



2016 Annual Report of the
Clemson University Commercial
Turfgrass 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.

We have recently hired Mr. Brad Addy, one of Dr. Bert McCarty's graduate students, to assist part time in the Commercial Turf Clinic. He will be with us at least until the end of May when he graduates, but may stay on through the summer, and possibly longer. I'd like to thank Brad for putting this excellent report together.

This year, the Clinic processed 89 samples. 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 seven 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 five samples. Turf Entomologist, Dr. J.C. Chong provided management recommendations for one sample. Nematologist, Dr. Paula Agudelo, and her staff ran numerous nematode assay samples when I've suspected that nematodes might be the main problem. Their valuable assistance has helped to make the Commercial Turfgrass Clinic a success and their continued support is much appreciated.

Hopefully, the information in this report will be helpful to our clientele, Turfgrass Consultants, Extension Agents, Regulatory Inspectors, students and other plant professionals.

Meg Williamson, Clemson University Plant Disease Diagnostician

Personnel Performing Diagnoses/Identifications

Each sample may involve one or more diagnosticians. Hence this section may not represent the total number of samples processed during this time period.

Madeline Dowling, processed 2 sample(s).

Meg Williamson, processed 89 sample(s).

PredeeshChandran, processed 3 sample(s).

Personnel Providing Management Advice

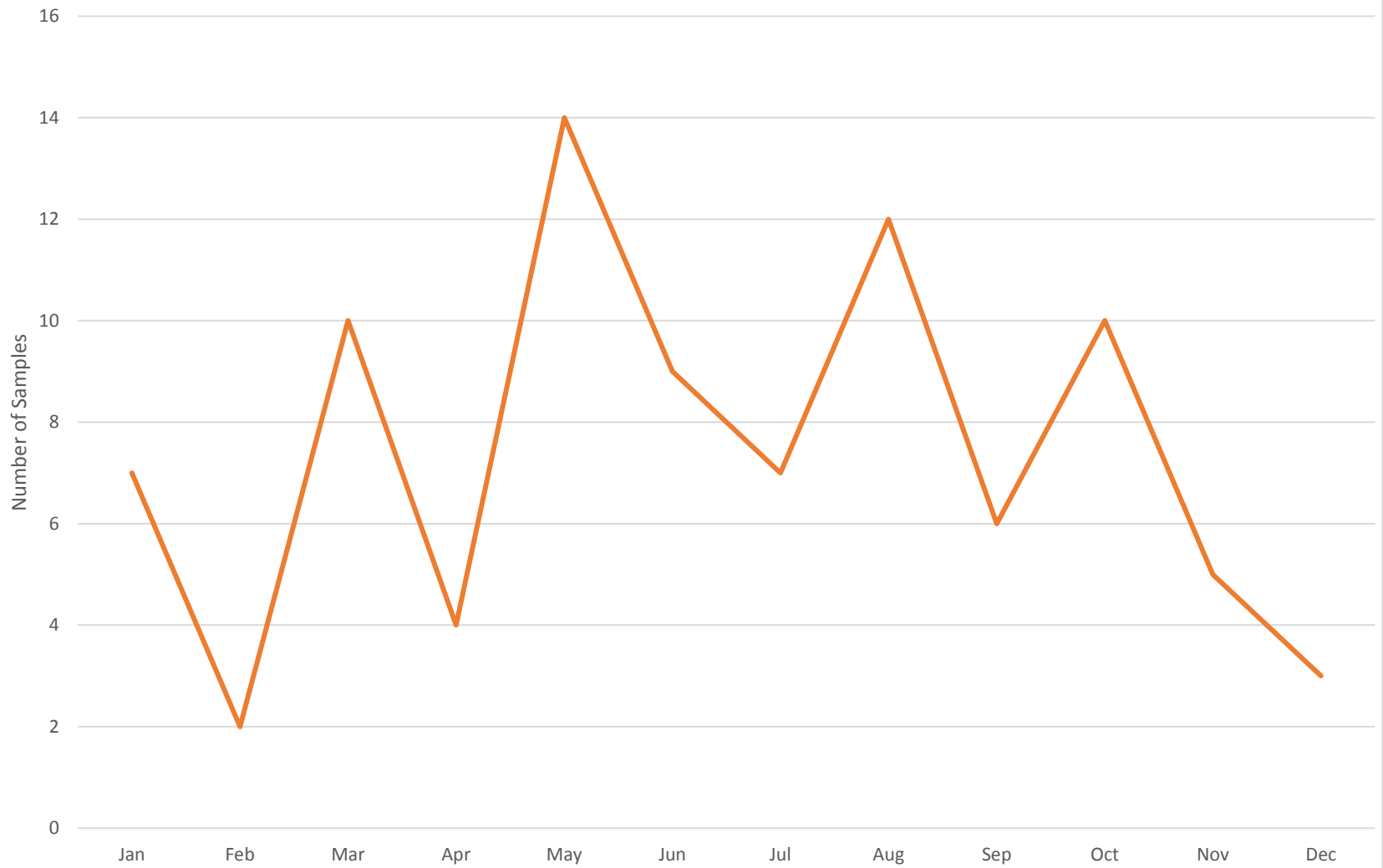
Each sample may involve one or more advisory consultants. Hence this section may not represent the total number of samples processed during this time period.

