No. 200100242

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Ag Biotech of Oregon, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE [illegible]GHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR [illegible]RTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible] PURPOSE , OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE [illegible] OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT [illegible]BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RYEGRASS, PERENNIAL

'ProGram'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-fifth day of April, in the year two thousand and five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

[illegible]ary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions*

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER: Ag Biotech of Oregon, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME: TPR96A TPR97A

3. VARIETY NAME: ProGram

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*: 1125 S.W. Stopp Place, Corvallis, Oregon 97333

5. TELEPHONE *(include area code)*: (541) 753-4144

6. FAX *(include area code)*:

FOR OFFICIAL USE ONLY

PVPO NUMBER: 200100242

FILING DATE: August 3, 2001

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*: Corporation

8. IF INCORPORATED, GIVE STATE OF INCORPORATION: Oregon

9. DATE OF INCORPORATION: 1988

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

John R. Hardison
Ag Biotech of Oregon, Inc.
1125 SW Stopp Place
Corvallis, OR 97333

FEES RECEIVED

FILING AND EXAMINATION FEES: $ 2450 + 255 DATE 8/3/01 8/13/01

CERTIFICATION FEE: $ 432 DATE 3/25/05

11. TELEPHONE *(Include area code)*: (541) 753-4144

12. FAX *(Include area code)*:

13. E_MAIL:

14. CROP KIND *(Common Name)*: Perennial Ryegrass

15. GENUS AND SPECIES NAME OF CROP: Lolium perenne

16. FAMILY NAME *(Botanical)*: Poaceae

17. IS THE VARIETY A FIRST GENERATION HYBRID? ☐ YES ☒ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

- a. ☒ Exhibit A. Origin and Breeding History of the Variety
- b. ☒ Exhibit B. Statement of Distinctness
- c. ☒ Exhibit C. Objective Description of Variety
- d. ☒ Exhibit D. Additional Description of the Variety *(Optional)*
- e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
- f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
- g. ☒ Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(a) of the Plant Variety Protection Act)*

☐ YES *(If "yes", answer items 20 and 21 below)* ☒ NO *(If "no," go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ YES ☐ NO

21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?

☐ YES ☒ NO

IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?

☐ YES ☒ NO

IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER: John R Hardison

NAME *(Please print or type)*: John R. Hardison

CAPACITY OR TITLE: President

DATE: 8-1-01

SIGNATURE OF OWNER:

NAME *(Please print or type)*:

CAPACITY OR TITLE:

DATE:

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18a. Exhibit A. Origin and Breeding History of the Variety

ProGram perennial ryegrass (Lolium perenne L.) is an advanced generation forty-eight clone synthetic cultivar developed by recurrent selection of progenies obtained by intercrossing several parental lines. Parents include progenies of two stem rust (Puccinia graminis Pers.)resistant perennial ryegrass plants of unknown parentage discovered in 1977 and 1978 alongside a roadway on the Oregon State University agronomy farm. These were intercrossed with plants selected from Dandy perennial ryegrass that furnished the main basis for the Target cultivar. Two hundred seedlings each of Elf, Target, Dandy and Magic were transplanted to a spaced plant nursery. These were tested by natural and artificial inoculation for resistance stem rust and crown rust (P. coronata Corda), and scald (Rhynsposporium orthosporum Caldwell and R. secalis (Oud.) J. J. Davis). Moderately resistant plants including 18 from Target, 9 from Elf, 14 from Dandy and 7 from Magic were intercrossed. Progeny seedlings were tested by natural inoculation for resistance to powdery mildew (Ersiphe graminis DC.), scald, and net blotch (Drechslera dictyoides f. sp. perenne (Drechs.) Schoem.) and tolerance to yellow dwarf virus. Plants selected for disease resistance, turf type, dark green color, and seed yield were intercrossed to produce pre-breeder seed. Breeder seed was produced in 2001.

TPR96A is an experimental designation of ProGram.

ProGram is a stable and uniform variety.

Dr. John R. Hardison is the designated breeder of ProGram.

ProGram was observed in pre Breeder, Breeder, Foundation and Certified seed plantings and was found to be stable and uniform.

JAS 2/23/05 No variants have been observed.

18b. EXHIBIT B Statement of Distinctness

ProGram perennial ryegrass can be distinguished from other cultivars by a combination of characteristics summarized in Tables 1 through 19 and Tables 1A through 21A, listed under Exhibit D.

ProGRam perennial ryegrass is most similar to Target but differs from Target specially by the following characters based on average of two years data, details shown at bottom of the page.

1. ProGram has shorter spikelet length, 12.80 mm, compared to 13.15 mm for Target (Tables 8 and 8A).

2. ProGram has shorter spike length, 16.96 cm, compared to 19.19 cm for Target (Tables 13 and 13A).

3. ProGram has shorter flag leaf, 10.32 cm, compared to 11.36 cm for Target (Tables 14 and 14A).

4. ProGram had heavier weight of 1000 seed, 1777 mg, compared to 1393 mg for Target (Tables 19 and 19A).

5. ProGram was rated darker winter color, Dark Green, compared to Medium Green for Target (Tables 3 and 3A).

Origin of data used in calculating averages for characters

1997 Table	1998 Table	Character		ProGram 1997	ProGram 1998	ProGram Ave.	Target 1997	Target 1998	Target Ave.
8	8A	Spikelet length	MM	12,98	12.63	12.80	13.27	13.04	13.15
13	13A	Spike length	CM	18.54	15.39	16.96	20.07	18.32	19.19
14	14A	Flag leaf sheath	CM	11.05	9.60	10.32	11.92	10.80	11.36
19	19A	Weight 1000 seed	MG	1767	1787	1777	1520	1267	1383
3	3A	Winter green color		Dark	Dark	Dark green	Med.	Med.	Medium green

REPRODUCE LOCALLY. Include form number and date on all reproductions. Form Approved - OMB No. 0581-0055

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY PROGRAM
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(RYEGRASS)

OBJECTIVE DESCRIPTION OF VARIETY
RYEGRASS
(*Lolium* spp.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Ag Biotech of Oregon, Inc.	TPR96A TPR97A	ProGram

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code)	FOR OFFICIAL USE ONLY PVPO NUMBER
1125 S.W. Stopp Place Corvallis, Oregon 97333	200100242

Place the appropriate number that describes the varietal characteristics of this variety in the boxes below. Use leading zeroes when necessary (e.g. 089). Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all pertinent comparative trial and evaluation data. The symbol "◣" indicates decimal.

1. SPECIES:

[2] 1 = *L. multiflorum* (annual or italian: includes Westerwoldicum) 2 = *L. perenne* (perennial) 3 = *L. rigidum* (includes Wimmeria)

4 = Hybrid (of species): _____ 5 = Other (Please specify): _____

2. PLOIDY:

[1] 1 = Diploid 2 = Tetraploid 3 = Other (Please specify): _____

3. DURATION:

[3] 1 = Annual or Biennial 2 = Short lived perennial (3-4 years) 3 = Perennial (more than 4 years)

STANDARD CULTIVARS

1 = GULF	2 = WIMMERIA 62	3 = LINN	4 = PELO
5 = NORLEA	6 = ABERYSTWYTH S-23	7 = MANHATTAN	8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

[5] 1 = Very Early 3 = Early 5 = Medium 7 = Late

[1][3] DAYS EARLIER THAN ... [7] STANDARD CULTIVAR

[1][1] DAYS LATER THAN ... [3] STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above): (CM)

[6][0][0] cm High

[◣] cm Shorter than..... [ ] STANDARD CULTIVAR

[ ] cm Taller than..... [ ] STANDARD CULTIVAR

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6. **PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead. Use standard cultivars from above for comparison):**

[ ][.][ ] Percent Damage of Application Cultivar

[ ][ ][ ] Percent Damage of ..... [ ] STANDARD CULTIVAR

7. **TURF DENSITY (Use standard cultivars from above):**

[ ][ ][ ] Tillers per 100 square cm

[ ][ ][ ] Less tillers per 100 square cm than ... [ ] STANDARD CULTIVAR

[ ][ ][ ] More tillers per 100 square cm than ... [ ] STANDARD CULTIVAR

8. **FLAG LEAF (at full growth, use standard cultivars from above):**

[1][4][1] cm Length (from ligule to tip) [2][9][4] mm Width (at widest point)

[0][3][9] cm Shorter than ..... [3] STANDARD CULTIVAR

[ ][ ][ ] cm Longer than ..... [ ] STANDARD CULTIVAR

[ ][1][0] mm Narrower than ..... [3] STANDARD CULTIVAR

[0][1][9] mm Wider than ..... [8] STANDARD CULTIVAR

1998 data Table 20A

[7] Flag Leaf at Boot Stage

1 = Deflexed
3 = Recurved
5 = Horizontal
7 = Semi-Erect
9 = Erect

9. **LEAVES:**

[3] Vernation: 1 = Leaves rolled in young shoots
3 = Leaves folded in young shoots
2 = Leaves semi-rolled (folded with rolled edges)

[8] % Plants with anthocyanin in lower leaf sheath coleoptile

[2] + Foliage Color: Dark green
1 = Yellow Green
2 = Medium Green
3 = Blue Green

10. **SPIKE:**

[1][8][5] mm Spike length (tip to internode below lowest floret)

[ ][6] mm Shorter than ..... [7] STANDARD CULTIVAR

[ ][ ] mm Longer than ..... [ ] STANDARD CULTIVAR

[1][7][6][7] mg per ~~ten spikes~~ 1000 seed (trimmed to internode below lowest floret)

[1][0][8][0] mg lighter per ~~ten spikes~~ 1000 seed than ..... [3] STANDARD CULTIVAR

[3][8][7] mg heavier per ~~ten spikes~~ 1000 seed than ..... [7] STANDARD CULTIVAR

[9][1] florets per spikelet

PERCENTAGE OF PLANTS WITH:

Rachis: [ ][7][3] % Smooth [ ][2][7] % Rough

Spike Color: [ ][45][5] % Green [ ][5][5] % Purple

Lemma: [ ][ ][ ] % Awned

[ ][ ][ ] mm Awn length [7][5] mm Glume length

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10. **SPIKE** (*Continued*)

[1] 1 = Spikelet length nearly equal to outer glumes
2 = Spikelet length much longer than outer glumes

11. **COLEOPTILE:**

[ ][ ][8] % Plants with anthocyanin in coleoptile

12. **ANTHER COLOR:**

[ ][ ][8] % Plants with white anthers [ ][7][6] % Plants with yellow anthers

[ ][1][6] % Plants with purple anthers

13. **ROOT AND PLANT CHARACTERS:**

[ ][2][6] % Plants with prostrate growth habit

[ ][ ][ ] % Plants with flourescent roots

[ ][7][4] % Plants with upright growth habit

14. **SEED:**

[1][7][6][7] mg per 1000 seeds [ ][4][5] mm Total Length of 10 seeds [1][0][8] mm Total Width of 10 seeds

15. **DISEASE** (0 = Not Tested, 2 = Highly Susceptible, 4 = Moderately Susceptible, 6 = Moderately Resistant, 8 = Highly Resistant)

[ ] Crown Rust (*Puccinia coronata*) [ ] Dollar Spot (*Sclerotinia*)

[ ] Brown Patch (*Rhizoctonia*) [ ] Leaf Spot (*Helminthosporium*)

[ ] Mildew [ ] Snow Mold (*Typhula*)

[ ] Red Thread (*Corticium*) [ ] Other (Please Specify): _____

16. **INSECT** (0 = Not Tested, 2 = Highly Susceptible, 4 = Moderately Susceptible, 6 = Moderately Resistant, 8 = Highly Resistant)

[ ] Please Specify: _____

17. **Give resemblance value in left column and variety code number in right column for variety with which comparison is made (1 = less than, 2 = same as, 3 = more erect, more resistant, denser, more persistent, darker or greater height.):**

Resemblance	Character	Similar Variety	
[2]	Plant Habit (erectness)	[8]	1 = GULF
[ ]	Tillering	[ ]	2 = WIMMERIA 62
[ ]	Winter hardiness	[ ]	3 = LINN
[ ]	High Temperature Stress Resistance	[ ]	4 = PELO
[ ]	Turf Persistence	[ ]	5 = NORLEA
[3]	Plant Color	[8]	6 = ABERYSTWYTH S-23
[ ]	Vertical Seeding Growth Rate	[ ]	7 = MANHATTAN
[ ]	Crown Density	[ ]	8 = PENNFINE
[ ]	Mower Shredding Resistance	[ ]	

18. GIVE AREA OF ADAPTATION AND INTENDED USE: Cool season region worldwide

19. GIVE AREA TEST RESULTS PRESENTED FROM: Oregon

20. COMMENTS:

18d.

Exhibit D Additional Description of the Variety

Botanical measurements that were made on plants of ProGram and other perennial ryegrass cultivars in spaced plant nurseries in 1997 are summarized in Tables 1 through 19. Botanical measurements made in 1998 are summarized in Tables 1A through 21A. Copies of each of these two groups, 1997 and 1998, of tables preceeded by a page listing titles of the tables for each year are included as part of Exhibit D. The 1997 data was used for preparation of Exhibit C unless otherwise indicated as taken from 1998 data. Data from two years measurements are used in preparation of Exhibit B, Statement of Distinctness.

List of tables containing measurements of morphological and other characteristics of perennial ryegrass cultivars obtained during 1997 in plants that had been transplanted in November 1996 in spaced plant plots near Corvallis, Oregon

Table 1. Heading date in 1997

Table 2. Mature growth habit, prostrate vs upright

Table 3. Winter color

Table 4. Percent rough vs smooth rachis

Table 5. Flag leaf height (cm)

Table 6. Flag leaf width (mm)

Table 7. Flag leaf length (cm)

Table 8. Length of spikelet (mm)

Table 9. Outer glume length (mm)

Table 10. Number of florets/spikelet

Table 11. Number of spikelets/spike

Table 12. Plant height (cm)

Table 13. Spike length (cm)

Table 14. Length of flag leaf sheath (cm)

Table 15. Anther color

Table 16. Seed width (mm)

Table 17. Seed length (mm)

Table 18. Coleoptile anthocyanin

Table 19. Weight of 1000 seed

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Table 1. Heading date in 1997 of perennial ryegrass cultivar ProGram (=Code Names TPR96A & TPR97A) compared to other cultivars transplanted November 1996 to spaced plant plots near Corvallis, Oregon.

Pickseed West, Inc. Research Facility Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 4 : HEADING DATE (JULIAN) - WHEN 3 HEADS EMERGED
Error Mean Square = 2.923
Error Degrees of Freedom - 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 2.777 at alpha = 0.050

Original Order				Ranked Order				LINE	
Mean	1 =	126.3	OP	Mean	15 =	150.6	A	LORETTA NOVA	May 31
Mean	2 =	133.9	DEFG	Mean	12 =	149.7	A	ELKA	May 30
Mean	3 =	132.1	EFGHI	Mean	20 =	144.3	B	MANHATTAN	May 24
Mean	4 =	135.5	CD	Mean	16 =	136.9	C	LOWGROW	May 17
Mean	5 =	127.4	NOP	Mean	4 =	135.5	CD	BRIGHTSTAR	May 16
Mean	6 =	127.2	NOP	Mean	27 =	134.6	CDE	PICK LP BE-93	May 15
Mean	7 =	128.8	LMNO	Mean	24 =	134.2	CDEF	PANTHER	
Mean	8 =	129.3	JKLMN	Mean	19 =	134.1	CDEF		
Mean	9 =	132.1	EFGHIJ	Mean	2 =	133.9	DEFG	ADVANTAGE	May 14
Mean	10 =	128.9	KLMNO	Mean	11 =	133.1	DEFGH	ELF	
Mean	11 =	133.1	DEFGH	Mean	34 =	133.0	DEFGHI	RIVIERA II	
"	12 =	149.7	A	Mean	33 =	132.8	DEFGHI	PRELUDE II	
"	13 =	126.8	NOP	Mean	38 =	132.7	DEFGHI		May 13
Mean	14 =	119.7	Q	Mean	30 =	132.7	DEFGHI		
Mean	15 =	150.6	A	Mean	42 =	132.4	EFGHI	TPR 96 P	
Mean	16 =	136.9	C	Mean	3 =	132.1	EFGHI	BLAZER III	
Mean	17 =	127.0	NOP	Mean	9 =	132.1	EFGHIJ	DERBY SUPREME	
Mean	18 =	131.2	GHIJKLM	Mean	22 =	131.8	EFGHIJ	MORNING STAR	May 12
Mean	19 =	134.1	CDEF	Mean	32 =	131.6	FGHIJK	PINNACLE	
Mean	20 =	144.3	B	Mean	26 =	131.5	FGHIJKL	SATURN	
Mean	21 =	130.3	IJKLM	Mean	37 =	131.2	GHIJKLM	TARGET	
Mean	22 =	131.8	EFGHIJ	Mean	18 =	131.2	GHIJKLM	MAGIC	
Mean	23 =	130.4	HIJKLM	Mean	41 =	131.2	GHIJKLM	TPR 96C	
Mean	24 =	134.2	CDEF	Mean	39 =	131.0	HIJKLM	TPR 96A = ProGram	May 11
Mean	25 =	125.8	P	Mean	40 =	130.9	HIJKLM	TPR 96 B	
Mean	26 =	131.5	FGHIJKL	Mean	29 =	130.8	HIJKLM	PICK LP 102-92	
Mean	27 =	134.6	CDE	Mean	23 =	130.4	HIJKLM	PALMER II	
Mean	28 =	129.3	JKLMN	Mean	21 =	130.3	IJKLM	MANHATTAN II	May 10
Mean	29 =	130.8	HIJKLM	Mean	8 =	129.3	JKLMN	DELAWARE DWARF	
Mean	30 =	132.7	DEFGHI	Mean	28 =	129.3	JKLMN		
Mean	31 =	129.0	KLMNO	Mean	36 =	129.0	KLMNO	SHERWOOD	
Mean	32 =	131.6	FGHIJK	Mean	31 =	129.0	KLMNO	HEADSTART	May 9
Mean	33 =	132.8	DEFGHI	Mean	10 =	128.9	KLMNO	EDGE	
Mean	34 =	133.0	DEFGHI	Mean	7 =	128.8	LMNO	CUTTER	
Mean	35 =	128.7	MNO	Mean	35 =	128.7	MNO		
Mean	36 =	129.0	KLMNO	Mean	5 =	127.4	NOP	CALYPSO II	
Mean	37 =	131.2	GHIJKLM	Mean	6 =	127.2	NOP	CITATION II	
"	38 =	132.7	DEFGHI	Mean	17 =	127.0	NOP	LYNX	May 7
Mean	39 =	131.0	HIJKLM	Mean	13 =	126.8	NOP	EXPRESS	
Mean	40 =	130.9	HIJKLM	Mean	1 =	126.3	OP	ACHIEVER	
Mean	41 =	131.2	GHIJKLM	Mean	25 =	125.8	P	PENNFINE	May 6
Mean	42 =	132.4	EFGHI	Mean	14 =	119.7	Q	LINN	April 30

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Table 2. Mature growth habit in 1997 of perennial ryegrass cv. PROGram (=Code Names TPR96A & TPR97A) compared with other cultivars transplanted November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 5: Mature growth habit, 1=prostrate, 9=upright
Error Mean Square = 0.7630
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least significant Difference Test
LSD value = 1.419 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	6.333	DEFG	Mean	12 =	8.667	A	ELKA
Mean	2 =	6.333	DEFG	Mean	27 =	8.333	AB	PICK LP EE-93
Mean	3 =	6.667	CDEFG	Mean	15 =	8.000	ABC	LORETTA NOVA
Mean	4 =	7.000	BCDEF	Mean	14 =	8.000	ABC	LINN
Mean	5 =	6.667	CDEFG	Mean	19 =	8.000	ABC	
Mean	6 =	6.000	EFG	Mean	20 =	8.000	ABC	MANHATTAN
Mean	7 =	6.333	DEFG	Mean	41 =	7.667	ABCD	TPR 96 C
Mean	8 =	5.667	FG	Mean	33 =	7.333	ABCDE	PRELUDE II
Mean	9 =	5.667	FG	Mean	29 =	7.333	ABCDE	PICK LP 102-92
Mean	10 =	5.333	G	Mean	30 =	7.333	ABCDE	
Mean	11 =	6.333	DEFG	Mean	28 =	7.000	BCDEF	
Mean	12 =	8.667	A	Mean	42 =	7.000	BCDEF	TPR 96 P
Mean	13 =	6.333	DEFG	Mean	24 =	7.000	BCDEF	PANTHER
"	14 =	8.000	ABC	Mean	37 =	7.000	BCDEF	TARGET
"	15 =	8.000	ABC	Mean	4 =	7.000	BCDEF	BRIGHTSTAR
Mean	16 =	7.000	BCDEF	Mean	16 =	7.000	BCDEF	LOWGROW
Mean	17 =	6.667	CDEFG	Mean	34 =	7.000	BCDEF	RIVIERA II
Mean	18 =	6.333	DEFG	Mean	5 =	6.667	CDEFG	CALYPSO II
Mean	19 =	8.000	ABC	Mean	17 =	6.667	CDEFG	LYNX
Mean	20 =	8.000	ABC	Mean	35 =	6.667	CDEFG	
Mean	21 =	6.000	EFG	Mean	26 =	6.667	CDEFG	SATURN
Mean	22 =	6.000	EFG	Mean	3 =	6.667	CDEFG	BLAZER III
Mean	23 =	6.333	DEFG	Mean	39 =	6.667	CDEFG	TPR 96 A = ProGram — 26% prostrate, 74% upright
Mean	24 =	7.000	BCDEF	Mean	38 =	6.667	CDEFG	
Mean	25 =	6.000	EFG	Mean	31 =	6.333	DEFG	HEADSTART
Mean	26 =	6.667	CDEFG	Mean	2 =	6.333	DEFG	ADVANTAGE
Mean	27 =	8.333	AB	Mean	32 =	6.333	DEFG	PINNACLE
Mean	28 =	7.000	BCDEF	Mean	1 =	6.333	DEFG	ACHIEVER
Mean	29 =	7.333	ABCDE	Mean	18 =	6.333	DEFG	MAGIC
Mean	30 =	7.333	ABCDE	Mean	13 =	6.333	DEFG	EXPRESS
Mean	31 =	6.333	DEFG	Mean	11 =	6.333	DEFG	ELF
Mean	32 =	6.333	DEFG	Mean	7 =	6.333	DEFG	CUTTER
Mean	33 =	7.333	ABCDE	Mean	23 =	6.333	DEFG	PALMER II
Mean	34 =	7.000	BCDEF	Mean	25 =	6.000	EFG	PENNFINE
Mean	35 =	6.667	CDEFG	Mean	6 =	6.000	EFG	CITATION II
Mean	36 =	5.667	FG	Mean	22 =	6.000	EFG	MORNING STAR
Mean	37 =	7.000	BCDEF	Mean	21 =	6.000	EFG	MANHATTAN II
Mean	38 =	6.667	CDEFG	Mean	9 =	5.667	FG	DERBY SUPREME
"	39 =	6.667	CDEFG	Mean	8 =	5.667	FG	DELAWARE DWARF
"	40 =	5.667	FG	Mean	36 =	5.667	FG	SHERWOOD
Mean	41 =	7.667	ABCD	Mean	40 =	5.667	FG	TPR 96 B
Mean	42 =	7.000	BCDEF	Mean	10 =	5.333	G	EDGE

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Table 3. Winter color in 1997 of perennial ryegrass cultivar ProGram (=Code Names TPR96A &TPR97A)compared with other cultivars transplanted November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 6: WINTER COLOR, 4-16-97, 1=LT GR, 2=MED GR, 3=DK GR, 4=BLUE GREEN
Error Mean Square = 0.2070
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 0.7390 at alpha = 0.050

Original Order				Ranked Order				LINE	COLOR
Mean	1 =	2.333	DEF	Mean	19 =	4.000	A		
Mean	2 =	3.333	ABC	Mean	28 =	3.667	AB		
Mean	3 =	2.333	DEF	Mean	11 =	3.333	ABC	ELF ------	DK GREEN
Mean	4 =	3.333	ABC	Mean	23 =	3.333	ABC	PALMER II	
Mean	5 =	2.000	EF	Mean	40 =	3.333	ABC	TPR 96 B ----	DK GREEN
Mean	6 =	2.333	DEF	Mean	29 =	3.333	ABC	PICK LP 102-92	
Mean	7 =	2.667	CDE	Mean	2 =	3.333	ABC	ADVANTAGE	
Mean	8 =	2.333	DEF	Mean	17 =	3.333	ABC	LYNX	
Mean	9 =	3.000	BCD	Mean	4 =	3.333	ABC	BRIGHTSTAR	
Mean	10 =	2.333	DEF	Mean	38 =	3.333	ABC		
Mean	11 =	3.333	ABC	Mean	27 =	3.000	BCD	PICK LP BB-93	
Mean	12 =	1.000	G	Mean	31 =	3.000	BCD	HEADSTART	
Mean	13 =	2.333	DEF	Mean	42 =	3.000	BCD	TPR 96 P ----	DK GREEN
M	14 =	1.000	G	Mean	35 =	3.000	BCD		
Me	15 =	2.333	DEF	Mean	41 =	3.000	BCD	TPR 96 C ----	DK GREEN
Mean	16 =	2.333	DEF	Mean	24 =	3.000	BCD	PANTHER	
Mean	17 =	3.333	ABC	Mean	9 =	3.000	BCD	DERBY SUPREME	
Mean	18 =	1.667	FG	Mean	30 =	3.000	BCD		
Mean	19 =	4.000	A	Mean	39 =	3.000	BCD	TPR 96 A ---- ProGram ------	DK GREEN
Mean	20 =	1.667	FG	Mean	34 =	2.667	CDE	RIVIERA II	
Mean	21 =	2.333	DEF	Mean	7 =	2.667	CDE	CUTTER	
Mean	22 =	2.333	DEF	Mean	16 =	2.333	DEF	LONGROW	
Mean	23 =	3.333	ABC	Mean	22 =	2.333	DEF	MORNING STAR	
Mean	24 =	3.000	BCD	Mean	32 =	2.333	DEF	PINNACLE	
Mean	25 =	1.667	FG	Mean	1 =	2.333	DEF	ACHIEVER	
Mean	26 =	2.333	DEF	Mean	3 =	2.333	DEF	BLAZER III	
Mean	27 =	3.000	BCD	Mean	26 =	2.333	DEF	SATURN	
Mean	28 =	3.667	AB	Mean	36 =	2.333	DEF	SHERWOOD	
Mean	29 =	3.333	ABC	Mean	6 =	2.333	DEF	CITATION II	
Mean	30 =	3.000	BCD	Mean	15 =	2.333	DEF	LORETTA NOVA	
Mean	31 =	3.000	BCD	Mean	8 =	2.333	DEF	DELAWARE DWARF	
Mean	32 =	2.333	DEF	Mean	21 =	2.333	DEF	MANHATTAN II	
Mean	33 =	2.000	EF	Mean	10 =	2.333	DEF	EDGE	
Mean	34 =	2.667	CDE	Mean	13 =	2.333	DEF	EXPRESS	
Mean	35 =	3.000	BCD	Mean	37 =	2.000	EF	TARGET ----------	LT GREEN
Mean	36 =	2.333	DEF	Mean	5 =	2.000	EF	CALYPSO II	
Mean	37 =	2.000	EF	Mean	33 =	2.000	EF	PRELUDE II	
Mean	38 =	3.333	ABC	Mean	25 =	1.667	FG	PENNFINE ----------	LT GREEN
Mean	39 =	3.000	BCD	Mean	18 =	1.667	FG	MAGIC ----------	LT GREEN
M	40 =	3.333	ABC	Mean	20 =	1.667	FG	MANHATTAN ----------	LT GREEN
Mean	41 =	3.000	BCD	Mean	12 =	1.000	G	ELKA	
Mean	42 =	3.000	BCD	Mean	14 =	1.000	G	LINN ----------	LT GREEN

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Table 4. Percent rough vs smooth rachis in perennial ryegrass cv. ProGram (=Code Names TPR96A & TPR97A) in 1997 compared with other cultivars transplanted november 1996 to spaced plant plots near Corvallis, Oregon.

