TURFGRASS

Research Report

2003

University of Nebraska-Lincoln
Institute of Agriculture and Natural Resources
Cooperative Extension Division
Agricultural Research Division
Center for Grassland Studies
Turfgrass Science Team
Nebraska Turfgrass Association
Nebraska Turfgrass Foundation

Turfgrass Science Team
University of Nebraska
"the good life needs good turf"

University of Nebraska Lincoln

2003 Turfgrass Research Report
Report Editor: Tiffany Heng-Moss

2003 Turfgrass Research Report

Statement of Purpose

The purpose of the Turfgrass Science Team is to bring together faculty, staff, graduate students, industry, funding, and other resources in a way that is convenient to work together in mutual benefit of research, extension, and teaching.

Team Mission

The mission of the Turfgrass Science Team is to develop cultivars, cultural practices, curriculum, and outreach programs that conserve water, reduce pesticide use, minimize environmental impact and enhance the quality of life.

Team Functions

Research
Extension
Education and Training
Outreach/Liaison

Turfgrass Team Members - Faculty
University of Nebraska

Research Emphasis:

*Investigate the biology, ecology and injury potential of turfgrass arthropods with the goal of developing effective sustainable and environmentally responsible Integrated Pest Management approaches for the insects and mites affecting Nebraska's turfgrasses.

Fred P. Baxendale
Department of Entomology

Extension Emphasis:
*Coordinator of the Plant and Pest Diagnostic Clinic
*Diagnose plant disease samples submitted to the Plant and Pest Diagnostic Clinic
*Develop and deliver plant disease programs

Jennifer L. Chaky
Department of Plant Pathology

Research Emphasis:

*Enhance understanding of microbial ecology in managed grassland ecosystems, namely golf course putting greens.
*Identify relationships among microbial communities developed in putting greens in response to management history.
*Improve understanding of microbial community development in putting greens, leading to reduced inputs and disease pressure.

Rhae A. Drijber
Department of Agronomy and Horticulture

Research Emphasis:
*Diagnose and manage ornamental plant diseases.
*Screen experimental fungicides for disease control in ornamentals.

Loren J. Giesler
Department of Plant Pathology

Research Emphasis:
*Improve turfgrass weed control practices through integrated turfgrass management practices.
*Enhance understanding of herbicide efficacy.
*Integrated approaches to buffalograss management.
Study long-term effects of root zone mixes and grow-in on golf green and sports turf characteristics.

Roch E. Gaussoin
Department of Agronomy & Horticulture

Research Emphasis:
*Study plant resistance to insects with emphasis on identification of resistant turfgrass.
*Characterization of the morphological, biochemical and physiological mechanisms conferring resistance.

Tiffany Heng-Moss
Department of Entomology

Research Emphasis:
*Xenobiotic remediation by plants and plant-microorganism systems.
*Pesticide and nutrient fate in relationship to environmental and water quality.
*Turfgrass canopy enviornmental influence on microorganism ecology.
*Enhanced understanding of environmental quality and sustainability of resource systems.

Garald L. Horst
Department of Agronomy & Horticulture

Research Emphasis:
*Integrated pest management for vertebrate species, including moles, voles, ground squirrels, pocket gophers, deer and Canada geese.

Scott E. Hygnstrom
School of Natural Resources

Research Emphasis:
*Engineer systems to quantitatively assess turfgrass responses of interest, such as golf ball roll distance and uniformity, shear strength and traffic tolerance.

Michael F. Kocher
Bio-Systems Engineering

Research Emphasis:
*Understand the interactions of wildflowers and warm-season turfgrass when planted in mixture.
*Evaluate turfgrass cultivars and other turfgrass products for use in west central Nebraska.

Dale Lindgren
Department of Agronomy & Horticulture
West Central Research and Extension Center

Research Emphasis:
*Administrate and facilitate research activities related to the Center for Grassland Studies, including turfgrass development, evaluation and management and seed production practices.

Martin A. Massengale
Center for Grassland Studies

Research Emphasis:

Director, Professional Golf Management Program
Turfgrass Science Team Member

Terrance P. Riordan
Department of Agronomy & Horticulture

Research Emphasis:

*Buffalograss Breeding, evaluation, and improvement

*Turfgrass species and cultivar evaluation

*Integrated turfgrass management (ITM)

*Turfgrass and forage grass seed production

Robert (Bob) C. Shearman
Department of Agronomy and Horticulture

Extension Emphasis:

*Develop and deliver extension programs emphasizing integrated landscape management practices.

Anne Streich
Department of Agronomy & Horticulture

Research Emphasis:

*Improve disease diagnosis and management
*Establish disease management systems for dollar spot and brown patch
*Screen experimental fungicides for turfgrass disease control.

John E. Watkins
Department of Plant Pathology

Research Emphasis:
*Identify microorganisms with potential for biological control of turfgrass diseases.
*Determine mechanisms of microbial effects on disease development
*Understand environmental impacts on pathogenic fungi and applied antagonists, with emphasis on bacteria on leaf spot, brown patch and dollar spot.

Gary Y. Yuen
Department of Plant Pathology

Turfgrass Team Members

Support Staff

Leonard Wit, Unit Manager, JSA Turf and Ornamental Research Facility, ARDC

Donna Michel, Secretary/Web-Master, Agronomy and Horticulture Department

Mike Boosalis, Professor Emeritus, Plant Pathology

Hikmet Budak, Program Coordinator, Buffalograss Breeding and Genetics

Casey Bryan, Research Technician, JSA Turf & Ornamental Research Facility, Mead

Tom Eickhoff , Research Technician, Entomology and Graduate Student

Christy Jochum, Research Technologist, Plant Pathology

Jeff Witkowski, Technician, Agronomy and Horticulture

Amy Ziems, Research Technologist, Plant Pathology and Graduate Student

Wyatt Anderson, Graduate Research Assistant, Entomology

Ryan Goss, Post Doctoral Associate, Turfgrass Physiology and Weed Ecology

Osman Gulsen, Graduate Research Assistant, Turfgrass Breeding, Agronomy and Horticulture

Jason Lewis, Graduate Research Assistant, Turfgrass Management

Shaojie Li, Graduate Research Assistant, Plant Pathology

Songul Severmutlu, Graduate Research Assistant, Turfgrass Management and Ecology

Ty McClellan, Graduate Research Assistant, Turfgrass Management

Turfgrass Research Support

Arrow Seed
BASF Corporation
Bayer Environmental Science
Cedar Chemical Company
Center for Great Plains Studies
Cleary Chemical
Dow AgroSciences
Earl May Seed and Nursery
Ecogen
Emerald Isle, Ltd.
Ever Ride Mowers
Exmark Mfg. Co., Inc.
Fermenta Plant Protection
FMC Turf and Ornamentals
The Greenkeeper Company Inc.
Jacklin Seed Co.
Johnson Seed Co.
LESCO
Midwest Turf and Irrigation
Monsanto Corp
National Turfgrass Evaluation Program
NE Golf Course Supt. Association
NE Professional Lawn Care Association
NE Turfgrass Association
Pickseed West Inc.
Pure-Seed Testing
Reams Sprinkler and Supply
J. Frank Schmidt and Sons Co.
The Scotts Company
Seed Research Inc.
Seeds West Inc.
Stock Seed Company
Sun Turf
Syngenta Crop Protection
Todd Valley Farms Inc.
Turfgrass America, Inc.
Turf-Seed, Inc.
United Horticulture Supply
United Seeds
United States Golf Association

Buffalograss Germplasm Resistance to Chinch Bug [*Blissus occiduus* (Hemiptera: Lygaeidae)

O. Gulsen, T. M. Heng-Moss, R. C. Shearman, K. P. Vogel, P. S. Baenziger, and D. J.Lee

Germplasm resources provide genetic variability in plants for insect resistance that may impact insect infestation. The goal of this project was to detect variation among selected buffalograss genotypes [*Buchloë dactyloides* (Nutt.) Engelm.] for chinch bug resistance, and relate resistance to ploidy level, chinch bug number, and pubescence. The fourty eight buffalograss genotypes from diverse geographic locations were evaluated for chinch bug resistance in replicated studies under greenhouse conditions. The rating scale was as following: 1 = ≤10%, 2 = 11-30%, 3 = 31-50%, 4 = 51-70%, and 5 = ≥71% of leaf area with severe discoloration, or dead tissue. Of the genotypes studied, 4 were highly resistant, 22 were moderately resistant, 19 were moderately susceptible and three were highly susceptible to chinch bug damage. The genotypes 184, 91-118, 196, and PX3-5-1 were highly resistant with damage ratings of less than 1.7. The genotypes 4A, 188, and 119 were highly susceptible. There was no significant correlation between chinch bug resistance and ploidy level or chinch bug resistance and pubescence. It is apparent that considerable variation in chinch bug resistance exists among buffalograss germplasm.

Cloning and Characterization of Resistance Gene Analogs in Buffalograss

H. Budak, R.C. Shearman, and I. Dweikat

The majority of resistance genes (R-genes) encode proteins with specific domains.

The objective of this study was to clone and characterize R gene analogs (RGA) by utilizing conserved domains. Sequence analysis of clones revealed that all encoded amino acid sequences were highly conserved among the buffalograss genotypes studied, and shared the same conserved motifs found in the cloned plant disease resistance genes.

Our results indicate that conserved domains of resistance genes cloned from a wide range of plant taxa can be used to isolate R-gene homolog in buffalograss used. The RGL sequences isolated from these turfgrass species used appear to be part of a multi-gene family. Markers designed by using conserved domains can be employed in linkage maps to trace resistance genes. However, we have no evidence from genetic linkage mapping that these sequences are linked to any diseases or abiotic stress resistance genes.

Application Timing of Merit for Control of Billbugs and White Grubs, 2003:

W.G. Anderson, F.P. Baxendale, T.E. Eickhoff and T.M. Heng-Moss

Insecticides were evaluated for control of billbugs and white grubs on plots located at the University of Nebraska Agricultural Research and Development Center near Mead, NE. The turf (100% Kentucky bluegrass) was maintained at a height of 2.5 inches. Thatch accumulation in the plot area was 0.25 inches. Field conditions at the study site were: soil type, silty clay loam; soil organic matter, 3-5%; soil pH, 6-7; water pH, 7.0. Environmental conditions at the time of treatment were as follows: soil moisture 24%, 27% and 16%; air temperature 69°F, 62°F and 82°F; soil temperature 67°F, 63°F and 84°F; relative humidity 44%, 70% and 69%; wind direction and velocity 124° at 4.7 mph, 189° at 4.1 mph and 234° at 6.8 mph. Plots were 8 x 8 ft and the experimental design was a RCB with 3 replications. Insecticide treatments were applied on 7 May, 4 June and 9 July 2003. Liquid products were applied using a CO_2 sprayer at 40 psi and applying 131 gpa finished spray. Post-treatment irrigation was 0.15 inches. A total of 6.7 inches of rain accumulated during the post-treatment period. Treatments were evaluated 62 (8 July for billbugs) and 111 (26 Aug for white grubs) days after the first treatment date by removing from each plot three, 8-inch diam turf-soil cores (1.05 ft² total area) to a depth of 3 inches and counting the number of surviving billbugs and white grubs.

All Merit treatments at all application dates provided statistically significant reductions of billbug numbers when compared to the untreated control. No phytotoxicity was observed.

Table 1. Mean number of surviving billbugs and percent control with Merit at two application dates.

Treatment	Rate lb AI acre^{-1} (Date)	Mean BB [†]	% Control
Merit 75WP	0.4 June	0.25 a	98
Merit 75WP	0.4 May	0.75 a	94
Merit 75WP	0.3 June	1.00 a	92
Merit 75WP	0.3 May	2.25 a	83
UTC	---	13.25 b	—

[†] Mean number of billbugs in 1.05 ft^2

[‡] Means followed by the same letter are not significantly different (P>0.05, LSD test)

All Merit treatments at all application dates provided statistically significant reductions of southern masked chafer numbers when compared to the untreated control. No phytotoxicity was observed.

Table 2. Mean number of surviving white grubs and percent control with Merit at three application dates.

Treatment	Rate lb AI acre^{-1} (Date)	Mean WG †	% Control
Merit 75WP	0.4 June	0.25 a	98
Merit 75WP	0.4 May	0.75 a	94
Merit 75WP	0.3 June	1.00 a	92
Merit 75WP	0.3 May	2.25 a	83
UTC	---	13.25 b	---

† Mean number of white grubs in 1.05 ft^2

‡ Means followed by the same letter are not significantly different (P>0.05, LSD test)

Control of Chiggers with Pyrethroid Insecticides, 2003:

F.P. Baxendale, R.W. Baxendale and T.E. Huntington

Insecticides were evaluated for control of chiggers on a brome grass area between pine tree rows on an acreage in Lincoln, NE. The grass (70% brome) was maintained at a height of 3 inches. Thatch accumulation in the plot area was 0.25 inches. Field conditions at the study site were: soil type, silty clay loam; soil organic matter, 2-4%; soil pH, 6-7; Environmental conditions at the time of treatment were as follows: soil moisture 8.2%; air temperature 93°F; soil temperature 81°F; relative humidity 44%; wind direction and velocity 65° at 4 mph. Plots were 4 x 4 ft and the experimental design was a RCB with 4 replications. Insecticide treatments were applied on 7 July 2003. Granule applications were applied using a hand shaker. Post-treatment irrigation was 0.15 inches. A total of 0.1 inches of rain accumulated during the post-treatment period. Treatment efficacy was evaluated (10 days after treatment(DAT)) by placing four 6" X 9" (1.5 ft² total area) black clipboards into the plot area. The clipboards were retrieved after 45-50 seconds and visually examined for the presence of surviving chiggers.

The insecticide formulations S9892 at 0.2 lb AI/A, and S8105 at 4.0 lb AI/A provided significant chigger reduction with 96% and 80% control, respectively. No phytotoxicity was observed.

Table 1. Mean number of surviving chiggers and percent control of nine insecticides.

Treatment	Rate lb AI acre^{-1}	Mean CH †	% Control
S09892	0.2	0.5 a	96
S08105	4.0	2.5 a	80
S10478	0.087	4.0 ab	68
S10585	0.1	4.0 ab	68
S10464	0.035	5.8 ab	54
S10584	0.2	6.0 ab	52
S10924	0.436	8.0 ab	36
S09907	0.218	9.0 ab	28
S09892	0.1	9.3 ab	26
UTC	---	12.5 b	---

† Mean number of chiggers in 1.5 ft^2

‡ Means followed by the same letter are not significantly different (P>0.05, LSD test)

Selected Rates of Pyrethroid Insecticides for Control of Chinch Bugs, 2003:

T.M. Heng-Moss, T.E. Eickhoff, W.G. Anderson and F.P. Baxendale

Insecticides were evaluated for control of chinch bugs on buffalograss research plots at the University of Nebraska JSA Research Facility near Mead Nebraska. The turf (100% buffalograss) was maintained at a height of 3 inches. Thatch accumulation in the plot area was 0.25 inches. Field conditions at the study site were: soil type, silty clay loam; soil organic matter, 3-5%; soil pH, 6-7; water pH, 7.0. Environmental conditions at the time of treatment were as follows: soil moisture 13.4%; air temperature 82°F; soil temperature 76°F; relative humidity 36%; wind direction and velocity 292° at 5 mph. Plots were 5 x 5 ft and the experimental design was a RCB with 5 replications. Insecticide treatments were applied on 27 June 2003. Granule applications were applied using a hand shaker. Post-treatment irrigation was 0.15 inches. A total of 0.16 inches of rain accumulated during the post-treatment period. Treatments were evaluated 10 DAT (7 July) by taking two 8-inch diameter vacuum samples (0.7 ft² total area per plot) with a modified Echo 2400 Shred 'N Vac. Samples were placed in Berlese funnels and surviving chinch bugs were extracted and counted after 48 hr.

All treatments provided statistically significant reductions in chinch bug numbers when compared to the untreated check. However, SPG03-003 and SPG03-013 (0.075lb AI/A) did not provide acceptable($\geq$80%) chinch bug control. No phytotoxicity was observed.

Table 1. Mean number of surviving chinch bugs and percent control of eight insecticides.

Treatment	Rate lb AI acre^{-1}	Mean CB [†]	% Control
SPG03-013	0.45	0.2 a	99
Talstar EZ	0.6	0.2 a	99
SPG03-013	0.2	0.4 a	99
SPG03-013	0.3	0.4 a	99
SPG03-013	0.15	2.2 a	95
SPG02-005	0.13	5.0 ab	89
SPG03-013	0.075	14.8 bc	68
SPG02-003	0.32	23.4 c	49
UTC	---	46.0 d	---

[†] Mean number of chinch bugs in 0.7 ft^2

[‡] Means followed by the same letter are not significantly different (P>0.05, LSD test)

Overseeding Buffalograss Turf with Fine-Leaved Fescues for Improved Turfgrass Performance

S. Severmutlu, T.P. Riordan, R.C. Shearman

Buffalograss is a low maintenance, stoloniferous, perennial warm-season species native to the North American Great Plains. Concerns regarding water conservation and chemical inputs have increased interest in using buffalograss as a turfgrass. However, the long annual dormancy of buffalograss is a limitation to its acceptance and use as a turfgrass in northern climates. Buffalograss becomes dormant early in the fall and remains dormant until late spring in those areas.

Fine-leaved fescues are adapted to low maintenance lawns, and are drought resistant, but do not tolerate high temperature stress. They grow actively when buffalograss is dormant. Thus, growth patterns of buffalograss and fine fescues are opposite and might compliment each other if grown in a mixture. When mixed together as a long-lived perennial turf, fine fescues could keep the mixture green in the spring and fall, while buffalograss could provide summer performance. This mixture might potentially extend the green cover, quality and utilization of buffalograss turf. With this in mind, studies were conducted to determine the effects of: 1) Fine-leaved fescue overseeding on turfgrass quality and color retention when mixed with buffalograss and 2) Species, seeding rate and date, and core cultivation on fine-leaved fescue overseeding establishment.

