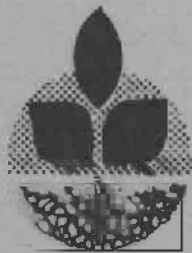


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Oregon Forage and Turf Grass Variety Seed Yield Trial 1984-85



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OREGON FORAGE AND TURF GRASS VARIETY SEED YIELD TRIAL, 1984-85

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ABSTRACT

Forty-nine perennial grass varieties and 12 annual grasses were evaluated for seed production potential at Corvallis, Oregon. Results of 1984 and 1985 harvest years are reported.

INTRODUCTION

New grass varieties and advanced breeding lines developed in public and private plant breeding programs become available each year. Seed producers and others need comparative information on seed yield potential of these new varieties. In 1981, a pilot seed yield evaluation program was started at Oregon State University for recently released varieties and advanced breeding lines from firms interested in seed production in the state. Seed yield of these varieties growing under western Oregon conditions was observed for two years and has been reported (Youngberg et al., 1985).

The program was continued on a fee basis in 1983. Fifty-five entries were received for evaluation of plant height, lodging, harvest date, 1000 seed weight and seed yield. Species included: perennial ryegrass (Lolium perenne), Italian ryegrass (Lolium multiflorum), fine-leaf fescue (Festuca rubra), Kentucky bluegrass (Poa pratensis), orchardgrass (Dactylis glomerata), and tall fescue (Festuca arundinacea). Standard varieties were included for each species.

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METHODS

The trial was conducted at Hyslop Crop Science Field Laboratory, Corvallis, on a Woodburn silt loam soil and designed to follow commercial field practices of Willamette Valley seed growers. Perennial species in this trial were planted in May 1983.

Seeding rates were adjusted for germination percentage to allow planting of equal amounts of pure live seed per length of row. Row spacing was 12 inches (30 cm) for all species except tall fescue and orchardgrass, which were spaced 18 inches (45 cm) apart. Four replications of each entry were established using a circular belt planter in either 2- or 3-row plots (depending on row spacing) so that all plots were 3 feet (0.9 m) wide and 15.6 feet (4.75 m) in length. A blank row was used to separate entries within blocks. A standard variety was included for each species. Seeding rates and dates, and row width for each species are given in Table 1.

Table 1. Seeding rate and date, row width, and mean number of seed per row for seed yield evaluation trial of 6 varieties of grasses.

Species	Seeding rate		Mean number seeds per:		Row width		Seeding date 1983
	(lb/a)	(kg/ha)	(ft)	(30 cm)	(in)	(cm)	
Perennial ryegrass	10.7	12.0	58	57	12	30	May 2-3
Fine-leaf fescue	4.5	5.0	61	60	12	30	May 3
Bluegrass	4.5	2.2	61	60	12	30	May 3
Orchardgrass	4.5	5.0	64	63	18	45	May 4
Tall fescue	8.9	10.0	61	60	18	45	May 4
Italian ryegrass	13.4	15.0	55	54	12	30	Sept. 20

Crop Management During the First Season

Weed control following establishment included bromoxynil at 0.5 lb

a.i./a (0.56 kg/ha) on June 2, 1983, and 0.75 lb a.i./a (0.84 kg/ha) 2,4-D low volatile ester on September 23, 1983, to all perennial species. Additional autumn chemical weed control was applied on October 21, 1983 (Table 2). Italian ryegrass entries were treated with Nortron^R at 1.0 lb a.i./a (1.1 kg/ha) on November 12, 1983.

Table 2. Autumn 1983 herbicide application and rate for 5 grass species.

Species	Herbicide	Rate ¹	
		(lb/a)	(kg/ha)
Perennial ryegrass	Atrazine	1.5	1.7
Fine-leaf fescue	Simazine	2.0	2.2
Bluegrass, Orchardgrass & Tall fescue	Diuron	3.0	3.4

¹Applied October 21, 1983

All perennial species were irrigated with 2.0 inches (51 mm) of water on June 8, 1983.

Fertilizer applications before the first seed crop included 16-20-0 at 187 lb/a (210 kg/ha) applied on September 14, 1983, before seeding the Italian ryegrass. The same rate was also applied to all perennial species on October 3, 1983. Spring fertilizer was applied as 46-0-0 to all entries on March 8, 1984 (Table 3).

