

**BREEDING, EVALUATION AND CULTURE OF  
BUFFALOGRASS FOR GOLF COURSE TURF**

**RESEARCH SUMMARY - FALL 1993**

**00083**

## **USGA PROGRESS REPORT - FALL 1993**

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**A USGA/GCSAA/University of Nebraska Research Project Initiated February, 1993**

## **Executive Summary**

### **BREEDING, EVALUATION AND CULTURE OF BUFFALOGRASS FOR GOLF COURSE TURF**

#### **STATUS OF '609' BUFFALOGRASS**

'609' sales are expected to meet Crenshaw & Doguet's 1993 projection of \$800,000. This has been accomplished by selling almost all of the 104 acres at Bastrop, TX. A royalty check of \$20,000 has just been received, and total royalties for 1993 should be about \$48,000.

Two visits to Texas allowed '609' to be evaluated under record-breaking drought and heat conditions. '609' did go off color earlier than bermuda when no irrigation was used. However, it recovered faster than bermuda in most situations. '609' was used at the new Boulders golf course in Acworth, Georgia and it was the only grass to survive a 30 day submersion during a flood at a Missouri sod farm.

#### **STATUS OF '315' and '378'**

Approximately 15 acres of '315' have been planted at Nickerson, Nebraska, and 20 acres of '378' have been planted at Mead, Nebraska. Sod and plugs will be available in 1994. Both cultivars have been officially released by UNL, and plant patents are nearly complete.

#### **STATUS OF SEEDED BUFFALOGRASSES**

Cold, wet weather in 1993 has negatively affected buffalograss seed production and has set back the release of new seeded cultivars. However, both cooperating groups, Native Turfgrass Group (NTG) and Sharps Bros, continue to make progress toward developing turf-type buffalograsses.

#### **NATIONAL BUFFALOGRASS TRIALS - UPDATE**

'315', '378', AZ143, NE 84-436, and NTDG-2 were the top performers during 1992 and 1993 at our Mead, NE location. '609' performed poorly because it was severely damaged each winter. The NTEP has distributed 1992 results from 22 locations that reported data. Nationally, '315', '378', AZ-143, Buffalawn, and NE 84-436 are the top vegetative selections, and the NTDG series are the top seeded buffalograsses.

#### **BUFFALOGRASS MANAGEMENT STUDIES**

The phytotoxicity of several herbicides, including MON 12051, Barricade, pendimethalin, and Dimension, was evaluated to determine their potential for use on buffalograss. No phytotoxicity was observed, indicating that with proper label clearance their use would be acceptable.

Observations of the planting date study initiated in 1992 indicate that cultivars differ in their optimum planting date. '315' plots planted in September showed complete survival.

A buffalograss traffic tolerance study was initiated with two mowing heights, three fertility levels, and two traffic levels. Preliminary observations indicate excellent tolerance and recovery from wear.

Transplant shock in buffalograss sod can be a serious problem. Therefore, a number of preventative treatments are being evaluated and buffalograss selections are being screened for differences in sod characteristics such as transplant shock, sod strength, and regrowth.

### **STUDENT PROGRESS**

The University of Nebraska has two new graduate students working on buffalograss related projects. Charlie Rodgers is a Ph.D. candidate in the buffalograss breeding area. Matt Giese is pursuing a master's degree and will study sod characteristics. Jennifer Johnson-Cicalese is continuing her work on a Ph.D.

### **BREEDING WORK**

Since its inception nine years ago, the buffalograss breeding project has made considerable progress in improving the turfgrass characteristics of buffalograss. Characteristics that are now being evaluated include wear, shade and low mowing tolerance, insect and disease resistance, spring greenup, fall dormancy, seed yield, germination rate, seedling vigor, and sod qualities. A large number of selections are evaluated each year and plants which show particular promise are either further evaluated for vegetative release, or used for population improvement and development of seeded turf-type buffalograsses.

In 1992 evaluations, over half of the selections in three replicated buffalograss trials had significantly better turf quality than Texoka, indicating that progress is being made. A wide range in spring greenup and fall dormancy ratings suggest that improvements can be made in extending the relatively short growing season of buffalograss.

Experimentals that are being considered for release as vegetative cultivars are three female selections, NE84-409, NE91-116, and NE91-118 and a male selection, NE84-45-3. There is continuing effort at UNL to develop seeded turf-type buffalograss. Seed has been harvested from four large synthetic blocks. Parents for a new breeding population with low mowing tolerance has been selected. Efforts to improve establishment characteristics of seeded buffalograsses are underway, including germination and seedling vigor.

New trials include a study with 53 vegetative and 21 seeded selections, and a study planted under a stand of trees for preliminary shade tolerance evaluations. Traffic treatments were initiated this summer on two older trials and preliminary observations suggest differences among selections in wear tolerance.

### **BUFFALOGRASS INSECT AND DISEASE RESEARCH**

Several screening trials have indicated significant differences among buffalograss selections in resistance to mealybugs. '609', Prairie and a few experimentals consistently show good resistance. Progeny of 20 different selections were also screened for resistance and 8% showed no signs of mealybug infestation. These plants were planted in an isolated crossing block for development of a seeded cultivar with enhanced resistance to mealybugs. Studies on mechanism of resistance suggest that leaf pubescence may be involved. Scanning electron microscopy is being used to evaluate leaf pubescence.

Further isolation from diseased buffalograss tissue indicate that the organism causing the "leaf spot disease" is probably Bipolaris buchloe.

## **BREEDING, EVALUATION AND CULTURE OF BUFFALOGRASS FOR GOLF COURSE TURF**

### **STATUS OF '609' BUFFALOGRASS**

'609' Sales - '609' sales, as of 18 October 1993, were approximately \$675,000. Crenshaw and Doguet Turfgrass, Inc. should meet their 1993 projection of \$800,000. This has been accomplished by selling almost all of the 104 acres at Bastrop, TX. By next year production potential will increase dramatically. A 114 acre field south of Houston is now on line, and a 120 acre field near San Antonio is being prepared for planting. Other Crenshaw & Doguet cooperators are also increasing their production, but at a slower rate. A royalty check of \$20,000 has just been received, and total royalties for 1993 should be about \$48,000.

'609' Performance - Texas had the longest dry period in history this summer. There were over 60 days with no precipitation and with very high temperatures. Two visits to Texas allowed '609' to be evaluated under these conditions. '609' was not perfect, but all species suffered under these conditions. It was observed that '609' did go off color earlier than bermuda when no irrigation was used. However, it recovered faster than bermuda in most situations.

'609' was used at the new Boulders course in Acworth, Georgia. This was a questionable use, but performance seems to be good. This course will provide a good test case of buffalograss for golf and for use in the Southeast.

'609', and probably buffalograss in general, seems to have good submersion tolerance. '609' was the only grass to survive a 30 day submersion during a flood at a Missouri sod farm.

### **STATUS OF '315' and '378'**

Approximately 15 acres of '315' have been planted at Nickerson, Nebraska, and 20 acres of '378' have been planted at Mead, Nebraska. Sod and plugs will be available in 1994. Both cultivars have been officially released by UNL, and plant patents are nearly complete. Performance of both cultivars has been very good in the National Buffalograss Trial, and no serious concerns are anticipated with their use. Plans are being made for the national release of '315', with first production occurring in Colorado and Missouri.

### **STATUS OF SEEDED BUFFALOGRASSES**

Cold, wet weather in 1993 has negatively affected buffalograss seed production and has set back the release of new seeded cultivars. However, both cooperating groups, Native Turfgrass Group (NTG) and Sharps Bros, continue to make progress toward developing turf-type buffalograsses. NTG plans on marketing two seeded turf-types in 1994. NTG has also developed a new synthetic, NTG-6, which seems to be providing

good seed yields and performance. Sharps Bros has harvested seed from their most promising breeder blocks and are planting foundation seed fields from these seedlings. Sharps also hopes for a 1994 commercial harvest.

## **LICENSING AGREEMENTS**

The following licenses are currently in effect:

1. '609'                      Proprietary license to grow and market '609' - Crenshaw & Doguet
2. Vegetative Buffalograss      Proprietary license to grow and market all vegetatively-propagated buffalograsses - Crenshaw & Doguet
3. Seeded Buffalograss          Proprietary license to produce seed from a select group of experimentals - NTG
4. Seeded Buffalograss          Proprietary license to produce seed from a select group of experimentals - Sharps Brothers
5. '315'                      Proprietary license to grow and market '315' in Nebraska - Oak Point Sod
6. '378'                      Proprietary license to grow and market '378' in Nebraska - Todd Valley Sod

NTG would like to have an agreement to produce and market all seeded buffalograsses developed in the future. It is very unlikely that this will be granted.

## **NATIONAL BUFFALOGRASS TRIALS - UPDATE**

The 1992 and 1993 results from the National Trial planted at the John Seaton Anderson Turfgrass Research Facility, Mead, NE indicate why '315' and '378' have been released in Nebraska. Last year '315' had the highest average quality rating and '378' ranked third. This year the ranking is reversed, but both continue to do exceptionally well (Table 1). Other experimentals that have done well are AZ143, NE 84-436, and NTDG-2. These have all performed better than the standards Texoka and Sharps Improved. The seeded buffalograsses all seem to rank below the vegetative cultivars from Nebraska, and above the vegetative cultivars from California. This shows the need for different cultivars for different zones of adaptation.

'609' is not the top cultivar in our study, largely because it was damaged severely each winter, and it took most of the summer to recover. '609', Prairie, and the California material are better adapted to southern areas of the United States.

Table 1. 1992 and 1993 performance of buffalograss cultivars and selections in the National Evaluation Trial planted June 1991 at Mead, NE.

