TifTuf Bermuda (DT-1)
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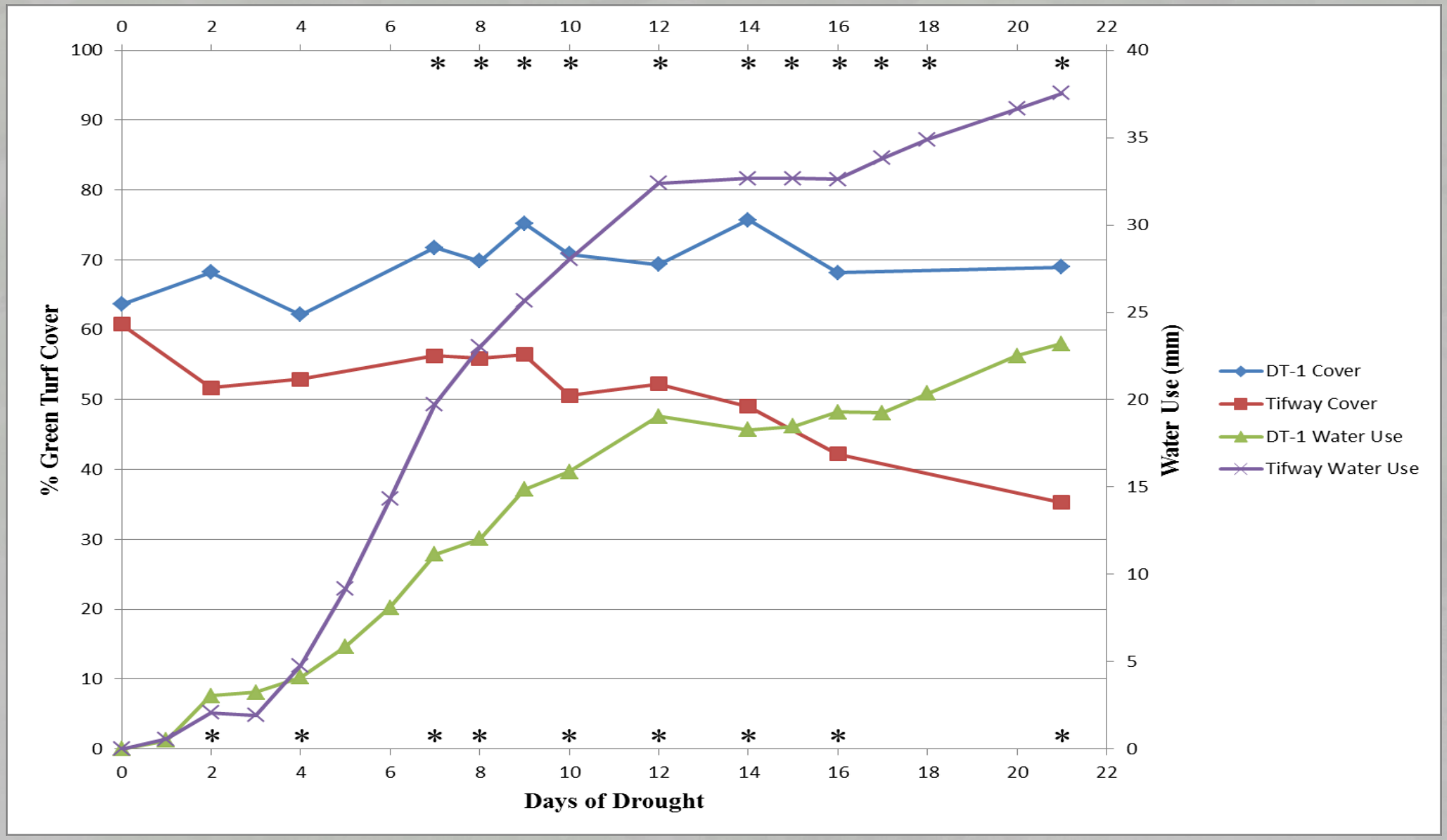
Plant Responses to Drought

- **Avoidance**
  - Deeper root extension
- **Escape**
  - Drought dormancy
- **Tolerance**
  - Osmatic adjustment, membrane stability, etc.
  - Aka: <u>USING LESS WATER</u>

