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ON-SITE TESTING OF BENTGRASS AND BERMUDAGRASS CULTIVARS FOR GOLF COURSE PUTTING GREENS

INTRODUCTION

There is growing interest within the golfing industry to develop on-site testing of turfgrass cultivars. This concept is not new, but has not been a common practice in recent years. Therefore, the Golf Course Superintendents Association of America (GCSAA), United States Golf Association Green Section (USGA), and the National Turfgrass Evaluation Program (NTEP) have agreed to revitalize on-site testing of turfgrass cultivars on golf courses, particularly on putting greens. This project conducts evaluations of new bentgrass and bermudagrass cultivars on USGA specification putting greens constructed at golf courses across the country. This on-site testing program is designed to provide scientific information of a more applied nature about putting green turfgrass cultivar performance.

Information from this project is valuable to the golfing industry. These studies will determine the adaptation of grasses for golf course use. In addition, information obtained from on-site testing will be of particular value to plant breeders, researchers, extension educators, USGA agronomists, golf course architects, and superintendents, who need to select the best adapted putting green cultivars for a particular regional climate.

A five-person committee composed of Dr. Jeff Nus, GCSAA Research Director; Dr. Mike Kenna, USGA Research Director; Mr. James Moore, USGA Construction Education Coordinator, Mr. Kevin Morris, NTEP Executive Director; and Dr. Bob Shearman, NTEP Special Projects Coordinator determined the trial site locations and the trial specifics. Input from golf course superintendents, USGA agronomists and turfgrass researchers assisted the committee members' decision making process.

Location & Number of Trial Sites

These cultivar evaluation trials are jointly sponsored and supported by the GCSAA, USGA-Green Section, and NTEP. The USGA funded the construction of USGA specification greens for the trials. Trial sites are located on golf courses near a land grant university with a turfgrass research program or in a major metropolitan area which is readily accessible to a university turfgrass scientist. Sixteen (16) regional evaluation trial sites have been established. Trials are located in: a) northern locations for bentgrasses, b) southern locations for bermudagrass, and c) transition zone locations for both species. Trials are located where golfers practice putting and/or chipping. Host clubs provide daily maintenance of the putting green site at their own expense.

Trial Specifics

The NTEP functions as the coordinating agent for the cultivar trials. These trials are five years in duration. Trials are conducted under mutually agreed upon guidelines, procedures, and funding outlined in a research agreement agreed to and signed by the appropriate representatives of GCSAA, USGA, and NTEP and each research cooperator (i.e. university turfgrass researcher). Trials are conducted at each location under the leadership of the assigned research cooperator. These persons are responsible for establishing and conducting the trial, and collecting and transferring the data to NTEP according to the research agreement.

Trials are maintained by the golf course superintendent at each location using management procedures common to their golf course, the geographical area and in consultation with the research cooperator. No special management practices are prescribed as these trials are intended to receive real-world golf course conditions and stresses.

ON-SITE TESTING (continued)

These trials are conducted principally with commercially available, named cultivars. Experimental lines that will be commercially available in the near future (i.e. before the end of the test cycle) were also included in these trials at the sponsoring company's discretion.

The NTEP administers the program and its funding, sets the advisory committee and gathers their input and recommendations for each species trial. The NTEP organizes and distribute the seed and vegetative materials which constitute the entries for each trial location. The NTEP provides the maintenance and data collection protocols to each site; collects, analyzes and disseminates the performance data in annual and final reports; and conducts an annual site visit for each trial.

For more information or additional copies of reports, please contact:

Kevin Morris, Executive Director
National Turfgrass Evaluation Program
Beltsville Agricultural Research Center-West
Building 001 Room 245
Beltsville, Maryland 20705 USA

NTEP reports can also be found on the World Wide Web at http://www.ntep.org

ON-SITE PUTTING GREEN TEST LOCATIONS

Golf Course	Location	Superintendent	Research Cooperator
Bentgrass only			
Crystal Springs Golf Course	Burlingame, California	Ray Davies	Dr. Ali Harivandi, California Cooperative Extension
Fox Hollow at Lakewood	Lakewood, Colorado	Bruce Nelson	Dr. Tony Koski, Colorado State University
Lassing Point Golf Course	Florence, Kentucky	Jerry Coldiron	Dr. A. J. Powell, University of Kentucky
North Shore Country Club	Glenview, Illinois	Dan Dinelli	Dr. Tom Voigt, University of Illinois
Purdue University Kampen Course	West Lafayette, Indiana	Jim Scott	Dr. Clark Throssell, Purdue University
Snoqualmie Ridge C. C.	Snoqualmie, Washington	Tom Wolff	Dr. Gwen Stahnke, Washington State University
Westchester Country Club	Rye, New York	Joe Alonzi	Dr. James Murphy, Rutgers University
Westwood Golf Course	Vienna, Virginia	Walter Montross	Dr. David Chalmers, Virginia Tech University
Bentgrass and Bermudagrass			
Bent Tree Country Club	Dallas, Texas	Keith Ihms	Dr. Milt Engelke, Texas A&M University
Country Club of Birmingham	Birmingham, Alabama	Lee McLemore	Dr. Elizabeth Guertal, Auburn University
Country Club of Green Valley	Green Valley, Arizona	Mike Bates	Dr. David Kopec, University of Arizona
The Missouri Bluffs	St. Charles, Missouri	Mike Vogt	Dr. John Dunn, University of Missouri
SCGA Members Club	Murrieta, California	John Martinez	Dr. Robert Green, University of California-Riverside
Bermudagrass only			
Country Club of Mobile	Mobile, Alabama	Ron Wright	Dr. Bryan Unruh, University of Florida
Jupiter Island Club	Hobe Sound, Florida	Rob Kloska	Dr. John Cisar, University of Florida
Lakeside Country Club	Houston, Texas	Mike Sandburg	Dr. Richard White, Texas A&M University

USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST

Entries and Sponsors

Entry No.	Name	Sponsor
1	MS-Supreme	Mississippi State University
2	TifEagle	Georgia Seed Development Commission
3	Mini-Verde	Turfgrass America
4	Tifdwarf	Standard Entry
5	Champion	Coastal Turf, Inc.
6	Tifgreen	Standard Entry
7	Floradwarf	Florida Turfgrass Foundation

TABLE 1A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT BIRMINGHAM, AL (COUNTRY CLUB OF BIRMINGHAM)

ESTABLISHMENT

Planting date	11-Jun-98
Problems during	None

FACTORS OF PLAY

Date opened for play	July of 1998. Open year round
Date closed for play	
Type of spikes allowed	softspikes
Uses of green	chipping, bunker practice

MOWING

Initial height	0.25"
Current height	0.125-0.150"
Frequency	6-7 days/week
Type of mower	Toro 800 walk
Rollers used	
Groomers used	6-7 days/week

CULTIVATION

Aerfication - dates	5/8" hollow - June. 1/4" hollow tine- July & August. Graden - Sept. 1.
Aerification - type	
Verticutting	Lightly verticut every 3 weeks or so.
Dates of topdressing	Heavy after aerifications, Lightly bi-weekly
Other cultural practices	Rolling as needed

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
March, April, May	26-0-22 (Nutralene+KNO_3)	0.5 lb. N
June, July	Anderson's (22-0-22)	0.5 lb. N
June, July	K_2SO_4 (0-0-24)	1 lb. K_2O
March-November	20-5-20 ProSol foliar	1/16 lb. N

FUNGICIDES

Date(s)	Product	Rate (oz./M)
Fungicides are sprayed biweekly in summer depending on weather conditions. Big problem with pythium so Alliette, Banol, Subdue, and Heritage are rotated and sprayed on a two weeks schedule.	Alliette	4
	Banol	2
	Subdue Maxx	1
	Dithane	4
	Daconil Ultrex	4-8 oz.
	Heritage	0.4
	Consyst	4
	Terrazole	6

HERBICIDES

Date(s)	Product	Rate (oz./M)
March, May, July	Bensulide	

INSECTICIDES

Date(s)	Product	Rate (oz./M)
for cutworms, armyworms and a few mole crickets	Talstar	

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
None		

NOTES/COMMENTS

Overseeded with Poa trivialis and covered when temperatures dropped below 24 degrees. Areas of green that get the most splash from bunkers are healthier. No discernable layer underneath. Weekly topdressing would probably be better.

TABLE 1B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT BIRMINGHAM, AL (COUNTRY CLUB OF BIRMINGHAM) 1/ 2000 DATA

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

NAME	GENETIC COLOR	SPRING GREENUP	COLOR MARCH	FALL COLOR AUGUST	FALL COLOR SEPTEMBER	QUALITY RATINGS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DEC	MEAN
MINI-VERDE	7.0	6.0	6.0	6.7	5.7	6.0	7.0	6.3	6.7	6.0	6.0	6.7	6.7	6.7	5.7	3.7	6.1
MS-SUPREME	6.7	6.3	6.3	3.7	4.0	6.0	7.3	7.0	7.0	6.3	6.7	6.0	5.7	3.7	4.7	3.3	5.8
TIFEAGLE	6.0	5.0	5.0	6.0	5.0	6.0	6.0	6.7	7.0	5.3	6.3	6.0	6.3	6.3	5.7	2.7	5.8
CHAMPION	7.0	5.3	5.3	5.7	3.7	5.7	6.0	7.0	6.7	6.0	6.0	6.7	6.0	5.3	4.7	2.7	5.7
FLORADWARF	7.3	6.0	6.0	5.3	4.7	5.7	6.3	6.3	7.0	6.0	5.3	6.7	6.3	5.3	5.0	2.7	5.7
TIFDWARF	6.0	6.7	6.7	6.7	4.3	6.0	5.7	6.0	7.0	6.0	5.3	5.3	4.7	7.0	3.7	3.7	5.5
TIFGREEN	4.7	4.3	4.3	3.0	3.3	5.3	3.7	4.7	5.0	4.0	4.0	4.0	3.0	3.3	3.3	4.0	4.0
LSD VALUE	1.3	1.0	1.0	1.1	1.6	0.8	0.9	1.3	1.0	1.0	0.7	1.0	1.0	1.0	0.9	1.5	0.4
C.V. (%)	11.0	9.8	9.8	12.3	17.7	6.3	9.0	10.8	7.8	9.9	7.2	9.8	10.2	11.4	11.3	21.7	4.4

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 2A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT MOBILE, AL (COUNTRY CLUB OF MOBILE)

ESTABLISHMENT

Planting date	18-Jun-98
Problems during	None
	1 lb. N/M, amend soil with Ca as needed. Topdress & roll until smooth surface was attained

FACTORS OF PLAY

Date opened for play	
Date closed for play	NA
Type of spikes allowed	softspikes
Uses of green	putting, chipping,

MOWING

Initial height	0.155"
Current height	0.140"
Frequency	7 days/week
Type of mower	walking
Rollers used	weekly in June - October
Groomers used	

CULTIVATION

Aerfication - dates	5/15 and 8/14
Aerification - type	5/8" Hollow Tines
Verticutting	Verticut lightly every other Monday in June-Oct. & topdressed lightly on the opposite Mondays. Topdressing monthly in November to May.
Dates of topdressing	

Other cultural practices

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
June - October		1 lb. N & 2 lbs. K
November - May		1/2 lb. N & 1 lb. K

75% slow release (Nutralene) Nitrogen
Typical blend 12-2-24
Foliar nutrients as needed (<2 lbs./year)

FUNGICIDES

Date(s)	Product	Rate (oz./M)
July-September	Delta Guard for army worms	
Fall, Spring	Banol, Heritage, Terrazole for Pythium	
	Chipco, chlorothalonil for patch disease	

NOTES/COMMENTS

Lots of disease fall of 2000. Tifgreen almost gone - taken over by adjacent plots. High nematode populations on Floradwarf.