	1992 Performance							1993 Performance					
	Winter	Spring	Quality	Color	Density	%Cover	Fall dormancy	Fall	Spring greenup	Quality	Color	%Cover	Fall
	survival	greenup						dormancy					dormancy
	May 28	May 6	Ave.	Ave.	May 28	June 24	Oct 9	Oct 27	May 14	Ave.	Ave.	July 15	Oct 14
'378'	7.0	3.0	6.5	6.8	7.0	33	4.7	1.3	6.7	7.2	5.8	93	3.3
AZ143	8.3	1.7	6.6	6.0	7.7	43	4.0	3.3	6.0	6.7	5.8	100	5.0
'315'	8.3	4.0	6.9	6.3	7.7	50	4.3	1.0	6.7	6.7	5.3	93	2.7
NE84-436	8.0	4.3	5.7	5.4	8.7	53	4.0	1.7	6.0	6.6	5.0	100	3.7
NTDG2	7.7	3.7	6.3	6.4	7.3	40	4.7	3.0	6.0	6.0	5.8	100	4.3
NE84-45-3	8.0	4.7	6.2	5.8	6.0	33	4.3	1.0	7.0	5.8	5.5	90	2.3
'609'	1.0	0.0	3.1	5.3	6.7	10	8.7	7.3	2.3	5.8	6.8	43	6.7
NTDG3	9.0	5.0	6.5	6.2	8.3	40	4.7	3.0	5.3	5.8	5.3	97	4.0
NTDG5	8.0	3.3	6.3	6.3	7.3	33	5.0	3.7	6.0	5.8	5.3	93	4.0
NTDG1	8.0	2.7	5.7	6.3	7.7	40	5.0	3.0	5.3	5.7	5.7	97	4.0
NTDG4	7.0	2.3	5.8	6.1	6.7	27	5.0	3.3	5.0	5.5	5.5	87	4.0
BAM101	7.7	2.3	6.1	6.0	8.3	40	5.0	2.7	5.7	5.4	5.3	100	4.3
Texoka	8.3	4.7	5.9	5.5	8.0	40	4.3	3.0	5.3	5.3	5.2	90	4.0
BAM202	7.7	2.7	5.1	6.4	8.0	33	5.3	3.3	4.7	5.2	6.0	90	4.0
Sharps	8.3	5.3	5.3	5.8	8.0	40	4.7	3.7	5.3	5.2	5.2	97	4.0
Prairie	2.0	0.3	4.5	5.5	7.0	17	6.7	6.0	2.7	5.1	5.2	87	6.3
Bison	7.7	3.0	5.6	6.6	8.3	43	5.0	3.7	5.0	5.0	6.2	93	4.3
Bufflawn	2.7	0.7	5.5	5.9	9.0	30	7.0	5.7	1.0	4.1	5.5	60	5.7
Highlight4	1.7	0.0	3.2	5.5	7.7	10	8.0	6.0	1.7	3.4	5.8	30	6.0
Highlight25	1.0	0.0	3.0	4.7	8.0	7	7.7	5.0	2.0	3.0	5.8	23	6.0
Highlight15	1.7	0.0	2.8	5.4	7.0	10	7.0	6.0	2.3	2.9	5.7	22	6.0
Rutgers	1.3	0.0	2.9	4.9	5.0	7	7.0	5.5	3.0	2.8	5.5	25	6.0
LSD at 5%	0.8	2.0	0.6	0.6	1.7	1.3	1.2	1.0	1.2	0.6	0.8	10	0.7

The NTEP has distributed the 1992 results from the 22 locations that reported data. These results indicate that '315', '378', AZ 143, Buffalawn, and NE 84-436 are the top vegetative selections, and the NTDG series are the top seeded buffalograsses.

## BUFFALOGRASS MANAGEMENT STUDIES

**Herbicide Testing** - The phytotoxicity of several new and existing herbicides was evaluated to determine their potential for use on buffalograss. Treatments were applied to a mature stand of 'Texoka' buffalograss located at the JSA Turfgrass Research Facility. Treatments were applied with a backpack CO<sub>2</sub> sprayer calibrated to deliver 3 gallons per 1000 ft<sup>2</sup> at 40 PSI. Plots were treated June 23, 1993. Data were collected on phytotoxicity 2 and 4 weeks after treatment (WAT) based on a visual quality scale of 1-9, with a 9 indicating no phytotoxicity (Table 2). None of the herbicides tested exhibited phytotoxicity indicating that with proper label clearance their use on buffalograss would be acceptable.

Table 2. Chemical phytotoxicity of new and existing herbicides to Texoka buffalograss. Mead, Nebraska 1993.

TREATMENT	RATE AI/ACRE	2 WAT	4 WAT
MON 12051	0.031	7.5	7.3
MON 12051	0.062	7.3	7.2
MON 12051	0.125	7.2	7.5
MON 12051	0.031	6.8	7.7
	+ 0.031 (6WAT)		
BARRICADE	0.75	7.7	6.8
BARRICADE	1.00	7.2	6.8
PENDIMETHALIN	1.5	7.2	7.3
PENDIMETHALIN	3.0	7.2	7.2
DIMENSION	0.5	7.5	7.0
DIMENSION	1.0	7.3	6.8
CONTROL		7.7	6.8
lsd at 0.05 alpha level =		0.7	0.7

**Planting Date** - Observations of the planting date study initiated in 1992 indicate that cultivars differ in their optimum planting date. None of the '609' plots planted in September survived the winter, while the '315' plots planted at this time showed complete survival. These large replicated blocks of standard cultivars are now established and ready for management studies in 1994.

**Traffic Tolerance** - A traffic tolerance study was initiated on two large blocks of buffalograss, one mowed at  $\frac{1}{8}$ " and the other at 2". Three fertility levels and two traffic



levels were used on each block. Prolonged wet weather and flooding prevented regular treatments, but preliminary observations indicate excellent tolerance and recovery from wear. We hope to continue this work in 1994.

Sod Studies - Buffalograss sod, when moved from the sod field to the installation site, enters a period of dormancy commonly referred to as transplant shock. Because this can be a serious problem, studies were initiated to determine the severity of the shock and determine if preventative measures can be taken. A number of treatments will be evaluated, including antitranspirants and biostimulants.

To determine if differences occur among buffalograss selections for sod characteristics, evaluations of transplant shock, sod strength, and regrowth were made on ten buffalograsses. Transplant shock was measured with quality ratings taken each week on the transplanted sod strips. Ratings were based on color, texture, density, and uniformity and used a 1-9 scale, with 9=best. Weekly evaluations were also made on sod knitting, using 0-3 scale. Sod which lifted easily and showed no root growth was rated zero, while fully knitted sod was rated three. To evaluate tensile strength of buffalograss sod, a "sod-stretching machine" was used which measured resistance to tearing. We are also measuring regrowth from the areas where sod was removed. Rapid regrowth is important because buffalograss sod fields are typically allowed to regrow from a 2 inch ribbon of sod and then reharvested.

Our results indicated differences among cultivars in both transplant shock and sod strength. Cultivars that fared quite well included the industry's standard cultivars of '609' and 'Prairie', and new releases '378' and '315'. These experiments will be conducted on a larger scale during the summer of 1994 to confirm this year's research. Some of this research will be conducted at Crenshaw & Doguet's sod farm in Texas.

## **STUDENT PROGRESS**

The University of Nebraska was able to recruit two graduate students this summer to work on buffalograss related projects. Charlie Rodgers is a Ph.D. candidate in the buffalograss breeding area. He will focus on seed germination and enhanced establishment of buffalograss. Matt Giese is pursuing a master's degree and will study sod characteristics and transplant shock. During 1993 Katie Kerner completed her M.S. degree, and Jennifer Johnson-Cicalese continued to make excellent progress toward her Ph.D.

## **BREEDING WORK**

Since its inception nine years ago, the buffalograss breeding project has made considerable progress in improving the turfgrass characteristics of buffalograss, including its density, color, rate of spread, and overall quality. Characteristics that are now being evaluated include wear, shade and low mowing tolerance, insect and disease resistance, spring greenup, fall dormancy, seed yield, germination rate, seedling vigor, and sod

qualities. In order to enhance our germplasm collection, selections continue to be made from buffalograss stands throughout the Great Plains. In addition, progeny have been obtained from selected crosses. These materials are first evaluated in spaced-plant nurseries. Plants which show particular promise are either further evaluated for vegetative release, or used for population improvement and development of seeded turf-type buffalograsses.

**1992 Evaluations** - To illustrate our evaluation process, the 1992 performance of three replicated buffalograss evaluation trials are presented here. The first trial, planted in July 1990, consists of 93 selections collected between 1985 and 1987. The second trial, planted in August 1990, consists of 92 progeny from 28 maternal lines. These progeny were selected in late fall of 1989, based on turf quality, spread, uniformity, density, and particularly late fall dormancy. The third trial, planted in April 1991, is also an advanced progeny evaluation from many of the same maternal lines. In this study, however, the 99 progeny were selected based on early spring greenup in addition to turf quality. One or more improved turf-type buffalograsses and a forage-type, Texoka, were included in each of these trials as standards. Maintenance included a 2.5 inch mowing height, fertilization at 1-1.5 lbs. N/M/season, pre- and postemergent herbicides applied as needed, and irrigation as needed to prevent severe drought stress.

In Tables 3-5, the buffalograss selections are ranked by their 1992 average turfgrass quality. In the July 1990 trial, 87% of the selections had significantly better turf quality than Texoka, indicating that progress is being made (Table 3). The color ratings ranged from 7.8 to 4.8 showing the diversity of genetic color in this species. The range in spring greenup and fall dormancy ratings suggest that improvements can be made in extending the relatively short growing season of buffalograss, one of the major drawbacks to utilization of this warm-season species. It is generally believed that southern types go dormant later in the fall and northern types green up earlier in the spring. For example, the southern type '609' showed almost no signs of dormancy by Oct. 9.

Many of the same observations that were made for the July 1990 trial can also be made for the August 1990 and April 1991 trials (Tables 4 and 5). Because the August 1990 trial consists of selections with late fall dormancy and the April 1991 trial consists of selections with early spring greenup it is of particular interest to look at these two parameters in Tables 4 and 5. The mean spring greenup in the 1991 trial (2.7) is slightly higher than in the 1990 trial (2.1). However, contrary to what is expected, fall dormancy occurred earlier in the 1990 trial (3.9) than in the 1991 trial (4.5). When the origin of the selections is compared, the 1990 trial has twice as many plants derived from southern lines as derived from northern lines, supporting the idea that southern selections go into dormancy later in the fall. Evaluation of these selections and progeny will continue for several more years under varied environmental and cultural conditions. For example, the mowing height of the July 1990 trial was lowered to 5/8 of an inch in June 1993.