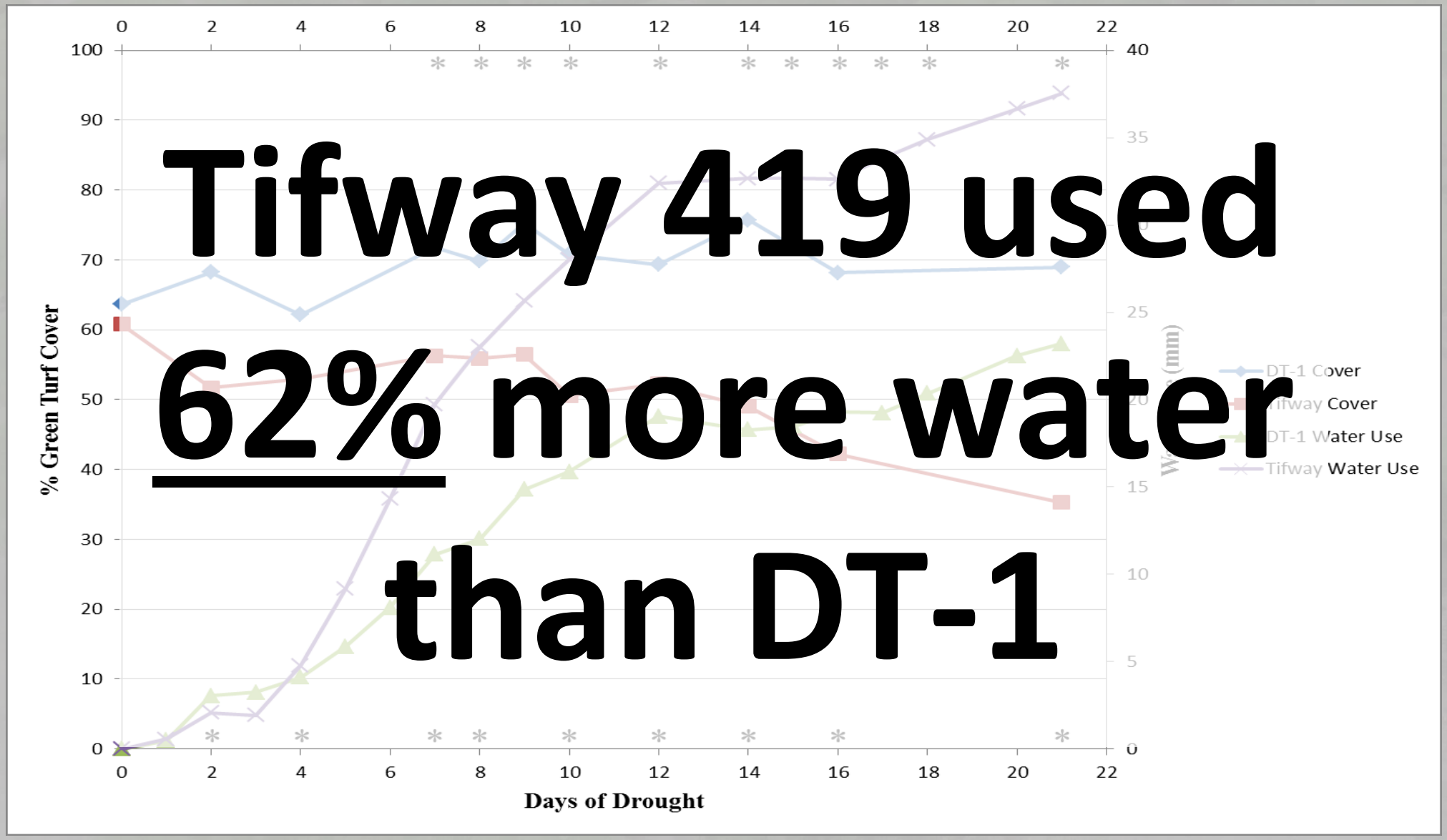
DT-1 “Selected” in 2001


Tifway
DT-1

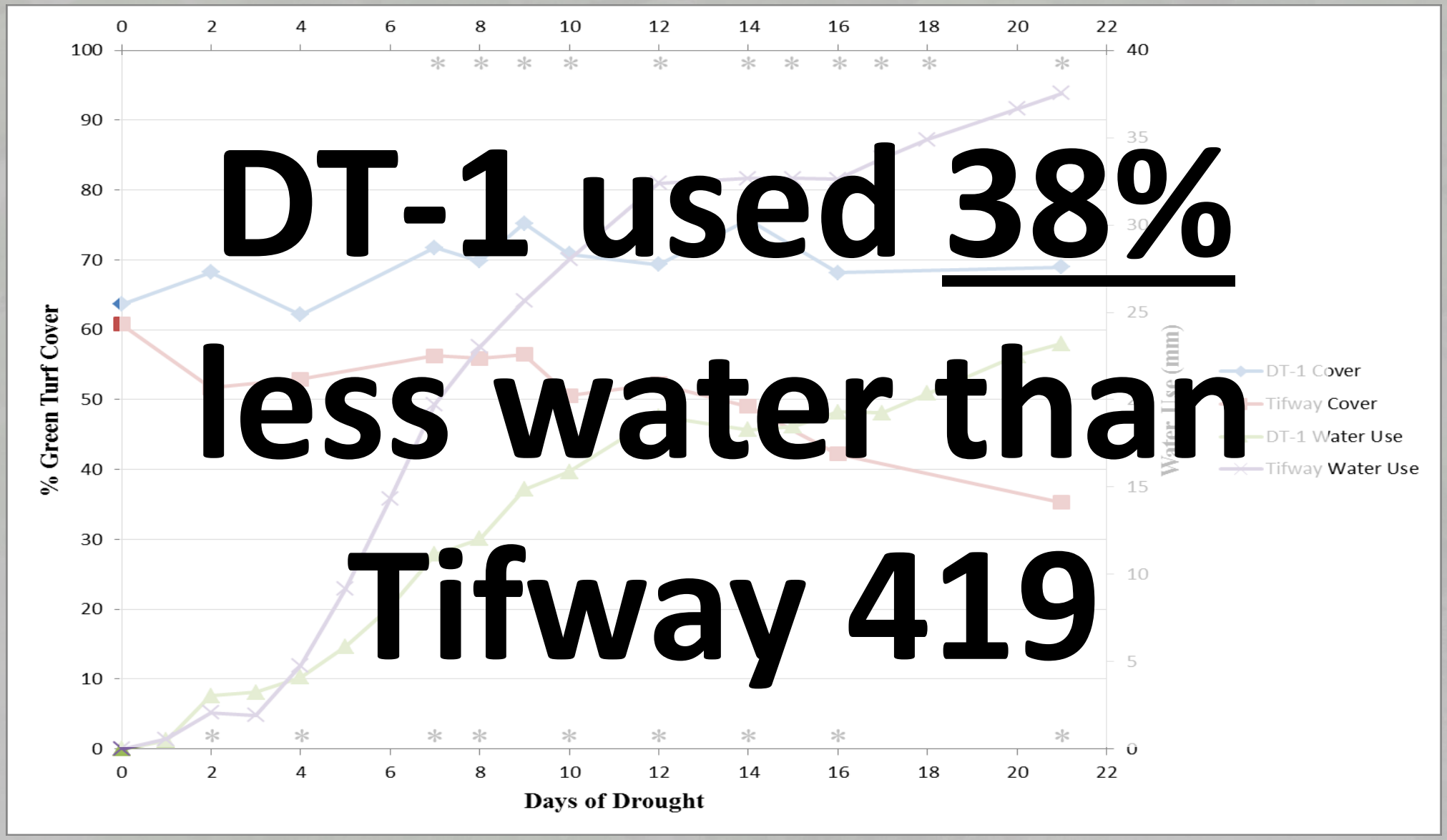
Short-Term Drought (Atlanta)



Short-Term Drought (Atlanta)

