

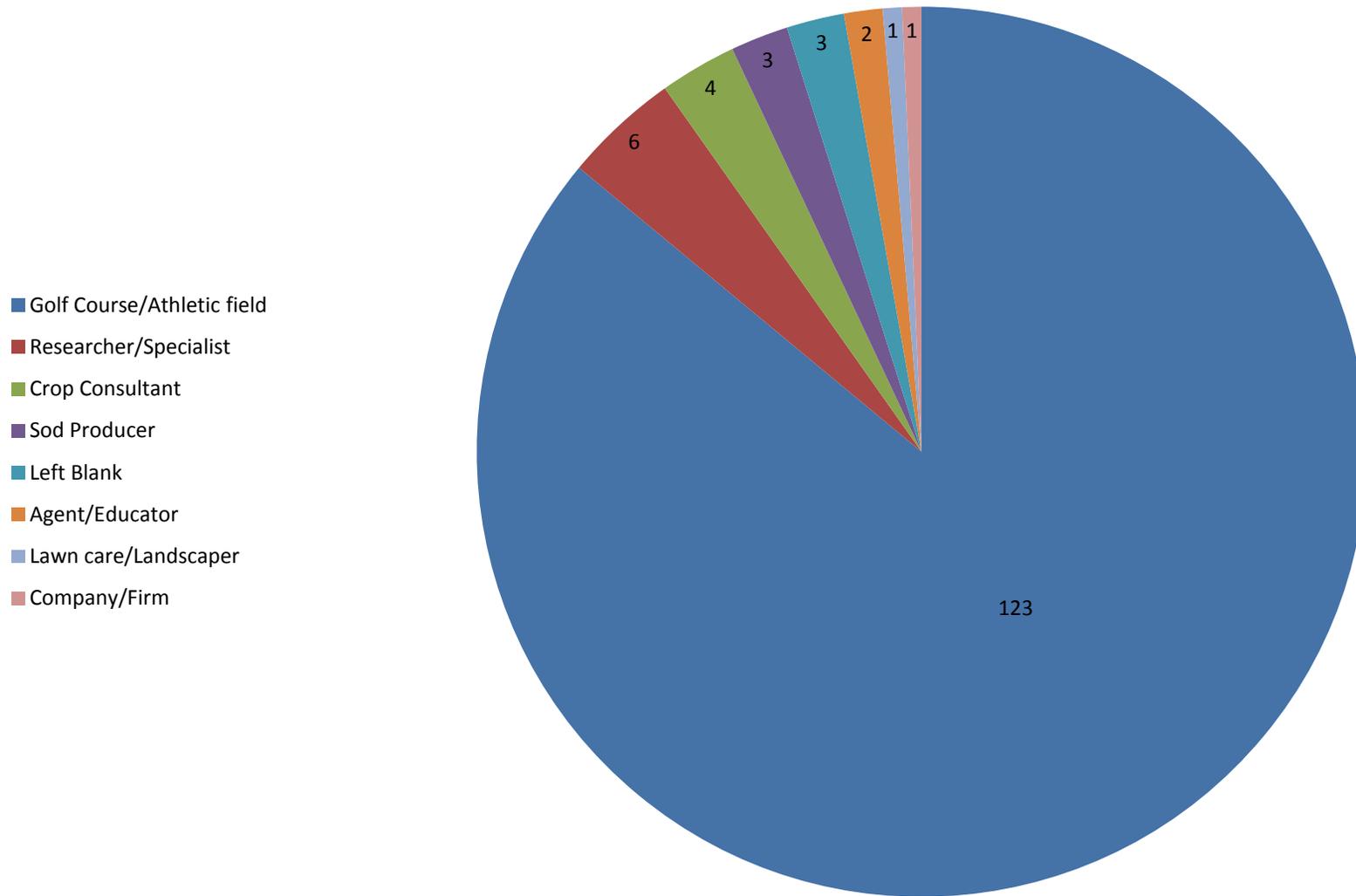
2015 Annual Report for the  
Clemson University  
Commercial Turf Clinic

The Clemson University Commercial Turf Clinic, formerly located at the Clemson Pee Dee Research and Education Center, has been in operation at the Pendleton, South Carolina location since 2013. The Clinic provides expedited diagnostic services to golf courses and other turf management professionals. Hopefully, the information in this report will be helpful to our clientele, Turfgrass Consultants, Extension Agents, Regulatory Inspectors, students and other plant professionals