Table 3. 1992 performance of buffalograss selections established July 13, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Percent cover	Turfgrass quality 1-9, 9=best						Color 1-9, 9=best			Canopy <sup>2</sup> type	Fall dormancy <sup>3</sup>
	May 6	June 3	June 3	June 9	July 14	Aug 11	Sept 17	Avg.	June 3	July 14	Avg.	July 14	Oct 9
86-120	5.0	100	7.7	7.0	7.0	7.3	7.9	7.4	7.0	7.0	7.0	3.0	5.7
84-315	5.3	93	7.0	7.7	7.3	7.0	7.3	7.3	7.0	6.7	6.8	3.0	5.0
86-61	5.0	100	6.7	7.3	6.0	7.0	8.2	7.2	7.3	7.3	7.3	2.3	5.0
86-23	5.0	100	6.3	6.0	7.3	6.7	7.8	7.0	6.0	7.0	6.5	2.7	5.3
85-378	4.7	100	6.7	7.7	6.7	6.0	7.2	6.9	7.0	6.7	6.8	1.7	3.7
87-76	6.7	90	7.3	6.7	6.0	5.7	7.8	6.9	7.3	6.3	6.8	2.7	2.7
86-116	4.7	97	6.3	6.3	6.7	7.0	7.3	6.8	7.0	7.0	7.0	2.3	5.7
87-62	5.3	97	6.7	7.0	6.7	7.0	6.8	6.8	7.0	7.3	7.2	3.0	4.3
87-86	4.3	100	6.0	6.7	6.0	6.0	7.9	6.7	7.0	6.0	6.5	3.0	4.0
85-443	4.0	97	6.3	6.0	6.7	6.0	7.4	6.6	6.0	6.7	6.3	2.7	2.3
86-78-1	5.0	97	6.3	6.7	6.3	5.7	7.4	6.6	6.3	7.0	6.7	2.3	3.7
87-24	4.7	90	6.7	7.0	6.3	5.7	7.0	6.6	6.7	6.7	6.7	3.0	3.3
87-51	3.7	97	6.0	6.7	6.7	5.0	7.3	6.5	6.3	6.3	6.3	3.0	5.0
87-87	6.0	100	7.7	7.0	6.7	6.3	5.7	6.5	8.0	7.7	7.8	2.7	2.0
87-unk	5.3	97	6.0	6.3	6.3	6.0	7.1	6.5	6.0	6.3	6.2	2.0	3.7
85-679	4.0	100	5.7	6.3	6.3	6.3	7.0	6.4	6.0	6.3	6.2	2.0	6.0
86-134-1	4.7	100	6.3	7.0	6.3	5.3	6.9	6.4	6.7	6.7	6.7	2.3	4.0
86-107	5.3	93	6.7	6.0	6.3	6.3	6.6	6.4	6.3	6.3	6.3	2.3	5.3
86-94	5.3	93	6.3	5.7	6.7	6.3	6.8	6.4	6.0	6.0	6.0	3.0	5.0
87-83	4.3	100	6.3	6.3	6.7	5.7	6.8	6.4	7.0	6.7	6.8	2.7	3.3
85-648	5.3	90	6.3	6.0	6.0	5.3	7.4	6.4	6.0	6.0	6.0	3.0	2.3
86-47-1	6.0	90	6.3	6.7	6.7	5.0	6.9	6.4	6.0	6.3	6.2	2.7	4.0
'609'	1.7	40	5.3	4.0	5.7	8.3	7.4	6.4	6.3	7.0	6.7	1.3	8.7
86-137	5.0	100	6.3	6.3	6.3	6.7	6.3	6.4	6.7	6.7	6.7	2.3	4.7
87-85	6.0	87	7.0	6.0	6.3	6.0	6.4	6.3	7.7	7.3	7.5	2.3	4.3
86-91	4.7	93	6.7	6.3	6.3	5.3	6.5	6.3	6.7	6.7	6.7	2.0	4.0
87-19	6.0	100	6.0	6.0	6.0	6.0	6.8	6.3	6.3	6.0	6.2	3.0	4.0
87-35	6.0	67	5.7	6.0	6.3	7.0	6.3	6.3	6.7	7.3	7.0	2.3	4.7
87-4	4.3	100	6.3	6.3	6.0	6.0	6.3	6.2	6.0	5.7	5.8	2.3	3.7
85-130	4.3	100	6.3	6.0	6.0	4.7	7.0	6.2	6.0	6.0	6.0	2.0	2.7
86-57	4.3	73	6.3	6.0	6.7	5.7	6.2	6.2	6.7	7.0	6.8	2.7	4.0

Table 3 (cont'd). 1992 performance of buffalograss selections established July 13, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Percent cover	Turfgrass quality 1-9, 9=best						Color 1-9, 9=best			Canopy <sup>2</sup> type	Fall dormancy <sup>3</sup>
	May 6	June 3	June 3	June 9	July 14	Aug 11	Sept 17	Avg.	June 3	July 14	Avg.	July 14	Oct 9
86-97-1	5.7	97	6.0	6.0	6.0	5.7	6.6	6.1	6.0	6.0	6.0	1.7	3.3
87-89	6.0	100	6.0	6.3	6.0	4.7	7.0	6.1	5.7	5.7	5.7	3.0	4.0
86-46	4.0	100	6.3	6.3	6.3	4.7	6.5	6.1	6.0	6.0	6.0	2.0	4.0
87-29	5.3	100	6.7	6.0	6.0	5.7	6.2	6.1	7.0	6.3	6.7	2.0	5.0
87-26	6.0	93	6.0	5.7	6.0	5.7	6.6	6.1	6.0	6.0	6.0	2.0	4.3
85-688	5.0	100	6.0	6.3	6.3	5.0	6.4	6.1	6.7	6.3	6.5	2.7	4.7
87-28	5.3	97	6.0	6.0	6.0	6.0	6.3	6.1	6.7	6.0	6.3	2.0	5.0
86-6	3.7	100	6.0	5.0	6.3	6.7	6.2	6.1	6.0	6.0	6.0	1.3	5.3
87-2	4.3	100	6.0	5.3	6.0	6.3	6.3	6.1	5.7	5.3	5.5	2.7	3.7
86-unk	5.7	70	5.7	6.0	6.0	5.7	6.5	6.0	6.7	6.7	6.7	2.3	4.3
86-82	5.3	100	6.3	5.7	6.0	5.7	6.3	6.0	6.7	6.3	6.5	2.0	4.0
87-25	5.3	70	6.3	5.3	6.0	6.0	6.2	6.0	6.0	5.7	5.8	2.0	4.7
87-27	4.7	93	6.0	6.0	6.0	5.0	6.5	6.0	6.7	6.0	6.3	2.3	3.3
85-634	4.7	97	6.0	6.0	6.0	4.7	6.6	6.0	7.0	6.7	6.8	2.3	4.3
86-118	4.3	93	6.0	5.7	5.7	6.3	6.1	6.0	6.3	6.0	6.2	2.0	5.3
87-65	4.7	97	6.3	6.0	6.0	5.3	6.1	6.0	6.7	7.3	7.0	2.3	2.7
87-92	4.3	100	5.7	6.0	6.7	5.0	6.3	6.0	6.3	6.3	6.3	2.3	3.3
87-93	5.7	97	6.0	6.0	5.7	5.3	6.4	6.0	6.0	5.7	5.8	2.3	4.3
85-633	4.0	93	6.0	6.0	6.0	5.3	6.2	5.9	6.0	6.0	6.0	2.7	3.3
86-1141	5.0	100	6.0	6.0	6.0	5.3	6.2	5.9	7.0	6.0	6.5	2.3	4.0
86-60-1	3.7	90	6.0	7.0	6.0	5.3	5.7	5.9	8.3	7.0	7.7	3.0	3.0
87-22	5.3	100	6.3	5.3	6.0	5.0	6.5	5.9	6.3	6.0	6.2	2.0	3.0
87-50	5.7	57	6.0	5.7	6.0	6.0	6.0	5.9	6.3	7.0	6.7	2.3	4.3
84-45-3	4.7	70	5.7	6.0	6.0	5.7	6.1	5.9	6.0	6.3	6.2	2.0	3.0
Prairie	3.3	100	5.7	4.3	5.7	6.0	6.8	5.9	5.7	5.3	5.5	1.7	7.7
86-108	4.7	100	5.7	5.7	6.3	5.3	6.2	5.9	6.0	6.3	6.2	2.3	2.3
86-114	4.7	97	5.7	4.7	6.3	6.0	6.4	5.9	5.0	5.0	5.0	2.0	6.7
86-2	5.0	100	6.3	5.7	6.0	5.7	5.9	5.9	6.7	6.7	6.7	1.3	5.3
87-30	4.3	93	6.0	5.7	6.3	5.3	6.0	5.9	6.3	6.3	6.3	2.3	5.3
85-251	3.7	93	6.3	6.3	6.0	5.0	5.8	5.9	6.3	6.7	6.5	2.3	2.3

