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

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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*.

2014 NATIONAL BENTGRASS TEST
(Putting Green)

LOCATIONS SUBMITTING DATA FOR 2019

State	Location	Code
California	Los Angeles (Los Angeles C.C.)	CA5
Georgia	Athens	GA3
Indiana	West Lafayette	IN1
Iowa	Ames	IA1
Kansas	Manhattan	KS1
Minnesota	St. Paul	MN1
Missouri	Columbia	MO1
New Jersey	North Brunswick	NJ1
North Carolina	Raleigh	NC1
Oklahoma	Stillwater	OK1
Utah	Logan	UT1
Utah	Logan (Reduced Irrigation)	UT2

2014 NATIONAL BENTGRASS TEST
(Putting Green)

Entries and Sponsors

Entry No	Name	Species	Sponsor
*1	Luminary	Creeping	Standard
*2	777 (DLFPS-AP/3054)	Creeping	Seed Research of Oregon
*3	Macdonald (DLFPS-AP/3018)	Creeping	DLF Pickseed USA
4	DLFPS-AP/3056	Creeping	DLF Pickseed USA
5	DLFPS-AP/3058	Creeping	SiteOne Landscape Supply
6	DLFPS-AP/3059	Creeping	DLF Pickseed USA
*7	Pure Select	Creeping	Tee-2-Green Corp.
*8	Penn A-1	Creeping	Standard
*9	Penncross	Creeping	Standard
*10	L-93 XD	Creeping	Jacklin Seed by Simplot®
*11	Armor	Creeping	Jacklin Seed by Simplot®
*12	Kingdom	Creeping	Jacklin Seed by Simplot®
*13	Nightlife	Creeping	Jacklin Seed by Simplot®
*14	V-8	Creeping	Standard
*15	Tour Pro (GDE)	Creeping	Semillas Fito
*16	Piranha (DC-1)	Creeping	Mountain View Seeds & Toyo Green Co. Ltd.
*17	Pure Eclipse (PST-ROPS)	Creeping	Pure Seed Testing, Inc
*18	Shark	Creeping	Mountain View Seeds
*19	Barracuda	Creeping	Mountain View Seeds
*20	Declaration	Creeping	Standard

* Commercially Available in the USA in 2020 or any other Country

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TABLE A.                              2019 LOCATIONS, SITE DESCRIPTIONS AND MANAGEMENT PRACTICES IN
                                        THE 2014 NATIONAL BENTGRASS (GREEN) TEST

                                                SOIL          SOIL                          SUN       MOWING
                      SOIL             SOIL  PHOSPHOROUS    POTASSIUM       NITROGEN         OR        HEIGHT           IRRIGATION
LOCATION            TEXTURE            PH    (LBS/ACRE)    (LBS/ACRE)    (LBS/1000 SQ FT)    SHADE      (IN)            PRACTICED

CA5       SAND                      6.6-7.0     0-60        151-240        0.0-1.0          FULL SUN   0.0-0.5   ONLY DURING SEVERE STRESS
GA3         -                          -          -            -             -                -          -               -
IA1       SANDY CLAY LOAM          7.1-7.5     0-60         0-150          2.1-3.0          FULL SUN   0.0-0.5   TO PREVENT STRESS

IN1       SAND                     7.6-8.5    61-150       151-240         3.1-4.0          FULL SUN   0.0-0.5   TO PREVENT DORMANCY
KS1       SAND                     7.6-8.5     0-60         0-150          2.1-3.0          FULL SUN   0.0-0.5   NO IRRIGATION
MN1       SAND                     7.1-7.5     0-60         0-150          2.1-3.0          FULL SUN   0.0-0.5   TO PREVENT STRESS

MO1         -                          -          -            -             -                -          -               -
NC1       SILTY CLAY LOAM          6.1-6.5    61-150        0-150          3.1-4.0          FULL SUN   0.0-0.5   TO PREVENT STRESS
NJ1       SAND                     6.1-6.5     0-60         0-150          1.1-2.0          FULL SUN   0.0-0.5   TO PREVENT STRESS

OK1       SAND                     7.1-7.5    61-150       241-375         3.1-4.0          FULL SUN   0.0-0.5   TO PREVENT STRESS
UT1       SAND                     6.6-7.0     0-60         0-150            -              FULL SUN   0.0-0.5   TO PREVENT STRESS
UT2       SAND                     6.6-7.0     0-60         0-150            -              FULL SUN   0.0-0.5   TO PREVENT DORMANCY
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TABLE B. LOCATIONS AND DATA COLLECTED IN 2019

LOCATION	JANUARY QUALITY RATING	FEBRUARY QUALITY RATING	MARCH QUALITY RATING	APRIL QUALITY RATING	MAY QUALITY RATING	JUNE QUALITY RATING	JULY QUALITY RATING	AUGUST QUALITY RATING	SEPTEMBER QUALITY RATING	OCTOBER QUALITY RATING	NOVEMBER QUALITY RATING	DECEMBER QUALITY RATING	GENETIC COLOR	SPRING GREENUP	LEAF TEXTURE
CA5	X	X	X	X	X	X	X	X	X	X	X	X	X		
GA3	X	X	X	X	X	X	X	X	X	X	X		X		
IA1			X	X	X	X	X	X	X				X		
IN1				X	X	X	X	X					X		X
KS1					X	X	X	X	X	X					
MN1					X	X	X	X	X	X			X		
MO1				X	X	X	X	X	X	X					
NC1			X	X	X	X	X	X	X	X	X		X	X	X
NJ1				X	X	X	X	X	X	X			X		X
OK1			X	X	X	X	X	X	X	X			X		X
UT1					X	X	X	X	X	X			X	X	
UT2					X	X	X	X	X	X				X	

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

LOCATION	SPRING DENSITY	SUMMER DENSITY	FALL DENSITY	PERCENT COVER SPRING	PERCENT COVER SUMMER	PERCENT COVER FALL	WINTER COLOR	DOLLAR SPOT	BROWN PATCH WARM TEMP.	FAIRY RING	PINK SNOW MOLD
CA5		X	X								X
GA3	X	X	X				X	X	X		
IA1											
IN1	X	X						X	X		
KS1								X			
MN1								X			
MO1								X		X	
NC1	X	X		X				X			
NJ1			X					X	X		
OK1	X	X	X	X	X	X					
UT1											
UT2											

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

LOCATION	FALL COLOR SEPTEMBER	FALL COLOR OCTOBER	FALL COLOR NOVEMBER	FALL COLOR DECEMBER	DOLLAR SPOT RATINGS MAY	JUNE	JULY	AUGUST	OCTOBER	BROWN PATCH JULY	AUGUST
CA5											
GA3	X	X	X	X							
IA1											
IN1						X	X			X	X
KS1					X		X	X			
MN1											
MO1											
NC1											
NJ1					X				X		
OK1											
UT1			X								
UT2			X								

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   TABLE 1.              MEAN TURFGRASS QUALITY RATINGS OF BENTGRASS CULTIVARS GROWN ON  1/
                         A GREEN AT FIVE LOCATIONS IN THE U.S. FOR LPI GROUP 1 **/
                                             2019 DATA