This year, the Clinic processed 113 samples, an increase of 32 over the 2014 total. These came from South Carolina and a number of other states, mostly in the southeastern U.S. I am extremely appreciative of the valuable consulting assistance provided by Dr. Bruce Martin and Dr. Bert McCarty, two well known and respected specialists in the Turfgrass Management field. Dr. Martin assisted with at least four samples and has also been generous enough to provide complete diagnostics during times when I must be out of the Lab. Dr. McCarty has provided helpful information on cultural problems with at least three samples. Nematologist, Dr. Paula Agudelo, assisted with consultation on one sample and her lab has run numerous nematode assay samples when I've suspected that nematodes might be the main problem. Finally, Extension Specialist, Dr. W. Corey Heaton provided recommendations for management of algae in a golf course irrigation pond. Their valuable assistance has helped to make the Commercial Turfgrass Clinic a success and their continued support is much appreciated.

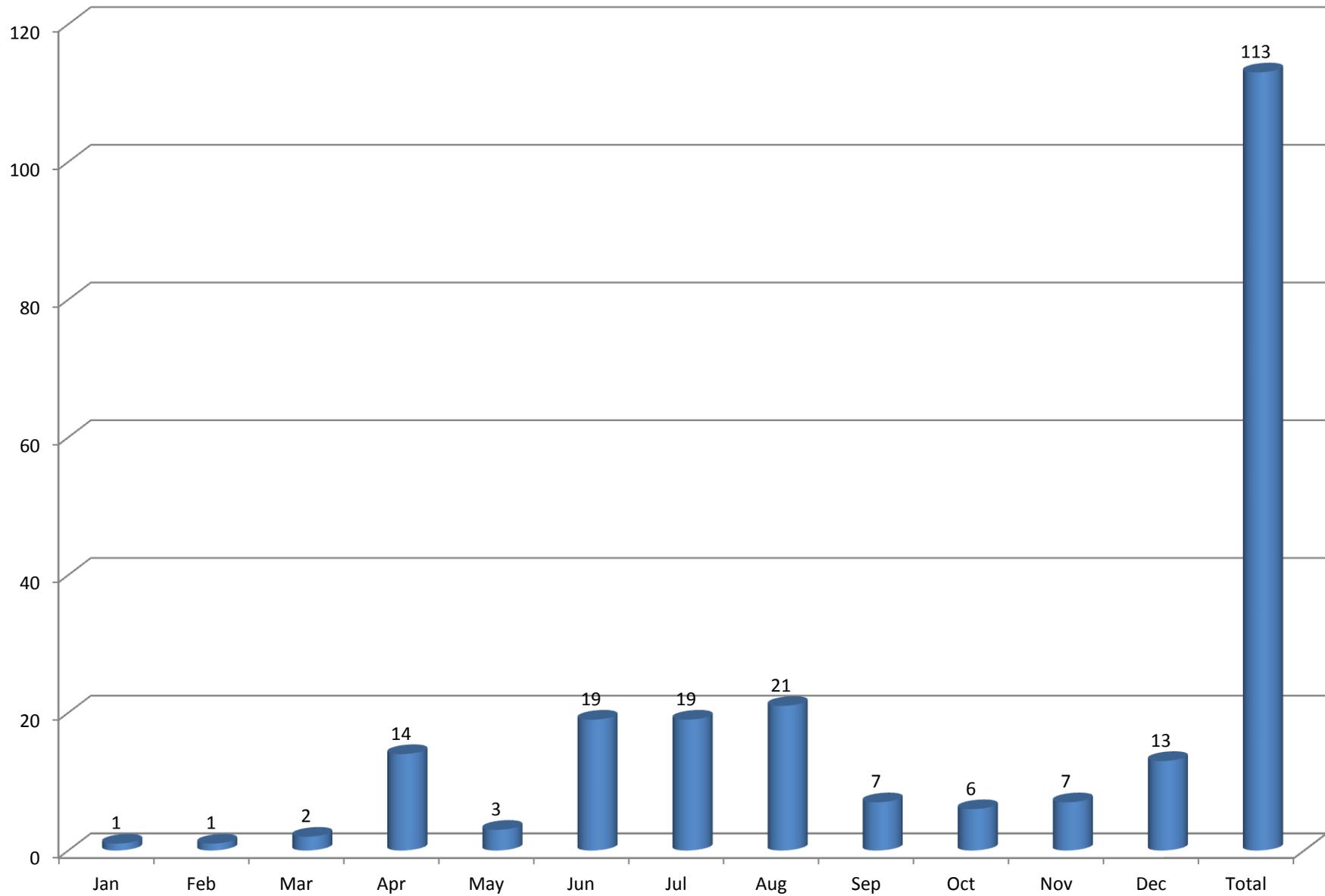
Meg Williamson, Clemson University Plant Disease Diagnostician