Bert McCarty, gave advice for 5 sample(s).

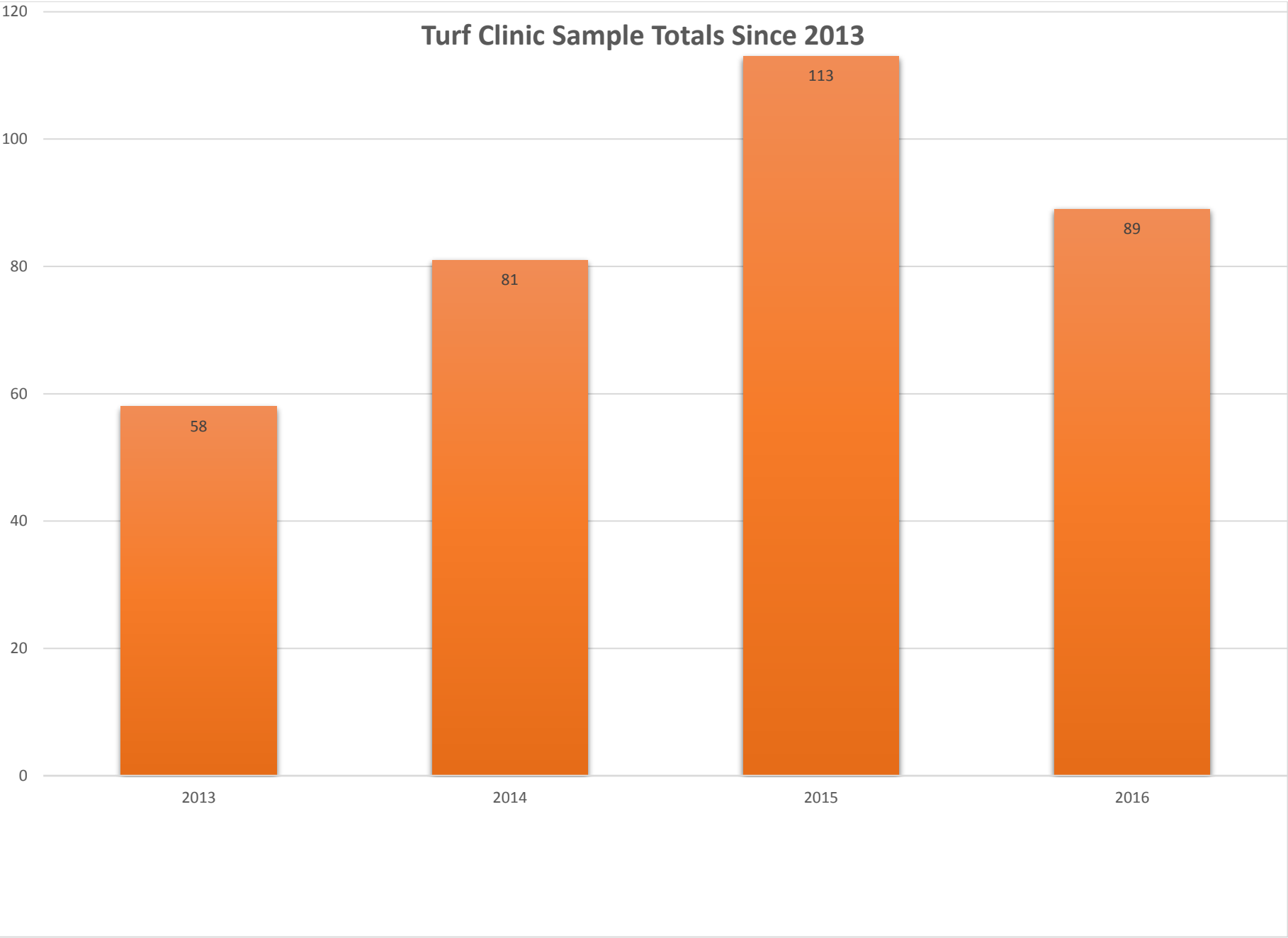
Bruce Martin, gave advice for 7 sample(s).

J.C. Chong, gave advice for 1 sample(s).