Three fine fescue species (blue, hard and Chewings) were overseeded into mature buffalograss stands using two levels of core cultivation (single or double pass) prior to the overseeding. Three planting dates (fall, spring, and fall and spring), and three seeding rates (10, 20, and 30 g m^{-2}) were also studied. Data were collected on turfgrass quality, color, green cover and botanical composition of the mixture.

Buffalograss turf overseeded with blue fescue (BF) in fall provided the highest turfgrass quality (Fig. 1), color and green cover during spring and late fall. The BF treatment maintained a very uniform, attractive, and weed-free turf. There was a positive linear response for seeding rate, with each increment between 10 g m^{-2} and 30 g m^{-2} increasing fine-leaved fescue shoot density, turfgrass quality (Fig. 2), color and green cover. However, mean separation indicated no differences in turfgrass quality, color and green cover between 20 and 30 g m^{-2}. Fall overseeding resulted in the highest shoot density values for the fine-leaved fescue species (Table 1). Spring seeding resulted in poor establishment (Table 1). Buffalograss overseeded with fine-leaved fescue species in the fall also produced the best turfgrass quality, darkest green color, and most green cover, when buffalograss was dormant in late fall and spring. Core cultivation treatment had no

effect on turfgrass quality. Botanical composition of the mixtures overseeded in fall stabilized near 75 to 80% fescue and 20 to 25% buffalograss 2 yr after overseeding. Color retention was improved in the fall and turf greened earlier in spring with the fine fescue-buffalograss mixtures. Turfgrass green cover was extended by 3 months when compared to buffalograss monostands. Results indicate that blue fescue at 20 g m^{-2} seeding rate should be recommended for overseeding buffalograss turf in the fall to extend turfgrass green appearance and enhance quality under NE conditions.

Table 1. Mean shoot density for fine fescue and buffalograss and percentage of fine fescues in mixtures as influenced by species × seeding date interactions.

Overseeded species	Seeding date	Shoot density						Fine fescue composition of mixture[†]
		May		July		September		
		fine fescue	buffalograss	fine fescue	buffalograss	fine fescue	buffalograss	
		no. 4000 mm^{-2}						%
Blue fescue	Fall	132	14	77	33	87	33	79
	Fall-spr.	115	16	62	39	74	42	72
	Spring	28	51	17	77	21	78	24
Chewings fescue	Fall	116	20	90	29	111	30	80
	Fall-spr.	100	23	79	34	95	31	76
	Spring	71	46	68	51	71	53	58
Hard fescue	Fall	160	13	86	31	106	35	82
	Fall-spr.	147	15	72	35	89	37	78
	Spring	31	52	17	76	32	82	28
LSD (0.05) [‡]		8.0	4.7	6.6	4.3	6.1	4.6	

[†] Fine fescue composition of the mixture averaged over growing season.
[‡] LSD for significant seeding date × species interactions.

LIST OF FIGURES

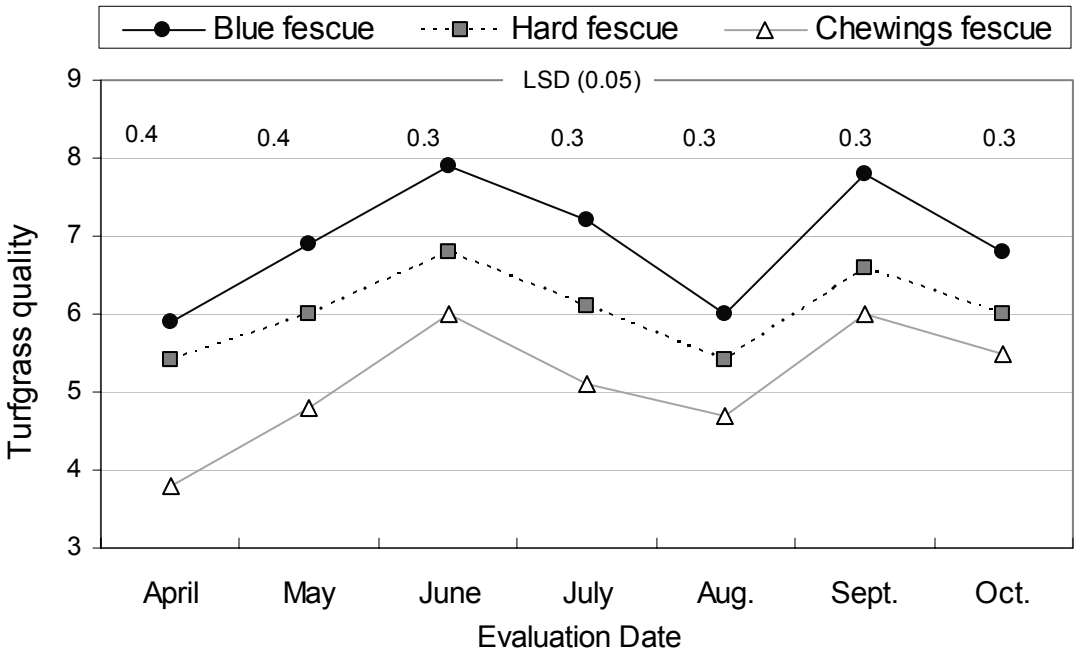


Fig.1

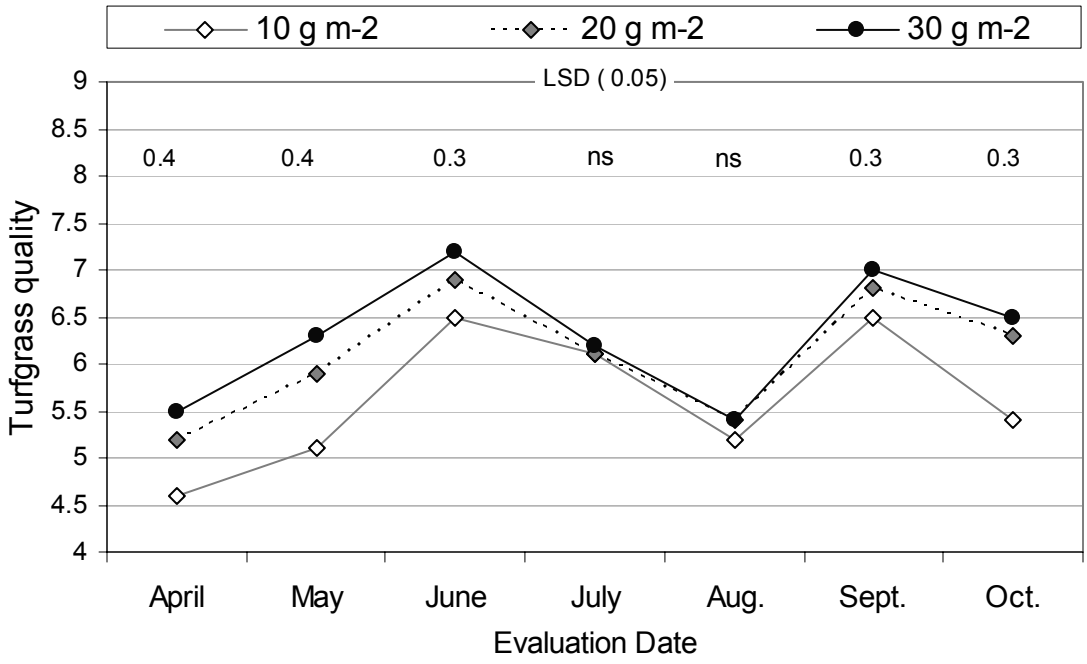

10 g m-2
20 g m-2
30 g m-2
LSD (0.05)
0.4
0.4
0.3
ns
ns
0.3
0.3
Turfgrass quality
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
April
May
June
July
Aug.
Sept.
Oct.
Evaluation Date

Fig. 2

Sports Turf Grow-In Experiment

R.E. Gaussoin and R.M. Goss

The Nebraska Turfgrass Team has taken a strong interest in aiding the sports turfgrass managers of Nebraska. A 10,000 ft2 research area was built in 2003 to provide continued support to the growing sports turf industry of Nebraska.

A research experiment comparing various, commercially available grow-in programs was conducted in 2003 (and will continue into 2004) on the Nebraska Sports Turfgrass Research Area at the John Seaton Anderson Turf and Ornamental Research Center near Mead, NE. The objective of the experiment was to evaluate grow-in programs and each component part of each program. We solicited recommended grow-in programs from multiple companies. Programs contained various combinations of inorganic fertilizers, organic fertilizers, foliar-applied fertilizers, biostimulants, and mycorrhizae. The study was initiated on two dates (July 9, 2003 and Sept 22, 2003). The dates represent a non-ideal and an ideal date of planting for Kentucky bluegrass establishment in eastern Nebraska. Plots were 3'x3' and arranged in a completely randomized design with three replicates. Treatments were created to determine whether the type of fertilizer and/or presence of biostimulant and/or mycorrhizae provided increased establishment rates. A total of 37 treatments were applied as per the recommended label for each product. No efforts to equilibrate rates between treatments were made. Due to the complexity of the experiment, only select treatments are discussed. The results of the second initiation date (September 22, 2003) cannot be discussed at this time because none of the plots had approached 100% cover at the last rating date of 2003 (November 7).

In general for the July 9th initiation date, most treatments with the Andersons fertilizer (preplant: 2.4 lb. N, 2.4 lb. P and 2.0 lb. K per 1000ft2 with A-TEP micronutrient package; weekly after germination: 0.9 lb. N, 0.15 lb. P, 0.84 lb. K per 1000ft2) program achieved cover too quickly for the experimental technique to accurately predict when 90 or 95% cover would be achieved (Table 1). These treatments would likely obtain 90-95% cover in less than 35 days from seeding. The treatments which included organic fertilizers were slightly slower to obtain cover as treatments with the Andersons fertilizer program for the first 35 days of the experiment (data not shown). However, there was no noticeable differences between inorganic or organic fertilizer programs after two months. No additional benefit was apparent when a treatment included biostimulants and/or mycorrhizae regardless of type of fertilizer applied. In addition, foliar-applied + Andersons fertilizer treatments did not achieve cover sooner than Andersons fertilizers alone.

The initial results of the experiment indicate a conventional inorganic fertilizer program provides one of the better grow-in programs for the establishment of Kentucky bluegrass. In addition, using granular fertilizers both pre-plant and post-germination made the Andersons fertilizer program very effective, convenient and easy to use. However, treatments with additional components, such as foliar-applied fertilizers, had similar results. The benefits of mycorrhizae and biostimulants were not evident from the initial research findings.

Data obtained from the September seeding will help determine the optimal and effective grow-in programs for Kentucky bluegrass. In addition, the potential benefits of biostimulants, mycorrhizae and foliar-applied fertilizers may become evident from further experimentation. Research will continue and will provide additional data in the future and will be discussed in future research reports.

Table 1. Estimated number of days before a treatment reached 90 and 95% Kentucky bluegrass cover and sod strength taken 82 days after initiation date (July 9, 2003) at Mead, NE.

	Days until 90% cover	Days until 95% cover
Untreated Control	43	47
Andersons Fertilizer Alone (Preplant fertilizer + weekly fertilizer after germination)	<35	<35
Becker Underwood Biostimulant + Mycorrhizae + Andersons Fertilizer Program	<35	<35
Becker Underwood Biostimulant + Mycorrhizae + NuGro Fertilizer	40	43
Sustane Fertilizer + Biostimulant + Mycorrhizae	40	42
Sustane Biostimulant + Mycorrhizae + Andersons Fertilizer	<35	<35
Emerald Isle Architect's Blend (Low Rate) + Foliar Package	<35	<35
Emerald Isle Architect's Blend (High Rate) + Foliar Package	40	43
Floratine Foliars (without Andersons Fertilizer)	45	56
Floratine Foliars + Floradox Pro (without Andersons Fertilizer)	44	52
BioGreen Growin	42	46
BioGreen Growin with Andersons Fertilizer	<35	<35
Grigg Brothers Foliar Nu-Blade + Andersons Fertilizer	<35	<35
Grigg Brothers Foliar BioBlend + TuffTurf + Andersons Fertilizer	40	43
Grigg Brothers Foliar Gary's Green + Andersons Fertilizer	<35	<35

Note: Treatments listed as <35 days achieved a high percent cover early in the experiment and therefore the technique could not accurately determine days until 90 or 95% cover.

Crabgrass and Foxtail Weed Control

R.E. Gaussoin and R.M. Goss

Two research experiments for pre-emergence and post-emergence warm-season annual grass control in a Kentucky bluegrass sward were conducted in 2003 at the John Seaton Anderson Turf and Ornamental Research Center near Mead, NE.

Experiment 1

The objective this experiment was to evaluate the weed control of various pre-emergence herbicides for annual warm-season grass control in a Kentucky bluegrass turfgrass stand maintained at 3 inch height of cut. Plots were 3'x5' and arranged in a randomized complete block design with four replicates. The following herbicide treatments were applied on May 6, 2003:

Untreated control			
Dimension Ultra WSP	dithiopyr	0.25+0.25	lb. a.i./A
Dimension Ultra WSP	dithiopyr	0.50	lb. a.i./A
Barricade 65G	prodiamine	0.50	lb. a.i./A
Dimension Ultra 2EW	dithiopyr	0.25+0.25	lb. a.i./A
Dimension Ultra 2EW	dithiopyr	0.50	lb. a.i./A
Pendulum 3.3EC	pendimethalin	1.0+1.0	lb. a.i./A
Pendulum 3.3EC	pendimethalin	2.0	lb. a.i./A
Pendulum 3.8CS	pendimethalin	1.0+1.0	lb. a.i./A
Pendulum 3.8CS	pendimethalin	2.0	lb. a.i./A
Ronstar 2G	oxadiazon	4.0	lb. a.i./A

Split application were made on June 27, 2003 [52 Days after initial treatment (DAIT)]. Plots were evaluated visually for injury 7, 14, 21 and 28 DAIT. Plots were evaluated for percent crabgrass and foxtail cover 70, 93, 100, 106, 112, 119, 129, 134, and 147 DAIT. Visual ratings collected 70, 100 and 147 DAIT will be discussed. Percent control for each rating date was estimated for each plot based on the average percent cover of the untreated controls in each replicate.

Conditions of the experiment resulted in annual warm-season grass emergence that was 14-21 days later than resident populations. Therefore, follow recommended application dates and historical data for your area.

Some minor turf injury was observed at 7 DAIT for several treatments, but these observations were not statistically different than the untreated plots (data not shown). Dimension Ultra WSP applied as either a single 0.50 lb. a.i./A or a split application of 0.25 lb. a.i./A consistently provided the best control and had 90% or better control of crabgrass and foxtail for all rating dates (Figure 1). At 70 DAIT, the Dimension Ultra WSP applications were the only treatments to have better than 90% control. However, Barricade, Pendulum 3.3EC applied as a single

application and Pendulum 3.8CS applied as a single application were not statistically different than the Dimension Ultra WSP treatments. At 100 DAIT Barricade, Ronstar and Pendulum 3.8CS (2.0 lb. a.i./A) provided annual warm-season grass 90% or better control similar to the Dimension Ultra WSP applications. Pendulum 3.3EC applied as a single application and Pendulum 3.8CS applied as a split application were statistically equal to the all of the aforementioned treatments but fell below 80% control at 100 DAIT. At the end of the experiment at 147 DAIT, Pendulum 3.8CS applied as a single application, Dimension Ultra WSP applied as a single or split application, Barricade and Ronstar had better than 90% control of the annual warm-season grasses. The split-application of Pendulum 3.8CS had better than 70% control and was not statistically different than the previously mentioned treatments.

The results of this experiment indicate the best treatments for season long control of annual warm-season grasses were Dimension Ultra WSP applied either as a single or split application, Pendulum 3.8CS applied as a single application, Barricade or Ronstar. The Dimension Ultra 2EW formulation did not provide adequate control compared to the WSP formulation.

Experiment 2

The objective of the second experiment was to evaluate the weed control of various pre-emergence herbicides and different application timings for annual warm-season grass control in a Kentucky bluegrass turfgrass stand maintained at 3 inch height of cut. Plots were 3'x5' and arranged in a randomized complete block design with four replicates. The initial pre-emergence treatments were applied on May 23, 2003. Subsequent herbicide application timings were made on previously untreated plots at early post-germination (1-2 crabgrass leaf stage; June 27, 35 DAIT), untillered (after 1-2 crabgrass leaf stage; July 15, 52 DAIT), and tillered crabgrass (August 13, 82 DAIT). The following herbicide treatments were used:

Pre-emergence applications			
● Untreated control			
● Barricade 4FL	prodiamine	21	oz/A
● Pendulum 3.3EC	pendimethalin	0.5	gal/A
Early post			
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	9	oz/A
● Barricade 4FL	prodiamine	21	oz/A
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	9	oz/A
+ Barricade 4FL	prodiamine	21	oz/A
Untillered			
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	13	oz/A
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	13	oz/A
+ Barricade 4FL	prodiamine	21	oz/A
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	20	oz/A
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	20	oz/A
+ Barricade 4FL	prodiamine	21	oz/A
Tillered			
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	20	oz/A
● Acclaim Extra 0.57EW	fenoxaprop-P-ethyl	20	oz/A
+ Barricade 4FL	prodiamine	21	oz/A

Plots were evaluated for percent crabgrass and foxtail cover 53, 76, 83, 89, 95, 102, 112, 117, and 129 DAIT. Visual ratings collected 76, 102 and 129 DAIT will be discussed. Percent control for each rating date was estimated for each plot based on the average percent cover of the untreated controls in each replicate. Plots were evaluated for visually injury at each rating date, but no visual injury was observed throughout the experiment.

Conditions of the experiment resulted in annual warm-season grass emergence that was 14-21 days later than resident populations. Therefore, follow recommended application dates and historical data for your area.