# Commercial Turfgrass Clinic Client Type by Number of Samples in 2015\*

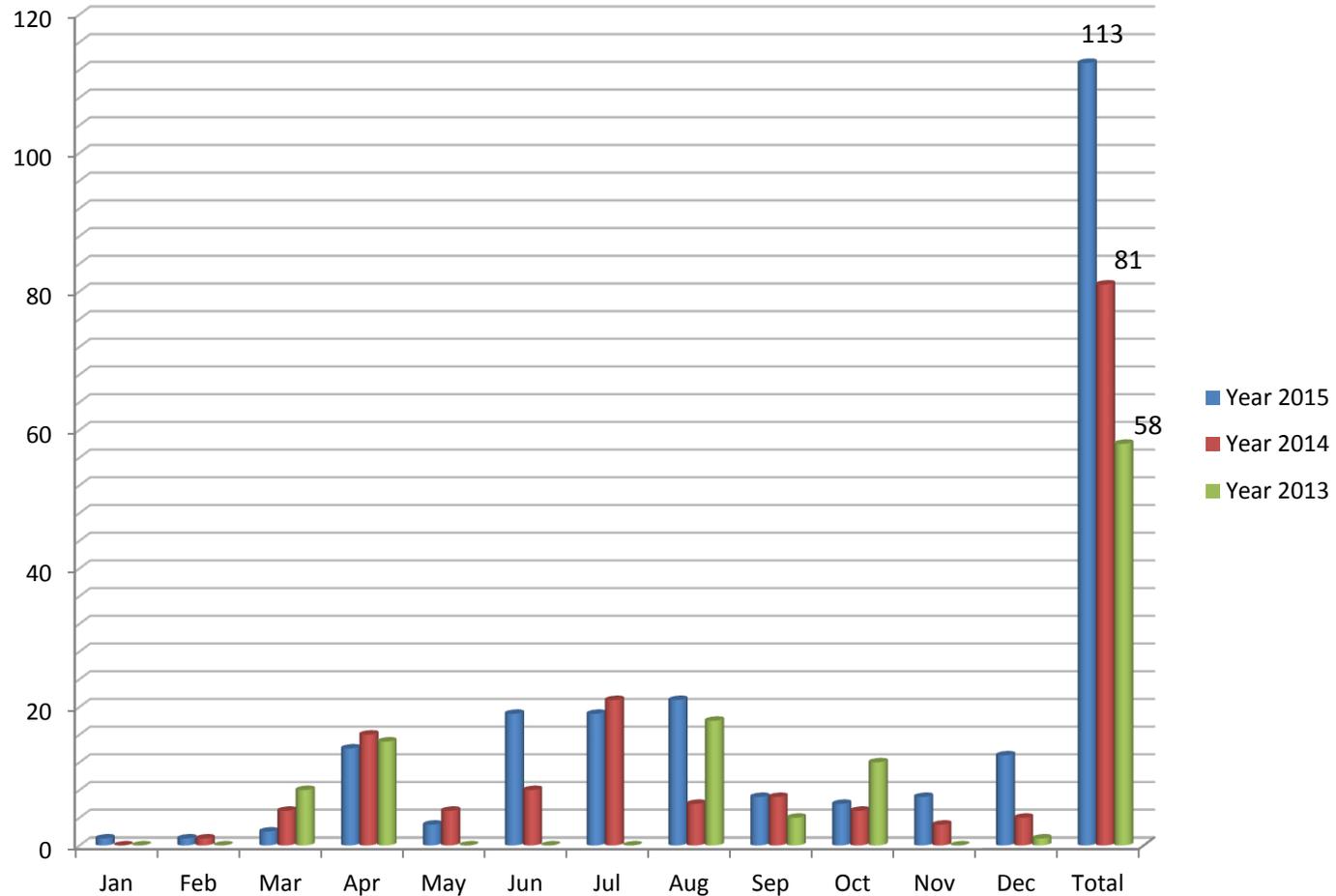


\*Some samples have more than one submitter involved.