Table 3. Spring 1983 fertilizer application and rate to 6 grass species.

Species	Rate ¹		Nitrogen (a.u.)	
	(lb/a)	(kg/ha)	(lb/a)	(kg/ha)
Perennial ryegrass Italian ryegrass and Fine-leaf fescue	233	261	107	120
Tall fescue and Orchardgrass	174	195	80	90
Bluegrass	291	326	134	150

¹46-0-0 for all species applied on March 8, 1984.

Fungicide treatments included Bravo 500^R at 3 pt/a (3.6 l/ha) for tall fescue and orchardgrass on April 13, 1984, and again on May 7, 1984. Tilt^R was applied at 4 fl. oz/a (0.3 l/ha) for rust control on perennial ryegrass and bluegrass. Five applications were made on bluegrass: April 26, May 7 and 29, June 11, and 25, while four were used on perennial ryegrass: May 16, 29, June 11, and 25.

No irrigation was applied in 1984. Soil moisture was adequate to insure physiological maturity in all species.

Plant height was measured at approximately peak anthesis and estimates of lodging were made at maturity for all entries.

Autumn 1984 and Spring 1985 Management

Italian ryegrass varieties were reseeded in the fall of 1984 for evaluation in the second crop year. Establishment methods previously reported for row spacing, seeding rate and plot size were used in 1984. On September 18, 1984, 187 lb/a (210 kg/ha) of 16-20-0 fertilizer was surface applied and incorporated into the seedbed. All varieties were planted on September 24, 1984, and were subsequently treated with the herbicide Nortron^R at 1.0 lb a.i./a (1.1 kg a.i./ha).

Straw was removed following the first seed harvest of perennial species in 1984. Remaining stubble was burned using a propane flamer on August 20 and 21, 1984. An application of 187 lb/a (210 kg/ha) of 16-20-0 fertilizer was broadcast on October 3, 1984. Herbicide sprays for fall and winter weed control were applied on October 16, 1984 (Table 4).

Table 4. Autumn 1984 herbicide application and rate to 5 grass species.

Species	Herbicide	Rate ¹	
		(lb/a)	(kg/ha)
Perennial ryegrass	Atrazine	1.5	1.7
Fine-leaf fescue	Simazine	2.5	2.8
Bluegrass, Orchardgrass & Tall fescue	Diuron	3.0	3.4

¹Applied October 16, 1984

Spring fertilizer was applied as 46-0-0 to all entries on March 8, 1985 (Table 5).

Table 5. Spring 1985 fertilizer application and rate to 6 grass species.

Species	Rate ¹		N (a.u.)	
	(lb/a)	(kg/ha)	(lb/a)	(kg/ha)
Perennial ryegrass Italian ryegrass and Fine-leaf fescue	239	268	110	123
Tall fescue and Orchardgrass	174	195	80	90
Bluegrass	304	341	140	157

¹46-0-0 for all species applied on March 8, 1985.

Fungicide treatments included Bravo 500^R at 3 pt/a (3.6 l/ha) for tall fescue and orchardgrass on April 29, 1985. Tilt^R was applied at 4 fl. oz/a (0.3 l/ha) for rust control on perennial ryegrass and bluegrass. Four applications were made on bluegrass: May 6, 17, and 31, and June 14; while three were used on perennial ryegrass: May 17, 31, and June 14.

All perennial varieties were irrigated on May 16, 1985 with 2 in (51 mm) of water to insure adequate soil moisture for physiological maturity in all species. Italian ryegrass varieties received 0.75 in

(19 mm) on May 9 and May 16, 1985, for a total of 1.5 in (38 mm).

Second-year data collected included maturity estimates based on heading and anthesis dates and additional information on lodging tendency. All varieties were checked on a weekly schedule from April 4, 1985, until maturity. Dates were recorded when approximately 50 percent of the stand had headed (heading date) and when exerted anthers were first apparent (anthesis date). The date lodging first became apparent within each plot was recorded plus an estimate of the area affected (area lodged) and the severity of lodging on a scale of 1 - 5. All plant height measurements were recorded on June 20, 1985.