HERBICIDES

Date(s)	Product	Rate (oz./M)
None		

INSECTICIDES

Date(s)	Product	Rate (oz./M)
None		

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
	Aquafer	4 oz./K every 30 days
	Wetting agent	

TABLE 2B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT MOBILE, AL (COUNTRY CLUB OF MOBILE) 1/ 2000 DATA

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

	GENETIC COLOR	DENSITY FALL	DOLLAR SPOT SEPTEMBER	PERCENT DOLLAR SPOT MARCH	COUNTS OF NEMATODES (NUMBERS/100 CUBIC CM SOIL) ROOT-KNOT	RING	LANCE	SHEATH	QUALITY RATINGS MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	MEAN
MINI-VERDE	7.8	7.8	3.0	17.0	72.5	5.0	0.0	5	8.0	8.0	8.8	8.8	8.3	8.5	8.0	7.3	8.2
CHAMPION	7.3	7.5	3.3	29.5	60.0	0.0	2.5	5	8.0	7.8	8.0	8.5	8.0	8.3	7.3	7.5	7.9
TIFEAGLE	7.3	7.8	3.8	14.5	55.0	3.5	0.0	0	8.0	7.8	7.8	8.8	8.0	8.3	7.5	7.0	7.9
TIFDWARF	8.3	7.8	1.3	8.3	90.0	15.0	0.0	15	8.0	7.5	7.0	7.0	7.5	8.3	8.0	7.0	7.5
MS-SUPREME	6.5	6.0	6.0	2.5	55.0	5.0	0.0	5	7.8	7.3	6.5	7.5	7.5	7.5	6.5	7.8	7.3
FLORADWARF	7.0	6.8	4.8	21.8	35.0	2.5	23.8	0	7.0	6.8	5.8	7.5	7.3	7.3	6.8	6.5	6.8
TIFGREEN	8.0	5.3	1.5	2.5	127.5	15.0	0.0	10	8.0	7.8	6.8	4.8	6.5	6.8	6.3	6.8	6.7
LSD VALUE	0.8	0.8	2.7	11.2	68.1	-	16.7	-	0.3	0.8	0.8	0.7	0.7	2.0	0.8	-	0.4
C.V. (%)	7.2	18.3	50.1	55.5	54.6	240.2	250.4	151.6	2.4	6.3	7.9	7.3	6.4	13.2	7.5	15.5	3.7

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 3A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT GREEN VALLEY, AZ (COUNTRY CLUB OF GREEN VALLEY)

ESTABLISHMENT

Planting date	July 1998
Problems during	Established from plugs only - 40 per plot

FACTORS OF PLAY

Date opened for play	1-Jun
Date closed for play	15-Dec
Type of spikes allowed	soft
Uses of green	putting practice

MOWING

Initial height	5/32"
Current height	5/32"
Frequency	6X/week
Type of mower	Walking and triplex
Rollers used	Grooved rollers only
Groomers used	

CULTIVATION

Aerfication - dates	22-Jun
Aerification - type	1/2" hollow tines 2 passes @ 2x2 spacing
Verticutting	Light vert. - 6/5, 7/18, 8/22
Dates of topdressing	Sand - 6/22, 7/5, 7/18, 8/22
Other cultural practices	

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
May-September (bi-monthly)	Florentine liquid	0.25 lbs. N
once in June-Sep.	15-15-15 greens grade granular	1.25 lbs. N
May-September (monthly)	Ferromec (Iron)	4 oz. product

FUNGICIDES

Date(s)	Product	Rate (oz./M)
None		

HERBICIDES

Date(s)	Product	Rate (oz./M)
Roundup applied when bermuda was dormant to control poa and stray bentgrass		

INSECTICIDES

Date(s)	Product	Rate (oz./M)
None		

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
April-September	soil wetting agent	2

NOTES/COMMENTS

TABLE 3B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT GREEN VALLEY, AZ (COUNTRY CLUB OF GREEN VALLEY) 1/ 2000 DATA

