. The main targets are plant diseases and pathogen that are of USDA-APHIS regulatory concern, such as the sudden oak death pathogen *Phytophthora ramorum* and the citrus greening pathogens *Candidatus Liberibacter africanus*, *C. Liberibacter asiaticus*, and *C. Liberibacter americanus*. The MPPD Lab works closely with the Department of Plant Industry at Clemson University to conduct state-wide surveys. The MPPD Lab also provides diagnostic services to detect the American foulbrood pathogen *Paenibacillus larvae* and the European foulbrood pathogen *Melissococcus plutonius*.

The MPPD Lab processed fee-for-service 18 samples in 2021 (**Fig. A5**) including 16 commercial and 2 noncommercial samples. Most samples were provided by regulatory agents and educators (**Fig. A6**). All samples originated from SC locations. Curt Colburn processed all 18 samples. Diana Low provided checked-in services for all samples. Diagnostic results of samples at the MPPD Lab in 2021 are provided in **Table A2**. In addition to the fee-for-service sample, approximately 1,500 peach samples were processed at the MPPD Lab to detect the plum pox virus in support of a Cooperative Agriculture Pest Survey (CAPS) grant in 2021.



**Fig. A5** Number of samples processed at the MPPD Lab per year over the past five years

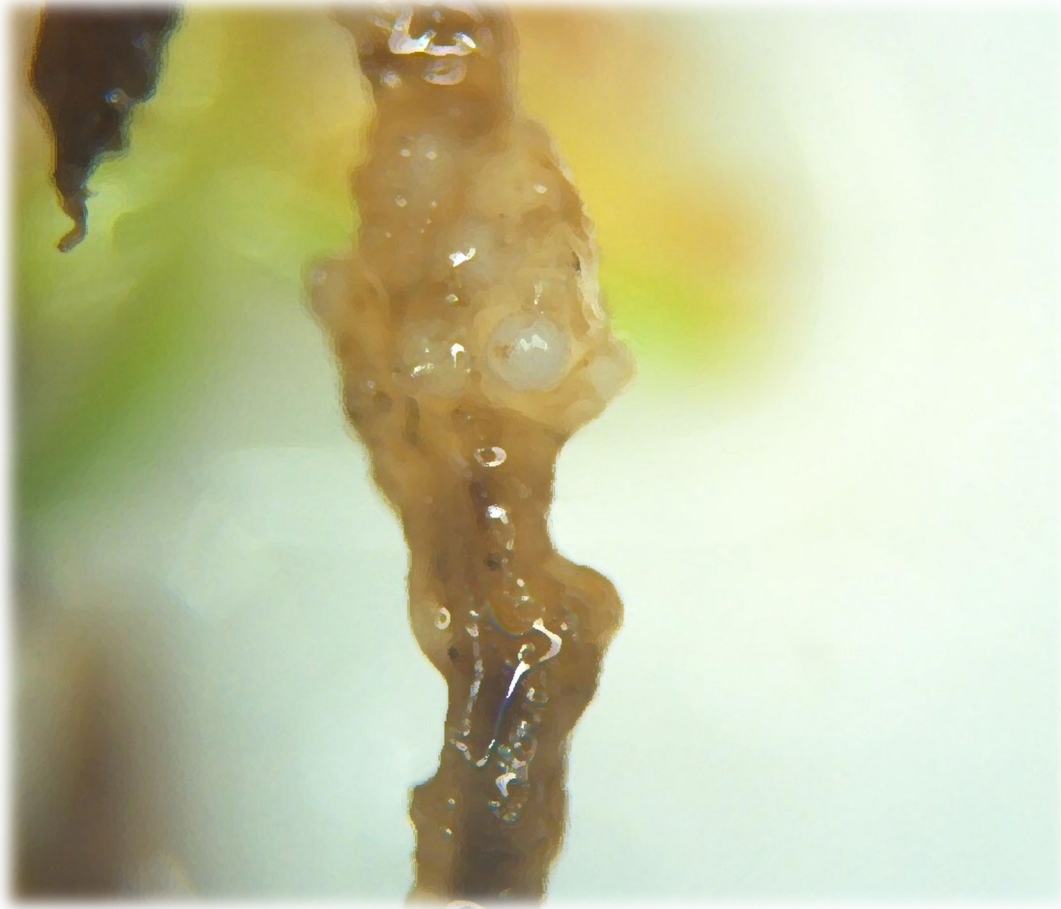


**Fig. A6** Number and percentage of samples processed at the MPPD Lab by client type in 2021

**Table A2** Diagnostic results of 18 samples received at the MPPD Lab in 2021

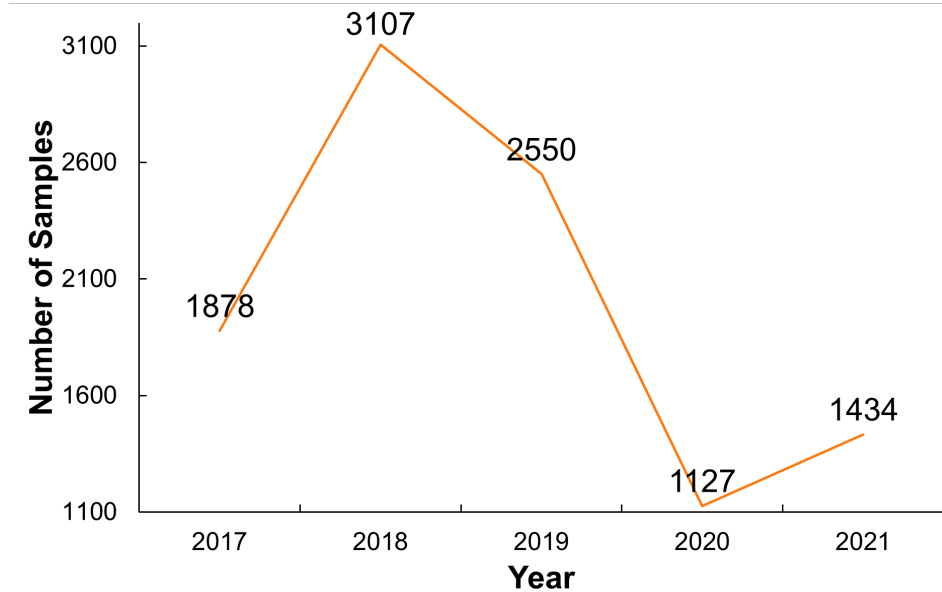
Host Scientific Name	Host Name	Diagnostic Results	Confirmed	Not Detected
<i>Apis mellifera</i>	Honeybee and products	European foulbrood ( <i>Melissococcus plutonius</i> )	3	2
		American foulbrood ( <i>Paenibacillus larvae</i> )	0	5
<i>Citrus limon</i>	Lemon	Citrus greening huanglongbing (African) ( <i>Candidatus Liberibacter africanus</i> )	0	1
		Citrus greening huanglongbing (Asian) ( <i>Candidatus Liberibacter asiaticus</i> )	0	1
<i>Citrus x meyeri</i>	Meyer Lemon	Citrus greening huanglongbing (African) ( <i>Candidatus Liberibacter africanus</i> )	0	1
		Citrus greening huanglongbing (Asian) ( <i>Candidatus Liberibacter asiaticus</i> )	0	1
<i>Vitis sp./spp.</i>	Grape	Phytoplasma disease ( <i>Phytoplasma sp./spp.</i> unknown)	0	1
Aquatic habitat	Water Sample	Phytophthora canker; Dieback ( <i>Phytophthora cactorum</i> )	1	0
		<i>Phytophthora ramorum</i>	0	10