Harvest

The entire plot area was harvested at maturity using a small plot harvester incorporating a sickle bar cutter and draper designed for efficient bagging of harvested plant biomass. Cutting heights were 1.5-2 in (4.9-6.6 cm) for perennial ryegrass, fine fescue and bluegrass; 5-6 in (16-20 cm) for tall fescue and orchardgrass. The bagged material was air-dried, threshed, cleaned and weighed. A 3- to 5-gram seed sample of each plot was taken with a seed divider to determine the 1000 seed weight. Harvest index was calculated for each entry:

$$\text{Harvest Index} = \frac{\text{Clean seed weight}}{\text{Total dry weight harvested}} \times 100$$

Data from each species were subjected to a randomized block analysis of variance and least significant difference test to determine differences among variety means.

RESULTS AND DISCUSSION

The planting method produced a good stand in all species. Two perennial ryegrass varieties, Trani, and to a lesser extent, Sisú, were

extremely attractive to mice. They were selectively grazed in each replication and suffered reduced yield because of mouse damage.

The Italian ryegrass variety, SB-S, shed pollen on April 23, 1984, but was severely infected by rust and set very little seed. SB-S did exert a second flush of seed heads which shed pollen about June 15, 1984, but also set very little seed. Harvest dates and other observations are presented for each species in Tables 6-17.

1984 Harvest

Mean plot yields for perennial ryegrass, bluegrass and annual ryegrass are equal to five-year mean commercial seed yields for Oregon. Plot yield of fine-leaf fescue, orchardgrass, and tall fescue was approximately double the five-year mean seed yield for the state.

1985 Harvest

The mean monthly temperatures from December-March in this production year were much below normal (Table 18). This may have contributed to stand reduction in certain perennial ryegrass and fine fescue varieties.

Rainfall during the spring growing season was below normal. Irrigation was applied once in May to replenish the soil moisture.

In general, lodging was less severe in 1985, as plants were shorter. Seed harvest in 1985 was 10-14 days earlier than in 1984 and average seed yield was higher in 1985 than in 1984.

Seed yields from these research plots should be compared with known standard varieties rather than using the absolute figures. Plot harvest methods reduced shattering and combine losses that normally occur in commercial production. Mean plot yield in 1985 for perennial and annual ryegrass was 20-30 percent above the five-year mean commercial seed

yields for Oregon. Plot yield of orchardgrass and Kentucky bluegrass was more than 50 percent greater and the fine-leaf fescue and tall fescue more than two and one half times the five-year mean seed yield for the state. These higher yields were the result of favorable conditions at maturity and adequate soil moisture provided by the May irrigation.

REFERENCES

Redmond, K.T., B.T. Kropp, and A.H. Murphy. 1984a. Local climatological data for Corvallis, Oregon. 1983 Summary with normals, means, extremes, monthly time series. Off. of the State Climatologist, Climatic Research Institute, and the Agric. Expt. Sta., Oregon State Univ., Corvallis. Rept. SCP-2. 22 pp.

Redmond, K.T. 1985. Local climatological data for Corvallis, Oregon. 1984b. Summary with normals, means, extremes, monthly time series. Off. of the State Climatologist, Climatic Research Institute, and the Agric. Expt. Sta., Oregon State Univ., Corvallis. Spec. Rept. 744. 22 pp.

Youngberg, H.W., W.C. Young III, and D.O. Chilcote. 1985. Oregon forage and turf grass variety seed yield trial, 1982-83. Spec. Rept. 730. Agric. Expt. Sta., Oregon State Univ., Corvallis.

1 Table 6. Harvest date, seed yield, thousand seed weight and harvest
2 index of perennial ryegrass, 1984 and 1985

3 Variety Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
			---- (lb/a) ----			--- (g) ---			
5 Prelude	13 Jul	01 Jul	1528	1157	1342	1.76	1.80	14.5	15.5
6 Linn	11 Jul	28 Jun	1173	1493	1333	2.07	2.33	13.6	19.3
Palmer	13 Jul	01 Jul	1279	1004	1141	1.73	1.64	14.0	12.0
7 2EE	06 Jul	28 Jun	993	1281	1137	1.56	1.80	14.9	17.9
SB-F	23 Jul	08 Jul	799	1451	1125	2.55	2.68	10.5	14.5
8 Agree	13 Jul	01 Jul	1126	1072	1099	1.77	1.87	14.5	17.0
Pronto	11 Jul	28 Jun	717	1322	1020	1.70	1.89	10.7	14.7
9 Pennfine	13 Jul	28 Jun	821	1206	1014	1.76	1.87	10.5	14.9
Lp 792	17 Jul	08 Jul	1193	716	954	1.64	1.55	19.1	15.2
10 Sisu	19 Jul	08 Jul	711	1052	881	1.67	1.66	10.5	14.9
Vejo	13 Jul	01 Jul	638	423	530	1.88	1.92	9.1	6.2
11 Trani	27 Jul	16 Jul	306	429	367	1.42	1.55	4.9	6.6
12 Mean			940	1050					
LSD .05	--	--	341	260	301	0.11	0.08	4.1	2.7