Ref. pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD separation
Variable 7: percent rough vs smooth rachis S=1, R=2
Error MeanSquare = 0.01600
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 0.2055 at alpha = 0.050

Original Order				Ranked Order				LINE	PERCENT Smooth	PERCENT Rough
Mean	1 =	1.250	EFGHI	Mean	16 =	1.617	A	LONGROW		
Mean	2 =	1.283	DEFGHI	Mean	25 =	1.567	AB	PENNFINE		
Mean	3 =	1.400	BCDEF	Mean	20 =	1.500	ABC	MANHATTAN		
Mean	4 =	1.433	ABCDE	Mean	22 =	1.483	ABCD	MORNING STAR		
Mean	5 =	1.350	CDEFGH	Mean	24 =	1.433	ABCDE	PANTHER		
Mean	6 =	1.217	FGHI	Mean	37 =	1.433	ABCDE	TARGET	43	57
Mean	7 =	1.217	FGHI	Mean	18 =	1.433	ABCDE	MAGIC	43	57
Mean	8 =	1.350	CDEFGH	Mean	4 =	1.433	ABCDE	BRIGHTSTAR		
Mean	9 =	1.233	EFGHI	Mean	3 =	1.400	BCDEF	BLAZER III		
Mean	10 =	1.317	CDEFGHI	Mean	34 =	1.383	BCDEFG	RIVIERA II		
Mean	11 =	1.317	CDEFGHI	Mean	5 =	1.350	CDEFGH	CALYPSO II		
Mean	12 =	1.300	CDEFGHI	Mean	8 =	1.350	CDEFGH	DELAWARE DWF		
Mean	13 =	1.233	EFGHI	Mean	31 =	1.333	CDEFGH	HEADSTART		
Mean	14 =	1.233	EFGHI	Mean	11 =	1.317	CDEFGHI	ELF		
Mean	15 =	1.267	EFGHI	Mean	29 =	1.317	CDEFGHI	LP 102-92		
Mean	16 =	1.617	A	Mean	10 =	1.317	CDEFGHI	EDGE		
Mean	17 =	1.300	CDEFGHI	Mean	17 =	1.300	CDEFGHI	LYNX		
Mean	18 =	1.433	ABCDE	Mean	26 =	1.300	CDEFGHI	SATURN		
Mean	19 =	1.150	HI	Mean	35 =	1.300	CDEFGHI			
Mean	20 =	1.500	ABC	Mean	12 =	1.300	CDEFGHI	ELKA		
Mean	21 =	1.233	EFGHI	Mean	36 =	1.300	CDEFGHI	SHERWOOD		
Mean	22 =	1.483	ABCD	Mean	27 =	1.283	DEFGHI	LP EE-93		
Mean	23 =	1.217	FGHI	Mean	2 =	1.283	DEFGHI	ADVANTAGE		
Mean	24 =	1.433	ABCDE	Mean	38 =	1.283	DEFGHI			
Mean	25 =	1.567	AB	Mean	32 =	1.267	EFGHI	PINNACLE		
Mean	26 =	1.300	CDEFGHI	Mean	39 =	1.267	EFGHI	TPR 96A = ProGram	27	73
Mean	27 =	1.283	DEFGHI	Mean	15 =	1.267	EFGHI	LORETTA NOVA		
Mean	28 =	1.233	EFGHI	Mean	33 =	1.267	EFGHI	PRELUDE II		
Mean	29 =	1.317	CDEFGHI	Mean	1 =	1.250	EFGHI	ACHIEVER		
Mean	30 =	1.183	GHI	Mean	14 =	1.233	EFGHI	LINN		
Mean	31 =	1.333	CDEFGH	Mean	9 =	1.233	EFGHI	DERBY SUPREME		
Mean	32 =	1.267	EFGHI	Mean	28 =	1.233	EFGHI			
Mean	33 =	1.267	EFGHI	Mean	13 =	1.233	EFGHI	EXPRESS		
Mean	34 =	1.383	BCDEFG	Mean	21 =	1.233	EFGHI	MANHATTAN II		
Mean	35 =	1.300	CDEFGHI	Mean	23 =	1.217	FGHI	PALMER II		
Mean	36 =	1.300	CDEFGHI	Mean	6 =	1.217	FGHI	CITATION II		
Mean	37 =	1.433	ABCDE	Mean	7 =	1.217	FGHI	CUTTER		
Mean	38 =	1.283	DEFGHI	Mean	30 =	1.183	GHI			
Mean	39 =	1.267	EFGHI	Mean	42 =	1.183	GHI	TPR P:	18	82
Mean	40 =	1.117	I	Mean	19 =	1.150	HI			
Mean	41 =	1.150	HI	Mean	41 =	1.150	HI	TPR 96 C	15	85
Mean	42 =	1.183	GHI	Mean	40 =	1.117	I	TPR 96 B	12	88

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Table 5. Flag leaf height (cm) in 1997 of perennial ryegrass cv. ProGram (=Code no's. TPR96A & TPR97A) compared with other cultivars transplanted November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 8 : FLAG LEAF HEIGHT (CM)
Error Mean Square = 11.51
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 5.510 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	40.88	CDEFGH	Mean	14 =	48.20	A	LINN
Mean	2 =	32.17	MNOPQ	Mean	20 =	47.50	AB	MANHATTAN
Mean	3 =	37.91	EFGHIJKL	Mean	9 =	45.40	ABC	DERBY SUPREME
Mean	4 =	33.25	KLMNOP	Mean	5 =	43.80	ABCD	CALYPSO II
Mean	5 =	43.80	ABCD	Mean	13 =	42.49	BCDE	EXPRESS
Mean	6 =	40.70	CDEFGH	Mean	10 =	42.46	BCDE	EDGE
Mean	7 =	34.57	JKLMN	Mean	8 =	41.76	CDEF	DELAWARE DWF
Mean	8 =	41.76	CDEF	Mean	22 =	41.60	CDEFG	MORNING STAR
Mean	9 =	45.40	ABC	Mean	36 =	41.00	CDEFGH	SHERWOOD
Mean	10 =	42.46	BCDE	Mean	1 =	40.88	CDEFGH	ACHIEVER
Mean	11 =	38.61	DEFGHIJK	Mean	6 =	40.70	CDEFGH	CITATION II
Mean	12 =	32.32	MNOPQ	Mean	18 =	40.14	CDEFGHI	MAGIC
Mean	13 =	42.49	BCDE	Mean	25 =	39.35	DEFGHIJ	PENNFINE
Mean	14 =	48.20	A	Mean	21 =	38.83	DEFGHIJ	MANHATTAN II
Mean	15 =	37.26	EFGHIJKLM	Mean	11 =	38.61	DEFGHIJK	ELF
Mean	16 =	37.00	EFGHIJKLMN	Mean	3 =	37.91	EFGHIJKL	BLAZER III
Mean	17 =	34.75	IJKLMN	Mean	15 =	37.26	EFGHIJKLM	LORETTA NOVA
Mean	18 =	40.14	CDEFGHI	Mean	16 =	37.00	EFGHIJKLMN	LOWGROW
Mean	19 =	27.62	QR	Mean	40 =	36.47	FGHIJKLMN	TPR 96 B
Mean	20 =	47.50	AB	Mean	30 =	36.22	GHIJKLMN	
Mean	21 =	38.83	DEFGHIJ	Mean	24 =	35.69	HIJKLMN	PANTHER
Mean	22 =	41.60	CDEFG	Mean	39 =	35.00	IJKLMN	TPR 96 A = ProGram
Mean	23 =	31.76	MNOPQ	Mean	17 =	34.75	IJKLMN	LYNX
Mean	24 =	35.69	HIJKLMN	Mean	32 =	34.60	JKLMN	PINNACLE
Mean	25 =	39.35	DEFGHIJ	Mean	7 =	34.57	JKLMN	CUTTER
Mean	26 =	34.38	JKLMN	Mean	26 =	34.38	JKLMN	SATURN
Mean	27 =	25.44	R	Mean	42 =	34.26	JKLMNO	TPR P
Mean	28 =	28.42	PQR	Mean	4 =	33.25	KLMNOP	BRIGHTSTAR
Mean	29 =	32.47	LMNOPQ	Mean	34 =	32.89	LMNOPQ	RIVIERA II
Mean	30 =	36.22	GHIJKLMN	Mean	37 =	32.83	LMNOPQ	TARGET
Mean	31 =	28.85	OPQR	Mean	38 =	32.52	LMNOPQ	
Mean	32 =	34.60	JKLMN	Mean	29 =	32.47	LMNOPQ	LP 102-92
Mean	33 =	31.79	MNOPQ	Mean	12 =	32.32	MNOPQ	ELKA
Mean	34 =	32.89	LMNOPQ	Mean	2 =	32.17	MNOPQ	ADVANTAGE
Mean	35 =	31.59	NOPQ	Mean	41 =	32.09	MNOPQ	TPR 96 C
Mean	36 =	41.00	CDEFGH	Mean	33 =	31.79	MNOPQ	PRELUDE II
Mean	37 =	32.83	LMNOPQ	Mean	23 =	31.76	MNOPQ	PALMER II
Mean	38 =	32.52	LMNOPQ	Mean	35 =	31.59	NOPQ	
Mean	39 =	35.00	IJKLMN	Mean	31 =	28.85	OPQR	HEADSTART
Mean	40 =	36.47	FGHIJKLMN	Mean	28 =	28.42	PQR	
Mean	41 =	32.09	MNOPQ	Mean	19 =	27.62	QR	
Mean	42 =	34.26	JKLMNO	Mean	27 =	25.44	R	LP EE-93

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Table 6. Flag leaf width (mm) in 1997 of perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 9 : FLAG LEAF WIDTH (MM)
Error Mean Square = 0.05900
Error Degrees of Freedom = 82
NO. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 0.3945 at alpha = 0.050

Original Order

Mean	1 =	3.010		CDEFGHIJ
Mean	2 =	3.070		CDEFGHI
Mean	3 =	2.887		GHIJKLMN
Mean	4 =	2.627		JKLMNOP
Mean	5 =	3.577	AB	
Mean	6 =	3.163		CDEFG
Mean	7 =	2.953		EFGHIJKL
Mean	8 =	3.153		CDEFG
Mean	9 =	3.010		CDEFGHIJ
Mean	10 =	3.347		BCDE
Mean	11 =	2.877		GHIJKLMN
Mean	12 =	2.347		P
Mean	13 =	3.183		BCDEFG
Mean	14 =	3.927	A	
Mean	15 =	2.460		OP
Mean	16 =	2.793		GHIJKLMNO
Mean	17 =	3.143		CDEFGH
Mean	18 =	3.287		BCDEF
Mean	19 =	2.510		NOP
Mean	20 =	2.913		FGHIJKLM
Mean	21 =	3.363		BC
Mean	22 =	3.137		CDEFGH
Mean	23 =	2.570		LMNOP
Mean	24 =	3.070		CDEFGHI
Mean	25 =	2.753		HIJKLMNO
Mean	26 =	3.103		CDEFGHI
Mean	27 =	2.520		MNOP
Mean	28 =	2.613		KLMNOP
Mean	29 =	2.887		GHIJKLMN
Mean	30 =	2.710		IJKLMNOP
Mean	31 =	2.843		GHIJKLMNO
Mean	32 =	2.960		DEFGHIJKL
Mean	33 =	3.043		CDEFGHI
Mean	34 =	3.070		CDEFGHI
Mean	35 =	3.003		CDEFGHIJK
Mean	36 =	3.350	BCD	
Mean	37 =	3.077		CDEFGHI
Mean	38 =	3.343	BCDE	
Mean	39 =	2.943		FGHIJKL
Mean	40 =	2.903		FGHIJKLMN
Mean	41 =	2.953		EFGHIJKL
Mean	42 =	2.837		GHIJKLMNO

Ranked Order

					LINE
Mean	14 =	3.927	A		LINN
Mean	5 =	3.577	AB		CALYPSO II
Mean	21 =	3.363		BC	MANHATTAN II
Mean	36 =	3.350		BCD	SHERWOOD
Mean	10 =	3.347		BCDE	EDGE
Mean	38 =	3.343		BCDE	
Mean	18 =	3.287		BCDEF	MAGIC
Mean	13 =	3.183		BCDEFG	EXPRESS
Mean	6 =	3.163		CDEFG	CITATION II
Mean	8 =	3.153		CDEFG	DELAWARE DWF
Mean	17 =	3.143		CDEFGH	LYNX
Mean	22 =	3.137		CDEFGH	MORNING STAR
Mean	26 =	3.103		CDEFGHI	SATURN
Mean	37 =	3.077		CDEFGHI	TARGET
Mean	2 =	3.070		CDEFGHI	ADVANTAGE
Mean	34 =	3.070		CDEFGHI	RIVIERA II
Mean	24 =	3.070		CDEFGHI	PANTHER
Mean	33 =	3.043		CDEFGHI	PRELUDE II
Mean	9 =	3.010		CDEFGHIJ	DERBY SUPREME
Mean	1 =	3.010		CDEFGHIJ	ACHIEVER
Mean	35 =	3.003		CDEFGHIJK	
Mean	32 =	2.960		DEFGHIJKL	PINNACLE
Mean	41 =	2.953		EFGHIJKL	TPR 96 C
Mean	7 =	2.953		EFGHIJKL	CUTTER
Mean	39 =	2.943		FGHIJKL	TPR 96 A = ProGram
Mean	20 =	2.913		FGHIJKLM	MANHATTAN
Mean	40 =	2.903		FGHIJKLMN	TPR 96 B
Mean	29 =	2.887		GHIJKLMN	LP 102-92
Mean	3 =	2.887		GHIJKLMN	BLAZER III
Mean	11 =	2.877		GHIJKLMN	ELF
Mean	31 =	2.843		GHIJKLMNO	HEADSTART
Mean	42 =	2.837		GHIJKLMNO	TPR P
Mean	16 =	2.793		GHIJKLMNO	LOWGROW
Mean	25 =	2.753		HIJKLMNO	PENNFINE
Mean	30 =	2.710		IJKLMNOP	
Mean	4 =	2.627		JKLMNOP	BRIGHTSTAR
Mean	28 =	2.613		KLMNOP	
Mean	23 =	2.570		LMNOP	PALMER II
Mean	27 =	2.520		MNOP	LP EE-93
Mean	19 =	2.510		NOP	
Mean	15 =	2.460		OP	LORETTA NOVA
Mean	12 =	2.347		P	ELKA

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Table 7. Flag leaf length (cm) in 1997 of perennial ryegrass cv. ProGram (=Code no's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 11 : FLAG LEAF LENGTH (CM)
Error Mean Square = 2.024
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD Value = 2.311 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	14.89	CDEFGHIJK	Mean	18 =	18.50	A	MAGIC
Mean	2 =	13.27	GHIJKLMNO	Mean	14 =	18.00	AB	LINN
Mean	3 =	13.85	FGHIJKLMN	Mean	5 =	17.05	ABC	CALYPSO II
Mean	4 =	13.24	GHIJKLMNO	Mean	9 =	16.82	ABCD	DERBY SUPREME
Mean	5 =	17.05	ABC	Mean	20 =	16.33	ABCDE	MANHATTAN
Mean	6 =	14.29	EFGHIJKLM	Mean	8 =	16.07	BCDEF	DELEWARE DWF
Mean	7 =	13.82	FGHIJKLMN	Mean	36 =	15.55	CDEFG	SHERWOOD
Mean	8 =	16.07	BCDEF	Mean	25 =	15.54	CDEFG	PENNFINE
Mean	9 =	16.82	ABCD	Mean	22 =	15.47	CDEFGH	MORNING STAR
Mean	10 =	14.79	CDEFGHIJK	Mean	13 =	15.13	CDEFGHI	EXPRESS
Mean	11 =	13.66	GHIJKLMNO	Mean	40 =	15.11	CDEFGHIJ	TPR 96 B
Mean	12 =	12.14	MNOPQ	Mean	1 =	14.89	CDEFGHIJK	ACHIEVER
Mean	13 =	15.13	CDEFGHI	Mean	10 =	14.79	CDEFGHIJK	EDGE
Mean	14 =	18.00	AB	Mean	21 =	14.71	DEFGHIJKL	MANHATTAN II
Mean	15 =	13.07	IJKLMNO	Mean	37 =	14.69	DEFGHIJKL	TARGET
Mean	16 =	14.38	EFGHIJKLM	Mean	17 =	14.61	DEFGHIJKL	LYNX
Mean	17 =	14.61	DEFGHIJKL	Mean	16 =	14.38	EFGHIJKLM	LOWGROW
Mean	18 =	18.50	A	Mean	35 =	14.34	EFGHIJKLM	
Mean	19 =	11.46	OPQ	Mean	6 =	14.29	EFGHIJKLM	CITATION II
Mean	20 =	16.33	ABCDE	Mean	26 =	14.26	EFGHIJKLM	SATURN
Mean	21 =	14.71	DEFGHIJKL	Mean	39 =	14.10	EFGHIJKLM	TPR 96 A= ProGram
Mean	22 =	15.47	CDEFGH	Mean	3 =	13.85	FGHIJKLMN	BLAZER III
Mean	23 =	11.77	NOPQ	Mean	7 =	13.82	FGHIJKLMN	CUTTER
Mean	24 =	13.21	HIJKLMNO	Mean	38 =	13.78	FGHIJKLMN	
Mean	25 =	15.54	CDEFG	Mean	34 =	13.74	GHIJKLMNO	RIVIERA II
Mean	26 =	14.26	EFGHIJKLM	Mean	11 =	13.66	GHIJKLMNO	ELF
Mean	27 =	10.52	PQ	Mean	41 =	13.60	GHIJKLMNO	TPR 96 C
Mean	28 =	10.02	Q	Mean	42 =	13.34	GHIJKLMNO	TPR 96P
Mean	29 =	12.69	KLMNOP	Mean	2 =	13.27	GHIJKLMNO	ADVANTAGE
Mean	30 =	13.14	IJKLMNO	Mean	4 =	13.24	GHIJKLMNO	BRIGHTSTAR
Mean	31 =	12.42	LMNOP	Mean	24 =	13.21	HIJKLMNO	PANTHER
Mean	32 =	12.80	JKLMNOP	Mean	30 =	13.14	IJKLMNO	
Mean	33 =	12.86	IJKLMNO	Mean	15 =	13.07	IJKLMNO	LORETTA NOVA
Mean	34 =	13.74	GHIJKLMNO	Mean	33 =	12.86	IJKLMNO	PRELUDE II
Mean	35 =	14.34	EFGHIJKLM	Mean	32 =	12.80	JKLMNOP	PINNACLE
Mean	36 =	15.55	CDEFG	Mean	29 =	12.69	KLMNOP	LP 102-92
Mean	37 =	14.69	DEFGHIJKL	Mean	31 =	12.42	LMNOP	HEADSTART
Mean	38 =	13.78	FGHIJKLMN	Mean	12 =	12.14	MNOPQ	ELKA
Mean	39 =	14.10	EFGHIJKLM	Mean	23 =	11.77	NOPQ	PALMER II
Mean	40 =	15.11	CDEFGHIJ	Mean	19 =	11.46	OPQ	
Mean	41 =	13.60	GHIJKLMNO	Mean	27 =	10.52	PQ	LP EE-93
Mean	42 =	13.34	GHIJKLMNO	Mean	28 =	10.02	Q	

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Table 8. Spikelet length (MM) in 1997 of perennial ryegrass ProGram (Code No's. TPR96A& TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Case Range : 217 - 258
Analysis of variance with LSD mean separation
Variable 10 : LENGTH OF SPIKELET (MM)
Error Mean Square = 0.5970
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least Significant Difference Test
LSD Vslue = 1.255 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	14.03	A	Mean	21 =	14.05	A	MANHATTAN II
Mean	2 =	13.32	ABC	Mean	14 =	14.05	A	LINN
Mean	3 =	13.68	ABC	Mean	1 =	14.03	A	ACHIEVER
Mean	4 =	13.12	ABCD	Mean	13 =	13.92	AB	EXPRESS
Mean	5 =	13.58	ABC	Mean	25 =	13.90	AB	PENNFINE
Mean	6 =	13.07	ABCD	Mean	7 =	13.90	AB	CUTTER
Mean	7 =	13.90	AB	Mean	36 =	13.88	AB	SHERWOOD
Mean	8 =	13.53	ABC	Mean	17 =	13.80	ABC	LYNX
Mean	9 =	13.63	ABC	Mean	20 =	13.77	ABC	MANHATTAN
Mean	10 =	13.33	ABC	Mean	33 =	13.77	ABC	PRELUDE II
Mean	11 =	13.10	ABCD	Mean	26 =	13.73	ABC	SATURN
Mean	12 =	9.367	G	Mean	3 =	13.68	ABC	BLAZER II
Mean	13 =	13.92	AB	Mean	9 =	13.63	ABC	DERBY SUPREME
	14 =	14.05	A	Mean	35 =	13.62	ABC	LP H-93
Mean	15 =	11.87	DEF	Mean	5 =	13.58	ABC	CALYPSO II
Mean	16 =	12.62	CDEF	Mean	8 =	13.53	ABC	DELAWARE DWARF
Mean	17 =	13.80	ABC	Mean	22 =	13.52	ABC	MORNING STAR
Mean	18 =	13.13	ABC	Mean	40 =	13.35	ABC	TPR 96 B
Mean	19 =	11.52	F	Mean	10 =	13.33	ABC	EDGE
Mean	20 =	13.77	ABC	Mean	2 =	13.32	ABC	ADVANTAGE
Mean	21 =	14.05	A	Mean	42 =	13.30	ABC	TPR 96 P
Mean	22 =	13.52	ABC	Mean	34 =	13.28	ABC	RIVIERA II
Mean	23 =	13.27	ABC	Mean	37 =	13.27	ABC	TARGET
Mean	24 =	12.77	BCDEF	Mean	23 =	13.27	ABC	PALMER II
Mean	25 =	13.90	AB	Mean	32 =	13.22	ABC	PINNACLE
Mean	26 =	13.73	ABC	Mean	18 =	13.13	ABC	MAGIC
Mean	27 =	11.75	EF	Mean	38 =	13.12	ABCD	
Mean	28 =	13.00	ABCDE	Mean	30 =	13.12	ABCD	JIFFIE
Mean	29 =	13.05	ABCD	Mean	4 =	13.12	ABCD	BRIGHTSTAR
Mean	30 =	13.12	ABCD	Mean	11 =	13.10	ABCD	ELF
Mean	31 =	12.80	ABCDE	Mean	41 =	13.08	ABCD	TPR 96 C
Mean	32 =	13.22	ABC	Mean	6 =	13.07	ABCD	CITATION II
Mean	33 =	13.77	ABC	Mean	29 =	13.05	ABCD	LP 102-92
Mean	34 =	13.28	ABC	Mean	28 =	13.00	ABCDE	
Mean	35 =	13.62	ABC	Mean	39 =	12.98	ABCDE	TPR 96 A = ProGram
Mean	36 =	13.88	AB	Mean	31 =	12.80	ABCDE	HEADSTART
Mean	37 =	13.27	ABC	Mean	24 =	12.77	BCDEF	PANTHER
Mean	38 =	13.12	ABCD	Mean	16 =	12.62	CDEF	LONGROW
	39 =	12.98	ABCDE	Mean	15 =	11.87	DEF	LORETTA NOVA
	40 =	13.35	ABC	Mean	27 =	11.75	EF	LP EK-93
Mean	41 =	13.08	ABCD	Mean	19 =	11.52	F	
Mean	42 =	13.30	ABC	Mean	12 =	9.367	G	ELKA