At 76 DAIT, combination treatments of Acclaim Extra (13 or 20 oz/A) and Barricade applied either early post-emergence or before tillering provided better than 90% control of warm-season annual grasses (Figure 2). Barricade applied pre-emergence and Acclaim Extra applied early post-emergence provided better than 80% control at 76 DAIT. Other treatments that had better than 70% control and were not statistically different than the aforementioned treatments included Barricade applied early post-emergence and Acclaim Extra (13 or 20 oz/A) applied before tillering. At 102 DAIT, the same three combination treatments of Acclaim Extra and Barricade applied before early post-emergence or before tillering again provided better than 90% control. Barricade applied either pre-emergence or early post-emergence again provided better than 80% control. In addition, the combination treatment of Acclaim Extra and Barricade applied after tillering also provided better than 80% control. Other treatments that had better than 70% control and were not statistically different than the aforementioned treatments at 102 DAIT included Acclaim Extra (13 or 20 oz/A) applied before tillering and Acclaim Extra applied after tillering. At the end of the experiment at 129 DAIT, the top treatments were again the three combination treatments of Acclaim Extra and Barricade applied early post-emergence (94%) or before tillering (95%). The combination treatment with the lower Acclaim Extra rate had 86% control at 129 DAIT. Barricade applied pre-emergence provided 82% control. Treatments that were not statistically different than the combination treatments at 129 DAIT included Barricade applied early post-emergence (78%), Acclaim Extra applied before tillering (70%), Acclaim Extra applied after tillering (69%), Acclaim Extra and Barricade applied after tillering (66%), and Acclaim Extra applied before tillering (56%).

The results from this experiment indicate the best control was obtained from combination treatments of Acclaim Extra and Barricade applied either early post-emergence or before tillering. In addition, the added prodiamine allowed the treatments to be applied later in the growing season and still obtain adequate control of annual warm-season grasses.

Figure 1. Experiment 1: Percent Weed Control

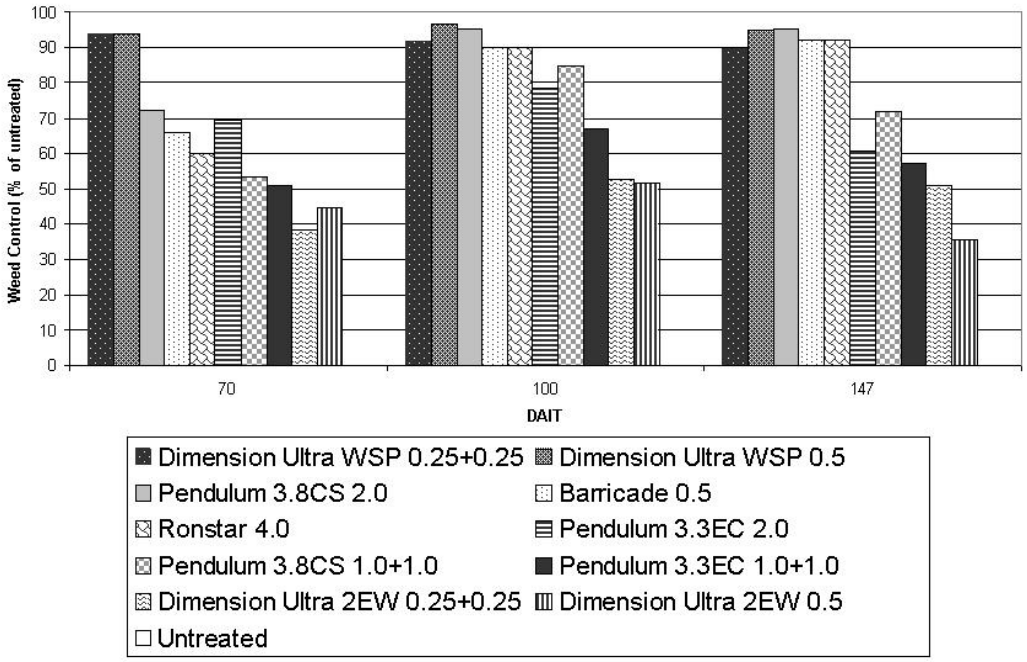
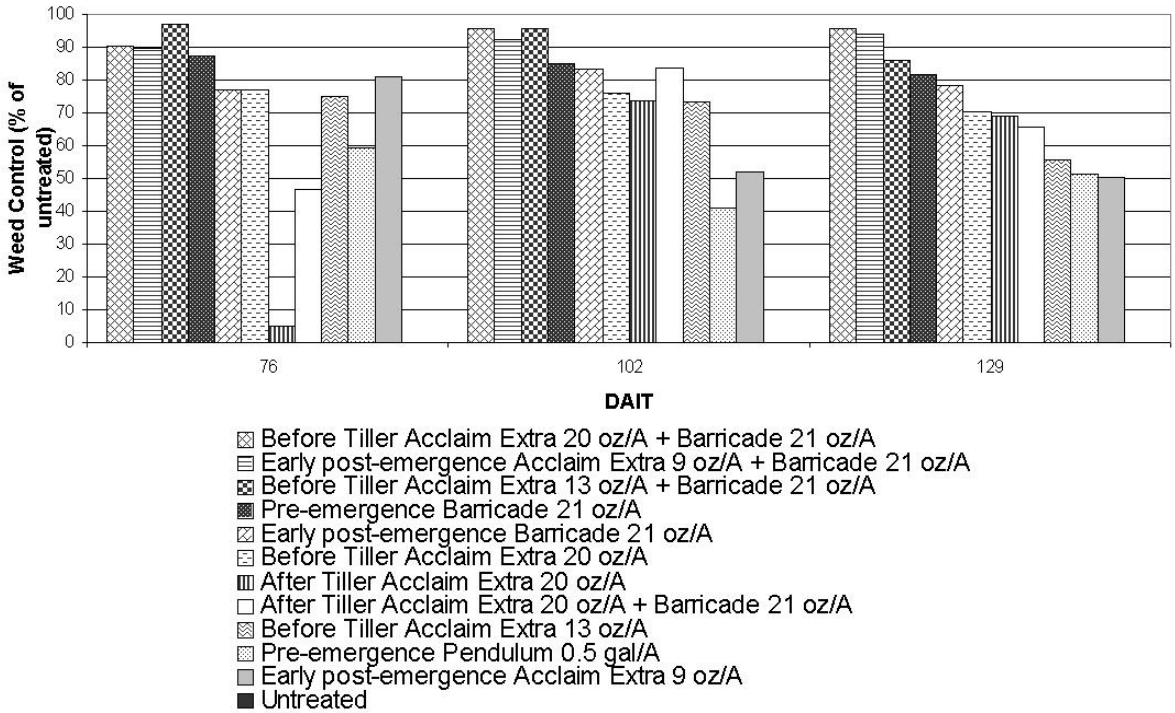


Figure 2. Experiment 2: Percent Weed Control



Ornamental Pre-emergence Weed Control

R.E. Gaussoin and R.M. Goss

Research for pre-emergence weed control in annual and perennial flowers was conducted in 2003 at the John Seaton Anderson Turf and Ornamental Research Center near Mead, NE. The objective of the experiment was to evaluate the weed control of pre-emergence herbicides with and without mulch.

Prior to the experiment, the research area was maintained as a tall fescue stand. The existing turfgrass was removed. The underlying soil was then cultivated and smoothed for proper planting. Chipped, aged wood mulch from deciduous and coniferous trees found at the research center was placed 3 inches deep on half of the experimental area and bordered with 2"x4" lumber for stabilization. Black-eyed Susan (*Rudbeckia fulgida* 'Goldstrum'), Marigold (T*agetes erecta* 'Galore Yellow Hybrid'), and Impatiens (*Impatiens walleriana* 'Accent Pink Hybrid') were transplanted into mulched and non-mulched plots on May 27, 2003.

Plots were 5'x5' and arranged in a split plot design with the whole plots being mulch or no mulch and the subplots being herbicide treatment. Each plot was replicated four times. Each plot contained several plants of each species. Plots were sprayed on June 5, 2003 over the top of mulch and ornamentals with the following herbicides applied: untreated control, Ronstar 2G (oxadiazon, 4 lb. a.i./A), Ronstar 50WP (oxadiazon, 4 lb. a.i./A), Pendulum 3.3EC (pendimethalin, 1.65 lb. a.i./A), and Preen (trifluralin, 4 lb. a.i./A). Repeat herbicide applications were not made. Plots were evaluated visually for ornamental injury 6, 22, and 40 days after herbicide application. Plots were evaluated for visual percent weed control 22, 40 and 76 days after herbicide application.

Plant injury was observed in the experiment (Figure 1). Pendulum 3.3EC significantly injured marigold plants up to 40 days after application. Marigold plants did recover from the injury but were observed to be smaller and had fewer flowers compared to other treatments. Some injury was observed from Ronstar 50WP but was not statistically significant than the control. Most of the impatiens received significant deer feeding damage during the experiment.

Weeds found in the research area included various pigweeds (*Amaranthus* spp.), sunflowers (*Helianthus* spp.), crabgrasses (*Digitaria* spp.) and other miscellaneous weed species. Mulching alone decreased the weed cover of any plot by approximately 50%. At 40 days after application, Ronstar WP and Pendulum 3.3EC provided the best weed control, particularly when mulch was applied (Figure 2). Ronstar 2G and Preen provided good control when mulch was applied, but did not provide adequate control without mulch. At 76 days after application Ronstar G, Ronstar

WP and Pendulum provided very good control when mulch was applied (Figure 3). Preen provided marginal control when mulch was applied. However, no herbicide treatment performed well without mulch at 76 days after application.

The results of the experiment indicate mulching is the most important management practice that can be used for weed control in ornamentals. The addition of herbicides improved the overall weed control with the best control from products that are delivered through a uniform application. Granular herbicides may miss some germinating weeds due to the method of delivery. However, care must be taken with any application to minimize contact with desirable species. Pendulum significantly injured marigold plants and reduced flower number in this experiment. Directed applications that avoid spraying ornamentals or making applications prior to planting may lessen injury to desirable species.

Figure 1. Injury to Marigolds 6, 22 and 40 days after application

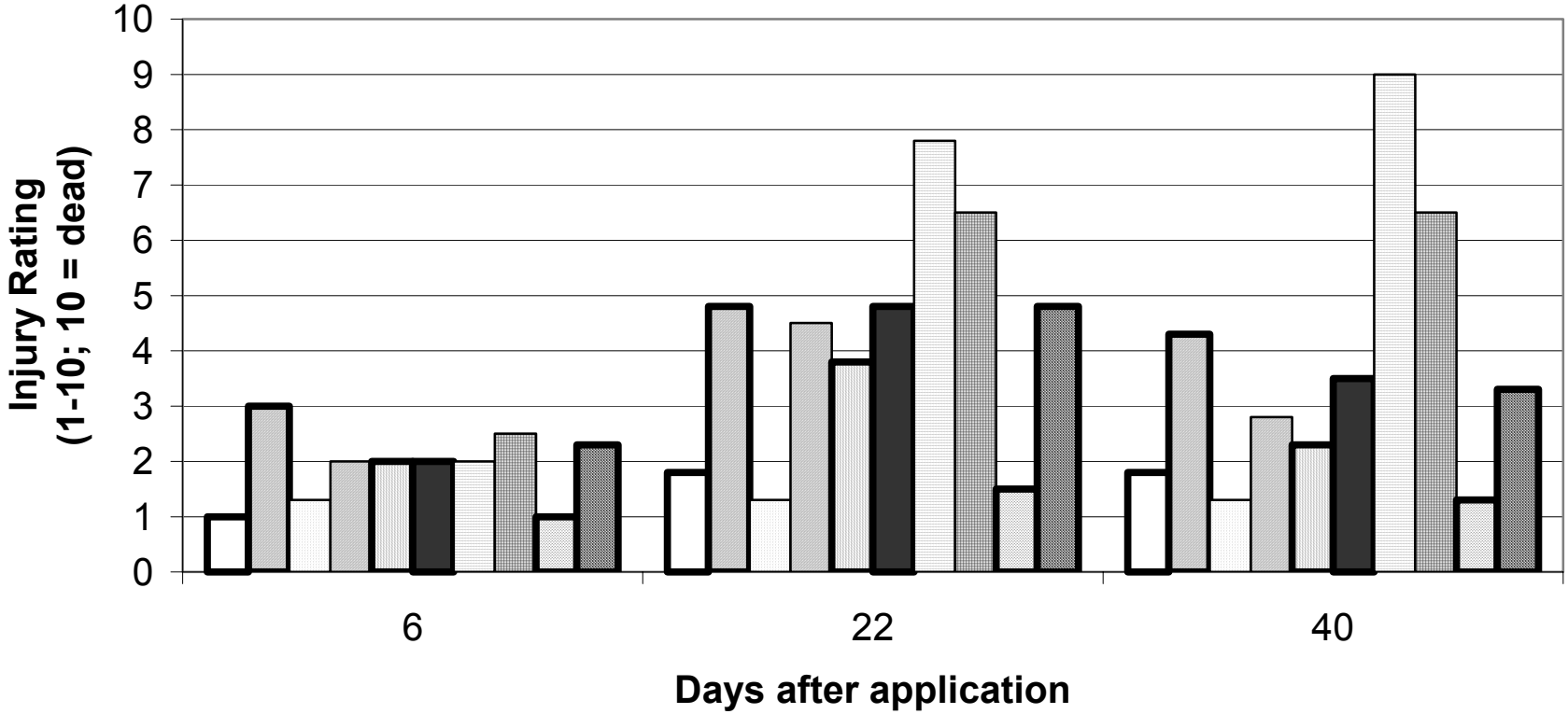


Figure 2. Percent Weed Cover 40 days after application

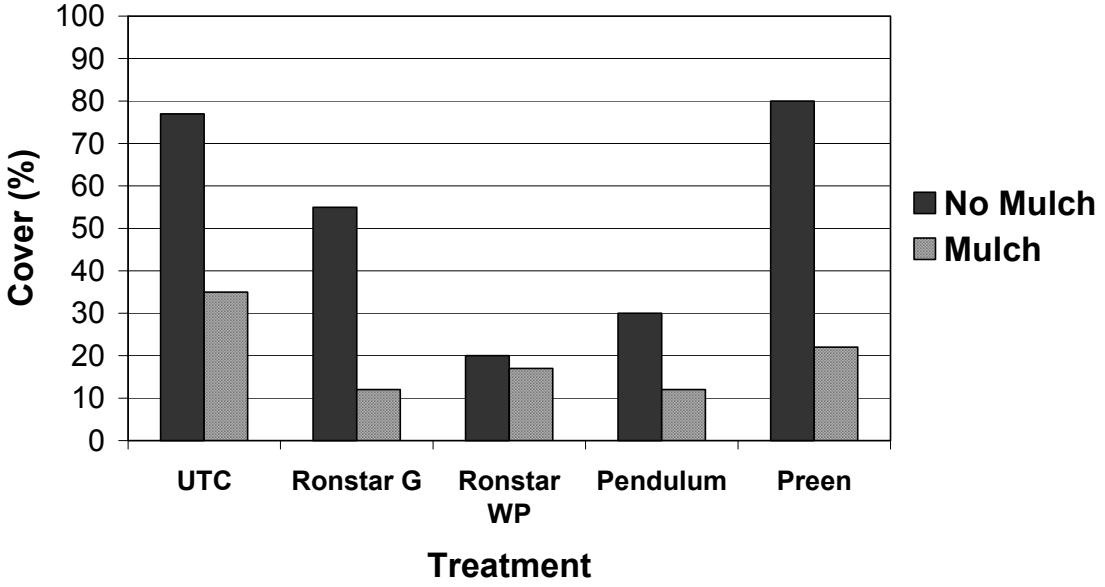
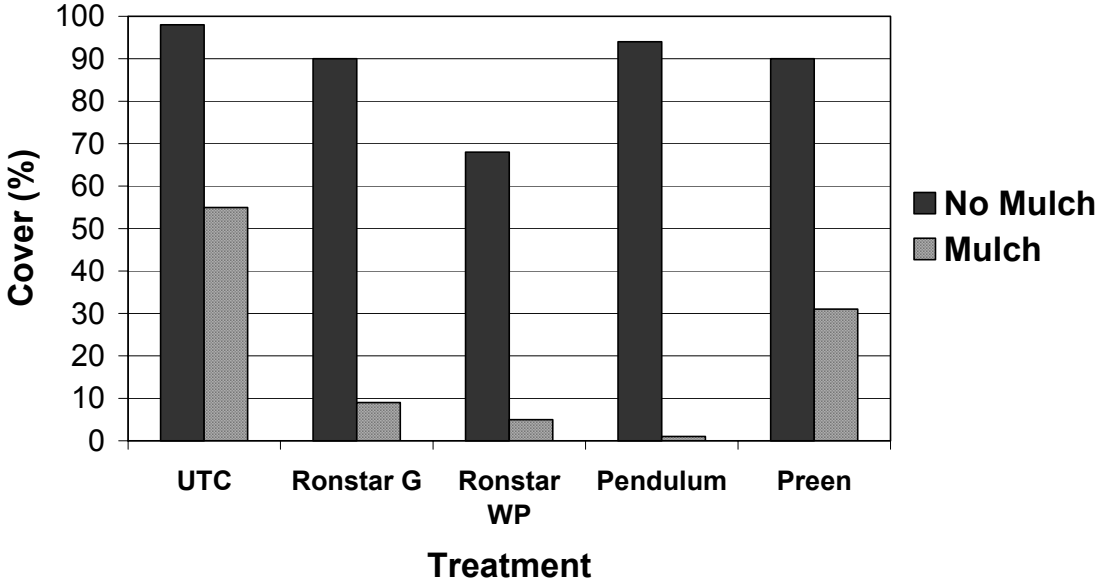


Figure 3. Percent Weed Cover 76 days after application



2003 Results for the 2002 National Buffalograss Trial

R.C. Shearman, H. Budak, and L.A. Wit

The 2002 Buffalograss trial was planted in early July 2002 at the John Seaton Anderson Turfgrass and Ornamental Research facility near Mead, Nebraska. The trial consists of 9 cultivars in a completely randomized block design with three replications. Plots are 5ft by 5ft in size. Plots maintained as a low maintenance turf: (2.5 inch mowing height, 1-2 times per month, 2 lb. N/1000 sq. ft. /year, no supplemental irrigation).

