

## **NATIONAL TURFGRASS EVALUATION PROGRAM**

The National Turfgrass Evaluation Program (NTEP) is designed to develop and coordinate uniform evaluation trials of turfgrass varieties and promising selections in the United States and Canada. Test results can be used by national companies and plant breeders to determine the broad picture of the adaptation of a cultivar. Results can also be used to determine if a cultivar is well adapted to a local area or level of turf maintenance.

Briefly, the NTEP is a self-supporting, non-profit program, sponsored by the Beltsville Agricultural Research Center and the National Turfgrass Federation, Inc. Program policy is made by a policy committee consisting of one member from each of the four (4) Regional Turfgrass Research Committees in the United States, one member from the Lawn Seed Division of the American Seed Trade Association, one member from the United States Golf Association (USGA) Green Section, one member from the Golf Course Superintendents Assoc. of America (GCSAA), one member for the Turfgrass Producers International (TPI), one member from the Turfgrass Breeders Association and an executive director. The program does not make variety recommendations. However, the data from tests can be used by extension specialists and others for making recommendations.

The policy committee is responsible for determining program policy including, (1) requirements for submission of entries, (2) scheduling tests, (3) evaluation methods, (4) selecting standard or control test entries, (5) setting entry fees, (6) coordinating tests in their respective regions, (7) establishing guidelines for publication and data distribution and (8) scheduling committee meetings.

Executive Director - Kevin N. Morris, National Turfgrass Evaluation Program, Inc.

### **CURRENT POLICY COMMITTEE MEMBERS:**

Mr. Aaron Kuenzi, Mountain View Seeds  
Mr. Ryan Jeffries, Columbia Seeds, Inc.  
Dr. Cole Thompson, USGA Green Section  
Dr. Charles Fontanier, Oklahoma State University  
Dr. Alec Kowalewski, Oregon State University  
Mr. Mike Selman, Buena Vista Turf Farm  
Mr. Mark Johnson, Golf Course Superintendents Assoc. of America  
Dr. Aaron Patton, Purdue University  
Mr. Steve Reid, DLF Pickseed USA  
Mr. Steve Rackliffe, University of Connecticut

### **FOR ADDITIONAL REPORTS OR INFORMATION CONTACT:**

Kevin Morris, Executive Director  
National Turfgrass Evaluation Program  
Beltsville Agricultural Research Center-West  
Building 005, Room 307  
Beltsville, Maryland 20705  
kmorris@ntep.org  
www.ntep.org

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## **A Guide to NTEP Turfgrass Ratings**

### **Introduction**

The quality and scientific merit of NTEP data is extremely important. However, the evaluation of turfgrass species and cultivars is a difficult and complex issue. Furthermore, turfgrass evaluation is generally a subjective process based on visual estimates of factors, like genetic color, stand density, leaf texture, uniformity and quality. These factors can not be measured in the same way as other agricultural crops. Turfgrass quality is not a measure of yield or nutritive value. Turfgrass quality is a measure of aesthetics (i.e. density, uniformity, texture, smoothness, growth habit and color), and functional use. The most common way of assessing turfgrass quality is a visual rating system that is based on the turfgrass evaluator's judgement.

### **General Considerations**

Most visual ratings collected on NTEP trials are based on a 1 to 9 rating scale. One is the poorest or lowest and 9 is the best or highest rating. However, a few characteristics, such as winter kill or percent living ground cover, are rated on a percentage basis, again by using the evaluator's judgement. Most disease ratings found in NTEP reports will use the 1-9 scale, 9=no disease except where the evaluator made a judgement of the percentage of disease in each plot. Percent disease data will be found in separate tables and will normally not be included with disease data using the 1-9 scale.

### **Turfgrass Quality**

Turfgrass Quality is based on 9 being outstanding or ideal turf and 1 being poorest or dead. A rating of 6 or above is generally considered acceptable. A quality rating value of 9 is reserved for a perfect or ideal grass, but it also can reflect an absolutely outstanding treatment plot. The NTEP requires quality ratings on a monthly basis. Quality ratings take into account the aesthetic and functional aspects of the turf. Quality ratings are not based on color alone, but on a combination of color, density, uniformity, texture, and disease or environmental stress.

Turfgrass quality ratings are grouped and presented by region, management level, a particular stress (shade, traffic, etc.) and in some cases, by individual location (starting with 2001 data, data from each location will be posted separately as well on the NTEP web site, <http://www.ntep.org>). Also available now is a summary table (Appendix) in the back of this report. This summary table includes various statistical measures not previously compiled for NTEP reports. For an explanation of this table and these changes, please go to the NTEP web site at <http://www.ntep.org/pdf/grandmean.mem.pdf>.

### **Other Ratings**

More detailed information on the ratings of specific characteristics can be found on the NTEP web site at <http://www.ntep.org/reports/ratings.htm>.

2018 NATIONAL LOW INPUT WARM-SEASON TEST

LOCATIONS SUBMITTING DATA FOR 2019

State	Location	Code
California	Fresno	CA7
Florida	Jay	FL3
Florida	Citra	FL4
Mississippi	Mississippi State	MS1
North Carolina	Raleigh	NC1
New Mexico	Las Cruces	NM1
Oklahoma	Stillwater	OK1
Texas	College Station	TX2
Utah	Logan	UT1
Virginia	Virginia Beach	VA4

2018 National Low Input Warm-Season Test  
Entries and Sponsors

<b>Entry No.</b>	<b>Name</b>	<b>Species</b>	<b>Seeded/ Vegetative</b>	<b>Sponsors</b>
*1	Meyer	Zoysia	Vegetative	Standard Entry
*2	Tifway	Bermuda	Vegetative	Standard Entry
*3	Midiron	Bermuda	Vegetative	Standard Entry
4	16-TZ-14114	Zoysia	Vegetative	University of Georgia
*5	Habiturf	Buffalo Curly Mesquite Blue grama	Vegetative	Lady Bird Johnson Wildflower Ctr.
6	XZ 14069	Zoysia	Vegetative	North Carolina State University
*7	ASC-117	Bermuda	Seeded	Allstar Seed Co.
*8	Cody	Buffalo	Seeded	Standard Entry
9	FAES 1322	Zoysia	Vegetative	University of Florida
10	FB 1628	Bermuda	Vegetative	University of Florida

\*Commercially available in 2020 in the US or any other country

TABLE A.