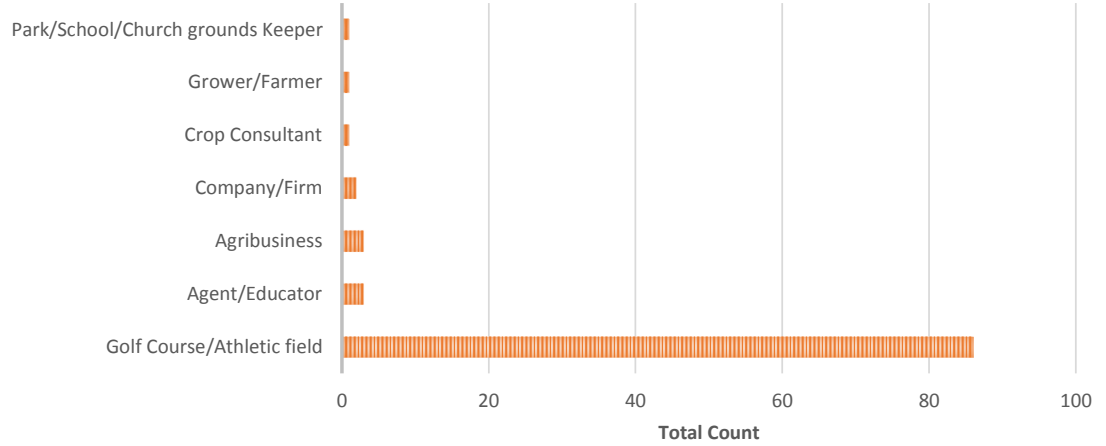
2016 Turf Clinic Sample Count By Month

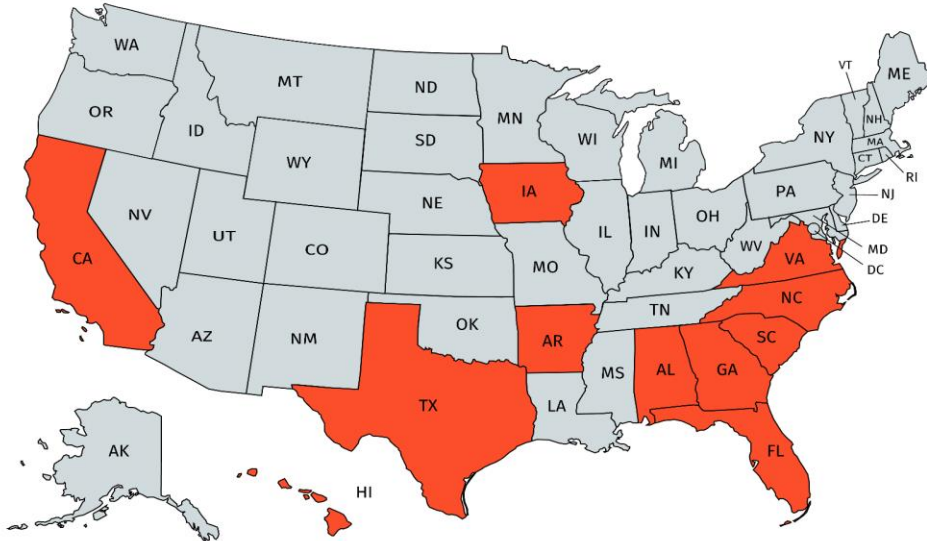


Turf Clinic Sample Totals Since 2013



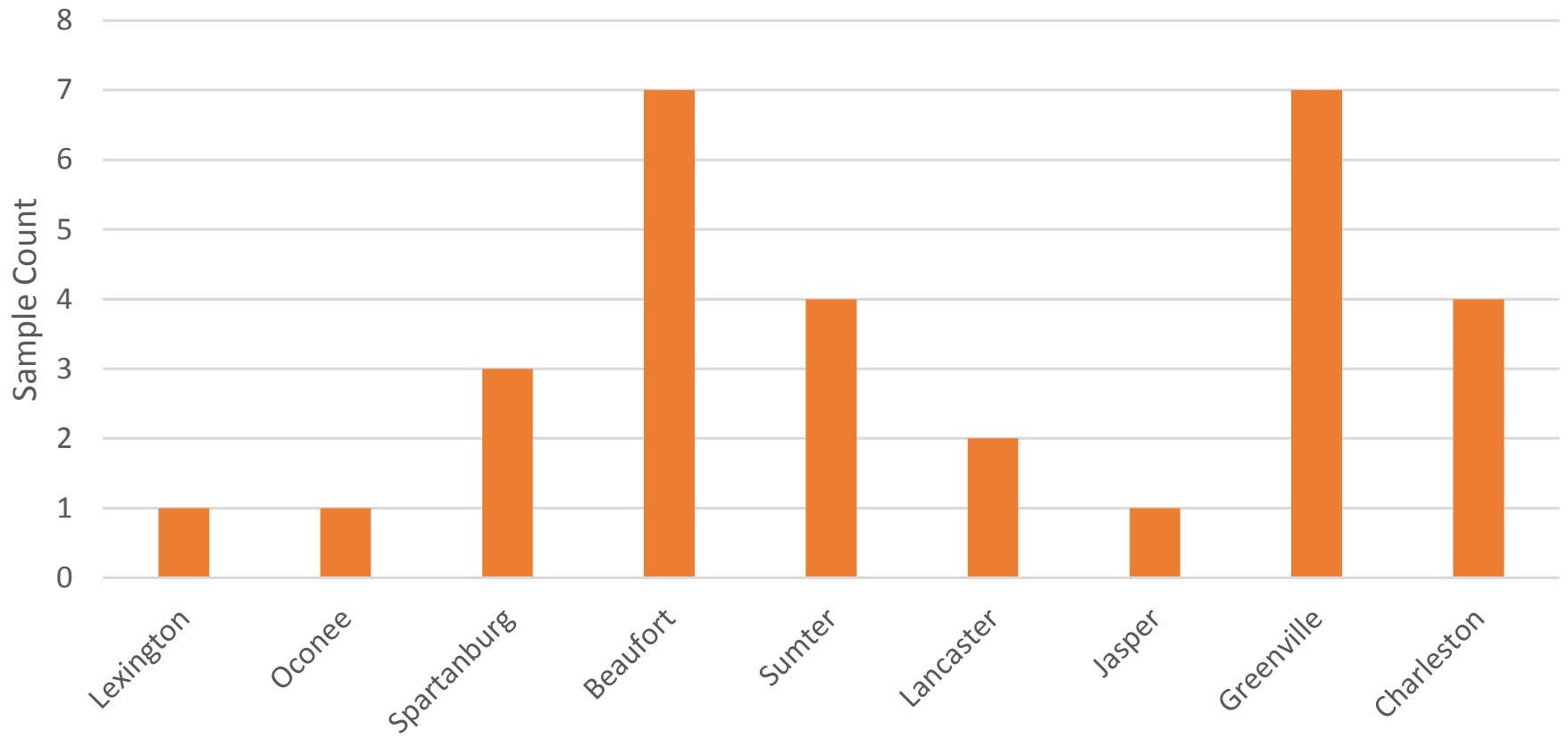