                         TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF  2/

   NAME                          # ENTRY     NJ1     MN1     IA1     MO1     KS1    MEAN

   *PIRANHA (DC-1)                  16       6.7     5.0     8.0     6.3     5.7     6.3
   *L-93 XD                         10       6.1     4.9     7.9     6.2     5.7     6.2
   *TOUR PRO (GDE)                  15       5.2     4.8     7.9     6.1     5.7     5.9
   *LUMINARY                         1       5.9     4.6     7.7     6.0     5.3     5.9
   *DECLARATION                     20       5.6     4.7     7.6     5.7     5.7     5.9
    DLFPS-AP/3058                    5       5.2     4.6     7.8     6.1     5.4     5.8
   *MACDONALD (DLFPS-AP/3018)        3       5.9     4.4     7.6     6.0     5.0     5.8
   *777 (DLFPS-AP/3054)              2       5.7     4.4     7.6     6.0     5.1     5.8
   *BARRACUDA                       19       5.1     4.6     7.6     5.9     5.5     5.7
    DLFPS-AP/3056                    4       5.5     4.1     7.1     5.4     4.8     5.4
   *V-8                             14       4.7     4.1     7.3     5.6     4.9     5.3
   *PURE ECLIPSE (PST-ROPS)         17       5.7     3.8     7.1     5.5     4.3     5.3
    DLFPS-AP/3059                    6       4.2     4.0     7.2     5.5     5.0     5.2
   *PURE SELECT                      7       4.8     3.6     7.0     5.6     4.1     5.0
   *SHARK                           18       4.3     3.7     7.0     5.5     4.3     5.0
   *PENN A-1                         8       3.9     3.8     6.9     5.2     4.7     4.9
   *KINGDOM                         12       4.5     3.6     6.9     5.4     4.1     4.9
   *NIGHTLIFE                       13       4.4     3.3     6.8     5.5     3.8     4.8
   *ARMOR                           11       3.6     2.8     6.3     4.9     3.2     4.2
   *PENNCROSS                        9       1.5     3.0     5.7     3.7     4.6     3.7

    LSD VALUE                                1.0     1.0     1.0     1.0     1.0     1.0
    C.V. (%)                                12.8    15.4     8.7    11.2    13.0    11.8
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*   COMMERCIALLY 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 AMMI GROUP. IF YOUR STATE IS NOT REPRESENTED, THEN CHOOSE AN AMMI GROUP THAT CONTAINS A LOCATION AND
      MANAGEMENT SIMILAR TO YOUR PLANTING CONDITIONS. FOR MORE INFORMATION ON AMMI, GO TO WWW.NTEP.OR/AMMI_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.

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TABLE 2.         MEAN TURFGRASS QUALITY RATINGS OF BENTGRASS CULTIVARS GROWN ON   1/
                 A GREEN AT FOUR LOCATIONS IN THE U.S. FOR LPI GROUP 2 */
                               2019 DATA

                 TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF  2/


        NAME                            # ENTRY    NC1      OK1      UT1     MEAN

        DLFPS-AP/3058                      5        7.0      6.5      6.5      6.7
        TOUR PRO (GDE)                    15        7.0      6.3      6.3      6.6
        DLFPS-AP/3059                      6        6.4      6.4      5.8      6.4
        NIGHTLIFE                         13        6.4      6.4      6.6      6.4
        SHARK                             18        6.4      6.3      6.1      6.3
        PURE SELECT                        7        6.5      6.0      6.5      6.3
        BARRACUDA                         19        6.7      5.8      5.9      6.2
        KINGDOM                           12        6.3      6.0      6.2      6.2
        V-8                               14        6.5      5.9      5.9      6.2
        PENN A-1                           8        6.1      6.2      5.5      6.1
        777 (DLFPS-AP/3054)                2        6.8      5.4      6.4      6.1
        ARMOR                             11        5.9      6.3      6.0      6.1
        LUMINARY                           1        6.8      5.1      6.2      6.0
        L-93 XD                           10        6.9      5.0      6.2      6.0
        MACDONALD (DLFPS-AP/3018)          3        6.8      5.0      6.4      5.9
        PIRANHA (DC-1)                    16        7.0      4.2      6.2      5.6
        DECLARATION                       20        6.4      4.2      5.3      5.3
        PURE ECLIPSE (PST-ROPS)           17        6.4      4.1      6.1      5.2
        DLFPS-AP/3056                      4        6.2      4.0      5.5      5.1
        PENNCROSS                          9        4.5      5.6      3.0      5.1

        LSD VALUE                                  1.0      1.0      1.0      1.0
        C.V. (%)                                   9.8     11.4     10.6     10.5
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*/ ENTRIES WITHIN THIS TABLE ARE ORDERED BY THE OVERALL MEAN AND HAVE SIMILAR TURF QUALITY PERFORMANCES IN ALL TEST LOCATIONS
    INCLUDED IN THIS AMMI GROUP. IF YOUR STATE IS NOT REPRESENTED, THEN CHOOSE AN AMMI GROUP THAT CONTAINS A LOCATION AND
    MANAGEMENT SIMILAR TO YOUR PLANTING CONDITIONS. FOR MORE INFORMATION ON AMMI, GO TO WWW.NTEP.OR/AMMI_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 3.   MEAN TURFGRASS QUALITY RATINGS OF BENTGRASS CULTIVARS GROWN ON   1/
                      A GREEN AT FOUR LOCATIONS IN THE U.S. FOR LPI GROUP 3 */
                                    2019 DATA

                          TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF 2/

NAME	# ENTRY	GA3	IN1	MEAN
TOUR PRO (GDE)	15	7.2	7.4	7.3
DLFPS-AP/3058	5	7.2	7.3	7.3
L-93 XD	10	7.0	7.3	7.1
PIRANHA (DC-1)	16	6.9	7.2	7.1
BARRACUDA	19	6.9	7.1	7.0
LUMINARY	1	6.9	7.1	7.0
777 (DLFPS-AP/3054)	2	6.8	7.0	6.9
MACDONALD (DLFPS-AP/3018)	3	6.7	6.9	6.8
DLFPS-AP/3059	6	6.7	6.9	6.8
DECLARATION	20	6.6	6.9	6.7
V-8	14	6.7	6.8	6.7
SHARK	18	6.5	6.6	6.5
PENN A-1	8	6.4	6.6	6.5
PURE SELECT	7	6.5	6.5	6.5
KINGDOM	12	6.4	6.4	6.4
NIGHTLIFE	13	6.4	6.3	6.4
DLFPS-AP/3056	4	6.2	6.4	6.3
PURE ECLIPSE (PST-ROPS)	17	6.2	6.3	6.2
ARMOR	11	5.9	5.9	5.9
PENNCROSS	9	5.4	5.8	5.6
LSD VALUE		1.0	1.0	1.0
C.V. (%)		9.6	9.4	9.5