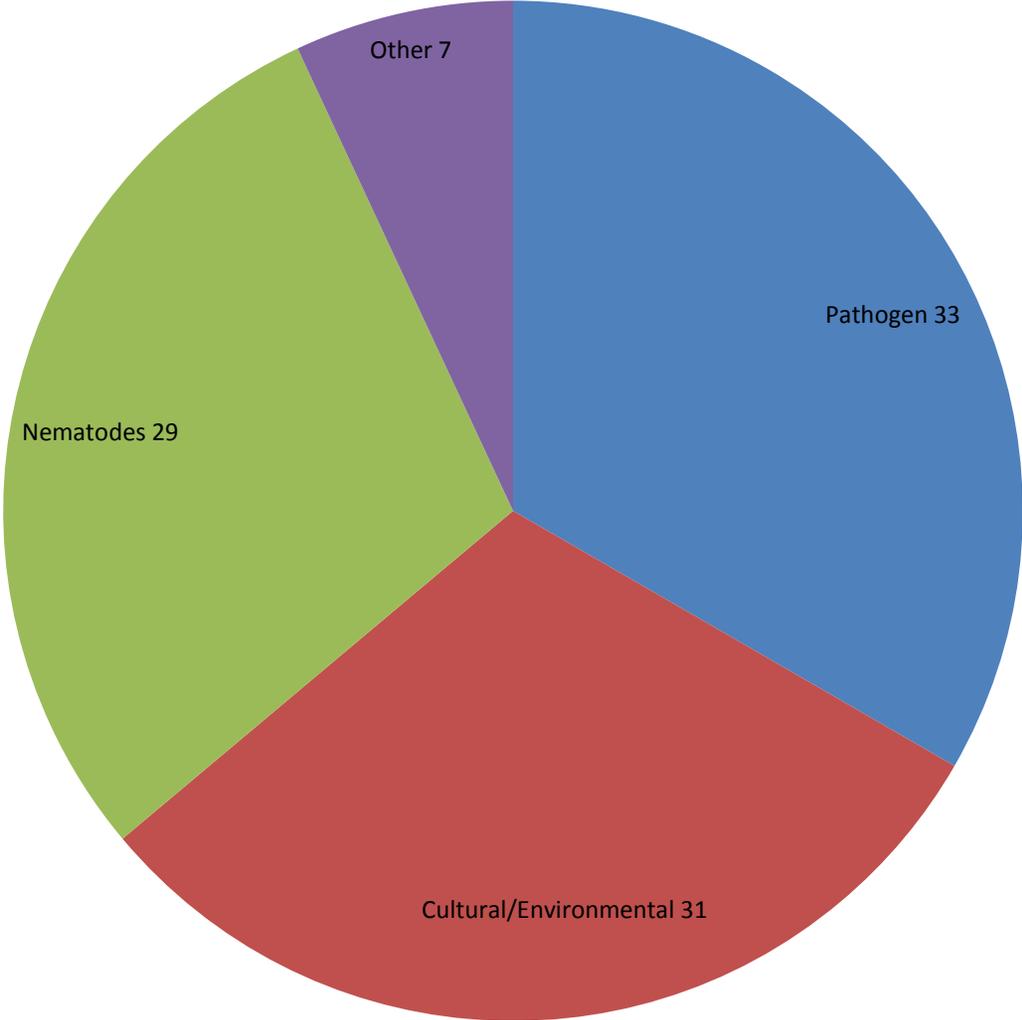
## Commercial Turfgrass Samples Submitted per Month in 2015