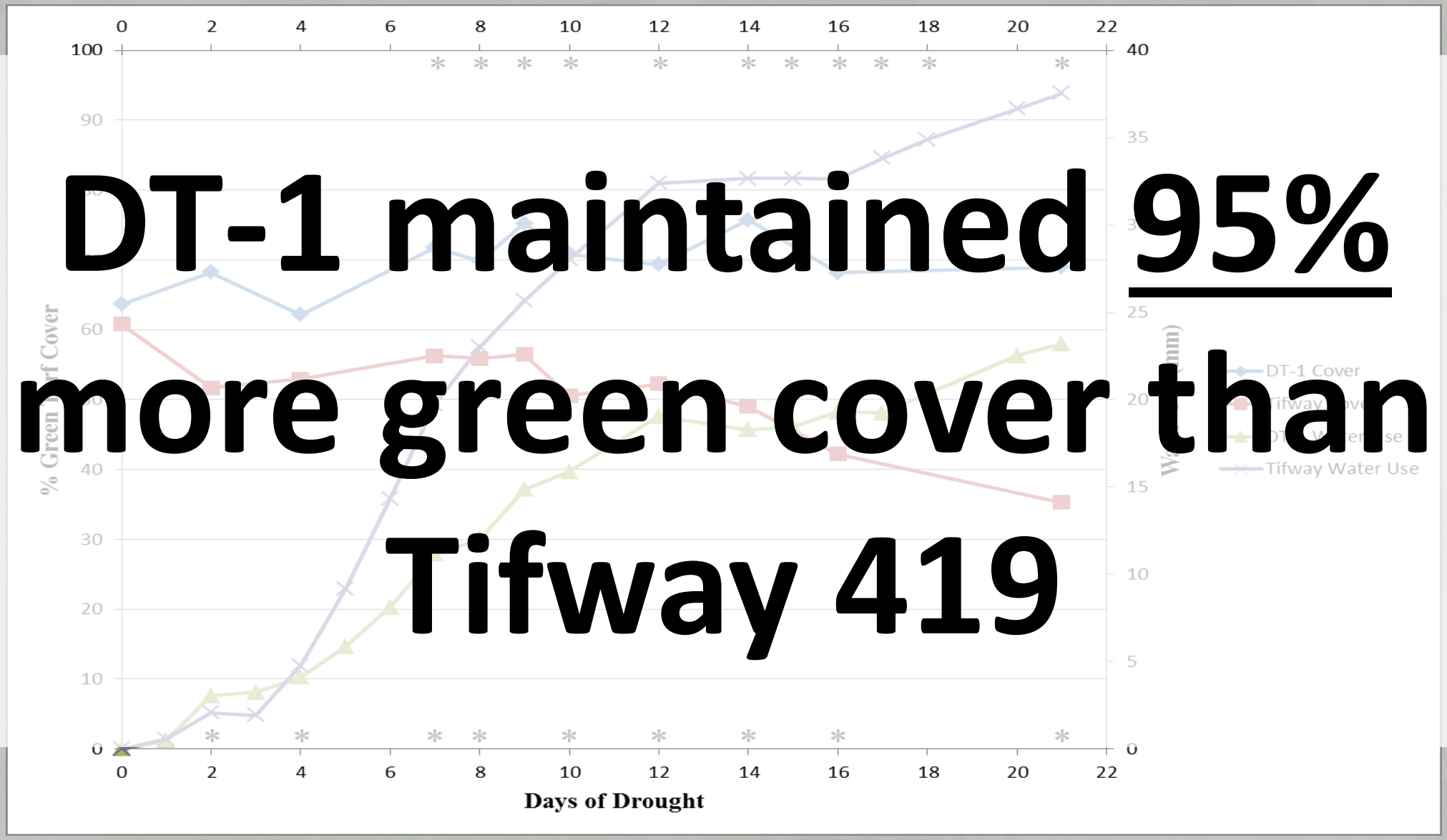


Short-Term Drought (Atlanta)



DT-1 used 38% less water than Tifway 419

Short-Term Drought (Atlanta)



DT-1 maintained 95% more green cover than Tifway 419

Short & Long-Term Drought (USA)

Table 1. Mean non-stressed and stressed turfgrass quality of three bermudagrasses mowed at 2.0” in field trials[1] at seven locations across the United States during 2011, 2012, and 2013.

	Turf quality[2]			Stress turf quality[3]		
Genotype	South[4]	North[5]	All	South	North	All
	Visual rating			Visual rating		
DT-1	**7.3 a**[6]	7.3 a	**7.3 a**	**5.9 a**	**6.0 a**	**5.9 a**
Tifway	6.2 b	7.1 a	6.7 b	4.2 b	4.3 b	4.2 b
Celebration	5.8 b	6.1 b	5.9 c	3.4 b	4.2 b	3.9 b

Short & Long-Term Drought (USA)

Under drought stress, Tifway 419 and Celebration went dormant, while DT-1 remained <u>ACCEPTABLE</u>

2010 USDA Trials

Long-Term Drought (Florida)

Table 2. Mean turfgrass quality of three bermudagrasses mowed at 1.5" averaged over four dates in 2010, 2011, and 2012 after sustained droughty conditions in the Linear Gradient Irrigation System (LGIS) evaluation at the West Florida Research and Education Center (WFREC) in Jay, FL[1].

	Irrigation level (% ET_0)								
Genotype	120	105	80	54	37	25	13	3	Average
	Visual rating[2]								
DT-1	**6.8 a**[3]	**6.6 a**	**6.4 a**	**6.3 a**	**6.3 a**	**5.8 a**	**4.7 a**	**4.6 a**	5.9
Celebration	4.7 b	4.5 b	4.3 b	3.9 b	3.7 b	2.8 c	2.1 c	2.2 c	3.5
Princess-77	4.7 b	4.6 b	4.3 b	4.3 b	4.1 b	3.9 b	3.1 b	2.9 b	4.0

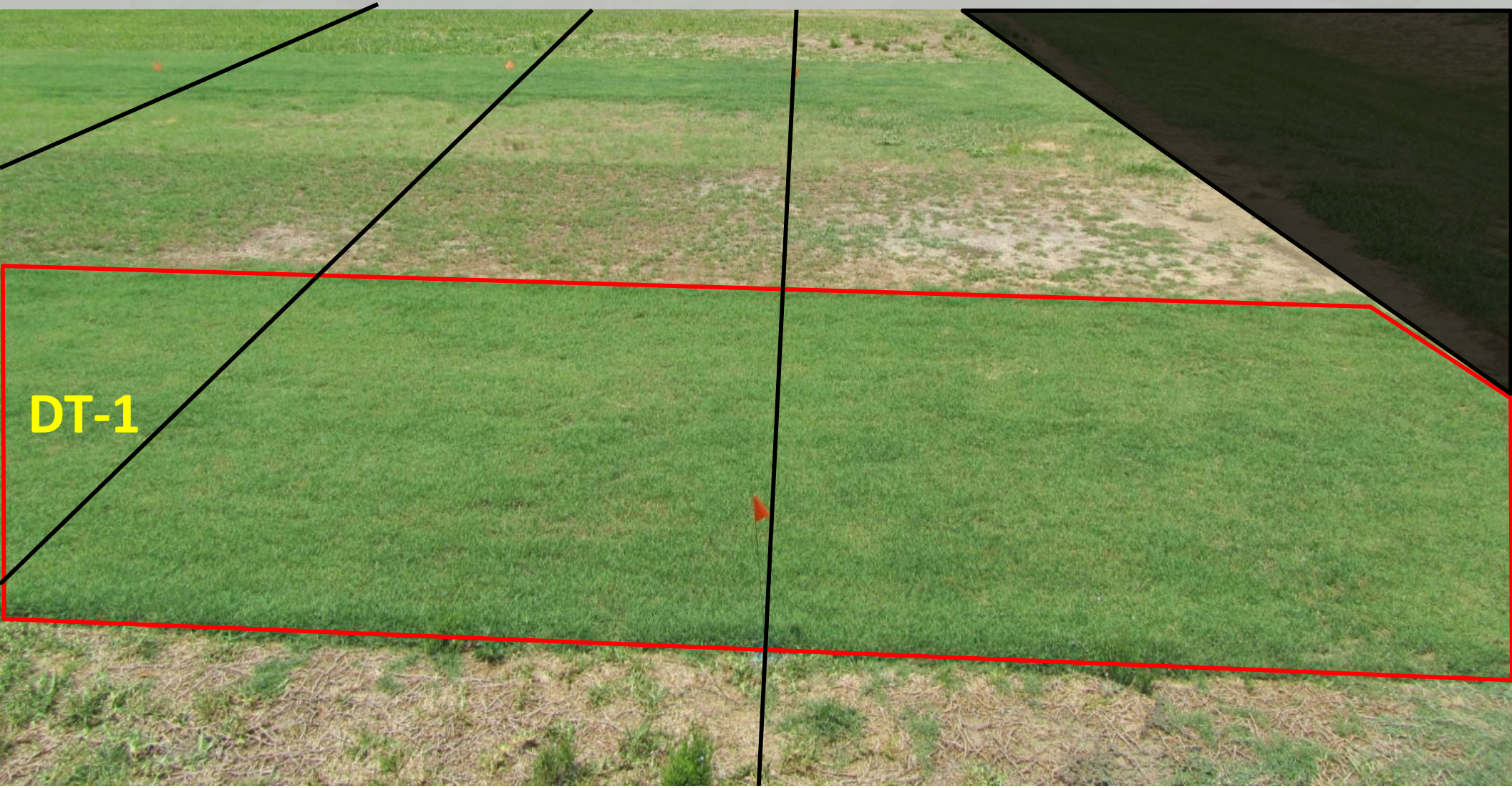
[1]Field trial planted during 2010.
[2]Turf quality was rated on a 1 to 9 scale with 1 = dead, 5 = acceptable, and 9 = excellent.
[3]Means within columns followed by the same letter are not significantly different according to Fisher's LSD ($P \leq 0.05$).