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Table 9. Outer glume length (mm) of perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 12 : OUTER GLUME LENGTH (MM)
Error Mean Square = 0.2730
Error Degrees of Freedom = 82
NO. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 0.8487 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	9.467	B	Mean	14 =	11.20	A	LINN
Mean	2 =	7.417	HIJKLMN	Mean	1 =	9.467	B	ACHIEVER
Mean	3 =	7.267	JKLMN	Mean	20 =	8.900	BC	MANHATTAN
Mean	4 =	6.983	KLMN	Mean	10 =	8.883	BC	EDGE
Mean	5 =	8.817	BC	Mean	35 =	8.850	BC	
Mean	6 =	8.367	CDEFG	Mean	5 =	8.817	BC	CALYPSO II
Mean	7 =	8.333	CDEFG	Mean	18 =	8.750	BCD	MAGIC
Mean	8 =	8.733	BCD	Mean	17 =	8.733	BCD	LYNX
Mean	9 =	8.133	CDEFGHI	Mean	36 =	8.733	BCD	SHERWOOD
Mean	10 =	8.883	BC	Mean	8 =	8.733	BCD	DELEWARE DWF
Mean	11 =	7.333	IJKLMN	Mean	37 =	8.583	CDE	TARGET
Mean	12 =	6.617	N	Mean	25 =	8.500	CDEF	PENNFINE
Mean	13 =	8.367	CDEFG	Mean	6 =	8.367	CDEFG	CITATION II
Mean	14 =	11.20	A	Mean	15 =	8.367	CDEFG	LORETTA NOVA
Mean	15 =	8.367	CDEFG	Mean	13 =	8.367	CDEFG	EXPRESS
Mean	16 =	6.917	LMN	Mean	32 =	8.350	CDEFG	PINNACLE
Mean	17 =	8.733	BCD	Mean	7 =	8.333	CDEFG	CUTTER
Mean	18 =	8.750	BCD	Mean	42 =	8.183	CDEFGH	TPR P
Mean	19 =	6.850	MN	Mean	21 =	8.183	CDEFGH	MANHATTAN II
Mean	20 =	8.900	BC	Mean	9 =	8.133	CDEFGHI	DERBY SUPREME
Mean	21 =	8.183	CDEFGH	Mean	31 =	7.967	DEFGHIJ	HEADSTART
Mean	22 =	7.933	DEFGHIJ	Mean	22 =	7.933	DEFGHIJ	MORNING STAR
Mean	23 =	7.233	JKLMN	Mean	33 =	7.933	DEFGHIJ	PRELUDE II
Mean	24 =	7.333	IJKLMN	Mean	30 =	7.883	EFGHIJ	
Mean	25 =	8.500	CDEF	Mean	29 =	7.800	EFGHIJK	LP 102-92
Mean	26 =	7.767	EFGHIJK	Mean	40 =	7.783	EFGHIJK	TPR 96 B
Mean	27 =	6.600	N	Mean	26 =	7.767	EFGHIJK	SATURN
Mean	28 =	6.700	N	Mean	41 =	7.733	FGHIJKL	TPR 96 C
Mean	29 =	7.800	EFGHIJK	Mean	39 =	7.583	GHIJKLM	TPR 96 A= ProGram
Mean	30 =	7.883	EFGHIJ	Mean	34 =	7.567	GHIJKLM	RIVIERA II
Mean	31 =	7.967	DEFGHIJ	Mean	2 =	7.417	HIJKLMN	ADVANTAGE
Mean	32 =	8.350	CDEFG	Mean	24 =	7.333	IJKLMN	PANTHER
Mean	33 =	7.933	DEFGHIJ	Mean	11 =	7.333	IJKLMN	ELF
Mean	34 =	7.567	GHIJKLM	Mean	3 =	7.267	JKLMN	BLAZER III
Mean	35 =	8.850	BC	Mean	23 =	7.233	JKLMN	PALMER II
Mean	36 =	8.733	BCD	Mean	38 =	7.150	JKLMN	
Mean	37 =	8.583	CDE	Mean	4 =	6.983	KLMN	BRIGHTSTAR
Mean	38 =	7.150	JKLMN	Mean	16 =	6.917	LMN	LOWGROW
Mean	39 =	7.583	GHIJKLM	Mean	19 =	6.850	MN	
Mean	40 =	7.783	EFGHIJK	Mean	28 =	6.700	N	
Mean	41 =	7.733	FGHIJKL	Mean	12 =	6.617	N	BLKA
Mean	42 =	8.183	CDEFGH	Mean	27 =	6.600	N	LP BB-93

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Table 10. Number of florets/spikelet in perennial ryegrass cv. ProGram (=Code no's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 13 : # OF FLORETS/SPIKELET
Error Mean Square = 1.473
Error Degrees of Freedom = 82
No. of observations of calculate a mean = 3
LSD value = 1.971 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	8.967	AB	Mean	34 =	9.450	A	RIVIERA II
Mean	2 =	9.233	AB	Mean	21 =	9.333	AB	MANHATTAN II
Mean	3 =	9.050	AB	Mean	17 =	9.317	AB	LYNX
Mean	4 =	9.233	AB	Mean	24 =	9.283	AB	PANTHER
Mean	5 =	8.317	ABC	Mean	36 =	9.250	AB	SHERWOOD
Mean	6 =	8.817	ABC	Mean	4 =	9.233	AB	BRIGHTSTAR
Mean	7 =	9.183	AB	Mean	2 =	9.233	AB	ADVANTAGE
Mean	8 =	8.383	ABC	Mean	7 =	9.183	AB	CUTTER
Mean	9 =	9.000	AB	Mean	39 =	9.150	AB	TPR 96 A= ProGram
Mean	10 =	8.383	ABC	Mean	33 =	9.117	AB	PRELUDE II
Mean	11 =	6.984	CD	Mean	3 =	9.050	AB	BLAZER III
Mean	12 =	7.467	BCD	Mean	29 =	9.017	AB	LP 102-92
Mean	13 =	8.867	ABC	Mean	9 =	9.000	AB	DERBY SUPREME
Mean	14 =	8.800	ABC	Mean	35 =	9.000	AB	
Mean	15 =	8.567	ABC	Mean	1 =	8.967	AB	ACHIEVER
Mean	16 =	8.885	ABC	Mean	16 =	8.885	ABC	LONGROW
Mean	17 =	9.317	AB	Mean	38 =	8.883	ABC	
Mean	18 =	7.933	ABC	Mean	13 =	8.867	ABC	EXPRESS
Mean	19 =	8.583	ABC	Mean	31 =	8.817	ABC	HEADSTART
Mean	20 =	8.483	ABC	Mean	6 =	8.817	ABC	CITATION II
Mean	21 =	9.333	AB	Mean	32 =	8.817	ABC	PINNACLE
Mean	22 =	8.767	ABC	Mean	28 =	8.800	ABC	
Mean	23 =	8.683	ABC	Mean	14 =	8.800	ABC	LINN
Mean	24 =	9.283	AB	Mean	26 =	8.783	ABC	SATURN
Mean	25 =	8.517	ABC	Mean	40 =	8.783	ABC	TPR 96 B
Mean	26 =	8.783	ABC	Mean	22 =	8.767	ABC	MORNING STAR
Mean	27 =	8.617	ABC	Mean	23 =	8.683	ABC	PALMER II
Mean	28 =	8.800	ABC	Mean	27 =	8.617	ABC	LP EE-93
Mean	29 =	9.017	AB	Mean	19 =	8.583	ABC	
Mean	30 =	8.417	ABC	Mean	15 =	8.567	ABC	LORETTA NOVA
Mean	31 =	8.817	ABC	Mean	25 =	8.517	ABC	PENNFINE
Mean	32 =	8.817	ABC	Mean	20 =	8.483	ABC	MANHATTAN
Mean	33 =	9.117	AB	Mean	41 =	8.450	ABC	TPR 96 C
Mean	34 =	9.450	A	Mean	42 =	8.433	ABC	TPR 96P
Mean	35 =	9.000	AB	Mean	30 =	8.417	ABC	
Mean	36 =	9.250	AB	Mean	8 =	8.383	ABC	DELEWARE DWF
Mean	37 =	5.750	D	Mean	10 =	8.383	ABC	EDGE
Mean	38 =	8.883	ABC	Mean	5 =	8.317	ABC	CALYPSO II
Mean	39 =	9.150	AB	Mean	18 =	7.933	ABC	MAGIC
Mean	40 =	8.783	ABC	Mean	12 =	7.467	BCD	ELKA
Mean	41 =	8.450	ABC	Mean	11 =	6.984	CD	ELF

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Table 11. Number of spikelets/spike in perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of vaiance with LSD mean separation
Variable 14 : # of spikelets/spike
Error Mean Square = 2.004
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 2.299 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	25.78	ABCDE	Mean	9 =	27.43	A	DERBY SUPREME
Mean	2 =	23.95	CDEFGHIJK	Mean	20 =	27.02	AB	MANHATTAN
Mean	3 =	23.97	CDEFGHIJK	Mean	5 =	26.83	AB	CALYPSO II
Mean	4 =	23.05	GHIJKL	Mean	18 =	26.23	ABC	MAGIC
Mean	5 =	26.83	AB	Mean	15 =	25.97	ABCD	LORETTA NOVA
Mean	6 =	22.93	GHIJKL	Mean	17 =	25.97	ABCD	LYNX
Mean	7 =	22.42	KLM	Mean	1 =	25.78	ABCDE	ACHIEVER
Mean	8 =	25.05	BCDEFGH	Mean	12 =	25.43	ABCDEF	ELKA
Mean	9 =	27.43	A	Mean	11 =	25.38	ABCDEF	ELF
Mean	10 =	25.22	ABCDEFG	Mean	10 =	25.22	ABCDEFG	EDGE
Mean	11 =	25.38	ABCDEF	Mean	21 =	25.08	BCDEFGH	MANHATTAN II
Mean	12 =	25.43	ABCDEF	Mean	13 =	25.05	BCDEFGH	EXPRESS
Mean	13 =	25.05	BCDEFGH	Mean	8 =	25.05	BCDEFGH	DELEWARE DWF
Mean	14 =	20.35	M	Mean	36 =	25.00	BCDEFGHI	SHERWOOD
Mean	15 =	25.97	ABCD	Mean	24 =	24.93	BCDEFGHIJ	PANTHER
Mean	16 =	24.40	CDEFGHIJK	Mean	37 =	24.88	BCDEFGHIJ	TARGET
Mean	17 =	25.97	ABCD	Mean	40 =	24.83	BCDEFGHIJ	TPR 96 B
Mean	18 =	26.23	ABC	Mean	30 =	24.82	BCDEFGHIJ	
Mean	19 =	22.70	JKL	Mean	26 =	24.52	CDEFGHIJK	SATURN
Mean	20 =	27.02	AB	Mean	16 =	24.40	CDEFGHIJK	LOWGROW
Mean	21 =	25.08	BCDEFGH	Mean	22 =	24.35	CDEFGHIJK	MORNING STAR
Mean	22 =	24.35	CDEFGHIJK	Mean	25 =	24.18	CDEFGHIJK	PENNFINE
Mean	23 =	22.72	IJKL	Mean	41 =	24.17	CDEFGHIJK	TPR 96 C
Mean	24 =	24.93	BCDEFGHIJ	Mean	34 =	24.12	CDEFGHIJK	RIVIERA II
Mean	25 =	24.18	CDEFGHIJK	Mean	3 =	23.97	CDEFGHIJK	BLAZER III
Mean	26 =	24.52	CDEFGHIJK	Mean	2 =	23.95	CDEFGHIJK	ADVANTAGE
Mean	27 =	22.95	GHIJKL	Mean	38 =	23.93	DEFGHIJK	
Mean	28 =	21.10	LM	Mean	33 =	23.80	DEFGHIJK	PRELUDE II
Mean	29 =	23.45	FGHIJK	Mean	35 =	23.52	EFGHIJK	
Mean	30 =	24.82	BCDEFGHIJ	Mean	29 =	23.45	FGHIJK	LP 102-92
Mean	31 =	22.82	HIJKL	Mean	39 =	23.38	FGHIJKL	TPR 96 A = ProGram
Mean	32 =	22.87	HIJKL	Mean	42 =	23.25	FGHIJKL	TPR 96P
Mean	33 =	23.80	DEFGHIJK	Mean	4 =	23.05	GHIJKL	BRIGHTSTAR
Mean	34 =	24.12	CDEFGHIJK	Mean	27 =	22.95	GHIJKL	LP EE-93
Mean	35 =	23.52	EFGHIJK	Mean	6 =	22.93	GHIJKL	CITATION II
Mean	36 =	25.00	BCDEFGHI	Mean	32 =	22.87	HIJKL	PINNACLE
Mean	37 =	24.88	BCDEFGHIJ	Mean	31 =	22.82	HIJKL	HEADSTART
Mean	38 =	23.93	DEFGHIJK	Mean	23 =	22.72	IJKL	PALMER II
Mean	39 =	23.38	FGHIJKL	Mean	19 =	22.70	JKL	
Mean	40 =	24.83	BCDEFGHIJ	Mean	7 =	22.42	KLM	CUTTER
Mean	41 =	24.17	CDEFGHIJK	Mean	28 =	21.10	LM	
"	42	22.25		"	14	20.35	M	LINN

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Table 12. Plant height (cm) of perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 15 : PLANT HEIGHT (CM) MEASURED IN WINTER TIME
Error Mean Square = 24.43
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 8.028 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	76.59	CDEFGH	Mean	14 =	86.83	A	LINN
Mean	2 =	67.71	IJK	Mean	9 =	86.10	AB	DERBY SUPREME
Mean	3 =	73.42	EFGHIJ	Mean	20 =	83.60	ABC	MANHATTAN
Mean	4 =	68.07	IJK	Mean	5 =	82.29	ABCD	CALYPSO II
Mean	5 =	82.29	ABCD	Mean	18 =	82.15	ABCD	MAGIC
Mean	6 =	76.91	CDEFG	Mean	25 =	80.66	ABCDE	PENNFINE
Mean	7 =	69.20	GHIJK	Mean	10 =	80.03	ABCDE	EDGE
Mean	8 =	79.45	ABCDE	Mean	36 =	80.00	ABCDE	SHERWOOD
Mean	9 =	86.10	AB	Mean	8 =	79.45	ABCDE	DELAWARE DWF
Mean	10 =	80.03	ABCDE	Mean	22 =	79.41	ABCDE	MORNING STAR
Mean	11 =	74.52	DEFGHI	Mean	13 =	78.76	BCDE	EXPRESS
Mean	12 =	59.36	LMN	Mean	21 =	77.52	CDEF	MANHATTAN II
Mean	13 =	78.76	BCDE	Mean	6 =	76.91	CDEFG	CITATION II
Mean	14 =	86.83	A	Mean	1 =	76.59	CDEFGH	ACHIEVER
Mean	15 =	66.29	JKL	Mean	16 =	74.91	DEFGHI	LOWGROW
Mean	16 =	74.91	DEFGHI	Mean	11 =	74.52	DEFGHI	ELF
Mean	17 =	69.26	GHIJK	Mean	3 =	73.42	EFGHIJ	BLAZER III
Mean	18 =	82.15	ABCD	Mean	40 =	70.52	FGHIJK	TPR 96 B
Mean	19 =	58.66	LMN	Mean	37 =	70.42	FGHIJK	TARGET
Mean	20 =	83.60	ABC	Mean	24 =	70.06	FGHIJK	PANTHER
Mean	21 =	77.52	CDEF	Mean	30 =	69.83	FGHIJK	
Mean	22 =	79.41	ABCDE	Mean	17 =	69.26	GHIJK	LYNX
Mean	23 =	63.77	KLM	Mean	7 =	69.20	GHIJK	CUTTER
Mean	24 =	70.06	FGHIJK	Mean	39 =	69.12	GHIJK	TPR 96 A= ProGram
Mean	25 =	80.66	ABCDE	Mean	38 =	68.67	HIJK	
Mean	26 =	68.27	IJK	Mean	42 =	68.62	HIJK	TPR P96P
Mean	27 =	55.18	N	Mean	26 =	68.27	IJK	SATURN
Mean	28 =	56.98	MN	Mean	32 =	68.26	IJK	PINNACLE
Mean	29 =	66.31	JKL	Mean	35 =	68.25	IJK	
Mean	30 =	69.83	FGHIJK	Mean	33 =	68.20	IJK	PRELUDE II
Mean	31 =	63.36	KLM	Mean	4 =	68.07	IJK	BRIGHTSTAR
Mean	32 =	68.26	IJK	Mean	2 =	67.71	IJK	ADVANTAGE
Mean	33 =	68.20	IJK	Mean	34 =	67.49	IJK	RIVIERA II
Mean	34 =	67.49	IJK	Mean	29 =	66.31	JKL	LP 102-92
Mean	35 =	68.25	IJK	Mean	15 =	66.29	JKL	LORETTA NOVA
Mean	36 =	80.00	ABCDE	Mean	41 =	66.22	JKL	TPR 96 C
Mean	37 =	70.42	FGHIJK	Mean	23 =	63.77	KLM	PALMER II
Mean	38 =	68.67	HIJK	Mean	31 =	63.36	KLM	HEADSTART
Mean	39 =	69.12	GHIJK	Mean	12 =	59.36	LMN	ELKA
Mean	40 =	70.52	FGHIJK	Mean	19 =	58.66	LMN	
Mean	41 =	66.22	JKL	Mean	28 =	56.98	MN	

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Table 13. Spike length (cm) in 1997 of perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR 97A) compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. pickseed West, INc. Research Facility, Data File 6PRPVP97
Randomized complet block design,three replications
Analysis of variance with LSD mean separation
Variable 16 : Spike Length (cm)
Error Mean Square = 1.618
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 2.066 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	23.41	AB	Mean	20 =	24.51	A	MANHATTAN
Mean	2 =	18.15	IJKLM	Mean	18 =	23.63	AB	MAGIC
Mean	3 =	19.97	FGHIJ	Mean	36 =	23.44	AB	SHERWOOD
Mean	4 =	18.01	JKLM	Mean	1 =	23.41	AB	ACHIEVER
Mean	5 =	23.32	AB	Mean	5 =	23.32	AB	CALYPSO II
Mean	6 =	21.65	BCDEF	Mean	9 =	23.01	AB	DERBY SUPREME
Mean	7 =	19.73	FGHIJK	Mean	14 =	22.86	AB	LINN
Mean	8 =	22.14	BCD	Mean	25 =	22.63	AB	PENNFINE
Mean	9 =	23.01	AB	Mean	10 =	22.54	AB	EDGE
Mean	10 =	22.54	AB	Mean	21 =	22.31	BC	MANHATTAN II
Mean	11 =	19.87	FGHIJ	Mean	8 =	22.14	BCD	DELEWARE DWF
Mean	12 =	18.67	GHIJKL	Mean	13 =	22.04	BCDE	EXPRESS
Mean	13 =	22.04	BCDE	Mean	6 =	21.65	BCDEF	CITATION II
Mean	14 =	22.86	AB	Mean	22 =	21.59	BCDEF	MORNING STAR
Mean	15 =	20.34	CDEFGH	Mean	17 =	20.44	CDEFG	LYNX
Mean	16 =	20.16	DEFGHI	Mean	26 =	20.37	CDEFGH	SATURN
Mean	17 =	20.44	CDEFG	Mean	30 =	20.35	CDEFGH	
Mean	18 =	23.63	AB	Mean	15 =	20.34	CDEFGH	LORETTA NOVA
Mean	19 =	16.29	MNO	Mean	35 =	20.30	CDEFGH	
Mean	20 =	24.51	A	Mean	16 =	20.16	DEFGHI	LOWGROW
Mean	21 =	22.31	BC	Mean	37 =	20.07	EFGHIJ	TARGET
Mean	22 =	21.59	BCDEF	Mean	32 =	20.03	EFGHIJ	PINNACLE
Mean	23 =	17.67	KLM	Mean	3 =	19.97	FGHIJ	BLAZER III
Mean	24 =	17.55	LMN	Mean	11 =	19.87	FGHIJ	ELF
Mean	25 =	22.63	AB	Mean	33 =	19.76	FGHIJ	PRELUDE II
Mean	26 =	20.37	CDEFGH	Mean	7 =	19.73	FGHIJK	CUTTER
Mean	27 =	15.40	O	Mean	42 =	19.01	GHIJKL	TPR P96P
Mean	28 =	15.58	NO	Mean	40 =	18.88	GHIJKL	TPR 96 B
Mean	29 =	18.80	GHIJKL	Mean	29 =	18.80	GHIJKL	LP 102-92
Mean	30 =	20.35	CDEFGH	Mean	12 =	18.67	GHIJKL	ELKA
Mean	31 =	18.32	HIJKLM	Mean	34 =	18.64	GHIJKL	RIVIERA II
Mean	32 =	20.03	EFGHIJ	Mean	39 =	18.54	GHIJKL	TPR 96 A = PROGram
Mean	33 =	19.76	FGHIJ	Mean	31 =	18.32	HIJKLM	HEADSTART
Mean	34 =	18.64	GHIJKL	Mean	41 =	18.23	IJKLM	TPR 96 C
Mean	35 =	20.30	CDEFGH	Mean	38 =	18.22	IJKLM	
Mean	36 =	23.44	AB	Mean	2 =	18.15	IJKLM	ADVANTAGE
Mean	37 =	20.07	EFGHIJ	Mean	4 =	18.01	JKLM	BRIGHTSTAR
Mean	38 =	18.22	IJKLM	Mean	23 =	17.67	KLM	PALMER II
Mean	39 =	18.54	GHIJKL	Mean	24 =	17.55	LMN	PANTHER
Mean	40 =	18.88	GHIJKL	Mean	19 =	16.29	MNO	
Mean	41 =	18.23	IJKLM	Mean	28 =	15.58	NO	

Table 14. Length of flag leaf sheath (cm) pf perennial ryegrass cv. ProGram (=Code No's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 17 : SHEATH LENGTH OF FLAG LEAF (CM) COLLAR OF LEAF TO SUBTENDING NODE
Error Mean Square = 0.4600
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 1.102 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	13.18	BC	Mean	14 =	15.84	A	LINN
Mean	2 =	10.30	MNOP	Mean	13 =	13.42	B	EXPRESS
Mean	3 =	11.40	FGHIJKLM	Mean	18 =	13.21	BC	MAGIC
Mean	4 =	10.37	LMNOP	Mean	9 =	13.19	BC	DERBY SUPREME
Mean	5 =	13.14	BC	Mean	1 =	13.18	BC	ACHIEVER
Mean	6 =	11.86	DEFGHI	Mean	5 =	13.14	BC	CALYPSO II
Mean	7 =	11.48	FGHIJK	Mean	25 =	12.80	BCD	PENNFINE
Mean	8 =	12.22	CDEF	Mean	20 =	12.80	BCD	MANHATTAN
Mean	9 =	13.19	BC	Mean	10 =	12.79	BCD	EDGE
Mean	10 =	12.79	BCD	Mean	36 =	12.68	BCDE	SHERWOOD
Mean	11 =	11.45	FGHIJKL	Mean	8 =	12.22	CDEF	DELEWARE DWF
Mean	12 =	10.05	OPQ	Mean	22 =	12.14	CDEFG	MORNING STAR
Mean	13 =	13.42	B	Mean	37 =	11.92	DEFGH	TARGET
Mean	14 =	15.84	A	Mean	6 =	11.86	DEFGHI	CITATION II
Mean	15 =	11.59	EFGHIJ	Mean	30 =	11.85	DEFGHI	
Mean	16 =	10.84	HIJKLMNO	Mean	21 =	11.75	DEFGHI	MANHATTAN II
Mean	17 =	11.32	FGHIJKLM	Mean	32 =	11.61	EFGHIJ	PINNACLE
Mean	18 =	13.21	BC	Mean	15 =	11.59	EFGHIJ	LORETTA NOVA
Mean	19 =	9.303	PQ	Mean	7 =	11.48	FGHIJK	CUTTER
Mean	20 =	12.80	BCD	Mean	11 =	11.45	FGHIJKL	ELF
Mean	21 =	11.75	DEFGHI	Mean	33 =	11.45	FGHIJKL	PRELUDE II
Mean	22 =	12.14	CDEFG	Mean	3 =	11.40	FGHIJKLM	BLAZER III
Mean	23 =	10.14	NOP	Mean	35 =	11.37	FGHIJKLM	
Mean	24 =	10.81	IJKLMNO	Mean	17 =	11.32	FGHIJKLM	LYNX
Mean	25 =	12.80	BCD	Mean	26 =	11.23	FGHIJKLMN	SATURN
Mean	26 =	11.23	FGHIJKLMN	Mean	40 =	11.19	FGHIJKLMN	TPR 96 B
Mean	27 =	8.963	Q	Mean	41 =	11.07	GHIJKLMNO	TPR 96 C
Mean	28 =	10.01	OPQ	Mean	39 =	11.05	GHIJKLMNO	TPR 96 A = ProGRam
Mean	29 =	10.61	JKLMNO	Mean	16 =	10.84	HIJKLMNO	LOWGROW
Mean	30 =	11.85	DEFGHI	Mean	42 =	10.81	IJKLMNO	TPR P
Mean	31 =	10.33	MNOP	Mean	24 =	10.81	IJKLMNO	PANTHER
Mean	32 =	11.61	EFGHIJ	Mean	29 =	10.61	JKLMNO	LP 102-92
Mean	33 =	11.45	FGHIJKL	Mean	34 =	10.48	KLMNO	RIVIERA II
Mean	34 =	10.48	KLMNO	Mean	4 =	10.37	LMNOP	BRIGHTSTAR
Mean	35 =	11.37	FGHIJKLM	Mean	31 =	10.33	MNOP	HEADSTART
Mean	36 =	12.68	BCDE	Mean	2 =	10.30	MNOP	ADVANTAGE
Mean	37 =	11.92	DEFGH	Mean	23 =	10.14	NOP	PALMER II
Mean	38 =	10.06	OPQ	Mean	38 =	10.06	OPQ	
Mean	39 =	11.05	GHIJKLMNO	Mean	12 =	10.05	OPQ	ELKA
Mean	40 =	11.19	FGHIJKLMN	Mean	28 =	10.01	OPQ	
Mean	41 =	11.07	GHIJKLMNO	Mean	19 =	9.303	PQ	
Mean	42 =	10.81	IJKLMNO	Mean	27 =	8.963	Q	LP EE-93