Table 3 (cont'd). 1992 performance of buffalograss selections established July 13, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Percent cover	Turfgrass quality 1-9, 9=best						Color 1-9, 9=best			Canopy <sup>2</sup> type	Fall dormancy <sup>3</sup>
	May 6	June 3	June 3	June 9	July 14	Aug 11	Sept 17	Avg.	June 3	July 14	Avg.	July 14	Oct 9
86-76	5.3	97	5.7	6.0	6.0	5.7	5.9	5.8	6.0	6.3	6.2	1.7	3.0
	4.0	83	5.3	5.0	5.3	5.0	7.2	5.8	6.3	6.0	6.2	2.0	4.7
87-90	4.0	100	6.0	5.7	6.0	4.7	6.3	5.8	6.3	5.7	6.0	2.0	3.7
85-267	4.3	100	6.0	6.7	5.7	5.0	5.6	5.8	6.3	6.7	6.5	2.7	2.0
85-698	3.7	97	6.0	5.3	5.7	5.7	5.9	5.8	6.3	6.3	6.3	2.0	6.3
87-80	5.7	100	6.0	6.0	6.0	4.7	5.9	5.8	5.3	5.0	5.2	2.7	4.7
85-627	3.3	83	5.3	6.0	6.0	5.0	6.0	5.7	6.7	6.3	6.5	2.3	5.3
85-678	4.0	100	6.0	5.0	6.0	5.7	5.9	5.7	6.0	6.0	6.0	1.3	5.0
87-18	5.7	100	6.0	5.7	6.0	5.3	5.6	5.7	6.0	6.0	6.0	2.0	5.0
87-5	4.7	100	5.7	5.0	5.7	4.3	6.8	5.7	5.0	4.7	4.8	2.3	4.3
87-94	3.7	100	5.7	5.7	6.0	4.3	6.2	5.7	6.3	6.3	6.3	2.0	3.7
85-649	3.7	100	5.0	5.0	6.0	4.0	6.9	5.6	5.0	5.0	5.0	3.0	2.0
85-607	5.0	100	5.7	5.7	5.7	5.7	5.5	5.6	6.3	6.3	6.3	2.0	5.3
85-709	5.7	100	6.0	5.7	5.7	5.0	5.7	5.6	6.0	6.3	6.2	2.0	4.3
85-502	4.3	73	6.0	6.3	6.0	4.7	5.3	5.6	6.7	6.7	6.7	3.0	3.3
86-71	5.0	100	5.3	6.0	6.0	4.7	5.8	5.6	6.0	5.7	5.8	2.7	2.0
85-665	6.7	67	5.7	4.7	5.3	5.3	6.2	5.6	6.0	6.3	6.2	1.3	6.0
85-702	4.7	100	6.0	4.3	5.7	5.7	5.9	5.6	5.0	5.7	5.3	1.7	7.0
86-1-2	4.3	100	5.7	5.7	5.7	4.7	5.8	5.5	6.3	6.0	6.2	1.3	4.7
87-75	4.7	100	6.0	5.7	6.0	5.0	5.3	5.5	6.0	6.3	6.2	2.0	4.0
85-637	4.7	100	5.3	5.7	5.7	4.3	6.0	5.5	6.0	6.0	6.0	1.3	3.3
87-44	6.0	93	5.7	5.3	6.0	4.7	5.6	5.5	6.3	6.3	6.3	1.3	3.3
Texoka	6.3	100	4.3	5.3	6.0	6.0	5.5	5.4	6.3	6.3	6.3	1.7	6.0
86-33	4.3	93	6.0	5.7	6.0	4.7	5.0	5.4	7.0	6.3	6.7	1.0	3.7
87-71	5.7	73	5.0	5.0	5.7	5.7	5.5	5.4	6.3	6.0	6.2	1.0	4.7
85-297	5.3	80	5.7	5.3	5.3	5.7	5.1	5.4	6.7	6.7	6.7	2.3	4.3
85-701	5.7	100	5.7	5.0	6.0	4.7	5.4	5.4	5.7	5.7	5.7	1.3	6.0
85-677	4.7	80	5.7	4.3	5.7	5.0	5.7	5.3	6.3	6.0	6.2	1.0	6.0
87-58	3.7	90	6.0	5.3	6.3	4.7	4.8	5.3	6.7	7.3	7.0	1.7	4.0
87-59	5.0	47	5.7	6.3	6.0	4.3	4.9	5.3	7.0	7.3	7.2	2.3	3.3

Table 3 (cont'd). 1992 performance of buffalograss selections established July 13, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Percent cover	Turfgrass quality 1-9, 9=best						Color 1-9, 9=best			Canopy <sup>2</sup> type	Fall dormancy <sup>3</sup>
	May 6	June 3	June 3	June 9	July 14	Aug 11	Sept 17	Avg.	June 3	July 14	Avg.	July 14	Oct 9
85-667	4.0	100	5.3	4.3	5.7	4.7	5.6	5.2	5.0	5.3	5.2	1.3	6.7
87-102	5.3	73	6.3	4.7	5.0	4.3	5.0	5.1	6.0	6.3	6.2	1.7	4.7
85-673	2.7	100	5.0	4.0	5.0	5.7	4.3	4.7	5.0	5.7	5.3	1.3	7.3
87-48	4.3	33	5.3	4.3	5.3	5.0	3.8	4.6	6.3	7.0	6.7	1.7	4.0
LSD (0.05)	1.6	20	1.0	1.0	0.7	1.4	1.2	0.6	0.7	0.8	0.6	0.9	1.3

<sup>1</sup>Spring greenup 0-10, 10=100% greenup.

<sup>2</sup>Canopy type 1-3, 1=open and 3=closed with no soil visible.

<sup>3</sup>Fall dormancy 1-9, 9=no dormancy, all green turf.

Table 4. 1992 performance of buffalograss selections established August 8, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best				Color 1-9, 9=best			Canopy <sup>3</sup> type	Purple <sup>4</sup> color	Fall dormancy <sup>5</sup>		
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	July 14	Oct. 13	Oct. 27
90-92	3.0	8.3	77	7.0	7.7	7.3	6.0	7.0	5.0	7.0	6.0	3.0	1.0	1.0	1.0
90-86	3.0	8.3	80	5.3	7.3	7.3	7.0	6.8	5.7	7.3	6.5	2.7	1.0	1.7	1.7
90-72	2.7	8.0	80	6.7	7.3	7.0	5.3	6.6	5.3	6.7	6.0	2.7	1.0	1.7	1.7
85-378	3.3	9.0	90	7.0	6.7	7.3	5.0	6.5	6.7	7.0	6.8	2.3	1.3	1.0	1.0
90-2	1.7	7.7	77	6.0	7.0	7.7	5.3	6.5	5.7	7.3	6.5	2.7	1.0	1.0	1.0
90-11	1.7	8.0	80	5.3	7.7	7.0	5.7	6.4	5.3	7.3	6.3	2.7	1.3	1.3	1.3
90-66	3.0	8.0	67	6.7	6.7	6.7	5.7	6.4	6.0	7.0	6.5	2.7	1.0	1.0	1.0
90-88	3.3	8.3	87	6.0	7.3	6.0	6.3	6.4	5.7	7.0	6.3	2.3	1.3	1.0	1.0
90-97	3.3	8.3	77	7.0	7.0	6.7	5.0	6.4	5.3	6.7	6.0	3.0	1.0	1.0	1.0
90-98	4.0	8.0	77	7.0	7.3	6.3	5.0	6.4	5.7	7.3	6.5	3.0	1.0	1.7	1.7
90-49	1.7	8.3	80	7.3	7.0	6.7	4.3	6.3	6.0	7.3	6.7	3.0	1.3	1.0	1.0
90-36	1.7	8.0	83	5.7	6.7	7.0	5.7	6.3	5.7	7.0	6.3	2.3	1.3	1.7	1.7
90-59	1.3	8.0	80	6.0	6.0	6.7	6.0	6.2	5.7	7.0	6.3	2.0	1.0	2.0	2.0
90-76	4.0	8.0	83	6.7	6.3	6.7	5.0	6.2	5.7	6.3	6.0	2.7	1.0	1.0	1.0
90-78	2.3	8.0	83	5.3	6.7	6.7	6.0	6.2	5.7	7.0	6.3	2.3	1.0	1.7	1.7
90-85	2.3	8.0	73	6.0	6.7	6.0	6.0	6.2	6.3	8.0	7.2	2.0	1.0	1.0	1.0
90-89	3.7	8.3	80	5.3	7.3	6.3	5.7	6.2	5.0	7.0	6.0	3.0	1.0	1.7	1.7
90-96	3.3	8.0	80	6.0	6.3	6.7	5.7	6.2	6.0	7.3	6.7	2.3	1.0	1.7	1.7
90-12	1.3	7.3	90	5.3	6.3	6.3	6.3	6.1	6.0	6.7	6.3	2.0	1.3	1.7	1.7
90-57	1.0	7.7	80	5.0	7.3	6.0	6.0	6.1	5.0	7.0	6.0	3.0	1.0	2.0	2.0
90-67	2.0	8.0	77	6.0	7.0	6.0	5.3	6.1	6.0	7.0	6.5	2.3	1.0	1.0	1.0
84-315	3.0	8.0	80	6.3	7.0	6.0	4.7	6.0	5.0	7.0	6.0	3.0	1.0	1.0	1.0
90-38	2.0	7.7	80	5.7	6.3	6.3	5.7	6.0	5.7	7.3	6.5	2.3	1.3	1.0	1.0
90-61	2.3	7.3	67	6.3	6.7	5.7	5.3	6.0	4.7	6.0	5.3	3.0	1.0	1.7	1.7
90-10	2.0	8.3	77	6.3	6.7	6.3	4.3	5.9	6.0	7.3	6.7	3.0	1.0	1.0	1.0
90-27	1.7	7.0	80	5.7	6.3	6.3	5.3	5.9	5.3	6.3	5.8	3.0	1.7	1.0	1.0
90-62	2.0	7.3	83	5.0	7.0	6.3	5.3	5.9	5.7	8.0	6.8	2.7	1.0	1.3	1.3
90-79	2.0	7.7	80	5.0	6.7	6.0	6.0	5.9	6.0	7.7	6.8	2.0	1.0	2.3	2.3
90-80	3.0	8.3	80	6.3	6.3	6.0	5.0	5.9	6.0	6.7	6.3	2.3	1.3	1.0	1.0