2016 TURF CLINIC SUBMITTER TYPES



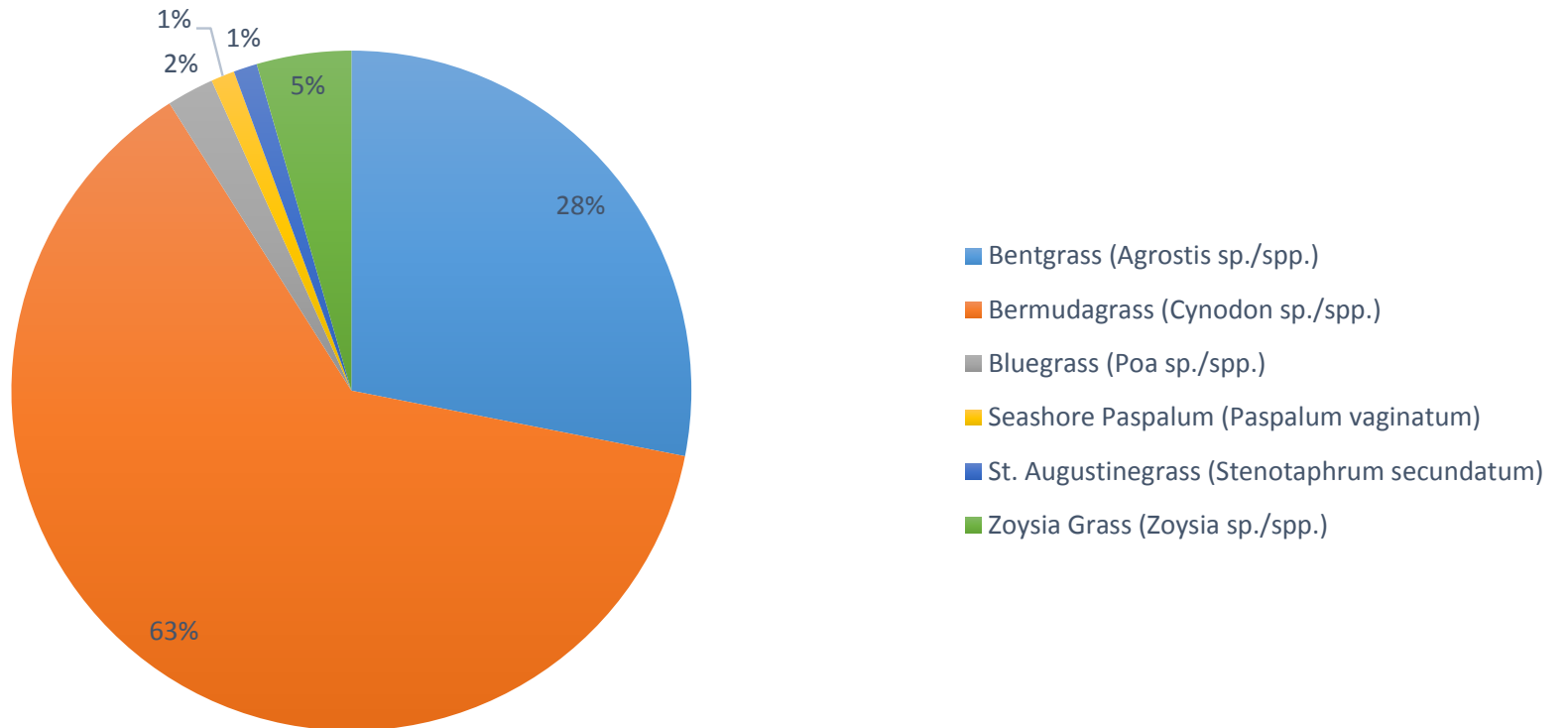


States that Submitted Samples in 2016

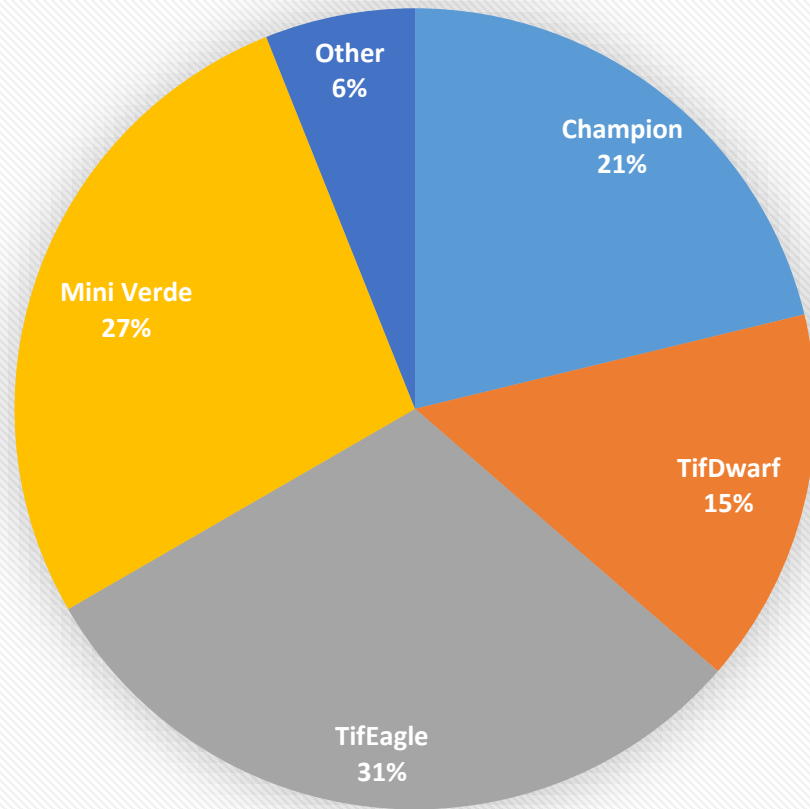
2016 Turf Clinic SC County Submissions