Table 15. Anther color in 1997 of perennial ryegrass cv. PROGram (=Code Names TPR96A & TPR97A) compared with other cultivars transplanted in November 1996 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Percent anther percent, 1997 year data

Line	White	Yellow	Brown	Purple	Red
Achiever	10	83	0	7	0
Advantage	2	93	0	3	2
Blazer III	3	92	2	3	0
Brightstar	5	85	0	10	0
Calypso II	14	78	0	8	0
Citation II	15	72	0	13	0
Cutter	8	85	0	7	0
Delaware Dwarf	6	79	0	15	0
Derby Supreme	13	64	0	23	0
Edge	11	79	0	10	0
Elf	13	85	0	2	0
Elka	10	88	0	2	0
Express	15	74	0	11	0
Headstart	10	79	0	11	0
	11	86	0	3	0
Linn	66	28	0	6	0
Loretta nova	10	82	0	8	0
Lowgrow	0	90	0	10	0
Lynx	16	79	0	3	2
Magic	10	77	0	13	0
	3	91	2	2	2
Manhattan	5	81	0	14	0
Manhattan II	11	66	0	23	0
Morning Star	7	88	0	5	0
Palmer II	7	80	0	00	2
Panther	3	94	0	3	0
Pennfine	23	66	0	11	0
Pick Lp EE-93	8	83	0	9	0
	7	82	0	8	3
Pick Lp 102-92	8	84	0	8	0
Pinnacle	6	89	0	5	0
Prelude II	7	87	0	4	2
Riviera II	7	77	0	16	0
	10	87	0	3	0
Saturn	13	75	0	9	3
Sherwood	15	61	0	24	0
Target	20	69	0	11	0
	8	88	0	2	2
TPR 96 A ProGram	8	76	0	16	0
TPR 96 B	13	77	0	8	0
TPR 96 C	13	75	2	10	0
TPR 96 P	6	76	0	18	0

Table 16. Seed width (MM) in 1997 of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 20 : 10 SEED WIDTH (MM) Case Range : 262 - 303
Error Mean Square = 0.4630
Error Degrees of Freedom = 82
Number of observations to calculate a mean = 3
Least Significant Difference Test
LSD Value = 1.105 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	11.50	BCDE	Mean	14 =	13.00	A	LINN
Mean	2 =	11.33	BCDE	Mean	6 =	12.00	AB	CITATION II
Mean	3 =	11.17	BCDE	Mean	18 =	12.00	AB	MAGIC
Mean	4 =	11.00	BCDE	Mean	38 =	11.83	BC	
Mean	5 =	11.33	BCDE	Mean	20 =	11.83	BC	MANHATTAN
Mean	6 =	12.00	AB	Mean	25 =	11.83	BC	PENNFINE
Mean	7 =	11.00	BCDE	Mean	17 =	11.67	BCD	LYNX
Mean	8 =	11.33	BCDE	Mean	1 =	11.50	BCDE	ACHIEVER
Mean	9 =	11.50	BCDE	Mean	12 =	11.50	BCDE	ELKA
Mean	10 =	11.33	BCDE	Mean	36 =	11.50	BCDE	SHERWOOD
Mean	11 =	10.50	E	Mean	22 =	11.50	BCDE	MORNING STAR
Mean	12 =	11.50	BCDE	Mean	9 =	11.50	BCDE	DERBY SUPREME
[illegible]	13 =	11.17	BCDE	Mean	37 =	11.33	BCDE	TARGET
Mean	14 =	13.00	A	Mean	34 =	11.33	BCDE	RIVIERA II
Mean	15 =	11.33	BCDE	Mean	5 =	11.33	BCDE	CALYPSO II
Mean	16 =	10.50	E	Mean	15 =	11.33	BCDE	LORETTA NOVA
Mean	17 =	11.67	BCD	Mean	2 =	11.33	BCDE	ADVANTAGE
Mean	18 =	12.00	AB	Mean	8 =	11.33	BCDE	DELAWARE DWARF
Mean	19 =	10.67	DE	Mean	10 =	11.33	BCDE	EDGE
Mean	20 =	11.83	BC	Mean	13 =	11.17	BCDE	EXPRESS
Mean	21 =	10.67	DE	Mean	26 =	11.17	BCDE	SATURN
Mean	22 =	11.50	BCDE	Mean	3 =	11.17	BCDE	BLAZER III
Mean	23 =	10.50	E	Mean	7 =	11.00	BCDE	CUTTER
Mean	24 =	10.83	CDE	Mean	40 =	11.00	BCDE	TPR 96 B
Mean	25 =	11.83	BC	Mean	4 =	11.00	BCDE	BRIGHTSTAR
Mean	26 =	11.17	BCDE	Mean	41 =	11.00	BCDE	TPR 96 C
Mean	27 =	10.67	DE	Mean	29 =	10.83	CDE	SUNSHINE
Mean	28 =	10.83	CDE	Mean	33 =	10.83	CDE	PRELUDE II
Mean	29 =	10.83	CDE	Mean	32 =	10.83	CDE	PINNACLE
Mean	30 =	10.83	CDE	Mean	30 =	10.83	CDE	JIFFIE
Mean	31 =	10.83	CDE	Mean	28 =	10.83	CDE	
Mean	32 =	10.83	CDE	Mean	24 =	10.83	CDE	PANTHER
Mean	33 =	10.83	CDE	Mean	35 =	10.83	CDE	LP H-93
Mean	34 =	11.33	BCDE	Mean	31 =	10.83	CDE	HEADSTART
Mean	35 =	10.83	CDE	Mean	39 =	10.83	CDE	TPR 96 A = PROGram
Mean	36 =	11.50	BCDE	Mean	42 =	10.67	DE	TPR 96 P
Mean	37 =	11.33	BCDE	Mean	27 =	10.67	DE	LP EE-93
[illegible]	38 =	11.83	BC	Mean	19 =	10.67	DE	
Mean	39 =	10.83	CDE	Mean	21 =	10.67	DE	MANHATTAN II
Mean	40 =	11.00	BCDE	Mean	23 =	10.50	E	PALMER II
Mean	41 =	11.00	BCDE	Mean	16 =	10.50	E	LOWGROW
Mean	42 =	10.67	DE	Mean	11 =	10.50	E	ELF

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Table 17. Seed length (MM) in 1997 of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Variable 19 : SEED LENGTH (MM) OF 10 SEEDS
Error Mean Square = 6.284 Case Range : 262 - 303
Error Degrees of Freedom = 82
No. observations to calculate a mean = 3
Least Significant Difference Test
LSD Value = 4.072 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	52.17	BCDE	Mean	14 =	57.17	A	LINN
Mean	2 =	47.00	FGHIJ	Mean	20 =	56.17	AB	MANHATTAN
Mean	3 =	49.33	DEFGHI	Mean	25 =	55.33	ABC	PENNFINE
Mean	4 =	47.33	FGHIJ	Mean	6 =	52.33	BCD	CITATION II
Mean	5 =	49.33	DEFGHI	Mean	1 =	52.17	BCDE	ACHIEVER
Mean	6 =	52.33	BCD	Mean	18 =	52.00	CDE	MAGIC
Mean	7 =	51.50	CDE	Mean	32 =	52.00	CDE	PINNACLE
Mean	8 =	51.50	CDE	Mean	7 =	51.50	CDE	CUTTER
Mean	9 =	48.83	DEFGHIJ	Mean	8 =	51.50	CDE	DELAWARE DWARF
Mean	10 =	50.50	DEFGH	Mean	21 =	51.50	CDE	MANHATTAN II
Mean	11 =	48.50	DEFGHIJ	Mean	33 =	51.00	DEF	PRELUDE II
Mean	12 =	42.83	K	Mean	17 =	51.00	DEF	LYNX
Mean	13 =	47.00	FGHIJ	Mean	34 =	50.83	DEFG	RIVIERA II
Mean	14 =	57.17	A	Mean	26 =	50.83	DEFG	SATURN
Mean	15 =	50.17	DEFGH	Mean	10 =	50.50	DEFGH	EDGE
Mean	16 =	48.33	DEFGHIJ	Mean	28 =	50.50	DEFGH	
Mean	17 =	51.00	DEF	Mean	35 =	50.33	DEFGH	LP H-93
Mean	18 =	52.00	CDE	Mean	15 =	50.17	DEFGH	LORETTA NOVA
Mean	19 =	46.50	HIJK	Mean	36 =	49.50	DEFGHI	SHERWOOD
Mean	20 =	56.17	AB	Mean	30 =	49.50	DEFGHI	JIFFIE
Mean	21 =	51.50	CDE	Mean	40 =	49.33	DEFGHI	TPR 96 B
Mean	22 =	49.17	DEFGHI	Mean	5 =	49.33	DEFGHI	CALYPSO II
Mean	23 =	47.33	FGHIJ	Mean	3 =	49.33	DEFGHI	BLAZER III
Mean	24 =	46.83	GHIJK	Mean	31 =	49.33	DEFGHI	HEADSTART
Mean	25 =	55.33	ABC	Mean	22 =	49.17	DEFGHI	MORNING STAR
Mean	26 =	50.83	DEFG	Mean	9 =	48.83	DEFGHIJ	DERBY SUPREME
Mean	27 =	46.83	GHIJK	Mean	11 =	48.50	DEFGHIJ	ELF
Mean	28 =	50.50	DEFGH	Mean	38 =	48.33	DEFGHIJ	
Mean	29 =	46.00	IJK	Mean	42 =	48.33	DEFGHIJ	TPR 96 P
Mean	30 =	49.50	DEFGHI	Mean	16 =	48.33	DEFGHIJ	LONGROW
Mean	31 =	49.33	DEFGHI	Mean	41 =	48.17	EFGHIJ	TPR 96 C
Mean	32 =	52.00	CDE	Mean	23 =	47.33	FGHIJ	PALMER II
Mean	33 =	51.00	DEF	Mean	4 =	47.33	FGHIJ	BRIGHTSTAR
Mean	34 =	50.83	DEFG	Mean	13 =	47.00	FGHIJ	EXPRESS
Mean	35 =	50.33	DEFGH	Mean	2 =	47.00	FGHIJ	ADVANTAGE
Mean	36 =	49.50	DEFGHI	Mean	37 =	46.83	GHIJK	TARGET
Mean	37 =	46.83	GHIJK	Mean	24 =	46.83	GHIJK	PANTHER
Mean	38 =	48.33	DEFGHIJ	Mean	27 =	46.83	GHIJK	LP EE-93
Mean	39 =	45.00	JK	Mean	19 =	46.50	HIJK	
Mean	40 =	49.33	DEFGHI	Mean	29 =	46.00	IJK	SUNSHINE
Mean	41 =	48.17	EFGHIJ	Mean	39 =	45.00	JK	TPR 96 A = ProGram
Mean	42 =	48.33	DEFGHIJ	Mean	12 =	42.83	K	ELKA

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Table 18. Coleoptile anthocyanin in perennial ryegrass cv. proGram (Code No's. TPR96A & TPR97A) in 1997 compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Case Range : 145 - 192
Variable 5 : ANTHOCYANIN PERCENT in 10 DAY OLD PLANT
Error Mean Square = 58.86
Error Degrees of Freedom = 94
No. of observations to calculate a mean = 3
Least Significant Difference Test
LSD value = 12.44 at alpha = 0.50

Original Order				Ranked Order				LINE
Mean	1 =	14.67	BCDEF	Mean	28 =	34.67	A	ELKA
Mean	2 =	10.67	CDEFG	Mean	24 =	24.00	AB	LOWGROW
Mean	3 =	22.67	ABC	Mean	34 =	24.00	AB	LYNX
Mean	4 =	22.67	ABC	Mean	26 =	22.67	ABC	ELF
Mean	5 =	20.00	BCD	Mean	3 =	22.67	ABC	MANHATTAN
Mean	6 =	2.667	FG	Mean	4 =	22.67	ABC	MANHATTAN II
Mean	7 =	8.000	DEFG	Mean	15 =	22.67	ABC	BRIGHTSTAR
Mean	8 =	20.00	BCD	Mean	5 =	20.00	BCD	PINNACLE
Mean	9 =	14.67	BCDEF	Mean	8 =	20.00	BCD	HEADSTART
Mean	10 =	9.333	DEFG	Mean	13 =	20.00	BCD	CUTTER
Mean	11 =	12.00	BCDEFG	Mean	23 =	20.00	BCD	RIVIERA II
Mean	12 =	14.67	BCDEF	Mean	33 =	20.00	BCD	DERBY SUPREME
Mean	13 =	20.00	BCD	Mean	31 =	20.00	BCD	TARGET
Mean	14 =	13.33	BCDEFG	Mean	21 =	20.00	BCD	SHERWOOD
Mean	15 =	22.67	ABC	Mean	19 =	20.00	BCD	JIFFIE
Mean	16 =	10.67	CDEFG	Mean	35 =	17.33	BCDE	
Mean	17 =	14.67	BCDEF	Mean	27 =	17.33	BCDE	DELAWARE DWARF
Mean	18 =	13.33	BCDEFG	Mean	38 =	14.67	BCDEF	SATURN
Mean	19 =	20.00	BCD	Mean	1 =	14.67	BCDEF	CITATION II
Mean	20 =	14.67	BCDEF	Mean	20 =	14.67	BCDEF	
Mean	21 =	20.00	BCD	Mean	12 =	14.67	BCDEF	EDGE
Mean	22 =	13.33	BCDEFG	Mean	17 =	14.67	BCDEF	SUNSHINE
Mean	23 =	20.00	BCD	Mean	9 =	14.67	BCDEF	BLAZER III
Mean	24 =	24.00	AB	Mean	29 =	14.67	BCDEF	EXPRESS
Mean	25 =	10.67	CDEFG	Mean	22 =	13.33	BCDEFG	CALYPSO II
Mean	26 =	22.67	ABC	Mean	30 =	13.33	BCDEFG	MORNING STAR
Mean	27 =	17.33	BCDE	Mean	14 =	13.33	BCDEFG	ADVANTAGE
Mean	28 =	34.67	A	Mean	18 =	13.33	BCDEFG	LP EE-93
Mean	29 =	14.67	BCDEF	Mean	42 =	13.33	BCDEFG	LP BB-93
Mean	30 =	13.33	BCDEFG	Mean	11 =	12.00	BCDEFG	PANTHER
Mean	31 =	20.00	BCD	Mean	25 =	10.67	CDEFG	ACHIEVER
Mean	32 =	8.000	DEFG	Mean	16 =	10.67	CDEFG	PALMER II
Mean	33 =	20.00	BCD	Mean	43 =	10.67	CDEFG	FIESTA III
Mean	34 =	24.00	AB	Mean	44 =	10.67	CDEFG	LP O-93
Mean	35 =	17.33	BCDE	Mean	2 =	10.67	CDEFG	LINN
Mean	36 =	9.333	DEFG	Mean	10 =	9.333	DEFG	
Mean	37 =	9.333	DEFG	Mean	36 =	9.333	DEFG	PRELUDE II
Mean	38 =	14.67	BCDEF	Mean	37 =	9.333	DEFG	LP H-93
Mean	39 =	1.333	G	Mean	47 =	9.333	DEFG	TPR 96C
Mean	40 =	6.667	EFG	Mean	45 =	8.000	DEFG	TPR 96A = ProGram
Mean	41 =	5.333	EFG	Mean	46 =	8.000	DEFG	TPR 96B
Mean	42 =	13.33	BCDEFG	Mean	7 =	8.000	DEFG	LORETTA NOVA
Mean	43 =	10.67	CDEFG	Mean	32 =	8.000	DEFG	MAGIC
Mean	44 =	10.67	CDEFG	Mean	40 =	6.667	EFG	PR 97 EL2
Mean	45 =	8.000	DEFG	Mean	41 =	5.333	EFG	LP I-93
Mean	46 =	8.000	DEFG	Mean	48 =	4.000	FG	TPR 96P
Mean	47 =	9.333	DEFG	Mean	6 =	2.667	FG	PENNFINE
Mean	48 =	4.000	FG	Mean	39 =	1.333	G	PR 97 DII

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Table 19. 1997 weight 1000 seed of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1996 near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 6PRPVP97
Randomized complete block design, three replications
Case Range : 172 - 213
Variable 18 : 1000 SEED WEIGHT (G)
Error Mean Square = 0.02200
Error Degrees of Freedom = 82
No. of observations to calculate a mean = 3
Least significant Difference Test
LSD value = 0.2409 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	2.047	B	Mean	14 =	2.847	A	LINN
Mean	2 =	1.727	CDE	Mean	1 =	2.047	B	ACHIEVER
Mean	3 =	1.647	CDE	Mean	10 =	1.847	BC	EDGE
Mean	4 =	1.660	CDE	Mean	9 =	1.827	BC	DERBY SUPREME
Mean	5 =	1.760	CDE	Mean	36 =	1.807	BC	SHERWOOD
Mean	6 =	1.793	C	Mean	6 =	1.793	C	CITATION II
Mean	7 =	1.713	CDE	Mean	32 =	1.787	CD	PINNACLE
Mean	8 =	1.700	CDE	Mean	40 =	1.773	CD	TPR 96B
Mean	9 =	1.827	BC	Mean	39 =	1.767	CD	TPR 96A = ProGram
Mean	10 =	1.847	BC	Mean	5 =	1.760	CDE	CALYPSO II
Mean	11 =	1.713	CDE	Mean	23 =	1.753	CDE	PALMER II
Mean	12 =	1.093	I	Mean	21 =	1.747	CDE	MANHATTAN II
Mean	13 =	1.693	CDE	Mean	38 =	1.740	CDE	
	14 =	2.847	A	Mean	2 =	1.727	CDE	ADVANTAGE
Mean	15 =	1.133	HI	Mean	25 =	1.727	CDE	PENNFINE
Mean	16 =	1.373	FGH	Mean	41 =	1.727	CDE	TPR 96C
Mean	17 =	1.680	CDE	Mean	7 =	1.713	CDE	CUTTER
Mean	18 =	1.680	CDE	Mean	11 =	1.713	CDE	ELF
Mean	19 =	1.693	CDE	Mean	26 =	1.707	CDE	LP H-93
Mean	20 =	1.380	FG	Mean	33 =	1.707	CDE	PRELUDE II
Mean	21 =	1.747	CDE	Mean	8 =	1.700	CDE	DELAWARE DWARF
Mean	22 =	1.613	CDEF	Mean	19 =	1.693	CDE	
Mean	23 =	1.753	CDE	Mean	13 =	1.693	CDE	EXPRESS
Mean	24 =	1.547	DEFG	Mean	35 =	1.693	CDE	SATURN
Mean	25 =	1.727	CDE	Mean	28 =	1.680	CDE	
Mean	26 =	1.707	CDE	Mean	17 =	1.680	CDE	LYNX
Mean	27 =	1.333	GHI	Mean	18 =	1.680	CDE	MAGIC
Mean	28 =	1.680	CDE	Mean	4 =	1.660	CDE	BRIGHTSTAR
Mean	29 =	1.653	CDE	Mean	30 =	1.660	CDE	JIFFIE
Mean	30 =	1.660	CDE	Mean	29 =	1.653	CDE	LP 102-92
Mean	31 =	1.393	FG	Mean	3 =	1.647	CDE	BLAZER III
Mean	32 =	1.787	CD	Mean	42 =	1.640	CDE	TPR 96P
Mean	33 =	1.707	CDE	Mean	22 =	1.613	CDEF	MORNING STAR
Mean	34 =	1.613	CDEF	Mean	34 =	1.613	CDEF	RIVIERA II
Mean	35 =	1.693	CDE	Mean	24 =	1.547	DEFG	PANTHER
Mean	36 =	1.807	BC	Mean	37 =	1.520	EFG	TARGET
Mean	37 =	1.520	EFG	Mean	31 =	1.393	FG	HEADSTART
Mean	38 =	1.740	CDE	Mean	20 =	1.380	FG	MANHATTAN
Mean	39 =	1.767	CD	Mean	16 =	1.373	FGH	LOWGROW
Mean	40 =	1.773	CD	Mean	27 =	1.333	GHI	LP EE-93
Mean	41 =	1.727	CDE	Mean	15 =	1.133	HI	LORETTA NOVA
Mean	42 =	1.640	CDE	Mean	12 =	1.093	I	ELKA

List of tables containing measurements of morphological and other characteristics of perennial ryegrass cultivars obtained during 1998 on plants that had been transplanted in November 1997 in spaced plant plots near Corvallis, Oregon

Table 1A Heading date in 1998

Table 2A Mature growth habit, prostrate vs upright, 1998

Table 3A Winter color, 1998

Table 4A Percent rough vs smooth rachis, 1998

Table 5A Flag leaf height (cm) 1998

Table 6A Flag leaf width (mm) 1998

Table 7A Flag leaf length (cm) 1998

Table 8A Length of spikelet (mm) 1998

Table 9A Outer glume length (mm) 1998

Table 10A Number of florets/spikelet 1998

Table 11A Number of spikelets/spike 1998

Table 12A Plant height (cm) 1998

Table 13A Length of spike (cm) 1998

Table 14A Length of flag leaf sheath (cm) 1998

Table 15A Color of spike 1998

Table 16A Width of seed (mm) 1998

Table 17A Length of seed (mm)

Table 19A Weight of 1000 seed 1998

Table 20A Flag leaf posture at boot stage 1998

Table 21A Anther date (Julian) 1998

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Table 1A. Heading date in 1998 of perennial ryegrass cv ProGram (Code Names TPR96[A] & TPR97[A]) compared to other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Case Range 139-184, Variable 6: HEADING DATE (JULIAN)
Randomized complete block design, 3 replications, ANOVA-LSD mean separation
Observations to calculate mean = 3, Least Significant Difference Test
Error mean square = 3.344 Error degrees of freedom = 90
LSD value = 2.966 at alpha = 0.050