2019 LOCATIONS, SITE DESCRIPTIONS AND MANAGEMENT PRACTICES IN  
THE 2018 NATIONAL LOW INPUT WARM-SEASON TEST

LOCATION	SOIL TEXTURE	SOIL PH	SOIL PHOSPHOROUS (LBS/ACRE)	SOIL POTASSIUM (LBS/ACRE)	NITROGEN (LBS/1000 SQ FT)	SUN OR SHADE	MOWING HEIGHT (IN)	IRRIGATION PRACTICED
CA7	SANDY LOAM	7.6-8.5	0-60	0-150	0.0-1.0	FULL SUN	3.6-4.0	TO PREVENT DORMANCY
FL3	SAND	5.6-6.0	61-150	0-150	1.1-2.0	FULL SUN	2.1-2.5	TO PREVENT DORMANCY
FL4	SAND	-	-	-	-	FULL SUN	3.1-3.5	ONLY DURING SEVERE STRESS
MS1	SANDY LOAM	7.6-8.5	271-450	501+	1.1-2.0	FULL SUN	2.1-2.5	ONLY DURING SEVERE STRESS
NC1	SILTY CLAY LOAM	6.1-6.5	61-150	0-150	0.0-1.0	FULL SUN	2.1-2.5	TO PREVENT STRESS
NM1	SANDY LOAM	8.6+	0-60	151-240	-	-	-	-
OK1	LOAM	7.1-7.5	61-150	241-375	1.1-2.0	FULL SUN	2.6-3.0	TO PREVENT STRESS
TX2	-	-	-	-	-	-	-	-
UT1	-	-	-	-	-	FULL SUN	3.6-4.0	ONLY DURING SEVERE STRESS
VA4	-	-	-	-	-	-	-	-

TABLE B.

## LOCATIONS AND DATA COLLECTED IN 2019

LOCATION	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	GENETIC COLOR	SPRING GREENUP	WEEDS SUMMER	WEEDS FALL	WINTER SURVIVAL	FALL COLOR NOVEMBER	2018 QUALITY RATINGS		
	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING	QUALITY RATING							AUG	SEP	OCT
CA7	X	X	X	X	X	X	X	X										
FL3	X	X	X	X	X	X	X											
FL4							X	X	X				X					
MS1		X	X	X	X	X	X				X							
NC1		X	X	X	X	X	X											
NM1	X	X	X	X	X	X	X			X	X	X						
OK1								X										
TX2		X	X	X	X	X	X				X							
UT1	X		X	X								X		X	X			
VA4		X	X	X	X	X	X				X					X	X	X

TABLE B.  
(CONT'D)

## LOCATIONS AND DATA COLLECTED IN 2019

LOCATION	PERCENT GROUND COVER		APRIL-DECEMBER							CANOPY HEIGHT	CANOPY HEIGHT	CANOPY HEIGHT	CANOPY HEIGHT	CANOPY HEIGHT	CANOPY HEIGHT	CANOPY HEIGHT
	APRIL GRCOVAPR	MAY GRCOV MAY	JUNE GRCOVJUN	JULY GRCOVJUL	AUGUST GRCOVAUG	SEPT GRCOVSEP	OCTOBER GRCOVOCT	NOVEMBER GRCOVNOV	DECEMBER GRCOVDEC	MAY MAY	JUNE JUN	JULY JUL	AUG AUG	SEPT SEP	OCT OCT	DEC DEC
CA7		X			X											
FL3			X	X	X		X			X	X	X	X	X	X	
FL4							X	X							X	X
MS1	X	X	X	X	X	X	X		X			X				
NC1											X	X	X	X	X	
NM1		X	X	X	X	X	X			X	X	X	X	X	X	
OK1																
TX2	X	X	X		X		X				X	X	X	X	X	
UT1					X											
VA4																

TABLE B.  
(CONT'D)LOCATIONS AND DATA COLLECTED IN 2019  
PERCENT ESTABLISHMENT

LOCATION	DATE 1	DATE 2	DATE 3	DATE 4	DATE 5	DATE 6	DATE 7	DATE 8	DATE 9	DATE 10	DATE 11	DATE 12	DATE 13	DATE 14	DATE 15
	ESTABD01	ESTABD02	ESTABD03	ESTABD04	ESTABD05	ESTABD06	ESTABD07	ESTABD08	ESTABD09	ESTABD10	ESTABD11	ESTABD12	ESTABD13	ESTABD14	ESTABD15
* CA7															
* FL3	X	X	X	X	X	X	X	X	X						
* FL4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
* MS1	X	X	X	X	X	X	X	X	X						
* NC1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
* NM1	X	X	X	X	X	X	X	X	X						
* OK1	X	X	X	X	X	X	X	X	X						
TX2															
UT1															
* VA4	X	X	X	X	X										

\* MORE INFORMATION OF PERCENT ESTABLISHMENT DATA SEE THE TABLES FOR EACH LOCATION.



TABLE 1.

MEAN TURFGRASS QUALITY RATINGS OF WARM-SEASON CULTIVARS  
GROWN AT NINE LOCATIONS IN THE U.S.  
2019 DATA

NAME	ENTRY #	TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF										
		CA7	FL3	FL4	MS1	NC1	NM1	TX2	UT1	VA4	MEAN	
*TIFWAY	BERMUDA	2	6.9	6.7	6.0	5.6	7.1	7.0	5.7	6.1	5.1	6.4
16-TZ-14114	ZOYSIA	4	7.2	6.9	6.0	5.6	7.0	5.5	6.1	6.3	5.7	6.3
FB 1628	BERMUDA	10	5.8	6.7	5.0	6.1	6.9	6.6	5.9	7.0	4.5	6.2
XZ 14069	ZOYSIA	6	5.5	6.6	6.1	6.2	4.9	5.0	6.4	7.1	4.6	6.0
*MIDIRON	BERMUDA	3	6.2	6.6	2.1	5.2	6.8	6.0	5.7	5.7	4.9	5.6
*MEYER	ZOYSIA	1	4.9	6.3	4.7	5.4	4.7	4.0	5.6	6.8	5.0	5.5
FAES 1322	ZOYSIA	9	3.3	6.3	4.8	5.8	4.1	4.9	6.2	7.2	2.9	5.2
*CODY	BUFFALO	8	6.8	5.8	2.3	5.4	5.2	5.0	4.9	5.6	2.0	5.0
*HABITURF	MIXTURE	5	6.6	5.5	2.0	5.4	4.3	4.4	5.0	5.4	2.3	4.9
*ASC-117	BERMUDA	7	6.5	5.7	1.9	3.6	4.4	4.8	4.6	2.9	1.0	4.2
LSD VALUE			1.4	0.4	0.8	0.4	0.9	0.8	0.5	2.0	0.3	0.3
C.V. (%)			14.2	3.7	12.7	4.1	10.0	9.2	5.9	20.2	4.7	10.7

\* COMMERCIALY AVAILABLE IN THE USA IN 2020

\*\* ENTRIES WITHIN THIS TABLE ARE ORDERED BY THE OVERALL MEAN AND HAVE SIMILAR TURF QUALITY PERFORMANCES IN ALL TEST LOCATIONS INCLUDED IN THIS LPI GROUP. IF YOUR STATE IS NOT REPRESENTED, THEN CHOOSE A LPI GROUP THAT CONTAINS A LOCATION AND MANAGEMENT SIMILAR TO YOUR PLANTING CONDITIONS. FOR MORE INFORMATION ON LPI, GO TO [WWW.NTEP.ORG/LPI\\_Q&A.PDF](http://WWW.NTEP.ORG/LPI_Q&A.PDF)

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 2.