2016 Turf Clinic Species Distribution

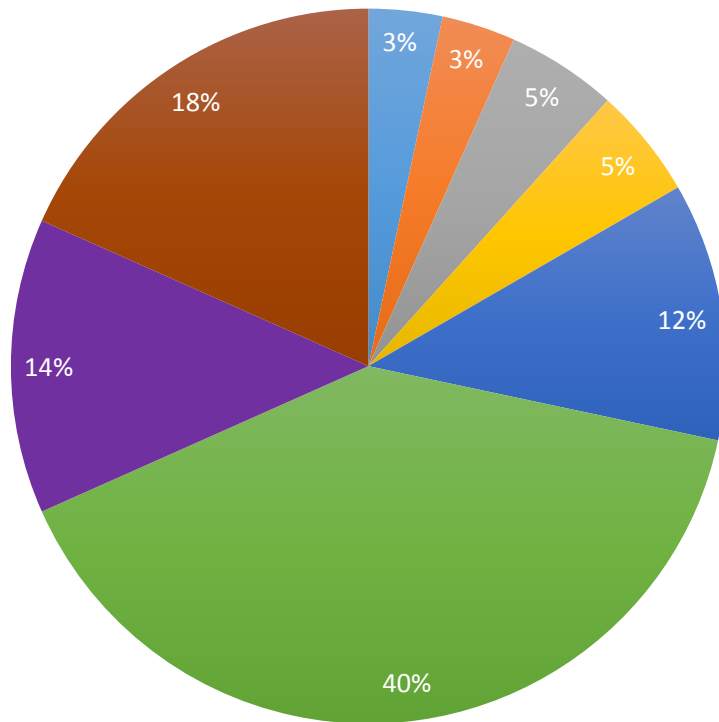


2016 Bermudagrass Cultivars Breakdown



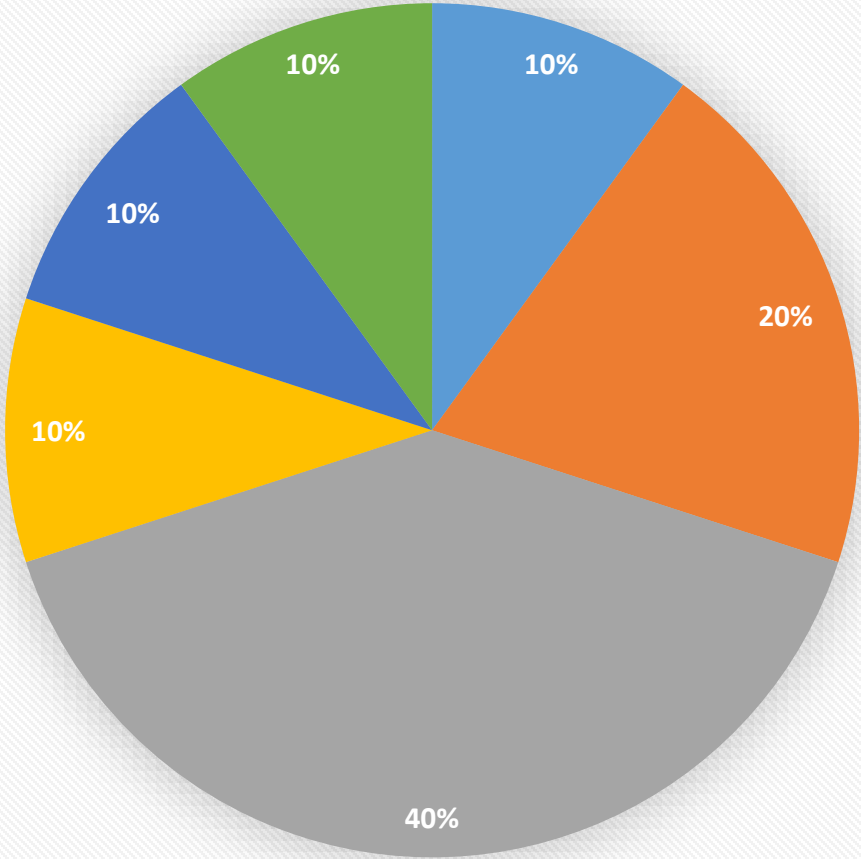
■ Champion ■ TifDwarf ■ TifEagle ■ Mini Verde ■ Other