Table 4 (cont'd). 1992 performance of buffalograss selections established August 8, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Color 1-9, 9=best			Canopy <sup>3</sup> type	Purple <sup>4</sup> color	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	July 14	Oct. 13	Oct. 27
90-42	2.7	8.0	83	5.7	5.7	6.3	5.7	5.8	6.0	6.7	6.3	1.7	1.3	1.0	1.0
90-70	2.7	9.0	90	5.3	7.0	6.0	5.0	5.8	6.0	7.0	6.5	2.0	1.3	1.0	1.0
90-71	2.7	7.7	83	4.7	6.7	6.0	6.0	5.8	5.7	7.0	6.3	2.3	1.3	1.3	1.3
84-45-3	2.3	8.0	77	6.3	6.0	6.0	4.7	5.8	5.3	6.0	5.7	2.0	1.0	1.0	1.0
90-23	2.7	7.7	73	6.0	6.3	6.0	4.7	5.8	6.0	7.3	6.7	2.7	1.7	1.0	1.0
90-26	4.3	8.0	83	5.0	6.0	6.0	6.0	5.8	6.3	7.7	7.0	2.0	1.3	2.7	2.7
90-69	1.3	8.0	73	5.3	6.7	5.7	5.3	5.8	4.0	5.3	4.7	3.0	1.0	1.0	1.0
90-77	2.3	8.0	87	5.7	6.3	5.7	5.3	5.8	6.3	6.7	6.5	1.7	1.0	1.0	1.0
90-83	2.3	7.7	70	5.3	6.3	6.0	5.3	5.8	5.0	6.7	5.8	3.0	1.0	1.0	1.0
90-4	2.0	8.0	83	4.0	6.0	6.7	6.0	5.7	5.3	6.3	5.8	2.3	1.7	1.3	1.3
90-5	3.3	7.7	87	6.3	6.3	5.3	4.7	5.7	6.3	7.7	7.0	2.0	2.0	2.3	2.3
90-8	2.7	8.0	80	5.7	6.3	6.0	4.7	5.7	6.0	7.7	6.8	2.0	1.3	1.7	1.7
90-82	2.3	7.7	90	4.3	6.7	5.7	6.0	5.7	5.3	6.7	6.0	1.7	1.0	1.7	1.7
90-87	1.0	7.7	77	6.0	6.0	6.0	4.7	5.7	4.7	6.3	5.5	2.0	1.3	1.0	1.0
90-94	4.0	8.0	83	4.7	6.3	6.0	5.7	5.7	5.7	6.7	6.2	1.7	1.0	1.7	1.7
90-41	4.7	8.7	87	5.0	6.3	6.3	4.7	5.6	6.0	7.0	6.5	2.0	1.3	2.0	2.0
90-45	1.3	7.0	80	5.3	5.7	5.7	5.7	5.6	6.0	7.0	6.5	1.3	1.3	3.0	3.0
90-47	2.0	8.0	70	5.0	6.0	6.0	5.3	5.6	5.7	6.3	6.0	2.7	1.3	1.0	1.0
90-51	2.3	8.3	90	5.0	6.3	6.0	5.0	5.6	6.0	7.0	6.5	2.0	1.3	1.3	1.3
90-56	3.0	8.7	90	5.3	7.0	6.0	4.0	5.6	6.0	7.7	6.8	2.3	1.0	1.3	1.3
90-7	2.7	7.7	87	5.0	6.0	6.0	5.3	5.6	6.0	7.3	6.7	1.7	1.3	1.7	1.7
90-22	2.0	8.0	80	4.3	6.3	6.0	5.3	5.5	6.0	7.0	6.5	2.0	1.7	1.0	1.0
90-34	2.0	7.3	73	5.0	6.3	5.7	5.0	5.5	5.7	6.0	5.8	3.0	1.3	1.3	1.3
90-43	2.0	7.7	80	4.7	6.3	6.0	5.0	5.5	6.0	8.0	7.0	2.0	1.3	1.0	1.0
90-53	2.7	8.3	67	6.3	5.7	5.0	5.0	5.5	6.0	7.3	6.7	2.7	1.0	1.0	1.0
90-55	2.3	7.0	87	3.7	6.3	6.0	6.0	5.5	5.0	6.0	5.5	2.0	1.0	1.3	1.3
90-84	1.0	8.0	80	5.3	6.7	6.0	4.0	5.5	4.7	7.0	5.8	3.0	1.0	1.0	1.0
90-90	2.7	8.0	90	4.7	6.0	5.7	5.7	5.5	5.3	6.7	6.0	1.3	1.3	1.0	1.0



Table 4 (cont'd). 1992 performance of buffalograss selections established August 8, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Color 1-9, 9=best			Canopy <sup>3</sup> type	Purple <sup>4</sup> color	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	July 14	Oct. 13	Oct. 27
90-18	1.3	8.0	83	4.0	6.3	5.7	5.7	5.4	5.7	6.3	6.0	1.7	2.3	1.0	1.0
90-21	1.0	7.3	90	4.0	6.3	6.3	5.0	5.4	6.0	6.7	6.3	2.0	1.3	1.0	1.0
90-44	0.3	7.3	83	4.0	6.3	6.0	5.3	5.4	5.3	6.7	6.0	2.0	1.3	1.7	1.7
90-52	2.7	8.3	87	4.0	7.0	6.0	4.7	5.4	5.7	7.3	6.5	2.3	1.3	1.0	1.0
90-50	2.0	6.7	63	4.7	5.3	5.3	6.0	5.3	5.7	6.7	6.2	1.7	1.7	1.3	1.3
90-6	1.7	7.7	80	4.7	6.0	5.3	5.3	5.3	6.0	7.3	6.7	2.0	1.7	1.0	1.0
90-93	3.3	8.3	87	5.0	6.0	5.3	5.0	5.3	6.0	7.7	6.8	1.7	1.0	1.7	1.7
90-95	1.7	7.0	67	4.3	5.7	6.0	5.3	5.3	6.0	6.7	6.3	1.7	1.0	1.3	1.3
Texoka	2.3	8.0	77	5.0	5.3	5.7	5.0	5.3	5.3	6.7	6.0	1.7	1.3	1.0	1.0
90-31	1.7	7.0	77	4.7	5.7	5.3	5.3	5.3	5.7	6.7	6.2	2.0	1.3	2.0	2.0
90-46	2.0	7.3	80	5.3	5.7	5.3	4.7	5.3	5.7	6.7	6.2	2.3	1.0	1.0	1.0
90-73	0.7	6.3	70	6.0	5.7	4.3	5.0	5.3	5.7	6.7	6.2	1.7	1.0	1.0	1.0
90-75	2.0	7.7	67	4.7	5.7	5.7	5.0	5.3	5.7	7.0	6.3	2.0	1.7	1.0	1.0
90-9	2.0	7.7	60	4.3	6.7	6.0	4.0	5.3	4.7	6.0	5.3	3.0	1.3	1.0	1.0
90-3	3.0	8.0	87	4.7	5.7	5.3	5.0	5.2	5.0	6.0	5.5	2.0	1.7	1.0	1.0
90-30	1.3	6.7	80	4.3	5.7	5.0	5.7	5.2	6.0	6.7	6.3	2.0	1.7	2.7	2.7
90-28	1.3	7.7	80	3.7	6.0	5.7	5.0	5.1	6.0	7.0	6.5	1.3	2.0	1.7	1.7
90-37	3.7	7.7	87	4.3	5.7	5.0	5.3	5.1	6.0	7.3	6.7	1.7	1.7	2.0	2.0
90-74	1.7	8.0	83	4.0	6.3	5.0	5.0	5.1	5.7	6.7	6.2	1.3	1.7	1.7	1.7
90-14	0.3	3.3	83	3.0	5.3	5.3	6.3	5.0	6.0	7.3	6.7	1.3	1.7	3.0	3.0
90-65	3.7	8.0	90	3.7	6.0	5.0	5.0	4.9	5.0	6.0	5.5	1.7	1.3	1.0	1.0
90-39	1.7	7.3	67	5.0	4.7	5.0	4.7	4.8	6.0	6.7	6.3	1.3	1.3	1.0	1.0
Prairie	1.0	4.7	83	3.0	5.3	5.3	5.3	4.8	5.3	6.0	5.7	1.3	2.0	2.7	2.7
90-60	2.0	6.3	47	4.3	6.0	4.7	4.0	4.8	4.3	6.0	5.2	2.7	1.0	2.0	2.0
90-68	1.3	7.7	63	4.7	5.3	4.7	4.3	4.8	5.3	7.0	6.2	1.7	1.7	1.3	1.3
90-13	1.7	6.7	83	4.0	5.0	4.3	5.3	4.7	6.0	7.0	6.5	1.7	1.7	1.7	1.7
90-32	2.0	7.7	83	4.0	5.7	4.0	5.0	4.7	5.3	6.7	6.0	1.0	1.7	1.3	1.3
90-15	0.7	3.7	67	3.0	5.0	5.0	5.3	4.6	6.0	7.0	6.5	1.7	1.7	5.0	5.0
90-20	0.7	5.7	83	3.3	5.3	4.0	5.7	4.6	6.0	7.0	6.5	1.3	1.7	3.3	3.3

Table 4 (cont'd). 1992 performance of buffalograss selections established August 8, 1990 at Mead, NE.

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Color 1-9, 9=best			Canopy <sup>3</sup> type	Purple <sup>4</sup> color	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	July 14	Oct. 13	Oct. 27
90-1	1.7	6.7	80	3.7	5.0	4.0	3.7	4.1	5.0	6.0	5.5	1.3	2.0	2.0	2.0
90-16	0.0	2.7	83	2.7	3.0	3.0	7.0	3.9	6.0	6.7	6.3	1.0	1.7	6.0	6.0
90-63	1.7	7.0	50	3.0	4.7	3.7	4.3	3.9	5.3	6.3	5.8	1.7	1.3	1.7	1.7
90-25	1.3	6.7	60	3.0	4.3	3.7	4.3	3.8	4.7	5.7	5.2	1.0	1.3	3.7	3.7
90-35	0.0	2.3	83	2.3	3.0	3.7	6.3	3.8	6.0	6.7	6.3	1.0	2.0	5.3	5.3
90-24	0.3	2.7	80	2.0	4.0	3.7	5.3	3.8	6.0	6.7	6.3	1.0	1.7	3.7	3.7
90-81	0.7	2.3	90	2.3	3.0	3.7	6.0	3.8	5.7	6.7	6.2	1.0	1.3	4.7	4.7
'609'	0.7	2.0	83	1.3	3.0	3.0	7.3	3.7	6.0	6.7	6.3	1.0	1.3	6.0	6.0
90-40	0.7	3.0	80	2.3	3.3	2.7	4.0	3.1	5.3	6.0	5.7	1.3	1.7	3.7	3.7
LSD (0.05)	1.5	1.4	1.8	1.2	1.2	1.4	1.1	0.9	0.7	0.8	0.6	0.8	0.7	1.1	0.9

<sup>1</sup>Spring greenup 0-10, 10=100% greenup.<sup>2</sup>Winter survival 1-9, 9=best survival.<sup>3</sup>Canopy type 1-3, 1=open and 3=closed with no soil visible.<sup>4</sup>Purple color 1-3, 1=none and 3=unattractive, probably an indication of chinch bug feeding.<sup>5</sup>Fall dormancy 1-9, 9=no dormancy, all green turf.

