

Performance of Fine Fescue Cultivars and Selections (1993-96)

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Introduction

Tests of commercially available turfgrass cultivars and experimental selections are conducted annually in University Park, PA to provide turfgrass managers, seed industry representatives, county extension agents, and other interested persons with information about turfgrass characteristics and performance. In September 1993, sixty-six fine fescue cultivars and selections were established at the Joseph Valentine Turfgrass Research Center in University Park, PA. Entries were supplied by the National Turfgrass Evaluation Program (NTEP). The following is a report on the performance of these entries between 1993 and 1996.

Materials and Methods

Each entry was seeded in 4 by 6 ft plots at a rate of 4.4 lb of seed per 1000 sq ft. The entire test area received full sunlight. Three replicate plots of each entry were used in this test. Plots were arranged in a randomized complete block design. Prior to seeding, starter fertilizer was applied at a rate of 1.0 lb of N, 0.5 lb of P₂O₅ (phosphate), and 0.5 lb K₂O (potash) per 1000 sq ft. In the spring of each year, a preemergence herbicide was applied for crabgrass control. Trimec™ (2,4-D, MCP, and dicamba) herbicide was applied in June in each year of the test at 1.5 oz per 1000 sq ft to control broadleaf weeds. The test was mowed at 2.0 inches and fertilized twice in each year (spring and fall) with 1 lb N/1000 sq ft per application. The test was irrigated whenever necessary to prevent wilting.

Assessments of Turfgrass Performance

All assessments of turfgrass performance were made on a visual basis. Care was taken to ensure consistent and accurate evaluations. The following performance criteria were used to assess fine fescue cultivars and selections.

Quality: Quality indicates the overall appearance of the turf and can incorporate several components including: density, texture (measure of leaf width), uniformity, and freedom from disease and insect damage. Quality is rated using a scale of 1 to 9, where 9 = highest quality.

Seedling vigor: This rating is a visual estimate of percent ground cover and plant height during the early stages of seedling establishment and reflects the rate of establishment. The plots were rated shortly after seeding using a scale of 1 to 9, where 9 = most vigorous seedling growth.

Spring green-up: Spring green-up provides an indication of how soon the turf breaks out of winter dormancy. The plots were rated for spring green-up using a scale of 1-9, with 9 = the most uniform green color.

Color: This rating reflects the inherent color of the entry, not yellowing or browning due to mower injury, drought stress, disease, etc. Color ratings are usually taken when grass is not under stress. Color was rated on a scale of 1-9, with 9 = the darkest green color.

Density: Density is a visual estimate of the number of plants per unit area. Density is rated on a scale of 1-9, with 9 = the most dense turf.

Disease ratings: Disease ratings provide an indication of a cultivar's reaction to a particular disease. Disease ratings are based on a scale of 1-9 (with 1 = extensive disease damage and 9 = no disease present). Disease ratings for leaf spot and red thread are included in this report.

Interpretation of Results

Data for the above criteria are presented in Tables 1 and 2. Cultivars that are commercially available are in bold type and experimental selections are in plain type. Differences between two entries are statistically significant only if the LSD (Least Significant Difference) value, listed at the bottom of each column in Tables 1 and 2 is exceeded by the numerical difference between two entries. For example, if cultivar 'A' is 3.0 units higher in quality than cultivar 'B', then this difference is only significant if the LSD value is 3.0 or less. If the LSD is greater than 3.0, then the numerical difference between the two cultivars may be due to inherent variability in the test area or some other element of chance.

Results and Discussion

Seedling vigor (Table 2) was greatest with the mixture of HF9032/**APM** at 80%/20% and 70%/30% on a weight basis. **APM** (a perennial ryegrass) germinated quicker than the fine fescue and enhanced the seedling vigor. Examining fine fescue selections only, BAR UR 204 and Flyer, both strong creeping fescues, showed the greatest seedling vigor on September 23, 1993.

Reliant II, SR 3100, Discovery, Osprey, HF9032/Dover (90%/10%), **Shadow II, HF9032, Nordic, Scaldis, Vernon, Defiant, and Spartan** received the highest combined seasonal quality ratings from 1994 through 1996 (Table 1). Although quality ratings take several factors into account, these entries ranked higher than other entries primarily due to their superior density, uniformity, and lack of leaf spot and red thread susceptibility. 67135 delivered the lowest combined seasonal quality rating.