*/ ENTRIES WITHIN THIS TABLE ARE ORDERED BY THE OVERALL MEAN AND HAVE SIMILAR TURF QUALITY PERFORMANCES IN ALL TEST LOCATIONS
     INCLUDED IN THIS AMMI GROUP. IF YOUR STATE IS NOT REPRESENTED, THEN CHOOSE AN AMMI GROUP THAT CONTAINS A LOCATION AND
     MANAGEMENT SIMILAR TO YOUR PLANTING CONDITIONS. FOR MORE INFORMATION ON AMMI, GO TO WWW.NTEP.OR/AMMI_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 4.   MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BENTGRASS CULTIVARS
                                 GROWN ON A GREEN UNDER REDUCED IRRIGATION AT LOGAN, UT   1/
                                                     2019 DATA

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

| | SPRING | COLOR | | | | QUALITY RATINGS | | | | |
NAME	GREENUP	NOVEMBER	APR	MAY	JUN	JUL	AUG	SEP	OCT	MEAN
BARRACUDA	5.0	6.0	5.3	6.7	6.0	6.3	5.0	4.7	5.7	5.7
DLFPS-AP/3058	4.7	6.7	6.3	5.0	6.0	5.7	5.3	5.0	5.7	5.6
MACDONALD (DLFPS-AP/3018)	5.0	6.7	6.0	5.3	5.7	5.0	5.3	5.0	6.0	5.5
KINGDOM	3.0	4.7	5.7	5.3	5.7	5.3	5.3	5.7	5.7	5.5
PURE SELECT	3.7	5.0	5.3	4.7	6.3	6.0	5.3	5.0	5.7	5.5
V-8	5.0	6.3	5.0	5.3	6.0	5.7	5.3	5.3	5.7	5.5
ARMOR	3.0	4.7	5.0	5.3	5.7	6.0	5.3	5.0	5.7	5.4
PENN A-1	4.0	4.3	5.0	5.3	6.0	5.0	5.3	5.0	6.0	5.4
NIGHTLIFE	3.3	5.0	4.7	5.3	5.7	6.0	5.7	4.7	5.3	5.3
PIRANHA (DC-1)	5.0	6.3	6.0	5.0	5.3	5.3	5.0	4.7	5.7	5.3
777 (DLFPS-AP/3054)	5.0	6.0	5.0	5.7	5.7	5.7	5.0	4.0	5.3	5.2
DLFPS-AP/3059	4.0	6.3	4.3	6.0	5.7	4.7	5.3	4.7	5.7	5.2
TOUR PRO (GDE)	4.3	5.7	5.3	5.0	5.7	4.7	5.0	5.0	5.3	5.1
LUMINARY	4.3	6.3	4.0	5.0	5.3	4.7	5.0	5.0	5.7	5.0
L-93 XD	4.7	5.3	5.0	4.7	6.0	5.3	4.3	4.0	4.7	4.9
SHARK	4.0	5.3	4.7	4.3	5.3	5.3	5.3	4.0	5.0	4.9
PURE ECLIPSE (PST-ROPS)	4.7	6.0	5.3	3.3	5.0	5.0	4.7	4.0	5.3	4.7
DLFPS-AP/3056	4.0	6.7	3.7	4.3	5.0	4.7	4.3	4.0	4.7	4.4
DECLARATION	4.7	5.7	4.3	4.0	5.0	4.7	3.7	4.0	4.3	4.3
PENNCROSS	3.0	3.7	2.3	2.3	4.3	2.3	3.7	3.0	4.3	3.2
LSD VALUE	1.0	1.3	1.6	1.9	2.4	1.3	1.5	1.3	1.4	0.9
C.V. (%)	13.7	13.5	18.0	20.0	14.6	14.3	14.0	14.6	11.8	9.8

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 5.
MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BENTGRASS CULTIVARS
GROWN ON A GREEN AT SAN FRANCISCO (CALIFORNIA GOLF CLUB OF SAN FRANCISCO),CA 1/
2019 DATA

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

NAME	GENETIC COLOR	DENSITY RATINGS SUMMER	DENSITY RATINGS FALL	PINK SNOW MOLD	QUALITY RATINGS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
PURE SELECT	5.7	7.0	7.0	7.7	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.3	7.0	7.0	7.0	7.0
L-93 XD	6.7	6.7	6.7	7.3	7.0	7.0	6.7	7.0	6.7	7.0	6.7	6.7	7.0	7.0	7.0	7.0	6.9
777 (DLFPS-AP/3054)	6.7	6.7	6.7	8.0	7.0	6.7	6.3	6.7	6.3	7.0	6.7	7.0	7.3	7.0	7.0	6.7	6.8
MACDONALD (DLFPS-AP/3018)	6.7	7.0	7.0	7.3	6.7	6.7	6.3	6.7	6.7	7.0	6.3	7.0	7.3	7.0	6.7	7.0	6.8
PURE ECLIPSE (PST-ROPS)	6.7	7.0	7.0	7.3	6.0	5.7	6.0	6.3	7.0	7.0	6.3	6.3	7.3	7.3	7.3	7.3	6.7
PIRANHA (DC-1)	6.7	7.0	6.3	7.3	6.3	6.3	6.0	6.3	6.3	6.7	6.0	6.3	7.3	7.0	7.0	7.0	6.6
SHARK	6.3	7.0	6.7	7.0	6.3	6.0	6.3	6.7	7.0	6.7	6.7	6.7	7.3	7.0	6.0	7.0	6.6
DLFPS-AP/3058	6.0	7.0	6.0	7.3	6.0	6.0	6.0	6.3	6.0	6.3	6.3	6.7	7.3	7.0	6.7	7.0	6.5
KINGDOM	8.0	6.3	6.7	7.7	6.0	6.0	6.3	6.3	6.3	6.7	6.3	6.3	7.0	7.0	7.0	6.7	6.5
V-8	7.3	6.7	7.0	7.7	6.0	6.0	6.3	6.3	6.3	6.7	6.7	6.0	7.3	6.7	6.7	6.7	6.5
NIGHTLIFE	8.0	7.0	7.0	7.7	6.3	6.3	6.3	6.0	6.0	6.3	6.3	6.0	7.3	7.3	6.3	6.7	6.4
TOUR PRO (GDE)	6.7	7.0	7.0	8.0	6.7	6.0	6.3	6.7	6.3	6.0	6.0	6.0	6.7	6.7	6.0	7.0	6.4
ARMOR	8.0	6.0	6.0	8.0	6.7	6.0	6.7	6.0	6.0	6.3	6.3	6.0	7.0	6.3	6.0	6.7	6.3
BARRACUDA	6.7	6.3	6.7	8.0	6.3	6.0	6.3	6.0	6.3	6.3	6.0	6.0	7.0	7.0	6.0	6.0	6.3
DLFPS-AP/3056	6.7	6.7	6.7	7.7	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.7	7.0	6.7	6.3	6.7	6.3
PENN A-1	7.0	6.0	6.0	7.3	6.0	5.7	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.3	6.3	6.2
DLFPS-AP/3059	6.0	6.0	6.0	7.3	6.0	6.0	6.0	6.0	5.7	6.0	6.0	6.3	6.7	6.3	6.0	6.0	6.1
LUMINARY	6.0	6.7	6.3	7.3	6.0	5.7	6.0	6.0	6.0	6.0	6.0	6.3	6.3	6.3	6.0	6.3	6.1
DECLARATION	6.7	6.0	6.3	7.7	5.7	5.0	6.0	5.7	5.7	5.0	5.3	6.0	6.0	6.0	5.3	6.0	5.6
PENNCROSS	6.3	4.0	4.0	8.0	4.3	3.7	4.3	4.3	4.3	4.0	4.3	4.3	3.7	4.0	4.7	4.0	4.2
LSD VALUE	0.8	0.5	0.6	1.3	0.6	0.6	0.7	0.6	0.7	0.5	0.8	0.7	0.7	0.5	0.7	0.6	0.2
C.V. (%)	7.0	4.8	5.8	6.3	6.3	6.6	6.9	6.2	6.7	5.5	7.6	6.5	6.9	5.1	6.9	5.9	2.3

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.