Table 5. 1992 performance of buffalograss selections established April 25, 1991 at Mead, NE.

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Genetic color <sup>3</sup>			Canopy <sup>4</sup> type	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	Oct. 13	Oct. 27
91-34	3.0	8.0	77	6.0	6.7	7.3	6.3	6.6	5.0	6.7	5.8	3.0	4.0	2.0
91-9	6.0	8.0	80	7.3	7.0	6.7	5.3	6.6	6.0	6.7	6.3	3.0	3.3	1.0
91-97	6.0	8.0	83	6.3	7.3	6.7	5.7	6.5	5.3	6.7	6.0	3.0	3.3	1.0
91-10	6.7	8.7	77	7.0	6.7	6.0	5.7	6.3	6.0	7.3	6.7	2.3	2.3	1.0
91-83	5.3	7.7	60	6.7	6.0	6.0	6.3	6.3	5.0	6.0	5.5	3.0	3.7	1.0
91-45	5.7	8.3	77	6.7	7.0	6.0	5.0	6.2	6.0	6.7	6.3	3.0	1.7	1.0
91-33	5.7	8.3	90	7.7	6.3	5.3	5.0	6.1	6.0	7.3	6.7	2.7	1.3	1.0
91-93	5.3	8.0	87	6.0	7.0	6.3	5.0	6.1	6.0	7.3	6.7	2.3	3.7	1.3
91-26	5.0	8.3	87	5.7	6.7	6.0	5.7	6.0	5.0	6.0	5.5	2.0	4.3	1.7
91-43	5.7	8.0	87	6.3	6.3	6.3	5.0	6.0	5.7	6.3	6.0	2.0	3.0	1.0
91-89	3.7	8.0	83	6.3	6.7	5.3	5.7	6.0	6.0	6.7	6.3	2.3	3.3	1.7
91-13	4.3	7.3	87	5.0	6.3	6.0	6.0	5.8	6.0	6.3	6.2	2.0	4.7	2.0
91-30	2.7	6.0	80	3.3	6.7	7.0	6.3	5.8	5.3	6.7	6.0	2.0	6.3	2.7
91-31	5.7	8.3	70	5.7	6.7	6.0	5.0	5.8	5.7	7.0	6.3	2.0	3.7	2.0
91-40	3.3	8.0	80	5.0	6.3	6.0	6.0	5.8	5.0	6.0	5.5	2.3	6.0	2.0
91-49	3.3	8.0	70	7.0	5.7	5.7	5.0	5.8	6.0	7.0	6.5	2.3	3.3	1.7
91-6	2.0	6.7	83	5.7	5.7	6.3	5.7	5.8	6.0	6.7	6.3	1.7	4.3	2.0
91-75	4.0	7.7	77	6.0	6.3	5.3	5.7	5.8	6.0	6.3	6.2	2.0	3.3	1.3
91-94	5.3	8.7	80	7.0	6.0	5.3	5.0	5.8	6.0	6.3	6.2	2.7	3.7	1.0
91-51	2.7	7.7	80	4.0	7.0	5.7	6.3	5.8	5.7	6.7	6.2	2.3	4.0	2.0
91-58	4.0	8.3	80	5.3	6.7	6.0	5.0	5.8	5.7	6.7	6.2	2.0	4.7	2.0
91-12	5.3	8.0	57	5.7	6.3	6.0	4.7	5.7	6.0	7.0	6.5	2.3	1.7	1.0
91-70	5.0	8.0	80	7.0	6.3	5.0	4.3	5.7	5.7	7.0	6.3	3.0	2.0	1.0
91-99	5.0	8.0	80	6.3	5.7	5.7	5.0	5.7	6.0	7.0	6.5	2.3	1.7	1.7
91-18	1.0	6.7	83	3.3	6.0	6.0	7.0	5.6	6.7	7.7	7.2	2.3	7.0	3.0
91-39	4.7	7.3	73	5.7	6.0	5.3	5.3	5.6	5.7	6.7	6.2	2.3	3.7	1.3
91-69	4.7	8.0	83	5.7	6.3	5.0	5.3	5.6	6.7	7.0	6.8	2.3	3.7	1.3
Texoka	5.7	8.0	77	4.7	6.3	6.0	5.0	5.5	6.0	7.3	6.7	2.0	3.7	1.7
91-2	1.0	6.7	73	3.7	6.0	6.3	6.0	5.5	6.0	7.0	6.5	2.7	4.7	2.7
91-32	5.3	8.0	77	4.7	6.3	5.7	5.3	5.5	5.3	6.7	6.0	2.0	4.0	3.0
91-95	2.3	7.3	80	4.0	6.3	6.0	5.7	5.5	6.0	7.0	6.5	2.3	4.7	2.0
91-16	2.7	7.3	83	4.3	6.3	5.3	5.7	5.4	5.3	6.0	5.7	2.0	5.7	2.7

Table 5 (cont'd). 1992 performance of buffalograss selections established April 25, 1991 at Mead, NE

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Genetic color <sup>3</sup>			Canopy type <sup>4</sup>	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	Oct. 13	Oct. 27
91-50	3.0	8.0	67	4.7	5.3	5.7	6.0	5.4	5.7	6.0	5.8	1.7	4.7	1.7
91-60	4.3	8.0	70	6.3	5.7	4.7	5.0	5.4	6.0	6.7	6.3	2.3	4.0	1.0
91-63	0.7	4.3	83	3.3	6.0	6.0	6.3	5.4	5.7	7.0	6.3	1.3	6.7	3.7
91-8	3.0	7.0	77	4.7	6.3	5.7	5.0	5.4	5.3	7.0	6.2	2.0	4.0	1.3
91-96	4.7	8.0	83	5.7	6.0	5.0	5.0	5.4	6.0	7.0	6.5	2.0	2.3	1.0
91-73	5.0	7.7	73	5.0	6.0	5.0	5.3	5.3	6.3	7.0	6.7	2.0	3.0	1.7
91-76	1.7	5.7	80	3.7	6.3	6.0	5.3	5.3	6.0	7.0	6.5	1.7	4.0	2.3
91-88	2.7	5.0	83	3.3	6.0	6.0	6.0	5.3	6.0	7.3	6.7	2.0	5.7	3.0
91-98	5.0	7.7	73	5.7	6.0	5.3	4.3	5.3	4.3	6.3	5.3	2.7	2.0	1.0
91-100	4.7	8.0	70	5.7	6.0	4.7	4.7	5.3	6.0	6.7	6.3	2.0	2.3	1.3
91-15	2.3	7.7	83	4.0	6.0	5.3	5.7	5.3	6.0	6.7	6.3	1.7	5.7	2.3
91-36	3.7	7.7	83	3.7	6.7	5.3	5.3	5.3	5.0	6.0	5.5	2.3	4.7	1.7
91-38	1.3	6.3	70	3.7	6.0	5.3	6.0	5.3	5.7	7.0	6.3	1.7	4.7	2.3
91-47	2.7	7.7	80	4.3	6.0	5.3	5.3	5.3	5.7	6.7	6.2	1.7	3.0	1.7
91-71	2.0	7.7	90	4.3	6.0	5.3	5.3	5.3	5.0	6.7	5.8	2.0	3.3	1.7
91-77	0.0	3.7	83	2.7	6.0	6.7	5.7	5.3	5.0	6.7	5.8	2.3	5.0	2.3
91-1	0.0	3.0	90	2.0	5.3	6.3	7.0	5.2	5.7	7.0	6.3	1.3	6.3	3.0
91-19	3.3	7.7	87	4.3	6.7	4.7	5.0	5.2	5.0	5.7	5.3	2.7	4.3	1.7
91-41	3.0	7.7	77	4.3	6.0	5.0	5.3	5.2	5.0	6.3	5.7	1.7	3.7	1.7
91-42	3.3	7.3	83	3.3	6.3	5.7	5.3	5.2	5.0	6.0	5.5	2.0	4.0	1.7
91-44	0.7	3.7	80	2.7	5.0	6.3	6.7	5.2	5.7	7.0	6.3	1.0	6.7	3.7
91-55	3.7	8.0	83	3.3	6.0	5.7	5.7	5.2	4.7	5.3	5.0	2.0	5.0	2.3
91-56	0.7	4.7	80	3.3	5.7	6.0	5.7	5.2	6.0	6.7	6.3	2.0	6.3	2.7
91-59	1.3	6.7	87	3.3	6.3	5.3	5.7	5.2	5.0	6.7	5.8	2.3	5.0	2.7
91-66	2.0	6.0	80	3.7	6.3	5.3	5.3	5.2	5.3	6.3	5.8	2.0	5.3	2.0
91-74	5.7	7.7	63	5.3	6.0	5.0	4.3	5.2	5.3	6.3	5.8	2.0	2.7	1.0
91-80	1.3	5.3	73	3.3	5.7	5.7	6.0	5.2	5.7	7.0	6.3	2.0	6.0	3.7
91-81	1.7	6.7	70	3.7	5.7	5.7	5.7	5.2	6.0	7.0	6.5	1.7	5.0	3.3
91-82	0.7	4.7	73	3.7	5.0	5.7	6.3	5.2	6.0	7.0	6.5	1.3	6.3	3.0
91-17	0.7	6.0	63	3.7	5.7	5.7	5.3	5.1	6.0	8.0	7.0	2.3	5.3	3.3
91-21	1.7	7.7	77	4.0	6.3	5.0	5.0	5.1	5.3	5.7	5.5	2.0	4.0	2.7