2016 Turf Clinic Bermudagrass Diagnoses



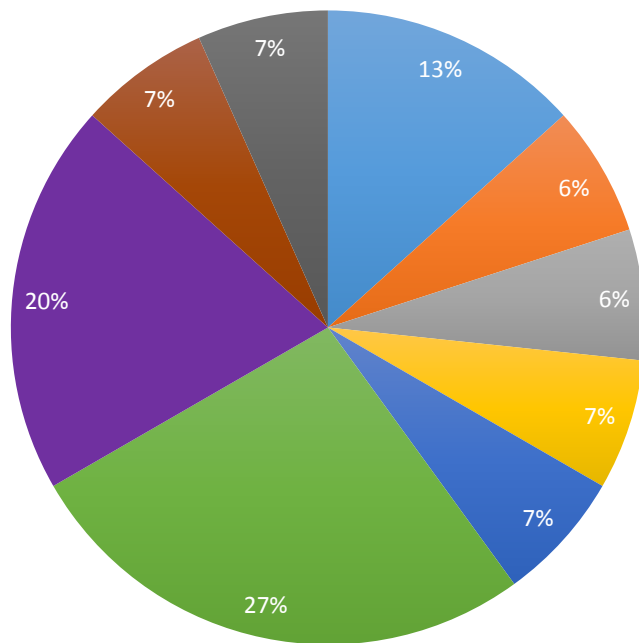
- Bermudagrass scale (*Odonaspis ruthae*)
- Cultural/environmental problem (Abiotic disorder)
- Lance Nematodes (*Hoplolaimus* sp./spp.)
- Leaf Spot (*Bipolaris* sp./spp.)
- Root Decline of Warm Season Grasses (*Gaeumannomyces graminis* var. *graminis*)
- Root-knot Nematodes (*Meloidogyne* sp./spp.)
- Sting Nematodes (*Belonolaimus* sp./spp.)
- Other

2016 Bentgrass Cultivars Breakdown



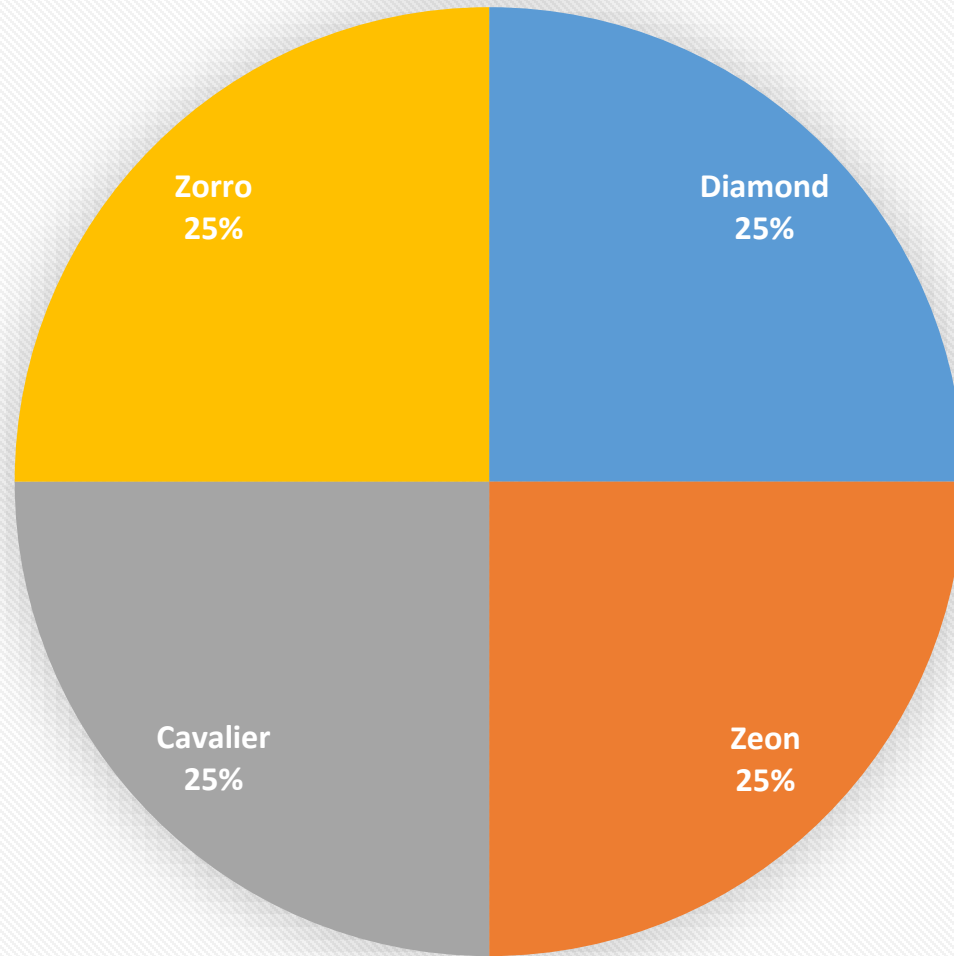
■ A-1 ■ Tye ■ A-4 ■ Pure Distinction ■ A1/A4 ■ Bent/Poa