The top performers in the NE test were Legacy and 378. The southern adapted types and diploid varieties, like Density did not survive the winter period well in Nebraska and most of theses plots were replanted by plugs to maintain a uniform turf area.

The advanced, seeded-types, such as Bowie and SWI200 performed better than the common types like Texoka.

Table 1. 2003 data summary for the 2002 National Buffalograss Trial at the JSA Turfgrass and Ornamental Research facility near Mead, NE.

		DENSITY		***QUALITY***					
ENTRY	***COLOR***	**SUMMER**	**FALL**	**JUN**	**JUL**	**AUG**	**SEPT**	**OCT**	**MEAN**
LEGACY	8.3	9.0	8.0	8.7	8.7	8.3	8.3	5.3	7.9
378	7.3	8.3	6.7	8.0	8.0	7.7	7.3	5.3	7.3
BOWIE	7.3	9.0	7.7	8.0	8..0	6.7	7.0	5.3	7.0
SWI-2000	7.0	9.0	7.3	8.0	8.0	6.3	6.7	4.7	6.7
NE 95-55	9.0	7.7	7.7	6.3	6.3	8.0	6.3	4.7	6.3
BISON	7.7	8.3	7.3	6.0	6.0	6.0	5.3	4.3	5.5
TEXOKA	7.0	7.7	6.3	5.7	5.7	6.0	5.7	3.7	5.3
609	8.3	4.3	4.0	3.3	3.3	2.7	3.3	3.7	3.3
FRONTIER TURFALLO	5.3	4.0	3.7	2.3	2.3	3.0	2.3	2.7	2.5
DENSITY	5.0	1.7	1.0	2.0	1.7	1.3	1.7	1.0	1.5
C.V.	5.4	12.1	10.5	15.6	14.8	12.8	15.5	17.1	11.8
LSD	0.6	1.3	1.0	1.4	1.3	1.1	1.3	1.1	1.0

Color rating scale 1-9, with 9= darkest green color.
Turfgrass density 1-9 scale, with 9= greatest density.
Turfgrass quality 1-9 scale, with 9=highest quality.

2003 Results for the 2001 National Tall Fescue Trials

R.C. Shearman, H. Budak, and L.A. Wit

The 2001 Tall Fescue trial was planted in the late August 2001 at the John Seaton Anderson Turfgrass and Ornamental Research Facility near Mead, Nebraska. One hundred and sixty cultivars and experimental lines were planted in a completely randomized block design with three replications. The plots are 4 ft by 5 ft in size and turfs were seeded at a rate of 6lbs/1,000 ft^2. The trial was planted on a Tomek silty clay loam soil, with a pH of 6.8, and 2.5 percent organic matter.

Turfs are mowed five times a week at 0.5 inch and clippings are returned. Nitrogen (N) and potassium (K) are applied at a rate of 6.0lbs N or K/1,000 ft^2/year. Phosphorus (P) is applied at 1.0 lbs P/1,000 ft^2per year. Irrigation adjusted twice a week to apply 80 percent ETp. Pendimethalin is applied at label recommended rates for the control crabgrass, and postemergence herbicides are applied as well. No fungicide or insecticides are used.

In 2003, color, density, and quality of turf were evaluated. Turfgrass color ratings ranged from 5.0 to 8.3. In general, tall fescue entries demonstrate a continuing emphasis on dark green color. Turfgrass density was high and all entries had acceptable ratings. Mean quality ratings ranged from 4.8 to 8.6, showing considerable variation and improvement in turfgrass performance.

Table 1. 2003 data summary for the 1999 National Tall Fescue Trial at the JSA Turfgrass and Ornamental Research facility near Mead, NE.

	DENSITY				*QUALITY*							
NAME	**COLOR**	**SPRING**	**SUMMER**	**FALL**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**MEAN**
K01-8007	6.7	9.0	9.0	8.7	7.7	8.7	9.0	9.0	9.0	8.3	8.3	8.6
DP 50-9082	6.0	9.0	9.0	9.0	6.7	8.3	8.7	9.0	9.0	9.0	8.3	8.4
MRF 25	6.7	9.0	9.0	9.0	7.7	7.7	9.0	9.0	9.0	9.0	7.7	8.4
RENDITION	8.0	9.0	9.0	9.0	6.7	8.7	9.0	9.0	8.3	9.0	8.0	8.4
01-RUTOR2	6.7	9.0	9.0	9.0	6.7	8.3	8.3	8.7	9.0	9.0	8.0	8.3
CIS-TF-64	7.3	9.0	9.0	9.0	6.0	8.3	8.3	9.0	9.0	9.0	7.0	8.1
MRF 26	7.3	9.0	9.0	9.0	6.7	7.0	8.3	8.7	9.0	9.0	8.0	8.1
01-ORU1	6.3	8.3	9.0	9.0	6.3	7.7	7.7	8.3	8.3	9.0	8.3	8.0
2ND MILLENNIUM	7.0	8.7	9.0	9.0	6.7	7.3	8.3	9.0	8.7	8.7	7.3	8.0
DP 50-9226	6.3	9.0	9.0	9.0	5.7	7.3	8.3	8.3	9.0	9.0	8.3	8.0
K01-8015	6.7	9.0	9.0	9.0	6.0	7.3	8.7	8.3	8.7	9.0	8.0	8.0
KALAHARI	7.3	9.0	9.0	8.3	6.7	7.3	8.0	8.3	8.7	9.0	7.7	8.0
PST-5KI	7.3	9.0	9.0	8.7	6.0	8.3	8.3	8.3	8.7	8.3	7.7	8.0
PST-5NAS	7.0	9.0	9.0	9.0	5.7	7.3	8.0	8.3	8.7	8.7	9.0	8.0
RAPTOR (CIS-TF-33)	7.3	9.0	9.0	9.0	6.0	8.3	8.7	9.0	8.7	9.0	6.7	8.0
TAR HEEL II (PST-5TR1)	8.0	9.0	9.0	9.0	6.0	8.0	9.0	8.7	8.0	9.0	7.7	8.0
ATF 586	7.3	8.7	8.7	8.3	6.3	7.7	8.0	8.3	8.7	8.3	8.0	7.9
ATF 702	7.7	9.0	8.7	9.0	6.3	7.0	8.0	8.3	8.0	9.0	8.3	7.9
BAR FA 1005	6.7	9.0	9.0	9.0	5.7	7.0	8.3	8.7	8.0	9.0	8.3	7.9
DYNASTY	7.3	9.0	9.0	9.0	5.0	8.0	8.3	8.3	8.7	9.0	7.7	7.9
MRF 211	7.0	9.0	9.0	8.0	6.7	7.3	8.0	8.3	8.7	8.0	8.0	7.9
MUSTANG 3	8.3	9.0	9.0	9.0	6.0	8.0	8.0	8.3	8.0	8.7	8.0	7.9
PADRE (NJ4)	6.0	9.0	9.0	9.0	5.0	7.7	8.3	8.7	8.7	9.0	8.0	7.9
TAR HEEL	6.3	8.7	8.7	8.7	5.3	7.3	8.7	8.3	8.7	8.7	8.0	7.9
TITAN LTD.	7.7	8.7	8.7	9.0	5.3	7.7	8.7	8.7	8.3	9.0	7.7	7.9
ATF-800	6.3	9.0	9.0	9.0	6.3	7.3	8.0	8.0	8.3	9.0	7.7	7.8
JT-13	6.7	9.0	9.0	8.7	6.0	7.0	8.0	8.7	8.3	8.7	8.0	7.8
K01-WAF	7.0	9.0	8.7	8.7	6.0	8.0	7.7	8.3	8.3	8.7	7.7	7.8
PST-53T	7.3	9.0	8.3	9.0	5.7	7.3	8.3	8.3	8.7	8.3	8.0	7.8
REMBRANDT	7.7	8.7	8.7	9.0	4.3	8.7	8.7	9.0	8.7	9.0	6.3	7.8
WOLFPACK	8.0	9.0	9.0	9.0	5.3	7.3	8.7	8.0	8.0	9.0	8.3	7.8
JT-12	6.3	9.0	8.7	9.0	6.0	6.7	8.0	8.3	8.3	9.0	7.7	7.7
PST-57E	6.3	9.0	9.0	8.7	5.3	7.0	8.0	8.3	8.0	8.7	8.3	7.7
PURE GOLD	7.7	8.0	8.0	8.7	5.3	7.7	8.3	8.0	7.7	8.7	8.0	7.7

SR 8250	7.0	8.7	8.3	9.0	6.0	7.3	7.7	7.7	8.0	9.0	8.0	7.7
SR 8550 (SRX 8BE4)	7.0	9.0	8.7	8.7	5.0	7.3	8.0	9.0	8.3	8.7	7.3	7.7
BE1	7.3	8.7	8.7	8.7	5.7	7.0	7.3	8.0	8.3	8.7	8.3	7.6
DAYTONA (MRF 23)	6.7	8.0	9.0	8.0	5.0	7.0	8.3	8.3	8.0	9.0	7.3	7.6
JT-15	7.7	9.0	9.0	9.0	5.7	6.7	8.3	8.3	8.3	9.0	7.0	7.6
MAGELLAN (OD-4)	7.0	9.0	9.0	9.0	5.0	7.3	8.3	8.0	8.0	9.0	7.3	7.6
ROBERTS SM4	6.3	8.3	8.3	8.7	4.7	6.7	8.3	8.3	8.3	8.7	8.0	7.6
SR 8600	6.7	9.0	9.0	8.7	4.7	7.3	8.3	8.3	8.3	8.7	7.3	7.6
ATF 799	7.0	8.7	8.7	8.7	5.7	7.3	7.3	7.7	8.0	8.7	7.7	7.5
GO-FL3	6.7	9.0	9.0	8.0	5.0	7.0	8.0	8.7	8.7	8.3	6.7	7.5
MRF 28	7.3	8.3	8.3	8.3	5.3	6.7	8.0	7.7	8.3	8.7	8.0	7.5
PST-5FZD	7.3	9.0	9.0	9.0	5.0	7.0	8.0	8.0	8.3	8.7	7.3	7.5
PST-5JM	7.3	9.0	8.7	9.0	5.3	7.0	7.3	8.0	8.3	9.0	7.3	7.5
SILVERADO II (PST-578)	6.7	8.7	8.3	8.7	5.3	8.0	8.3	7.3	8.0	8.3	7.3	7.5
TOMAHAWK RT	6.3	7.7	8.0	8.0	5.7	7.0	8.3	8.0	8.0	8.0	7.7	7.5
UT-RB3	7.3	9.0	9.0	8.0	5.7	7.3	7.7	8.0	8.3	8.7	7.0	7.5
01-TFOR3	6.7	9.0	8.7	8.3	5.3	7.0	7.7	7.7	8.0	8.3	7.7	7.4
ATF-803	6.7	9.0	8.7	8.7	4.7	6.3	8.3	8.7	8.0	9.0	6.7	7.4
BRAVO	7.0	8.0	8.3	8.3	5.0	7.3	7.7	8.0	7.7	8.3	8.0	7.4
CIS-TF-65	6.7	9.0	9.0	9.0	5.0	7.7	8.0	8.0	8.0	9.0	6.3	7.4
CIS-TF-77	7.7	8.3	9.0	9.0	4.7	6.0	7.7	8.3	8.7	9.0	7.3	7.4
GREMLIN (P-58)	7.3	9.0	9.0	8.7	4.7	7.0	8.0	8.0	8.0	8.3	7.7	7.4
JT-18	7.7	8.7	8.3	8.7	5.7	7.3	7.3	7.3	7.7	8.7	7.7	7.4
MRF 27	7.7	9.0	9.0	9.0	5.3	6.0	7.7	8.3	8.3	8.3	8.0	7.4
SOUTHERN CHOICE II	7.0	9.0	9.0	8.3	5.3	6.7	7.3	8.0	8.0	8.7	7.7	7.4
TAHOE (CAS-157)	7.3	8.7	8.3	8.7	5.3	6.7	7.3	8.3	8.3	8.7	7.3	7.4
TULSA II (ATF 706)	7.7	8.3	8.7	8.7	5.7	7.0	7.0	7.7	7.7	8.7	8.3	7.4
UT-155	7.0	8.0	8.3	8.7	5.3	6.3	7.0	8.0	8.7	8.7	7.7	7.4
BLACKWATCH (PICK-OD3-01)	6.3	8.3	8.7	9.0	5.0	6.3	7.7	8.3	8.7	8.0	7.0	7.3
BONSAI	6.3	8.7	8.7	8.3	5.3	6.3	7.0	8.0	8.0	9.0	7.3	7.3
COCHISE III (018)	7.3	9.0	9.0	8.7	4.7	7.3	8.0	7.7	8.3	8.0	7.0	7.3
DLF-J210	7.0	8.7	8.7	8.3	5.7	7.0	7.0	7.3	8.0	8.3	7.7	7.3
ENDEAVOR	8.0	8.3	8.3	8.3	4.3	6.7	8.3	8.0	8.0	8.0	8.0	7.3
FOCUS	7.3	8.7	8.7	8.3	6.0	6.3	7.3	8.0	8.3	8.3	6.7	7.3
JT-9	8.0	8.7	8.7	8.3	5.3	6.7	7.3	7.7	8.3	8.3	7.3	7.3
K01-E03	7.0	9.0	9.0	9.0	5.3	7.0	7.0	7.3	8.0	9.0	7.7	7.3
LARAMIE	7.0	8.0	8.0	9.0	5.0	7.0	7.3	8.0	8.3	9.0	6.7	7.3
MRF 29	7.7	8.0	8.7	9.0	5.0	6.0	7.3	8.0	8.0	8.7	8.0	7.3
PICK-00-AFA	7.7	8.7	9.0	9.0	4.0	7.0	7.0	8.3	8.0	9.0	7.7	7.3

PST-DDL	6.3	8.3	8.3	8.3	5.3	6.7	7.7	7.7	8.0	8.3	7.7	7.3
QUEST	6.3	9.0	9.0	8.3	5.0	6.7	7.3	8.0	8.3	8.3	7.3	7.3
RIVERSIDE (PROSEEDS 5301)	6.3	9.0	8.7	8.7	4.3	7.3	8.0	8.3	8.0	8.7	6.7	7.3
T991	6.7	8.3	8.7	8.3	5.0	7.0	7.0	7.7	8.0	8.3	8.0	7.3
TITANIUM (SBM)	7.3	8.7	8.7	8.7	4.7	7.0	7.7	8.0	8.0	8.7	7.0	7.3
AVENGER (L1Z)	7.3	8.7	9.0	8.7	5.7	7.3	7.3	7.7	7.3	7.7	7.3	7.2
CAS-ED	7.7	8.7	8.7	8.7	5.3	6.7	7.0	7.3	8.0	8.7	7.7	7.2
CAYENNE	7.7	8.7	8.3	8.3	4.7	7.0	7.3	7.7	8.0	8.3	7.3	7.2
CIS-TF-60	7.3	8.0	8.7	8.7	4.3	6.7	8.0	8.3	8.0	8.7	6.3	7.2
JAGUAR 3	7.3	8.3	8.3	8.7	4.0	6.7	7.3	8.0	8.0	8.7	7.7	7.2
JT-6	7.3	8.7	8.7	8.0	4.7	6.7	7.7	7.7	7.7	8.0	8.0	7.2
JTTFF-2000	7.7	8.7	8.3	8.3	5.0	6.0	7.0	8.0	8.0	8.3	8.0	7.2
K01-E09	7.7	9.0	9.0	9.0	4.7	6.3	7.7	7.7	8.3	9.0	7.0	7.2
LANCER	6.7	8.7	8.3	8.3	5.3	7.7	7.7	7.7	7.7	8.3	6.3	7.2
MA 138	6.7	9.0	8.7	9.0	5.0	6.7	7.0	7.3	8.0	9.0	7.7	7.2
OLYMPIC GOLD	7.7	8.3	8.0	8.3	5.0	6.3	7.7	8.0	8.0	8.3	7.3	7.2
PICASSO	7.0	8.7	8.7	8.0	4.7	6.7	7.3	8.3	8.7	8.0	7.0	7.2
PROSPECT	7.3	9.0	8.7	8.7	5.3	6.7	7.7	7.3	8.0	8.7	6.7	7.2
TEMPEST	7.3	9.0	9.0	8.0	4.7	6.3	7.7	8.0	8.0	8.7	7.3	7.2
WATCHDOG	7.7	8.7	8.3	8.3	5.0	7.7	7.3	7.7	7.7	8.3	6.7	7.2
BINGO	7.3	8.7	9.0	8.7	3.3	7.0	7.7	7.3	8.0	8.7	7.7	7.1
GO-OD2	6.3	9.0	9.0	8.7	5.0	7.0	7.0	7.3	7.7	8.7	7.0	7.1
GUARDIAN-21 (ROBERTS DOL)	7.3	8.7	9.0	9.0	4.7	6.0	7.0	8.0	8.0	8.7	7.7	7.1
INFERNO (JT-99)	7.0	8.7	8.7	8.7	5.7	7.0	6.7	7.7	7.7	8.7	6.7	7.1
MA 127	7.0	8.7	8.7	8.3	5.3	6.3	7.3	7.0	8.0	8.3	7.3	7.1
MRF 210	7.3	9.0	9.0	8.7	4.7	6.3	7.3	7.3	8.3	8.0	7.7	7.1
PICK TF H-97	8.0	8.3	8.0	8.7	4.0	6.3	7.3	8.0	8.0	8.7	7.7	7.1
PST-5BAB	7.0	9.0	8.7	8.7	5.3	6.3	7.0	7.0	8.0	8.7	7.7	7.1
PST-5BZ	7.7	8.3	8.3	8.7	4.7	6.0	7.0	8.0	7.7	8.7	8.0	7.1
SIGNIA	7.3	8.7	8.3	8.3	5.0	7.3	7.7	7.3	8.0	8.3	6.3	7.1
SOUTH PAW (MRF 24)	7.3	9.0	9.0	9.0	4.3	6.0	7.3	8.0	8.0	9.0	7.3	7.1
TURBO (CAS-MC1)	7.3	9.0	8.7	8.7	5.3	6.7	6.7	7.3	8.3	8.7	7.0	7.1
B-7001	7.7	8.7	8.3	8.7	4.0	7.0	7.3	7.3	8.0	8.7	7.0	7.0
CIS-TF-67	7.3	8.3	8.3	9.0	5.0	6.0	7.0	7.7	8.0	9.0	6.7	7.0
CONSTITUTION (ATF-593)	6.7	9.0	8.3	8.3	5.7	6.0	6.7	7.3	7.7	8.3	7.3	7.0
DAVINCI (LTP-7801)	7.0	8.7	8.7	8.7	4.0	6.7	7.7	8.0	7.3	7.7	7.3	7.0
EA 163	7.3	8.7	8.3	8.7	5.0	6.7	7.3	7.0	7.7	8.7	6.7	7.0
FALCON II	6.3	9.0	8.7	8.0	4.7	7.3	7.3	7.3	8.0	8.0	6.7	7.0
FINELAWN ELITE (DLSD)	5.3	8.7	8.7	8.7	4.7	7.0	7.0	7.3	7.3	8.7	6.7	7.0