GENETIC COLOR RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT IN THE U.S.  
2019 DATA

GENETIC COLOR RATINGS 1-9; 9=DARK GREEN 2/

NAME		NM1
FB 1628	BERMUDA	8.3
MIDIRON	BERMUDA	8.0
TIFWAY	BERMUDA	8.0
16-TZ-14114	ZOYSIA	7.7
ASC-117	BERMUDA	6.3
FAES 1322	ZOYSIA	6.3
XZ 14069	ZOYSIA	6.3
CODY	BUFFALO	5.7
HABITURF	MIXTURE	5.0
MEYER	ZOYSIA	4.3
LSD VALUE		2.3
C.V. (%)		21.6

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 3.

SPRING GREENUP RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT IN THE U.S.  
2019 DATA

SPRING GREENUP RATINGS 1-9; 9=COMPLETELY GREEN 2/

NAME		MS1	NM1	TX2	VA4	MEAN
16-TZ-14114	ZOYSIA	6.7	6.0	6.7	7	6.6
CODY	BUFFALO	6.7	9.0	6.7	3	6.3
MIDIRON	BERMUDA	4.7	7.7	6.0	5	5.8
HABITURF	MIXTURE	7.3	6.7	6.0	2	5.5
FAES 1322	ZOYSIA	5.7	3.7	7.0	5	5.3
FB 1628	BERMUDA	4.0	8.0	6.3	3	5.3
TIFWAY	BERMUDA	3.0	8.7	5.7	4	5.3
MEYER	ZOYSIA	6.7	2.0	5.7	6	5.1
XZ 14069	ZOYSIA	5.7	2.7	7.0	5	5.1
ASC-117	BERMUDA	1.7	6.7	5.3	1	3.7
LSD VALUE		1.5	2.7	0.9	0	0.8
C.V. (%)		17.9	27.4	8.8	0	18.4

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 4.

PERCENT WEEDS (SUMMER) RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT IN THE U.S. 2/  
 2019 DATA

NAME		NM1	UT1	MEAN
MEYER	ZOYSIA	58.3	1.3	29.8
ASC-117	BERMUDA	55.0	2.7	28.8
FB 1628	BERMUDA	53.3	1.0	27.2
HABITURF	MIXTURE	45.0	1.0	23.0
FAES 1322	ZOYSIA	41.7	2.3	22.0
XZ 14069	ZOYSIA	40.0	2.7	21.3
CODY	BUFFALO	28.3	1.0	14.7
MIDIRON	BERMUDA	28.3	1.0	14.7
16-TZ-14114	ZOYSIA	25.0	1.3	13.2
TIFWAY	BERMUDA	8.3	1.0	4.7
LSD VALUE		33.6	0.8	16.8
C.V. (%)		54.6	33.7	74.2

- 1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).
- 2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 5.

PERCENT WEEDS (FALL) RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT IN THE U.S. 2/  
 2019 DATA

NAME		FL4
MIDIRON	BERMUDA	70.0
FB 1628	BERMUDA	46.7
ASC-117	BERMUDA	43.3
TIFWAY	BERMUDA	43.3
HABITURF	MIXTURE	40.0
CODY	BUFFALO	36.7
FAES 1322	ZOYSIA	26.7
MEYER	ZOYSIA	23.3
XZ 14069	ZOYSIA	20.0
16-TZ-14114	ZOYSIA	16.7
LSD VALUE		21.2
C.V. (%)		35.9

- 1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).
- 2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 6.

PERCENT WINTER SURVIVAL RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT IN THE U.S. 2/  
 2019 DATA

NAME		UT1
CODY	BUFFALO	80.0
FB 1628	BERMUDA	80.0
HABITURF	MIXTURE	80.0
MIDIRON	BERMUDA	80.0
TIFWAY	BERMUDA	76.7
16-TZ-14114	ZOYSIA	73.3
MEYER	ZOYSIA	73.3
XZ 14069	ZOYSIA	73.3
FAES 1322	ZOYSIA	66.7
ASC-117	BERMUDA	36.7
LSD VALUE		26.9
C.V. (%)		23.2

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 7.

FALL COLOR (NOVEMBER) RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT IN THE U.S.  
 2019 DATA

FALL COLOR RATINGS 1-9; 9=COMPLETE COLOR RETENTION 2/

NAME		UT1
XZ 14069	ZOYSIA	2.0
FAES 1322	ZOYSIA	1.3
16-TZ-14114	ZOYSIA	1.0
ASC-117	BERMUDA	1.0
CODY	BUFFALO	1.0
FB 1628	BERMUDA	1.0
HABITURF	MIXTURE	1.0
MEYER	ZOYSIA	1.0
MIDIRON	BERMUDA	1.0
TIFWAY	BERMUDA	1.0
LSD VALUE		0.3
C.V. (%)		16.1

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 8.

MEAN TURFGRASS QUALITY RATINGS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT VIRGINIA BEACH, VA 1/  
2018 DATA

TURFGRASS QUALITY RATINGS 1-9; 9=BEST 2/

NAME		AUGUST	SEPTEMBER	OCTOBER	MEAN
FB 1628	BERMUDA	4.0	5.0	5.0	4.7
MIDIRON	BERMUDA	4.0	5.0	5.0	4.7
TIFWAY	BERMUDA	4.0	5.0	5.0	4.7
16-TZ-14114	ZOYSIA	3.7	5.0	5.0	4.6
XZ 14069	ZOYSIA	3.0	4.0	4.0	3.7
MEYER	ZOYSIA	2.7	3.7	4.0	3.4
FAES 1322	ZOYSIA	2.0	2.3	2.7	2.3
HABITURF	MIXTURE	2.0	2.0	2.3	2.1
CODY	BUFFALO	2.0	2.0	2.0	2.0
ASC-117	BERMUDA	1.0	1.0	1.0	1.0
LSL VALUE		0.4	0.4	0.4	0.2
C.V. (%)		9.4	7.2	7.0	4.5

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 9.