Original Order				Ranked Order				LINE	
Mean	1 =	146.4	KLMN	Mean	16 =	157.6	A	LORETTA NOVA	= June 7
Mean	2 =	151.3	CDEF	Mean	20 =	154.3	B	MANHATTAN	= June 4
Mean	3 =	149.9	CDEFGHIJ	Mean	17 =	152.4	BC	LOWGROW	
Mean	4 =	151.4	BCDE	Mean	25 =	152.4	BCD	PANTHER	
Mean	5 =	143.2	O	Mean	36 =	151.4	BCDE	PR 97 EL2	= June 1
Mean	6 =	147.2	JKLMN	Mean	22 =	151.4	BCDE		
Mean	7 =	148.4	FGHIJKL	Mean	4 =	151.4	BCDE	BRIGHTSTAR	
Mean	8 =	148.6	EFGHIJK	Mean	2 =	151.3	CDEF	ADVANTAGE	
Mean	9 =	150.3	CDEFGHI	Mean	34 =	151.3	CDEFG	SUNBRIGHT	
Mean	10 =	148.3	GHIJKL	Mean	19 =	151.1	CDEFGH	MAGIC	= June 1
Mean	11 =	150.4	CDEFGHI	Mean	11 =	150.4	CDEFGHI	ELF	= May 30
Mean	12 =	150.1	CDEFGHIJ	Mean	9 =	150.3	CDEFGHI	DERBY SUP	
"	13 =	148.5	EFGHIJK	Mean	12 =	150.1	CDEFGHIJ		
Mean	14 =	147.2	JKLMN	Mean	41 =	150.0	CDEFGHIJ	TARGET	= May 30
Mean	15 =	137.2	P	Mean	31 =	149.9	CDEFGHIJ	LP 0-93	
Mean	16 =	157.6	A	Mean	3 =	149.9	CDEFGHIJ	BLAZER III	
Mean	17 =	152.4	BC	Mean	28 =	149.8	CDEFGHIJ	PRELUDE II	
Mean	18 =	145.5	LMNO	Mean	23 =	149.8	CDEFGHIJ	MORN STAR	
Mean	19 =	151.1	CDEFGH	Mean	27 =	149.6	CDEFGHIJ	PINNACLE	
Mean	20 =	154.3	B	Mean	29 =	149.6	CDEFGHIJ	RACER	
Mean	21 =	148.9	EFGHIJK	Mean	33 =	149.6	CDEFGHIJ	LP BB-93	
Mean	22 =	151.4	BCDE	Mean	24 =	149.6	CDEFGHIJ	PALMER II	
Mean	23 =	149.8	CDEFGHIJ	Mean	37 =	149.4	DEFGHIJ	RIV II	
Mean	24 =	149.6	CDEFGHIJ	Mean	40 =	149.3	EFGHIJK	SUNSHINE	
Mean	25 =	152.4	BCD	Mean	38 =	149.1	EFGHIJK	SATURN	
Mean	26 =	145.1	MNO	Mean	35 =	149.0	EFGHIJK	PR 97 DII	
Mean	27 =	149.6	CDEFGHIJ	Mean	21 =	148.9	EFGHIJK	MAN II	
Mean	28 =	149.8	CDEFGHIJ	Mean	46 =	148.9	EFGHIJK	TPR 96 P =	5/29
Mean	29 =	149.6	CDEFGHIJ	Mean	8 =	148.6	EFGHIJK	DEL DWF	
Mean	30 =	144.9	NO	Mean	13 =	148.5	EFGHIJK	HEADSTART	
Mean	31 =	149.9	CDEFGHIJ	Mean	42 =	148.4	FGHIJKL		
Mean	32 =	148.0	IJKLM	Mean	7 =	148.4	FGHIJKL	CUTTER	
Mean	33 =	149.6	CDEFGHIJ	Mean	10 =	148.3	GHIJKL	EDGE	
Mean	34 =	151.3	CDEFG	Mean	43 =	148.2	HIJKL	TPR 96 A = ProGram	= 5/28
Mean	35 =	149.0	EFGHIJK	Mean	45 =	148.1	IJKL	TPR 96 C	= 5/28
Mean	36 =	151.4	BCDE	Mean	44 =	148.1	IJKLM	TPR 96 B	
Mean	37 =	149.4	DEFGHIJ	Mean	39 =	148.0	IJKLM	SHERWOOD	
"	38 =	149.1	EFGHIJK	Mean	32 =	148.0	IJKLM	LP Q-93	
Mean	39 =	148.0	IJKLM	Mean	14 =	147.2	JKLMN	JIFFIE	
Mean	40 =	149.3	EFGHIJK	Mean	6 =	147.2	JKLMN	CIT II	
Mean	41 =	150.0	CDEFGHIJ	Mean	1 =	146.4	KLMN	ACHIEVER	
Mean	42 =	148.4	FGHIJKL	Mean	18 =	145.5	LMNO	LYNX	
Mean	43 =	148.2	HIJKL	Mean	26 =	145.1	MNO	PENNIPNE = May 25	
Mean	44 =	148.1	IJKLM	Mean	30 =	144.9	NO		
Mean	45 =	148.1	IJKL	Mean	5 =	143.2	O	CALYPSO II	
Mean	46 =	148.9	EFGHIJK	Mean	15 =	137.2	P	LINN = May 17	

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Table 2A. Mature growth habit in 1998 of perennial ryegrass cv ProGram (Code names TPR96A & TPR97A) compared with other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Case Range: 139-184, Variable 19: MATURE GROWTH HABIT 1=PROSTRATE 9=UPRIGHT
Randomized complete block design, 3 replications, ANOVA-LSD mean separation
Observations to calculate mean = 3 Least significant difference test
Error mean square = 1.1773 Error degrees of freedom = 90
LSD value = 2.160 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	6.667	ABCD	Mean	22 =	7.667	A	
Mean	2 =	7.333	AB	Mean	2 =	7.333	AB	ADVANTAGE
Mean	3 =	6.333	ABCD	Mean	14 =	7.333	AB	JIFFIE
Mean	4 =	6.333	ABCD	Mean	13 =	7.333	AB	HEADSTART
Mean	5 =	6.667	ABCD	Mean	7 =	7.333	AB	CUTTER
Mean	6 =	7.000	ABC	Mean	25 =	7.000	ABC	PANTHER
Mean	7 =	7.333	AB	Mean	33 =	7.000	ABC	LP BB-93
Mean	8 =	6.333	ABCD	Mean	23 =	7.000	ABC	MORN. STAR
Mean	9 =	5.333	BCD	Mean	6 =	7.000	ABC	CIT II
Mean	10 =	5.333	BCD	Mean	34 =	7.000	ABC	SUNBRIGHT
Mean	11 =	6.000	ABCD	Mean	15 =	6.667	ABCD	LINN
Mean	12 =	6.333	ABCD	Mean	5 =	6.667	ABCD	CALYPSO II
Mean	13 =	7.333	AB	Mean	19 =	6.667	ABCD	MAGIC
Mean	14 =	7.333	AB	Mean	32 =	6.667	ABCD	LP Q-93
Mean	15 =	6.667	ABCD	Mean	36 =	6.667	ABCD	PR 97 EL2
Mean	16 =	3.000	E	Mean	38 =	6.667	ABCD	SATURN
Mean	17 =	5.667	ABCD	Mean	1 =	6.667	ABCD	ACHIEVER
Mean	18 =	6.000	ABCD	Mean	41 =	6.667	ABCD	TARGET
Mean	19 =	6.667	ABCD	Mean	30 =	6.667	ABCD	
Mean	20 =	6.000	ABCD	Mean	40 =	6.667	ABCD	SUNSHINE
Mean	21 =	6.667	ABCD	Mean	21 =	6.667	ABCD	MAN II
Mean	22 =	7.667	A	Mean	24 =	6.667	ABCD	PALMER II
Mean	23 =	7.000	ABC	Mean	35 =	6.667	ABCD	PR 97 DII
Mean	24 =	6.667	ABCD	Mean	4 =	6.333	ABCD	BRIGHTSTAR
Mean	25 =	7.000	ABC	Mean	8 =	6.333	ABCD	DEL DWF
Mean	26 =	6.000	ABCD	Mean	37 =	6.333	ABCD	RIV II
Mean	27 =	5.667	ABCD	Mean	29 =	6.333	ABCD	RACER
Mean	28 =	5.667	ABCD	Mean	12 =	6.333	ABCD	
Mean	29 =	6.333	ABCD	Mean	3 =	6.333	ABCD	BLAZER III
Mean	30 =	6.667	ABCD	Mean	46 =	6.333	ABCD	TPR 96 P
Mean	31 =	5.667	ABCD	Mean	39 =	6.000	ABCD	SHERWOOD
Mean	32 =	6.667	ABCD	Mean	26 =	6.000	ABCD	PENNFINE
Mean	33 =	7.000	ABC	Mean	20 =	6.000	ABCD	MAN.
Mean	34 =	7.000	ABC	Mean	11 =	6.000	ABCD	ELF
Mean	35 =	6.667	ABCD	Mean	18 =	6.000	ABCD	LYNX
Mean	36 =	6.667	ABCD	Mean	45 =	6.000	ABCD	TPR 96 C
Mean	37 =	6.333	ABCD	Mean	27 =	5.667	ABCD	PINNACLE
Mean	38 =	6.667	ABCD	Mean	28 =	5.667	ABCD	PRELUDE II
Mean	39 =	6.000	ABCD	Mean	43 =	5.667	ABCD	TPR 96 A = ProGram -- [63% upright, 37% prostrate]
Mean	40 =	6.667	ABCD	Mean	31 =	5.667	ABCD	LP O-93
Mean	41 =	6.667	ABCD	Mean	17 =	5.667	ABCD	LOWGROW
Mean	42 =	5.000	CDE	Mean	10 =	5.333	BCD	EDGE
Mean	43 =	5.667	ABCD	Mean	9 =	5.333	BCD	DERBY SUP
Mean	44 =	4.667	DE	Mean	42 =	5.000	CDE	
Mean	45 =	6.000	ABCD	Mean	44 =	4.667	DE	TPR 96 B
Mean	46 =	6.333	ABCD	Mean	16 =	3.000	E	LORETTA NOVA

Table 3A. Winter color in 1998 of perennial ryegrass cv ProGram (Code names TPR96 A & TPR97A) compared with other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Case Range 139-184 Variable 18: WINTER COLOR 1=LIGHT GREEN
2=MEDIUM GREEN, 3=DARK GREEN, 4=BLUE
Randomized complete block design, 3 replications
Observations to calculate mean = 3, Least significant difference test
Error mean square = 0.2240 Error degrees of freedom = 90
LSD value = 0.7677 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	3.000	BCD	Mean	22 =	4.000	A	
Mean	2 =	2.667	CDE	Mean	30 =	4.000	A	
Mean	3 =	3.000	BCD	Mean	14 =	3.667	AB	JIFFIE
Mean	4 =	3.333	ABC	Mean	32 =	3.667	AB	LP Q-93
Mean	5 =	2.333	DE	Mean	33 =	3.667	AB	LP BB-93
Mean	6 =	2.667	CDE	Mean	12 =	3.667	AB	
Mean	7 =	3.333	ABC	Mean	36 =	3.667	AB	PR 97 EL2
Mean	8 =	2.667	CDE	Mean	31 =	3.667	AB	LP O-93
Mean	9 =	2.667	CDE	Mean	34 =	3.667	AB	SUNBRIGHT
Mean	10 =	2.667	CDE	Mean	4 =	3.333	ABC	BRIGHTSTAR
Mean	11 =	3.000	BCD	Mean	18 =	3.333	ABC	LYNX
Mean	12 =	3.667	AB	Mean	28 =	3.333	ABC	PRELUDE II
Mean	13 =	3.000	BCD	Mean	43 =	3.333	ABC	TPR 96 A = ProGram
Mean	14 =	3.667	AB	Mean	42 =	3.333	ABC	
Mean	15 =	1.333	F	Mean	24 =	3.333	ABC	PALMER II
Mean	16 =	2.667	CDE	Mean	7 =	3.333	ABC	CUTTER
Mean	17 =	2.667	CDE	Mean	29 =	3.000	BCD	RACER
Mean	18 =	3.333	ABC	Mean	27 =	3.000	BCD	PINNACLE
Mean	19 =	2.000	EF	Mean	3 =	3.000	BCD	BLAZER III
Mean	20 =	2.000	EF	Mean	1 =	3.000	BCD	ACHIEVER
Mean	21 =	2.333	DE	Mean	23 =	3.000	BCD	MORN. STAR
Mean	22 =	4.000	A	Mean	40 =	3.000	BCD	SUNSHINE
Mean	23 =	3.000	BCD	Mean	37 =	3.000	BCD	RIV II
Mean	24 =	3.333	ABC	Mean	35 =	3.000	BCD	PR 97 DII
Mean	25 =	2.667	CDE	Mean	11 =	3.000	BCD	ELF
Mean	26 =	2.000	EF	Mean	13 =	3.000	BCD	HEADSTART
Mean	27 =	3.000	BCD	Mean	46 =	3.000	BCD	TPR 96 P
Mean	28 =	3.333	ABC	Mean	45 =	3.000	BCD	TPR 96 C
Mean	29 =	3.000	BCD	Mean	44 =	2.667	CDE	TPR 96 B
Mean	30 =	4.000	A	Mean	8 =	2.667	CDE	DEL DWF
Mean	31 =	3.667	AB	Mean	16 =	2.667	CDE	LORETTA NOVA
Mean	32 =	3.667	AB	Mean	10 =	2.667	CDE	EDGE
Mean	33 =	3.667	AB	Mean	25 =	2.667	CDE	PANTHER
Mean	34 =	3.667	AB	Mean	9 =	2.667	CDE	DERBY SUP
Mean	35 =	3.000	BCD	Mean	17 =	2.667	CDE	LOWGROW
Mean	36 =	3.667	AB	Mean	6 =	2.667	CDE	CIT II
Mean	37 =	3.000	BCD	Mean	2 =	2.667	CDE	ADVANTAGE
Mean	38 =	2.333	DE	Mean	5 =	2.333	DE	CALYPSO II
Mean	39 =	2.333	DE	Mean	39 =	2.333	DE	SHERWOOD
Mean	40 =	3.000	BCD	Mean	21 =	2.333	DE	MAN II
Mean	41 =	2.333	DE	Mean	38 =	2.333	DE	SATURN
Mean	42 =	3.333	ABC	Mean	41 =	2.333	DE	TARGET
Mean	43 =	3.333	ABC	Mean	26 =	2.000	EF	PENNFINE
Mean	44 =	2.667	CDE	Mean	20 =	2.000	EF	MAN.
Mean	45 =	3.000	BCD	Mean	19 =	2.000	EF	MAGIC
Mean	46 =	3.000	BCD	Mean	15 =	1.333	F	LINN

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Table 4A. Percent rough vs smooth rachis in perennial ryegr.cv ProGram (Code names TPR96A & TPR97A) in 1998 compared to other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. pickseed West, Inc. Research Facility, Data File 98PRPVP
Case Range: 139-184 Variable 15: % ROUGH VS SMOOTH, SMOOTH = 1 Rough = 2
Randomized complete block design, 3 replications
Observations to calculate mean = 3 Least significant difference test
Error mean square = 0.01100 Error degrees of freedom = 90
LSD value = 0.1701 at alpha = 0.050

Original Order				Ranked Order				LINE	PERCENT Rough	PERCENT Smooth
Mean	1 =	1.633	GH	Mean	8 =	1.967	A	DSL DWF		
Mean	2 =	1.700	DEFGH	Mean	23 =	1.933	AB	MORN STAR		
Mean	3 =	1.783	BCDEFG	Mean	13 =	1.917	ABC	HEADSTART		
Mean	4 =	1.850	ABCD	Mean	38 =	1.917	ABC	SATURN		
Mean	5 =	1.767	BCDEFGH	Mean	37 =	1.917	ABC	RIV II		
Mean	6 =	1.817	ABCDEF	Mean	21 =	1.867	ABCD	MAN II		
Mean	7 =	1.800	ABCDEFG	Mean	41 =	1.867	ABCD	TARGET	87	13
Mean	8 =	1.967	A	Mean	27 =	1.867	ABCD	PINNACLE		
Mean	9 =	1.633	GH	Mean	20 =	1.850	ABCD	MAN.		
Mean	10 =	1.833	ABCDE	Mean	4 =	1.850	ABCD	BRIGHTSTAR		
Mean	11 =	1.833	ABCDE	Mean	11 =	1.833	ABCDE	ELF		
Mean	12 =	1.767	BCDEFGH	Mean	19 =	1.833	ABCDE	MAGIC	83	17
Mean	13 =	1.917	ABC	Mean	10 =	1.833	ABCDE	EDGE		
Mean	14 =	1.767	BCDEFGH	Mean	33 =	1.817	ABCDEF	LP BB-93		
Mean	15 =	1.700	DEFGH	Mean	28 =	1.817	ABCDEF	PRELUDE II		
Mean	16 =	1.333	I	Mean	6 =	1.817	ABCDEF	CIT II		
Mean	17 =	1.783	BCDEFG	Mean	35 =	1.817	ABCDEF	PR 97 DII	82	18
Mean	18 =	1.783	BCDEFG	Mean	7 =	1.800	ABCDEFG	CUTTER		
Mean	19 =	1.833	ABCDE	Mean	25 =	1.800	ABCDEFG	PANTHER		
Mean	20 =	1.850	ABCD	Mean	32 =	1.800	ABCDEFG	LP Q-93		
Mean	21 =	1.867	ABCD	Mean	31 =	1.800	ABCDEFG	LP O-93		
Mean	22 =	1.633	GH	Mean	3 =	1.783	BCDEFG	BLAZER III		
Mean	23 =	1.933	AB	Mean	24 =	1.783	BCDEFG	PALMER II		
Mean	24 =	1.783	BCDEFG	Mean	17 =	1.783	BCDEFG	LOWGROW		
Mean	25 =	1.800	ABCDEFG	Mean	30 =	1.783	BCDEFG			
Mean	26 =	1.783	BCDEFG	Mean	34 =	1.783	BCDEFG	SUNBRIGHT		
Mean	27 =	1.867	ABCD	Mean	26 =	1.783	BCDEFG	PENNFINE		
Mean	28 =	1.817	ABCDEF	Mean	18 =	1.783	BCDEFG	LYNX		
Mean	29 =	1.650	FGH	Mean	14 =	1.767	BCDEFGH	JIFFIE		
Mean	30 =	1.783	BCDEFG	Mean	5 =	1.767	BCDEFGH	CALYPSO II		
Mean	31 =	1.800	ABCDEFG	Mean	12 =	1.767	BCDEFGH			
Mean	32 =	1.800	ABCDEFG	Mean	36 =	1.750	CDEFGH	PR 97 EL2	75	25
Mean	33 =	1.817	ABCDEF	Mean	45 =	1.733	DEFGH	TPR 96 C	73	27
Mean	34 =	1.783	BCDEFG	Mean	39 =	1.733	DEFGH	SHERWOOD		
Mean	35 =	1.817	ABCDEF	Mean	43 =	1.733	DEFGH	TPR 96 A = ProGram	73	27
Mean	36 =	1.750	CDEFGH	Mean	40 =	1.700	DEFGH	SUNSHINE		
Mean	37 =	1.917	ABC	Mean	15 =	1.700	DEFGH	LINN		
Mean	38 =	1.917	ABC	Mean	2 =	1.700	DEFGH	ADVANTAGE		
Mean	39 =	1.733	DEFGH	Mean	42 =	1.667	EFGH			
Mean	40 =	1.700	DEFGH	Mean	46 =	1.650	FGH	TPR 96 P	65	35
Mean	41 =	1.867	ABCD	Mean	29 =	1.650	FGH	RACER		
Mean	42 =	1.667	EFGH	Mean	9 =	1.633	GH	DERBY SUP		
Mean	43 =	1.733	DEFGH	Mean	22 =	1.633	GH			
Mean	44 =	1.600	H	Mean	1 =	1.633	GH	ACHIEVER		
Mean	45 =	1.733	DEFGH	Mean	44 =	1.600	H	TPR 96 B	60	40
Mean	46 =	1.650	FGH	Mean	16 =	1.333	I	LORETTA NOVA		

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Table 5A. Flag leaf height in 1998 of perennial ryegrass cv. ProGram (Code names TPR96A & TPR97A) compared with other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. pickseed West, Inc. Research Facility, Data File 98PRPVP
Case Range: 139-184, Variable 14; FLAG LEAF HEIGHT (CM)
Randomized complete block design, 3 replications
Observations to calculate mean = 3, Least significant difference test
Error mean square = 4.030 Error degrees of freedom = 90
LSD value = 3.256 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	25.82	ABCDEF	Mean	20 =	29.00	A	MAN.
Mean	2 =	21.70	IJKLMNOPQR	Mean	3 =	26.78	AB	BLAZER III
Mean	3 =	26.78	AB	Mean	9 =	26.52	ABC	DERBY SUP
Mean	4 =	22.38	GHIJKLMNOPQ	Mean	5 =	26.40	ABCD	CALYPSO II
Mean	5 =	26.40	ABCD	Mean	17 =	26.16	ABCDE	LONGROW
Mean	6 =	23.73	BCDEFGHIJKLM	Mean	35 =	26.08	ABCDE	PR 97 DII
Mean	7 =	22.69	FGHIJKLMNOP	Mean	1 =	25.82	ABCDEF	ACHIEVER
Mean	8 =	25.15	BCDEFGH	Mean	15 =	25.43	BCDEFG	LINN
Mean	9 =	26.52	ABC	Mean	28 =	25.39	BCDEFG	PRELUDE II
Mean	10 =	24.91	BCDEFGHI	Mean	21 =	25.23	BCDEFG	MAN II
Mean	11 =	23.90	BCDEFGHIJKLM	Mean	8 =	25.15	BCDEFGH	DEL DWF
Mean	12 =	22.54	GHIJKLMNOPQ	Mean	19 =	25.14	BCDEFGH	MAGIC
Mean	13 =	21.50	KLMNOPQR	Mean	10 =	24.91	BCDEFGHI	EDGE
Mean	14 =	22.96	EFGHIJKLMNO	Mean	44 =	24.89	BCDEFGHIJ	TPR 96 B
Mean	15 =	25.48	BCDEFG	Mean	45 =	24.76	BCDEFGHIJ	TPR 96 C
Mean	16 =	20.29	NOPQR	Mean	38 =	24.69	BCDEFGHIJK	SATURN
Mean	17 =	26.16	ABCDE	Mean	23 =	24.50	BCDEFGHIJKL	MORN STAR
Mean	18 =	21.65	JKLMNOPQR	Mean	11 =	23.90	BCDEFGHIJKLM	ELF
Mean	19 =	25.14	BCDEFGH	Mean	6 =	23.73	BCDEFGHIJKLM	CIT II
Mean	20 =	29.00	A	Mean	25 =	23.70	BCDEFGHIJKLM	PANTHER
Mean	21 =	25.23	BCDEFG	Mean	37 =	23.65	BCDEFGHIJKLM	RIV II
Mean	22 =	21.28	LMNOPQR	Mean	39 =	23.58	BCDEFGHIJKLM	SHERWOOD
Mean	23 =	24.50	BCDEFGHIJKL	Mean	27 =	23.40	CDEFGHIJKLMN	PINNACLE
Mean	24 =	19.83	OPQR	Mean	46 =	23.21	DEFGHIJKLMN	TPR 96 P
Mean	25 =	23.70	BCDEFGHIJKLM	Mean	42 =	23.09	EFGHIJKLMN	
Mean	26 =	22.59	FGHIJKLMNOP	Mean	14 =	22.96	EFGHIJKLMNO	JIFFIE
Mean	27 =	23.40	CDEFGHIJKLMN	Mean	36 =	22.93	EFGHIJKLMNO	PR 97 EL2
Mean	28 =	25.39	BCDEFG	Mean	7 =	22.69	FGHIJKLMNOP	CUTTER
Mean	29 =	21.97	HIJKLMNOPQR	Mean	26 =	22.59	FGHIJKLMNOP	PENNFINE
Mean	30 =	19.31	QR	Mean	43 =	22.58	FGHIJKLMNOP	TPR 96 A = ProGram
Mean	31 =	19.72	OPQR	Mean	41 =	22.54	GHIJKLMNOPQ	TARGET
Mean	32 =	22.38	GHIJKLMNOPQ	Mean	12 =	22.54	GHIJKLMNOPQ	
Mean	33 =	18.94	R	Mean	4 =	22.38	GHIJKLMNOPQ	BRIGHTSTAR
Mean	34 =	20.91	MNOPQR	Mean	32 =	22.38	GHIJKLMNOPQ	LP Q-93
Mean	35 =	26.08	ABCDE	Mean	29 =	21.97	HIJKLMNOPQR	RACER
Mean	36 =	22.93	EFGHIJKLMNO	Mean	2 =	21.70	IJKLMNOPQR	ADVANTAGE
Mean	37 =	23.65	BCDEFGHIJKLM	Mean	18 =	21.65	JKLMNOPQR	LYNX
Mean	38 =	24.69	BCDEFGHIJK	Mean	13 =	21.50	KLMNOPQR	HEADSTART
Mean	39 =	23.58	BCDEFGHIJKLM	Mean	22 =	21.28	LMNOPQR	
Mean	40 =	19.55	PQR	Mean	34 =	20.91	MNOPQR	SUNBRIGHT
Mean	41 =	22.54	GHIJKLMNOPQ	Mean	16 =	20.29	NOPQR	LORETTA NOVA
Mean	42 =	23.09	EFGHIJKLMN	Mean	24 =	19.83	OPQR	PALMER II
Mean	43 =	22.58	FGHIJKLMNOP	Mean	31 =	19.72	OPQR	LP O-93
Mean	44 =	24.89	BCDEFGHIJ	Mean	40 =	19.55	PQR	SUNSHINE
Mean	45 =	24.76	BCDEFGHIJ	Mean	30 =	19.31	QR	
Mean	46 =	23.21	DEFGHIJKLMN	Mean	33 =	18.94	R	LP BB-93

