

Strategies to minimize disease with reduced fungicide use

Micah Woods, Ph.D.

March 4, 2024

Asian Turfgrass Center
www.asianturfgrass.com

PACE Turf
www.paceturf.org





Spray properly



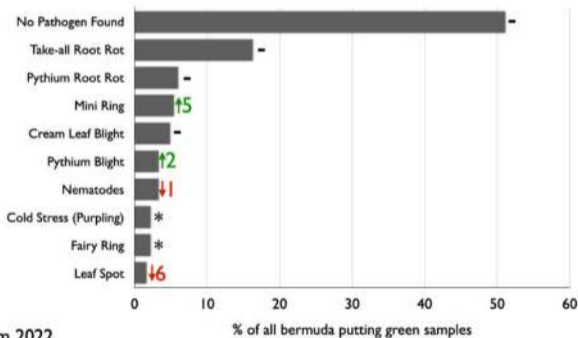
Effective spraying

- Understand the pathogen
- Calibrated sprayer & appropriate nozzles
- Correct spray volume
- Application rate & intervals
- of the correct product

Commonly diagnosed diseases

NC STATE
UNIVERSITY

Top 10 2023 Bermuda Putting Green Diagnoses



(-) no change from 2022

(↑/↓) place change from 2022

(*) not in top 10 in 2022



Fertilize sensibly



Normal nutrient content of bermudagrass leaves

element	25 th percentile	Median (%)	75 th percentile
N	3.4	3.7	4.6
P	0.34	0.39	0.47
K	1.1	1.3	1.7
Ca	0.28	0.34	0.38
Mg	0.15	0.18	0.19
S	0.35	0.39	0.45

Normal nutrient content of zoysiagrass leaves

element	25 th percentile	Median (%)	75 th percentile
N	2.0	2.2	2.5
P	0.18	0.25	0.33
K	0.83	1.0	1.2
Ca	0.18	0.21	0.27
Mg	0.08	0.10	0.13
S	0.27	0.29	0.32

Normal nutrient content of seashore paspalum leaves

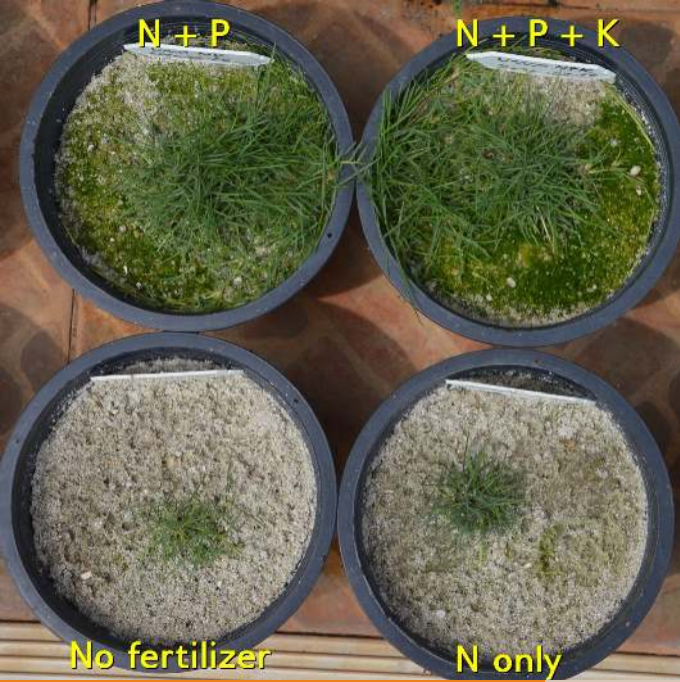
element	25 th percentile	Median (%)	75 th percentile
N	3.2	3.4	3.5
P	0.31	0.33	0.35
K	2.1	2.2	2.3
Ca	0.22	0.23	0.25
Mg	0.17	0.20	0.21
S	0.71	0.74	0.77

N + P

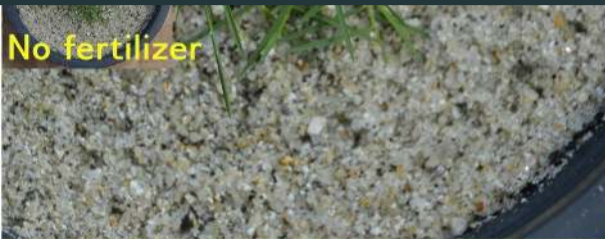
N + P + K

No fertilizer

N only



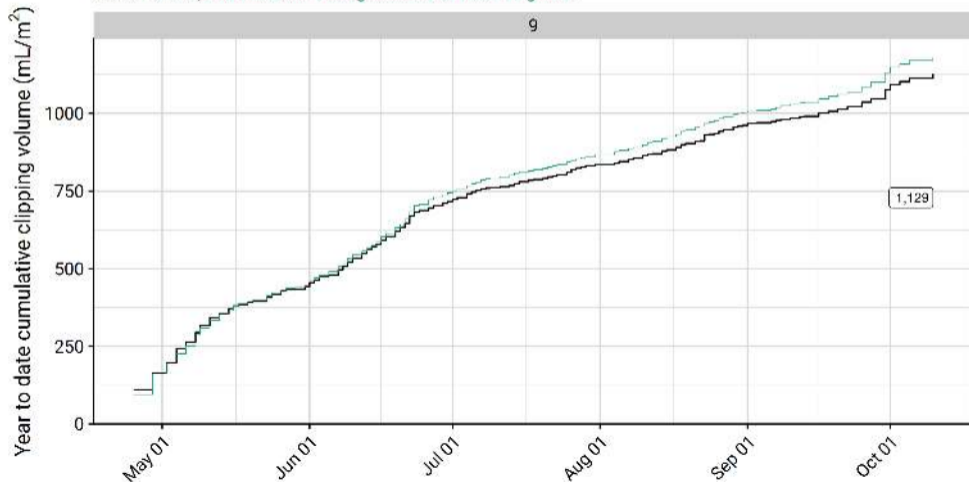
P & algae



Growth rate

Cumulative clipping volume

2023 in black, and the 2023 average across all holes in green.



Mowing quality and frequency



Soil organic material





Irrigation



Minimize leaf wetness



Grass species





1. Spray properly
2. Commonly diagnosed diseases
3. Fertilize sensibly
4. P & algae
5. Growth rate
6. Mowing quality and frequency
7. Soil organic material
8. Irrigation
9. Minimize leaf wetness
10. Grass species

Online handout with slides & more info



www.asianturfgrass.com

www.paceturf.org