Long-Term Drought (Florida)

Under severe drought stress, Celebration and Princess-77 failed, while DT-1 remained ACCEPTABLE

Long-Term Drought (Florida)

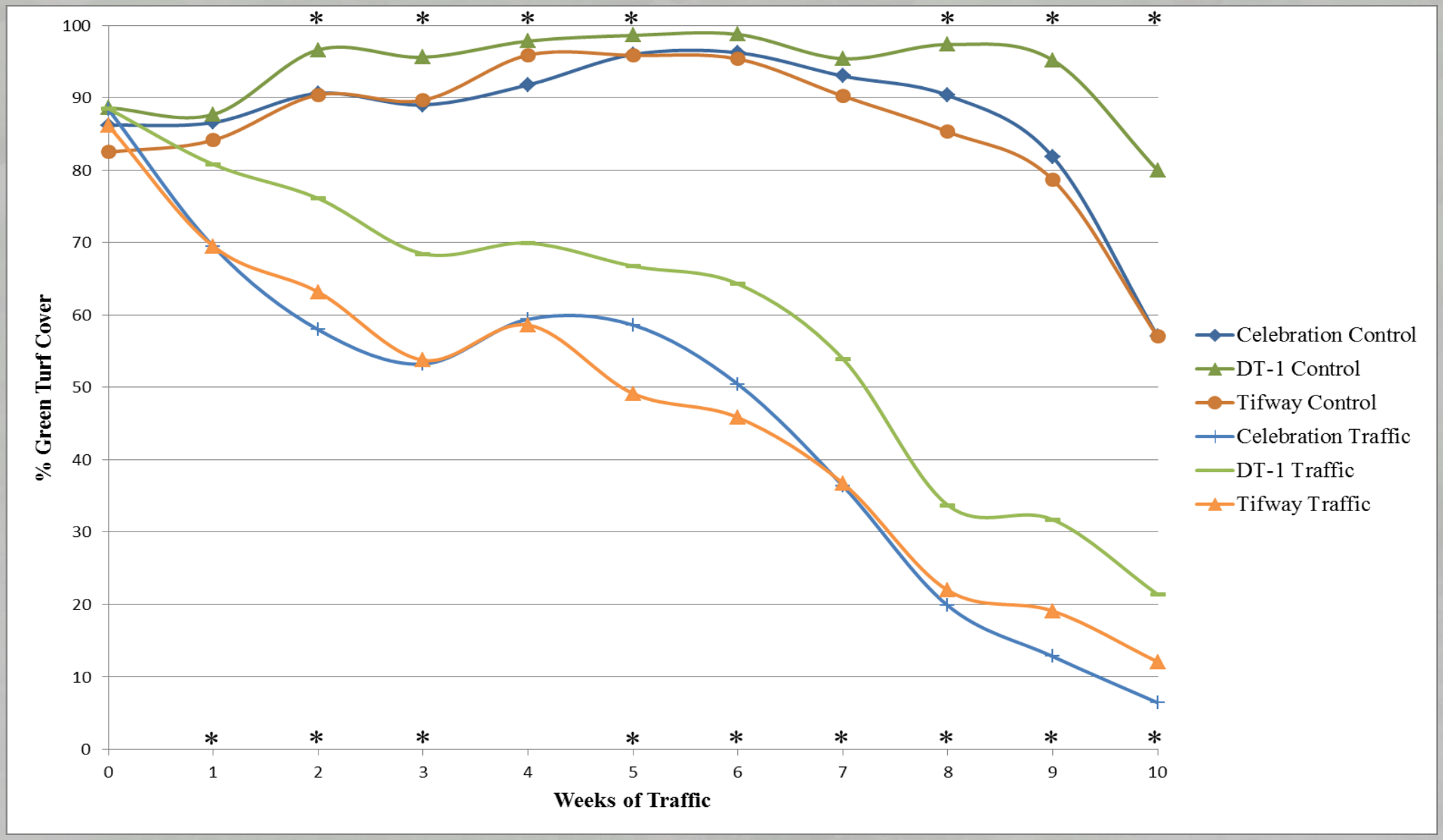
- University Drought Trial during 2011 in Florida