Differences in leaf spot and red thread susceptibility were noticed among entries during the test period and are reported in Table 2. Ratings revealed that many entries were not severely affected by either disease. Entries that showed the most leaf spot were 67135 and BAR Frr 4ZBD. BAR UR 204, **Dawson, Rondo, Molinda, Shademaster II, and Seabreeze** exhibited the greatest red thread incidence.

Spring green-up and color ratings were taken each year between 1994 and 1996. Spring green-up was greatest with 67135, **Jasper (E), Aruba, BAR UR 204, Eco, Medina,** and PST-4DT. Spring green-up was lowest with **SR 3100, Discovery, Aurora w/endo, HF9032, Brigade, Nordic, Vernon, Ecostar, Osprey, and Scaldis.** Color ratings showed BAR Frr 4ZBD and twelve other selections as the darkest green entries while **Aruba** and 67135 were the lightest green selections.

Keep in mind that the results of this test reflect cultivar performance for the management regime imposed at this site and environmental conditions in central Pennsylvania.

Table 1. Quality ratings of fine fescue cultivars and selections for 1994-96. This trial was established September 1993 at the Joseph Valentine Research Center, University Park, Pennsylvania.

Entry ²	Species ³	Turfgrass Quality Ratings ¹			
		Season Average 1994	Season Average 1995	Season Average 1996	Combined Season Ave. 1994-96
Reliant II	HRD	6.0	7.3	7.4	6.9
SR 3100	HRD	5.8	7.7	7.2	6.9
Discovery	HRD	6.1	7.6	6.9	6.9
Osprey	HRD	6.6	6.8	7.0	6.8
HF9032/Dover(90%/10%)	HRD/CHW	6.4	6.9	7.1	6.8
Shadow II	CHW	6.9	6.6	6.7	6.8
HF9032/Dover(100%/0%)	HRD/CHW	5.9	7.3	6.8	6.7
Nordic	HRD	5.3	7.1	7.2	6.6
Scaldis	HRD	5.8	6.8	6.6	6.4
Vernon	HRD	5.6	7.0	6.5	6.4
Defiant	HRD	5.3	6.8	7.0	6.4
Spartan	HRD	5.7	6.6	6.4	6.2
Ecostar	HRD	5.4	6.6	6.4	6.1
HF9032/Dover(80%/20%)	HRD/CHW	5.7	5.9	6.7	6.1
HF9032/Dover(70%/30%)	HRD/CHW	5.9	5.7	6.7	6.1
Pamela	HRD	5.4	5.9	6.8	6.1
Banner III	CHW	5.6	6.2	6.2	6.0
Aurora w/endo	HRD	5.6	6.4	5.9	5.9
Victory II	CHW	6.1	5.9	5.8	5.9
Treazure	CHW	5.9	5.7	6.1	5.9
MB 82-93	HRD	5.2	6.2	6.3	5.9
Brigade	HRD	5.1	5.8	6.7	5.9

¹ Refer to "Assessments of Turfgrass Performance" for an explanation of performance criteria ratings.

² Names that are in bold type are commercially available cultivars, those that are in plain type are experimental selections (not available to the general public).

³ Fine fescue species and perennial ryegrass are designated by the following letters: CHW = chewings fescue, HRD = hard fescue, PR = perennial ryegrass, SHP = sheep fescue, SLC = slender creeping fescue, STC = strong creeping fescue

Table 1. Quality ratings of fine fescue cultivars and selections for 1994-96, continued.