Table 5 (cont'd). 1992 performance of buffalograss selections established April 25, 1991 at Mead, NE

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Genetic color <sup>3</sup>			Canopy type <sup>4</sup>	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	Oct. 13	Oct. 27
91-27	2.0	7.0	90	3.7	6.3	5.3	5.0	5.1	5.0	5.7	5.3	2.0	4.7	2.0
91-3	3.3	8.3	90	4.3	6.0	5.0	5.0	5.1	5.0	6.3	5.7	1.7	4.3	1.7
91-64	2.7	6.0	77	3.7	6.0	5.0	5.7	5.1	6.0	7.0	6.5	1.7	4.7	2.0
91-72	0.7	4.3	83	3.3	5.7	5.7	5.7	5.1	6.0	7.0	6.5	1.0	5.0	2.3
91-90	1.0	5.7	80	3.0	5.7	5.7	6.0	5.1	5.7	7.0	6.3	1.0	5.7	4.0
91-20	0.7	3.7	70	2.7	5.0	6.0	6.3	5.0	6.0	7.0	6.5	1.0	5.3	3.0
91-29	2.0	8.0	87	4.0	6.0	4.7	5.3	5.0	6.3	7.0	6.7	2.0	2.3	1.0
91-4	2.7	7.3	63	4.3	6.3	4.7	4.7	5.0	4.0	5.3	4.7	3.0	3.0	1.7
91-57	1.3	5.0	60	3.7	5.7	5.0	5.7	5.0	5.3	7.0	6.2	2.0	6.0	3.0
91-65	1.7	7.0	80	4.0	6.0	5.0	5.0	5.0	6.0	7.0	6.5	2.0	4.3	2.3
91-67	0.3	2.7	87	2.3	5.0	6.3	6.3	5.0	5.7	7.0	6.3	1.0	5.7	3.3
91-78	0.7	4.0	73	3.0	5.3	5.7	6.0	5.0	6.0	7.3	6.7	1.3	6.3	3.0
91-91	2.7	6.3	73	3.0	6.0	5.3	5.7	5.0	4.7	6.0	5.3	2.0	4.0	2.0
91-14	1.0	4.3	73	3.0	5.3	5.7	5.7	4.9	6.0	7.3	6.7	1.7	6.3	3.0
91-28	3.3	7.0	77	3.3	5.7	5.7	5.0	4.9	6.0	7.0	6.5	2.0	5.0	3.0
91-11	3.0	7.0	73	3.7	5.7	5.0	5.0	4.8	5.0	6.0	5.5	1.7	4.3	2.3
91-24	3.3	8.0	60	4.3	5.3	4.7	5.0	4.8	6.0	6.3	6.2	1.7	3.3	1.3
91-7	1.0	3.7	60	2.7	5.0	5.3	6.3	4.8	6.0	7.0	6.5	1.0	6.3	4.0
91-79	1.3	5.3	80	3.3	5.7	5.0	5.3	4.8	5.3	6.3	5.8	1.7	4.3	2.0
91-23	2.3	7.3	77	3.3	6.0	4.7	5.0	4.8	5.3	5.7	5.5	2.0	5.0	2.3
91-25	3.0	8.0	67	4.0	5.3	4.7	5.0	4.8	5.7	6.0	5.8	1.7	3.3	2.0
91-68	3.0	6.7	80	3.0	6.0	5.0	5.0	4.8	5.0	5.7	5.3	2.0	4.7	2.0
91-86	1.3	4.3	67	2.7	5.0	5.7	5.7	4.8	5.7	7.0	6.3	1.0	6.0	3.3
91-54	1.7	6.3	80	4.0	5.3	4.3	5.0	4.7	6.0	7.0	6.5	1.0	4.3	1.7
91-62	0.7	3.7	83	2.7	5.3	5.0	5.7	4.7	6.0	7.0	6.5	1.3	5.3	2.3
91-46	1.0	4.0	83	2.3	5.3	5.0	5.7	4.6	6.0	7.0	6.5	1.3	5.0	2.7
91-53	0.0	2.7	90	2.0	4.3	5.3	6.7	4.6	6.0	7.0	6.5	1.0	6.7	4.0
91-35	0.3	3.7	80	2.3	4.7	5.3	5.7	4.5	6.0	6.7	6.3	1.0	5.7	3.7
91-52	0.0	2.3	87	2.0	4.0	5.0	7.0	4.5	5.0	6.0	5.5	1.0	6.3	3.7
91-61	2.7	6.3	73	3.0	5.3	4.3	5.3	4.5	4.7	6.0	5.3	1.3	5.7	2.3
91-84	0.3	4.0	80	2.3	4.7	5.0	6.0	4.5	5.3	7.0	6.2	1.7	6.7	4.3

Table 5 (cont'd). 1992 performance of buffalograss selections established April 25, 1991 at Mead, NE

	Spring greenup <sup>1</sup>	Winter survival <sup>2</sup>	Percent cover	Turfgrass quality 1-9, 9=best					Genetic color <sup>3</sup>			Canopy type <sup>4</sup>	Fall dormancy <sup>5</sup>	
	May 6	June 2	June 2	June 2	July 14	Aug. 11	Sept. 19	Avg.	June 2	July 14	Avg.	July 14	Oct. 13	Oct. 27
91-87	0.3	3.0	53	2.3	4.7	4.7	6.0	4.4	4.7	6.0	5.3	1.0	6.0	4.3
91-5	0.3	5.0	47	3.3	4.7	3.3	4.7	4.0	6.0	7.3	6.7	1.3	5.0	2.3
91-48	0.0	3.3	63	2.3	3.3	3.7	5.7	3.8	5.3	6.3	5.8	1.0	6.0	3.7
LSD (0.05)	1.6	1.6	19	1.0	1.1	1.4	1.0	0.7	0.6	0.7	0.5	0.7	1.4	1.1

<sup>1</sup>Spring greenup 0-10, 10=100% greenup.<sup>2</sup>Winter survival 1-9, 9=best survival.<sup>3</sup>Genetic color 1-9, 9=deepest green.<sup>4</sup>Canopy type 1-3, 1=open and 3=closed with no soil visible.<sup>5</sup>Fall dormancy 1-9, 9=no dormancy, all green turf.

Vegetative Cultivar Development - Experimentals that are being considered for release as vegetative cultivars include three female selections, NE84-409, NE91-116, and NE91-118 and a male selection, NE84-45-3. During 1993 an increase block of each of these selections was established. NE84-45-3 has particularly attractive male inflorescences and we feel it would be very useful on golf course berms, slopes or other unmowed situations. NE91-116 has maintained its density and quality after two years at a 5/8 inch mowing height and one year of traffic treatments, making it a possible candidate for fairway use. It is now being evaluated in a replicated trial. Severe contamination of the NE84-436 increase block has forced us to delay possible release of this selection.

Seeded Cultivar Development - There is continuing effort at UNL to develop seeded turf-type buffalograss. Seed has been harvested from four large synthetic blocks planted at our research facility. The selection criteria for the half-sib families in these synthetics was bur yield, evapotranspiration, quality under non-irrigated conditions, fall dormancy and seedling emergence. The next generation of each of these synthetics will be planted next spring. Breeders seed will be harvested from the most promising synthetics for subsequent release.

Parents for a new breeding population has been selected, based largely on low growth habit, low mowing tolerance and quality. A crossing block of this material will be planted next spring. Work on developing a population with resistance to mealybugs is described under the Insect Research heading.

Enhancing Establishment Characteristics - Another breeding project initiated in 1993 will attempt to enhance establishment characteristics of an improved seeded turf-type buffalograss. Germination and improved seedling vigor are two aspects of establishment that will be explored.

Research on identifying biochemical inhibitors in the burr responsible for seed dormancy will be conducted. Thirty-three mother plants, from diverse genetic origin, with superior turf-quality characteristics were identified in the buffalograss nurseries at the JSA Turfgrass Research Facility this summer. Open-pollinated seed was harvested from each plant. Germination studies will be performed on this seed to identify variability for germination. In addition, compounds will be extracted from the burrs, and isolated. A series of tests will be performed with each isolate to determine its influence on germination. Once the compound responsible for dormancy has been identified, germplasm will be screened to develop a population with improved germination.

The germplasm source for improving seedling vigor will be four synthetic populations developed at UNL. Literature indicates that seedling vigor in buffalograss, as well as many other warm season native grasses, can be attributed to increased caryopsis size, a highly heritable trait. Phenotypic recurrent selection for large caryopses will be utilized to develop four populations of seeded turf-type buffalograss with improved seedling vigor.

Tests Established in 1993 - A replicated trial containing 53 vegetative and 21 seeded experimental selections and cultivars was planted in June. Although it was flooded several times this summer, the trial is now well established. A trial was also planted under a stand of trees for preliminary shade tolerance evaluations. Thirty-two entries were included in this trial.

Traffic treatments were initiated this summer to two replicated trials, planted in 1986 and 1987 and each containing 50 selections. Treatments were biweekly, weather permitting, from June through August. This data has not yet been analyzed, but there appear to be differences among selections in wear tolerance suggesting improvement may be possible.

## BUFFALOGRASS INSECT AND DISEASE RESEARCH

Chinch Bug Resistance - In April 1992, sod squares of 70 different buffalograss selections were transplanted into a chinch bug-infested lawn. Chinch bug counts made in September 1992 did not indicate significant differences in resistance among these selections. In October 1993 additional samples were taken from each sod square, and chinch bug counts are now being made. This second year of data should help us detect any differences in resistance, if they are present.

Mealybug Resistance - Several screening trials have indicated significant differences among buffalograss selections in resistance to mealybugs, both in the greenhouse and field. '609', Prairie and a few experimentals consistently show good resistance, while experimental selection 85-97 is extremely susceptible (Tables 6, 7, and 8). Progeny of these selections were also screened for resistance. Of the 1741 seedlings evaluated, 143 (8%) showed no signs of mealybug infestation. These plants were planted in an isolated crossing block in May 1993, and a limited quantity of seed has been harvested from each female plant. These progeny will be evaluated and, hopefully, contribute to the development of a seeded cultivar with enhanced resistance to mealybugs. Studies on mechanism of resistance suggest that leaf pubescence may be involved. A positive correlation was found between amount of pubescence and susceptibility. Scanning electron microscopy studies have been initiated to evaluate leaf pubescence and how mealybugs interact with the leaf surface.