## *Appendix 3 Nematode Assay Lab Annual Report 2021*

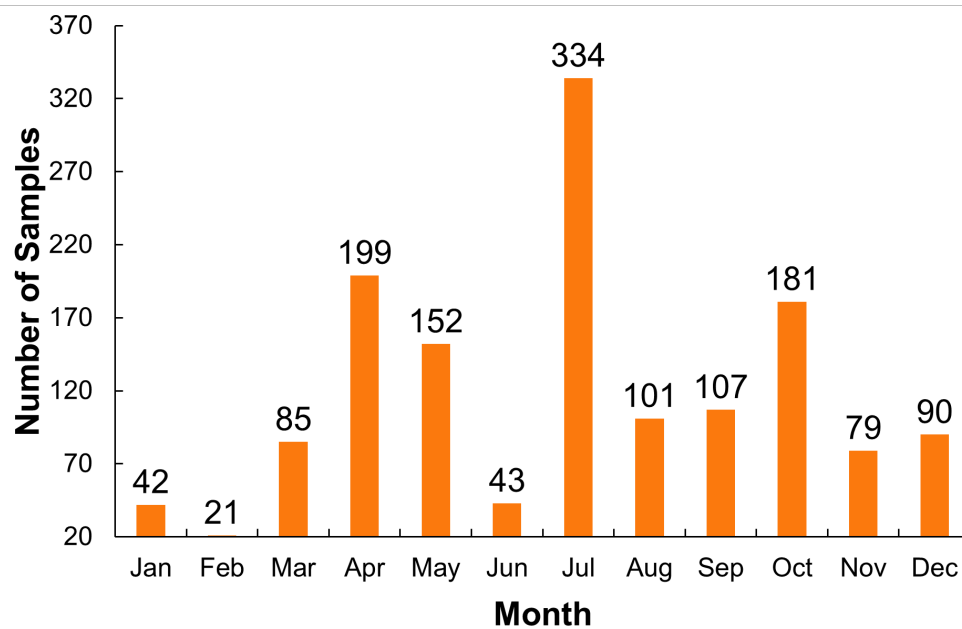


The information contained in this report is based upon work that was supported by the Southern Plant Diagnostic Network of the National Plant Diagnostic Network.

The Nematode Assay Lab (NAL) is led by Dr. Churamani Khanal. It locates in the Biosystems Research Complex at the Department of Plant and Environmental Sciences of Clemson University. NAL serves under contractual agreement with PPDC to extract and identify plant parasitic nematodes from plant and soil samples and to provide management recommendations, as needed. The nematode assay samples are submitted from various sources, including extension offices, commercial operations, research projects, and regulatory inspectors. In 2021, it processed 1434 samples (**Fig. A7**), which was a 27% increase from that of 2020.



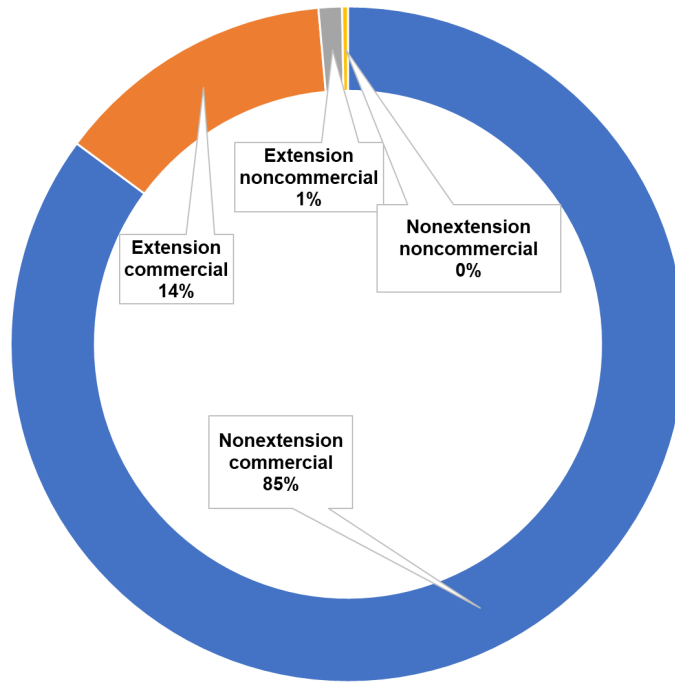
**Fig. A7** Number of samples processed at NAL per year over the past five years