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Table 6A. Flag leaf width in 1998 of perennial ryegrass cv ProGram (Code names TPR96[A] & TPR97[A]) compared with other cultivars transplanted to spaced plant plots in November 1997 near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data file 98PRPVP
Case Range; 139-184, Variable 7; FLAG LEAF WIDTH (MM)
Randomized complete block design, 3 replications
Observations to calculate mean = 3, Least significant difference test
Error mean square = 0.5800, Error degrees of freedom = 90
LSD value = 0.3907 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	2.593	CDEFGHIJKLMN	Mean	20 =	3.210	A	MAN
Mean	2 =	2.410	HIJKLMN	Mean	5 =	3.003	AB	CALYPSO II
Mean	3 =	2.793	BCDEFGH	Mean	6 =	2.933	ABC	CIT II
Mean	4 =	2.520	EFGHIJKLMN	Mean	17 =	2.913	ABCD	LOWGROW
Mean	5 =	3.003	AB	Mean	15 =	2.893	ABCDE	LINN
Mean	6 =	2.933	ABC	Mean	23 =	2.870	ABCDEF	MORN STAR
Mean	7 =	2.550	CDEFGHIJKLMN	Mean	19 =	2.840	ABCDEFG	MAGIC
Mean	8 =	2.837	ABCDEFG	Mean	8 =	2.837	ABCDEFG	DEL DWF
Mean	9 =	2.660	BCDEFGHIJKL	Mean	3 =	2.793	BCDEFGH	BLAZER III
Mean	10 =	2.653	BCDEFGHIJKL	Mean	18 =	2.770	BCDEFGHI	LYNX
Mean	11 =	2.720	BCDEFGHIJ	Mean	11 =	2.720	BCDEFGHIJ	ELF
Mean	12 =	2.620	BCDEFGHIJKLM	Mean	25 =	2.720	BCDEFGHIJ	PANTHER
Mean	13 =	2.460	GHIJKLMN	Mean	28 =	2.693	BCDEFGHIJK	PRELUDE II
Mean	14 =	2.487	FGHIJKLMN	Mean	45 =	2.687	BCDEFGHIJKL	TPR 96 C
Mean	15 =	2.893	ABCDE	Mean	42 =	2.677	BCDEFGHIJKL	
Mean	16 =	2.603	CDEFGHIJKLM	Mean	9 =	2.660	BCDEFGHIJKL	DERBY SUP
Mean	17 =	2.913	ABCD	Mean	10 =	2.653	BCDEFGHIJKL	EDGE
Mean	18 =	2.770	BCDEFGHI	Mean	37 =	2.633	BCDEFGHIJKLM	RIV II
Mean	19 =	2.840	ABCDEFG	Mean	21 =	2.627	BCDEFGHIJKLM	MAN II
Mean	20 =	3.210	A	Mean	12 =	2.620	BCDEFGHIJKLM	
Mean	21 =	2.627	BCDEFGHIJKLM	Mean	26 =	2.617	BCDEFGHIJKLM	PENNFINE
Mean	22 =	2.483	FGHIJKLMN	Mean	44 =	2.610	CDEFGHIJKLM	TPR 96 B
Mean	23 =	2.870	ABCDEF	Mean	16 =	2.603	CDEFGHIJKLM	LORETTA NOVA
Mean	24 =	2.253	MN	Mean	1 =	2.593	CDEFGHIJKLMN	ACHIEVER
Mean	25 =	2.720	BCDEFGHIJ	Mean	39 =	2.580	CDEFGHIJKLMN	SHERWOOD
Mean	26 =	2.617	BCDEFGHIJKLM	Mean	7 =	2.550	CDEFGHIJKLMN	CUTTER
Mean	27 =	2.403	HIJKLMN	Mean	46 =	2.547	CDEFGHIJKLMN	TPR 96 P
Mean	28 =	2.693	BCDEFGHIJK	Mean	38 =	2.537	DEFGHIJKLMN	SATURN
Mean	29 =	2.327	KLMN	Mean	4 =	2.520	EFGHIJKLMN	BRIGHTSTAR
Mean	30 =	2.203	N	Mean	43 =	2.500	FGHIJKLMN	TPR 96 A = ProGram
Mean	31 =	2.397	IJKLMN	Mean	36 =	2.487	FGHIJKLMN	PR 97 EL2
Mean	32 =	2.253	MN	Mean	14 =	2.487	FGHIJKLMN	JIFFIE
Mean	33 =	2.437	HIJKLMN	Mean	22 =	2.483	FGHIJKLMN	
Mean	34 =	2.337	JKLMN	Mean	35 =	2.477	GHIJKLMN	PR 97 DII
Mean	35 =	2.477	GHIJKLMN	Mean	13 =	2.460	GHIJKLMN	HEADSTART
Mean	36 =	2.487	FGHIJKLMN	Mean	41 =	2.443	HIJKLMN	TARGET
Mean	37 =	2.633	BCDEFGHIJKLM	Mean	33 =	2.437	HIJKLMN	LP BB-93
Mean	38 =	2.537	DEFGHIJKLMN	Mean	2 =	2.410	HIJKLMN	ADVANTAGE
Mean	39 =	2.580	CDEFGHIJKLMN	Mean	27 =	2.403	HIJKLMN	PINNACLE
Mean	40 =	2.300	LMN	Mean	31 =	2.397	IJKLMN	LP O-93
Mean	41 =	2.443	HIJKLMN	Mean	34 =	2.337	JKLMN	SUNBRIGHT
Mean	42 =	2.677	BCDEFGHIJKL	Mean	29 =	2.327	KLMN	RACER
Mean	43 =	2.500	FGHIJKLMN	Mean	40 =	2.300	LMN	SUNSHINE
Mean	44 =	2.610	CDEFGHIJKLM	Mean	24 =	2.253	MN	PALMER II
Mean	45 =	2.687	BCDEFGHIJKL	Mean	32 =	2.253	MN	LP Q-93
Mean	46 =	2.547	CDEFGHIJKLMN	Mean	30 =	2.203	N	

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Table 7A. Flag leaf length in 1998 of perennial ryegrass cv ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1997 near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Case range: 139-184, variable 5: FLAG LEAF LENGTH (CM)
Error Mean Square = 0.9230, Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 1.558 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	6.907	JKLMN	Mean	20 =	15.21	A	MANHATTAN
Mean	2 =	7.507	GHIJKLM	Mean	16 =	12.92	B	LORETTA NOVA
Mean	3 =	8.210	DEFGHIJKL	Mean	17 =	10.08	C	LONGROW
Mean	4 =	7.363	GHIJKLMN	Mean	28 =	9.480	CD	PRELUDE II
Mean	5 =	8.363	DEFGHIJ	Mean	9 =	9.420	CDE	DERBY SUP
Mean	6 =	7.883	EFGHIJKLM	Mean	38 =	9.165	CDEF	SATURN
Mean	7 =	7.107	IJKLMN	Mean	19 =	8.827	CDEFG	MAGIC
Mean	8 =	8.103	DEFGHIJKLM	Mean	44 =	8.677	CDEFGH	TPR 96 B
Mean	9 =	9.420	CDE	Mean	25 =	8.510	DEFGHI	PANTHER
Mean	10 =	7.910	EFGHIJKLM	Mean	5 =	8.363	DEFGHIJ	CALYPSO II
Mean	11 =	7.720	FGHIJKLM	Mean	15 =	8.260	DEFGHIJK	LINN
Mean	12 =	7.847	FGHIJKLM	Mean	33 =	8.237	DEFGHIJKL	LP 83-93
Mean	13 =	6.797	KLMN	Mean	3 =	8.210	DEFGHIJKL	BLAZER III
Mean	14 =	8.113	DEFGHIJKLM	Mean	35 =	8.200	DEFGHIJKL	PR 97 DII
Mean	15 =	8.260	DEFGHIJK	Mean	21 =	8.147	DEFGHIJKL	MAN. II
Mean	16 =	12.92	B	Mean	14 =	8.113	DEFGHIJKLM	JIFFIE
Mean	17 =	10.08	C	Mean	8 =	8.103	DEFGHIJKLM	DEL. DWF
Mean	18 =	8.073	DEFGHIJKLM	Mean	45 =	8.087	DEFGHIJKLM	TPR 96 C
Mean	19 =	8.827	CDEFG	Mean	18 =	8.073	DEFGHIJKLM	LYNX
Mean	20 =	15.21	A	Mean	37 =	8.053	DEFGHIJKLM	RIV. II
Mean	21 =	8.147	DEFGHIJKL	Mean	42 =	8.023	DEFGHIJKLM	
Mean	22 =	7.813	FGHIJKLM	Mean	36 =	7.930	DEFGHIJKLM	PR 97 EL2
Mean	23 =	7.400	GHIJKLMN	Mean	26 =	7.913	EFGHIJKLM	PENNFINE
Mean	24 =	5.900	N	Mean	10 =	7.910	EFGHIJKLM	EDGE
Mean	25 =	8.510	DEFGHI	Mean	6 =	7.883	EFGHIJKLM	CIT. II
Mean	26 =	7.913	EFGHIJKLM	Mean	12 =	7.847	FGHIJKLM	
Mean	27 =	7.180	HIJKLMN	Mean	22 =	7.813	FGHIJKLM	
Mean	28 =	9.480	CD	Mean	41 =	7.783	FGHIJKLM	TARGET
Mean	29 =	6.727	KLMN	Mean	11 =	7.720	FGHIJKLM	ELP
Mean	30 =	6.573	MN	Mean	43 =	7.700	FGHIJKLM	TPR 96 A = ProGram
Mean	31 =	7.437	GHIJKLMN	Mean	34 =	7.593	GHIJKLM	SUNBRIGHT
Mean	32 =	6.683	LMN	Mean	2 =	7.507	GHIJKLM	ADVANTAGE
Mean	33 =	8.237	DEFGHIJKL	Mean	46 =	7.507	GHIJKLM	TPR 96 P
Mean	34 =	7.593	GHIJKLM	Mean	31 =	7.437	GHIJKLMN	LP 0-93
Mean	35 =	8.200	DEFGHIJKL	Mean	23 =	7.400	GHIJKLMN	MORN. STAR
Mean	36 =	7.930	DEFGHIJKLM	Mean	4 =	7.363	GHIJKLMN	BRIGHTSTAR
Mean	37 =	8.053	DEFGHIJKLM	Mean	27 =	7.180	HIJKLMN	PINNACLE
Mean	38 =	9.165	CDEF	Mean	39 =	7.143	HIJKLMN	SHERWOOD
Mean	39 =	7.143	HIJKLMN	Mean	7 =	7.107	IJKLMN	CUTTER
Mean	40 =	7.060	IJKLMN	Mean	40 =	7.050	IJKLMN	SUNSHINE
Mean	41 =	7.780	FGHIJKLM	Mean	1 =	6.907	JKLMN	ACHIEVER
Mean	42 =	8.023	DEFGHIJKLM	Mean	13 =	6.797	KLMN	HEADSTART
Mean	43 =	7.700	FGHIJKLM	Mean	29 =	6.727	KLMN	RACER
Mean	44 =	8.677	CDEFGH	Mean	32 =	6.683	LMN	LO 0-93
Mean	45 =	8.087	DEFGHIJKLM	Mean	30 =	6.573	MN	
Mean	46 =	7.507	GHIJKLM	Mean	24 =	5.900	N	PALMER II

Table 8A. Spikelet length in 1998 of perennial ryegrass cv ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted to spaced plant plots in November 1997 near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications
Analysis of variance with LSD mean separation
Case Range: 139-184, Variable 9: LENGTH OF SPIKELET (MM)
Observations to calculate mean = 3, Least Significant Difference Test
Error Mean Square = 0.6690 Error Degrees of Freedom = 90
LSD value = 1.327 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	13.73	ABCD	Mean	3 =	14.32	A	BLAZER III
Mean	2 =	12.36	EFGH	Mean	28 =	14.22	A	PRELUDE II
Mean	3 =	14.32	A	Mean	20 =	14.00	AB	MAN.
Mean	4 =	12.74	BCDEFG	Mean	8 =	13.97	AB	DEL DWF
Mean	5 =	13.84	ABC	Mean	38 =	13.94	ABC	SATURN
Mean	6 =	13.19	ABCDEF	Mean	39 =	13.89	ABC	SHERWOOD
Mean	7 =	12.10	FGH	Mean	5 =	13.84	ABC	CALYPSO II
Mean	8 =	13.97	AB	Mean	42 =	13.84	ABC	
Mean	9 =	13.01	ABCDEFG	Mean	17 =	13.76	ABCD	LOWGROW
Mean	10 =	13.73	ABCD	Mean	1 =	13.73	ABCD	ACHIEVER
Mean	11 =	13.14	ABCDEFG	Mean	10 =	13.73	ABCD	EDGE
Mean	12 =	12.78	BCDEFG	Mean	37 =	13.54	ABCDE	RIV II
Mean	13 =	13.34	ABCDEF	Mean	45 =	13.41	ABCDEF	TPR 96 C
"	14 =	13.24	ABCDEF	Mean	35 =	13.36	ABCDEF	PR 97 DII
Mean	15 =	13.15	ABCDEFG	Mean	32 =	13.35	ABCDEF	LP Q-93
Mean	16 =	11.41	H	Mean	13 =	13.34	ABCDEF	HEADSTART
Mean	17 =	13.76	ABCD	Mean	23 =	13.34	ABCDEF	MORN STAR
Mean	18 =	13.10	ABCDEFG	Mean	44 =	13.33	ABCDEF	TPR 96 B
Mean	19 =	12.64	CDEFGH	Mean	22 =	13.25	ABCDEF	
Mean	20 =	14.00	AB	Mean	14 =	13.24	ABCDEF	JIFFIE
Mean	21 =	13.13	ABCDEFG	Mean	46 =	13.23	ABCDEF	TPR 96 P
Mean	22 =	13.25	ABCDEF	Mean	27 =	13.23	ABCDEF	PINNACLE
Mean	23 =	13.34	ABCDEF	Mean	6 =	13.19	ABCDEF	CIT II
Mean	24 =	12.86	BCDEFG	Mean	31 =	13.16	ABCDEFG	LP O-93
Mean	25 =	13.11	ABCDEFG	Mean	15 =	13.15	ABCDEFG	LINN
Mean	26 =	11.84	GH	Mean	11 =	13.14	ABCDEFG	ELF
Mean	27 =	13.23	ABCDEF	Mean	21 =	13.13	ABCDEFG	MAN II
Mean	28 =	14.22	A	Mean	25 =	13.11	ABCDEFG	PANTHER
Mean	29 =	13.09	ABCDEFG	Mean	18 =	13.10	ABCDEFG	LYNX
Mean	30 =	12.39	EFGH	Mean	29 =	13.09	ABCDEFG	RACER
Mean	31 =	13.16	ABCDEFG	Mean	41 =	13.04	ABCDEFG	TARGET
Mean	32 =	13.35	ABCDEF	Mean	9 =	13.01	ABCDEFG	DERBY SUP
Mean	33 =	12.43	DEFGH	Mean	24 =	12.86	BCDEFG	PALMER II
Mean	34 =	12.76	BCDEFG	Mean	12 =	12.78	BCDEFG	
Mean	35 =	13.36	ABCDEF	Mean	34 =	12.76	BCDEFG	SUNBRIGHT
Mean	36 =	12.33	EFGH	Mean	4 =	12.74	BCDEFG	BRIGHTSTAR
Mean	37 =	13.54	ABCDE	Mean	19 =	12.64	CDEFGH	MAGIC
Mean	38 =	13.94	ABC	Mean	43 =	12.63	CDEFGH	TPR 96 A = ProGram
"	39 =	13.89	ABC	Mean	40 =	12.49	DEFGH	SUNSHINE
Mean	40 =	12.49	DEFGH	Mean	33 =	12.43	DEFGH	LP BB-93
Mean	41 =	13.04	ABCDEFG	Mean	30 =	12.39	EFGH	
Mean	42 =	13.84	ABC	Mean	2 =	12.36	EFGH	ADVANTAGE
Mean	43 =	12.63	CDEFGH	Mean	36 =	12.33	EFGH	PR 97 EL2
Mean	44 =	13.33	ABCDEF	Mean	7 =	12.10	FGH	CUTTER
Mean	45 =	13.41	ABCDEF	Mean	26 =	11.84	GH	PENNFINE
Mean	46 =	13.23	ABCDEF	Mean	16 =	11.41	H	LORETTA NOVA

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Table 9A. Outer glume length (mm) of perennial ryegrass cv ProGram (Code No's. TPR96A & TPR97A) in 1998 compared with other cultivars transplanted to spaced plant plots in November 1997 near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications
Case Range: 139-184, Variable 13: OUTER GLUME LENGTH (MM)
Error Mean Square = 0.2600, Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.8271 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	8.433	ABCDEFGH	Mean	20 =	9.217	A	MAN.
Mean	2 =	7.083	PQ	Mean	27 =	9.000	AB	PINNACLE
Mean	3 =	8.343	BCDEFGHI	Mean	5 =	8.970	ABC	CALYPSO II
Mean	4 =	7.410	KLMNOPQ	Mean	15 =	8.833	ABCD	LINN
Mean	5 =	8.970	ABC	Mean	19 =	8.653	ABCDE	MAGIC
Mean	6 =	8.200	BCDEFGHIJKL	Mean	28 =	8.560	ABCDEF	PRELUDE II
Mean	7 =	7.683	GHIJKLMNOP	Mean	8 =	8.453	ABCDEFG	DEL DWF
Mean	8 =	8.453	ABCDEFG	Mean	1 =	8.433	ABCDEFGH	ACHIEVER
Mean	9 =	8.227	BCDEFGHIJK	Mean	38 =	8.403	ABCDEFGH	SATURN
Mean	10 =	7.637	GHIJKLMNOP	Mean	3 =	8.343	BCDEFGHI	BLAZER III
Mean	11 =	8.000	EFGHIJKLMNO	Mean	41 =	8.320	BCDEFGHI	TARGET
Mean	12 =	8.243	BCDEFGHIJ	Mean	18 =	8.277	BCDEFGHIJ	LYNX
Mean	13 =	7.777	FGHIJKLMNOP	Mean	21 =	8.253	BCDEFGHIJ	MAN II
Mean	14 =	7.693	GHIJKLMNOP	Mean	12 =	8.243	BCDEFGHIJ	
Mean	15 =	8.833	ABCD	Mean	9 =	8.227	BCDEFGHIJK	DERBY SUP
Mean	16 =	7.353	MNOPQ	Mean	6 =	8.200	BCDEFGHIJKL	CIT II
Mean	17 =	8.020	DEFGHIJKLMN	Mean	29 =	8.177	BCDEFGHIJKLM	RACER
Mean	18 =	8.277	BCDEFGHIJ	Mean	43 =	8.177	BCDEFGHIJKLM	TPR 96 A = Pro Gram
Mean	19 =	8.653	ABCDE	Mean	26 =	8.167	CDEFGHIJKLM	PENNFINE
Mean	20 =	9.217	A	Mean	45 =	8.043	DEFGHIJKLMN	TPR 96 C
Mean	21 =	8.253	BCDEFGHIJ	Mean	39 =	8.043	DEFGHIJKLMN	SHERWOOD
Mean	22 =	7.243	NOPQ	Mean	17 =	8.020	DEFGHIJKLMN	LOWGROW
Mean	23 =	7.750	FGHIJKLMNOP	Mean	11 =	8.000	EFGHIJKLMNO	ELF
Mean	24 =	7.333	NOPQ	Mean	37 =	7.860	EFGHIJKLMNOP	RIV II
Mean	25 =	7.733	FGHIJKLMNOP	Mean	13 =	7.777	FGHIJKLMNOP	HEADSTART
Mean	26 =	8.167	CDEFGHIJKLM	Mean	31 =	7.760	FGHIJKLMNOP	LP O-93
Mean	27 =	9.000	AB	Mean	23 =	7.750	FGHIJKLMNOP	MORN. STAR
Mean	28 =	8.560	ABCDEF	Mean	25 =	7.733	FGHIJKLMNOP	PANTHER
Mean	29 =	8.177	BCDEFGHIJKLM	Mean	14 =	7.693	GHIJKLMNOP	JIFFIE
Mean	30 =	7.377	LMNOPQ	Mean	7 =	7.683	GHIJKLMNOP	CUTTER
Mean	31 =	7.760	FGHIJKLMNOP	Mean	10 =	7.637	GHIJKLMNOP	EDGE
Mean	32 =	7.187	OPQ	Mean	35 =	7.627	GHIJKLMNOP	PR 97 DII
Mean	33 =	7.620	HIJKLMNOP	Mean	33 =	7.620	HIJKLMNOP	LP BB-93
Mean	34 =	7.243	NOPQ	Mean	42 =	7.543	IJKLMNOP	
Mean	35 =	7.627	GHIJKLMNOP	Mean	44 =	7.527	IJKLMNOP	TPR 96 B
Mean	36 =	6.593	Q	Mean	46 =	7.450	JKLMNOP	TPR 96 P
Mean	37 =	7.860	EFGHIJKLMNOP	Mean	4 =	7.410	KLMNOPQ	BRIGHTSTAR
Mean	38 =	8.403	ABCDEFGH	Mean	30 =	7.377	LMNOPQ	
Mean	39 =	8.043	DEFGHIJKLMN	Mean	40 =	7.367	MNOPQ	SUNSHINE
Mean	40 =	7.367	MNOPQ	Mean	16 =	7.353	MNOPQ	LORETTA NOVA
Mean	41 =	8.320	BCDEFGHI	Mean	24 =	7.333	NOPQ	PALMER II
Mean	42 =	7.543	IJKLMNOP	Mean	22 =	7.243	NOPQ	
Mean	43 =	8.177	BCDEFGHIJKLM	Mean	34 =	7.243	NOPQ	SUNBRIGHT
Mean	44 =	7.527	IJKLMNOP	Mean	32 =	7.187	OPQ	LP Q-93
Mean	45 =	8.043	DEFGHIJKLMN	Mean	2 =	7.083	PQ	ADVANTAGE
Mean	46 =	7.450	JKLMNOP	Mean	36 =	6.593	Q	PR 97 EL2

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Table 10A. Florets per spikelet in perennial ryegrass cv ProGram (Code no's. TPR96[A] & TPR97[A]) in 1998 compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications
Analysis of Variance with LSD mean separation
Case Range: 139-184, Variable 10, NUMBER OF FLORETS/SPIKELET
Error Mean Square = 0.4820, Error degrees of freedom = 90
Observations to calculate mean = 3, Least significant difference test
LSD value = 1.126 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	10.33	CDEFG	Mean	42 =	12.12	A	TWP-94
Mean	2 =	10.58	BCDEFG	Mean	3 =	11.47	AB	BLAZER III
Mean	3 =	11.47	AB	Mean	39 =	11.42	ABC	SHERWOOD
Mean	4 =	10.20	EFG	Mean	20 =	11.37	ABCD	MANhattan
Mean	5 =	10.98	BCDE	Mean	28 =	11.22	ABCDE	PRELUDE II
Mean	6 =	10.25	DEFG	Mean	38 =	11.20	ABCDE	SATURN
Mean	7 =	9.633	FGH	Mean	37 =	11.15	ABCDE	RIV II
Mean	8 =	10.52	BCDEFG	Mean	17 =	11.13	ABCDE	LONGROW
Mean	9 =	10.60	BCDEFG	Mean	23 =	11.10	ABCDE	MORN. STAR
Mean	10 =	10.68	BCDEFG	Mean	25 =	11.03	ABCDE	PANTHER
Mean	11 =	10.85	BCDE	Mean	12 =	11.02	ABCDE	
Mean	12 =	11.02	ABCDE	Mean	45 =	11.00	ABCDE	TPR 96 C
"	13 =	10.78	BCDE	Mean	5 =	10.98	BCDE	CALYPSO II
Mean	14 =	10.85	BCDE	Mean	41 =	10.97	BCDE	TARGET
ean	15 =	10.40	BCDEFG	Mean	32 =	10.87	BCDE	LP Q-93
Mean	16 =	8.683	H	Mean	21 =	10.87	BCDE	MAN II
Mean	17 =	11.13	ABCDE	Mean	14 =	10.85	BCDE	JIFFIE
Mean	18 =	10.30	CDEFG	Mean	11 =	10.85	BCDE	ELF
Mean	19 =	10.77	BCDE	Mean	22 =	10.78	BCDE	
Mean	20 =	11.37	ABCD	Mean	13 =	10.78	BCDE	HEADSTART
Mean	21 =	10.87	BCDE	Mean	34 =	10.77	BCDE	SUNBRIGHT
Mean	22 =	10.78	BCDE	Mean	19 =	10.77	BCDE	MAGIC
Mean	23 =	11.10	ABCDE	Mean	40 =	10.77	BCDE	SUNSHINE
Mean	24 =	10.13	EFG	Mean	31 =	10.75	BCDEF	LP Q-93
Mean	25 =	11.03	ABCDE	Mean	27 =	10.70	BCDEFG	PINNACLE
Mean	26 =	9.600	GH	Mean	10 =	10.68	BCDEFG	EDGE
Mean	27 =	10.70	BCDEFG	Mean	33 =	10.68	BCDEFG	LP BB-93
Mean	28 =	11.22	ABCDE	Mean	29 =	10.63	BCDEFG	RACER
Mean	29 =	10.63	BCDEFG	Mean	35 =	10.60	BCDEFG	PR 97 D11
Mean	30 =	10.50	BCDEFG	Mean	9 =	10.60	BCDEFG	DERBY SUP
Mean	31 =	10.75	BCDEF	Mean	2 =	10.58	BCDEFG	ADVANTAGE
Mean	32 =	10.87	BCDE	Mean	8 =	10.52	BCDEFG	DEL DWF
Mean	33 =	10.68	BCDEFG	Mean	43 =	10.52	BCDEFG	TPR 96 A = ProGram
Mean	34 =	10.77	BCDE	Mean	30 =	10.50	BCDEFG	
Mean	35 =	10.60	BCDEFG	Mean	36 =	10.48	BCDEFG	PR 97 EL2
Mean	36 =	10.48	BCDEFG	Mean	46 =	10.45	BCDEFG	TPR 96 P
Mean	37 =	11.15	ABCDE	Mean	15 =	10.40	BCDEFG	LINN
"	38 =	11.20	ABCDE	Mean	1 =	10.33	CDEFG	ACHEIVER
Mean	39 =	11.42	ABC	Mean	18 =	10.30	CDEFG	LYNX
Mean	40 =	10.77	BCDE	Mean	44 =	10.25	DEFG	TPR 96 B
Mean	41 =	10.97	BCDE	Mean	6 =	10.25	DEFG	CIT II
Mean	42 =	12.12	A	Mean	4 =	10.20	EFG	BRIGHTSTAR
Mean	43 =	10.52	BCDEFG	Mean	24 =	10.13	EFG	PALMER II
Mean	44 =	10.25	DEFG	Mean	7 =	9.633	FGH	CUTTER
Mean	45 =	11.00	ABCDE	Mean	26 =	9.600	GH	PENNFINE
Mean	46 =	10.45	BCDEFG	Mean	16 =	8.633	H	LORETTA NOVA