TURFGRASS QUALITY AND OTHER RATINGS 1-9; 9=BEST 2/
TURFGRASS STIMPMETER READINGS MEASURED IN INCHES

	GENETIC	SPRING	LEAF	DENSITY RATINGS			PERCENT LIVING COVER			THATCH	FALL COLOR	FALL COLOR	STIMPMETER READING			QUALITY RATINGS							
NAME	COLOR	GREENUP	TEXTURE	SPRING	SUMMER	FALL	SPRING	SUMMER	FALL	(MM)	SEP	OCT	JUNE	AUGUST	OCTOBER	APR	MAY	JUN	JUL	AUG	SEP	OCT	MEAN
TIFEAGLE	7.0	7.0	7.3	7.0	8.3	7.7	85.0	85.0	97.3	23.3	7.3	7.3	83.0	87.3	89.3	5.7	7.0	7.7	7.0	7.0	7.3	6.3	6.9
MINI-VERDE	7.0	4.7	7.7	7.0	8.3	8.3	73.3	78.3	94.0	22.7	7.3	7.0	86.7	92.3	95.7	4.3	6.7	8.0	6.7	8.3	6.3	6.0	6.6
MS-SUPREME	6.7	6.0	7.3	6.3	7.3	8.0	76.7	88.3	95.7	20.3	6.0	6.3	81.3	81.7	80.7	4.7	6.7	7.7	6.3	7.3	7.0	4.7	6.3
TIFDWARF	6.7	6.0	7.3	7.0	8.7	7.7	48.3	68.3	99.0	22.0	5.0	5.7	81.7	87.0	90.0	3.3	7.0	8.3	8.0	6.0	5.3	4.7	6.1
TIFGREEN	7.0	5.7	6.0	4.7	6.7	7.0	66.7	68.3	69.0	18.7	7.3	7.3	87.7	87.7	85.7	4.0	4.3	6.3	5.7	6.3	8.3	7.7	6.1
FLORADWARF	5.0	5.0	5.0	4.7	5.7	5.3	78.3	95.0	67.3	15.7	4.7	4.7	72.0	77.3	80.7	6.3	4.7	5.7	6.0	4.7	6.0	5.3	5.5
CHAMPION	6.3	4.0	7.0	5.3	7.3	8.0	53.3	63.3	80.7	20.3	6.0	6.3	90.7	94.0	95.3	3.3	5.3	5.3	5.3	6.3	6.0	3.7	5.0
LSD VALUE	0.7	2.8	0.8	1.3	1.0	0.9	11.4	15.4	16.6	4.1	2.6	1.9	14.6	15.2	19.7	1.9	1.0	2.3	2.1	1.4	2.1	1.9	1.0
C.V. (%)	6.1	22.9	7.2	11.9	8.0	7.3	9.7	10.8	10.6	10.6	20.1	14.6	8.3	8.1	9.8	21.8	10.2	16.2	15.4	11.9	15.3	18.4	8.7

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 4A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT MURRIETA, CA (SCGA MEMBERS CLUB)

ESTABLISHMENT

Planting date	29-May-98
Problems during	None

FACTORS OF PLAY

Date opened for play	
Date closed for play	
Type of spikes allowed	Softspikes only
Uses of green	putting, chipping, target. Heavy use PPG.

MOWING

Initial height	0.125"
Current height	0.125"
Frequency	7 days/week
Type of mower	Triplex - GKV
Rollers used	Groomers used approximate 4 days/week.
Groomers used	Rollers used 1-2 times per month.

CULTIVATION

Aerfication - dates	3/14, 10/10
Aerification - type	5/8" hollow tine
Verticutting	2-3 times/month depending upon thatch except Nov.-May.
Dates of topdressing	Heavy topdressing w/USGA spec. sand on 3/14, 10/10, following aerification. Light topdressing w/#30 silica sand monthly except Nov.-Mar.
Other cultural practices	Heavy brushing in Mar., Oct. Rolled for special tournament events which is 1-2 times/month. Flushed with 6" of irrigation water once every 3 weeks from June-Oct. to lower High E.C. (100% reclaimed irrigation use in 2000)

FUNGICIDES

Date(s)	Product	Rate (oz./M)
27-Jul	Daconil WS	2
3-Aug	Alliette	4
3-Aug	Fore (WP)	8
14-Aug	Subdue Maxx	1
14-Aug	Fore (WP)	8
20-Nov	26 Chipco GT Flo.	5

HERBICIDES

Date(s)	Product	Rate (oz./M)
None		

INSECTICIDES

Date(s)	Product	Rate (oz./M)
11-Jul	Merit (75 WSP)	0.19
14-Aug	Tempo 20 WP	5 grams/1000

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
None		

NOTES/COMMENTS

Overseeded with Perennial Ryegrass (Certified Blue Tag "Brightstar II & Charger II) on Oct. 18. Preparations included verticutting and scalping to .120

TABLE 4A. (CONT'D) 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT MURRIETA, CA (SCGA

FERTILIZATION

Date(s)	Product Name	Product Analysis	Rate (lbs./M) N	P	K
5-Jan	Turf Partners	7-0-0	0.02		
5-Jan	Turf Partners	1-0-23			0.07
5-Jan	Turf Partners	7-32-6	0.02	0.1	0.02
5-Jan	Crown Tech.	FeSO4			
14-Jan	Nutriculture	20-20-20	0.08	0.08	0.08
14-Jan	Turf Partners	1-0-23			0.07
14-Jan	Turf Partners	7-0-0	0.02		
14-Jan	Crown Tech.	FeSO4			
14-Jan	Turf Partners	7-32-6	0.02	0.1	0.02
24-Jan	Turf Partners	1-0-23			0.07
24-Jan	Turf Partners	Eco-Mag			
24-Jan	Turf Partners	7-32-6	0.02	0.1	0.02
24-Jan	Turf Partners	7-0-0	0.02		
9-Feb	Best	10-4-16	0.4	0.16	1.62
22-Feb	True Green	34-0-0	0.04		
22-Feb	Turf Partners	7-0-0	0.02		
22-Feb	Turf Partners	Eco-Mag			
22-Feb	Crown Tech.	FeSO4			
1-Mar	Nutriculture	28-8-18	0.08	0.02	0.05
1-Mar	Turf Partners	1-0-23			0.07
1-Mar	Turf Partners	1-0-0 (8% Ca)			
1-Mar	Turf Partners	7-32-6	0.02	0.1	0.02
1-Mar	Turf Partners	Eco-Mag			
1-Mar	Crown Tech.	FeSO4			
2-Mar	Best	10-4-16	0.62	0.25	0.99
8-Mar	Turf Partners	1-0-0 (8% Ca)			
8-Mar	Turf Partners	1-0-23			0.07
8-Mar	Turf Partners	7-32-6	0.02	0.1	0.02
8-Mar	Turf Partners	7-0-0	0.02		
17-Mar	Nutriculture	20-20-20	0.06	0.06	0.06