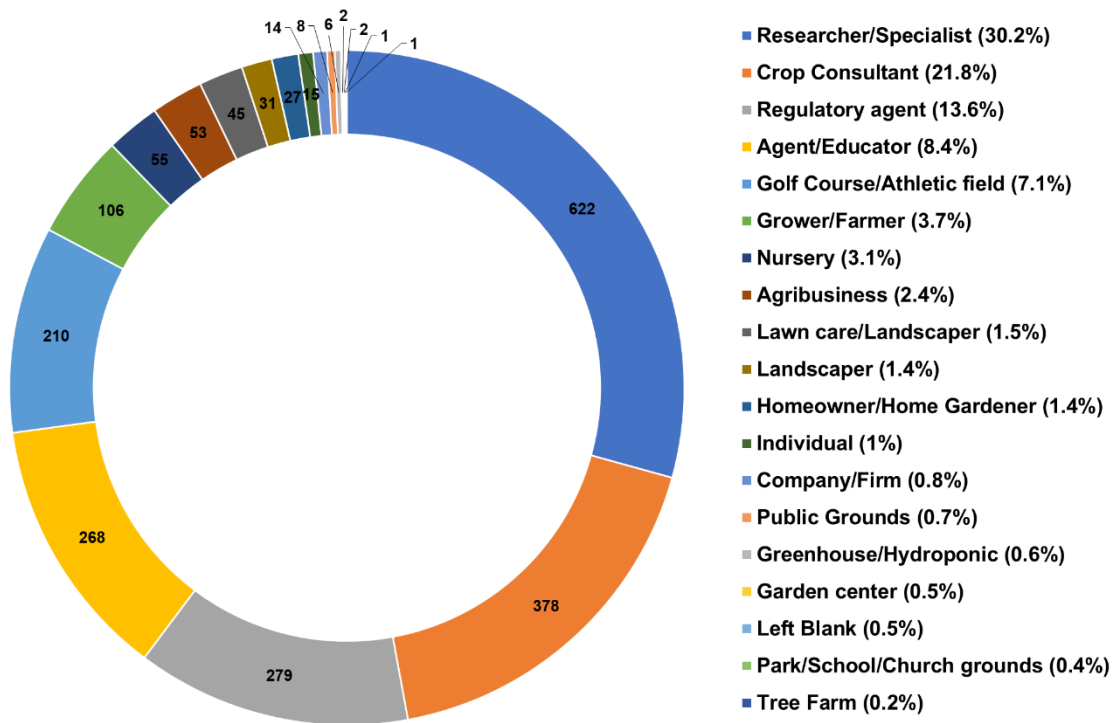
**Fig. A8** Number of samples processed at NAL per month in 2021



The vast majority of samples received at NAL in 2021 (98.5%) were from commercial sources (**Fig. A9**). NAL provided services to 2123 clients (**Fig. A10**).



**Fig. A9** Count and Percentage of samples by source at NAL in 2021



**Fig. A10** Count and Percentage of samples by client type at NAL in 2021

More than 45% of the nematode samples were turfgrasses. The other top sample categories were field crops, fruits, and vegetables (Fig. A11). More than 60% of the samples in 2021 were from 41 counties within SC, while more than 22% of the samples were from FL. The remaining 244 samples were from 13 other states (Fig. A12).