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TABLE 6.                              GENETIC COLOR RATINGS OF BENTGRASS CULTIVARS  1/
                                              GROWN ON A GREEN
                                                 2019 DATA

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

      NAME                        GA3    IA1    IN1    MN1    NC1    NJ1    OK1    UT1    MEAN

      NIGHTLIFE                   7.0    8.0    9.0    8.0    8.3    6.0    5.0    8.0    7.4
      KINGDOM                     7.0    7.0    9.0    8.0    8.3    6.0    5.7    8.0    7.4
      ARMOR                       7.0    7.7    9.0    8.0    8.3    6.0    4.7    8.0    7.3
      777 (DLFPS-AP/3054)         7.0    7.3    7.3    7.0    7.0    6.0    5.3    7.0    6.8
      PIRANHA (DC-1)              7.0    8.0    7.0    5.7    7.3    6.0    5.5    7.0    6.7
      LUMINARY                    7.0    6.7    6.7    7.0    7.0    6.3    5.0    7.0    6.6
      DLFPS-AP/3056               6.7    7.0    7.7    7.0    7.0    6.0    3.7    7.3    6.5
      PENN A-1                    6.7    7.0    7.3    7.0    7.3    4.7    4.3    7.3    6.5
      V-8                         6.3    6.7    8.7    6.3    7.0    4.0    5.7    7.0    6.5
      MACDONALD (DLFPS-AP/3018)   7.0    7.3    7.0    5.7    7.0    4.7    5.7    7.0    6.4
      PURE SELECT                 6.3    7.3    8.3    6.3    7.0    4.7    4.7    6.7    6.4
      PURE ECLIPSE (PST-ROPS)     7.0    6.7    8.0    6.0    7.0    6.0    3.5    7.0    6.4
      DLFPS-AP/3058               7.0    7.7    6.7    4.3    7.0    6.0    5.3    7.0    6.4
      TOUR PRO (GDE)              7.0    6.7    7.3    5.3    7.3    5.7    4.7    7.0    6.4
      L-93 XD                     7.0    7.0    6.0    4.7    7.0    8.0    4.0    6.7    6.3
      SHARK                       6.7    6.3    7.7    6.0    7.0    5.0    5.0    6.3    6.3
      DECLARATION                 6.0    7.7    6.3    5.0    7.0    6.3    4.5    6.0    6.1
      BARRACUDA                   6.3    7.0    7.3    5.3    7.0    4.3    5.0    6.3    6.1
      DLFPS-AP/3059               6.0    6.3    6.7    5.0    7.0    4.0    5.0    6.7    5.8
      PENNCROSS                   6.0    6.0    6.7    6.7    7.3    3.0    4.3    5.3    5.7

      LSD VALUE                   0.5    1.3    0.8    1.0    0.5    2.1    2.0    0.6    0.4
      C.V. (%)                    4.7   11.4    6.9    9.5    4.7   24.5   25.2    5.3   11.9
```

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.

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TABLE 7.              SPRING GREENUP RATINGS OF BENTGRASS CULTIVARS  1/
                              GROWN ON A GREEN
                                 2019 DATA

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

                        NAME                      UT1

                        V-8                       5.7
                        DLFPS-AP/3058             5.0
                        777 (DLFPS-AP/3054)       4.7
                        DECLARATION               4.7
                        DLFPS-AP/3056             4.7
                        LUMINARY                  4.7
                        MACDONALD (DLFPS-AP/3018) 4.7
                        PENN A-1                  4.7
                        PIRANHA (DC-1)            4.7
                        PURE ECLIPSE (PST-ROPS)   4.7
                        L-93 XD                   4.3
                        PURE SELECT               4.3
                        SHARK                     4.3
                        BARRACUDA                 4.0
                        DLFPS-AP/3059             4.0
                        ARMOR                     3.7
                        KINGDOM                   3.7
                        TOUR PRO (GDE)            3.7
                        NIGHTLIFE                 3.0
                        PENNCROSS                 2.7

                        LSD VALUE                 1.2
                        C.V. (%)                  17.6
```

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.

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TABLE 8.                    LEAF TEXTURE RATINGS OF BENTGRASS CULTIVARS  1/
                                    GROWN ON A GREEN
                                      2019 DATA

                        LEAF TEXTURE RATINGS 1-9; 9=VERY FINE  2/

         NAME                      IN1    NC1    NJ1    OK1    MEAN

         PURE ECLIPSE (PST-ROPS)   8.7    8.7    6.7    8.0    8.0
         PURE SELECT               8.3    9.0    6.7    8.0    8.0
         777 (DLFPS-AP/3054)       7.3    8.7    7.0    8.0    7.8
         L-93 XD                   7.3    8.7    6.7    8.0    7.7
         MACDONALD (DLFPS-AP/3018) 7.3    9.0    6.3    8.0    7.7
         SHARK                     7.7    9.0    5.7    8.0    7.6
         PIRANHA (DC-1)            7.3    9.0    6.0    8.0    7.6
         V-8                       7.7    8.7    6.0    8.0    7.6
         NIGHTLIFE                 7.3    8.3    6.3    8.0    7.5
         DLFPS-AP/3058             7.0    8.0    6.7    8.0    7.4
         TOUR PRO (GDE)            6.7    8.7    6.3    8.0    7.4
         ARMOR                     7.3    8.0    5.7    8.0    7.3
         BARRACUDA                 6.7    8.7    5.7    8.0    7.3
         KINGDOM                   7.3    8.0    5.0    8.0    7.1
         DLFPS-AP/3056             7.0    8.0    5.0    8.0    7.0
         DECLARATION               6.0    7.7    6.0    8.0    6.9
         DLFPS-AP/3059             7.0    7.7    5.7    6.7    6.8
         LUMINARY                  6.3    7.7    5.0    7.7    6.7
         PENN A-1                  6.3    8.0    4.3    8.0    6.7
         PENNCROSS                 6.3    5.0    3.0    7.3    5.4