FERTILIZATION

Date(s)	Product Name	Product Analysis	Rate (lbs./M) N	P	K
17-Mar	Nutriculture	34-0-0	0.04		
17-Mar	Turf Partners	Eco-Mag			
17-Mar	Crown Tech.	FeSO4			
27-Mar	Nutriculture	28-8-18	0.08	0.02	0.05
27-Mar	Turf Partners	1-0-23			0.07
27-Mar	Turf Partners	7-32-6	0.02	0.1	0.02
27-Mar	Crown Tech.	FeSO4			
2-Apr	Turf Partners	Gypsum			
3-Apr	Turf Partners	34-0-0	0.01		
3-Apr	Turf Partners	1-0-0 (8% Ca)			
3-Apr	Turf Partners	1-0-23			0.07
3-Apr	Nutriculture	28-8-18	0.08	0.02	0.05
3-Apr	Nutriculture	24-0-0	0.07		
14-Apr	Turf Partners	34-0-0	0.1		
14-Apr		0-0-34			0.09
18-Apr	Best	18-3-18 (Polyon)	0.5	0.08	0.5
23-Apr	Turf Partners	0-0-34			0.2
23-Apr	Nutriculture	28-8-18	0.08	0.02	0.05
23-Apr	Turf Partners	Eco-Mag			
23-Apr	Crown Tech.	FeSO4			
26-Apr	Nutriculture	28-8-18	0.08	0.02	0.05
26-Apr	Turf Partners	1-0-23			0.07
26-Apr	Turf Partners	Eco-Mag			
26-Apr	promot	Promot			
26-Apr	Crown Tech.	FeSO4			
1-May	Turf Partners	34-0-0	0.07		
1-May	Crown Tech.	FeSO4			
7-May	Best	18-3-18 (Polyon)	0.5	0.08	0.5
12-May	Nutriculture	28-8-18	0.08	0.02	0.05
12-May	Crown Tech.	FeSO4			

TABLE 4A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT MURRIETA, CA (SCGA MEMBERS CONT'D)

FERTILIZATION

Date(s)	Product Name	Product Analysis	Rate (lbs./M) N	P	K
12-May	Turf Partners	1-0-23			0.04
12-May	Turf Partners	Eco-Mag			
23-May	Nutriculture	20-20-20	0.06	0.06	0.06
23-May	Turf Partners	1-0-23			0.04
23-May	Crown Tech.	FeSO4			
31-May	Nutriculture	28-8-18	0.08	0.02	0.05
31-May	Nutriculture	24-0-0	0.07		
14-Jun	Nutriculture	34-0-0	0.07		
14-Jun	Turf Partners	1-0-23			0.14
14-Jun	Turf Partners	8% chelated Fe			
19-Jun	Turf Partners	0-0-34			0.07
19-Jun	Nutriculture	24-0-0	0.07		
24-Jun	Pursell	0-0-46			1.1
10-Jul	Turf Partners	0-0-34			0.07
10-Jul	Turf Partners	7-0-0	0.1		
16-Jul	Turf Partners	Gypsum			
27-Jul	Pac. Ag. & Turf	0-0-25			0.08
27-Jul	Nutriculture	24-0-0	0.1		
8-Aug	Pac. Ag. & Turf	0-0-25			0.1
8-Aug	Nutriculture	24-0-0	0.1		
17-Aug	Turf Partners	34-0-0			
19-Aug	Turf Partners	0-0-34			0.07
19-Aug	Nutriculture	28-8-18	0.08	0.02	0.05
19-Aug	Sequestar	13% Fe			
5-Sep	Turf Partners	0-0-34			0.07
5-Sep	K-Power	13.75-0-46	0.04		0.13
5-Sep	Sequestar	13% Fe			
11-Sep	Turf Partners	1-0-0-8Ca			

FERTILIZATION

Date(s)	Product Name	Product Analysis	Rate (lbs./M) N	P	K
11-Sep	Turf Partners	1-0-23			0.07
11-Sep	Nutriculture	34-0-0	0.1		
19-Sep	Best	10-4-16	0.62	0.25	0.99
1-Oct	Turf Partners	Gypsum			
4-Oct	Best	10-4-16	0.26	0.11	0.42
25-Oct	Turf Partners	0-0-34			0.1
25-Oct	Nutriculture	28-8-18	0.08	0.02	0.05
2-Nov	Turf Partners	Gypsum			
12-Nov	K-Power	34-0-0	0.1		
12-Nov	Turf Partners	1-0-23			0.07
12-Nov	Crown Tech.	FeSO4			
15-Nov	Turf Partners	Eco-Mag			
15-Nov	Turf Partners	1-0-23			0.14
15-Nov	K-Power	13.75-0-46	0.04		0.13
15-Nov	Nutriculture	20-20-20	0.06	0.06	0.06
15-Nov	Crown Tech.	FeSO4			
27-Nov	Turf Partners	0-0-34			0.07
27-Nov	Nutriculture	28-8-18	0.08	0.02	0.05
3-Dec	Lebenon S.G.	20-0-20	0.5		0.5
7-Dec	K-Power	13.75-0-46	0.04		0.13
7-Dec	Turf Partners	34-0-0			0.07
7-Dec	Turf Partners	1-0-0-8Ca			
16-Dec	Best	10-4-16	0.4	0.16	1.62
22-Dec	Nutriculture	28-8-18	0.08	0.02	0.05
22-Dec	Turf Partners	34-0-0			0.07
22-Dec	Crown Tech.	FeSO4			
27-Dec	Turf Partners	34-0-0			0.1
27-Dec	Nutriculture	20-20-20	0.1	0.1	0.1
		Total	7.53	1.89	12.09