Entry ²	Species ³	Turfgrass Quality Ratings ¹			
		Season Average 1994	Season Average 1995	Season Average 1996	Combined Season Ave. 1994-96
Bridgeport	CHW	6.0	5.6	6.0	5.9
Quarto	SHP	5.3	5.9	6.4	5.9
Culumbra	CHW	5.8	5.8	6.0	5.9
Darwin	CHW	5.7	5.7	6.2	5.9
Tiffany	CHW	5.2	5.9	6.3	5.8
Victory (E)	CHW	6.1	5.3	6.1	5.8
Jamestown II	CHW	5.6	5.8	5.9	5.8
SR 5100	CHW	5.4	5.7	6.2	5.8
TMI-3CE	CHW	5.5	5.6	6.2	5.8
WX3-FFG6	STC	5.6	5.5	6.0	5.7
Eco	CHW	5.7	5.3	5.8	5.6
Brittany	CHW	5.3	5.8	5.7	5.6
Sandpiper	CHW	5.6	5.4	5.7	5.6
MB 66-93	CHW	5.5	5.3	5.9	5.5
HF9032/APM(90%/10%)	HRD/PR	4.4	5.3	6.8	5.5
Shadow (E)	CHW	5.8	5.0	5.7	5.5
K-2	CHW	5.5	5.0	6.0	5.5
NJ F-93	CHW	5.7	4.9	5.7	5.4
Banner II	CHW	5.1	5.6	5.6	5.4
ISI-FC-62	CHW	5.7	5.1	5.4	5.4
Florentine	STC	5.5	5.1	5.6	5.4
PST-4ST	STC	4.7	5.9	5.6	5.4

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		Season Average 1994	Season Average 1995	Season Average 1996	Combined Season Ave. 1994-96
WX3-FF54	CHW	4.9	5.6	5.6	5.4
Medina	CHW	4.9	4.8	6.1	5.3
Jasper (E)	STC	4.8	4.9	5.7	5.1
HF9032/APM(80%/20%)	HRD/PR	4.4	5.1	5.8	5.1
Flyer II	STC	5.1	4.9	5.1	5.1
Shademaster II	STC	5.5	4.3	5.2	5.1
HF9032/APM(70%/30%)	HRD/PR	4.7	5.1	5.3	5.0
PST-4DT	STC	5.2	4.5	5.3	5.0
Seabreeze	SLC	6.1	3.4	5.5	5.0
Jamestown	CHW	4.8	4.8	4.9	4.9
Aruba	STC	5.2	4.2	4.8	4.8
Flyer	STC	4.9	3.9	5.0	4.6
CAS-FR13	STC	4.6	4.2	4.5	4.4
Molinda	CHW	4.2	3.6	5.4	4.4
Dawson	SLC	5.5	3.3	4.2	4.3
Rondo	STC	5.0	3.4	4.4	4.3
Cascade	CHW	3.6	3.9	4.8	4.1
BAR UR 204	STC	4.5	3.2	4.4	4.1
Common Creeping	STC	4.1	3.4	3.9	3.8
BAR Fr 4ZBD	STC	3.4	3.2	4.2	3.6
Silverlawn	STC	3.7	3.2	3.6	3.5
67135	SHP	1.8	1.8	3.5	2.4
LSD at 5% ⁴		1.2	0.8	0.8	0.7

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Table 2. Performance and disease ratings of fine fescue cultivars and selections for 1993-96. This trial was established September 1993 at the Joseph Valentine Research Center, University Park, Pennsylvania.

Entry ²	Species ³	Turfgrass Ratings ¹					
		Seedling Vigor 9/24/93	Spring Greenup 1994-96	Color 1994-96	Density 1994-96	Leaf Spot 5/31/94	Red Thread 6/30/95
Reliant II	HRD	2.3	5.1	6.2	7.2	9.0	9.0
SR 3100	HRD	3.3	3.9	6.0	7.2	8.7	8.7
Discovery	HRD	2.7	3.9	5.9	7.6	9.0	9.0
Osprey	HRD	3.7	4.4	6.1	7.4	9.0	8.0
HF9032/ Dover (90%/10%)	HRD/CHW	5.7	5.4	6.3	7.4	9.0	9.0
Shadow II	CHW	5.3	6.6	5.7	7.6	9.0	8.3
HF9032/ Dover (100%/0%)	HRD/CHW	4.7	4.1	6.8	7.4	9.0	8.7
Nordic	HRD	4.7	4.3	6.2	7.7	8.3	9.0
Scaldis	HRD	3.7	4.7	6.8	7.0	8.0	8.7
Vernon	HRD	3.0	4.3	7.1	7.3	9.0	9.0
Defiant	HRD	3.7	5.7	6.2	6.8	8.3	8.0
Spartan	HRD	5.3	5.0	5.8	7.1	9.0	8.7
Ecostar	HRD	4.7	4.3	5.3	6.7	8.7	9.0
HF9032/ Dover (80%/20%)	HRD/CHW	4.7	5.2	6.3	6.9	8.7	9.0
HF9032/ Dover (70%/30%)	HRD/CHW	5.3	5.3	6.3	6.9	9.0	8.7
Pamela	HRD	3.3	5.7	5.8	6.7	7.7	8.7
Banner III	CHW	3.7	6.4	6.7	7.1	9.0	8.3
Aurora w/endo	HRD	3.7	3.9	5.8	6.9	8.3	8.7
Victory II	CHW	5.3	6.4	5.4	7.1	8.7	8.0
Treazure	CHW	5.7	6.3	5.8	6.9	8.0	7.7
MB 82-93	HRD	3.3	5.8	5.9	6.9	8.7	9.0
Brigade	HRD	4.3	4.2	6.0	6.4	8.3	7.7