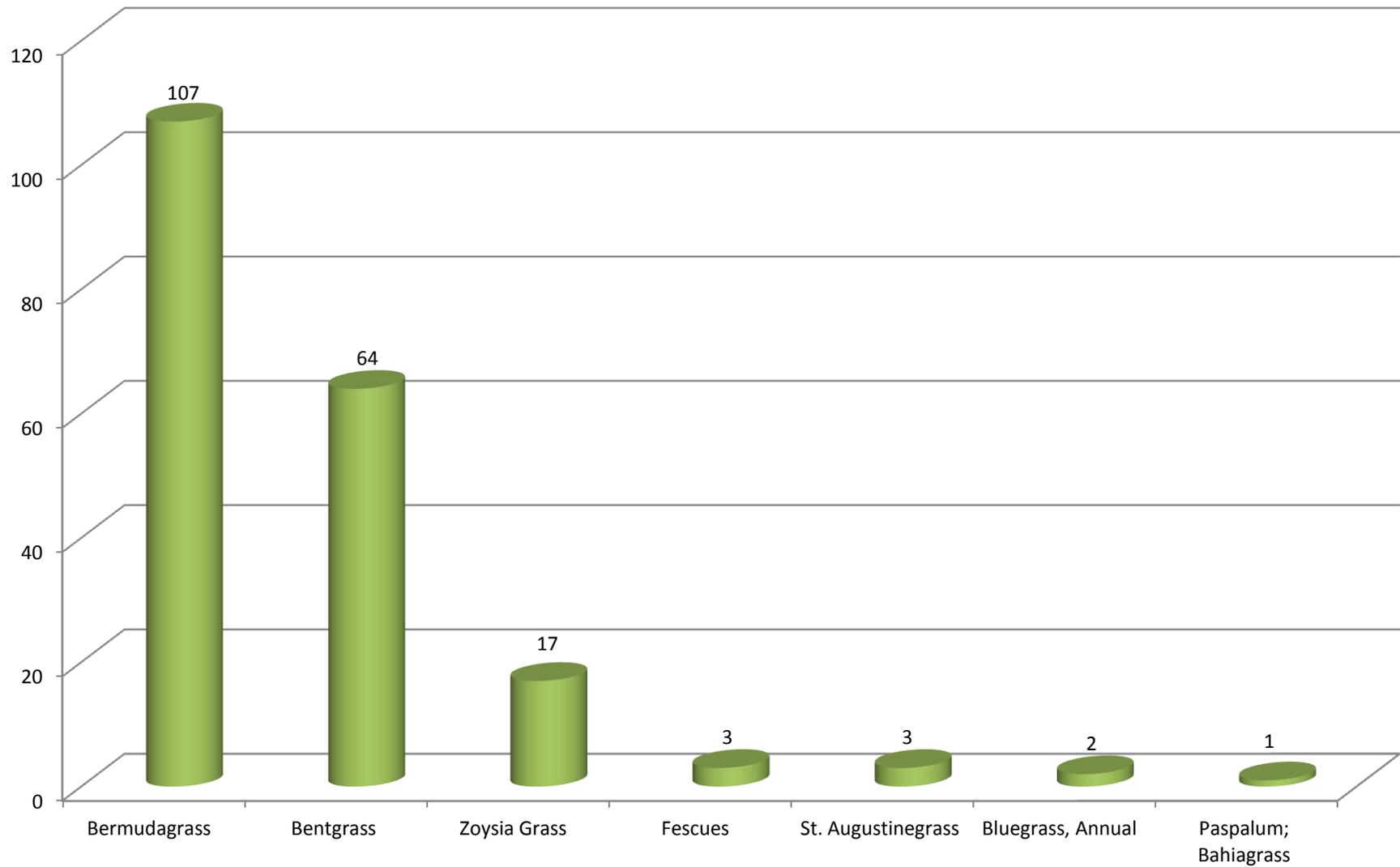
## Number of Samples Submitted to the Commercial Turfgrass Clinic for the Past 3 Years



# Commercial Turf Pest Categories in 2015 by Number of Diagnoses



## Types of Turfgrass Submitted in 2015 by number of Confirmed Diagnoses\*



\* Many samples have more than one diagnosis.

State	Counties and State Totals for 2015	Number of Samples
Alabama	Baldwin	4
	Houston	1
	Shelby	4
	AL STATE TOTAL	9
Arkansas	Pulaski	19
	AR STATE TOTAL	19
California	Los Angeles	1
	Riverside	2
	CA STATE TOTAL	3
Florida	Collier	1
	Duval	3
	Nassau	3
	Palm Beach	1
	Saint Johns	9
	Sumter	1
	FL STATE TOTAL	18
	Georgia	Forsyth
Fulton		3
Greene		1
Jackson		1
Richmond		1
GA STATE TOTAL		7
North Carolina		Davidson
	NC STATE TOTAL	3
Pennsylvania	York	5
	PA STATE TOTAL	5
South Carolina	Aiken	1
	Beaufort	5
	Berkeley	1
	Charleston	2
	Edgefield	1
	Georgetown	1
	Greenville	7
	Horry	3
	Oconee	3
	Orangeburg	6
	Pickens	9
	Richland	1
	Spartanburg	3
	SC STATE TOTAL	43
	Texas	Fort Bend
Harris		1
Tarrant		1
Travis		2
TX STATE TOTAL		6
	<b>Out-of-State Total</b>	70
	<b>In-State Total</b>	43
	<b>GRAND TOTAL</b>	113

## Commercial Turf Clinic Diagnoses and Identifications

### Confidence Designations For Diagnoses and Identifications

The charts in the following sections show headings for confidence level designations above the number of samples found for that crop. The following descriptions are provided to explain what these mean.