TABLE 4B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT MURRIETA, CA (SCGA MEMBERS CLUB) 1/ 2000 DATA

TURFGRASS QUALITY AND OTHER RATINGS 1-9; 9=BEST 2/
TURFGRASS STIMPMETER READINGS MEASURED IN INCHES

NAME	GENETIC COLOR	LEAF TEXTURE	PERCENT COVER FEBRUARY	PERCENT COVER MARCH	STIMPMETER READINGS JULY	STIMPMETER READINGS SEPTEMBER	QUALITY RATINGS APR	MAY	JUN	JUL	AUG	SEP	OCT	MEAN
MS-SUPREME	8.0	7.7	81.7	93.3	132.3	110.0	8.0	8.0	8.0	8.0	7.7	7.7	8.0	7.9
MINI-VERDE	8.0	8.0	68.3	91.7	124.7	101.0	7.0	8.0	7.0	8.0	8.0	8.0	8.0	7.7
CHAMPION	8.0	7.7	60.0	86.7	123.3	99.7	7.0	8.0	6.7	8.0	7.3	7.3	7.3	7.4
TIFEAGLE	8.0	7.0	75.0	92.7	129.3	106.0	7.0	7.3	7.0	8.0	7.0	7.3	7.3	7.3
FLORADWARF	7.0	7.0	63.3	70.0	126.0	104.3	6.0	8.0	7.0	8.0	7.0	6.7	7.0	7.1
TIFGREEN	6.3	6.0	53.3	88.3	122.7	99.7	6.3	6.0	6.0	6.7	6.0	6.3	6.7	6.3
TIFDWARF	6.3	6.0	46.7	81.7	129.0	106.3	6.0	6.7	6.0	6.0	6.0	6.3	6.3	6.2
LSD VALUE	0.5	0.5	16.1	5.8	-	-	0.4	0.5	0.4	0.8	0.5	1.0	0.9	0.2
C.V. (%)	4.4	4.0	13.7	4.0	4.9	5.7	3.2	4.0	3.2	5.8	4.2	7.4	6.4	1.6

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 5A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT HOBE SOUND, FL (THE JUPITER ISLAND CLUB)

ESTABLISHMENT

Planting date	
Problems during	

FACTORS OF PLAY

Date opened for play	
Date closed for play	None
Type of spikes allowed	softspikes
Uses of green	chipping - trap lessons

MOWING

Initial height	0.110"
Current height	0.110"
Frequency	7 days/week
Type of mower	Walk-Jacobsen
Rollers used	None
Groomers used	When needed

CULTIVATION

Aerfication - dates	4 times hollow in Summer. 2 times water injection in Winter.
Aerification - type	
Verticutting	5 times heavy verticutting in Summer
Dates of topdressing	Topdressed every 3 weeks in Summer and 5 times in Winter
Other cultural practices	None

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
Summer	14-3-14	1 lb./month
Summer	0-0-30	4 lbs./month
Summer	Spray with Mono KP+Minors weekly	
Winter	0-0-30	2-4 lbs. K/month
	Spray Magnesium and 1-0-14 weekly	
	Spray Mono KP+Minors+Liquid-green+Primer weekly	

FUNGICIDES

Date(s)	Product	Rate (oz./M)
None		

HERBICIDES

Date(s)	Product	Rate (oz./M)
None		

INSECTICIDES

Date(s)	Product	Rate (oz./M)
Sprayed for insects as needed		

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
None		

NOTES/COMMENTS

TABLE 5B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT HOBE SOUND, FL (THE JUPITER ISLAND CLUB) 1/

2000 DATA

TURFGRASS QUALITY AND OTHER RATINGS 1-9; 9=BEST 2/
TURFGRASS STIMPMETER READINGS MEASURED IN INCHES

NAME	GENETIC COLOR	LEAF TEXTURE	DENSITY FALL	THATCH MEASUREMENT	FALL COLOR SEPTEMBER	FALL COLOR DECEMBER	STOLON COUNTS APRIL	STIMPMETER READINGS	QUALITY RATINGS MAR	APR	MAY	JUN	AUG	SEP	NOV	DEC	MEAN
TIFDWARF	8.7	8.0	8.3	1.7	9.0	8.7	8.7	118.3	8.3	6.7	7.7	8.0	9.0	9.0	8.0	7.3	8.0
MINI-VERDE	8.7	8.3	8.3	2.0	7.3	8.7	52.0	116.3	8.7	6.3	6.7	7.0	9.0	7.3	8.7	9.0	7.8
TIFEAGLE	8.7	7.7	8.3	2.0	8.3	8.7	53.3	113.7	8.7	6.3	7.0	6.7	8.3	8.3	8.0	9.0	7.8
FLORADWARF	8.7	8.0	8.0	1.7	7.3	8.7	37.0	112.3	9.0	6.3	7.0	6.7	8.0	7.3	7.7	8.0	7.5
TIFGREEN	8.0	7.0	6.7	1.7	7.3	8.0	44.3	117.3	7.3	7.7	8.0	8.0	7.7	7.3	8.3	6.0	7.5
CHAMPION	8.3	8.3	7.7	2.0	6.7	8.0	36.0	112.7	8.3	6.3	6.3	6.7	7.3	7.0	9.0	8.3	7.4
MS-SUPREME	8.0	7.7	6.7	2.0	7.0	8.0	71.0	109.3	8.0	6.3	7.7	7.7	7.0	7.0	8.0	7.3	7.4
LSD VALUE	-	1.4	1.7	-	1.3	1.0	-	-	1.4	1.2	1.3	1.0	0.7	1.2	1.4	0.7	0.4
C.V. (%)	6.0	7.9	10.6	20.4	8.8	5.5	78.5	6.2	7.7	8.6	8.6	7.1	5.0	8.4	7.6	5.2	2.8

