

1988 Turf Weed Control, PGR, and Management Studies
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The drought of 1988 offered some unique opportunities to study grasses under these conditions. One ongoing study which yielded some valuable information was an evaluation of various cool-season turfgrass species and cultivars for their performance under low maintenance conditions. This trial consisted of 48 cultivars of Kentucky bluegrass (*Poa pratensis*), tall fescue (*Festuca Arundinacea*), fine fescues (*Festuca rubra*), and perennial ryegrass (*Lolium perenne*) evaluated under conditions of no irrigation and low nitrogen fertility (1 lb N/M/YR). Data in table 1 show the percent survival of each species. The two species which fared the best were tall fescue and perennial ryegrass. Surprisingly, the fine fescues did not survive the drought very well which was unexpected because the fine fescues have always been touted as low maintenance, drought hardy grasses. The Kentucky bluegrasses also did not do very well but some of their lack of survival can be attributed to the difficulty in establishing bluegrasses and the gradual deterioration seen with the improved, sod-quality bluegrass varieties under low maintenance. The two species that fared well in this test were tall fescue and perennial ryegrass. Tall fescue has long been noted for its ability to withstand droughts and has done so by being very deep rooted compared to other cool season turfgrasses. This trial has demonstrated that for medium to low maintenance turfs, tall fescue should be strongly considered for use in Michigan. Our trials have never shown any problems with winterkill of tall fescue in Michigan, however, this has long been a concern. Until we get more data, we still caution against the use of tall fescues on wet or poorly drained soils.

Data in tables 2-5 show the 1988 quality ratings for variety trials of Kentucky bluegrass, tall fescue, fine fescues, and perennial ryegrass. The tall fescue variety trial was established in May of 1988 so data was only available from August, September and October of 1988. Because of the number of varieties now available in all species, a good rule of thumb for selecting varieties is to select those varieties that are in the top 25% of the trial. This will assure you of selecting high quality varieties.

A study was conducted in 1988 to examine the ability of various iron sources to mask the injury seen from spring applications of Embark to control annual bluegrass seedheads. Embark was applied at 1/8 lb AI/A (8 oz/A) alone and in combination with various commercially available iron sources and the treatments were evaluated for percent seedhead control and turf quality. Data in table six describes the rate and sources of iron used in the study and shows the results in terms of turf quality and seedhead density and control. Most of the iron sources tested did provide some masking of Embark injury with Scott's Iron S granular source providing the best turf quality. Also providing good masking of Embark injury was Ferromec at 2 and 4 oz/M. The most interesting observation of the study was that many of the iron sources antagonized the efficacy of Embark. This was clearly shown in the percent seedhead control data. Only Scott's Iron-S and Agriflex provided the same level of control as Embark alone. Ferromec AC at 2 oz/M showed slight antagonism but was still effective. The Lesco Iron plus N and Ferromec AC at 6 oz/M caused a noticeable loss of seedhead control but they were not statistically different from the Embark alone treatment. All other rates and sources of iron caused a significant loss of seedhead control.