         LSD VALUE                 1.2    0.7    1.5    0.6    0.5
         C.V. (%)                 10.1    5.7   15.9    4.9    9.1
```

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.

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TABLE 9.                  SPRING DENSITY RATINGS OF BENTGRASS CULTIVARS  1/
                               GROWN ON A GREEN
                                  2019 DATA

                        DENSITY RATINGS 1-9; 9=MAXIMUM DENSITY  2/

             NAME                        GA3    IN1    NC1    OK1    MEAN

             DLFPS-AP/3058               8.0    7.7    8.7    7.0    7.8
             MACDONALD (DLFPS-AP/3018)   7.0    8.0    9.0    7.3    7.8
             SHARK                       6.7    8.3    9.0    7.3    7.8
             PURE ECLIPSE (PST-ROPS)     7.3    9.0    9.0    5.5    7.7
             777 (DLFPS-AP/3054)         7.0    7.3    9.0    7.3    7.7
             ARMOR                       7.0    8.0    8.7    7.0    7.7
             PIRANHA (DC-1)              8.0    8.0    9.0    5.5    7.6
             DLFPS-AP/3059               7.0    8.0    8.7    6.7    7.6
             PURE SELECT                 7.0    8.0    9.0    6.3    7.6
             TOUR PRO (GDE)              8.0    7.3    8.7    6.3    7.6
             KINGDOM                     6.7    7.7    8.0    7.0    7.3
             L-93 XD                     8.0    7.7    9.0    4.7    7.3
             BARRACUDA                   7.3    6.7    8.7    6.7    7.3
             NIGHTLIFE                   7.3    7.3    8.3    6.0    7.3
             PENN A-1                    6.7    6.3    9.0    7.0    7.3
             V-8                         7.0    6.3    9.0    6.7    7.3
             LUMINARY                    7.0    7.3    8.3    6.3    7.3
             DECLARATION                 6.7    6.7    9.0    6.5    7.2
             DLFPS-AP/3056               7.0    7.0    9.0    3.7    6.7
             PENNCROSS                   6.7    6.0    6.3    6.0    6.3

             LSD VALUE                   0.6    1.6    0.6    3.0    0.8
             C.V. (%)                    5.1   13.5    4.2   28.0   14.0
```

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.

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TABLE 10.              SUMMER DENSITY RATINGS OF BENTGRASS CULTIVARS  1/
                                GROWN ON A GREEN
                                   2019 DATA

                      DENSITY RATINGS 1-9; 9=MAXIMUM DENSITY  2/

              NAME                      GA3    IN1    NC1    OK1    MEAN

              SHARK                     7.7    8.0    9.0    7.0    7.9
              PURE SELECT               7.3    8.0    9.0    6.7    7.8
              PURE ECLIPSE (PST-ROPS)   7.7    9.0    9.0    5.0    7.7
              PIRANHA (DC-1)            7.0    8.7    9.0    6.0    7.7
              NIGHTLIFE                 7.7    7.0    9.0    6.3    7.5
              V-8                       7.3    7.3    8.7    6.7    7.5
              ARMOR                     7.0    7.7    9.0    6.0    7.4
              LUMINARY                  7.7    7.0    9.0    6.0    7.4
              TOUR PRO (GDE)            7.3    7.7    9.0    5.7    7.4
              DLFPS-AP/3058             7.7    7.3    9.0    5.3    7.3
              777 (DLFPS-AP/3054)       8.0    7.0    9.0    5.0    7.3
              BARRACUDA                 7.3    6.7    9.0    6.0    7.3
              DLFPS-AP/3059             7.0    7.3    9.0    5.7    7.3
              L-93 XD                   7.7    7.3    9.0    5.0    7.3
              MACDONALD (DLFPS-AP/3018) 7.3    8.0    9.0    4.7    7.3
              DECLARATION               7.0    6.7    9.0    6.0    7.2
              KINGDOM                   7.7    6.0    9.0    6.0    7.2
              PENN A-1                  7.0    6.0    9.0    6.0    7.0
              DLFPS-AP/3056             7.3    6.7    8.7    5.3    7.0
              PENNCROSS                 6.3    5.7    6.3    5.3    5.9

              LSD VALUE                 0.8    1.6    0.4    0.8    0.5
              C.V. (%)                  6.6   13.7    2.5    8.0    8.4
```

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 11.                    FALL DENSITY RATINGS OF BENTGRASS CULTIVARS  1/
                                      GROWN ON A GREEN
                                         2019 DATA

                    DENSITY RATINGS 1-9; 9=MAXIMUM DENSITY  2/

            NAME                          GA3     NJ1     OK1     MEAN

            777 (DLFPS-AP/3054)           7.7     6.3     7.7     7.2
            DLFPS-AP/3058                 6.7     6.0     7.7     6.8
            MACDONALD (DLFPS-AP/3018)     6.7     6.3     7.3     6.8
            LUMINARY                      6.7     5.0     7.7     6.4
            PURE ECLIPSE (PST-ROPS)       6.0     6.3     7.0     6.4
            PIRANHA (DC-1)                6.0     5.7     7.5     6.4
            PURE SELECT                   5.7     5.7     7.7     6.3
            TOUR PRO (GDE)                6.0     5.7     7.3     6.3
            DECLARATION                   6.0     5.3     7.5     6.3
            SHARK                         6.0     5.0     7.7     6.2
            L-93 XD                       6.3     6.0     6.3     6.2
            NIGHTLIFE                     5.3     5.3     8.0     6.2
            DLFPS-AP/3056                 6.0     4.7     7.7     6.1
            KINGDOM                       5.7     4.7     8.0     6.1
            V-8                           6.3     4.7     7.3     6.1
            ARMOR                         5.7     4.0     7.7     5.8
            DLFPS-AP/3059                 6.3     4.0     7.0     5.8
            BARRACUDA                     6.0     4.0     6.7     5.6
            PENN A-1                      6.0     3.7     7.0     5.6
            PENNCROSS                     5.7     1.0     6.7     4.4

            LSD VALUE                     1.3     1.1     1.3     0.7
            C.V. (%)                     13.1    13.5    10.9    12.4
```

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.

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          TABLE 12.      PERCENT LIVING GROUND COVER (SPRING) RATINGS OF BENTGRASS CULTIVARS  1/
                             GROWN ON A GREEN
                             2019 DATA

                 PERCENT LIVING GROUND COVER IN SPRING: LOCATIONS  2/

                 NAME                          NC1    OK1    MEAN

                 SHARK                         99.0   98.3   98.7
                 MACDONALD (DLFPS-AP/3018)     99.0   98.0   98.5
                 PENN A-1                      99.0   97.7   98.3
                 ARMOR                         99.0   97.3   98.2
                 DLFPS-AP/3059                 99.0   97.3   98.2
                 KINGDOM                       99.0   97.3   98.2
                 777 (DLFPS-AP/3054)           99.0   96.7   97.8
                 DLFPS-AP/3058                 99.0   96.7   97.8
                 TOUR PRO (GDE)                99.0   96.3   97.7
                 PURE SELECT                   99.0   95.3   97.2
                 BARRACUDA                     99.0   94.0   96.5
                 NIGHTLIFE                     99.0   93.7   96.3
                 V-8                           99.0   93.0   96.0
                 DECLARATION                   99.0   92.5   95.8
                 PIRANHA (DC-1)                99.0   92.5   95.8
                 LUMINARY                      99.0   90.3   94.7
                 PURE ECLIPSE (PST-ROPS)       99.0   86.5   92.8
                 L-93 XD                       99.0   62.0   80.5
                 PENNCROSS                     58.3   96.0   77.2
                 DLFPS-AP/3056                 99.0   49.7   74.3