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 6A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT DALLAS, TX (BENT TREE COUNTRY CLUB)

ESTABLISHMENT

Planting date	8-Jun-98
Problems during	Extremely hot and dry

FACTORS OF PLAY

Date opened for play	open every day except
Date closed for play	Monday when club closed
Type of spikes allowed	Softspikes
Uses of green	Chipping and Putting

MOWING

Initial height	
Current height	0.125"
Frequency	6 days/week
Type of mower	Toro 1000 walking unit
Rollers used	Brush attachments used in
Groomers used	growing season

CULTIVATION

Aerfication - dates	May and September
Aerification - type	Solid tine
Verticutting	Spike biweekly May-Sept. Verticut biweekly April-Sept. (alternate with verticut program)
Dates of topdressing	biweekly (different week from verticut) April-Sept.
Other cultural practices	Heavy application after solid tine rolling in Winter to smooth surface when not mowing

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
Granular Fertilizer Applications		
March	Par Ex 16-0-24	1 lb. N
May	Par Ex 16-0-24	1 lb. N
June	Polyon 0-0-46	1 lb. K
June	Country club 16-4-8	1 lb. N
July	Polyon 0-0-46	1 lb. K
August	Scotts 18-9-18	0.5 lb. N
September	Scotts 13-2-26	0.5 lb. N
October	Polyon 0-0-46	1 lb. K
October	Milorganite 6-2-0	1 lb. N
December	Polyon 0-0-32	1 lb. K
Total - Granular app.	5.0 lbs. N, 3.6 lbs. P,	9.2 lbs. K
Foliar Fertilizer Applications		
Every two weeks (March-Sept.) - 14 Applications		
Each Floratine app. consisted of		0.15 lb. N
		0.08 lb. P
		0.15 lb. K
Total - Foliar app.	2.1 lbs. N, 1.2 lbs. P,	2.1 lbs. K
Total Fertilizer app.	7.1 lbs. N, 4.8 lbs. P,	11.3 lbs. K

FUNGICIDES

Date(s)	Product	Rate (oz./M)
None		

HERBICIDES

Date(s)	Product	Rate (oz./M)
None		

INSECTICIDES

Date(s)	Product	Rate (oz./M)
sprayed with Battle GC for cutworms in May, July and August		

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
None		

NOTES/COMMENTS

Not overseeded in Fall. Used covers when temp predicted to be below 20 for excess of 24 hours

TABLE 6B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS
IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST
AT DALLAS, TX (BENT TREE COUNTRY CLUB) 1/
2000 DATA

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

NAME	GENETIC COLOR	SPRING GREENUP	LEAF TEXTURE	DENSITY SPRING	DENSITY SUMMER	QUALITY RATINGS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
MINI-VERDE	6.0	5.3	4.7	3.0	6.0	4.3	5.7	4.7	3.0	3.7	4.7	4.0	6.0	5.7	4.0	8.0	3.3	4.8
TIFEAGLE	6.3	5.3	3.0	2.7	5.3	4.3	5.3	5.3	2.7	3.3	3.7	4.3	5.3	4.3	4.0	7.0	3.7	4.4
CHAMPION	6.3	5.3	3.3	2.3	5.3	3.7	5.0	4.7	2.3	4.3	5.0	3.7	5.3	3.7	3.0	7.3	3.0	4.3
TIFDWARF	5.0	6.3	2.7	3.7	4.0	5.3	7.0	6.0	3.7	3.0	2.7	3.0	4.0	2.7	2.0	4.7	5.3	4.1
TIFGREEN	4.0	5.3	4.7	3.7	3.3	4.7	7.3	5.7	3.7	3.3	2.0	4.3	3.3	2.0	2.0	4.0	4.3	3.9
MS-SUPREME	5.3	3.7	3.0	1.7	6.0	4.0	4.0	3.0	1.0	4.7	3.3	3.7	5.3	4.0	3.0	6.3	3.3	3.8
FLORADWARF	5.3	3.0	3.0	2.0	3.3	4.3	4.0	3.7	1.3	4.7	3.0	2.7	3.3	3.0	2.7	5.3	3.7	3.5
LSD VALUE	2.0	2.8	-	1.8	2.1	1.3	1.0	2.3	0.8	2.2	2.1	1.1	1.8	1.1	2.2	1.1	1.0	0.8
C.V. (%)	17.1	26.6	42.3	31.5	22.7	13.5	11.2	24.0	18.7	24.7	30.1	15.4	20.2	18.1	34.7	10.4	13.8	9.6

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 7A. 2000 MANAGEMENT - ON-SITE BERMUDAGRASS TEST AT HOUSTON, TX (LAKESIDE COUNTRY CLUB)

ESTABLISHMENT

Planting date	16-Jun-98
Problems during	None

FACTORS OF PLAY

Date opened for play	open year round
Date closed for play	
Type of spikes allowed	Metal spikes are banned
Uses of green	Putting/Chipping/bunker play, etc.