TABLE 2. 1988 Quality Ratings for USDA Fine Fescue Variety Trial

Variety	Quality Ratings					Grand Means
	4/25	6/30	8/4	9/10	10/31	
Fri-Frt-83-1	6.7	7.0	7.2	7.0	7.7	7.1
Beauty	8.0	5.5	7.0	6.8	6.8	6.8
CF-2	7.7	6.2	6.0	6.7	7.3	6.8
Shadow	7.7	6.3	6.3	6.0	7.3	6.7
Aurora	7.7	6.2	7.0	6.8	5.8	6.7
Enjoy	7.2	6.8	6.0	6.2	7.2	6.7
Epsom	7.3	6.8	6.3	6.2	6.5	6.6
ST-2	7.7	6.3	7.0	6.8	5.0	6.6
HF 9-3	7.2	6.5	5.7	5.8	7.5	6.5
Atlanta	7.2	5.8	6.0	6.7	6.8	6.5
Mary	7.5	5.8	5.7	6.3	6.8	6.4
Banner	7.5	6.0	5.7	6.2	6.7	6.4
Reliant	6.7	6.2	7.3	6.3	5.3	6.4
Koket	7.7	5.2	5.7	6.3	6.3	6.2
Longfellow	7.7	5.7	6.3	5.5	5.8	6.2
Pennlawn	6.8	5.7	5.7	6.2	6.5	6.2
Tamara	6.5	6.0	6.7	5.0	6.5	6.1
Wilma	7.7	5.5	5.7	5.8	5.8	6.1
Valda	7.7	5.3	6.3	6.0	5.0	6.1
Jamestown	7.0	5.5	5.7	5.8	6.2	6.0
Center	6.8	5.3	6.0	5.3	6.5	6.0
Scaldis	6.7	5.7	6.3	5.5	5.7	6.0
Flyer	7.2	5.5	5.7	6.0	5.5	6.0
Waldorf	6.0	6.2	6.3	5.0	6.2	5.9
Checker	6.7	5.8	6.3	4.8	5.8	5.9
Boreal	6.3	4.7	6.0	6.8	5.7	5.9
430	6.7	5.0	6.0	5.0	6.8	5.9
Waldina	7.7	4.7	6.0	6.5	4.3	5.8
Estica	6.2	4.8	6.3	5.7	6.0	5.8
Tatjana	7.7	4.3	5.3	5.0	6.3	5.7
Bar FO 81-225	7.3	5.3	5.8	5.0	5.0	5.7
Magenta	6.8	5.2	5.3	5.3	5.7	5.7
Lousia	6.0	5.0	6.0	5.7	5.7	5.7
-	6.3	5.2	5.7	6.3	4.7	5.6
Penille	5.7	4.8	6.3	5.7	5.3	5.6
Unknown	6.5	4.5	5.3	6.2	5.3	5.6
Biljart	7.0	5.0	6.0	5.3	4.3	5.5
Ivalo	6.5	4.3	5.7	6.0	5.2	5.5
Highlight	6.2	4.7	6.0	4.3	6.3	5.5
Ruby	6.3	4.0	6.3	6.2	4.7	5.5
-	6.9	5.0	6.1	5.3	3.8	5.4
Ensylva	5.3	5.0	5.8	5.7	5.3	5.4
Wintergreen	6.3	4.7	5.7	5.3	5.0	5.4
Ceres	6.0	5.0	6.0	5.0	5.0	5.4
Commodore	6.7	4.7	5.5	5.3	4.7	5.4
-	6.5	5.0	5.0	5.0	4.7	5.2
Robot	6.3	4.3	5.0	5.3	4.3	5.1
-	6.9	5.0	4.1	5.3	3.8	5.0
-	7.9	4.0	4.1	4.3	3.8	4.8
-	6.9	4.0	3.1	4.3	3.8	4.4