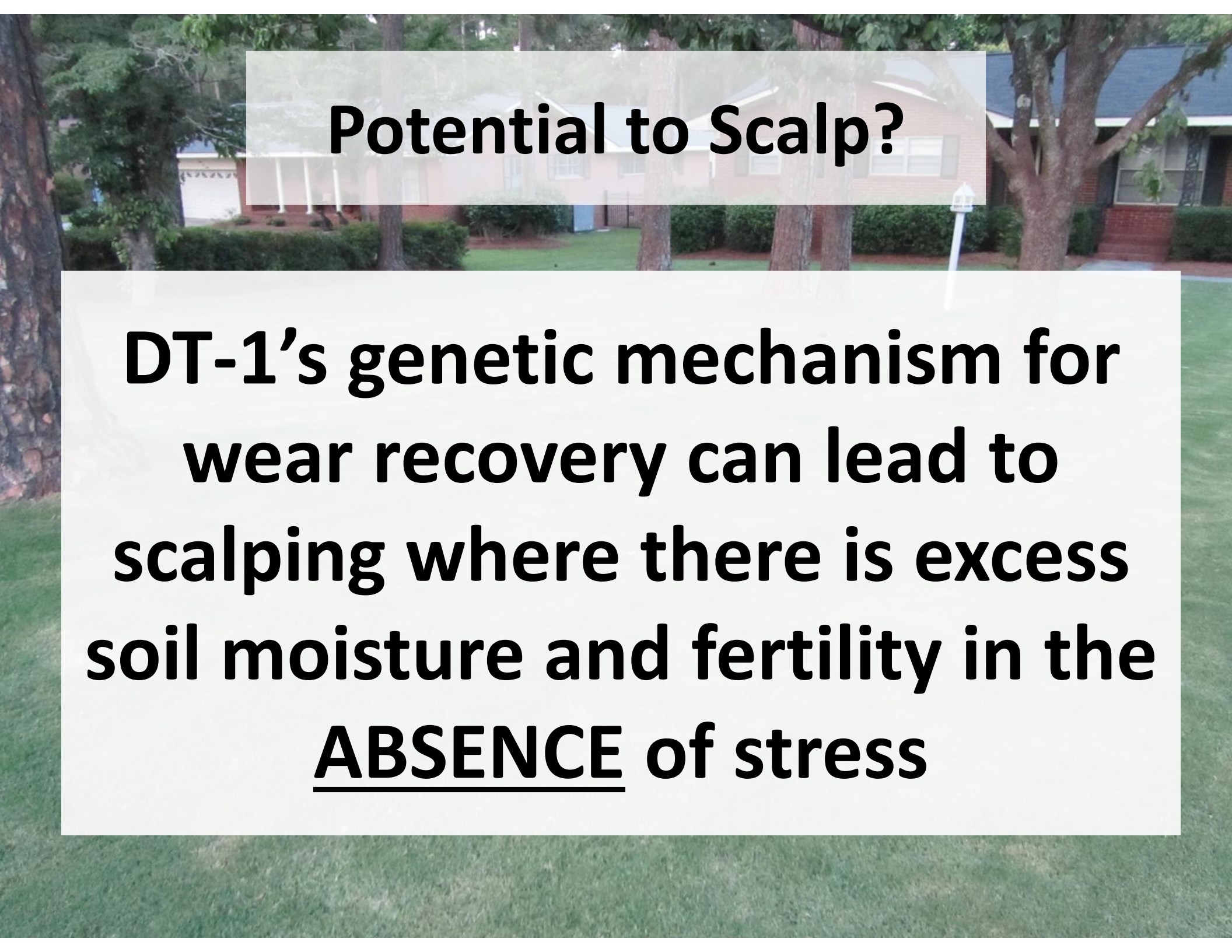
Long-Term Drought (Florida)

Wear Trials

Wear Trials


% Green Turf Cover
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
Weeks of Traffic
Celebration Control
DT-1 Control
Tifway Control
Celebration Traffic
DT-1 Traffic
Tifway Traffic


Potential to Scalp?



Potential to Scalp?

DT-1's genetic mechanism for wear recovery can lead to scalping where there is excess soil moisture and fertility in the <u>ABSENCE</u> of stress

Spring Green-Up

Table 5. Mean turfgrass cover and color of five bermudagrasses mowed at 1.5” in an irrigated, non-stressed field trial during 2012 and 2013 in Tifton, GA[1].

	Turf cover[2]			
Genotype	Estab.	Green-up	Summer	Dormancy
	% green cover			
DT-1	**44 b**[3]	**75 a**	91 a	**65 a**
Celebration	55 a	62 b	89 a	26 b

Fall Dormancy

Table 6. Mean turfgrass quality, cover, and color of two bermudagrasses mowed at 1.5" in an irrigated, non-stressed[1] field trial during 2010 and 2011 in Tifton, GA[2].

	Turf quality[3]			Turf cover[4]		
Genotype	April	June	Oct.[1]	April	June	Oct.
	Visual rating			% green cover		
DT-1	6.3 a[5]	7.5 a	**8.3 a**	89 a	85 a	**63 a**
Tifway	5.8 a	6.0 a	6.0 b	80 a	83 a	25 b

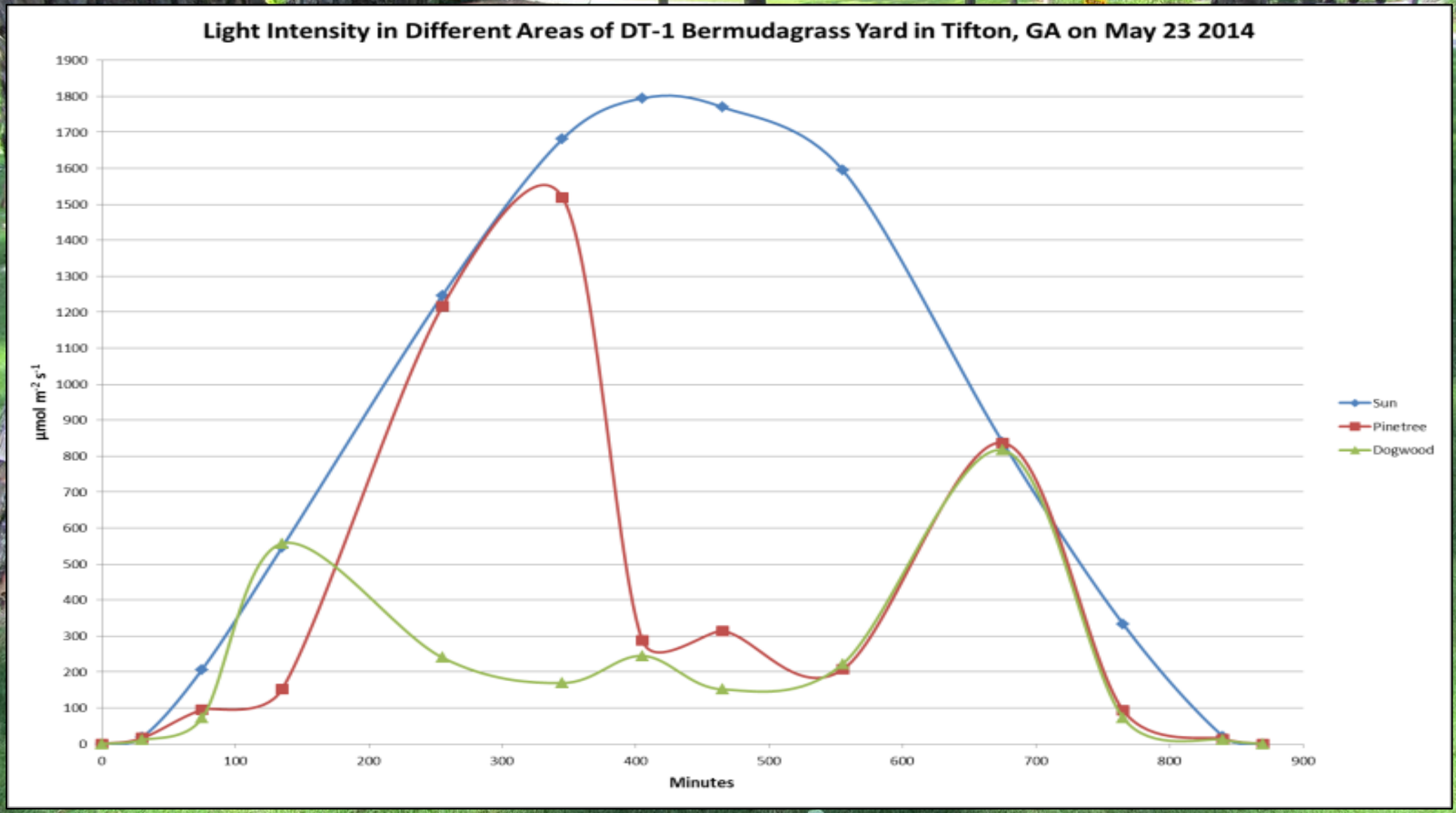
Shade “Trials”