FINESSE II	7.0	8.3	8.7	9.0	5.3	6.3	7.0	7.0	7.3	9.0	7.0	7.0
GRANDE II	7.0	8.7	8.7	8.3	5.3	6.7	6.7	7.0	8.3	8.3	7.0	7.0
MA 158	7.7	9.0	9.0	8.7	4.7	6.3	7.3	7.3	7.7	8.7	7.3	7.0
MATADOR	6.7	8.3	8.3	8.3	4.3	6.0	8.0	8.0	7.7	8.0	7.0	7.0
NA-TDD	8.0	8.7	8.3	8.7	5.0	7.3	7.3	7.3	7.3	7.3	7.0	7.0
PST-5A1	6.7	8.7	8.3	8.7	5.0	6.7	6.7	7.0	7.7	8.7	7.7	7.0
PST-5T1	6.7	9.0	9.0	9.0	5.0	6.0	6.7	7.3	7.3	8.0	8.7	7.0
PST-5TUO	7.3	8.7	8.3	8.7	4.7	6.0	7.0	8.0	8.3	8.7	6.7	7.0
R-4	7.3	9.0	9.0	9.0	3.7	6.7	7.3	7.3	8.0	8.3	7.3	7.0
SILVERSTAR (PST-5ASR)	6.3	9.0	9.0	9.0	4.0	6.0	7.3	7.3	7.7	8.7	8.0	7.0
STETSON	7.0	8.3	8.3	8.3	4.7	7.0	7.0	7.3	7.0	8.3	7.3	7.0
WYATT	7.7	8.7	8.3	8.3	5.0	6.7	7.3	7.7	8.0	8.3	6.3	7.0
ATF 806	7.7	7.3	8.3	8.7	4.0	6.0	7.0	7.3	7.3	8.7	7.7	6.9
DOMINION	7.3	8.0	8.0	8.7	4.3	6.7	7.3	7.7	7.3	8.3	6.3	6.9
FIVE POINT (MCN-RC)	7.3	8.0	8.0	8.7	4.3	6.3	7.0	7.0	7.3	8.7	7.3	6.9
MASTERPIECE	6.3	9.0	9.0	8.7	4.0	6.3	7.0	8.0	8.0	8.7	6.3	6.9
PICK ZMG	7.3	8.7	8.7	9.0	4.0	5.7	7.0	7.3	7.3	8.7	8.0	6.9
BAR FA 1003	8.0	8.7	8.3	8.3	4.3	6.3	7.0	7.0	7.3	8.3	7.3	6.8
BARRERA	8.0	8.7	8.7	8.7	4.0	5.7	6.7	7.7	7.7	8.7	7.3	6.8
COYOTE	6.3	8.7	7.7	8.7	4.7	6.0	6.3	6.7	7.3	8.7	7.7	6.8
FALCON IV (F-4)	6.7	8.7	8.7	8.7	4.7	7.0	7.0	6.7	7.3	7.7	7.0	6.8
FORTE (BE-2)	7.7	7.3	8.0	8.7	5.3	6.7	6.7	7.0	7.0	8.7	6.3	6.8
MILLENNIUM	8.0	8.7	8.7	9.0	5.0	6.3	6.7	7.3	7.3	9.0	5.7	6.8
ATF 704	6.7	8.0	8.0	8.3	4.0	6.0	7.0	7.3	7.3	8.3	7.0	6.7
BARLEXAS II	7.7	8.3	8.3	8.3	4.0	6.0	6.7	7.3	7.0	8.3	7.3	6.7
BARRINGTON	7.0	9.0	8.7	8.7	3.7	5.7	7.0	7.3	7.3	8.7	7.0	6.7
BILTMORE	6.7	9.0	8.0	8.7	4.3	6.7	7.0	6.7	6.7	8.7	7.0	6.7
COVENANT (ATF 802)	7.0	8.7	8.7	8.7	4.3	6.0	6.7	7.0	7.7	8.7	6.7	6.7
PST-5LO	6.7	9.0	8.7	8.3	4.0	6.0	7.0	7.0	7.0	8.0	8.0	6.7
PST-5S12	8.0	9.0	8.7	8.7	4.3	6.0	6.7	7.0	7.3	8.7	6.7	6.7
SRX 805	7.0	9.0	8.3	8.3	4.3	5.7	6.7	7.0	7.3	8.3	7.7	6.7
ATF 707	7.7	7.7	7.3	8.0	4.7	6.0	6.7	6.3	6.7	8.0	7.7	6.6
BAR FA 1CR7	7.7	8.3	8.0	8.0	4.3	6.3	6.3	7.0	7.3	8.0	6.7	6.6
GO-SIU2	7.0	9.0	9.0	8.3	4.0	6.0	7.0	6.7	8.0	8.0	6.7	6.6
JUSTICE (RB2-01)	6.0	8.7	8.7	8.7	5.3	6.7	6.7	6.7	7.0	7.3	6.3	6.6
KITTY HAWK 2000	7.3	8.7	8.7	8.7	4.0	5.7	6.3	7.7	7.7	8.0	7.0	6.6
LEGITIMATE	7.0	8.7	8.3	8.7	4.0	6.7	7.0	7.3	7.3	8.7	5.3	6.6
PST-5KU	7.0	9.0	8.3	8.3	4.7	6.3	6.7	7.0	7.3	8.3	5.7	6.6
REBEL SENTRY	6.3	8.7	8.3	8.7	4.0	6.3	6.7	7.0	7.0	8.7	6.3	6.6

TRACER	7.7	8.7	8.7	8.7	4.0	6.3	6.7	7.0	7.0	8.3	7.0	6.6
PLANTATION	7.3	8.0	8.0	8.0	4.0	6.3	6.7	7.3	7.0	8.0	6.0	6.5
BARLEXAS	6.7	8.0	8.3	8.7	4.3	5.7	6.0	6.3	7.0	8.3	7.0	6.4
GO-RD4	5.7	9.0	8.7	8.3	4.0	6.3	6.0	6.3	8.0	7.7	6.7	6.4
TF66	7.7	8.0	8.0	8.7	4.3	5.7	6.3	7.0	6.7	8.3	6.7	6.4
SCORPION	7.3	8.7	8.3	8.7	3.7	5.3	6.3	6.3	6.3	8.7	7.7	6.3
ELISA	7.0	8.0	8.0	8.0	4.3	6.0	6.3	7.0	6.3	7.0	5.7	6.1
REBEL EXEDA	7.7	8.7	8.7	8.3	3.7	5.3	6.0	6.7	6.7	8.3	6.3	6.1
KY-31 E+	5.0	7.3	6.7	6.7	4.3	5.7	6.0	5.3	4.3	4.3	3.3	4.8
CV	10.5	5.1	5.3	5.1	18.6	12.0	11.3	9.6	8.7	5.6	8.4	7.3
LSD	1.6	0.8	0.9	1.0	1.8	1.5	1.7	1.4	1.3	0.8	1.0	0.9

Color rating scale 1-9, with 9= darkest green color.
Turfgrass density 1-9 scale, with 9= greatest density.
Turfgrass quality 1-9 scale, with 9=highest quality.

2003 Results for the 2001 Ancillary Tall Fescue Trial

R.C. Shearman, H. Budak, and L.A. Wit

The 2001 Tall Fescue trial was planted in the late August 2001 at the John Seaton Anderson Turfgrass and Ornamental Research Facility near Mead, Nebraska. One hundred and sixty cultivars and experimental lines were planted in a completely randomized block design with three replications. The plots are 4f ft by 5 ft in size and turfs were seeded at a rate of 6lbs/1,000 ft^2. The trial was planted on a Tomek silty clay loam soil, with a pH of 6.8, and 2.5 percent organic matter.

Turfs are mowed five times a week at 0.5 inch and clippings are returned. Nitrogen (N) and potassium (K) are applied at a rate of 6.0lbs N or K/1,000 ft^2/year. Phosphorus (P) is applied at 1.0 lbs P/1,000 ft^2 per year. Irrigation adjusted twice a week to apply 80 percent ETp. Pendimethalin is applied at label recommended rates for the control crabgrass, and postemergence herbicides are applied as well. No fungicide or insecticides are used.

In 2003, density, and quality of turf were evaluated. While mean quality ratings ranged from 7.2 to 3.3 in trafficked entries, nontrafficked entries had a range from 5.0 to 7.3. The relatively high turfgrass quality ratings for the entries in this trial indicate that the overall improvement in tall fescue performance.

Table 1. 2003 data summary for the 2000 Ancillary Tall Fescue Trial at the JSA Turfgrass and Ornamental Research facility near Mead, NE.

		NON TRAFFICKED			*TRAFFICKED*		
NAME	DENSITY	JULY	AUGUST	MEAN	JUL	AUGUST	MEAN
GO-SIU2	8.3	7.3	7.3	7.3	7.3	7.0	7.2
ATF-800	8.7	7.0	7.3	7.2	6.7	6.7	6.7
DP 50-9082	9.0	7.3	7.3	7.3	6.3	6.7	6.5
DP 50-9226	8.7	7.0	7.3	7.2	6.0	7.0	6.5
GO-OD2	8.7	7.0	7.0	7.0	7.0	5.7	6.3
K01-8007	8.7	7.0	7.3	7.2	6.7	6.0	6.3
KALAHARI	8.7	8.0	7.7	7.8	6.3	6.3	6.3
LEGITIMATE	8.3	7.0	7.3	7.2	6.7	6.0	6.3
SOUTH PAW (MRF 24)	8.7	7.3	7.0	7.2	6.7	6.0	6.3
ATF-803	9.0	7.0	6.7	6.8	6.3	6.0	6.2
BONSAI	8.7	7.7	6.3	7.0	6.3	6.0	6.2
MRF 25	9.0	7.7	7.0	7.3	6.3	6.0	6.2
MRF 28	8.0	7.0	7.0	7.0	6.3	6.0	6.2
DAYTONA (MRF 23)	8.0	7.7	7.0	7.3	6.3	5.7	6.0
MRF 211	8.0	7.0	6.7	6.8	6.7	5.3	6.0
WOLFPACK	8.7	6.3	6.0	6.2	5.7	6.3	6.0
01-TFOR3	7.7	5.7	5.7	5.7	6.0	5.7	5.8
MRF 26	8.7	6.3	7.0	6.7	6.0	5.7	5.8
MRF 27	8.7	7.0	7.0	7.0	5.7	6.0	5.8
MRF 29	8.3	7.3	6.3	6.8	5.7	6.0	5.8
ELISA	8.3	6.3	5.0	5.7	6.3	5.0	5.7
GO-FL3	8.7	6.7	6.3	6.5	5.3	6.0	5.7
JUSTICE (RB2-01)	8.0	6.7	6.0	6.3	6.3	5.0	5.7
MRF 210	8.7	7.3	6.3	6.8	5.7	5.7	5.7
R-4	7.0	6.3	6.0	6.2	6.7	4.7	5.7
REMBRANDT	7.7	6.3	6.3	6.3	6.3	5.0	5.7
RIVERSIDE (PROSEEDS 5301)	9.0	7.3	7.3	7.3	5.7	5.7	5.7
SOUTHERN CHOICE II	7.7	7.3	7.0	7.2	6.0	5.3	5.7
TAR HEEL II (PST-5TR1)	8.3	6.0	6.0	6.0	5.3	6.0	5.7
UT-RB3	7.0	8.0	8.0	8.0	5.3	6.0	5.7
COCHISE III (018)	7.3	6.3	6.0	6.2	6.7	4.3	5.5

FALCON IV (F-4)	7.7	6.7	6.0	6.3	6.0	5.0	5.5
JT-13	8.0	5.7	5.7	5.7	5.3	5.7	5.5
K01-WAF	8.0	5.3	5.3	5.3	5.7	5.3	5.5
SILVERADO II (PST-578)	8.0	5.7	5.7	5.7	5.7	5.3	5.5
TEMPEST	8.7	7.0	7.0	7.0	6.0	5.0	5.5
B-7001	8.0	5.3	5.7	5.5	5.3	5.3	5.3
BARLEXAS II	7.3	7.3	7.0	7.2	5.7	5.0	5.3
CIS-TF-64	8.0	5.0	5.0	5.0	6.0	4.7	5.3
CONSTITUTION (ATF-593)	8.0	5.7	5.7	5.7	5.3	5.3	5.3
FINESSE II	8.0	5.7	5.7	5.7	5.7	5.0	5.3
GO-RD4	8.0	6.7	6.3	6.5	5.7	5.0	5.3
PST-5LO	7.3	5.7	5.7	5.7	5.0	5.7	5.3
01-ORU1	7.7	5.7	6.0	5.8	5.0	5.3	5.2
BLACKWATCH (PICK-OD3-01)	8.0	5.3	4.7	5.0	6.0	4.3	5.2
ENDEAVOR	8.0	5.3	5.0	5.2	5.3	5.0	5.2
GREMLIN (P-58)	7.7	5.3	5.7	5.5	5.3	5.0	5.2
JAGUAR 3	8.0	5.3	5.3	5.3	5.0	5.3	5.2
JT-9	8.3	5.7	5.3	5.5	5.0	5.3	5.2
K01-8015	8.0	5.7	5.3	5.5	5.0	5.3	5.2
MA 138	8.3	7.0	5.3	6.2	6.3	4.0	5.2
MILLENNIUM	8.7	5.7	6.3	6.0	5.3	5.0	5.2
PST-57E	7.7	5.7	5.3	5.5	5.3	5.0	5.2
BARRINGTON	7.7	7.3	6.3	6.8	5.3	4.7	5.0
BRAVO	8.0	7.0	7.7	7.3	5.7	4.3	5.0
FALCON II	8.7	6.0	6.7	6.3	5.3	4.7	5.0
FINELAWN ELITE (DLSD)	8.3	6.0	6.0	6.0	5.0	5.0	5.0
JT-15	7.7	5.7	5.7	5.7	4.3	5.7	5.0
K01-E09	7.7	5.7	5.7	5.7	5.0	5.0	5.0
PLANTATION	8.7	5.7	5.3	5.5	5.0	5.0	5.0
PST-5A1	8.0	5.0	5.3	5.2	5.7	4.3	5.0
REBEL SENTRY	8.0	6.0	6.0	6.0	5.7	4.3	5.0
SR 8250	8.3	5.0	5.0	5.0	5.0	5.0	5.0
SR 8600	8.0	6.0	6.0	6.0	4.7	5.3	5.0
TITANIUM (SBM)	8.3	6.0	5.7	5.8	4.7	5.3	5.0
ATF 586	8.3	6.3	6.7	6.5	5.3	4.3	4.8

BAR FA 1005	8.3	6.0	5.3	5.7	4.3	5.3	4.8
CIS-TF-67	7.7	6.0	6.7	6.3	5.3	4.3	4.8
DAVINCI (LTP-7801)	8.0	6.0	5.7	5.8	5.7	4.0	4.8
JT-6	7.7	5.7	5.7	5.7	4.0	5.7	4.8
MATADOR	8.3	5.7	6.0	5.8	4.7	5.0	4.8
MUSTANG 3	8.0	5.7	5.7	5.7	5.3	4.3	4.8
NA-TDD	8.7	6.3	6.3	6.3	5.3	4.3	4.8
PST-5BZ	8.0	5.7	5.7	5.7	4.7	5.0	4.8
PST-5FZD	8.3	5.7	5.7	5.7	4.7	5.0	4.8
PST-5KU	7.7	5.0	5.3	5.2	5.0	4.7	4.8
PURE GOLD	7.7	5.3	5.7	5.5	4.3	5.3	4.8
SIGNIA	8.7	5.7	5.7	5.7	4.7	5.0	4.8
SR 8550 (SRX 8BE4)	7.7	6.3	6.3	6.3	5.0	4.7	4.8
TF66	7.7	6.3	6.3	6.3	5.3	4.3	4.8
TOMAHAWK RT	8.0	5.3	5.7	5.5	5.0	4.7	4.8
01-RUTOR2	7.7	6.0	6.3	6.2	4.3	5.0	4.7
BAR FA 1003	7.7	5.3	5.3	5.3	4.7	4.7	4.7
BINGO	7.7	5.7	5.7	5.7	4.7	4.7	4.7
CAS-ED	7.7	6.3	5.3	5.8	5.3	4.0	4.7
CIS-TF-65	8.0	5.7	5.7	5.7	5.3	4.0	4.7
CIS-TF-77	8.0	5.7	5.3	5.5	5.0	4.3	4.7
COYOTE	8.3	5.7	5.7	5.7	5.3	4.0	4.7
DOMINION	7.7	6.0	6.7	6.3	5.3	4.0	4.7
DYNASTY	8.3	5.7	5.7	5.7	5.3	4.0	4.7
JTTFF-2000	8.0	5.3	5.0	5.2	5.3	4.0	4.7
MA 127	7.3	6.3	5.7	6.0	5.3	4.0	4.7
MASTERPIECE	8.0	6.7	6.3	6.5	5.0	4.3	4.7
PICASSO	8.3	7.0	7.0	7.0	5.3	4.0	4.7
PST-5KI	8.7	5.0	5.0	5.0	4.3	5.0	4.7
PST-5S12	7.3	5.7	5.7	5.7	4.7	4.7	4.7
WYATT	8.3	5.7	5.7	5.7	5.0	4.3	4.7
FORTE (BE-2)	8.0	6.0	6.7	6.3	5.0	4.0	4.5
GRANDE II	8.0	5.0	5.0	5.0	4.7	4.3	4.5
JT-12	8.0	5.7	5.3	5.5	4.0	5.0	4.5
KY-31 E+	7.7	4.7	4.3	4.5	5.0	4.0	4.5