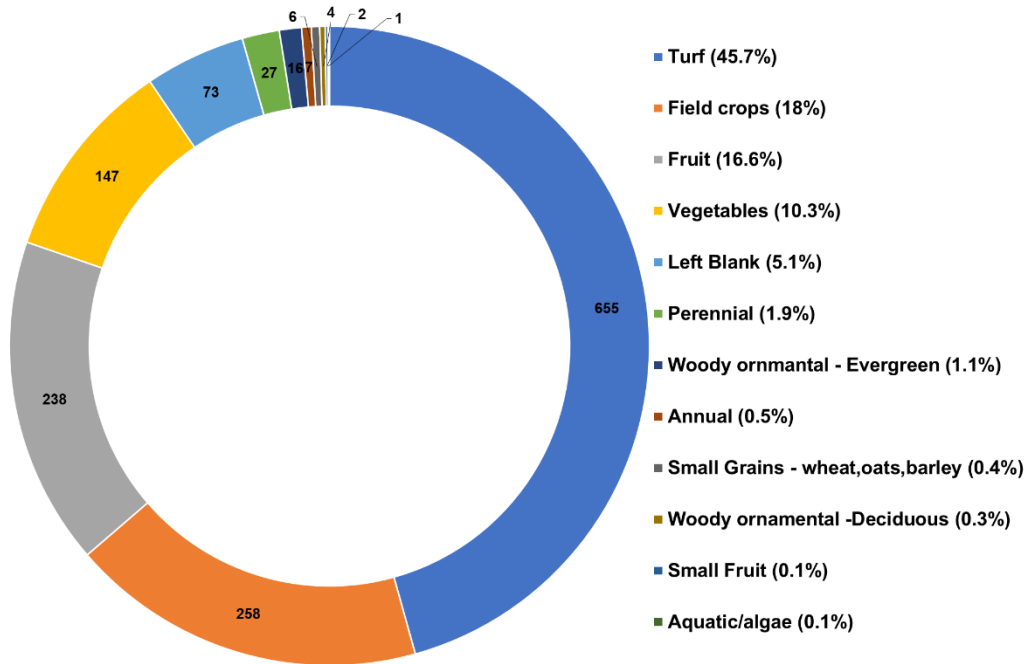


Fig. A11 Count and Percentage of samples per sample category at NAL in 2021

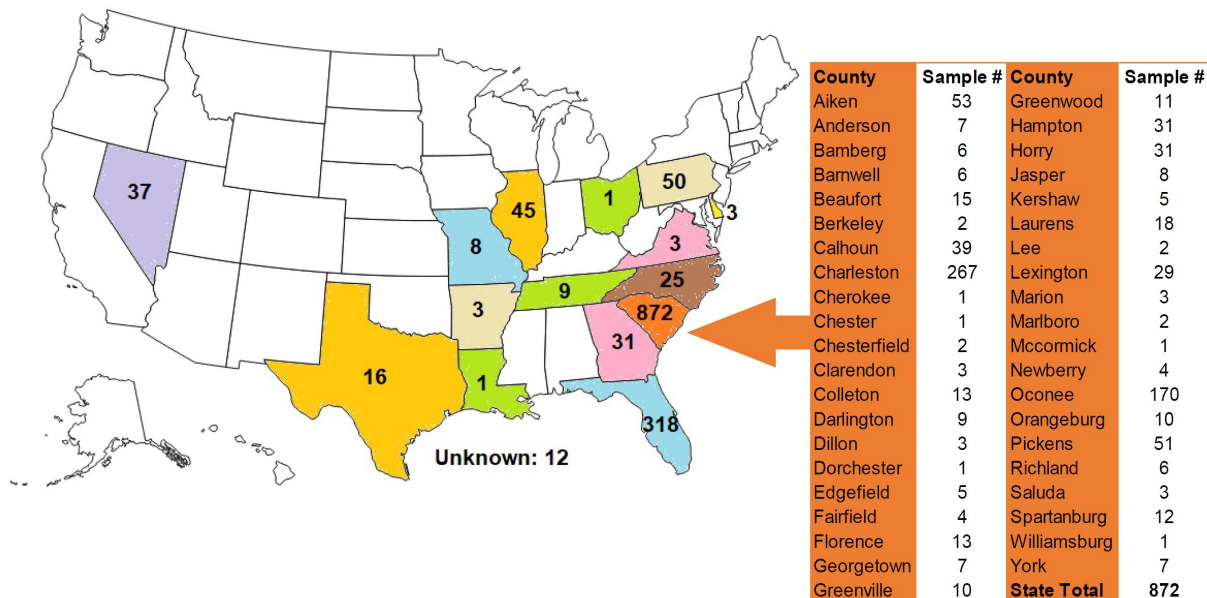


Fig. A12 Count of NAL samples per state and SC county

Churamani Khanal and Jeanice Troutman processed and gave advice for 1005 and 432 samples, respectively. Diana Low provided checked-in for all NAL samples. Out of the 1434 samples, 1429 were physical samples, while five were image-only samples. Diagnostic results of samples received at NAL in 2021 are listed in **Table A3**.