**Confirmed** - The diagnosis was derived using techniques which allowed for the confirmation of the organism to Genus level, and sometimes to the species and/or race or pathovar level.

**Not Detected** -The sample was submitted as a suspect sample or as part of survey project. The suspected or survey pathogen was not detected on the submitted sample.

**Suspected** - Diagnostic symptoms of the pathogen or pest were present but evidence to allow for a definite determination could not be confirmed. This term is often used with abiotic entries because it is difficult to make conclusive diagnoses with these types of problems based solely on a diagnostic sample. Samples with viral symptoms are often diagnosed at this level since we can only test for a limited number of virus diseases.

**Inconclusive** - Although the sample was examined and/or tested to the best of our ability, a reliable result could not be achieved so the only conclusion is to diagnose the sample as inconclusive. This term may also be used when genus or species is undetermined due to limitations of time, availability of accurate tests or knowledge about the organism's morphology. Insufficient samples can also lead to an inconclusive designation. In many of these cases, the exact taxonomy is often not necessary for management of the pest or pathogen.

## Diagnoses and Identifications for Commercial Turf

	Confirmed	Not Detected	Suspected	Inconclusive
<b>Bentgrass (<i>Agrostis</i> sp./spp.) 64</b>				
Anthracnose ( <i>Colletotrichum graminicola</i> )	1	0	0	0
Anthracnose; <i>Colletotrichum</i> Leaf Spot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
Black Layer of Turfgrass (Abiotic disorder)	1	0	0	0
Chemical Injury (Abiotic disorder)	0	0	4	0
Cultural/Environmental Problem (Abiotic disorder)	0	0	14	0
ETRI Ectotrophic Root Infecting Fungi (Complex of Fungi)	0	0	0	1
Environmental Stress; Problem (Abiotic disorder)	8	0	2	0
Leaf Spot ( <i>Bipolaris sorokiniana</i> )	1	0	0	0
Magnaporthe Summer Patch ( <i>Magnaportheiopsis poae</i> )	1	0	0	0
Nematode Damage (Unidentified Nematode)	0	0	0	1
Microdochium Patch <i>Microdochium nivale</i>	1	0	0	0
Pythium Root Dysfunction ( <i>Pythium</i> sp./spp.)	3	0	2	0
Pythium Root Dysfunction ( <i>Pythium volutum</i> )	1	0	0	0
Ring Nematode ( <i>Mesocriconema</i> sp./spp.)	6	0	0	0
Ring Nematodes (Family Criconematidae)	0	0	1	0
Root Problem (Unknown Cause)	0	0	0	1
Root-knot Nematodes ( <i>Meloidogyne</i> sp./spp.)	1	0	0	0
Spiral Nematodes ( <i>Helicotylenchus</i> sp./spp.)	2	0	0	0
Sting Nematodes ( <i>Belonolaimus</i> sp./spp.)	3	0	0	0
Stubby-root Nematodes (Family Trichodoridae)	6	0	0	0
Stunt Nematodes ( <i>Tylenchorhynchus</i> sp./spp.)	1	0	0	0
Take-all ( <i>Gaeumannomyces</i> sp./spp.)	0	0	1	0
<b>Bermudagrass (<i>Cynodon</i> sp./spp.) 107</b>				
Anthracnose; <i>Colletotrichum</i> Leaf Spot ( <i>Colletotrichum</i> sp./spp.)	1	0	0	0
Crambus Sod Webworm ( <i>Crambus</i> sp./spp.)	0	0	1	0
Cream Leaf Blight ( <i>Limonomyces roseipellis</i> )	2	0	4	0
Cultural/Environmental Problem (Abiotic disorder)	7	0	8	0
Curvularia Blight; Leaf Spot ( <i>Curvularia</i> sp./spp.)	2	0	0	0
Dense Thatch Layer (Abiotic disorder)	1	0	0	0
High Soluble Salt (Abiotic disorder)	2	0	0	0