LANCER	7.7	6.3	6.3	6.3	5.0	4.0	4.5
MA 158	7.7	6.3	6.3	6.3	5.0	4.0	4.5
PICK ZMG	7.7	5.7	5.0	5.3	4.0	5.0	4.5
PST-DDL	6.0	5.0	5.0	5.0	4.7	4.3	4.5
RAPTOR (CIS-TF-33)	7.7	6.0	6.0	6.0	5.0	4.0	4.5
REBEL EXEDA	8.3	6.0	5.7	5.8	5.0	4.0	4.5
ROBERTS SM4	7.3	4.7	5.3	5.0	5.0	4.0	4.5
T991	8.7	5.3	5.3	5.3	5.0	4.0	4.5
TULSA II (ATF 706)	7.7	6.0	6.0	6.0	5.3	3.7	4.5
ATF 702	7.7	6.7	6.7	6.7	4.0	4.7	4.3
ATF 704	7.0	5.7	5.7	5.7	4.7	4.0	4.3
ATF 799	7.7	6.7	6.3	6.5	5.0	3.7	4.3
BARRERA	8.0	6.0	5.7	5.8	4.7	4.0	4.3
BE1	8.3	6.7	6.0	6.3	3.7	5.0	4.3
CAYENNE	7.7	5.3	5.3	5.3	5.0	3.7	4.3
EA 163	7.7	6.0	6.0	6.0	4.0	4.7	4.3
MAGELLAN (OD-4)	7.7	4.7	4.7	4.7	5.3	3.3	4.3
PST-5BAB	8.3	7.0	5.7	6.3	4.0	4.7	4.3
PST-5NAS	8.0	5.3	5.0	5.2	4.3	4.3	4.3
PST-5TUO	8.3	5.3	6.0	5.7	4.3	4.3	4.3
QUEST	7.7	6.0	5.3	5.7	4.7	4.0	4.3
SRX 805	8.0	5.7	5.7	5.7	3.7	5.0	4.3
TAHOE (CAS-157)	8.0	6.7	5.3	6.0	4.7	4.0	4.3
TITAN LTD.	8.0	6.3	6.7	6.5	4.7	4.0	4.3
UT-155	8.0	6.0	5.7	5.8	5.0	3.7	4.3
AVENGER (L1Z)	8.3	5.7	5.7	5.7	5.0	3.3	4.2
BAR FA 1CR7	7.7	6.3	5.3	5.8	4.7	3.7	4.2
BILTMORE	8.3	5.7	6.0	5.8	4.7	3.7	4.2
COVENANT (ATF 802)	8.0	6.0	6.7	6.3	4.3	4.0	4.2
FIVE POINT (MCN-RC)	8.7	6.7	6.0	6.3	5.0	3.3	4.2
GUARDIAN-21 (ROBERTS DOL)	7.0	5.3	5.3	5.3	4.3	4.0	4.2
KITTY HAWK 2000	8.0	6.0	6.7	6.3	4.7	3.7	4.2
LARAMIE	8.3	5.0	5.0	5.0	5.0	3.3	4.2
PST-5JM	7.7	5.0	5.0	5.0	4.0	4.3	4.2
PST-5T1	8.0	6.3	5.0	5.7	4.0	4.3	4.2

SCORPION	8.0	6.3	6.3	6.3	4.3	4.0	4.2
STETSON	8.0	5.7	5.7	5.7	4.3	4.0	4.2
TRACER	8.0	7.0	7.0	7.0	4.3	4.0	4.2
2ND MILLENNIUM	7.7	6.3	6.3	6.3	4.7	3.3	4.0
BARLEXAS	8.0	6.3	6.7	6.5	4.3	3.7	4.0
CIS-TF-60	7.7	6.7	6.7	6.7	4.0	4.0	4.0
FOCUS	8.3	5.7	6.0	5.8	4.7	3.3	4.0
INFERNO (JT-99)	8.0	6.3	6.7	6.5	4.3	3.7	4.0
JT-18	7.7	5.7	6.0	5.8	4.0	4.0	4.0
K01-E03	8.0	6.0	6.0	6.0	4.0	4.0	4.0
PROSPECT	8.3	5.7	6.0	5.8	4.3	3.7	4.0
RENDITION	7.7	5.3	6.0	5.7	3.7	4.3	4.0
TAR HEEL	8.0	5.7	5.3	5.5	4.3	3.7	4.0
WATCHDOG	8.3	5.0	5.0	5.0	4.0	4.0	4.0
ATF 806	7.3	6.3	5.7	6.0	4.0	3.7	3.8
OLYMPIC GOLD	8.0	5.0	5.0	5.0	4.3	3.3	3.8
PADRE (NJ4)	8.0	4.7	4.7	4.7	4.3	3.3	3.8
PICK-00-AFA	8.0	5.3	5.7	5.5	3.7	4.0	3.8
DLF-J210	7.7	6.3	5.3	5.8	3.0	4.3	3.7
PST-53T	8.0	5.0	5.7	5.3	4.0	3.3	3.7
TURBO (CAS-MC1)	7.0	7.0	6.3	6.7	3.3	4.0	3.7
ATF 707	8.0	5.0	5.0	5.0	3.0	3.7	3.3
PICK TF H-97	7.7	5.3	5.7	5.5	3.7	3.0	3.3
SILVERSTAR (PST-5ASR)	7.7	5.0	5.0	5.0	3.0	3.7	3.3
CV	8.3	12.9	11.4	10.9	20.1	19.3	15.8
LSD	1.8	1.4	1.2	1.1	2.0	1.6	1.4

Color rating scale 1-9, with 9= darkest green color.
Turfgrass density 1-9 scale, with 9= greatest density.
Turfgrass quality 1-9 scale, with 9=highest quality.

2003 Results for the 2000 National Kentucky Bluegrass Trial

R.C. Shearman, H. Budak, and L.A. Wit

The 2000 National Kentucky Bluegrass Trial was planted in September 2000 at the John Seaton Anderson Turfgrass and Ornamental Research Facility near
Mead, Neb. One hundred seventy-three cultivars and experimental lines were planted in a completely randomized block design with three replications. The plots are 5 ft by 5 ft in size and turfs were seeded at a rate of 6 lbs/1,000 ft^2. The trial is growing on a Tomek silty clay loam soil, with a pH of 6.8, and 2.5 percent organic matter.

Turfs are mowed four times a week at 0.63 inch and clippings are returned. Nitrogen (N) is applied at a rate of 4.0 lbs N/1,000 ft^2/year. Phosphorus and potassium are applied according to soil test recommendations.
Soil samples are taken in April each year. Irrigation is adjusted twice a week to apply 80 percent ETp. Pendimethalin is applied at label-recommended rates for the control of crabgrass, and postemergence herbicides are applied to control broadleaf weeds, as well. Fungicides and insecticides are applied on a curative basis only.

In 2003, color, density, and quality of turf were evaluated. Turfgrass color ratings ranged from 5.0 to 8.3. Turfgrass density ratings were very high, indicating excellent establishment for most entries. Mean turfgrass quality ratings ranged from 4.1 to 7.2.

Table 1. 2003 data summary for the 2000 National Kentucky Bluegrass Trial at the JSA Turfgrass and Ornamental Research facility near Mead, NE.

		DENSITY			*QUALITY*							
NAME	**COLOR**	**SPRING**	**SUMMER**	**FALL**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**MEAN**
AWARD	6.3	9.0	9.0	8.3	7.7	7.7	8.0	7.3	6.7	7.3	5.7	7.2
SHAMROCK	5.7	8.7	8.7	8.3	7.7	7.3	7.7	7.3	6.7	6.7	6.3	7.1
BAR PP 0471	7.3	8.7	9.0	7.7	6.7	7.7	8.3	7.7	5.3	6.7	6.3	7.0
MIDNIGHT II (A98-739)	7.3	9.0	9.0	8.7	8.0	8.0	8.0	7.3	6.3	6.0	5.3	7.0
QUANTUM LEAP	7.0	9.0	9.0	9.0	8.0	8.0	7.7	6.7	6.7	6.0	5.7	7.0
SRX 27921	7.3	8.7	8.7	8.7	6.3	8.0	8.0	7.0	7.3	5.7	6.3	7.0
GLENMONT (H94-293)	6.7	9.0	8.7	8.3	8.0	8.0	8.0	7.0	5.3	6.0	5.7	6.9
ARCADIA	7.0	9.0	9.0	8.3	6.7	7.3	8.0	7.3	6.3	6.0	5.7	6.8
BEDAZZLED	5.0	8.3	8.3	9.0	6.3	8.0	7.7	6.3	6.3	7.0	5.3	6.7
J-2561	7.3	8.0	8.7	7.7	6.7	7.7	7.7	6.7	6.0	6.7	5.3	6.7
J-2885	5.7	8.7	8.7	8.3	6.0	7.3	8.3	7.7	4.7	7.7	5.0	6.7
SRX 2394	7.7	9.0	9.0	8.7	7.0	7.0	8.0	6.7	6.0	6.7	5.3	6.7
BEYOND (J-1880)	7.0	8.7	8.7	8.7	6.7	7.7	7.7	6.3	6.0	6.3	5.7	6.6
BLACKSBURG II (PST-1BMY)	6.7	8.3	8.7	8.3	7.0	7.0	7.0	7.0	6.7	6.0	5.3	6.6
CHAMPAGNE	6.0	9.0	8.7	8.3	6.3	7.0	7.7	7.0	5.7	6.7	5.7	6.6
IMPACT	7.3	8.3	8.7	8.7	6.3	6.7	8.3	7.7	5.3	6.0	6.0	6.6
EVEREST	6.7	8.7	9.0	8.3	6.7	7.3	8.0	7.0	5.3	5.7	5.3	6.5
RUGBY II	6.3	8.7	8.7	8.0	7.0	7.0	7.0	7.0	5.7	7.0	5.0	6.5
TOTAL ECLIPSE	8.0	9.0	9.0	9.0	7.0	7.3	7.0	6.7	6.7	6.0	4.7	6.5
ASCOT	7.7	8.7	8.3	8.3	7.0	7.0	7.3	6.3	6.0	6.0	5.3	6.4
BA 84-140	7.7	8.7	8.3	8.7	7.0	7.3	7.3	6.3	5.7	5.3	5.7	6.4
BARIRIS	7.7	9.0	9.0	9.0	6.7	7.3	7.7	6.3	6.3	5.7	5.0	6.4
EAGLETON	6.0	9.0	9.0	8.7	6.3	7.0	6.7	6.3	5.7	6.0	6.7	6.4
EXCURSION (J-1648)	6.3	9.0	9.0	8.7	7.0	7.0	7.0	7.0	5.0	6.3	5.3	6.4
H92-203	7.7	9.0	9.0	8.7	6.7	6.3	7.0	6.0	7.0	6.0	5.7	6.4
A97-1409	7.0	9.0	9.0	9.0	6.0	6.3	6.3	6.0	6.0	7.0	6.3	6.3
AWESOME (J-1420)	8.0	8.7	8.7	8.0	6.0	7.0	7.3	6.3	6.7	5.7	5.0	6.3
BLUESTONE (PST-731)	6.7	8.3	8.3	9.0	6.3	6.7	6.3	7.7	5.0	6.7	5.7	6.3

BOUTIQUE	7.3	8.0	8.3	8.0	5.7	6.0	7.3	6.3	6.7	7.0	5.0	6.3
CHICAGO II	7.3	8.3	8.3	8.3	6.3	6.7	7.0	6.7	5.0	7.0	5.3	6.3
LAKESHORE (A93-200)	6.0	9.0	8.3	8.7	7.0	7.3	7.0	5.7	6.0	5.7	5.3	6.3
NUGLADE	7.3	8.7	8.7	8.0	6.0	6.3	8.0	7.3	5.0	6.0	5.7	6.3
PRO SEEDS - 453	7.3	9.0	9.0	8.3	6.0	7.0	7.0	6.3	6.3	5.7	5.7	6.3
PST-H6-150	6.3	9.0	9.0	8.3	6.7	6.7	6.7	6.3	6.0	6.7	5.3	6.3
ARROW (A97-1567)	8.0	8.7	8.7	8.7	7.0	6.7	6.7	5.7	6.3	6.0	5.3	6.2
BAR PP 0566	7.3	9.0	9.0	8.3	6.0	6.0	7.0	6.0	6.0	6.7	5.7	6.2
J-1838	6.0	8.7	8.7	8.3	6.0	7.0	7.0	6.0	5.7	6.3	5.3	6.2
JEFFERSON	6.3	9.0	9.0	8.7	5.7	6.0	7.3	6.7	5.7	6.3	5.7	6.2
LIBERATOR	7.3	8.0	9.0	7.7	6.3	6.7	7.7	6.7	5.3	6.0	4.7	6.2
SRX 26351	7.3	9.0	9.0	8.7	6.0	7.0	7.0	6.0	6.7	5.0	6.0	6.2
1B7-308	7.7	9.0	9.0	8.3	6.3	6.7	6.3	6.3	7.3	5.0	5.0	6.1
BARRISTER (J-1655)	7.3	8.0	8.3	7.7	5.7	6.7	7.0	6.7	5.3	6.7	5.0	6.1
BARZAN	7.3	8.3	8.3	8.0	6.0	7.0	7.0	6.0	5.7	5.7	5.7	6.1
FREEDOM II	7.3	8.0	8.3	8.3	6.0	6.3	7.0	6.0	5.0	6.0	6.3	6.1
MALLARD (A97-1439)	6.3	8.7	8.7	8.3	6.0	6.7	7.0	6.0	6.7	5.3	5.3	6.1
PP H 6366	7.0	9.0	9.0	8.0	6.0	6.0	6.3	6.3	6.7	6.7	4.7	6.1
PST-H5-35	8.3	8.3	8.3	8.3	6.3	6.7	6.7	6.3	5.0	7.0	5.0	6.1
ROYALE (A97-1336)	5.7	8.7	8.7	9.0	7.0	7.3	6.0	5.0	6.3	5.0	6.3	6.1
WELLINGTON	5.3	8.7	8.7	8.7	6.3	6.3	6.7	6.0	5.7	6.0	5.7	6.1
WILDWOOD	7.3	8.7	8.3	8.7	6.7	6.7	6.3	6.0	6.0	5.7	5.7	6.1
A97-1330	7.7	8.7	8.7	8.7	5.7	6.0	6.0	5.7	7.0	6.3	5.0	6.0
A98-139	6.7	9.0	9.0	8.3	5.7	5.7	6.7	5.7	6.0	6.0	6.0	6.0
B3-185	8.0	9.0	9.0	8.7	6.3	6.0	7.0	6.0	6.7	5.3	5.0	6.0
B5-45	8.0	9.0	9.0	8.3	6.0	6.0	6.0	6.0	6.7	5.0	6.0	6.0
BARONETTE (BA 81-058)	6.7	9.0	9.0	9.0	6.0	6.3	6.3	6.0	6.3	6.0	5.3	6.0
CABERNET	6.7	8.7	8.7	8.7	5.7	6.3	6.0	6.0	6.0	6.0	5.7	6.0
CHATEAU	6.3	9.0	9.0	9.0	5.3	6.0	6.7	5.7	6.0	6.0	6.0	6.0
ENVICTA	6.3	8.3	8.7	8.3	6.3	6.3	7.0	5.3	6.0	5.0	6.3	6.0
MARQUIS	6.7	8.7	8.3	8.7	6.0	5.7	6.0	5.7	6.0	6.7	5.7	6.0
MIDNIGHT	6.3	9.0	9.0	8.0	6.3	5.3	6.7	6.3	6.3	5.7	5.3	6.0
RAMBO	7.0	8.7	8.7	8.7	6.0	6.0	6.3	6.3	5.3	6.3	6.0	6.0