**Table A3** Diagnostic results of samples received at NAL in 2021

Host Scientific Name	Host Common Name	Diagnostic Results*	Counts
<b><i>Abelmoschus esculentus</i></b>	<b>Okra</b>	Reniform nematode ( <i>Rotylenchulus reniformis</i> )	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	14
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	15
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	26
		Stubby-root nematodes (Family Trichodoridae)	12
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	5
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	25
<b><i>Agrostis</i> sp./spp.</b>	<b>Bentgrass</b>	Stubby-root nematodes (Family Trichodoridae)	39
		Cyst nematodes ( <i>Heterodera</i> sp./spp.)	5
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	49
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	52
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	23
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	27
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	6
		Sheath nematodes ( <i>Hemicycliophora</i> sp./spp.)	13
		<b><i>Arachis hypogaea</i></b>	<b>Peanut</b>
Stubby-root nematodes (Family Trichodoridae)	1		
Reniform nematode ( <i>Rotylenchulus reniformis</i> )	1		
Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	2		
Ring nematode ( <i>Mesocriconema</i> sp./spp.)	2		
Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1		
Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2		
<b><i>Avena sativa</i></b>	<b>Oats</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	2
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
<b><i>Bambusa</i> sp./spp.</b>	<b>Bamboo</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
<b><i>Beta vulgaris vulgaris</i></b>	<b>Sugar Beet</b>	Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	2
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	5
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
<b><i>Buxus sempervirens</i></b>	<b>Common Boxwood</b>	Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	7
<b><i>Crinum</i> sp./spp.</b>	<b>Milk-lily; Crinum</b>	Stubby-root nematodes (Family Trichodoridae)	4
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	8
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	9
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	5
<b><i>Cucurbita</i> sp./spp.</b>	<b>Squash</b>	Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Stubby-root nematodes (Family Trichodoridae)	4
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	8
<b><i>Cynodon dactylon</i></b>	<b>Bermudagrass</b>	Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	9
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	5
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2

Host Scientific Name	Host Common Name	Diagnostic Results*	Counts
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	6
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	3
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	6
		Stubby-root nematodes (Family Trichodoridae)	2
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	11
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	4
		Sheath nematodes ( <i>Hemicycliophora</i> sp./spp.)	1
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	7
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	11
		Stubby-root nematodes (Family Trichodoridae)	118
		Criconemoides ring nematodes ( <i>Criconemoides</i> sp./spp.)	11
		Sheath nematodes ( <i>Hemicycliophora</i> sp./spp.)	23
		Awl nematode ( <i>Dolichodorus</i> sp./spp.)	16
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	286
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	198
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	164
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	275
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	27
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	91
		Stubby-root nematodes (Trichodorids) ( <i>Trichodorus</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	9
		Sheath nematode ( <i>Hemicriconemoides</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	240
<b><i>Eremochloa ophiuroides</i></b>	<b>Centipedegrass</b>	Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	10
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	9
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	6
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	21
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
		Sheath nematodes ( <i>Hemicycliophora</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	2
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	4
		Stubby-root nematodes (Trichodorids) ( <i>Trichodorus</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	6
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	11
<b><i>Ficus carica</i></b>	<b>Common Fig</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2
		Stubby-root nematodes (Family Trichodoridae)	2
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
<b><i>Glycine max</i></b>	<b>Soybean</b>	Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	3
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	8
		Stubby-root nematodes (Family Trichodoridae)	2
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
		Columbia lance nematode ( <i>Hoplolaimus columbus</i> )	1
		Reniform nematode ( <i>Rotylenchulus reniformis</i> )	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	4
		Soybean cyst nematode (SCN) ( <i>Heterodera glycines</i> )	4
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	6
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	2
<b><i>Gossypium hirsutum</i></b>	<b>Cotton</b>	Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	24
		Columbia lance nematode ( <i>Hoplolaimus columbus</i> )	14

Host Scientific Name	Host Common Name	Diagnostic Results*	Counts
		Reniform nematode ( <i>Rotylenchulus reniformis</i> )	18
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	41
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	4
		Soybean cyst nematode (SCN) ( <i>Heterodera glycines</i> )	1
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	24
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	43
		Stubby-root nematodes (Family Trichodoridae)	55
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	35
<b><i>Helianthus annuus</i></b>	<b>Sunflower</b>	Stubby-root nematodes (Family Trichodoridae)	4
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	3
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	4
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	3
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
<b><i>Hemerocallis</i> sp./spp. hybrids</b>	<b>Daylily</b>	Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	3
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
<b><i>Lycopersicon esculentum</i></b>	<b>Tomato</b>	Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	65
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	36
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	109
		Stubby-root nematodes (Family Trichodoridae)	51
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	4
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	96
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	55
<b><i>Magnolia grandiflora</i></b>	<b>Southern Magnolia</b>	Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
<b><i>Malus sylvestris</i></b>	<b>Common Apple</b>	Cyst nematodes ( <i>Heterodera</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	22
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	4
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	35
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	11
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	14
		Reniform nematode ( <i>Rotylenchulus reniformis</i> )	1
<b><i>Nicotiana tabacum</i></b>	<b>Tobacco (General)</b>	Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	2
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	2
<b><i>Paspalum</i> sp./spp.</b>	<b>Paspalum; Bahiagrass</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	3
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	3
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	2
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	2
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	2
<b><i>Phaseolus coccineus</i></b>	<b>Scarlet Runner bean</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	2
		Stubby-root nematodes (Family Trichodoridae)	2