2016 Turf Clinic Bentgrass Diagnoses



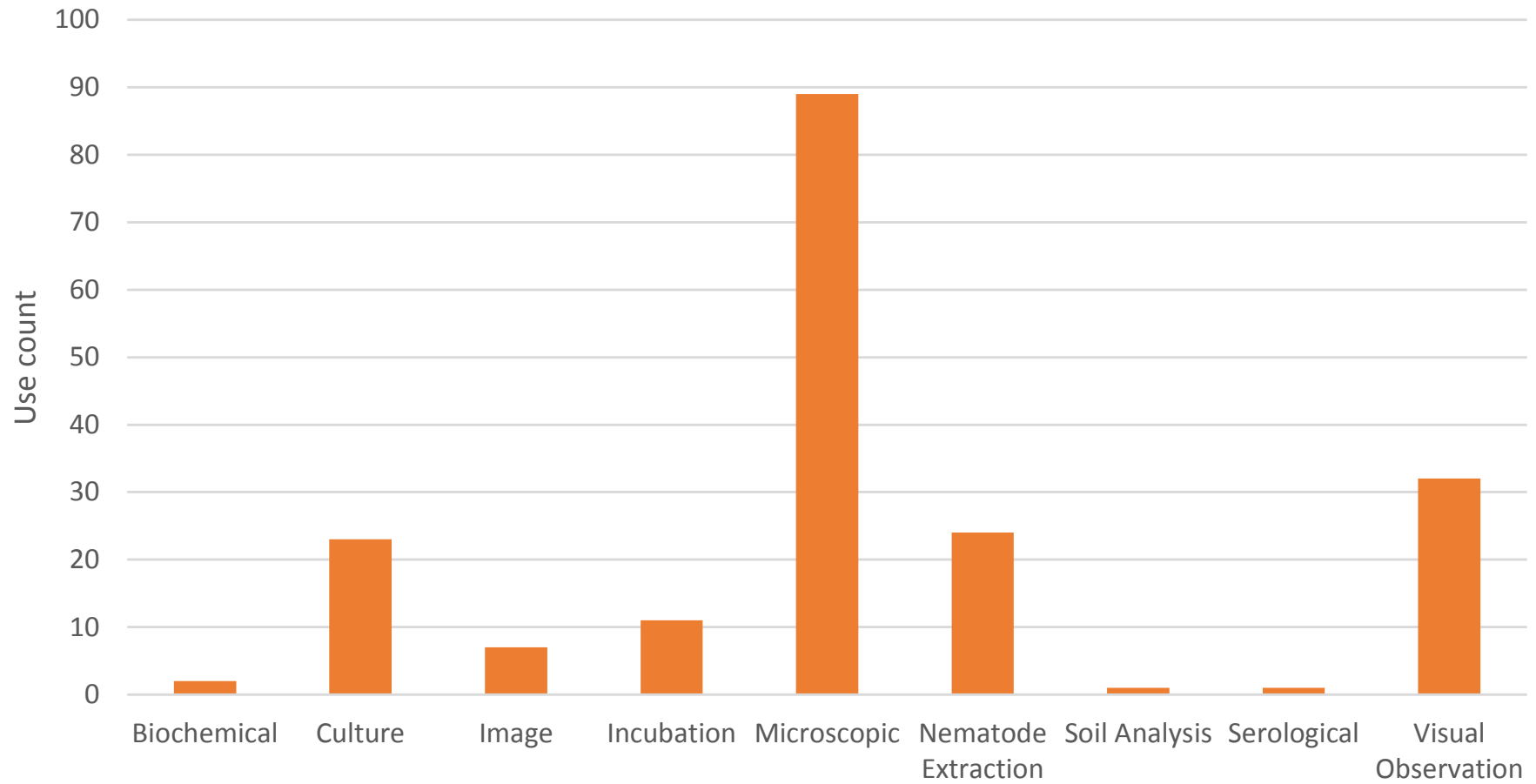
- Anthracnose (*Colletotrichum graminicola*)
- Bacterial Wilt (*Xanthomonas translucens* pv. *poae*)
- Gloeocercospora sorghi
- Leptosphaerulina Leaf Spot (*Leptosphaerulina* sp./spp.)
- Normal Plant Growth (Identification Analysis)
- Pythium Root Dysfunction (*Pythium volutum*)
- Ring Nematode (*Mesocriconema* sp./spp.)
- Stunt nematodes (*Tylenchorhynchus* sp./spp.)
- Waitea Patch; Brown Ring Patch (*Waitea* (syn. *Rhizoctonia*) *circinata* var. *circinata*)