SRX QG245	6.3	9.0	9.0	9.0	6.3	6.7	7.0	6.0	5.7	5.3	5.3	6.0
BA 00-6001	7.0	9.0	9.0	8.7	6.0	6.0	6.3	6.3	6.3	5.3	5.0	5.9
BARON	6.7	8.7	8.7	7.7	5.0	6.3	6.3	6.0	6.3	6.3	5.0	5.9
BLUE KNIGHT	6.3	9.0	9.0	8.3	5.7	7.0	6.7	6.3	5.7	4.7	5.3	5.9
GINNEY (J-1368)	6.7	9.0	9.0	8.7	5.7	6.3	6.7	6.3	5.0	6.7	4.7	5.9
NU DESTINY (J-2695)	7.0	8.3	8.7	8.3	5.7	6.0	6.0	5.7	5.0	6.7	6.0	5.9
PICK 417	7.0	8.0	8.7	8.7	6.3	6.3	5.3	6.0	5.7	5.0	6.7	5.9
PST-1701 (AVALANCHE)	7.0	8.7	8.7	9.0	6.3	6.3	6.3	5.7	5.7	5.7	5.0	5.9
PST-B4-246	7.0	9.0	9.0	8.3	5.7	5.3	7.3	6.3	6.3	5.3	4.7	5.9
RITA	6.7	9.0	9.0	8.3	6.0	6.7	6.0	6.0	6.0	5.3	5.3	5.9
SI A96-386	6.3	8.7	8.7	8.7	5.7	6.7	6.7	5.7	5.0	5.7	5.7	5.9
UNKNOWN	6.7	8.7	8.7	8.3	5.7	6.0	6.0	5.7	6.0	6.7	5.3	5.9
A96-451	6.7	9.0	9.0	8.7	5.3	6.0	6.7	6.0	5.7	6.0	4.7	5.8
A97-1432	7.3	8.3	8.3	8.3	6.0	6.0	6.0	6.0	5.7	5.3	5.7	5.8
ALLURE	7.7	9.0	9.0	8.0	5.7	5.7	5.3	5.3	6.3	5.3	6.7	5.8
BAR PP 0573	6.0	9.0	9.0	8.7	5.0	6.7	6.0	6.0	4.7	6.0	6.0	5.8
BARTITIA	6.3	8.3	8.3	9.0	6.0	6.3	6.7	6.3	4.7	5.0	5.3	5.8
BRILLIANT	7.7	8.7	8.7	8.3	5.7	6.0	6.0	6.0	5.3	6.7	5.0	5.8
EVERGLADE	6.7	8.3	8.7	8.3	4.7	5.3	7.7	6.7	4.3	7.0	5.0	5.8
ODYSSEY	8.0	9.0	9.0	8.7	4.7	6.0	7.0	6.7	5.3	6.0	4.7	5.8
PST-1804	8.0	9.0	9.0	8.7	6.3	6.7	5.7	4.3	7.7	4.7	5.3	5.8
PST-B3-170	7.0	8.3	8.7	8.3	5.7	6.0	6.3	6.3	6.7	4.3	5.3	5.8
SHOWCASE	6.7	9.0	8.7	8.7	5.7	6.0	6.7	6.0	5.0	5.7	5.7	5.8
VOYAGER II (PST-1QG-27)	6.3	8.7	8.7	8.3	5.3	6.0	6.3	6.0	5.3	5.7	6.0	5.8
A97-1715	7.0	9.0	9.0	8.0	4.0	5.0	6.7	6.3	6.0	5.3	6.7	5.7
A98-1028	7.3	9.0	9.0	8.7	5.3	5.0	5.7	6.0	6.0	6.0	6.0	5.7
BLUE RIDGE (A97-1449)	6.0	9.0	9.0	8.3	6.0	6.0	6.0	5.7	4.7	5.3	6.0	5.7
BOOMERANG	5.3	8.3	8.3	8.7	4.7	6.0	6.0	6.0	5.3	5.7	6.0	5.7
HALLMARK	5.7	9.0	9.0	8.7	5.7	6.0	6.0	6.0	5.7	5.3	5.3	5.7
HV 238	6.0	8.3	8.3	8.7	5.0	6.0	6.0	5.7	5.3	6.3	5.7	5.7
J-2890	6.3	8.7	8.7	8.0	4.7	5.7	6.7	6.3	5.0	6.7	5.0	5.7
LIMOUSINE	5.7	9.0	9.0	8.0	6.0	6.0	5.7	5.7	4.7	6.3	5.7	5.7
MISTY	7.3	8.7	8.7	8.7	6.3	6.0	6.0	5.7	6.3	4.3	5.3	5.7

PICK 453	6.7	8.7	8.7	8.7	6.0	6.0	6.0	6.3	5.3	5.0	5.0	5.7
ROYCE (A98-304)	6.7	9.0	9.0	8.0	5.0	5.0	6.0	5.3	6.0	6.3	6.0	5.7
ALPINE	5.0	9.0	9.0	8.3	5.3	5.7	6.0	6.3	4.3	6.3	5.0	5.6
APOLLO	6.0	8.7	8.7	8.3	5.3	5.3	7.0	6.0	5.3	5.0	5.3	5.6
B3-171	7.3	8.7	8.7	8.3	5.0	6.0	6.0	6.0	6.0	5.3	4.7	5.6
BA 82-288	6.0	9.0	9.0	8.3	4.7	5.3	6.0	6.0	5.7	6.0	5.7	5.6
CHAMPLAIN (A98-1275)	6.7	8.7	8.7	8.7	5.0	5.7	6.7	6.7	4.7	6.0	4.7	5.6
H92-558	7.0	9.0	9.0	8.7	4.3	5.3	7.3	5.3	5.7	5.7	5.7	5.6
JEWEL	6.3	9.0	8.7	8.3	5.3	5.3	5.3	5.7	5.7	6.3	5.3	5.6
PP H 7907	6.3	9.0	8.7	8.7	5.7	6.0	6.3	6.0	5.3	5.3	4.7	5.6
PST-604	6.7	9.0	9.0	8.7	5.7	5.7	5.7	5.0	6.0	5.7	5.7	5.6
RAVEN	7.7	8.7	8.7	8.7	5.0	6.3	6.0	5.3	5.3	5.3	5.7	5.6
A96-427	7.3	8.7	8.7	8.7	4.0	4.3	6.0	6.0	6.7	6.3	5.3	5.5
A98-365	6.7	8.7	8.3	9.0	5.0	5.7	6.0	5.7	4.7	5.7	6.0	5.5
A98-881	6.0	9.0	9.0	8.3	4.0	5.0	6.0	6.0	5.3	6.0	6.3	5.5
BROOKLAWN	6.7	8.7	9.0	8.0	5.0	5.3	6.0	5.7	5.3	5.3	6.0	5.5
GOLDSTAR (A98-296)	7.7	8.7	8.7	8.7	4.0	5.3	5.3	5.7	6.0	6.7	5.7	5.5
JULIUS	6.0	8.3	8.7	8.0	5.3	5.3	5.7	6.0	5.7	4.7	5.7	5.5
LANGARA	8.0	8.0	8.7	8.3	5.3	5.3	5.0	5.0	6.0	6.7	5.3	5.5
PST-222	6.7	9.0	9.0	8.7	5.0	5.3	6.7	6.0	5.3	5.3	5.0	5.5
BAR PP 0468	6.3	8.0	8.3	7.7	5.0	5.7	5.7	5.7	5.0	5.7	5.0	5.4
DLF 76-9036	6.7	9.0	9.0	8.7	5.0	5.0	5.0	5.3	5.3	6.3	6.0	5.4
MOONLIGHT	7.3	8.0	8.0	8.3	5.7	6.0	6.0	5.3	4.7	5.3	4.7	5.4
NORTH STAR	7.3	8.7	8.7	8.3	5.3	5.7	5.0	6.3	5.7	5.7	4.3	5.4
PP H 7832	7.0	9.0	9.0	8.3	5.7	5.3	4.3	4.3	7.0	5.0	6.0	5.4
PST-108-79	6.0	8.7	8.7	8.7	4.3	4.3	6.7	5.7	4.7	7.0	5.0	5.4
PST-161	6.7	8.3	8.7	8.3	4.7	4.3	6.0	5.3	5.0	6.0	6.7	5.4
SR 2284 (SRX 2284)	6.7	9.0	9.0	8.7	3.7	4.3	6.3	6.0	6.3	6.0	5.3	5.4
B5-144	5.3	8.7	8.7	9.0	5.0	5.3	5.0	5.3	5.0	6.0	5.7	5.3
B5-43	8.0	9.0	9.0	8.7	5.0	5.0	5.0	5.0	6.0	4.7	6.3	5.3
BLACKSTONE	8.0	9.0	8.7	8.3	4.7	5.3	5.7	5.3	5.3	5.3	5.7	5.3
BLUEMAX (PST-B5-89)	7.3	8.7	8.7	8.7	5.0	5.0	6.0	5.0	6.3	5.3	4.7	5.3
MONTE CARLO (A96-402)	5.3	9.0	9.0	8.7	4.7	5.0	5.3	5.0	5.3	5.3	6.3	5.3

PP H 6370	6.7	9.0	9.0	8.3	4.3	5.0	5.0	5.0	5.7	6.0	6.0	5.3
PRINCETON 105	7.7	8.7	8.7	8.3	4.7	5.3	6.3	5.7	5.0	5.7	4.7	5.3
PST-YORK HARBOR 4	7.7	9.0	9.0	8.7	5.0	5.7	5.7	5.3	5.7	5.0	4.7	5.3
ABBEY	7.3	8.3	8.3	9.0	5.0	5.0	5.0	5.0	5.3	5.0	6.3	5.2
BODACIOUS	6.7	8.3	8.3	7.7	4.3	5.0	5.0	5.0	5.7	6.0	5.3	5.2
CHELSEA	6.3	9.0	9.0	9.0	3.7	4.7	6.3	6.0	5.0	5.3	5.3	5.2
DLF 76-9034	7.0	8.7	8.7	8.7	4.7	4.7	5.0	5.3	6.3	5.0	5.3	5.2
SONOMA	6.0	9.0	9.0	8.7	3.3	4.3	5.7	6.3	4.7	6.3	5.7	5.2
SRX 2114	7.3	8.7	8.7	8.3	5.3	5.3	6.0	5.7	5.7	4.3	4.3	5.2
TSUNAMI (J-2487)	7.0	8.7	8.7	8.7	5.0	5.0	5.0	5.7	5.3	5.3	5.3	5.2
A96-742	7.3	9.0	9.0	9.0	4.7	4.0	5.0	5.3	5.7	5.3	5.7	5.1
J-1513	7.3	8.3	8.3	8.0	5.0	4.3	5.0	5.7	5.3	5.3	5.0	5.1
99AN-53	6.7	8.3	8.3	8.7	3.7	4.3	6.0	6.0	4.3	5.3	5.7	5.0
B4-128A	6.0	8.7	8.7	8.0	3.0	4.0	5.3	5.3	6.3	6.0	5.3	5.0
BARITONE	7.7	8.0	8.0	8.3	4.0	4.7	5.0	5.3	5.0	5.0	5.7	5.0
BARONIE	7.0	9.0	9.0	8.7	4.0	4.7	5.0	5.3	5.0	6.0	5.3	5.0
BLUE SAPPHIRE (NA-K991)	5.0	8.7	9.0	8.7	5.0	4.7	6.0	5.3	4.7	4.7	4.3	5.0
BORDEAUX	6.7	8.3	8.3	8.7	5.0	5.0	5.3	5.0	5.3	4.7	4.3	5.0
COVENTRY	7.3	8.7	8.7	9.0	4.3	4.7	5.0	5.3	5.3	5.3	5.3	5.0
DLF 76-9037	6.7	8.7	8.7	8.7	3.3	4.0	6.0	5.3	5.0	6.7	4.3	5.0
FAIRFAX	5.3	9.0	9.0	8.0	4.3	4.7	5.0	5.0	5.0	4.7	6.3	5.0
GO-9LM9	7.7	9.0	8.7	8.3	4.7	4.3	4.0	5.0	6.7	4.3	5.7	5.0
JULIA	7.0	9.0	9.0	8.7	4.0	5.0	5.0	5.0	5.3	4.3	6.0	5.0
MERCURY (PICK-232)	6.3	8.0	8.7	8.7	4.7	4.7	4.7	5.0	5.3	5.0	5.7	5.0
PERFECTION (J-1515)	7.3	8.3	8.3	7.7	3.7	4.7	4.3	5.7	5.7	6.3	4.7	5.0
UNIQUE	7.3	9.0	8.3	8.7	4.0	4.3	4.3	6.0	4.7	6.3	5.0	5.0
WASHINGTON	6.7	8.0	7.7	8.3	3.7	4.3	4.3	5.0	5.3	5.7	6.3	5.0
A98-407	6.7	8.7	8.7	8.3	4.3	4.3	5.0	4.7	5.3	5.0	5.7	4.9
MOON SHADOW (PICK 113-3)	5.7	9.0	8.7	9.0	4.7	4.3	4.3	5.7	4.7	5.3	5.0	4.9
NA-K992	7.0	8.7	8.7	8.3	3.3	4.0	5.7	5.3	5.7	5.0	5.3	4.9
PST-B5-125	7.0	8.3	8.3	8.0	4.3	4.0	4.7	5.3	5.0	5.7	5.3	4.9
A96-739	6.0	8.7	9.0	8.7	3.0	5.0	4.3	5.7	5.0	5.0	5.7	4.8
BA 83-113	7.3	8.3	8.7	9.0	3.3	4.0	4.3	4.7	5.7	6.0	5.7	4.8

GOLDRUSH	6.0	8.7	9.0	8.7	4.3	4.3	5.0	4.7	4.3	5.7	5.0	4.8
A98-183	7.3	9.0	9.0	8.3	3.7	3.3	4.3	5.0	6.7	5.7	4.0	4.7
BH 00-6002	6.3	9.0	9.0	8.7	4.0	4.0	3.3	4.3	6.0	5.3	6.0	4.7
DLF 76-9032	7.0	8.7	8.3	8.7	3.0	4.3	4.7	4.7	5.3	5.7	5.0	4.7
LIMERICK	5.0	8.7	8.7	8.7	4.0	4.0	4.3	4.7	6.7	4.3	5.0	4.7
CVB-20631	6.0	8.7	8.7	9.0	4.0	4.0	4.7	4.7	5.3	5.0	4.3	4.6
HV 140	5.7	8.3	8.3	7.7	3.0	4.0	4.7	4.3	4.7	5.0	5.7	4.5
SERENE	6.7	8.7	8.3	9.0	4.0	4.0	4.0	4.3	4.7	5.0	5.3	4.5
LILY	6.7	9.0	8.7	8.7	3.3	3.7	3.3	4.3	5.3	5.0	6.0	4.4
BH 00-6003	7.0	8.3	8.7	8.3	3.7	4.0	4.0	4.3	4.7	4.7	5.0	4.3
KENBLUE	7.3	9.0	9.0	8.7	3.3	3.3	4.0	4.7	4.7	3.7	6.0	4.2
A97-857	6.7	8.3	8.0	8.7	3.3	3.0	4.0	3.7	5.3	5.0	4.7	4.1
PP H 7929	6.0	9.0	9.0	8.7	3.3	3.7	3.7	3.7	5.7	4.0	5.0	4.1
CV	18.7	4.8	5.4	6.8	12.0	10.7	8.5	17.9	16.3	16.8	15.7	7.1
LSD	6.8	0.9	2.2	2.6	1.0	0.9	0.8	2.4	2.1	2.2	2.9	0.6

Color rating scale 1-9, with 9= darkest green color.
Turfgrass density 1-9 scale, with 9= greatest density.
Turfgrass quality 1-9 scale, with 9=highest quality.

2003 Results for the 1999 National Perennial Ryegrass Trial

R.C. Shearman, H.Budak, and L.A. Wit

The 1999 Ryegrass trial was planted in the late August 1999 at the John Seaton Anderson Turfgrass and Ornamental Research Facility near Mead, Nebraska. One hundred and thirty eight cultivars and experimental lines were planted in a completely randomized block design with three replications. The plots are 4 ft by 5 ft in size and turfs were seeded at a rate of 6lbs/1,000 ft^2. The trial was planted on a Tomek silty clay loam soil, with a pH of 6.8, and 2.5 percent organic matter.

Turfs are mowed five times a week at 0.5 inch and clippings are returned. Nitrogen (N) and potassium (K) are applied at a rate of 6.0 lbs N or K/1,000 ft^2/year. Phosphorus (P) is applied at 1.0 lbs P/1,000 ft^2 per year. Irrigation adjusted twice a week to apply 80 percent ETp. Pendimethalin is applied at label recommended rates for the control crabgrass, and postemergence herbicides are applied as well. No fungicide or insecticides are used.

In 2003, color, density, and quality of turf were evaluated. Turfgrass color ratings ranged from 4.7 to 8.0. In general, perennial ryegrass entries demonstrate a continuing emphasis on dark green color. Turfgrass density were high and all entries but one (Linn) acceptable ratings. Mean quality ratings ranged from 1.3 to 7.5. The relatively high turfgrass quality ratings for the entries in this trial indicate that the overall improvement in perennial ryegrass performance.

Table 1. 2003 data summary for the 1999 National Perennial Ryegrass Trial at the JSA Turfgrass and Ornamental Research facility near Mead, NE.