MOWING

Initial height	0.156"
Current height	0.125"
Frequency	7 days/week
Type of mower	Toro walking greens mower
Rollers used	used weekly in Summer
Groomers used	used biweekly in Summer

CULTIVATION

Aerfication - dates	2/22 - Hydroject
Aerification - type	4/10, 9/5 - 3/8" Hollow tine
	7/12 - 1" Drill & Fill
Verticutting	5/22, 5/30, 6/12, 6/20, 7/3, 7/17, 8/7, 8/21, 9/21
Dates of topdressing	Very heavy:4/10, 7/12, 9/5; Dusting-heavy: 10/16; Moderate:1/10, 1/17, 1/24, 1/31., 2/7, 2/28, 3/20, 3/27,6/7, 7/17; Light:1/3, 2/14, 5/8, 5/15, 6/5, 7/31, 8/21, 11/6, 12/4
Other cultural practices	Brush green monthly

FERTILIZATION

Date(s)	Product	Rate (lbs./M)
31-Jan	Houactonite	0.5 lb. N
2/14, 2/28, 3/27,5/15	Andersons 18-6-15	0.5 lb. N
24-Apr	Andersons 22-0-22	1.5 lb. N
30-May	Andersons 18-6-15	0.75 lb. N
6/5, 8/7	Andersons 10-20-20	1.0 lb. N
12-Jun	HHI 15-4-6	1.0 lb. N
5-Jul	Andersons 18-4-6	1.0 lb. N
7/31, 9/11	Andersons 10-20-20	0.75 lb. N
10/30, 11/20, 12/4	Andersons 10-20-20	0.5 lb. N
8-Dec	Gypsum	8 lbs

FUNGICIDES

Date(s)	Product	Rate (oz./M)
1/24, 3/13	Subdue Maxx	1
1/24, 3/13	Daconil	2.5
3-May	Fore	4.9
5/18, 6/5	Prostar	4.5
5/23, 11/3, 11/17	Fore	6
5-Oct	Subdue	1
11/3, 11/17/2000	Heritage	0.4

NOTES/COMMENTS

Overseeded on 10/16/00 with 8-10 lbs. of Poa Trivialis per 1000 sq.ft.

HERBICIDES

Date(s)	Product	Rate (oz./M)
5-Jun	Illoxan	1

INSECTICIDES

Date(s)	Product	Rate (oz./M)
1/24, 4/17	Dursban	2.0 lbs./A
15-Jun	Dursban	
10/5, 10/30	Dursban	1

OTHER PRODUCTS

Date(s)	Product	Rate (oz./M)
1/10, 3/13	Invigorate	2
1/10, 1/24, 4/17, 5/3, 5/23	Ferromec	5
1/10, 1/24, 3/13	Thoroughbred	0.4
3/13, 6/5	SeaQuential	2
17-Apr	Primo	0.05
3-May	Green Lawnger	7

TABLE 7B. MEAN TURFGRASS QUALITY AND OTHER RATINGS OF BERMUDAGRASS CULTIVARS IN THE 1998 USGA/GCSAA/NTEP ON-SITE BERMUDAGRASS TEST AT HOUSTON, TX (LAKESIDE COUNTRY CLUB) 1/ 2000 DATA

TURFGRASS QUALITY AND OTHER RATINGS 1-9; 9=BEST 2/
TURFGRASS STIMPMETER READINGS MEASURED IN INCHES

NAME	GENETIC COLOR	STIMPMETER READINGS MAY	STIMPMETER READINGS AUGUST	STIMPMETER READINGS OCTOBER	QUALITY RATINGS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
MINI-VERDE	4.0	107.3	95.7	113.0	6.0	7.0	6.0	4.0	5.3	7.0	6.0	6.0	5.0	6.0	5.0	5.0	5.7
CHAMPION	4.7	101.7	102.0	103.3	5.7	6.7	6.0	5.0	5.3	6.3	5.7	6.0	4.3	5.7	4.3	4.3	5.4
TIFDWARF	5.0	117.0	111.3	120.0	6.3	7.0	6.3	3.7	5.3	5.7	5.3	5.3	4.7	5.7	4.3	5.0	5.4
FLORADWARF	4.7	102.7	100.0	106.3	6.0	6.7	5.3	4.0	4.0	6.7	5.3	5.0	5.0	5.3	4.7	4.7	5.2
MS-SUPREME	5.0	110.7	108.0	106.7	5.3	6.7	6.7	3.7	5.0	6.0	5.0	5.3	4.3	5.3	4.7	4.3	5.2
TIFEAGLE	4.3	95.7	98.7	100.3	6.0	6.3	6.0	3.7	5.0	6.0	6.0	5.0	4.0	5.7	4.3	4.3	5.2
TIFGREEN	4.7	102.7	94.0	104.0	5.3	5.7	4.7	3.3	4.7	3.7	2.3	2.0	3.0	2.0	2.7	3.7	3.6
LSD VALUE	-	8.3	13.5	13.9	-	-	-	1.8	-	0.9	1.3	1.0	1.9	1.0	1.0	0.7	0.5
C.V. (%)	23.4	4.4	6.5	6.3	25.3	15.0	18.5	20.1	15.6	9.1	14.2	11.8	20.4	11.5	13.0	8.7	5.6

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.