TABLE 3. National Perennial Ryegrass Variety Trial

Variety	Quality Ratings					Grand Means	Red Thread Lesions/Plot
	5/20	6/30	8/2	9/9	10/27		
PST-2PM	7.0	6.5	6.8	7.3	6.7	6.9	2.0
PST-M2E	7.0	7.2	6.8	6.8	5.8	6.7	5.3
PST-2H7	6.7	7.2	6.5	7.0	6.3	6.7	5.7
SR-4100	7.3	6.0	7.3	6.8	6.0	6.7	0.7
Allaire	7.0	6.2	6.5	6.7	6.8	6.6	2.0
Repell	7.7	6.7	6.7	6.7	5.3	6.6	1.7
Tara	7.0	6.3	6.5	7.0	6.0	6.6	2.0
Manhattan II	7.0	6.5	6.5	6.7	5.7	6.5	3.0
ISI-851	7.0	6.7	6.7	6.7	5.0	6.4	0.7
Runaway	6.3	6.2	6.5	6.8	6.0	6.4	1.3
Pick 300	6.7	5.5	6.7	6.8	6.2	6.4	0.3
Pennant	6.3	6.2	6.7	7.0	5.7	6.4	1.0
Manhattan	7.0	6.5	6.0	6.7	5.3	6.3	1.7
Rodeo	6.3	7.3	6.0	6.2	5.7	6.3	1.7
SR 4000	7.0	7.2	5.8	6.3	4.8	6.2	0.3
Rival	7.0	6.5	5.5	6.8	5.3	6.2	0
PST-2HH	6.7	6.0	6.2	6.8	5.3	6.2	2.3
Bar Lp 410	6.7	6.0	6.5	7.2	4.7	6.2	1.3
Barry	7.0	6.3	6.0	7.0	4.7	6.2	4.7
PST-259	7.0	6.0	6.3	6.5	5.0	6.2	2.7
PST-2DD	6.3	5.3	6.5	6.8	5.8	6.2	1.7
PSU-222	6.7	5.7	6.5	6.3	5.7	6.2	2.7
PSU-333	6.0	6.3	6.7	6.3	5.3	6.1	5.7
Birdie II	6.0	5.8	6.5	6.7	5.7	6.1	0.3
PST-250	6.0	6.3	5.8	6.8	5.5	6.1	5.0
Pick-647	6.0	5.8	6.7	6.3	5.7	6.1	0
Citation II	7.0	5.5	6.3	6.0	5.3	6.0	2.3
Pick 233	6.3	5.8	6.3	6.3	5.3	6.0	5.3
Goalie	5.7	5.8	6.2	6.7	5.8	6.0	1.3
Pick 600	6.3	5.8	6.5	6.3	5.0	6.0	2.7
Palmer	5.7	5.8	6.2	6.8	5.5	6.0	2.3
Omega II	6.3	6.3	5.8	6.7	4.7	6.0	1.0
Bar LP 454	7.0	6.8	5.3	6.3	4.0	5.9	3.0
Belle	5.0	5.3	6.5	6.8	5.8	5.9	0.7
SR 4031	6.3	5.0	6.0	6.3	5.8	5.9	1.3
Yorktown II	6.3	6.7	6.2	6.0	4.3	5.9	2.0
Gator	7.0	5.8	6.3	5.7	4.7	5.9	1.0
NK 80389	6.3	7.3	5.3	5.3	5.0	5.9	2.0
Derby	6.3	4.7	6.3	6.3	5.7	5.9	0.7
Pick 715	6.3	5.0	5.8	6.8	5.2	5.8	2.3
Ovation	6.0	6.0	5.7	6.2	5.3	5.8	0.3
Prelude	6.7	5.0	6.5	6.2	4.7	5.8	1.3
J207	6.3	6.3	5.5	6.0	4.7	5.8	2.0
Regency	6.0	5.7	5.8	6.5	4.8	5.8	1.0
ISI-K2	6.3	6.7	5.3	6.0	4.5	5.8	1.7
Mom-Lp-763	6.0	5.7	5.8	6.3	4.7	5.7	0.7
Brenda	5.3	5.3	6.2	6.2	5.3	5.7	2.0
Pennfine	5.3	5.3	6.2	6.3	5.0	5.6	2.7
Sunrye	5.7	4.7	5.8	6.3	5.7	5.6	1.3
KWS-A1-2	6.0	7.0	5.7	5.5	4.0	5.6	2.3

TABLE 3 cont'. National Perennial Ryegrass Variety Trial

<u>Variety</u>	<u>Quality Ratings</u>					<u>Grand Means</u>	<u>Red Thread Lesions/Plot</u>
	<u>5/20</u>	<u>6/30</u>	<u>8/2</u>	<u>9/9</u>	<u>10/27</u>		
Diplomat	5.7	6.2	5.5	6.0	4.7	5.6	1.7
Vintage-2DF	6.0	5.3	6.2	5.3	5.0	5.6	3.7
Acrobat	7.0	4.8	5.0	5.8	5.0	5.5	0
Caliente	6.0	5.3	5.8	6.0	4.5	5.5	1.0
Ranger	6.7	5.8	5.2	5.7	4.3	5.5	5.7
Del 946	6.3	3.7	6.0	6.7	5.0	5.5	0
Patriot	6.0	6.0	5.3	5.7	4.3	5.5	1.3
Regal	5.7	4.0	5.3	6.2	6.0	5.4	1.3
Ronja	5.3	6.7	4.8	6.0	4.3	5.4	0.7
Sheriff	6.3	5.0	6.2	5.3	4.2	5.4	0.7
Cowboy	5.7	3.7	5.8	6.5	5.3	5.4	0.3
J208	5.7	6.2	5.0	5.5	4.5	5.4	5.0
Pavo	5.0	6.2	5.3	5.7	4.3	5.3	0.7
Delray	6.3	4.3	5.0	5.7	3.7	5.0	1.7
Linn	4.0	4.3	2.7	4.3	3.0	3.7	0.3