PERCENT ESTABLISHMENT AND TURFGRASS QUALITY RATINGS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT STILLWATER, OK 1/  
2018 DATA

TURFGRASS QUALITY RATINGS 1-9; 9=BEST 2/

NAME		QUALITY NOVEMBER	DATE 1	DATE 2	DATE 3	DATE 4	DATE 5	DATE 6	DATE 7	DATE 8	MEAN
MIDIRON	BERMUDA	7.0	8.7	31.7	56.7	88.7	95.7	98.3	98.0	99.0	72.1
ASC-117	BERMUDA	6.3	3.3	40.0	56.7	82.3	92.0	95.3	95.7	98.0	70.4
CODY	BUFFALO	7.3	4.3	31.7	43.3	66.7	73.3	79.3	73.3	80.0	56.5
TIFWAY	BERMUDA	8.0	5.7	11.7	19.7	40.0	56.0	78.3	73.3	84.0	46.1
FB 1628	BERMUDA	7.0	5.3	9.7	22.7	35.0	51.7	68.3	58.3	68.3	39.9
16-TZ-14114	ZOYSIA	7.0	6.0	12.7	15.7	28.3	40.0	56.7	53.3	68.3	35.1
HABITURF	MIXTURE	7.7	5.3	11.0	20.7	31.0	40.0	48.3	51.7	51.7	32.5
MEYER	ZOYSIA	7.3	5.7	10.0	13.3	17.3	22.7	27.7	25.0	29.0	18.8
XZ 14069	ZOYSIA	7.7	5.0	6.0	8.0	10.0	16.3	21.7	25.0	26.7	14.8
FAES 1322	ZOYSIA	7.0	5.0	6.0	6.3	8.7	10.3	16.0	14.0	21.0	10.9
LSL VALUE		1.0	1.2	15.1	11.3	12.1	11.4	8.8	11.5	9.7	7.6
C.V. (%)		6.9	13.3	51.4	27.2	19.1	14.7	9.6	13.0	10.0	12.3

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 10.

PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT FRESNO, CA 2/  
2019 DATA

NAME		SPRING	SUMMER	MEAN
CODY	BUFFALO	99.0	99.0	99.0
FB 1628	BERMUDA	99.0	96.0	97.5
ASC-117	BERMUDA	97.7	96.0	96.8
HABITURF	MIXTURE	94.3	99.0	96.7
TIFWAY	BERMUDA	99.0	92.7	95.8
16-TZ-14114	ZOYSIA	96.3	92.7	94.5
MIDIRON	BERMUDA	88.0	99.0	93.5
XZ 14069	ZOYSIA	91.7	83.0	87.3
MEYER	ZOYSIA	85.0	86.3	85.7
FAES 1322	ZOYSIA	63.3	53.3	58.3
LSD VALUE		9.6	19.1	10.7
C.V. (%)		6.4	12.0	7.2

- 1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).
- 2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 11.

PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT JAY, FL 2/  
2019 DATA

NAME		JUNE	JULY	AUGUST	OCTOBER	MEAN
FB 1628	BERMUDA	99.0	99.0	99.0	97.7	98.7
MIDIRON	BERMUDA	99.0	99.0	99.0	97.7	98.7
TIFWAY	BERMUDA	99.0	99.0	96.0	93.0	96.8
MEYER	ZOYSIA	96.0	99.0	96.3	91.7	95.8
16-TZ-14114	ZOYSIA	99.0	99.0	87.7	96.0	95.4
XZ 14069	ZOYSIA	83.3	99.0	99.0	99.0	95.1
FAES 1322	ZOYSIA	76.7	99.0	97.7	96.0	92.3
ASC-117	BERMUDA	99.0	90.0	96.3	80.0	91.3
CODY	BUFFALO	99.0	90.0	93.0	83.3	91.3
HABITURF	MIXTURE	93.0	89.7	85.0	86.7	88.6
LSD VALUE		7.4	5.2	19.3	8.7	5.2
C.V. (%)		4.8	3.1	8.2	5.4	3.0

- 1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).
- 2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 12.

CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT JAY, FL 1/  
2019 DATA

NAME		CANOPY HEIGHT MEASURED IN CM 2/							MEAN
		MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER		
HABITURF	MIXTURE	11.7	8.7	11.0	11.3	7.3	5.7	9.3	
CODY	BUFFALO	11.3	7.7	10.7	9.3	6.0	5.0	8.3	
ASC-117	BERMUDA	11.7	8.0	8.7	8.7	6.7	5.0	8.1	
MIDIRON	BERMUDA	8.3	7.7	9.3	8.0	6.0	6.0	7.6	
16-TZ-14114	ZOYSIA	6.0	7.7	8.7	9.0	6.0	5.0	7.1	
MEYER	ZOYSIA	7.0	7.3	8.3	7.0	5.7	5.0	6.7	
TIFWAY	BERMUDA	6.7	7.0	7.3	5.7	6.0	5.3	6.3	
FB 1628	BERMUDA	4.0	5.7	6.7	5.7	5.0	5.0	5.3	
FAES 1322	ZOYSIA	5.0	4.7	5.0	6.3	5.0	5.0	5.2	
XZ 14069	ZOYSIA	4.3	4.0	4.7	4.3	4.7	4.0	4.3	
LSD VALUE		2.5	1.6	2.6	1.7	1.3	2.0	0.5	
C.V. (%)		20.1	13.7	18.8	13.7	11.8	15.7	4.9	

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 13.

PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT JAY, FL 2/  
2018-19 DATA

NAME		SEPT 27	OCT 13	OCT 23	NOV 15	DEC 11	MARCH 12	APRIL 4	APRIL 30	MAY 31	MEAN
ASC-117	BERMUDA	96.0	96.0	99.0	99.0	99.0	99.0	99.0	99.0	96.0	98.0
FB 1628	BERMUDA	73.3	76.7	86.3	86.3	89.7	96.0	96.0	96.0	99.0	88.8
CODY	BUFFALO	76.7	80.0	86.7	86.7	86.7	90.0	93.0	99.0	96.0	88.3
TIFWAY	BERMUDA	73.3	80.0	86.7	86.7	90.0	90.0	90.0	93.0	96.0	87.3
16-TZ-14114	ZOYSIA	50.0	53.3	53.3	60.0	63.3	73.3	80.0	83.3	96.0	68.1
MIDIRON	BERMUDA	33.3	40.0	40.0	40.0	40.0	53.3	66.7	86.3	96.0	55.1
HABITURF	MIXTURE	26.7	30.0	36.7	40.0	40.0	43.3	53.3	70.0	86.3	47.4
MEYER	ZOYSIA	36.7	36.7	36.7	36.7	36.7	40.0	46.7	63.3	76.7	45.6
XZ 14069	ZOYSIA	23.3	23.3	23.3	23.3	23.3	33.3	36.7	60.0	80.0	36.3
FAES 1322	ZOYSIA	20.0	20.0	20.0	23.3	23.3	23.3	26.7	40.0	66.7	29.3
LSD VALUE		16.7	15.4	15.3	13.7	11.8	12.9	16.4	14.3	8.5	10.3
C.V. (%)		20.6	18.2	17.1	15.1	12.8	12.9	15.0	11.3	5.9	10.2

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 14.

PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT CITRA, FL 2/  
2019 DATA

NAME		SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	MEAN
16-TZ-14114	ZOYSIA	93.0	96.0	99.0	96.0	96.0
TIFWAY	BERMUDA	90.0	99.0	99.0	96.0	96.0
XZ 14069	ZOYSIA	93.0	93.0	93.0	93.0	93.0
MEYER	ZOYSIA	90.0	90.0	90.0	90.0	90.0
FAES 1322	ZOYSIA	80.0	86.7	86.7	86.7	85.0
FB 1628	BERMUDA	80.0	86.7	86.7	86.7	85.0
MIDIRON	BERMUDA	30.0	36.7	26.7	26.7	30.0
CODY	BUFFALO	16.7	26.7	33.3	30.0	26.7
ASC-117	BERMUDA	20.0	23.3	20.0	20.0	20.8
HABITURF	MIXTURE	13.3	10.0	16.7	10.0	12.5
LSD VALUE		11.6	17.7	16.1	13.6	13.5
C.V. (%)		12.4	17.4	15.8	13.8	13.6

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 15.

CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT CITRA, FL 1/  
2019 DATA

		CANOPY HEIGHT MEASURED IN CM 2/		
NAME		OCTOBER	DECEMBER	MEAN
TIFWAY	BERMUDA	9.3	8.3	8.8
ASC-117	BERMUDA	9.0	7.3	8.2
16-TZ-14114	ZOYSIA	8.3	7.0	7.7
HABITURF	MIXTURE	7.7	7.7	7.7
MIDIRON	BERMUDA	6.0	7.3	6.7
FB 1628	BERMUDA	10.0	3.0	6.5
MEYER	ZOYSIA	7.7	5.0	6.3
XZ 14069	ZOYSIA	8.3	3.0	5.7
CODY	BUFFALO	4.3	7.0	5.7
FAES 1322	ZOYSIA	7.0	2.7	4.8
LSD VALUE		7.7	1.6	3.4
C.V. (%)		38.0	16.7	22.8

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.



TABLE 16.

PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT CITRA, FL 2/  
2018-19 DATA

NAME		SEPT 12	SEPT 26	OCT 10	OCT 25	NOV 8	NOV 20	DEC 5	DEC 18	JAN 9	JAN 25	FEB 8	FEB 22
TIFWAY	BERMUDA	10.0	20.0	30.0	63.3	60.0	53.3	56.7	73.3	66.7	60.0	66.7	76.7
16-TZ-14114	ZOYSIA	20.0	20.0	30.0	43.3	46.7	60.0	56.7	60.0	60.0	50.0	63.3	63.3
MEYER	ZOYSIA	16.7	20.0	20.0	30.0	30.0	30.0	33.3	40.0	33.3	20.0	13.3	30.0
XZ 14069	ZOYSIA	10.0	10.0	10.0	20.0	20.0	20.0	26.7	23.3	33.3	36.7	40.0	36.7
FAES 1322	ZOYSIA	13.3	13.3	10.0	20.0	20.0	20.0	23.3	20.0	23.3	30.0	30.0	30.0
FB 1628	BERMUDA	10.0	10.0	13.3	23.3	23.3	20.0	23.3	30.0	26.7	20.0	23.3	30.0
MIDIRON	BERMUDA	10.0	20.0	23.3	26.7	30.0	20.0	30.0	43.3	30.0	16.7	20.0	30.0
CODY	BUFFALO	10.0	16.7	33.3	56.7	56.7	46.7	30.0	30.0	40.0	10.0	10.0	20.0
ASC-117	BERMUDA	0.0	13.3	53.3	70.0	43.3	10.0	10.0	10.0	10.0	10.0	10.0	10.0
HABITURF	MIXTURE	10.0	10.0	20.0	26.7	26.7	16.7	20.0	23.3	20.0	20.0	16.7	20.0
LSD VALUE		4.1	5.7	5.9	9.9	11.3	17.4	19.7	18.0	13.0	14.2	8.1	14.1
C.V. (%)		22.8	21.4	15.6	16.6	19.7	35.1	36.1	30.9	23.4	31.9	17.7	25.4

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 16.  
(CONT'D)

PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT CITRA, FL 2/  
2018-19 DATA

NAME		MARCH 11	MARCH 20	APRIL 3	APRIL 19	MAY 3	MAY 15	MAY 28	JUNE 10	JULY 1	JULY 22	AUG 5	AUG 19	MEAN
TIFWAY	BERMUDA	80.0	80.0	80.0	83.3	90.0	93.0	96.0	96.0	80.0	90.0	90.0	80.0	69.8
16-TZ-14114	ZOYSIA	63.3	66.7	73.3	83.3	83.3	90.0	90.0	93.0	89.7	93.0	93.0	93.0	66.0
MEYER	ZOYSIA	40.0	43.3	46.7	60.0	73.3	76.7	86.7	86.7	93.0	93.0	89.7	89.7	49.8
XZ 14069	ZOYSIA	46.7	46.7	53.3	53.3	56.7	66.7	70.0	83.3	86.7	93.0	86.7	96.0	46.9
FAES 1322	ZOYSIA	30.0	30.0	33.3	40.0	46.7	46.7	46.7	56.7	70.0	86.7	80.0	86.7	37.8
FB 1628	BERMUDA	30.0	33.3	30.0	26.7	46.7	46.7	43.3	53.3	66.7	86.7	73.3	80.0	36.3
MIDIRON	BERMUDA	30.0	33.3	26.7	33.3	43.3	46.7	53.3	53.3	43.3	56.7	53.3	46.7	34.2
CODY	BUFFALO	43.3	36.7	26.7	23.3	23.3	23.3	26.7	30.0	23.3	30.0	26.7	33.3	29.4
ASC-117	BERMUDA	10.0	10.0	10.0	13.3	10.0	16.7	16.7	23.3	26.7	40.0	33.3	40.0	20.8
HABITURF	MIXTURE	16.7	16.7	13.3	23.3	13.3	13.3	20.0	20.0	16.7	23.3	20.0	20.0	18.6
LSD VALUE		13.2	16.2	16.1	14.3	20.0	18.6	17.1	18.3	17.5	17.9	14.2	14.2	9.9
C.V. (%)		21.3	25.3	25.6	20.6	25.7	22.6	19.7	19.3	18.6	16.3	14.0	13.6	15.3

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 17.

PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT MISS. ST., MS 2/  
2019 DATA

NAME		APRIL	MAY	JUNE	AUGUST	OCTOBER	MEAN
16-TZ-14114	ZOYSIA	99.0	99.0	99.0	99	99	99.0
MIDIRON	BERMUDA	99.0	99.0	99.0	99	99	99.0
CODY	BUFFALO	97.7	99.0	99.0	99	99	98.8
HABITURF	MIXTURE	96.0	99.0	99.0	99	99	98.6
TIFWAY	BERMUDA	94.7	99.0	99.0	99	99	98.4
FB 1628	BERMUDA	93.0	99.0	99.0	99	99	98.1
MEYER	ZOYSIA	80.0	91.7	99.0	99	99	95.2
XZ 14069	ZOYSIA	76.7	91.7	97.7	99	99	94.6
FAES 1322	ZOYSIA	70.0	88.3	96.0	99	99	92.9
ASC-117	BERMUDA	4.0	7.0	70.0	99	99	65.9
LSD VALUE		7.4	4.3	9.8	0	0	3.0
C.V. (%)		6.0	3.2	6.0	0	0	2.1

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 18.

CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT MISS. ST., MS 1/  
2019 DATA

CANOPY HEIGHT MEASURED IN CM 2/

NAME		MAY	JULY	MEAN
HABITURF	MIXTURE	6	8.0	7.0
CODY	BUFFALO	6	7.7	6.8
16-TZ-14114	ZOYSIA	5	6.0	5.5
MIDIRON	BERMUDA	5	6.0	5.5
FB 1628	BERMUDA	5	6.0	5.5
XZ 14069	ZOYSIA	5	6.0	5.5
FAES 1322	ZOYSIA	5	6.0	5.5
TIFWAY	BERMUDA	5	5.7	5.3
MEYER	ZOYSIA	5	5.7	5.3
ASC-117	BERMUDA	5	5.3	5.2
LSD VALUE		0	0.6	0.3
C.V. (%)		0	5.9	3.2

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 19.

PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT AT MISS. ST., MS 2/  
 2018-19 DATA

NAME		JULY 26 4 WEEKS	AUG 2 6 WEEKS	AUG 23 8 WEEKS	SEPT 7 10 WEEKS	OCT 4 14 WEEKS	OCT 20 16 WEEKS	OCT 30 18 WEEKS	NOV 20 21 WEEKS	MEAN
ASC-117	BERMUDA	73.3	66.7	63.3	86.7	99.0	99.0	99.0	99.0	85.8
MIDIRON	BERMUDA	36.7	46.7	63.3	99.0	99.0	99.0	99.0	99.0	80.2
FB 1628	BERMUDA	18.3	25.0	40.0	89.7	99.0	99.0	99.0	99.0	71.1
HABITURF	MIXTURE	13.3	20.0	33.3	83.3	99.0	99.0	99.0	99.0	68.3
TIFWAY	BERMUDA	13.3	18.3	33.3	73.3	99.0	99.0	99.0	99.0	66.8
CODY	BUFFALO	6.7	11.7	28.3	70.0	99.0	99.0	99.0	99.0	64.1
16-TZ-14114	ZOYSIA	11.7	20.0	25.0	53.3	86.7	90.0	94.7	96.0	59.7
MEYER	ZOYSIA	11.7	14.0	18.3	43.3	63.3	73.3	70.0	66.7	45.1
FAES 1322	ZOYSIA	5.0	11.7	18.3	36.7	53.3	63.3	63.3	60.0	39.0
XZ 14069	ZOYSIA	6.7	8.3	13.3	30.0	46.7	60.0	63.3	60.0	36.0
LSD VALUE		7.6	6.4	8.4	7.7	5.7	4.1	6.4	3.9	3.6
C.V. (%)		24.8	17.1	16.0	7.4	4.4	3.0	4.6	2.9	3.8

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN.  
 STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 20.

CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
 GROWN UNDER LOW INPUT AT RALEIGH, NC 1/  
 2019 DATA

## CANOPY HEIGHT MEASURED IN CM 2/

NAME		JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	MEAN
HABITURF	MIXTURE	11.7	10.3	15.0	11.7	7.7	11.3
CODY	BUFFALO	10.0	8.3	14.7	10.3	6.7	10.0
ASC-117	BERMUDA	10.7	10.7	10.7	8.0	7.7	9.5
16-TZ-14114	ZOYSIA	8.7	7.7	10.7	8.7	7.0	8.5
MIDIRON	BERMUDA	9.7	9.3	9.7	7.0	6.0	8.3
TIFWAY	BERMUDA	6.7	7.3	8.7	6.0	5.7	6.9
MEYER	ZOYSIA	6.3	5.3	10.0	6.3	6.0	6.8
FB 1628	BERMUDA	5.3	5.7	8.0	6.3	6.0	6.3
XZ 14069	ZOYSIA	5.3	4.7	7.0	6.3	6.3	5.9
FAES 1322	ZOYSIA	5.0	4.7	6.7	6.7	6.0	5.8
LSD VALUE		1.6	1.2	0.8	1.0	0.6	0.6
C.V. (%)		13.0	10.1	5.0	8.5	6.0	4.6

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN.  
 STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 21. PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT RALEIGH, NC 2/  
2018-19 DATA

NAME		JULY 26 2018	AUGUST 9 2018	AUGUST 23 2018	SEPT 6 2018	SEPT 20 2018	OCTOBER 3 2018	MAY 8 2019	MAY 22 2019
MIDIRON	BERMUDA	30.0	53.3	63.3	70.0	76.7	85.0	96.3	97.7
ASC-117	BERMUDA	78.3	83.3	86.7	91.7	93.0	96.0	26.7	33.3
16-TZ-14114	ZOYSIA	6.7	18.3	25.0	38.3	50.0	65.0	91.7	93.3
TIFWAY	BERMUDA	6.7	15.0	20.0	38.3	51.7	65.0	90.0	91.3
FB 1628	BERMUDA	6.7	11.0	18.3	35.0	55.0	65.0	88.0	89.7
CODY	BUFFALO	3.0	15.0	20.0	31.7	31.7	35.0	51.7	56.7
XZ 14069	ZOYSIA	5.0	5.0	8.3	16.7	18.3	28.3	51.7	55.0
MEYER	ZOYSIA	5.0	10.0	11.7	16.7	21.7	33.3	51.7	55.0
HABITURF	MIXTURE	5.0	6.7	8.3	13.3	13.3	16.7	23.3	28.3
FAES 1322	ZOYSIA	4.0	5.0	5.0	10.0	10.0	16.7	30.0	31.7
LSD VALUE		8.1	8.5	9.5	10.7	15.2	11.8	15.0	16.1
C.V. (%)		34.6	24.6	22.9	19.1	22.9	14.9	15.9	16.1