Leaf Spot Disease - Further isolation from diseased buffalograss tissue indicate that the organism causing this leaf spot disease is probably *Bipolaris buchloe*. However, efforts to inoculate disease-free buffalograss plants and produce disease symptoms have been unsuccessful to date. The proper environment for disease development may not be present in the inoculation tests. Additional work is needed to gain a better understanding of the environmental conditions for this disease.



Table 6. Susceptibility of buffalograss selections to mealybugs under greenhouse conditions, May-July 1992.

Selection	Mealybug infestation (0-5, 0=none)				Turf quality <sup>2</sup>	Regrowth <sup>3</sup>
	May 19	June 19	July 8	Average <sup>1</sup>	May 19	June 19
84-609	0.0	0.7	1.2	0.9	5.3	7.2
Prairie	0.5	1.8	2.5	2.2	4.8	6.5
84-412	0.3	2.0	3.7	2.8	5.3	5.8
84-512	0.3	2.3	4.5	3.4	4.2	4.8
84-204	0.2	2.5	4.7	3.6	4.0	4.3
85-129	0.7	2.7	4.5	3.6	4.3	4.7
85-190	0.5	2.7	4.5	3.6	4.2	3.7
T2	0.5	2.7	4.7	3.7	4.2	3.0
84-13-2	0.5	2.7	4.7	3.7	4.3	2.7
84-714	0.8	2.3	5.0	3.7	4.0	4.8
84-315	1.3	2.5	5.0	3.8	4.3	2.7
85-217	0.0	2.5	5.0	3.8	3.0	4.5
85-378	0.7	2.7	5.0	3.8	3.7	4.5
84-WS	1.0	2.8	5.0	3.9	4.0	3.5
84-48-2	0.3	3.0	5.0	4.0	4.7	4.0
T	0.7	3.2	5.0	4.1	4.5	3.8
84-64	1.0	3.2	5.0	4.1	4.7	4.5
84-923	0.8	3.2	5.0	4.1	4.2	3.5
Bird-1	0.8	3.3	5.0	4.2	3.0	2.5
Bird-2	0.5	3.3	5.0	4.2	3.8	4.0
84-25-2	1.8	3.7	4.8	4.3	3.2	3.0
84-925	0.7	3.5	5.0	4.3	4.2	2.7
84-926	1.3	3.5	5.0	4.3	3.8	2.5
84-932	1.3	3.5	5.0	4.3	3.5	2.7
84-931	1.3	3.6	5.0	4.3	3.8	2.2
84-802	1.2	3.7	5.0	4.3	3.7	1.7
84-924	1.5	3.7	5.0	4.3	3.8	3.3
84-927	1.2	3.7	5.0	4.3	4.0	2.2
85-478	1.2	3.7	5.0	4.3	5.0	2.8
84-22-2	0.7	3.8	5.0	4.4	4.3	3.2
84-930	1.3	4.0	5.0	4.5	3.8	2.0
85-111	0.5	4.0	5.0	4.5	4.0	2.3
84-928	1.0	4.2	5.0	4.6	4.2	2.7
85-212	1.3	4.2	5.0	4.6	3.8	2.5
85-33	2.2	4.2	5.0	4.6	3.8	2.0
84-608	1.2	4.3	5.0	4.7	2.0	1.7
84-903	1.3	4.3	5.0	4.7	3.7	2.5
85-97	2.0	4.4	5.0	4.7	3.2	1.8
LSD (.05)	NS	0.8	0.2	0.4	0.7	1.6

<sup>1</sup>Average of June and July ratings

<sup>2</sup>Turf quality 1-9 scale, 9=best

<sup>3</sup>Regrowth 1-9 scale, 1= no growth

Table 7. Susceptibility of buffalograss selections to mealybugs under greenhouse conditions, Aug 1992-Jan 1993.

	Turf quality 1-9, 9=best							Density	Mealybug infestation 0-5, 0=none							Mealybug	Pubescence
	Aug 14	Sept 18	Oct 22	Dec 1	Jan 6	Ave.	0-9, 9=most	Sept 4	Sept 18	Oct 17	Nov 25	Jan 6	Ave.	counts	0-5, 0=none		
														Jan 8	Feb 16		
84-609	6.0	5.3	7.0	7.3	7.3	6.7	5.8	0.0	0.0	0.0	0.3	0.1	1.8	0.3			
84-609X	5.5	5.5	7.0	7.5	7.8	6.9	6.0	0.3	0.3	0.0	0.3	0.2	1.0	0.0			
Prairie	4.3	4.5	5.8	6.0	5.8	5.5	5.0	0.5	1.5	1.3	0.8	1.0	5.3	1.3			
84-512	3.8	4.5	4.8	5.0	5.3	4.9	4.8	0.5	2.3	1.5	1.5	1.4	12.3	1.5			
84-412	5.0	5.3	6.3	5.5	5.5	5.6	5.3	0.8	2.8	2.5	2.3	2.1	17.3	0.0			
84-930	5.3	4.8	4.0	3.8	3.3	3.9	5.3	0.8	3.0	2.5	3.0	2.3	12.8	3.0			
84-931	5.0	5.5	5.3	5.8	5.8	5.6	6.0	0.8	2.8	3.0	2.8	2.3	11.0	3.8			
85-190-2	5.5	6.3	6.0	5.0	6.0	5.8	6.0	0.8	2.8	3.0	2.8	2.3	19.3	3.0			
84-926	6.0	6.0	4.5	4.3	3.8	4.6	6.0	0.5	2.8	3.3	3.0	2.4	15.0	3.0			
84-925	4.8	5.3	5.0	4.3	3.5	4.5	6.0	0.5	3.0	3.0	3.3	2.4	18.3	3.0			
85-924	5.5	5.8	5.8	4.8	4.8	5.3	6.0	1.0	3.0	3.0	3.0	2.5	30.0	2.8			
84-204	4.0	6.0	4.5	4.3	3.8	4.6	6.0	1.0	3.0	2.8	3.5	2.6	17.0	3.0			
85-217	4.8	6.0	4.8	4.5	5.0	5.1	6.0	1.3	2.8	3.5	2.8	2.6	8.0	4.0			
84-714	4.8	5.0	5.5	5.5	5.0	5.3	5.3	1.3	3.3	3.0	3.0	2.6	18.8	1.8			
Texoka	5.3	5.3	5.8	5.8	5.0	5.4	6.0	0.5	3.3	3.3	3.8	2.7	21.3	4.3			
84-923	4.5	5.0	4.5	3.3	2.0	3.7	5.5	0.5	2.8	3.8	4.0	2.8	28.8	2.5			
84-927	5.5	5.5	4.8	4.3	3.8	4.6	6.3	0.8	3.0	3.8	3.5	2.8	9.8	3.0			
85-204	5.3	5.3	5.0	4.5	4.0	4.7	5.3	0.8	3.0	3.5	4.0	2.8	12.5	3.8			
84-48-2	4.8	5.3	5.5	4.5	4.0	4.8	5.3	0.8	2.8	4.0	4.0	2.9	79.8	2.8			
84-928	5.3	5.5	4.8	4.0	3.8	4.5	5.8	1.3	3.5	3.5	3.5	2.9	12.8	3.0			
85-378	5.3	5.5	4.8	4.0	3.8	4.5	5.8	1.3	3.3	3.8	3.8	3.0	16.3	3.5			
84-V6	5.3	5.3	5.0	4.3	4.0	4.6	5.8	1.5	3.3	3.5	4.0	3.1	24.0	3.5			
BIFD2	4.3	4.8	4.0	3.5	2.5	3.7	5.5	1.3	3.5	4.0	4.0	3.2	26.0	3.0			
84-22-2	4.5	5.0	4.5	3.8	3.5	4.2	5.0	1.5	3.8	3.5	4.0	3.2	17.0	3.8			
84-315	5.5	6.0	4.5	3.5	2.8	4.2	6.3	1.0	3.5	4.3	4.0	3.2	4.3	2.3			
85-97	5.0	5.0	4.5	3.8	3.0	4.1	5.8	1.5	3.8	4.5	4.5	3.6	34.5	4.5			
85-97X	4.5	5.0	5.3	4.0	3.3	4.4	5.8	1.3	3.8	4.5	5.0	3.6	29.8	4.0			
LSD (.05)	1.1	1.0	1.1	1.5	1.5	0.6	0.8	0.8	0.6	1.1	0.8	0.6	19.6	0.6			

Table 8. Differences among buffalograss selections growing in PVC-pipe cages in the field and inoculated with mealybugs, Aug-Sept 1992.

Selection	Turf quality 1-9, 9=best				Mealybug counts Sept. 1
	Aug 3	Aug 13	Aug 26	Ave.	
84-609	4.3	4.3	3.8	4.2	45.7
85-217	5.3	3.8	3.8	4.3	83.5
84-512	4.3	3.3	3.8	3.8	166.3
84-931	5.7	4.3	3.7	4.6	168.0
84-48-2	5.5	4.5	4.7	4.9	203.5
84-927	5.0	4.3	3.8	4.4	261.2
84-412	4.0	3.8	4.0	3.9	349.0
84-925	5.2	4.3	4.0	4.5	427.5
84-928	5.3	4.3	3.8	4.5	489.0
84-926	5.3	4.2	4.0	4.5	489.8
84-714	5.0	4.3	3.5	4.3	605.3
85-204	5.2	4.5	3.5	4.4	811.2
BIRD2	5.0	2.8	1.7	3.2	934.0
85-97	5.3	4.0	3.8	4.4	978.2
84-930	5.0	4.0	4.0	4.3	1,257.2
LSD (.05)	0.6	0.8	0.8	0.6	488.4

## **BUFFALOGRASS RELATED PUBLICATIONS AND PRESENTATIONS**

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