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Table 11A. Number of spikelets/spike in perennial ryegr. cv. ProGram (Code No's. TPR96 A & TPR97A) in 1998 compared with other cultivars transplanted in November 1998 to spaced plant plots near Corvallis,Ore.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 8: NUMBER OF SPIKELETS/SPIKE Function Range
Error Mean Square = 1.765 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 2.155 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	19.48	EFGHIJK	Mean	20 =	25.07	A	MAN.
Mean	2 =	19.67	EFGHIJK	Mean	3 =	22.93	AB	BLAZER III
Mean	3 =	22.93	AB	Mean	16 =	22.88	B	LORETTA NOVA
Mean	4 =	20.15	CDEFGHI	Mean	41 =	22.20	BC	TARGET
Mean	5 =	20.22	CDEFGHI	Mean	23 =	22.05	BCD	MORN. STAR
Mean	6 =	20.42	CDEFGHI	Mean	17 =	21.60	BCDE	LOWGROW
Mean	7 =	18.93	GHIJKL	Mean	11 =	21.50	BCDE	ELF
Mean	8 =	20.40	CDEFGHI	Mean	45 =	21.47	BCDE	TPR 96 C
Mean	9 =	21.38	BCDE	Mean	9 =	21.38	BCDE	DERBY SUP
Mean	10 =	20.08	CDEFGHIJ	Mean	19 =	21.28	BCDEF	MAGIC
Mean	11 =	21.50	BCDE	Mean	38 =	21.07	BCDEFG	SATURN
Mean	12 =	20.23	CDEFGHI	Mean	28 =	20.85	BCDEFGH	PRELUDE II
Mean	13 =	19.85	EFGHIJK	Mean	36 =	20.82	BCDEFGH	PR 97 EL2
Mean	14 =	20.18	CDEFGHI	Mean	42 =	20.55	CDEFGHI	
Mean	15 =	17.02	L	Mean	6 =	20.42	CDEFGHI	CIT II
Mean	16 =	22.88	B	Mean	8 =	20.40	CDEFGHI	DEL DWF
Mean	17 =	21.60	BCDE	Mean	25 =	20.33	CDEFGHI	PANTHER
Mean	18 =	19.92	DEFGHIJK	Mean	35 =	20.25	CDEFGHI	PR 97 DII
Mean	19 =	21.28	BCDEF	Mean	12 =	20.23	CDEFGHI	
Mean	20 =	25.07	A	Mean	5 =	20.22	CDEFGHI	CALYPSO II
Mean	21 =	20.15	CDEFGHI	Mean	44 =	20.20	CDEFGHI	TPR 96 B
Mean	22 =	19.17	FGHIJKL	Mean	26 =	20.20	CDEFGHI	PENNFINE
Mean	23 =	22.05	BCD	Mean	46 =	20.20	CDEFGHI	TPR 96 P
Mean	24 =	17.98	JKL	Mean	14 =	20.18	CDEFGHI	JIFFIE
Mean	25 =	20.33	CDEFGHI	Mean	21 =	20.15	CDEFGHI	MAN II
Mean	26 =	20.20	CDEFGHI	Mean	4 =	20.15	CDEFGHI	BRIGHTSTAR
Mean	27 =	18.48	IJKL	Mean	10 =	20.08	CDEFGHIJ	EDGE
Mean	28 =	20.85	BCDEFGH	Mean	43 =	19.93	DEFGHIJK	TPR 96 A = ProGram
Mean	29 =	18.85	HIJKL	Mean	18 =	19.92	DEFGHIJK	LYNX
Mean	30 =	18.48	IJKL	Mean	13 =	19.85	EFGHIJK	HEADSTART
Mean	31 =	18.63	IJKL	Mean	2 =	19.67	EFGHIJK	ADVANTAGE
Mean	32 =	19.05	GHIJKL	Mean	39 =	19.60	EFGHIJK	SHERWOOD
Mean	33 =	17.90	KL	Mean	37 =	19.57	EFGHIJK	RIV II
Mean	34 =	18.91	GHIJKL	Mean	1 =	19.48	EFGHIJK	ACHIEVER
Mean	35 =	20.25	CDEFGHI	Mean	22 =	19.17	FGHIJKL	
Mean	36 =	20.82	BCDEFGH	Mean	32 =	19.05	GHIJKL	LP Q-93
Mean	37 =	19.57	EFGHIJK	Mean	7 =	18.93	GHIJKL	CUTTER
Mean	38 =	21.07	BCDEFG	Mean	34 =	18.91	GHIJKL	SUNBRIGHT
Mean	39 =	19.60	EFGHIJK	Mean	29 =	18.85	HIJKL	RACER
Mean	40 =	17.27	L	Mean	31 =	18.63	IJKL	LP O-93
Mean	41 =	22.20	BC	Mean	30 =	18.48	IJKL	
Mean	42 =	20.55	CDEFGHI	Mean	27 =	18.48	IJKL	PINNACLE
Mean	43 =	19.93	DEFGHIJK	Mean	24 =	17.98	JKL	PALMER II
Mean	44 =	20.20	CDEFGHI	Mean	33 =	17.90	KL	LP BB-93
Mean	45 =	21.47	BCDE	Mean	40 =	17.27	L	SUNSHINE
Mean	46 =	20.20	CDEFGHI	Mean	15 =	17.02	L	LINN

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Table 12A. Plant height (CM) of perennial ryegr. cv. ProGram (Code No's. TPR96A & TPR97A) in 1998 compared with other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range: 139-184
Variable 17: PLANT HEIGHT (CM) Function Range
Error Mean Square = 9.572 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 5.019 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	55.79	ABCD	Mean	3 =	57.00	A	BLAZER III
Mean	2 =	46.87	MNOPQ	Mean	8 =	56.70	A	DEL DWF
Mean	3 =	57.00	A	Mean	15 =	56.53	AB	LINN
Mean	4 =	46.64	MNOPQ	Mean	9 =	56.48	AB	DERBY SUP
Mean	5 =	55.30	ABCD	Mean	44 =	56.11	ABC	TPR 96 B
Mean	6 =	54.24	ABCDEFGH	Mean	37 =	56.08	ABC	RIV II
Mean	7 =	51.19	CDEFGHIJKLM	Mean	1 =	55.79	ABCD	ACHIEVER
Mean	8 =	56.70	A	Mean	20 =	55.58	ABCD	MAN.
Mean	9 =	56.48	AB	Mean	5 =	55.30	ABCD	CALYPSO II
Mean	10 =	54.31	ABCDEFGH	Mean	28 =	55.24	ABCD	PRELUDE II
Mean	11 =	53.51	ABCDEFGHIJ	Mean	17 =	54.90	ABCDE	LOWGROW
Mean	12 =	49.82	FGHIJKLMNO	Mean	35 =	54.81	ABCDEF	PR 97 DII
Mean	13 =	49.74	GHIJKLMNOP	Mean	23 =	54.57	ABCDEFG	MORN. STAR
Mean	14 =	51.52	BCDEFGHIJKLM	Mean	10 =	54.31	ABCDEFGH	EDGE
Mean	15 =	56.53	AB	Mean	21 =	54.25	ABCDEFGH	MAN II
Mean	16 =	41.17	R	Mean	6 =	54.24	ABCDEFGH	CIT II
Mean	17 =	54.90	ABCDE	Mean	45 =	53.83	ABCDEFGHI	TPR 96 C
Mean	18 =	50.85	DEFGHIJKLMN	Mean	38 =	53.68	ABCDEFGHIJ	SATURN
Mean	19 =	52.68	ABCDEFGHIJK	Mean	11 =	53.51	ABCDEFGHIJ	ELF
Mean	20 =	55.58	ABCD	Mean	26 =	53.06	ABCDEFGHIJ	PENNFINE
Mean	21 =	54.25	ABCDEFGH	Mean	19 =	52.68	ABCDEFGHIJK	MAGIC
Mean	22 =	47.25	LMNOPQ	Mean	46 =	52.46	ABCDEFGHIJK	TPR 96 P
Mean	23 =	54.57	ABCDEFG	Mean	39 =	52.21	ABCDEFGHIJKL	SHERWOOD
Mean	24 =	45.96	NOPQR	Mean	14 =	51.52	BCDEFGHIJKLM	JIFFIE
Mean	25 =	50.20	EFGHIJKLMN	Mean	7 =	51.19	CDEFGHIJKLM	CUTTER
Mean	26 =	53.06	ABCDEFGHIJ	Mean	43 =	51.00	DEFGHIJKLM	TPR 96 A = ProGram
Mean	27 =	50.11	EFGHIJKLMN	Mean	42 =	50.88	DEFGHIJKLMN	
Mean	28 =	55.24	ABCD	Mean	18 =	50.85	DEFGHIJKLMN	LYNX
Mean	29 =	48.89	IJKLMNOPQ	Mean	25 =	50.20	EFGHIJKLMN	PANTHER
Mean	30 =	45.06	OPQR	Mean	27 =	50.11	EFGHIJKLMN	PINNACLE
Mean	31 =	47.92	KLMNOPQ	Mean	12 =	49.82	FGHIJKLMNO	
Mean	32 =	49.56	GHIJKLMNOP	Mean	13 =	49.74	GHIJKLMNOP	HEADSTART
Mean	33 =	47.33	LMNOPQ	Mean	32 =	49.56	GHIJKLMNOP	LP Q-93
Mean	34 =	44.52	QR	Mean	41 =	49.55	HIJKLMNOP	TARGET
Mean	35 =	54.81	ABCDEF	Mean	29 =	48.89	IJKLMNOPQ	RACER
Mean	36 =	48.70	JKLMNOPQ	Mean	36 =	48.70	JKLMNOPQ	PR 97 EL2
Mean	37 =	56.08	ABC	Mean	31 =	47.92	KLMNOPQ	LP O-93
Mean	38 =	53.68	ABCDEFGHIJ	Mean	33 =	47.33	LMNOPQ	LP BB-93
Mean	39 =	52.21	ABCDEFGHIJKL	Mean	22 =	47.25	LMNOPQ	
Mean	40 =	44.80	PQR	Mean	2 =	46.87	MNOPQ	ADVANTAGE
Mean	41 =	49.55	HIJKLMNOP	Mean	4 =	46.64	MNOPQ	BRIGHTSTAR
Mean	42 =	50.88	DEFGHIJKLMN	Mean	24 =	45.96	NOPQR	PALMER II
Mean	43 =	51.00	DEFGHIJKLM	Mean	30 =	45.06	OPQR	
Mean	44 =	56.11	ABC	Mean	40 =	44.80	PQR	SUNSHINE
Mean	45 =	53.83	ABCDEFGHI	Mean	34 =	44.52	QR	SUNBRIGHT
Mean	46 =	52.46	ABCDEFGHIJK	Mean	16 =	41.17	R	LORETTA NOVA

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Table 13A. Spike length (cm) in 1998 of perennial ryegr. cv.ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range: 139-184
Variable 16: SPIKE LENGTH (CM) Function Range
Error Mean Square = 1.098 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 1.700 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	17.33	CDEFGHIJ	Mean	20 =	21.68	A	MAN.
Mean	2 =	15.81	IJKLMN	Mean	17 =	19.56	B	LOWGROW
Mean	3 =	18.93	BC	Mean	3 =	18.93	BC	BLAZER III
Mean	4 =	15.90	IJKLMN	Mean	9 =	18.82	BC	DERBY SUP
Mean	5 =	17.99	BCDEF	Mean	28 =	18.77	BC	PRELUDE II
Mean	6 =	17.83	CDEFGH	Mean	23 =	18.73	BC	MORN. STAR
Mean	7 =	15.57	KLMNO	Mean	8 =	18.57	BCD	DEL DWF
Mean	8 =	18.57	BCD	Mean	38 =	18.55	BCD	SATURN
Mean	9 =	18.82	BC	Mean	19 =	18.45	BCD	MAGIC
Mean	10 =	17.87	BCDEFGH	Mean	11 =	18.40	BCD	ELF
Mean	11 =	18.40	BCD	Mean	41 =	18.32	BCDE	TARGET
Mean	12 =	15.66	JKLMNO	Mean	5 =	17.99	BCDEF	CALYPSO II
Mean	13 =	15.62	KLMNO	Mean	37 =	17.90	BCDEFG	RIV II
[illegible]	14 =	16.66	EFGHIJKL	Mean	10 =	17.87	BCDEFGH	EDGE
Mean	15 =	16.50	FGHIJKL	Mean	6 =	17.83	CDEFGH	CIT II
Mean	16 =	16.27	GHIJKLM	Mean	21 =	17.60	CDEFGH	MAN II
Mean	17 =	19.56	B	Mean	39 =	17.45	CDEFGHI	SHERWOOD
Mean	18 =	16.23	GHIJKLM	Mean	1 =	17.33	CDEFGHIJ	ACHIEVER
Mean	19 =	18.45	BCD	Mean	27 =	16.99	DEFGHIJK	PINNACLE
Mean	20 =	21.68	A	Mean	44 =	16.98	DEFGHIJK	TPR 96 B
Mean	21 =	17.60	CDEFGH	Mean	35 =	16.97	DEFGHIJK	PR 97 DII
Mean	22 =	14.78	MNOP	Mean	14 =	16.66	EFGHIJKL	JIFFIE
Mean	23 =	18.73	BC	Mean	26 =	16.62	FGHIJKL	PENNFINE
Mean	24 =	14.27	NOP	Mean	15 =	16.50	FGHIJKL	LINN
Mean	25 =	15.74	JKLMNO	Mean	16 =	16.27	GHIJKLM	LORETTA NOVA
Mean	26 =	16.62	FGHIJKL	Mean	45 =	16.23	GHIJKLM	TPR 96 C
Mean	27 =	16.99	DEFGHIJK	Mean	18 =	16.23	GHIJKLM	LYNX
Mean	28 =	18.77	BC	Mean	42 =	16.19	HIJKLM	
Mean	29 =	15.59	KLMNO	Mean	4 =	15.90	IJKLMN	BRIGHTSTAR
Mean	30 =	13.36	P	Mean	46 =	15.87	IJKLMN	TPR 96 P
Mean	31 =	15.72	JKLMNO	Mean	2 =	15.81	IJKLMN	ADVANTAGE
Mean	32 =	14.25	NOP	Mean	25 =	15.74	JKLMNO	PANTHER
Mean	33 =	14.47	NOP	Mean	31 =	15.72	JKLMNO	LP O-93
Mean	34 =	15.11	LMNO	Mean	12 =	15.66	JKLMNO	
Mean	35 =	16.97	DEFGHIJK	Mean	13 =	15.62	KLMNO	HEADSTART
Mean	36 =	15.47	KLMNO	Mean	29 =	15.59	KLMNO	RACER
Mean	37 =	17.90	BCDEFG	Mean	7 =	15.57	KLMNO	CUTTER
Mean	38 =	18.55	BCD	Mean	36 =	15.47	KLMNO	PR 97 EL2
[illegible]	39 =	17.45	CDEFGHI	Mean	43 =	15.39	KLMNO	TPR 96 A = ProGram
[illegible]	40 =	14.05	OP	Mean	34 =	15.11	LMNO	SUNBRIGHT
Mean	41 =	18.32	BCDE	Mean	22 =	14.78	MNOP	
Mean	42 =	16.19	HIJKLM	Mean	33 =	14.47	NOP	LP BB-93
Mean	43 =	15.39	KLMNO	Mean	24 =	14.27	NOP	PALMER II
Mean	44 =	16.98	DEFGHIJK	Mean	32 =	14.25	NOP	LP Q-93
Mean	45 =	16.23	GHIJKLM	Mean	40 =	14.05	OP	SUNSHINE
Mean	46 =	15.87	IJKLMN	Mean	30 =	13.36	P	

Table 14A. Length of flag leaf sheath (cm) of perennial ryegr.cv ProGram (Code No's. TPR96[A] & TPR97[A]) in 1998 compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range: 139-184
Variable 12: SHEATH LENGTH OF FLAG LEAF (CM). Function Range
Error Mean Square = 0.2870 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.8690 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	10.19	DEFGHIJK	Mean	20 =	11.87	A	MAN.
Mean	2 =	8.893	OPQR	Mean	15 =	11.63	AB	LINN
Mean	3 =	10.24	DEFGHIJ	Mean	17 =	11.12	ABC	LOWGROW
Mean	4 =	9.633	GHIJKLMNO	Mean	9 =	11.12	ABC	DERBY SUP
Mean	5 =	10.72	CDE	Mean	41 =	10.80	BCD	TARGET
Mean	6 =	9.644	FGHIJKLMNO	Mean	5 =	10.72	CDE	CALYPSO II
Mean	7 =	9.603	HIJKLMNO	Mean	28 =	10.71	CDE	PRELUDE II
Mean	8 =	10.29	CDEFGHIJ	Mean	19 =	10.50	CDEF	MAGIC
Mean	9 =	11.12	ABC	Mean	23 =	10.48	CDEFG	MORN. STAR
Mean	10 =	10.40	CDEFGH	Mean	10 =	10.40	CDEFGH	EDGE
Mean	11 =	10.27	CDEFGHIJ	Mean	14 =	10.37	CDEFGH	JIFFIE
Mean	12 =	9.640	FGHIJKLMNO	Mean	27 =	10.35	CDEFGHI	PINNACLE
Mean	13 =	9.593	HIJKLMNO	Mean	38 =	10.33	CDEFGHI	SATURN
Mean	14 =	10.37	CDEFGH	Mean	35 =	10.30	CDEFGHI	PR 97 DII
Mean	15 =	11.63	AB	Mean	8 =	10.29	CDEFGHIJ	DEL DWF
Mean	16 =	9.207	MNOPQ	Mean	11 =	10.27	CDEFGHIJ	ELF
Mean	17 =	11.12	ABC	Mean	3 =	10.24	DEFGHIJ	BLAZER III
Mean	18 =	9.703	FGHIJKLMNO	Mean	21 =	10.24	DEFGHIJ	MAN II
Mean	19 =	10.50	CDEF	Mean	39 =	10.21	DEFGHIJK	SHERWOOD
Mean	20 =	11.87	A	Mean	1 =	10.19	DEFGHIJK	ACHIEVER
Mean	21 =	10.24	DEFGHIJ	Mean	37 =	10.14	DEFGHIJKL	RIV II
Mean	22 =	9.783	FGHIJKLMN	Mean	26 =	10.10	DEFGHIJKL	PENNFINE
Mean	23 =	10.48	CDEFG	Mean	44 =	10.08	DEFGHIJKL	TPR 96 B
Mean	24 =	8.443	QR	Mean	45 =	9.995	DEFGHIJKLM	TPR 96 C
Mean	25 =	9.927	EFGHIJKLM	Mean	25 =	9.927	EFGHIJKLM	PANTHER
Mean	26 =	10.10	DEFGHIJKL	Mean	22 =	9.783	FGHIJKLMN	
Mean	27 =	10.35	CDEFGHI	Mean	18 =	9.703	FGHIJKLMNO	LYNX
Mean	28 =	10.71	CDE	Mean	6 =	9.644	FGHIJKLMNO	CIT II
Mean	29 =	9.483	IJKLMNO	Mean	46 =	9.640	FGHIJKLMNO	TPR 96 P
Mean	30 =	8.267	R	Mean	12 =	9.640	FGHIJKLMNO	
Mean	31 =	9.057	NOPQR	Mean	4 =	9.633	GHIJKLMNO	BRIGHTSTAR
Mean	32 =	8.590	PQR	Mean	7 =	9.603	HIJKLMNO	CUTTER
Mean	33 =	8.607	PQR	Mean	43 =	9.603	HIJKLMNO	TPR 96 A = ProGram
Mean	34 =	9.280	LMNOPQ	Mean	13 =	9.593	HIJKLMNO	HEADSTART
Mean	35 =	10.30	CDEFGHI	Mean	29 =	9.483	IJKLMNO	RACER
Mean	36 =	9.343	KLMNOP	Mean	42 =	9.427	JKLMNOP	
Mean	37 =	10.14	DEFGHIJKL	Mean	36 =	9.343	KLMNOP	PR 97 EL2
Mean	38 =	10.33	CDEFGHI	Mean	34 =	9.280	LMNOPQ	SUNBRIGHT
Mean	39 =	10.21	DEFGHIJK	Mean	16 =	9.207	MNOPQ	LORETTA NOVA
Mean	40 =	8.843	OPQR	Mean	31 =	9.057	NOPQR	LP O-93
Mean	41 =	10.80	BCD	Mean	2 =	8.893	OPQR	ADVANTAGE
Mean	42 =	9.427	JKLMNOP	Mean	40 =	8.843	OPQR	SUNSHINE
Mean	43 =	9.603	HIJKLMNO	Mean	33 =	8.607	PQR	LP BB-93
Mean	44 =	10.08	DEFGHIJKL	Mean	32 =	8.590	PQR	LP Q-93
Mean	45 =	9.995	DEFGHIJKLM	Mean	24 =	8.443	QR	PALMER II
Mean	46 =	9.640	FGHIJKLMNO	Mean	30 =	8.267	R	

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Table 15.A. Color of the spike of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR 97A) in 1998 compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 11: SPIKE COLOR GREEN=1, PURPLE=2
Error Mean Square = 0.02500, Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.2565 at alpha = 0.050

Original Order				Ranked Order				LINE	PERCENT Green	PERCENT Purple
Mean	1 =	1.633	ABCDEFGHI	Mean	21 =	1.833	A	MAN II		
Mean	2 =	1.433	GHIJK	Mean	26 =	1.800	AB	PENNFINE = -----	20	80
Mean	3 =	1.783	ABC	Mean	38 =	1.783	ABC	SATURN		
Mean	4 =	1.517	DEFGHIJK	Mean	3 =	1.783	ABC	BLAZER III		
Mean	5 =	1.750	ABCDE	Mean	8 =	1.767	ABCD	DEL DWF		
Mean	6 =	1.617	ABCDEFGHIJ	Mean	15 =	1.750	ABCDE	LINN = -------	25	75
Mean	7 =	1.650	ABCDEFGH	Mean	20 =	1.750	ABCDE	MAN Thattan ------	25	75
Mean	8 =	1.767	ABCD	Mean	41 =	1.750	ABCDE	TARGET =---------	25	75
Mean	9 =	1.400	HIJK	Mean	5 =	1.750	ABCDE	CALYPSO II		
Mean	10 =	1.700	ABCDEF	Mean	33 =	1.750	ABCDE	LP BB-93		
Mean	11 =	1.650	ABCDEFGH	Mean	37 =	1.750	ABCDE	RIV II		
Mean	12 =	1.450	FGHIJK	Mean	10 =	1.700	ABCDEF	EDGE		
Mean	13 =	1.633	ABCDEFGHI	Mean	25 =	1.667	ABCDEFG	PANTHER		
Mean	14 =	1.650	ABCDEFGH	Mean	34 =	1.650	ABCDEFGH	SUNBRIGHT		
Mean	15 =	1.750	ABCDE	Mean	7 =	1.650	ABCDEFGH	CUTTER		
Mean	16 =	1.317	K	Mean	23 =	1.650	ABCDEFGH	MORN. STAR		
Mean	17 =	1.617	ABCDEFGHIJ	Mean	11 =	1.650	ABCDEFGH	ELF =----------	35	65
Mean	18 =	1.633	ABCDEFGHI	Mean	19 =	1.650	ABCDEFGH	MAGIC =----------	35	65
Mean	19 =	1.650	ABCDEFGH	Mean	14 =	1.650	ABCDEFGH	JIFFIE		
Mean	20 =	1.750	ABCDE	Mean	13 =	1.633	ABCDEFGHI	EEADSTART		
Mean	21 =	1.833	A	Mean	30 =	1.633	ABCDEFGHI			
Mean	22 =	1.383	IJK	Mean	39 =	1.633	ABCDEFGHI	SHERWOOD		
Mean	23 =	1.650	ABCDEFGH	Mean	1 =	1.633	ABCDEFGHI	ACHIEVER		
Mean	24 =	1.433	GHIJK	Mean	18 =	1.633	ABCDEFGHI	LYNX		
Mean	25 =	1.667	ABCDEFG	Mean	44 =	1.633	ABCDEFGHI	TPR 96 B --	--	
Mean	26 =	1.800	AB	Mean	17 =	1.617	ABCDEFGHIJ	LOWGROW		
Mean	27 =	1.567	BCDEFGHIJK	Mean	6 =	1.617	ABCDEFGHIJ	CIT II		
Mean	28 =	1.533	CDEFGHIJK	Mean	35 =	1.617	ABCDEFGHIJ	PR 97 DII =	--38	62
Mean	29 =	1.500	EFGHIJK	Mean	27 =	1.567	BCDEFGHIJK	PINNACLE		
Mean	30 =	1.633	ABCDEFGHI	Mean	43 =	1.550	BCDEFGHIJK	TPR 96 A - ProGram	--45	55
Mean	31 =	1.517	DEFGHIJK	Mean	42 =	1.533	CDEFGHIJK			
Mean	32 =	1.500	EFGHIJK	Mean	28 =	1.533	CDEFGHIJK	PRELUDE II		
Mean	33 =	1.750	ABCDE	Mean	31 =	1.517	DEFGHIJK	LP O-93		
Mean	34 =	1.650	ABCDEFGH	Mean	4 =	1.517	DEFGHIJK	BRIGHTSTAR		
Mean	35 =	1.617	ABCDEFGHIJ	Mean	29 =	1.500	EFGHIJK	RACER		
Mean	36 =	1.417	GHIJK	Mean	45 =	1.500	EFGHIJK	TPR 96 C -=	-- 50	50
Mean	37 =	1.750	ABCDE	Mean	32 =	1.500	EFGHIJK	LP Q-93		
Mean	38 =	1.783	ABC	Mean	12 =	1.450	FGHIJK			
Mean	39 =	1.633	ABCDEFGHI	Mean	46 =	1.433	GHIJK	TPR 96 P =-	- 57	43
Mean	40 =	1.367	JK	Mean	24 =	1.433	GHIJK	PALMER II		
Mean	41 =	1.750	ABCDE	Mean	2 =	1.433	GHIJK	ADVANTAGE		
Mean	42 =	1.533	CDEFGHIJK	Mean	36 =	1.417	GHIJK	PR 97 EL2 =	- 58	42
Mean	43 =	1.550	BCDEFGHIJK	Mean	9 =	1.400	HIJK	DERBY SUP		
Mean	44 =	1.633	ABCDEFGHI	Mean	22 =	1.383	IJK			
Mean	45 =	1.500	EFGHIJK	Mean	40 =	1.367	JK	SUNSHINE		
Mean	46 =	1.433	GHIJK	Mean	16 =	1.317	K	LORETTA NOVA		

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Table 16A. Seed width (MM) of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR97A) in 1998 compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon.