2016 Zoysiagrass Cultivar Breakdown



■ Diamond ■ Zeon ■ Cavalier ■ Zorro

Methods Used in Turf Clinic 2016



Diagnoses and Identifications by Turfgrass Type

	Confirmed	Not Detected	Suspected	Inconclusive
Bentgrass (Agrostis sp./spp.)				
Anthracnose (Colletotrichum graminicola)	2	0	0	0
Chemical; Environmental injury (Abiotic disorder)	0	0	1	0
Cultural/Environmental Problem (Abiotic disorder)	0	0	2	0
ETRI Ectotrophic Root Infecting Fungi (Complex of Fungi)	0	0	0	1
Fairy ring (Various Fungi)	0	0	0	2
Gloeocercospora sorghi	1	0	0	0
Leptosphaerulina Leaf Spot (Leptosphaerulina sp./spp.)	1	0	0	0
Normal Plant Growth (Identification Analysis)	1	0	0	0
Pythium Root Dysfunction (Pythium sp./spp.)	0	0	0	0
Pythium Root Dysfunction (Pythium volutum)	1	0	0	0
Ring Nematode (Mesocriconema sp./spp.)	4	0	0	0
Root problem (Unknown Cause)	0	0	0	0
Stunt nematodes (Tylenchorhynchus sp./spp.)	3	0	0	0
Take All (Gaeumannomyces graminis var. avenae)	0	0	1	0
Take-all (Gaeumannomyces sp./spp.)	0	1	0	0
Waitea Patch; Brown Ring Patch (Waitea (syn. Rhizoctonia) circinata var. circinata)	1	0	0	0
Creeping Bentgrass (Agrostis palustris)				
Bacterial Wilt (Xanthomonas translucens pv. poae)	1	0	1	0
Bermudagrass (Cynodon sp./spp.)	1	0	0	0
Algae (General)	2	0	0	0
Bermudagrass Mite (Eriophyes cynodoniensis)	1	0	0	0
Bermudagrass scale (Odonaspis ruthae)	0	0	2	0
Brown Patch (Rhizoctonia sp./spp.)	2	0	8	0
Cream leaf blight (Limonomyces roseipellis)	1	0	0	0
Cultural/environmental problem (Abiotic disorder)	0	0	0	7
Dense Thatch Layer (Abiotic disorder)	1	0	0	0
ETRI Ectotrophic Root Infecting Fungi (Complex of Fungi)	3	0	0	0
Fairy ring (Various Fungi)	0	0	1	0
Lance Nematodes (Hoplolaimus sp./spp.)	3	0	0	0
Leaf and sheath spot (Rhizoctonia oryzae)	1	0	0	0
Leaf Spot (Bipolaris sp./spp.)	1	0	0	0
Leaf Spot; Leaf Blight (Exserohilum rostratum)	1	0	0	0
Leptosphaerulina Leaf Blight (Leptosphaerulina australis)	0	0	0	0
Microdochium Patch (Microdochium nivale)	1	0	0	0
No pathogen found (Identification Analysis)	0	0	2	0
Nutritional Deficiency (Abiotic disorder)	1	0	0	0
Phosphorus deficiency (Abiotic disorder)	0	0	0	0
Pythium Blight; Cottony Blight (Pythium sp./spp.)	0	0	0	0
Pythium root dysfunction (Pythium sp./spp.)	7	0	3	0
Ring Nematode (Mesocriconema sp./spp.)	0	0	0	0
Root Decline of Warm Season Grasses (Gaeumannomyces graminis var. graminis)	24	0	1	0
Root problem (Unknown Cause)	1	0	0	0
Root-knot Nematodes (Meloidogyne sp./spp.)	0	0	3	0
Soil Compaction (Abiotic disorder)	8	0	0	0
Spring Dead Spot (Ophiosphaerella sp./spp.)	1	0	0	0
Sting Nematodes (Belonolaimus sp./spp.)				
Unspecified pathology (Pythium sp./spp.)	0	0	2	0
Bluegrass (Poa sp./spp.)	1	0	0	0
Poa Annua Decline (Environmental Stresses)	1	0	0	0
Pythium Root Dysfunction (Pythium sp./spp.)				
Ring Nematode (Mesocriconema sp./spp.)	1	0	0	0
Seashore Paspalum (Paspalum vaginatum)	0	0	1	0
Algae (General)	0	0	0	1
Cultural/environmental problem (Abiotic disorder)				
ETRI ectotrophic root infecting fungi (Complex of Fungi)	0	0	1	0
St. Augustinegrass (Stenotaphrum secundatum)				
Sugarcane mosaic (SCMV) (Potyvirus Sugarcane Mosaic Virus)	1	0	0	0
Zoysia Grass (Zoysia sp./spp.)	1	0	0	0
Cultural/environmental problem (Abiotic disorder)	2	0	0	0
Curvularia Blight; Leaf Spot (Curvularia sp./spp.)	0	0	1	0
Dense Thatch Layer (Abiotic disorder)	0	0	1	0
Low soil moisture (Abiotic disorder)	1	0	0	0
Root problems (Abiotic disorder)				
Rust; Leaf Rust (Puccinia zoysiae)				