                 LSD VALUE                      5.2   25.9   12.7
                 C.V. (%)                       3.3   17.1   11.7
```

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.

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          TABLE 13.     PERCENT LIVING GROUND COVER (SUMMER) RATINGS OF BENTGRASS CULTIVARS  1/
                                    GROWN ON A GREEN
                                      2019 DATA

                        PERCENT LIVING GROUND COVER IN SUMMER: LOCATIONS  2/

                           NAME                      OK1

                           ARMOR                     99.0
                           DLFPS-AP/3058             99.0
                           NIGHTLIFE                 99.0
                           PENN A-1                  99.0
                           PURE SELECT               99.0
                           SHARK                     99.0
                           V-8                       99.0
                           DLFPS-AP/3059             98.7
                           TOUR PRO (GDE)            98.7
                           PIRANHA (DC-1)            98.5
                           PENNCROSS                 98.3
                           777 (DLFPS-AP/3054)       98.0
                           LUMINARY                  98.0
                           KINGDOM                   97.7
                           L-93 XD                   97.3
                           DECLARATION               97.0
                           BARRACUDA                 96.0
                           PURE ECLIPSE (PST-ROPS)   94.5
                           MACDONALD (DLFPS-AP/3018) 91.7
                           DLFPS-AP/3056             81.7

                           LSD VALUE                  7.0
                           C.V. (%)                   4.3
```

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.

PERCENT LIVING GROUND COVER IN FALL: LOCATIONS 2/

NAME	OK1
DLFPS-AP/3058	99.0
DLFPS-AP/3059	99.0
PENN A-1	99.0
PURE SELECT	99.0
TOUR PRO (GDE)	99.0
ARMOR	97.7
SHARK	97.7
PENNCROSS	96.0
BARRACUDA	95.7
KINGDOM	95.7
NIGHTLIFE	92.7
V-8	92.7
777 (DLFPS-AP/3054)	84.7
MACDONALD (DLFPS-AP/3018)	81.7
L-93 XD	72.3
LUMINARY	69.7
PIRANHA (DC-1)	63.0
DECLARATION	56.3
DLFPS-AP/3056	45.0
PURE ECLIPSE (PST-ROPS)	40.0
LSD VALUE	40.5
C.V. (%)	30.1

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 15.                    WINTER COLOR RATINGS OF BENTGRASS CULTIVARS  1/
                                        GROWN ON A GREEN
                                          2019 DATA

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


                        NAME                         GA3

                        777 (DLFPS-AP/3054)          7.0
                        DLFPS-AP/3058                6.7
                        LUMINARY                     6.7
                        MACDONALD (DLFPS-AP/3018)    6.7
                        PENN A-1                     6.7
                        PIRANHA (DC-1)               6.7
                        TOUR PRO (GDE)               6.7
                        ARMOR                        6.3
                        L-93 XD                      6.3
                        PURE ECLIPSE (PST-ROPS)      6.3
                        PURE SELECT                  6.3
                        SHARK                        6.3
                        BARRACUDA                    6.0
                        DLFPS-AP/3056                6.0
                        DLFPS-AP/3059                6.0
                        NIGHTLIFE                    6.0
                        V-8                          6.0
                        DECLARATION                  5.7
                        KINGDOM                      5.7
                        PENNCROSS                    5.7


                        LSD VALUE                    0.9
                        C.V. (%)                     8.5
```

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 16.              DOLLAR SPOT RATINGS OF BENTGRASS CULTIVARS  1/
                                GROWN ON A GREEN
                                   2019 DATA

                    DOLLAR SPOT RATINGS 1-9; 9=NO DISEASE  2/

NAME                      GA3    IN1    KS1    MN1    MO1    NC1    NJ1    MEAN

TOUR PRO (GDE)           8.0    8.7    7.7    6.0    9.0    9.0    8.0    8.0
L-93 XD                  7.3    8.3    8.0    5.7    9.0    9.0    7.7    7.9
DECLARATION              7.3    8.3    7.7    5.3    9.0    9.0    8.0    7.8
DLFPS-AP/3058            8.0    8.7    8.0    3.5    9.0    9.0    6.7    7.5
LUMINARY                 7.0    8.3    6.7    5.3    9.0    9.0    6.0    7.3
PIRANHA (DC-1)           7.3    8.0    8.0    3.0    9.0    9.0    7.0    7.3
BARRACUDA                7.7    7.7    8.0    4.0    9.0    9.0    5.7    7.3
DLFPS-AP/3059            7.7    8.3    6.0    3.7    9.0    9.0    6.7    7.2
MACDONALD (DLFPS-AP/3018) 6.7   8.0    7.3    3.3    8.7    9.0    6.3    7.0
V-8                      7.0    7.7    7.0    3.0    9.0    9.0    6.7    7.0
777 (DLFPS-AP/3054)      7.0    8.0    7.0    4.3    8.3    9.0    5.7    7.0
PENN A-1                 7.0    8.7    5.7    4.0    9.0    9.0    5.3    7.0
DLFPS-AP/3056            7.3    7.3    6.7    3.0    9.0    9.0    5.0    6.8
PENNCROSS                6.7    7.0    5.7    4.0    8.3    9.0    6.0    6.7
PURE SELECT              6.0    6.0    4.7    3.3    8.0    9.0    4.7    6.0
NIGHTLIFE                6.7    6.3    4.7    3.7    8.3    7.3    4.3    5.9
PURE ECLIPSE (PST-ROPS)  7.0    5.3    4.7    3.0    8.0    9.0    4.3    5.9
KINGDOM                  5.3    7.3    5.7    2.0    8.0    9.0    3.3    5.8
SHARK                    6.3    6.3    4.0    3.0    8.0    7.7    5.0    5.8
ARMOR                    5.3    4.0    2.7    3.0    6.7    7.0    2.0    4.4

LSD VALUE                1.0    1.5    1.1    2.5    0.5    1.8    1.2    0.5
C.V. (%)                 8.5   12.7   11.3   36.5    3.4   12.9   13.0   13.0
```

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 17.   BROWN PATCH (WARM TEMPERATURE) RATINGS OF BENTGRASS CULTIVARS  1/
                               GROWN ON A GREEN
                                  2019 DATA