14 Table 7. Plant height, lodging score, heading date, and anthesis date of
15 perennial ryegrass

17 Variety Name	Plant Height		1985		1984 Lodging Score	1985		
	1984	1985	Heading Date	Anthesis Date		First Lodging Date	Area Severity	
	---(cm)---					(%)		
19 Prelude	92	64	15 May	29 May	4.5	29 May	48	2.8
20 Linn	91	66	08 May	21 May	5.0	20 May	20	2.5
Palmer	91	67	15 May	29 May	4.5	29 May	45	2.8
21 2EE	82	56	03 May	21 May	5.0	19 May	30	2.5
SB-F	93	74	29 May	19 Jun	3.3	09 Jun	28	2.3
22 Agree	86	64	21 May	29 May	3.3	16 Jun	30	2.8
Pronto	93	64	08 May	21 May	5.0	20 May	38	2.5
23 Pennfine	93	65	11 May	23 May	4.8	20 May	33	2.3
Lp 792	89	55	23 May	29 May	4.3	19 Jun	53	2.8
24 Sisu	94	69	23 May	16 Jun	3.3	16 Jun	35	2.5
Vejo	97	68	11 May	25 May	5.0	03 Jun	40	2.8
25 Trani	71	60	12 Jun	24 Jun	3.3	19 Jun	18	2.3
26 LSD .05	9	4	4 (days)	6 (days)	0.6	7 (days)	18	NS

1 Table 8. Harvest date, seed yield, thousand seed weight and harvest
2 index of fine fescue, 1984 and 1985

3 Variety Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
			---- (lb/a) ----			--- (g) ---			
5 ISI 829	06 Jul	25 Jun	1660	2504	2082	1.11	1.32	21.0	20.9
6 Eboli ¹	28 Jun	21 Jun	1604	1511	1558	0.94	1.23	16.2	22.2
Pernilje ²	09 Jul	28 Jun	1298	1802	1550	0.95	1.03	20.8	16.4
7 Z 7492 ¹	06 Jul	25 Jun	1429	1227	1328	0.87	0.95	17.3	20.6
Tatjana ¹	28 Jun	21 Jun	1513	1121	1317	0.94	1.13	16.9	21.1
8 Cascade ¹	06 Jul	25 Jun	1117	1495	1306	0.93	1.09	14.9	17.7
Premiere	09 Jul	29 Jun	1248	1293	1271	0.95	1.08	16.3	19.3
9 ZW 42-100	09 Jul	28 Jun	1132	1395	1264	0.84	1.08	19.7	16.7
Pennlawn ²	07 Jul	25 Jun	1005	1211	1108	0.85	0.98	16.1	18.1
10 ASHF - 82	02 Jul	21 Jun	1189	424	806	0.79	1.06	15.5	26.9
11 Mean			1320	1398					
LSD .05	--	--	256	218	237	0.06	0.06	3.5	2.9

12 ¹Chewings; ²red creeping

14 Table 9. Plant height, lodging score, heading date, and anthesis date
15 of fine fescue

17 Variety Name	Plant Height		1985		1984	1985		
	1984	1985	Heading Date	Anthesis Date	Lodging Score	First Lodging		
	---(cm)---					---		
						Date	Area	Severity

19 ISI 829	81	93	17 Apr	21 May	3.5	29 May	28	2.5
20 Eboli ¹	83	83	24 Apr	21 May	5.0	31 May	25	2.0
Pernilje ²	81	82	01 May	23 May	4.3	29 May	72	2.5
21 Z 7492 ¹	83	72	01 May	21 May	5.0	29 May	55	2.5
Tatjana ¹	80	74	17 Apr	21 May	5.0	29 May	63	2.8
22 Cascade ¹	89	83	01 May	21 May	5.0	29 May	50	3.0
Premiere	84	82	01 May	25 May	4.5	02 Jun	25	2.0
23 ZW 42-100	76	71	01 May	29 May	5.0	02 Jun	28	2.0
Pennlawn ²	83	77	01 May	27 May	5.0	29 May	60	3.0
24 ASHF - 82	79	68	01 May	21 May	5.0	12 Jun	50	2.5
25 LSD .05	5	8	--	3	0.4	3	18	0.5
26				(days)		(days)		