- Home Lawn Trials during 2013 in Georgia

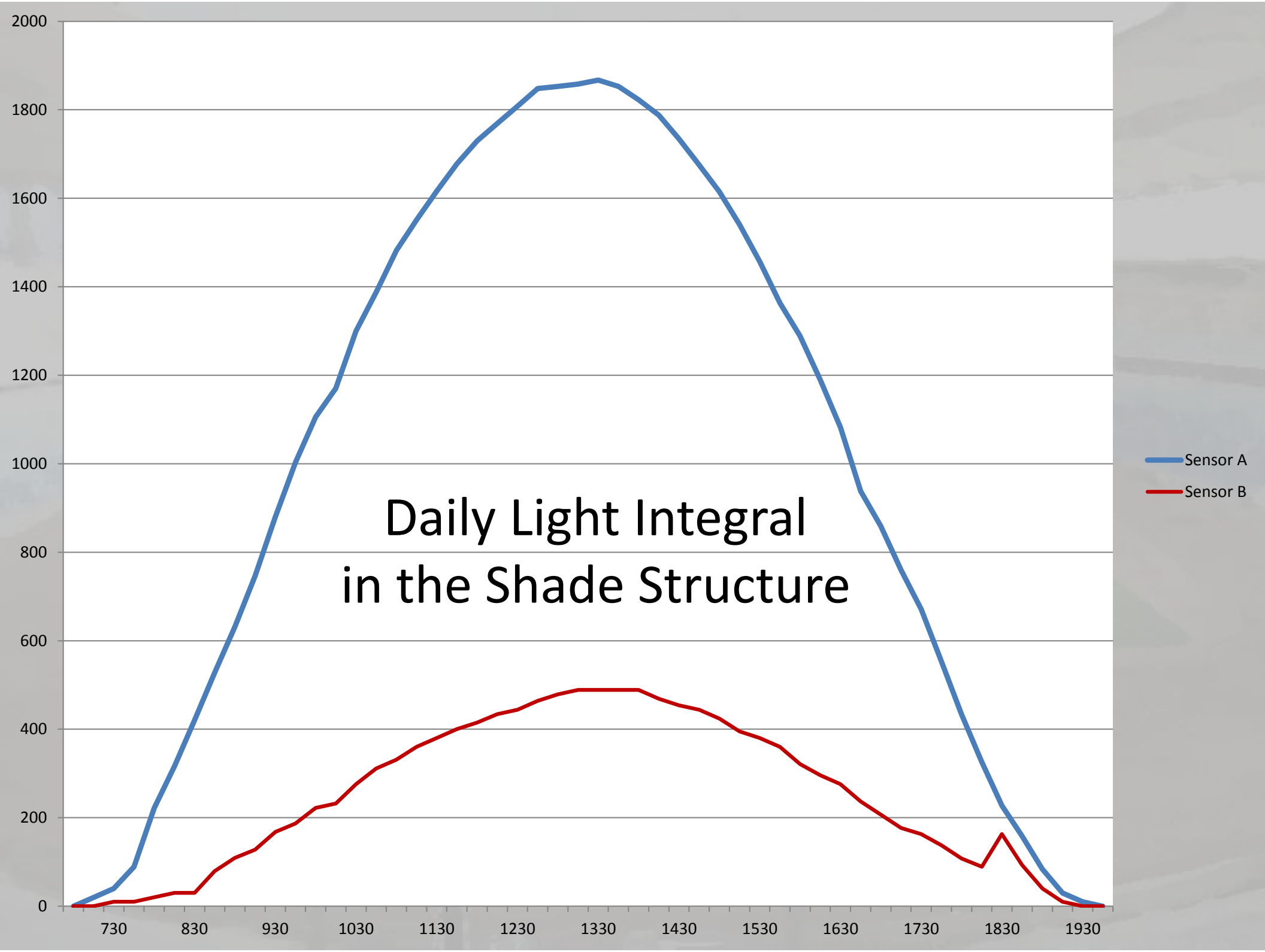
Shade “Trials”

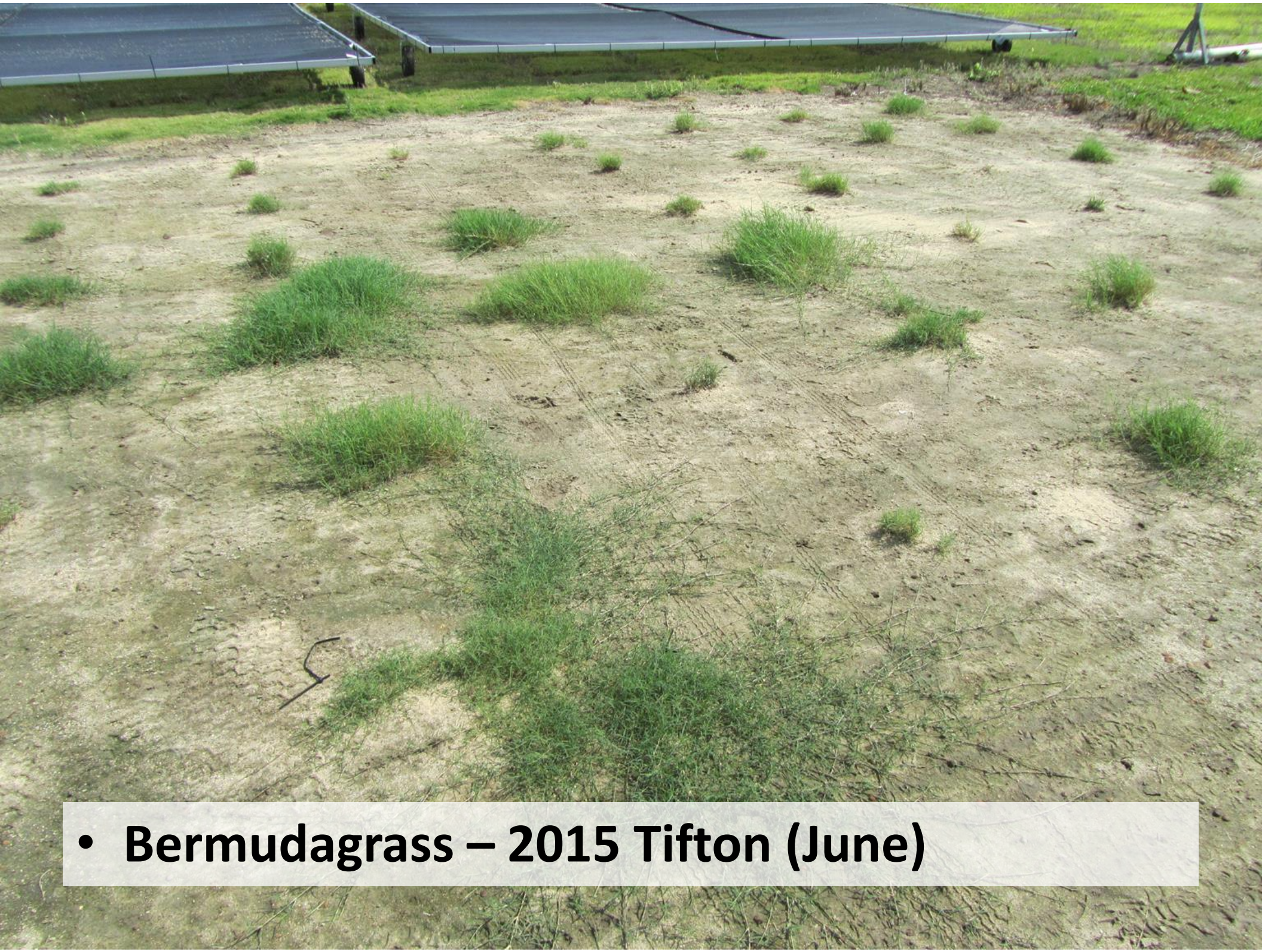
- Home Lawn Trials during 2014 in Georgia