Host Scientific Name	Host Common Name	Diagnostic Results*	Counts
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
<b><i>Phaseolus vulgaris</i></b>	<b>Snap Bean; green bean</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	2
		Stubby-root nematodes (Family Trichodoridae)	4
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	2
		Columbia lance nematode ( <i>Hoplolaimus columbus</i> )	1
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	1
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	1
<b><i>Pinus</i> sp./spp.</b>	<b>Pine</b>	Stubby-root nematodes (Family Trichodoridae)	6
<b><i>Prunus persica</i></b>	<b>Peach</b>	Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	72
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	70
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	69
		Free living nematodes (Multiple genera sp./spp.)	178
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	2
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	13
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	36
<b><i>Quercus</i> sp./spp.</b>	<b>Oak</b>	Stubby-root nematodes (Family Trichodoridae)	1
<b><i>Stenotaphrum secundatum</i></b>	<b>St. Augustinegrass</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	5
		Stubby-root nematodes (Family Trichodoridae)	6
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	4
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	5
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	11
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	3
		Pin nematodes ( <i>Paratylenchus</i> sp./spp.)	1
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	5
<b><i>Triticum aestivum</i></b>	<b>Common Wheat</b>	Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Stubby-root nematodes (Family Trichodoridae)	1
<b><i>Zea mays</i></b>	<b>Field Corn</b>	Cyst nematodes ( <i>Heterodera</i> sp./spp.)	1
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	6
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	2
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	23
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	6
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	21
		Stubby-root nematodes (Family Trichodoridae)	15
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	3
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	15
		Soybean cyst nematode (SCN) ( <i>Heterodera glycines</i> )	4
		Reniform nematode ( <i>Rotylenchulus reniformis</i> )	3
		Columbia lance nematode ( <i>Hoplolaimus columbus</i> )	2
<b><i>Zea mays</i></b>	<b>Sweet Corn</b>	Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1
<b><i>Zoysia</i> sp./spp.</b>	<b>Zoysia Grass</b>	Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	2
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	2

Host Scientific Name	Host Common Name	Diagnostic Results*	Counts
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	13
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	36
		Sheath nematodes ( <i>Hemicyclophora</i> sp./spp.)	9
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	25
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	13
		Stubby-root nematodes (Family Trichodoridae)	27
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	5
		Needle nematodes ( <i>Longidorus</i> sp./spp.)	3
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	2
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	7
<b>Grain (General category)</b>		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	1
<b>Turfgrass (Mixed species)</b>		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	1
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	1
<b>Vegetables (Mixed species)</b>		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	2
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	2
<b>Potting Soil; growing media (General) (Nursery)</b>		Stubby-root nematodes (Family Trichodoridae)	1
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	1
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	1
<b>Unknown</b>		Cyst nematodes ( <i>Heterodera</i> sp./spp.)	17
		Dagger nematodes ( <i>Xiphinema</i> sp./spp.)	22
		Lance nematodes ( <i>Hoplolaimus</i> sp./spp.)	21
		Lesion nematodes ( <i>Pratylenchus</i> sp./spp.)	31
		Pin nematodes ( <i>Paratylenchus</i> sp./spp.)	1
		Ring nematode ( <i>Mesocriconema</i> sp./spp.)	20
		Root-knot nematodes ( <i>Meloidogyne</i> sp./spp.)	19
		Sheath nematodes ( <i>Hemicyclophora</i> sp./spp.)	2
		Sheathoid nematode ( <i>Hemicriconemoides</i> sp./spp.)	5
		Spiral nematode ( <i>Scutellonema</i> sp./spp.)	1
		Spiral nematodes ( <i>Helicotylenchus</i> sp./spp.)	57
		Sting nematodes ( <i>Belonolaimus</i> sp./spp.)	8
		Stubby-root nematodes (Family Trichodoridae)	33
		Stunt nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	23

\* "No Nematode Found" results are not shown.