TABLE 4. 1987 Tall Fescue Variety Trial

Variety	Quality Ratings			% Cover	Grand Quality Means	Leaf Texture 1-9, 9 Finest
	8/4	9/6	10/29			
Jaguar II	7.7	8.3	6.3	83.3	7.4	6.0
Hubbard 87	7.7	7.5	6.2	85.0	7.1	5.7
PST-5HF	7.3	7.8	6.0	85.0	7.1	5.0
Pick DM	6.0	8.0	6.8	78.3	6.9	5.3
Rebel II	7.2	7.5	6.0	91.7	6.9	6.0
Monarch	7.2	7.7	5.8	86.7	6.9	5.7
Apache	7.8	7.0	5.7	86.7	6.8	6.3
Tribute	7.2	7.5	5.7	85.0	6.8	5.8
PST-5AG	6.7	7.7	5.8	83.3	6.7	6.0
Falcon	7.2	6.8	6.2	94.3	6.7	5.0
PST-5MW	6.7	7.2	6.3	81.7	6.7	5.7
Pick 127	7.5	7.2	5.3	81.7	6.7	5.0
Bonanza	7.2	7.2	5.7	83.3	6.7	5.3
Pick GH6	6.8	7.3	5.8	81.7	6.7	5.2
Trail Blazer	6.3	7.3	6.2	88.3	6.6	7.0
PST-5AP	6.8	7.2	5.7	85.0	6.6	5.0
Wrangler	6.7	6.8	6.0	95.0	6.5	6.0
Thoroughbred	6.8	7.0	5.7	93.3	6.5	5.8
Rebel	6.8	7.2	5.5	91.7	6.5	4.7
Pick DDF	6.3	7.3	5.7	73.3	6.4	5.7
PST-5OL	7.2	6.8	5.3	87.7	6.4	5.3
Mesa	7.0	6.8	5.5	90.0	6.4	5.0
Pick TF9	6.2	7.3	5.8	80.0	6.4	5.8
Legend	6.3	6.8	6.0	86.7	6.4	5.8
PST-DBC	7.0	6.8	5.3	86.7	6.4	5.0
Cimmaron	6.2	7.0	6.0	81.7	6.4	5.8
PST-5D1	6.7	7.0	5.3	90.0	6.3	5.7
Taurus	6.0	7.3	5.7	91.7	6.3	6.0
KWS-DUR	6.7	7.3	4.8	76.7	6.3	6.5
Arid	6.5	7.0	5.3	86.7	6.3	5.8
Trident	6.5	6.8	5.3	78.3	6.2	6.8
Chieftan	6.5	7.2	5.0	86.7	6.2	5.7
Sundance	6.0	7.0	5.7	86.7	6.2	6.0
Olympic	6.7	7.2	4.7	91.7	6.2	4.7
Adventure	6.7	6.7	5.2	86.0	6.2	5.7
Aztec	5.8	7.0	5.7	81.7	6.2	6.5
Richmond	7.2	6.3	5.0	88.3	6.2	4.7
PST-5BL	6.0	7.2	5.3	76.7	6.2	6.7
JB-2	6.3	6.3	5.7	88.3	6.1	5.5
Normac 99	6.3	6.8	5.2	76.7	6.1	6.0
Carefree	6.5	6.8	5.0	90.0	6.1	6.3
Titan	6.8	6.8	4.7	89.3	6.1	5.3
Finelawn I	6.7	6.7	5.0	96.0	6.1	5.0
Tip	7.2	6.0	5.0	91.7	6.1	4.7
PST-5FN	6.2	6.7	5.3	78.3	6.1	6.3
Pick SLD	5.7	6.7	5.8	81.7	6.1	6.7
Pacer	6.7	6.8	4.7	92.7	6.1	5.8
PST-5EN	6.7	6.7	4.7	88.3	6.0	6.0
Bel 86-1	6.7	6.8	4.5	80.0	6.0	5.3