Shade “Trials”



2014 USDA Shade Test

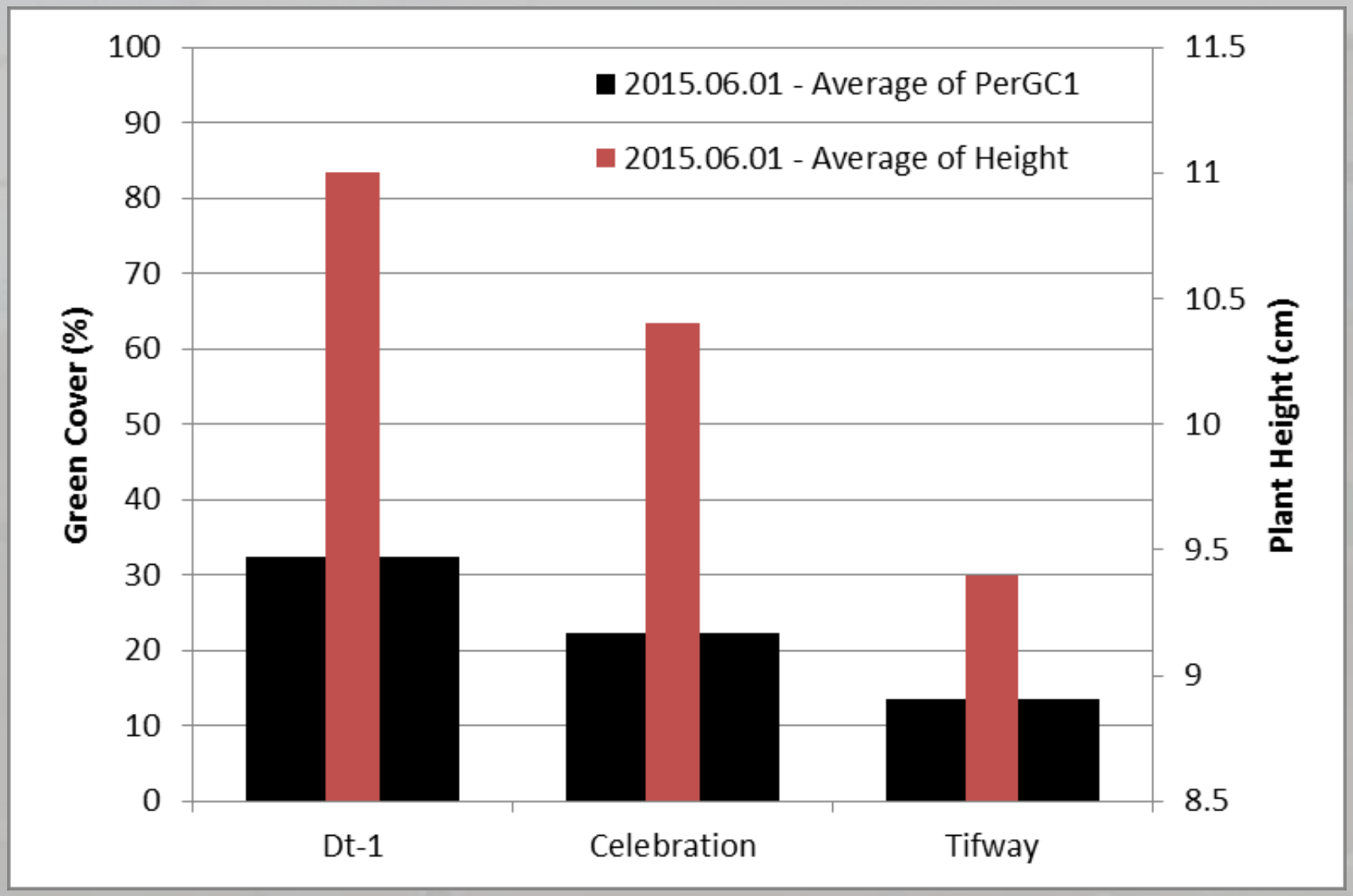

Daily Light Integral
in the Shade Structure
2000
1800
1600
1400
1200
1000
800
600
400
200
0
730
830
930
1030
1130
1230
1330
1430
1530
1630
1730
1830
1930
Sensor A
Sensor B