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Quarto	SHP	3.3	5.9	7.1	6.6	8.3	8.7
Culumbra	CHW	3.7	6.6	7.3	6.7	9.0	8.0
Darwin	CHW	5.3	5.4	7.0	7.0	9.0	8.7
Tiffany	CHW	4.3	6.1	6.3	6.8	8.0	8.3
Victory (E)	CHW	5.0	6.2	5.4	6.9	8.3	7.0
Jamestown II	CHW	5.7	6.6	5.3	6.9	8.3	8.7
SR 5100	CHW	4.3	6.0	6.0	6.8	8.3	8.7
TMI-3CE	CHW	4.7	5.9	6.0	6.6	8.7	7.3
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Eco	CHW	4.3	7.1	6.7	6.6	8.3	8.0
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Sandpiper	CHW	3.3	6.2	5.8	6.7	9.0	8.7
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HF9032/APM(90%10%)	HRD/PR	6.3	5.1	6.4	6.4	9.0	8.7
Shadow (E)	CHW	4.3	6.4	5.9	6.8	9.0	7.7
K-2	CHW	4.3	6.6	6.9	6.6	9.0	8.0
NJ F-93	CHW	4.0	5.2	6.5	6.8	9.0	6.7
Banner II	CHW	5.7	6.2	5.9	6.3	8.7	9.0
ISI-FC-62	CHW	4.0	6.3	6.3	6.3	8.7	8.3
Florentine	STC	4.7	6.2	7.3	6.6	6.7	7.3
PST-4ST	STC	4.0	6.0	7.0	6.3	6.3	8.7

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WX3-FF54	CHW	5.0	6.0	5.9	6.4	8.7	8.7
Medina	CHW	5.7	7.0	6.8	6.9	7.3	7.3
Jasper (E)	STC	5.7	7.2	7.0	6.2	4.7	8.3
HF9032/APM(80%30%)	HRD/PR	7.7	5.3	6.2	6.2	9.0	8.7
Flyer II	STC	5.7	6.1	7.5	5.8	6.3	8.3
Shademaster II	STC	5.0	5.8	7.3	6.0	5.7	5.7
HF9032/APM(70%30%)	HRD/PR	7.7	5.8	6.3	5.9	9.0	8.7
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Seabreeze	SLC	4.7	5.7	5.5	5.9	8.0	6.0
Jamestown	CHW	5.3	6.6	5.6	6.2	8.3	7.7
Aruba	STC	5.7	7.1	4.1	5.3	6.3	7.7
Flyer	STC	6.7	6.7	6.8	5.6	5.3	7.0
CAS-FR13	STC	3.0	6.9	7.4	5.2	3.7	8.0
Molinda	CHW	5.0	6.7	5.4	5.4	7.0	5.3
Dawson	SLC	5.0	5.3	4.9	4.7	8.3	4.3
Rondo	STC	4.3	5.0	5.2	5.1	8.0	5.0
Cascade	CHW	5.0	6.9	5.6	5.2	6.3	8.3
BAR UR 204	STC	7.0	7.1	5.3	5.2	5.0	4.3
Common Creeping	STC	6.0	6.0	5.0	4.6	5.7	8.7
BAR Fr 4ZBD	STC	5.3	6.3	7.6	4.6	2.3	7.7
Silverlawn	STC	4.0	6.3	6.3	5.2	5.0	7.3
67135	SHP	3.3	8.0	4.7	3.1	2.0	7.7
LSD at 5% ⁴		1.5	1.0	0.7	0.8	1.5	1.8

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