                     BROWN PATCH RATINGS 1-9; 9=NO DISEASE  2/

                  NAME                        GA3    IN1    NJ1    MEAN

                  LUMINARY                    7.7    7.7    7.7    7.7
                  PIRANHA (DC-1)              6.7    8.0    6.7    7.1
                  PURE ECLIPSE (PST-ROPS)     7.0    7.7    6.7    7.1
                  777 (DLFPS-AP/3054)         8.0    7.7    5.3    7.0
                  DLFPS-AP/3058               7.7    8.0    5.3    7.0
                  TOUR PRO (GDE)              6.7    8.0    6.0    6.9
                  SHARK                       6.3    8.0    6.3    6.9
                  MACDONALD (DLFPS-AP/3018)   7.0    8.0    5.3    6.8
                  ARMOR                       6.3    7.3    6.3    6.7
                  NIGHTLIFE                   5.7    6.7    7.3    6.6
                  V-8                         6.7    8.0    4.7    6.4
                  DECLARATION                 5.7    8.0    5.3    6.3
                  PURE SELECT                 7.0    6.7    5.0    6.2
                  L-93 XD                     7.0    7.7    3.7    6.1
                  BARRACUDA                   6.3    7.3    4.7    6.1
                  DLFPS-AP/3059               6.3    8.0    4.0    6.1
                  KINGDOM                     6.3    4.7    7.3    6.1
                  PENN A-1                    6.3    7.0    5.0    6.1
                  PENNCROSS                   5.3    6.7    6.0    6.0
                  DLFPS-AP/3056               6.3    6.3    4.7    5.8

                  LSD VALUE                   1.2    2.5    2.0    1.1
                  C.V. (%)                   11.2   20.7   21.6   18.5
```

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 18.              FAIRY RING RATINGS OF BENTGRASS CULTIVARS  1/
                                        GROWN ON A GREEN
                                          2019 DATA

                          FAIRY RING RATINGS 1-9; 9=NO DISEASE  2/

                          NAME                        MO1

                          777 (DLFPS-AP/3054)         9.0
                          ARMOR                       9.0
                          DECLARATION                 9.0
                          DLFPS-AP/3058               9.0
                          KINGDOM                     9.0
                          L-93 XD                     9.0
                          PENNCROSS                   9.0
                          BARRACUDA                   8.7
                          DLFPS-AP/3059               8.7
                          MACDONALD (DLFPS-AP/3018)   8.7
                          NIGHTLIFE                   8.7
                          PIRANHA (DC-1)              8.7
                          SHARK                       8.7
                          V-8                         8.7
                          DLFPS-AP/3056               8.3
                          LUMINARY                    8.3
                          PENN A-1                    8.3
                          PURE ECLIPSE (PST-ROPS)     8.3
                          PURE SELECT                 8.3
                          TOUR PRO (GDE)              8.0

                          LSD VALUE                   1.0
                          C.V. (%)                    6.8
```

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.

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         TABLE 19.         FALL COLOR (NOVEMBER) RATINGS OF BENTGRASS CULTIVARS  1/
                                    GROWN ON A GREEN
                                       2019 DATA

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

             NAME                          GA3     UT1     MEAN

             MACDONALD (DLFPS-AP/3018)     6.3     7.3     6.8
             777 (DLFPS-AP/3054)           7.0     6.0     6.5
             DLFPS-AP/3056                 6.0     6.7     6.3
             V-8                           6.7     6.0     6.3
             DLFPS-AP/3058                 6.3     6.3     6.3
             PIRANHA (DC-1)                6.3     6.3     6.3
             LUMINARY                      6.7     5.7     6.2
             SHARK                         6.7     5.7     6.2
             TOUR PRO (GDE)                6.7     5.7     6.2
             L-93 XD                       7.0     5.3     6.2
             PURE ECLIPSE (PST-ROPS)       6.3     6.0     6.2
             BARRACUDA                     5.7     6.3     6.0
             PURE SELECT                   6.0     6.0     6.0
             DLFPS-AP/3059                 5.7     6.0     5.8
             DECLARATION                   5.7     5.7     5.7
             PENN A-1                      6.3     4.7     5.5
             ARMOR                         6.7     4.0     5.3
             NIGHTLIFE                     5.7     4.7     5.2
             KINGDOM                       6.0     4.3     5.2
             PENNCROSS                     6.0     4.0     5.0

             LSD VALUE                     1.0     1.1     0.7
             C.V. (%)                      9.9    12.1    10.9
```

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.

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TABLE 20.              FALL COLOR RATINGS OF BENTGRASS CULTIVARS
                       GROWN ON A GREEN AT ATHENS, GA  1/
                                 2019 DATA


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

       NAME                      SEPTEMBER   OCTOBER   NOVEMBER   DECEMBER    MEAN

       777 (DLFPS-AP/3054)          7.0        8.0        7.0        7.0       7.3
       LUMINARY                     7.0        7.7        6.7        7.0       7.1
       ARMOR                        7.7        7.0        6.7        6.7       7.0
       DLFPS-AP/3058                6.7        7.7        6.3        7.0       6.9
       PIRANHA (DC-1)               6.7        7.0        6.3        7.0       6.8
       TOUR PRO (GDE)               6.3        7.0        6.7        7.0       6.8
       V-8                          6.7        7.3        6.7        6.7       6.8
       MACDONALD (DLFPS-AP/3018)    6.7        6.7        6.3        7.0       6.7
       KINGDOM                      7.0        7.3        6.0        5.7       6.5
       L-93 XD                      6.3        6.3        7.0        6.3       6.5
       PENN A-1                     6.3        6.3        6.3        7.0       6.5
       SHARK                        5.7        6.3        6.7        7.0       6.4
       BARRACUDA                    6.3        6.7        5.7        6.3       6.3
       DECLARATION                  6.3        6.3        5.7        6.7       6.3
       DLFPS-AP/3056                6.3        6.0        6.0        6.7       6.3
       NIGHTLIFE                    6.3        6.7        5.7        6.3       6.3
       PURE ECLIPSE (PST-ROPS)      6.0        6.3        6.3        6.7       6.3
       PURE SELECT                  6.3        6.3        6.0        6.7       6.3
       DLFPS-AP/3059                6.0        6.3        5.7        6.3       6.1
       PENNCROSS                    6.3        5.7        6.0        6.0       6.0


       LSD VALUE                    1.5        1.9        1.6        1.3       1.3
       C.V. (%)                     9.6       12.1       10.0        7.9       7.6
```

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.   DOLLAR SPOT RATINGS OF BENTGRASS CULTIVARS IN THE
                    GROWN ON A GREEN AT WEST LAFAYETTE, IN 1/
                              2019 DATA

                  DOLLAR SPOT RATINGS 1-9; 9=NO DISEASE 2/

	DOLLAR SPOT JUNE	DOLLAR SPOT	MEAN
PENN A-1	9.0	8.7	8.8
TOUR PRO (GDE)	9.0	8.7	8.8
DECLARATION	9.0	8.3	8.7
DLFPS-AP/3058	8.7	8.7	8.7
DLFPS-AP/3059	9.0	8.3	8.7
L-93 XD	9.0	8.3	8.7
LUMINARY	9.0	8.3	8.7
PIRANHA (DC-1)	8.7	8.0	8.3
777 (DLFPS-AP/3054)	8.3	8.0	8.2
MACDONALD (DLFPS-AP/3018)	8.3	8.0	8.2
BARRACUDA	8.3	7.7	8.0
DLFPS-AP/3056	8.7	7.3	8.0
V-8	8.3	7.7	8.0
KINGDOM	7.7	7.3	7.5
PENNCROSS	8.0	7.0	7.5
NIGHTLIFE	7.3	6.3	6.8
PURE SELECT	7.3	6.0	6.7
SHARK	7.0	6.3	6.7
PURE ECLIPSE (PST-ROPS)	6.7	5.3	6.0
ARMOR	4.7	4.0	4.3
LSD VALUE	1.4	1.5	1.3
C.V. (%)	10.2	12.4	10.6

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.