27 ¹Chewings; ²red creeping

1 Table 10. Harvest date, seed yield, thousand seed weight and harvest
2 index of Kentucky Bluegrass, 1984 and 1985

3 Variety 4 Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
			---- (lb/a) ----			--- (g) ---			
5 PP-02	17 Jul	02 Jul	1073	2134	1603	0.42	0.44	20.8	29.3
6 ZW 42-96	17 Jul	02 Jul	990	2194	1592	0.43	0.36	16.6	27.8
7 PP-01	17 Jul	02 Jul	1054	2125	1590	0.39	0.35	18.8	27.8
8 Newport	17 Jul	02 Jul	720	2235	1477	0.38	0.40	18.5	23.4
9 Conni	17 Jul	02 Jul	781	1575	1178	0.39	0.41	19.9	39.8
Annika	17 Jul	02 Jul	643	1614	1128	0.36	0.39	18.9	35.0
Cynthia	17 Jul	02 Jul	578	1608	1093	0.37	0.38	16.4	33.5
Arnolda	17 Jul	02 Jul	583	1524	1054	0.40	0.42	19.0	29.3
Charlotte	17 Jul	02 Jul	361	1446	903	0.42	0.46	10.4	24.5
10 Mean			754	1828					
11 LSD .05	--	--	215	384	299	0.04	0.02	3.9	NS

15 Table 11. Plant height, lodging score, heading date, and anthesis date
16 of Kentucky Bluegrass

18 Variety 19 Name	Plant Height		1985		1984	1985		
	1984	1985	Heading Date	Anthesis Date	Lodging Score	First Lodging		
	---(cm)---					Date	Area	Severity
20 PP-02	68	51	15 May	21 May	2.3	26 Jun	0	1.0
21 ZW 42-96	72	61	01 May	21 May	2.8	23 Jun	5	1.3
22 PP-01	69	61	15 May	21 May	2.8	24 Jun	3	1.3
Newport	82	67	01 May	21 May	2.8	23 Jun	8	1.8
23 Conni	42	38	15 May	21 May	2.0	26 Jun	0	1.0
Annika	65	54	08 May	21 May	3.5	12 Jun	5	2.8
Cynthia	66	55	06 May	21 May	3.3	12 Jun	0	2.3
24 Arnolda	49	47	06 May	21 May	1.3	24 Jun	8	1.3
25 Charlotte	59	50	08 May	21 May	3.5	12 Jun	0	3.0
26 LSD .05	6	4	2	--	1.0	6	1	1.0
			(days)			(days)		

1 Table 12. Harvest date, seed yield, thousand seed weight and harvest
2 index of orchardgrass

3 Variety Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
4			---- (lb/a) ----			--- (g) ---			
5 Hallmark	06 Jul	26 Jun	1947	2133	2040	0.99	1.22	18.7	17.6
6 SB-SYN-2	06 Jul	26 Jun	1868	2145	2007	0.95	1.21	18.3	19.5
Paiute	06 Jul	26 Jun	1876	1806	1841	0.99	1.19	17.7	15.6
7 Jesper	09 Jul	28 Jun	1588	1988	1788	0.96	1.16	19.7	16.3
Potomac	06 Jul	26 Jun	1765	1803	1784	0.96	1.15	17.1	15.9
8 Sparta	09 Jul	28 Jun	1799	1685	1742	0.89	1.08	24.0	16.8
DG-04	11 Jul	01 Jul	1296	1141	1218	0.96	1.18	16.0	11.6
9 DG-02	11 Jul	01 Jul	1125	1092	1108	1.01	1.15	14.9	11.3
Cesarina	13 Jul	01 Jul	811	755	783	0.81	0.97	14.4	9.8
10 Marta	13 Jul	01 Jul	869	655	762	0.83	1.00	11.5	6.7
DG-03	17 Jul	16 Jul	585	290	437	0.91	1.18	13.6	5.4
11 DG-01	17 Jul	16 Jul	522	213	368	0.81	1.21	9.5	3.2
12 Mean			1338	1309					
LSD .05	--	--	262	216	239	0.05	0.13	3.0	1.8