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 21. PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
(CONT'D) GROWN UNDER LOW INPUT AT RALEIGH, NC 2/  
2018-19 DATA

NAME		JUNE 5 2019	JUNE 19 2019	JULY 3 2019	JULY 17 2019	JULY 31 2019	AUG 14 2019	AUG 28 2019	SEPT 11 2019	MEAN
MIDIRON	BERMUDA	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	85.3
ASC-117	BERMUDA	53.3	66.7	81.7	96.3	99.0	99.0	99.0	99.0	80.2
16-TZ-14114	ZOYSIA	93.3	96.3	96.3	99.0	99.0	99.0	99.0	99.0	73.1
TIFWAY	BERMUDA	93.0	94.7	96.3	99.0	99.0	99.0	99.0	99.0	72.3
FB 1628	BERMUDA	93.0	94.7	97.7	99.0	99.0	99.0	99.0	99.0	71.8
CODY	BUFFALO	63.3	71.7	76.7	81.7	91.0	99.0	99.0	99.0	57.9
XZ 14069	ZOYSIA	60.0	63.3	65.0	76.7	85.0	90.0	97.7	99.0	51.6
MEYER	ZOYSIA	60.0	65.0	68.3	73.3	78.3	81.7	88.3	89.7	50.6
HABITURF	MIXTURE	33.3	45.0	53.3	65.0	78.3	93.3	99.0	99.0	42.6
FAES 1322	ZOYSIA	43.3	48.3	50.0	58.3	63.3	81.7	91.7	94.7	40.2
LSD VALUE		14.3	16.7	18.1	17.7	13.9	6.5	5.4	6.3	8.0
C.V. (%)		13.1	13.8	13.9	12.3	9.2	4.2	3.1	3.3	8.1

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 22. PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT LAS CRUCES, NM 2/  
2019 DATA

NAME		MAY 8	JUNE 13	JULY 16	AUGUST 22	SEPT 11	OCTOBER 9	MEAN
FB 1628	BERMUDA	97.7	95.0	98.0	96.0	98.7	91.7	96.2
TIFWAY	BERMUDA	99.0	94.0	97.3	95.0	98.3	92.0	95.9
16-TZ-14114	ZOYSIA	89.0	66.0	98.0	98.3	99.0	93.0	90.6
FAES 1322	ZOYSIA	73.0	93.7	87.3	90.0	97.3	91.7	88.8
XZ 14069	ZOYSIA	56.0	98.3	90.0	94.7	97.7	95.7	88.7
MIDIRON	BERMUDA	63.7	82.3	98.0	98.3	98.0	82.0	87.1
CODY	BUFFALO	97.0	78.7	84.7	85.7	95.7	77.7	86.6
ASC-117	BERMUDA	53.3	94.3	94.7	88.3	98.3	83.3	85.4
HABITURF	MIXTURE	70.3	99.0	66.7	76.7	86.3	59.3	76.4
MEYER	ZOYSIA	51.0	96.7	61.0	77.3	86.0	78.7	75.1
LSD VALUE		59.5	37.1	28.6	29.3	13.1	16.9	21.2
C.V. (%)		34.6	17.3	16.2	13.4	6.3	10.9	10.7

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN.  
STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 23. CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT LAS CRUCES, NM 1/  
2019 DATA

		CANOPY HEIGHT MEASURED IN CM 2/						
NAME		MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	MEAN
ASC-117	BERMUDA	27.0	42.0	34.0	32.0	29.7	25.3	31.7
TIFWAY	BERMUDA	26.0	30.7	29.0	28.3	27.3	26.3	27.9
CODY	BUFFALO	26.3	34.0	29.3	27.0	24.3	19.7	26.8
MIDIRON	BERMUDA	23.7	32.3	29.3	26.3	23.0	22.0	26.1
HABITURF	MIXTURE	23.3	30.7	29.7	26.7	23.3	18.7	25.4
16-TZ-14114	ZOYSIA	23.3	27.3	26.0	24.3	22.0	20.7	23.9
FB 1628	BERMUDA	21.7	31.0	26.0	24.0	21.7	18.7	23.8
MEYER	ZOYSIA	25.0	23.0	24.7	25.0	24.3	20.0	23.7
FAES 1322	ZOYSIA	23.3	29.0	22.7	22.0	20.7	19.3	22.8
XZ 14069	ZOYSIA	20.7	25.0	18.7	19.3	19.7	18.3	20.3
LSD VALUE		6.1	11.4	6.7	5.6	5.2	6.0	5.4
C.V. (%)		11.3	18.3	13.5	11.8	11.6	14.3	11.4

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN.  
STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 24.

PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT LAS CRUCES, NM 2/  
2018 DATA

NAME		JULY 31 2018	AUG 16 2018	AUG 28 2018	SEPT 14 2018	SEPT 25 2018	OCT 9 2018	OCT 22 2018	MEAN
CODY	BUFFALO	10.7	67.7	98.0	92.0	91.7	80.3	70.3	73.0
ASC-117	BERMUDA	22.7	60.7	83.0	85.0	92.3	86.7	74.7	72.1
TIFWAY	BERMUDA	5.0	33.7	64.0	74.3	86.7	98.0	95.0	65.2
FB 1628	BERMUDA	5.0	29.7	64.7	77.3	86.0	94.7	87.3	63.5
MIDIRON	BERMUDA	6.7	35.3	79.0	71.0	76.0	87.7	61.0	59.5
HABITURF	MIXTURE	4.3	21.7	51.0	52.0	81.0	83.3	62.3	50.8
16-TZ-14114	ZOYSIA	7.3	17.7	35.0	55.7	71.7	84.0	75.3	49.5
FAES 1322	ZOYSIA	3.7	11.3	18.3	31.0	44.7	53.7	51.3	30.6
MEYER	ZOYSIA	8.7	12.7	23.7	35.0	43.3	49.7	25.7	28.4
XZ 14069	ZOYSIA	1.0	3.7	9.3	18.7	27.0	35.7	30.3	18.0
LSD VALUE		29.6	34.2	21.3	18.4	16.7	17.1	27.4	15.9
C.V. (%)		149.0	62.6	25.3	19.3	14.9	14.0	25.0	19.2

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 25.

PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT COLLEGE STATION, TX 2/  
2019 DATA

NAME		APRIL 18 2019	MAY 16 2019	JUNE 18 2019	AUG 6 2019	OCT 10 2019	MEAN
MIDIRON	BERMUDA	99.0	99.0	97.7	99.0	99.0	98.7
CODY	BUFFALO	99.0	97.7	97.7	97.7	99.0	98.2
FB 1628	BERMUDA	94.7	96.3	99.0	99.0	97.7	97.3
16-TZ-14114	ZOYSIA	92.7	97.7	97.7	96.0	99.0	96.6
HABITURF	MIXTURE	96.3	95.0	96.0	96.0	99.0	96.5
XZ 14069	ZOYSIA	94.7	93.3	93.0	96.3	96.0	94.7
TIFWAY	BERMUDA	94.7	93.3	93.3	91.7	96.0	93.8
FAES 1322	ZOYSIA	90.0	90.0	93.3	91.7	91.3	91.3
ASC-117	BERMUDA	80.0	83.3	88.3	86.7	93.0	86.3
MEYER	ZOYSIA	86.3	86.7	81.7	86.7	89.7	86.2
LSD VALUE		12.2	5.6	7.4	5.2	13.1	5.8
C.V. (%)		6.6	3.6	4.4	3.2	5.6	3.5

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 26. CANOPY HEIGHT MEASUREMENTS OF WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT AT COLLEGE STATION, TX 1/  
2019 DATA

		CANOPY HEIGHT MEASURED IN CM 2/					
NAME		JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	MEAN
ASC-117	BERMUDA	5.3	8.0	9.0	8.0	6.3	7.3
HABITURF	MIXTURE	7.3	8.0	7.3	7.3	6.0	7.2
CODY	BUFFALO	6.3	9.3	6.0	8.0	5.3	7.0
MIDIRON	BERMUDA	6.0	8.0	6.3	5.0	5.3	6.1
16-TZ-14114	ZOYSIA	5.3	5.3	7.3	5.3	4.7	5.6
FB 1628	BERMUDA	4.3	8.7	5.3	5.0	4.3	5.5
MEYER	ZOYSIA	3.7	6.0	6.0	4.7	4.3	4.9
TIFWAY	BERMUDA	3.0	7.0	4.7	5.0	4.3	4.8
XZ 14069	ZOYSIA	4.3	6.0	4.3	3.0	3.0	4.1
FAES 1322	ZOYSIA	3.3	5.3	4.0	3.0	3.0	3.7
LSD VALUE		2.1	7.0	2.9	1.5	3.0	2.2
C.V. (%)		23.6	36.8	24.7	17.1	29.3	20.9

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 27. PERCENT LIVING GROUND COVER RATINGS OF WARM-SEASON CULTIVARS 1/  
GROWN UNDER LOW INPUT AT LOGAN, UT 2/  
2019 DATA

NAME		SUMMER
TIFWAY	BERMUDA	99.0
CODY	BUFFALO	96.0
HABITURF	MIXTURE	96.0
MIDIRON	BERMUDA	96.0
FB 1628	BERMUDA	80.0
16-TZ-14114	ZOYSIA	56.7
MEYER	ZOYSIA	46.7
ASC-117	BERMUDA	36.3
XZ 14069	ZOYSIA	30.0
FAES 1322	ZOYSIA	26.7
LSD VALUE		28.7
C.V. (%)		26.2

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

TABLE 28. PERCENT ESTABLISHMENT RATINGS OF WARM-SEASON CULTIVARS 1/  
 GROWN UNDER LOW INPUT AT VIRGINIA BEACH, VA 2/  
 2018-19 DATA

NAME		SUMMER 2018	FALL 2018	SPRING 2019	SUMMER 2019	FALL 2019	MEAN
TIFWAY	BERMUDA	50.0	68.3	78.3	90.0	88.3	75.0
MIDIRON	BERMUDA	48.3	66.7	78.3	86.7	88.3	73.7
16-TZ-14114	ZOYSIA	41.7	56.7	61.7	81.7	93.3	67.0
FB 1628	BERMUDA	46.7	63.3	61.7	66.7	66.7	61.0
MEYER	ZOYSIA	33.3	50.0	53.3	68.3	80.0	57.0
XZ 14069	ZOYSIA	25.0	46.7	63.3	73.3	73.3	56.3
FAES 1322	ZOYSIA	18.3	28.3	21.7	31.7	41.7	28.3
CODY	BUFFALO	11.7	15.0	20.0	21.7	25.0	18.7
HABITURF	MIXTURE	10.0	16.7	20.0	20.0	21.7	17.7
ASC-117	BERMUDA	0.0	1.7	1.7	0.0	0.0	0.7
LSD VALUE		4.2	6.1	3.9	4.6	3.8	2.8
C.V. (%)		9.6	9.6	5.5	5.5	4.3	4.1

1/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

2/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.



APPENDIX TABLE. SUMMARY OF TURFGRASS QUALITY RATINGS FOR WARM-SEASON CULTIVARS  
GROWN UNDER LOW INPUT  
2019 DATA

TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF

NAME		QUALITY	MAXIMUM
		MEAN 1/	IN TOP 25% 2/
16-TZ-14114	ZOYSIA	6.3	55.6
ASC-117	BERMUDA	3.9	0.0
CODY	BUFFALO	4.8	0.0
FAES 1322	ZOYSIA	5.0	22.2
FB 1628	BERMUDA	6.1	33.3
HABITURF	MIXTURE	4.6	0.0
MEYER	ZOYSIA	5.3	0.0
MIDIRON	BERMUDA	5.5	0.0
TIFWAY	BERMUDA	6.2	55.6
XZ 14069	ZOYSIA	5.8	44.4
LSD VALUE		0.3	
C.V. (%)		10.7	

\*/ TO DETERMINE STATISTICAL DIFFERENCES AMONG ENTRIES, SUBTRACT ONE ENTRY'S MEAN FROM ANOTHER ENTRY'S MEAN. STATISTICAL DIFFERENCES OCCUR WHEN THIS VALUE IS LARGER THAN THE CORRESPONDING LSD VALUE (LSD 0.05).

\*\*/ C.V. (COEFFICIENT OF VARIATION) INDICATES THE PERCENT VARIATION OF THE MEAN IN EACH COLUMN.

1/ MEAN AN AVERAGE OF ALL THE TURFGRASS QUALITY RATINGS FROM ALL LOCATIONS.

2/ MAXIMUM IN TOP 25%: THE PERCENTAGE OF LOCATIONS WHERE THAT ENTRY FINISHED IN THE TOP 25% OF ALL ENTRIES.S.