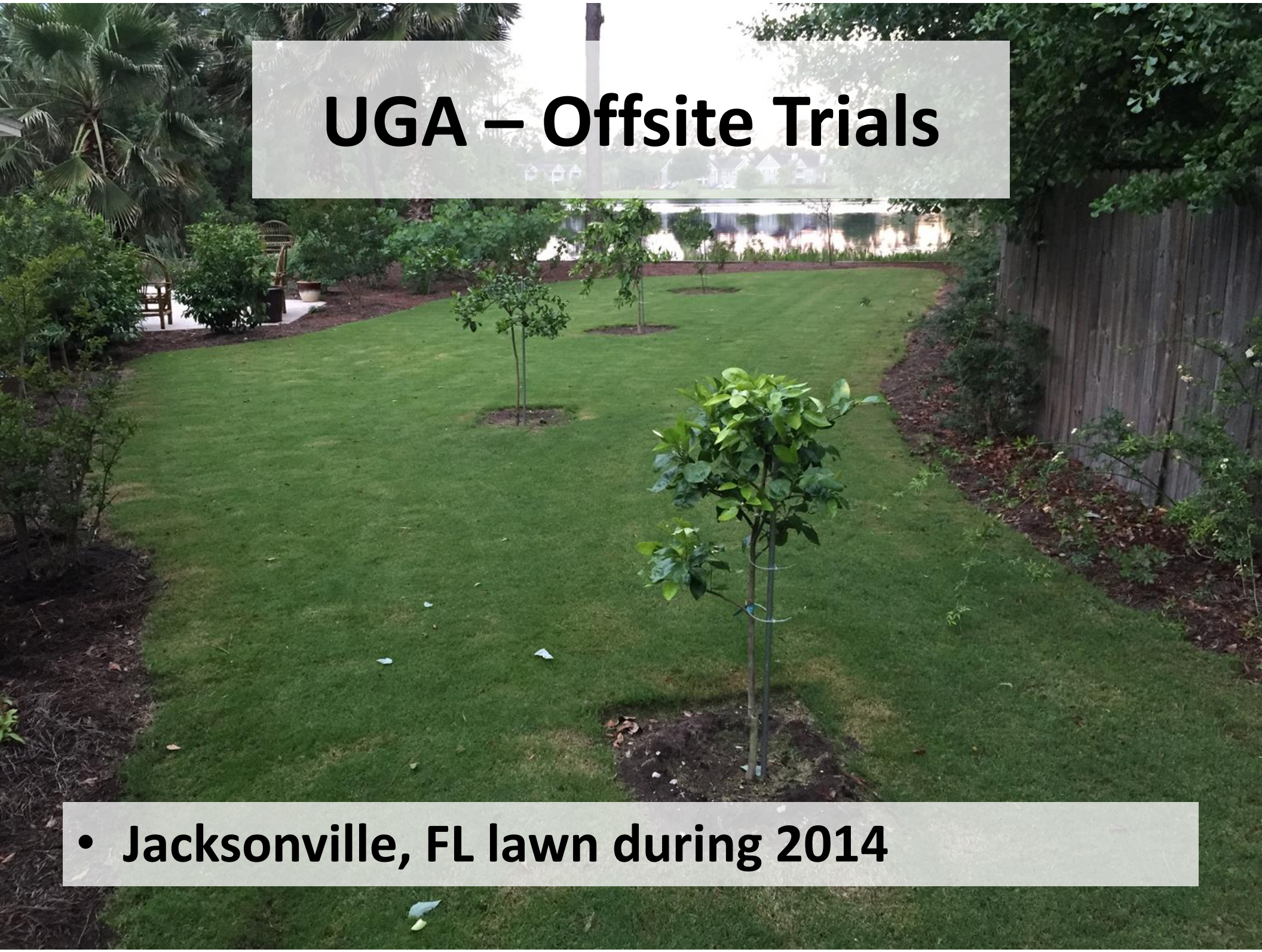
- **Bermudagrass – 2015 Tifton (June)**

Bermudagrass Shade Trial

2015 Tifton (June)



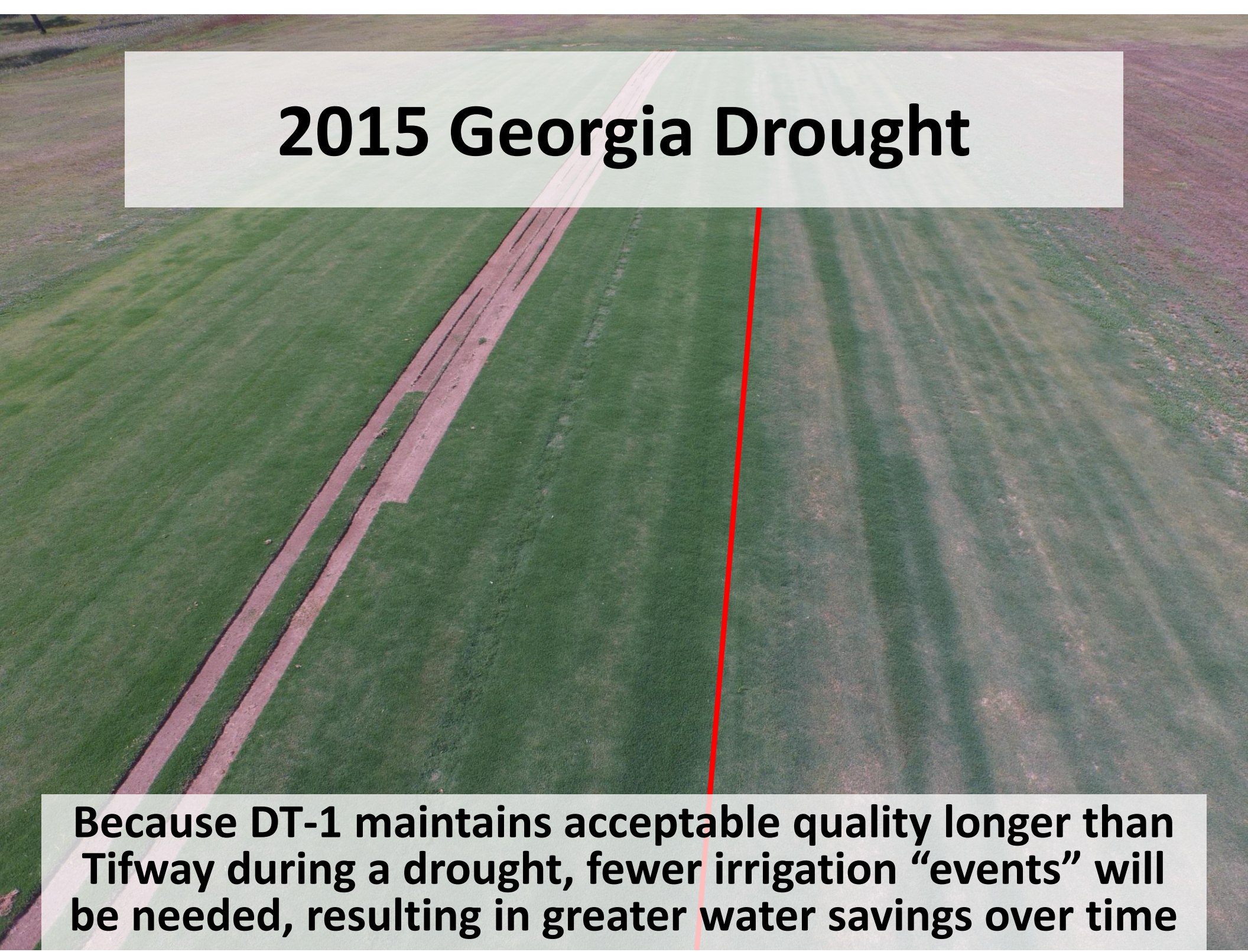
UGA – Offsite Trials



- Jacksonville, FL lawn during 2014

UGA – Offsite Trials

- Austin, TX lawn during 2015



2015 Georgia Drought

Because DT-1 maintains acceptable quality longer than Tifway during a drought, fewer irrigation “events” will be needed, resulting in greater water savings over time

TifTuf Bermuda (DT-1)

- Superior hybrid cross from (4x) by (2x) parents which has been tested for over 22 years
- More **drought tolerant** than Tifway, Celebration, TifGrand, and Latitude 36
- Better establishment and cover than Tifway
- Superior traffic tolerance than Tifway or Celebration
- Higher sod strength than Tifway in the Spring and Fall
- Faster Spring green-up than Tifway and Celebration
- Greater color retention than Tifway and Celebration during the onset of fall/winter dormancy