TABLE 4 cont'. 1987 Tall Fescue Variety Trial

<u>Variety</u>	<u>Quality Ratings</u>			<u>% Cover</u>	<u>Grand Quality Means</u>	<u>Leaf Texture 1-9, 9 Finest</u>
	<u>8/4</u>	<u>9/6</u>	<u>10/29</u>			
Normarc 77	6.8	6.5	4.7	76.7	6.0	5.0
Pick 845 PN	6.3	6.7	5.0	76.7	6.0	6.2
Finelawn 5GL	6.5	6.7	4.7	93.3	5.9	6.0
Williamette	6.7	6.5	4.3	83.3	5.8	6.0
PST-5D7	6.0	6.6	4.9	78.3	5.8	7.1
PE-7	5.5	6.8	5.2	86.7	5.8	6.3
Bel 86-2	6.0	6.3	5.0	85.0	5.8	6.3
PST-5DM	6.0	6.5	4.8	85.0	5.8	6.2
Jaquar	6.7	6.0	4.4	81.4	5.7	4.9
Syn GA	6.2	5.7	4.7	86.7	5.5	5.3
Fatima	5.8	6.3	4.3	90.0	5.5	5.5
Ky-31	6.3	5.5	3.7	90.0	5.2	5.3
	0.0	0.0	0.0		0.0	

TABLE 5. 1986 National Kentucky Bluegrass Trial

Variety	Quality Ratings						Grand Means
	4/25	5/20	6/23	8/2	9/6	10/27	
P 104	6.5	7.3	8.3	8.7	8.5	8.5	8.0
Midnight	6.2	8.0	7.8	7.8	8.0	8.3	7.7
Bristol	7.2	8.2	7.2	8.0	7.7	7.8	7.7
Lofts 1757	7.2	7.8	7.3	7.5	7.5	7.7	7.5
Challenger	7.3	7.3	6.7	7.5	7.7	8.0	7.4
Mystic	6.3	6.7	8.7	7.2	7.8	7.7	7.4
Blacksburg	5.7	7.7	7.7	7.8	8.2	7.0	7.3
Aspen	7.0	7.0	7.0	7.8	7.2	7.3	7.2
Glade	6.8	7.7	7.5	7.0	7.3	6.8	7.2
Destiny	6.7	7.2	7.7	6.8	7.2	7.5	7.2
Ba 73-540	7.0	7.7	8.0	6.3	7.0	6.8	7.1
Eclipse	6.7	6.7	7.7	7.2	7.2	7.2	7.1
Ram-1	6.7	5.8	7.7	7.7	7.3	7.3	7.1
Able I	6.7	6.8	8.3	6.8	7.0	6.8	7.1
Ba 72-500	7.0	7.2	8.0	7.3	7.0	5.8	7.1
Liberty	7.0	6.7	7.5	7.0	6.8	7.0	7.0
Georgetown	7.0	7.5	7.0	6.0	7.2	7.2	7.0
Classic	7.0	6.8	7.2	7.0	7.5	6.3	7.0
Dawn	6.8	7.2	6.7	7.2	6.8	7.2	7.0
Haga	7.3	7.2	7.5	6.5	6.8	6.5	7.0
Adelphi	7.0	6.7	6.2	6.8	7.5	7.5	6.9
PST-CB1	7.0	7.2	6.0	7.0	6.8	7.5	6.9
Asset	7.3	6.8	7.3	6.2	6.2	7.5	6.9
America	6.2	6.5	7.3	7.0	7.0	7.2	6.9
Ba 69-82	7.0	7.3	7.2	6.2	6.8	6.7	6.9
Tendos	6.2	6.0	7.3	7.2	7.2	7.3	6.9
Sydsport	6.5	6.7	7.0	6.7	7.5	6.5	6.8
Nassau	6.3	6.2	6.3	6.8	7.5	7.5	6.8
Ba 72-441	6.7	7.5	7.8	6.7	6.5	5.5	6.8
K3-178	6.7	7.2	5.5	6.7	6.8	7.5	6.7
Touchdown	6.5	6.2	6.0	7.2	7.5	7.0	6.7
Trenton	6.7	6.8	7.2	6.8	7.3	5.5	6.7
Ba 70-139	6.8	7.0	7.2	7.3	6.7	5.3	6.7
WW Ag 491	6.7	7.0	7.2	7.0	6.2	6.2	6.7
F-1872	7.0	6.7	6.0	6.2	7.3	7.0	6.7
Merion	6.8	7.0	6.8	7.2	6.5	5.7	6.7
Parade	6.0	6.7	6.3	7.0	7.2	6.8	6.7
Cheri	6.7	7.0	7.5	6.7	6.8	5.3	6.7
NE 80-88	6.8	6.2	6.0	6.8	7.0	7.0	6.6
Rugby	7.0	6.8	6.8	6.5	6.8	5.8	6.6
239	6.7	7.5	6.2	6.3	6.8	6.2	6.6
K1-152	7.2	7.0	6.0	6.2	6.8	6.5	6.6
Gnome	7.0	6.2	7.0	6.7	6.0	6.7	6.6
Aquila	6.7	6.3	6.0	7.0	7.0	6.2	6.5
Somerset	6.3	6.3	7.0	6.7	6.8	6.0	6.5
Ba 70-242	6.5	7.7	6.5	6.3	6.7	5.3	6.5
Julia	6.8	7.2	7.0	6.7	5.3	6.0	6.5
Ba 72-492	6.7	6.8	7.2	7.0	6.7	4.7	6.5
Parade	6.3	6.5	6.0	6.0	7.3	6.8	6.5
Victa	6.3	6.5	7.5	6.3	6.3	5.5	6.4