	Confirmed	Not Detected	Suspected	Inconclusive
Lance Nematodes ( <i>Hoplolaimus</i> sp./spp.)	8	0	0	0
Leaf Spot ( <i>Bipolaris</i> sp./spp.)	4	0	0	0
Leaf Spot; Leaf Blight ( <i>Exserohilum rostratum</i> )	3	0	0	0
Leptosphaerulina Leaf Spot; Blight ( <i>Leptosphaerulina trifolii</i> )	2	0	0	0
Low Soil Moisture (Abiotic disorder)	0	0	1	0
Microdochium Patch ( <i>Microdochium nivale</i> )	7	0	0	0
Pythium Blight; Cottony Blight ( <i>Pythium</i> sp./spp.)	3	0	0	0
Pythium Root Dysfunction ( <i>Pythium</i> sp./spp.)	3	0	1	0
Pythium Root and/or Crown Rot ( <i>Pythium</i> sp./spp.)	2	0	0	0
Ring Nematode ( <i>Mesocriconema</i> sp./spp.)	5	0	0	0
Root Decline of Warm Season Grasses ( <i>Gaeumannomyces graminis</i> var. <i>graminis</i> )	7	0	2	0
Root Problem (Unknown Cause)	0	0	0	1
Root Problems (Abiotic disorder)	1	0	1	1
Root-knot Nematodes ( <i>Meloidogyne</i> sp./spp.)	20	0	1	0
Sheathoid Nematode ( <i>Hemicriconemoides</i> sp./spp.)	1	0	0	0
Sting Nematodes ( <i>Belonolaimus</i> sp./spp.)	4	0	0	0
Unspecified Pathology ( <i>Pythium</i> sp./spp.)	1	0	0	0
<b>Bluegrass, Annual (<i>Poa annua</i>) 2</b>				
Black Layer of Turfgrass (Abiotic disorder)	1	0	0	0
Rapid Blight ( <i>Labyrinthula terrestris</i> )	1	0	0	0
<b>Fescues (<i>Festuca</i> spp) 3</b>				
Cultural/Environmental Problem (Abiotic disorder)	0	0	1	0
Phoma Blight; Dieback; Rot ( <i>Phoma</i> sp./spp.)	0	0	1	0
Pythium Blight; Cottony Blight ( <i>Pythium</i> sp./spp.)	1	0	0	0
<b>Paspalum; Bahiagrass (<i>Paspalum</i> sp./spp.) 1</b>				
Microdochium patch ( <i>Microdochium nivale</i> )	1	0	0	0
<b>St. Augustinegrass (<i>Stenotaphrum secundatum</i>) 3</b>				
Cultural/Environmental Problem (Abiotic disorder)	0	0	1	0
Gray Leaf Spot ( <i>Pyricularia grisea</i> )	1	0	0	0
Nutrient Imbalance (Abiotic disorder)	0	0	1	0

	Confirmed	Not Detected	Suspected	Inconclusive
<b>Zoysia Grass (Zoysia sp./spp.) 13</b>				
Cultural/Environmental Problem (Abiotic disorder)	0	0	2	0
Curvularia Blight; Leaf Spot (Curvularia sp./spp.)	2	0	0	0
Dense Thatch Layer (Abiotic disorder)	1	0	0	0
Drainage Problem (Abiotic disorder)	1	0	0	0
Large Patch [Rhizoctonia solani (Thanatephorus cucumeris)]	1	0	0	0
Nutrient Imbalance (Abiotic disorder)	0	0	1	0
Pythium Blight; Cottony Blight (Pythium sp./spp.)	1	0	0	0
Pythium Root Dysfunction (Pythium sp./spp.)	1	0	0	0
Root Problem (Unknown Cause)	0	0	0	2
Sting Nematodes (Belonolaimus sp./spp.)	1	0	0	0
<b>Zoysia (Japanese lawngrass) (Zoysia japonica) 4</b>				
Microdochium patch (Microdochium nivale)	2	0	0	0
Poor Leaf Emergence (Abiotic disorder)	0	0	2	0
<b>Zoysia Grass, Manilagrass (Zoysia matrella) 4</b>				
Dollar Spot (Sclerotinia homeocarpa)	1	0	0	0
Spring Dead Spot (Ophiosphaerella sp./spp.)	0	0	3	0