	DENSITY				*QUALTIY*							
ENTRY	**COLOR**	**SPRDENS**	**SUMDENS**	**FALLDENS**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**MEAN**
PIZZAZZ	8.0	9.0	9.0	9.0	7.3	7.7	7.7	7.7	8.3	7.7	6.3	7.5
GALLERY (MB 412)	7.3	9.0	9.0	9.0	7.7	8.0	8.0	6.7	7.7	7.3	6.3	7.4
SUNKISSED (ABT-99-4.834)	8.7	8.7	8.7	9.0	7.3	7.7	7.3	6.7	8.0	6.7	7.7	7.3
HAWKEYE (SRX 4RHT)	8.0	9.0	9.0	8.7	7.7	8.0	7.7	7.3	7.0	6.3	6.3	7.2
SPLENDID (MB 411)	7.0	9.0	9.0	9.0	7.3	7.3	7.7	6.7	7.3	7.3	6.7	7.2
PINNACLE II (BAR 9 B2)	8.0	8.3	8.7	9.0	7.0	7.3	8.0	7.3	7.7	6.7	5.7	7.1
SEVILLE II	7.7	9.0	9.0	9.0	7.0	8.0	7.7	7.0	8.0	6.0	6.0	7.1
SR 4220 (SRX 4801)	8.3	9.0	9.0	9.0	7.3	7.7	8.0	6.7	7.3	6.7	6.3	7.1
AMAZING (B1)	8.3	9.0	8.7	9.0	6.7	7.3	7.7	6.7	7.7	7.0	6.0	7.0
ARRIVAL (CIS-PR-84)	8.7	9.0	8.7	9.0	6.7	7.7	7.3	7.0	7.3	7.0	5.7	7.0
KOKOMO (CIS-PR-69)	8.0	9.0	9.0	9.0	6.0	7.0	7.7	5.7	8.0	8.7	6.0	7.0
LPR 98-144	6.7	9.0	8.7	9.0	7.3	8.0	7.7	6.0	7.0	7.0	6.0	7.0
PICK PR QH-97	8.0	9.0	9.0	9.0	6.7	7.3	7.7	7.3	6.7	6.3	6.7	7.0
QUEST II (ABT-99-4.721)	8.0	9.0	9.0	9.0	6.7	6.7	7.3	6.7	8.0	7.3	6.3	7.0
SR 4420 (SRX 4820)	7.7	9.0	9.0	9.0	7.0	7.3	7.7	6.3	6.7	7.3	6.7	7.0
SUMMERSET (MB 413)	7.7	9.0	9.0	9.0	7.0	7.3	7.3	6.7	7.3	7.0	6.7	7.0
ABT-99-4.815	7.0	9.0	9.0	9.0	6.7	7.3	7.3	5.7	7.0	7.0	7.0	6.9
CHARISMATIC (LTP 98-501)	8.0	9.0	9.0	9.0	6.3	7.0	7.3	7.0	7.3	7.3	6.0	6.9
COURAGE (MB 410)	7.0	9.0	9.0	9.0	6.3	7.0	7.3	6.3	7.3	7.3	6.3	6.9
PARAGON	7.7	9.0	8.7	9.0	6.7	7.0	7.3	6.3	7.7	7.0	6.3	6.9
ABT-99-4.464	6.7	9.0	9.0	9.0	6.3	7.3	7.3	6.3	7.0	7.3	6.0	6.8
BLAZER IV (PICK MDR)	8.0	9.0	9.0	9.0	6.3	6.7	6.7	6.7	8.0	7.0	6.0	6.8
GATOR 3 (CIS-PR-85)	8.0	9.0	9.0	9.0	6.3	6.7	6.7	6.3	7.7	7.0	6.7	6.8
INSPIRE (R8000)	7.3	9.0	9.0	9.0	6.3	6.7	6.3	6.3	7.3	7.7	6.7	6.8
PICK PR B-97	7.7	9.0	9.0	9.0	6.7	7.0	7.0	7.0	7.0	6.3	6.7	6.8
PROMISE	7.0	9.0	9.0	9.0	6.7	7.7	7.3	6.7	7.0	6.3	6.0	6.8
SR 4350 (APR 1237)	7.0	9.0	9.0	9.0	6.3	7.0	7.7	6.7	7.7	6.3	6.0	6.8
ALL STAR2 (CIS-PR-78)	8.7	8.3	8.3	9.0	6.7	7.0	7.3	6.3	7.7	6.3	5.3	6.7
ASCEND	7.7	9.0	8.3	9.0	6.3	7.0	7.3	6.3	7.0	7.3	5.3	6.7

CAS-LP84	7.0	8.7	8.7	8.7	7.0	7.3	7.0	6.7	6.0	6.7	6.3	6.7
FIESTA 3	7.3	8.3	8.7	8.0	7.0	7.7	7.0	5.7	7.7	6.0	5.7	6.7
PALMER III	7.3	9.0	9.0	9.0	6.7	7.3	7.3	6.3	7.0	6.7	5.3	6.7
CATHEDRAL II	6.7	9.0	9.0	9.0	7.0	7.0	7.0	6.0	6.7	6.3	6.3	6.6
DAZZLE (ABT-99-4.724)	8.0	9.0	9.0	9.0	6.3	6.3	6.7	6.0	7.3	7.0	6.3	6.6
EXTREME (JR-317)	6.7	8.7	8.7	9.0	6.7	7.0	7.0	6.3	7.0	6.0	6.0	6.6
IQ (CIS-PR-75)	7.3	9.0	9.0	9.0	6.3	6.7	7.3	6.7	6.3	7.0	6.0	6.6
PICK PR 1-94	8.0	9.0	9.0	8.7	6.3	7.0	7.0	6.7	7.0	6.3	6.0	6.6
TERRADYNE (A5C)	8.0	9.0	9.0	9.0	6.7	7.0	7.3	6.0	7.0	6.0	6.3	6.6
APR 1231	6.7	9.0	9.0	9.0	6.3	7.0	7.0	6.3	6.0	6.3	6.7	6.5
CITATION FORE (PST-2BR)	7.7	9.0	9.0	9.0	6.0	6.7	6.7	6.3	7.0	6.3	6.3	6.5
HEADSTART	7.0	9.0	8.7	8.3	7.0	7.0	7.0	6.3	6.0	5.7	6.3	6.5
ICON (MB 414)	7.3	8.7	8.7	9.0	5.7	6.3	6.3	6.3	6.7	7.7	6.3	6.5
MACH 1 (ROBERTS-627)	8.3	8.7	7.7	9.0	6.0	6.7	7.0	5.3	6.7	7.3	6.7	6.5
PLEASURE XL	7.3	9.0	9.0	9.0	6.0	7.0	7.7	6.3	6.7	6.0	5.7	6.5
PREMIER II	7.3	9.0	8.7	9.0	6.7	6.7	7.0	6.0	7.0	6.7	5.7	6.5
SR 4500	7.0	9.0	9.0	8.7	6.0	6.7	6.3	6.3	7.0	6.7	6.3	6.5
ADMIRE (JR-151)	7.0	9.0	8.7	9.0	6.0	6.3	7.0	6.0	6.7	6.7	6.0	6.4
ELFKIN	7.0	8.0	8.3	8.3	5.7	6.3	6.3	6.3	7.0	6.3	6.7	6.4
LPR 98-143	7.0	9.0	8.7	9.0	6.3	6.7	6.3	6.0	6.7	6.3	6.3	6.4
PASSPORT	6.3	9.0	9.0	9.0	7.0	6.3	6.7	6.3	6.7	5.7	6.0	6.4
PST-2CRR	8.0	9.0	9.0	9.0	6.3	6.7	6.7	6.3	6.3	7.3	5.0	6.4
RADIANT	8.7	9.0	9.0	9.0	5.7	6.0	6.7	6.0	7.7	6.7	6.3	6.4
ABT-99-4.115	7.0	9.0	9.0	9.0	6.0	6.3	6.3	6.0	6.3	7.0	6.3	6.3
APPLAUD (PENNINGTON-11301)	7.3	9.0	9.0	9.0	5.3	6.3	6.3	5.7	7.0	7.3	6.3	6.3
CABO (CIS-PR-80)	8.7	9.0	8.7	9.0	6.0	6.3	7.0	6.0	6.7	6.3	6.0	6.3
CALYPSO II	6.7	8.7	8.7	8.3	6.7	6.7	6.3	6.0	7.0	6.3	5.3	6.3
CHURCHILL	8.0	9.0	8.3	9.0	6.0	6.0	6.0	6.3	7.7	6.7	5.3	6.3
DIVINE	7.0	9.0	9.0	9.0	6.3	6.3	7.0	5.7	6.7	6.3	6.0	6.3
GRAND SLAM 2L96 (PST-2L96)	7.3	9.0	9.0	8.7	5.3	5.7	6.7	6.0	7.7	7.0	5.7	6.3
JR-128	6.7	9.0	8.3	9.0	6.0	6.0	6.3	6.0	7.0	6.0	6.7	6.3
MAJESTY	7.3	9.0	9.0	9.0	6.0	6.0	6.7	6.0	7.3	6.0	6.3	6.3
PANTHER	6.3	9.0	9.0	8.7	5.7	6.3	6.0	6.0	7.7	6.0	6.3	6.3

PARADIGM (APR 1236)	7.0	9.0	8.7	9.0	5.7	6.7	7.0	5.7	6.7	6.3	6.3	6.3
PENNANT II	8.0	9.0	9.0	9.0	6.3	6.7	6.7	6.0	6.7	5.7	6.0	6.3
RACER II (PICK RC2)	7.3	9.0	8.3	9.0	6.0	6.7	7.0	5.3	7.0	6.3	6.0	6.3
APR 776	6.7	8.7	8.7	9.0	5.3	6.3	6.3	5.3	6.7	6.7	7.0	6.2
EXACTA	7.3	8.3	8.7	9.0	6.0	6.3	6.3	6.3	7.3	5.7	5.3	6.2
MEPY	7.3	9.0	9.0	9.0	6.0	6.7	6.7	6.0	7.0	5.7	5.7	6.2
MONTEREY II (JR-187)	6.7	9.0	9.0	9.0	5.7	6.0	6.7	6.0	7.0	5.7	6.3	6.2
MP103	7.3	9.0	9.0	9.0	5.3	6.3	6.7	5.7	7.0	5.7	6.7	6.2
MP88	7.7	8.3	8.3	8.3	5.7	6.0	6.7	5.7	7.3	6.0	6.0	6.2
PICK EX2	6.0	9.0	8.7	9.0	6.3	6.3	6.7	5.3	6.7	5.3	7.0	6.2
STELLAR (CIS-PR-72)	8.0	8.7	8.7	9.0	6.0	6.0	6.3	6.0	7.3	6.3	5.7	6.2
ABT-99-4.339	6.7	8.7	8.7	9.0	6.0	6.3	6.3	6.0	6.3	6.7	5.3	6.1
ABT-99-4.560	7.3	9.0	9.0	9.0	6.0	6.3	6.3	6.3	6.7	5.7	5.7	6.1
CHARGER II	7.0	9.0	9.0	9.0	5.7	6.3	6.3	6.3	6.3	6.3	5.3	6.1
MANHATTAN 4 (PST-2CRL)	7.7	8.3	8.3	8.7	5.3	6.3	6.3	6.0	6.0	7.3	5.3	6.1
MDP	8.0	8.7	8.7	8.7	6.0	6.0	6.3	5.7	6.3	6.3	6.0	6.1
MP107	7.7	8.7	8.7	8.7	5.7	6.3	6.7	5.7	6.7	6.0	6.0	6.1
PENTIUM (NJ-6401)	7.7	9.0	9.0	9.0	5.0	6.0	6.7	5.7	6.7	6.3	6.3	6.1
AFFINITY	6.3	9.0	9.0	9.0	5.7	6.3	7.0	5.7	6.3	5.7	5.0	6.0
AFFIRMED	7.0	8.7	8.7	9.0	5.3	6.0	6.7	5.0	6.7	6.3	5.7	6.0
BRIGHTSTAR SLT (PST-2A6B)	8.3	8.7	8.7	8.7	6.0	6.0	6.0	6.0	6.0	6.3	5.7	6.0
JET	8.0	9.0	9.0	9.0	6.0	6.3	6.7	5.3	6.7	6.0	5.3	6.0
PST-2RT	6.7	9.0	9.0	9.0	5.7	6.3	6.3	6.0	6.3	6.0	5.0	6.0
SECRETARIAT	6.7	9.0	9.0	9.0	6.3	6.3	6.3	5.3	6.0	6.0	5.7	6.0
WILMINGTON	8.0	9.0	9.0	9.0	5.7	6.3	6.7	6.7	6.0	5.3	5.7	6.0
ABT-99-4.600	7.0	9.0	9.0	9.0	5.3	5.3	6.0	5.7	6.7	6.0	6.0	5.9
ABT-99-4.965	8.0	9.0	9.0	9.0	5.0	6.0	6.3	5.3	6.3	6.7	5.7	5.9
ALLSPORT	7.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.3	5.7	5.0	5.9
APR 1235	7.0	9.0	8.7	9.0	5.7	5.7	6.0	6.0	6.0	6.0	5.7	5.9
BARLENNIUM	7.3	9.0	8.7	9.0	5.3	6.0	6.0	5.3	6.7	6.3	5.7	5.9
ENTRY 135	6.3	9.0	9.0	9.0	5.7	6.0	6.0	5.7	6.7	5.0	6.0	5.9
EPD	7.7	9.0	9.0	9.0	5.7	5.7	6.0	5.7	6.0	6.0	6.0	5.9
PICK PRNGS	7.0	9.0	9.0	9.0	5.0	6.0	6.0	5.7	6.7	6.0	6.0	5.9

PROSPORT (AG-P981)	6.7	8.7	8.7	8.7	5.7	6.0	6.3	6.3	5.3	5.7	6.0	5.9
CRUISER (ABT-99-4.709)	7.7	9.0	9.0	9.0	4.3	5.7	5.7	6.3	6.0	6.7	6.0	5.8
DLF-LDD	7.3	9.0	8.7	9.0	4.7	5.7	5.7	5.0	6.3	7.0	6.0	5.8
DP LP-1	6.7	8.7	8.7	8.7	5.7	6.3	6.3	5.0	6.3	5.3	5.7	5.8
ENTRY 136	6.0	9.0	9.0	9.0	5.3	6.0	6.3	5.7	6.3	5.0	5.7	5.8
PST-2M4	7.3	8.7	8.7	8.7	5.0	5.7	6.0	6.0	6.7	6.0	5.3	5.8
APR 1232	6.0	9.0	9.0	9.0	5.3	6.0	5.7	5.3	5.7	5.7	6.3	5.7
BRIGHTSTAR II	8.0	9.0	9.0	9.0	4.7	5.7	6.0	6.0	5.7	6.3	5.7	5.7
LINE DRIVE	7.0	9.0	9.0	9.0	4.7	5.3	6.3	6.0	6.0	5.7	5.7	5.7
LTP-ME	7.7	9.0	9.0	9.0	5.7	5.7	5.7	6.7	6.0	6.0	4.3	5.7
PACESETTER (6011)	7.0	9.0	9.0	9.0	4.7	5.3	6.0	6.3	5.7	6.0	6.0	5.7
PST-2JH	7.0	9.0	9.0	9.0	5.0	5.3	6.0	5.3	6.3	6.3	5.7	5.7
BY-100	6.0	9.0	9.0	9.0	5.0	5.7	6.0	5.3	6.7	5.3	5.3	5.6
ENTRY 137	6.0	9.0	9.0	9.0	5.3	5.3	5.7	5.3	6.0	6.0	5.7	5.6
KOOS R-71	6.7	9.0	9.0	9.0	5.0	5.0	6.3	6.3	5.7	5.0	6.0	5.6
PROWLER (APR 777)	7.0	9.0	9.0	9.0	5.3	5.7	5.3	5.3	5.7	6.3	5.7	5.6
RACER	7.0	8.7	8.3	8.0	5.3	5.3	5.7	5.0	7.0	5.7	5.0	5.6
CATALINA	7.0	8.7	8.7	9.0	5.3	5.7	5.3	5.3	5.3	5.3	6.0	5.5
CATALINA II (PST-CATS)	7.0	9.0	9.0	9.0	4.0	5.0	5.3	5.7	6.7	6.7	5.3	5.5
NEXUS	8.0	9.0	9.0	9.0	4.3	5.3	5.7	5.7	6.3	5.7	5.7	5.5
PST-2LA	7.3	8.3	8.3	9.0	4.7	5.0	5.3	5.3	6.3	6.3	5.7	5.5
PST-2SBE	7.3	8.7	9.0	9.0	4.7	5.3	5.7	5.3	6.7	5.3	5.3	5.5
RENAISSANCE (APR 1233)	7.3	8.7	8.3	9.0	4.0	5.0	6.0	5.3	6.0	6.3	6.0	5.5
SALINAS (PST-2SLX)	7.0	9.0	9.0	9.0	5.3	5.0	5.3	5.0	6.3	6.0	5.3	5.5
SKYHAWK	7.3	8.7	8.7	8.7	4.7	5.0	5.7	5.3	6.3	5.7	6.0	5.5
ENTRY 138	6.0	9.0	9.0	9.0	5.3	5.7	5.3	5.7	5.7	5.3	5.0	5.4
EP53	7.0	8.7	9.0	8.7	5.0	5.3	5.7	5.0	6.0	5.3	5.7	5.4
PHANTOM	7.3	9.0	9.0	9.0	5.0	5.7	5.7	5.3	6.0	5.3	5.0	5.4
SUPERSTAR (EP57)	7.7	8.3	8.3	8.3	5.0	5.7	6.0	5.0	6.3	4.3	5.3	5.4
WVPB-R-82	6.7	9.0	8.3	9.0	4.7	5.3	5.7	5.7	6.0	5.0	5.3	5.4
WVPB-R-84	6.7	9.0	8.3	9.0	4.3	5.0	6.0	5.0	6.7	5.3	5.7	5.4
EDGE	6.0	8.3	8.0	9.0	5.0	5.3	5.3	5.3	5.7	5.3	5.3	5.3
PREMIER	7.0	8.3	8.0	9.0	5.0	5.3	5.7	5.0	6.0	5.3	5.0	5.3

PROTYME (ABT-99-4.625)	7.3	9.0	9.0	9.0	5.0	5.3	5.3	5.3	6.0	5.3	5.0	5.3
APR 1234	6.7	8.0	8.0	9.0	5.0	5.7	5.3	5.3	5.0	5.3	4.7	5.2
MANHATTAN 3	6.7	8.7	8.3	9.0	4.3	5.0	5.3	5.3	6.0	5.7	5.0	5.2
DP 17-9069	5.7	8.0	8.3	8.0	4.0	4.7	5.3	4.7	6.0	5.0	5.3	5.0
SRX 4120	6.0	9.0	9.0	9.0	4.3	4.7	4.7	5.3	5.7	4.7	5.3	5.0
DP 17-9391	6.0	8.3	8.7	8.7	4.0	4.7	4.3	4.0	6.3	6.0	4.3	4.8
YATSUGREEN	5.7	9.0	8.7	9.0	3.7	4.3	4.0	4.7	5.7	5.3	5.0	4.7
BUCCANEER	5.7	8.3	8.3	8.0	4.0	4.3	4.3	4.7	5.0	5.3	4.7	4.6
DP 17-9496	5.7	8.3	8.3	8.3	3.0	2.7	2.7	3.3	4.0	3.7	3.7	3.3
LINN	4.7	6.7	5.7	5.0	1.0	1.0	1.0	1.0	1.3	2.0	1.7	1.3
CV	7.2	3.4	4.9	3.2	10.1	9.3	9.4	14.7	13.0	13.9	11.4	7.4
LSD	0.8	0.5	0.8	0.4	0.9	0.9	0.9	1.6	1.5	1.5	1.1	0.7

Color rating scale 1-9, with 9= darkest green color.
Turfgrass density 1-9 scale, with 9= greatest density.
Turfgrass quality 1-9 scale, with 9=highest quality.