13
14 Table 13. Plant height, lodging score, heading date, and anthesis date
15 of orchardgrass

16 Variety Name	1985		1984 Lodging Score	1985		1985		
	Plant Height			Heading	Anthesis	First Lodging		
17	1984	1985	Date	Date	Date	Area	Severity	
18	---(cm)---				(%)			
19 Hallmark	141	131	01 May	15 May	1.5	21 Jun	68	1.8
20 SB-SYN-2	141	134	01 May	15 May	2.8	21 Jun	63	1.8
Paiute	140	138	01 May	15 May	1.5	26 Jun	0	1.0
21 Jesper	139	143	08 May	23 May	2.5	26 Jun	0	1.0
Potomac	139	133	01 May	15 May	1.8	23 Jun	35	1.5
22 Sparta	125	131	15 May	27 May	2.5	26 Jun	0	1.0
DG-04	149	141	15 May	29 May	1.0	26 Jun	5	1.3
23 DG-02	149	139	15 May	27 May	1.3	26 Jun	40	1.8
Cesarina	124	109	08 May	23 May	2.8	23 Jun	50	1.8
24 Marta	129	117	08 May	25 May	2.5	24 Jun	58	2.0
DG-03	124	122	18 May	07 Jun	1.3	26 Jun	10	1.3
25 DG-01	128	130	21 May	03 Jun	1.3	24 Jun	30	1.5
26 LSD .05	8	7	2	7	0.7	4	40	0.5
27			(days)	(days)	(days)			

1 Table 14. Harvest date, seed yield, thousand seed weight and harvest
2 index of tall fescue, 1984 and 1985

3 Variety Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
			---- (lb/a) ----			--- (g) ---			
5 ASTF-82 SP	06 Jul	26 Jun	2118	2467	2292	2.06	1.99	17.4	19.5
6 Fawn	28 Jun	21 Jun	1754	2499	2127	2.32	2.43	14.2	18.2
FA-01	09 Jul	28 Jun	1609	2426	2018	2.15	2.05	12.7	18.4
7 ASTF-82 F	09 Jul	26 Jun	1547	2196	1871	2.10	1.97	14.3	19.0
Rebel	06 Jul	26 Jun	1644	1916	1780	2.10	1.90	16.0	17.8
8 Sibilla	09 Jul	28 Jun	1264	1767	1516	1.94	1.83	12.2	17.2
9 Mean			1656	2212					
LSD .05	--	--	NS	NS	NS	0.09	0.08	2.5	NS
10 LSD .10	--	--							

11
12 Table 15. Plant height, lodging score, heading date, and anthesis date
13 of tall fescue

15 Variety Name	Plant Height		1985		1984	1985		
	1984	1985	Heading Date	Anthesis Date	Lodging Score	First Lodging		
	---(cm)---					Date	Area	Severity
						(%)		
18 ASTF-82 SP	140	123	11 Jun	29 May	4.0	05 Jun	65	1.8
Fawn	141	126	24 May	21 May	4.0	05 Jun	63	2.3
19 FA-01	138	121	12 Jun	29 May	4.0	05 Jun	68	1.8
ASTF-82 F	141	127	04 Jun	29 May	4.0	05 Jun	68	1.8
20 Rebel	136	122	12 Jun	29 May	4.0	05 Jun	73	2.0
Sibilla	137	124	07 Jun	29 May	3.5	05 Jun	60	2.3
21 LSD .05	NS	NS	6	--	0.4	--	NS	NS
22			(days)					