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          TABLE 22.      DOLLAR SPOT RATINGS OF BENTGRASS CULTIVARS
                       GROWN ON A GREEN AT MANHATTAN, KS  1/
                               2019 DATA

                 DOLLAR SPOT RATINGS 1-9; 9=NO DISEASE  2/

        NAME                           MAY       JULY     AUGUST     MEAN

        DECLARATION                    7.7       4.7       6.0        6.1
        BARRACUDA                      8.0       4.3       5.3        5.9
        L-93 XD                        8.0       4.7       5.0        5.9
        DLFPS-AP/3058                  8.0       4.0       5.0        5.7
        PIRANHA (DC-1)                 8.0       4.3       4.3        5.6
        TOUR PRO (GDE)                 7.7       4.7       4.3        5.6
        LUMINARY                       6.7       4.0       5.0        5.2
        V-8                            7.0       4.3       4.3        5.2
        MACDONALD (DLFPS-AP/3018)      7.3       4.0       3.7        5.0
        777 (DLFPS-AP/3054)            7.0       4.0       3.7        4.9
        DLFPS-AP/3059                  6.0       4.0       4.0        4.7
        PENN A-1                       5.7       4.0       4.3        4.7
        DLFPS-AP/3056                  6.7       3.7       3.3        4.6
        PENNCROSS                      5.7       3.3       3.7        4.2
        KINGDOM                        5.7       3.0       3.7        4.1
        NIGHTLIFE                      4.7       2.7       2.7        3.3
        PURE SELECT                    4.7       2.7       2.7        3.3
        PURE ECLIPSE (PST-ROPS)        4.7       2.7       2.3        3.2
        SHARK                          4.0       3.0       2.3        3.1
        ARMOR                          2.7       2.3       3.3        2.8

        LSD VALUE                      1.0       1.0       1.2        0.7
        C.V. (%)                      10.3      15.7      18.3       10.0
```

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 23.            DOLLAR SPOT RATINGS OF BENTGRASS CULTIVARS
                          GROWN ON A GREEN AT NORTH BRUNSWICK, NJ  1/
                                       2019 DATA

                            DOLLAR SPOT RATINGS 1-9; 9=NO DISEASE  2/


                                    DOLLAR   DOLLAR SPOT
                     NAME            SPOT      OCTOBER      MEAN

                     DECLARATION          8.0        8.0       8.0
                     L-93 XD              7.7        7.3       7.5
                     TOUR PRO (GDE)       8.0        6.3       7.2
                     DLFPS-AP/3058        6.7        5.7       6.2
                     DLFPS-AP/3059        6.7        5.7       6.2
                     MACDONALD (DLFPS-AP/3018)  6.3  5.7       6.0
                     PIRANHA (DC-1)       7.0        5.0       6.0
                     V-8                  6.7        5.3       6.0
                     BARRACUDA            5.7        5.7       5.7
                     LUMINARY             6.0        5.3       5.7
                     777 (DLFPS-AP/3054)  5.7        5.3       5.5
                     DLFPS-AP/3056        5.0        5.3       5.2
                     PENNCROSS            6.0        4.3       5.2
                     PENN A-1             5.3        4.3       4.8
                     NIGHTLIFE            4.3        4.3       4.3
                     PURE ECLIPSE (PST-ROPS)  4.3    3.7       4.0
                     PURE SELECT          4.7        3.3       4.0
                     SHARK                5.0        2.7       3.8
                     KINGDOM              3.3        3.3       3.3
                     ARMOR                2.0        2.3       2.2

                     LSD VALUE            1.0        1.4       0.9
                     C.V. (%)            11.8       18.0      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 24.        BROWN PATCH RATINGS OF BENTGRASS CULTIVARS IN THE
                          GROWN ON A GREEN AT WEST LAFAYETTE, IN  1/
                                      2019 DATA

                          BROWN PATCH RATINGS 1-9; 9=NO DISEASE  2/


                                           BROWN PATCH WEAR RATINGS
                     NAME                  JULY        WEAR        MEAN

                     DLFPS-AP/3059          8.7         8.0         8.3
                     SHARK                  8.7         8.0         8.3
                     PIRANHA (DC-1)         8.3         8.0         8.2
                     DLFPS-AP/3058          8.0         8.0         8.0
                     MACDONALD (DLFPS-AP/3018) 8.0      8.0         8.0
                     PURE ECLIPSE (PST-ROPS) 8.3        7.7         8.0
                     777 (DLFPS-AP/3054)    8.0         7.7         7.8
                     DECLARATION            7.7         8.0         7.8
                     LUMINARY               8.0         7.7         7.8
                     V-8                    7.7         8.0         7.8
                     ARMOR                  8.0         7.3         7.7
                     TOUR PRO (GDE)         6.7         8.0         7.3
                     L-93 XD                6.3         7.7         7.0
                     PURE SELECT            7.3         6.7         7.0
                     BARRACUDA              6.3         7.3         6.8
                     PENN A-1               6.7         7.0         6.8
                     DLFPS-AP/3056          7.0         6.3         6.7
                     NIGHTLIFE              6.3         6.7         6.5
                     PENNCROSS              6.3         6.7         6.5
                     KINGDOM                5.3         4.7         5.0


                     LSD VALUE              5.1         4.8         4.4
                     C.V. (%)               22.8        20.9        19.8
```

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.

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APPENDIX TABLE.    SUMMARY OF TURFGRASS QUALITY RATINGS FOR BENTGRASS CULTIVARS
                              GROWN ON A GREEN
                                 2019 DATA

                    TURFGRASS QUALITY RATINGS 1-9; 9=IDEAL TURF


                                    QUALITY    MAXIMUM
                    NAME            MEAN 1/   IN TOP 25% 2/


                    777 (DLFPS-AP/3054)      6.1         40
                    ARMOR                    5.2          0
                    BARRACUDA                6.1         30
                    DECLARATION              5.9         30
                    DLFPS-AP/3056            5.5         20
                    DLFPS-AP/3058            6.4         60
                    DLFPS-AP/3059            5.8         10
                    KINGDOM                  5.6          0
                    L-93 XD                  6.3         70
                    LUMINARY                 6.2         40
                    MACDONALD (DLFPS-AP/3018)  6.1       20
                    NIGHTLIFE                5.6         20
                    PENN A-1                 5.6          0
                    PENNCROSS                4.3          0
                    PIRANHA (DC-1)           6.3         60
                    PURE ECLIPSE (PST-ROPS)  5.7          0
                    PURE SELECT              5.7         20
                    SHARK                    5.7         10
                    TOUR PRO (GDE)           6.4         50
                    V-8                      5.9         10


                    LSD VALUE                0.3
                    C.V. (%)                10.9
```

*/ 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.