TABLE 5 cont'. 1986 National Kentucky Bluegrass Trial

<u>Variety</u>	<u>Quality Ratings</u>						<u>Grand Means</u>
	<u>4/25</u>	<u>5/20</u>	<u>6/23</u>	<u>8/2</u>	<u>9/6</u>	<u>10/27</u>	
Merit	6.3	7.5	6.8	6.0	6.2	5.5	6.4
WW Ag 496	6.7	6.0	6.8	6.7	5.3	6.3	6.3
Monopoly	6.3	6.8	6.7	6.2	5.3	6.3	6.3
WW Ag 468	5.7	7.0	6.3	6.7	5.8	5.8	6.2
Ikone	7.0	6.7	5.7	6.7	6.0	5.0	6.2
Barzan	6.3	5.0	6.8	6.2	6.2	6.5	6.2
Welcome	6.0	6.7	6.8	7.0	5.3	4.7	6.1
Compact	5.8	6.2	6.7	6.3	5.7	5.8	6.1
Baron	6.0	6.0	6.7	6.2	6.5	5.0	6.1
Harmony	5.8	6.8	6.3	6.0	6.0	5.3	6.1
Connie	5.8	6.0	6.8	6.7	5.3	5.3	6.0
Wabash	6.3	4.7	5.7	6.3	6.0	7.0	6.0
WW Ag 495	5.8	6.0	5.3	6.5	6.5	5.8	6.0
Huntsville	6.8	5.0	5.3	6.3	6.2	6.3	6.0
Majestic	6.3	4.8	5.8	6.7	6.0	6.3	6.0
HV 97	6.0	6.8	6.3	5.8	4.7	6.2	6.0
Ba 73-626	6.5	6.0	6.3	6.7	6.0	4.3	6.0
Bar VB 534	5.8	5.0	5.7	6.7	7.0	5.5	5.9
Cynthia	5.3	5.0	6.0	6.7	7.2	5.3	5.9
A-34	6.0	6.0	6.3	6.3	5.3	5.3	5.9
Amazon	5.7	5.5	6.5	6.5	5.2	5.3	5.8
Kenblue	5.3	4.0	5.0	6.2	5.0	6.0	5.3
Joy	5.8	3.3	5.7	5.7	5.3	5.7	5.3
Annika	5.5	4.7	6.0	5.3	5.0	3.0	4.9
S. Dakota Certified	5.7	3.0	3.7	6.0	5.0	5.3	4.8