1 Table 16. Harvest date, seed yield, thousand seed weight, and harvest
 2 index of annual ryegrass, 1984 and 1985

3 Variety Name	Harv. Date		Seed Yield			1000 Seed Wt.		Harv. Index	
	1984	1985	1984	1985	Mean	1984	1985	1984	1985
			---- (lb/a) ----			--- (g) ---			
5 Marshall	02 Jul	26 Jun	1899	3371	2635	2.70	2.31	18.1	20.2
WSG TB-1A	09 Jul	28 Jun	1751	2357	2054	3.64	2.80	14.6	14.8
6 Aubade	09 Jul	28 Jun	1180	2466	1823	3.31	2.63	12.0	14.3
Westerwold	09 Jul	26 Jun	1290	2081	1685	3.53	3.14	11.7	15.1
7 SB-A	09 Jul	28 Jun	1460	1273	1366	3.61	2.86	13.7	11.5
SB-S	02 Jul	17 Jun	308	925	616	2.43	2.56	5.2	14.6
8 Sikem	--	28 Jun	--	2975	--	--	2.23	--	19.3
9 Bambi	--	28 Jun	--	2383	--	--	3.23	--	17.4
Wencke	--	26 Jun	--	2216	--	--	2.18	--	16.4
10 Catalpa	--	28 Jun	--	2130	--	--	3.21	--	15.3
Kitty	--	26 Jun	--	1731	--	--	2.06	--	14.3
11 Roberta	--	26 Jun	--	1470	--	--	2.77	--	9.5
12 Mean			1315	2115					
LSD .05	--	--	505	544	--	0.34	0.32	3.8	3.0

14 Table 17. Plant height, lodging score, heading date, and anthesis date
 15 of annual ryegrass

17 Variety Name	Plant Height		1985		1984 Lodging Score	1985		
	1984	1985	Heading Date	Anthesis Date		First Lodging		
	----(cm)----					(%)		
19 Marshall	101	114	21 May	05 Jun	4.0	06 May	33	2.3
WSG TB-1A	135	118	21 May	29 May	3.5	05 May	25	2.3
20 Aubade	125	116	21 May	29 May	3.8	24 Apr	28	3.5
Westerwold	124	114	21 May	29 May	3.0	03 May	10	2.3
21 SB-A	125	111	21 May	29 May	3.0	03 May	53	2.3
SB-S	98	92	03 Apr	10 May	4.0	24 Apr	65	3.3
22 Sikem	--	119	21 May	29 May	--	03 May	15	2.5
23 Bambi	--	113	21 May	29 May	--	01 May	10	2.0
Wencke	--	106	21 May	29 May	--	12 May	45	2.5
24 Catalpa	--	110	21 May	29 May	--	03 May	38	2.8
Kitty	--	101	21 May	29 May	--	03 May	40	3.0
25 Roberta	--	106	21 May	29 May	--	01 May	40	2.5
26 LSD .05	NS	9	--	--	0.5	10	18	0.8
						(days)		

Table 18. Monthly mean minimum and maximum temperatures, total precipitation in Corvallis, Oregon (30-yr. averages, 1983, 1984 and 1985)¹

M o n t h	Temperature (° F)								Precipitation (inches)			
	Min				Max							
	30-yr				30-yr				30-yr			
	avg	1983	1984	1985	avg	1983	1984	1985	avg	1983	1984	1985
Jan.	32.9	36.3	35.1	28.1	45.1	48.2	48.7	42.5	7.55	6.91	3.26	0.25
Feb.	35.0	39.2	35.7	31.9	50.4	52.1	52.2	48.5	4.86	10.31	6.92	3.65
Mar.	36.1	42.3	40.3	33.9	53.8	56.3	57.9	53.1	4.63	8.78	3.82	4.94
Apr.	38.8	39.3	38.9	41.9	59.3	61.0	57.2	62.2	2.46	3.01	3.41	1.05
May	43.2	44.6	42.7	42.8	66.2	69.5	63.6	67.3	1.92	1.51	3.67	0.94
June	48.3	48.8	46.6	47.4	72.6	70.0	69.7	75.3	1.20	1.39	4.34	2.22
July	50.6	52.1	51.1	52.3	80.7	73.9	81.1	87.1	0.31	2.55	0.20	0.54
Aug.	50.7	53.5	49.3	50.0	80.5	79.6	81.3	80.9	0.81	2.21	0.00	0.48
Sept.	47.7	47.8	47.4	--	75.5	73.0	74.6	--	1.48	0.53	0.74	--
Oct.	41.7	40.4	41.8	--	64.3	63.4	59.0	--	3.39	1.05	4.65	--
Nov.	37.2	41.9	39.0	--	52.3	53.4	51.2	--	6.17	9.93	13.55	--
Dec.	34.6	31.1	31.9	--	46.5	40.7	43.8	--	7.77	7.35	4.01	--
Year	41.4	43.1	41.6	--	62.3	61.1	61.7	--	42.55	55.53	48.57	--

¹Redmond et al., 1984a; Redmond et al., 1984b