Ref. Pickseed West, Inc. Research Facility, Data file 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 22: 10 SEED WIDTH (MM)
Error Mean Square = 0.4710 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 1.113 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	12.67	CDEF	Mean	15 =	14.67	A	LINN
Mean	2 =	12.83	CDE	Mean	26 =	14.00	AB	PENNFINE
Mean	3 =	12.33	DEF	Mean	17 =	13.50	BC	LOWGROW
Mean	4 =	12.17	DEF	Mean	46 =	13.17	BCD	TPR 96 P
Mean	5 =	13.17	BCD	Mean	5 =	13.17	BCD	CALYPSO II
Mean	6 =	13.17	BCD	Mean	23 =	13.17	BCD	MORN. STAR
Mean	7 =	12.83	CDE	Mean	6 =	13.17	BCD	CIT II
Mean	8 =	13.17	BCD	Mean	8 =	13.17	BCD	DEL DWF
Mean	9 =	13.00	BCDE	Mean	14 =	13.17	BCD	JIFFIE
Mean	10 =	12.67	CDEF	Mean	21 =	13.00	BCDE	MAN II
Mean	11 =	12.50	CDEF	Mean	39 =	13.00	BCDE	SHERWOOD
Mean	12 =	12.00	EF	Mean	18 =	13.00	BCDE	LYNX
Mean	13 =	11.67	F	Mean	37 =	13.00	BCDE	RIV II
Mean	14 =	13.17	BCD	Mean	9 =	13.00	BCDE	DERBY SUP
Mean	15 =	14.67		Mean	41 =	13.00	BCDE	TARGET
Mean	16 =	12.00	EF	Mean	7 =	12.83	CDE	CUTTER
Mean	17 =	13.50	BC	Mean	2 =	12.83	CDE	ADVANTAGE
Mean	18 =	13.00	BCDE	Mean	31 =	12.83	CDE	LP O-93
Mean	19 =	12.67	CDEF	Mean	24 =	12.83	CDE	PALMER II
Mean	20 =	12.50	CDEF	Mean	33 =	12.67	CDEF	LP BB-93
Mean	21 =	13.00	BCDE	Mean	10 =	12.67	CDEF	EDGE
Mean	22 =	12.00	EF	Mean	36 =	12.67	CDEF	PR 97 EL2
Mean	23 =	13.17	BCD	Mean	19 =	12.67	CDEF	MAGIC
Mean	24 =	12.83	CDE	Mean	43 =	12.67	CDEF	TPR 96 A = ProGram
Mean	25 =	12.50	CDEF	Mean	1 =	12.67	CDEF	ACHIEVER
Mean	26 =	14.00	AB	Mean	28 =	12.50	CDEF	PRELUDE II
Mean	27 =	12.50	CDEF	Mean	32 =	12.50	CDEF	LP Q-93
Mean	28 =	12.50	CDEF	Mean	11 =	12.50	CDEF	ELF
Mean	29 =	12.17	DEF	Mean	27 =	12.50	CDEF	PINNACLE
Mean	30 =	12.33	DEF	Mean	45 =	12.50	CDEF	TPR 96 C
Mean	31 =	12.83	CDE	Mean	20 =	12.50	CDEF	MAN.
Mean	32 =	12.50	CDEF	Mean	25 =	12.50	CDEF	PANTHER
Mean	33 =	12.67	CDEF	Mean	38 =	12.33	DEF	SATURN
Mean	34 =	12.00	EF	Mean	44 =	12.33	DEF	TPR 96 B
Mean	35 =	12.33	DEF	Mean	40 =	12.33	DEF	SUNSHINE
Mean	36 =	12.67	CDEF	Mean	30 =	12.33	DEF	
Mean	37 =	13.00	BCDE	Mean	3 =	12.33	DEF	BLAZER III
Mean	38 =	12.33	DEF	Mean	35 =	12.33	DEF	PR 97 DII
Mean	39 =	13.00	BCDE	Mean	42 =	12.33	DEF	
Mean	40 =	12.33	DEF	Mean	4 =	12.17	DEF	BRIGHTSTAR
Mean	41 =	13.00	BCDE	Mean	29 =	12.17	DEF	RACER
Mean	42 =	12.33	DEF	Mean	34 =	12.00	EF	SUNBRIGHT
Mean	43 =	12.67	CDEF	Mean	12 =	12.00	EF	
Mean	44 =	12.33	DEF	Mean	16 =	12.00	EF	LORETTA NOVA
Mean	45 =	12.50	CDEF	Mean	22 =	12.00	EF	
Mean	46 =	13.17	BCD	Mean	13 =	11.67	F	HEADSTART

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Table 17A. Seed length (MM) of perennial ryegrass cv. ProGram (Code No's. TPR96A & TPR97A) in 1998 compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 23: AVE. SEED LENGTH (MM)
Error Mean Square = 0.05200 Error Degrees of Freedom - 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.3699 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	6.250	A	Mean	1 =	6.250	A	ACHIEVER
Mean	2 =	5.733	CDEFGHIJ	Mean	15 =	6.217	AB	LINN
Mean	3 =	5.790	CDEFGH	Mean	26 =	6.077	ABC	PENNFINE
Mean	4 =	5.717	CDEFGHIJ	Mean	19 =	6.060	ABC	MAGIC
Mean	5 =	5.993	ABCD	Mean	6 =	6.050	ABC	CIT II
Mean	6 =	6.050	ABC	Mean	21 =	6.010	ABCD	MAN. II
Mean	7 =	5.383	JKLM	Mean	5 =	5.993	ABCD	CALYPSO II
Mean	8 =	5.670	DEFGHIJKL	Mean	10 =	5.960	ABCDE	EDGE
Mean	9 =	5.650	DEFGHIJKL	Mean	14 =	5.950	ABCDE	JIFFIE
Mean	10 =	5.960	ABCDE	Mean	35 =	5.890	ABCDEF	PR 97 DII
Mean	11 =	5.867	BCDEFG	Mean	17 =	5.877	BCDEF	LOWGROW
Mean	12 =	5.327	LM	Mean	11 =	5.867	BCDEFG	ELF
Mean	13 =	5.660	DEFGHIJKL	Mean	23 =	5.860	BCDEFG	MORN. STAR
Mean	14 =	5.950	ABCDE	Mean	28 =	5.853	BCDEFG	PRELUDE II
Mean	15 =	6.217	AB	Mean	37 =	5.850	BCDEFG	RIV II
Mean	16 =	4.923	N	Mean	39 =	5.850	BCDEFG	SHERWOOD
Mean	17 =	5.877	BCDEF	Mean	20 =	5.840	CDEFG	MAN.
Mean	18 =	5.690	EFGHIJKLM	Mean	46 =	5.833	CDEFG	TPR 96 P
Mean	19 =	6.060	ABC	Mean	3 =	5.790	CDEFGH	BLAZER III
Mean	20 =	5.840	CDEFG	Mean	31 =	5.783	CDEFGH	LP 0-93
Mean	21 =	6.010	ABCD	Mean	43 =	5.767	CDEFGHI	TPR 96 A = ProGram
Mean	22 =	5.500	GHIJKLM	Mean	38 =	5.760	CDEFGHI	SATURN
Mean	23 =	5.860	BCDEFG	Mean	2 =	5.733	CDEFGHIJ	ADVANTAGE
Mean	24 =	5.527	FGHIJKLM	Mean	27 =	5.720	CDEFGHIJ	PINNACLE
Mean	25 =	5.440	HIJKLM	Mean	4 =	5.717	CDEFGHIJ	BRIGHTSTAR
Mean	26 =	6.077	ABC	Mean	29 =	5.710	CDEFGHIJK	RACER
Mean	27 =	5.720	CDEFGHIJ	Mean	41 =	5.670	DEFGHIJKL	TARGET
Mean	28 =	5.853	BCDEFG	Mean	8 =	5.670	DEFGHIJKL	DEL DWF
Mean	29 =	5.710	CDEFGHIJK	Mean	13 =	5.660	DEFGHIJKL	HEADSTART
Mean	30 =	5.367	JKLM	Mean	9 =	5.650	DEFGHIJKL	DERBY SUP
Mean	31 =	5.783	CDEFGH	Mean	45 =	5.610	EFGHIJKLM	TPR 96 C
Mean	32 =	5.603	EFGHIJKLM	Mean	32 =	5.603	EFGHIJKLM	LP Q-93
Mean	33 =	5.453	HIJKLM	Mean	18 =	5.600	EFGHIJKLM	LYNX
Mean	34 =	5.260	MN	Mean	40 =	5.560	FGHIJKLM	SUNSHINE
Mean	35 =	5.890	ABCDEF	Mean	44 =	5.560	FGHIJKLM	TPR 96 B
Mean	36 =	5.343	KLM	Mean	24 =	5.527	FGHIJKLM	PALMER II
Mean	37 =	5.850	BCDEFG	Mean	22 =	5.500	GHIJKLM	
Mean	38 =	5.760	CDEFGHI	Mean	33 =	5.453	HIJKLM	LP BB-93
Mean	39 =	5.850	BCDEFG	Mean	25 =	5.440	HIJKLM	PANTHER
Mean	40 =	5.560	FGHIJKLM	Mean	42 =	5.400	IJKLM	
Mean	41 =	5.670	DEFGHIJKL	Mean	7 =	5.383	JKLM	CUTTER
Mean	42 =	5.400	IJKLM	Mean	30 =	5.367	JKLM	
Mean	43 =	5.767	CDEFGHI	Mean	36 =	5.343	KLM	PR 97 EL2
Mean	44 =	5.560	FGHIJKLM	Mean	12 =	5.327	LM	
Mean	45 =	5.610	EFGHIJKLM	Mean	34 =	5.260	MN	SUNBRIGHT

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Table 19A. 1998 weight 1000 seed of perennial ryegr. cv. ProGram (Code No's. TPR96A & TPR97A) compared with other cultivars transplanted in November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data file 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 4: 1000 SEED WEIGHT (G)
Error Mean Square = 0.03900 Error degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.3203 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	1.580	BCDEFG	Mean	15 =	1.953	A	LINN
Mean	2 =	1.407	DEFGHIJK	Mean	22 =	1.800	AB	
Mean	3 =	1.393	DEFGHIJK	Mean	9 =	1.787	AB	DERBY SUPREME
Mean	4 =	1.280	GHIJKL	Mean	43 =	1.787	AB	TPR 96 A = ProGram
Mean	5 =	1.587	BCDEFG	Mean	46 =	1.773	ABC	TPR 96 P
Mean	6 =	1.520	BCDEFGH	Mean	26 =	1.713	ABCD	PENNFINE
Mean	7 =	1.567	BCDEFG	Mean	31 =	1.693	ABCD	LP Q-93
Mean	8 =	1.560	BCDEFG	Mean	39 =	1.687	ABCD	SHERWOOD
Mean	9 =	1.787	AB	Mean	29 =	1.633	ABCDE	RACER
Mean	10 =	1.587	BCDEFG	Mean	42 =	1.633	ABCDE	
Mean	11 =	1.580	BCDEFG	Mean	21 =	1.620	BCDEF	MANHATTAN II
Mean	12 =	1.453	CDEFGHI	Mean	35 =	1.613	BCDEF	PR 97 DII
Mean	13 =	1.353	EFGHIJK	Mean	10 =	1.587	BCDEFG	EDGE
Mean	14 =	1.453	CDEFGHI	Mean	5 =	1.587	BCDEFG	CALYPSO II
Mean	15 =	1.953	A	Mean	11 =	1.580	BCDEFG	ELF
Mean	16 =	1.027	L	Mean	45 =	1.580	BCDEFG	TPR 96 C
Mean	17 =	1.173	IJKL	Mean	1 =	1.580	BCDEFG	ACHIEVER
Mean	18 =	1.573	BCDEFG	Mean	18 =	1.573	BCDEFG	LYNX
Mean	19 =	1.233	HIJKL	Mean	7 =	1.567	BCDEFG	CUTTER
Mean	20 =	1.100	KL	Mean	44 =	1.567	BCDEFG	TPR 96 B
Mean	21 =	1.620	BCDEF	Mean	8 =	1.560	BCDEFG	DEL. DWF
Mean	22 =	1.800	AB	Mean	6 =	1.520	BCDEFGH	CITATION II
Mean	23 =	1.333	EFGHIJKL	Mean	40 =	1.520	BCDEFGH	SUNSHINE
Mean	24 =	1.480	BCDEFGHI	Mean	28 =	1.513	BCDEFGH	PRELUDE II
Mean	25 =	1.213	HIJKL	Mean	24 =	1.480	BCDEFGHI	PALMER II
Mean	26 =	1.713	ABCD	Mean	12 =	1.453	CDEFGHI	
Mean	27 =	1.360	EFGHIJK	Mean	14 =	1.453	CDEFGHI	JIFFIE
Mean	28 =	1.513	BCDEFGH	Mean	37 =	1.427	DEFGHIJ	RIVIERA II
Mean	29 =	1.633	ABCDE	Mean	32 =	1.427	DEFGHIJ	LP Q-93
Mean	30 =	1.400	DEFGHIJK	Mean	2 =	1.407	DEFGHIJK	ADVANTAGE
Mean	31 =	1.693	ABCD	Mean	30 =	1.400	DEFGHIJK	
Mean	32 =	1.427	DEFGHIJ	Mean	3 =	1.393	DEFGHIJK	BLAZER III
Mean	33 =	1.300	FGHIJKL	Mean	27 =	1.360	EFGHIJK	PINNACLE
Mean	34 =	1.113	JKL	Mean	13 =	1.353	EFGHIJK	HEADSTART
Mean	35 =	1.613	BCDEF	Mean	23 =	1.333	EFGHIJKL	MORNING STAR
Mean	36 =	1.280	GHIJKL	Mean	38 =	1.327	EFGHIJKL	SATURN
Mean	37 =	1.427	DEFGHIJ	Mean	33 =	1.300	FGHIJKL	LP BB-93
Mean	38 =	1.327	EFGHIJKL	Mean	4 =	1.280	GHIJKL	BRIGHTSTAR
Mean	39 =	1.687	ABCD	Mean	36 =	1.280	GHIJKL	PR 97 DL2
Mean	40 =	1.520	BCDEFGH	Mean	41 =	1.267	GHIJKL	TARGET
Mean	41 =	1.267	GHIJKL	Mean	19 =	1.233	HIJKL	MAGIC
Mean	42 =	1.633	ABCDE	Mean	25 =	1.213	HIJKL	PANTHER
Mean	43 =	1.787	AB	Mean	17 =	1.173	IJKL	LOWGROW
Mean	44 =	1.567	BCDEFG	Mean	34 =	1.113	JKL	SUNBRIGHT
Mean	45 =	1.580	BCDEFG	Mean	20 =	1.100	KL	MANHATTAN
Mean	46 =	1.773	ABC	Mean	16 =	1.027	L	LORETTA NOVA

Table 20A Flag leaf posture at boot stage of perennial ryegr.cv ProGram (Code names TPR96A & TPR97 A) in 1998 compared to other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Randomized complete block design, three replications, Case Range 139-184
Variable 21: FLAG LEAF AT BOOT STAGE: 1=DEFLEXED, 3=RECURVED, 5=HORIZONTAL, 7=SEMIERECT, 9=ERECT
Error Mean Square = 0.1660 Error Degrees of Freedom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 0.6609 at alpha = 0.050

Original Order				Ranked Order				LINE
Mean	1 =	7.127	AB	Mean	24 =	7.207	A	PALMER II
Mean	2 =	6.260	G	Mean	1 =	7.127	AB	ACHIEVER
Mean	3 =	6.367	DEFG	Mean	34 =	7.080	ABC	SUNBRIGHT
Mean	4 =	7.000	ABCDE	Mean	9 =	7.027	ABCD	DERBY SUP
Mean	5 =	6.837	ABCDEFG	Mean	15 =	7.000	ABCDE	LINN
Mean	6 =	6.930	ABCDEF	Mean	7 =	7.000	ABCDE	CUTTER
Mean	7 =	7.000	ABCDE	Mean	4 =	7.000	ABCDE	BRIGHTSTAR
Mean	8 =	6.853	ABCDEFG	Mean	26 =	6.997	ABCDEF	PENNFINE
Mean	9 =	7.027	ABCD	Mean	29 =	6.950	ABCDEF	RACER
Mean	10 =	6.753	ABCDEFG	Mean	27 =	6.937	ABCDEF	PINNACLE
Mean	11 =	6.680	ABCDEFG	Mean	6 =	6.930	ABCDEF	CIT II
Mean	12 =	6.240	G	Mean	14 =	6.853	ABCDEFG	JIFFIE
Mean	13 =	6.717	ABCDEFG	Mean	8 =	6.853	ABCDEFG	DEL DWF
"	14 =	6.853	ABCDEFG	Mean	35 =	6.843	ABCDEFG	PR 97 DII
Mean	15 =	7.000	ABCDE	Mean	5 =	6.837	ABCDEFG	CALYPSO II
Mean	16 =	6.417	DEFG	Mean	23 =	6.817	ABCDEFG	MORN. STAR
Mean	17 =	6.217	G	Mean	22 =	6.787	ABCDEFG	
Mean	18 =	6.557	ABCDEFG	Mean	42 =	6.783	ABCDEFG	
Mean	19 =	6.397	DEFG	Mean	28 =	6.770	ABCDEFG	PRELUDE II
Mean	20 =	5.330	H	Mean	10 =	6.753	ABCDEFG	EDGE
Mean	21 =	6.727	ABCDEFG	Mean	21 =	6.727	ABCDEFG	MAN II
Mean	22 =	6.787	ABCDEFG	Mean	13 =	6.717	ABCDEFG	HEADSTART
Mean	23 =	6.817	ABCDEFG	Mean	39 =	6.687	ABCDEFG	SHERWOOD
Mean	24 =	7.207	A	Mean	11 =	6.680	ABCDEFG	ELF
Mean	25 =	6.337	FG	Mean	31 =	6.667	ABCDEFG	LP Q-93
Mean	26 =	6.997	ABCDEF	Mean	33 =	6.640	ABCDEFG	LP BB-93
Mean	27 =	6.937	ABCDEF	Mean	30 =	6.633	ABCDEFG	
Mean	28 =	6.770	ABCDEFG	Mean	40 =	6.610	ABCDEFG	SUNSHINE
Mean	29 =	6.950	ABCDEF	Mean	45 =	6.593	ABCDEFG	TPR 96 C
Mean	30 =	6.633	ABCDEFG	Mean	43 =	6.563	ABCDEFG	TPR 96 A = ProGram
Mean	31 =	6.667	ABCDEFG	Mean	18 =	6.557	ABCDEFG	LYNX
Mean	32 =	6.480	BCDEFG	Mean	44 =	6.547	ABCDEFG	TPR 96 B
Mean	33 =	6.640	ABCDEFG	Mean	41 =	6.533	BCDEFG	TARGET
Mean	34 =	7.080	ABC	Mean	46 =	6.530	BCDEFG	TPR 96 P
Mean	35 =	6.843	ABCDEFG	Mean	32 =	6.480	BCDEFG	LP Q-93
Mean	36 =	6.390	DEFG	Mean	37 =	6.440	CDEFG	RIV II
Mean	37 =	6.440	CDEFG	Mean	16 =	6.417	DEFG	LORETTA NOVA
Mean	38 =	6.363	EFG	Mean	19 =	6.397	DEFG	MAGIC
"	39 =	6.687	ABCDEFG	Mean	36 =	6.390	DEFG	PR 97 EL2
"	40 =	6.610	ABCDEFG	Mean	3 =	6.367	DEFG	BLAZER III
Mean	41 =	6.533	BCDEFG	Mean	38 =	6.363	EFG	SATURN
Mean	42 =	6.783	ABCDEFG	Mean	25 =	6.337	FG	PANTHER
Mean	43 =	6.563	ABCDEFG	Mean	2 =	6.260	G	ADVANTAGE
Mean	44 =	6.547	ABCDEFG	Mean	12 =	6.240	G	
Mean	45 =	6.593	ABCDEFG	Mean	17 =	6.217	G	Lowgrow
Mean	46 =	6.530	BCDEFG	Mean	20 =	5.330	H	Manhattan

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Table 21A Anther date (Julian) during 1998 of perennial ryegr.cv ProGram (code names TPR96A & TPR97A compared to other cultivars transplanted November 1997 to spaced plant plots near Corvallis, Oregon

Ref. Pickseed West, Inc. Research Facility, Data File 98PRPVP
Variable 20: ANTHER DATE (JULIAN)
Randomized complete block design, three replications, Case Range 139-184
Error Mean Square = 1.590 Error Degrees of Fredom = 90
Observations to calculate mean = 3, Least Significant Difference Test
LSD value = 2.045 at alpha = 0.050

Original Order				Ranked Order				LINE	
Mean	1 =	155.3	CDEF	Mean	16 =	163.7	A	LORETTA NOVA	
Mean	2 =	155.3	CDEF	Mean	25 =	158.0	B	PANTHER	
Mean	3 =	154.0	EFGH	Mean	23 =	158.0	B	MORN. STAR	
Mean	4 =	156.0	BCDE	Mean	11 =	157.3	BC	ELF	= June 7
Mean	5 =	152.0	HI	Mean	20 =	156.7	BCD	MANhattan	= June 6
Mean	6 =	152.7	GHI	Mean	45 =	156.0	BCDE	TPR 96 C :	= June 6
Mean	7 =	153.3	FGHI	Mean	4 =	156.0	BCDE	BRIGHTSTAR	
Mean	8 =	155.3	CDEF	Mean	10 =	156.0	BCDE	EDGE	
Mean	9 =	154.0	EFGH	Mean	2 =	155.3	CDEF	ADVANTAGE	
Mean	10 =	156.0	BCDE	Mean	8 =	155.3	CDEF	DEL DWF	
Mean	11 =	157.3	BC	Mean	17 =	155.3	CDEF	LOWGROW	
Mean	12 =	154.7	DEFG	Mean	1 =	155.3	CDEF	ACHIEVER	
Mean	13 =	154.0	EFGH	Mean	43 =	155.3	CDEF	TPR 96 A	=ProGram = June 5
	14 =	154.0	EFGH	Mean	27 =	155.3	CDEF	PINNACLE	
Mean	15 =	146.7	K	Mean	12 =	154.7	DEFG		
Mean	16 =	163.7	A	Mean	37 =	154.7	DEFG	RIV II	
Mean	17 =	155.3	CDEF	Mean	40 =	154.7	DEFG	SUNSHINE	
Mean	18 =	152.7	GHI	Mean	19 =	154.7	DEFG	MAGIC	= June 4
Mean	19 =	154.7	DEFG	Mean	13 =	154.0	EFGH	HEADSTART	
Mean	20 =	156.7	BCD	Mean	9 =	154.0	EFGH	DERBY SUP	
Mean	21 =	153.3	FGHI	Mean	38 =	154.0	EFGH	SATURN	
Mean	22 =	154.0	EFGH	Mean	39 =	154.0	EFGH	SHERWOOD	
Mean	23 =	158.0	B	Mean	41 =	154.0	EFGH	TARGET	
Mean	24 =	153.3	FGHI	Mean	46 =	154.0	EFGH	TPR 96 P	= June 4
Mean	25 =	158.0	B	Mean	3 =	154.0	EFGH	BLAZER III	
Mean	26 =	149.3	J	Mean	14 =	154.0	EFGH	JIFFIE	
Mean	27 =	155.3	CDEF	Mean	28 =	154.0	EFGH	PRELUDE II	
Mean	28 =	154.0	EFGH	Mean	44 =	154.0	EFGH	TPR 96 B	= June 4
Mean	29 =	152.7	GHI	Mean	22 =	154.0	EFGH		
Mean	30 =	151.3	IJ	Mean	36 =	154.0	EFGH	PR 97 EL2	
Mean	31 =	154.0	EFGH	Mean	31 =	154.0	EFGH	LP 0-93	
Mean	32 =	151.3	IJ	Mean	42 =	154.0	EFGH		
Mean	33 =	153.3	FGHI	Mean	33 =	153.3	FGHI	LP BB-93	
Mean	34 =	153.3	FGHI	Mean	24 =	153.3	FGHI	PALMER II	
Mean	35 =	151.3	IJ	Mean	34 =	153.3	FGHI	SUNBRIGHT	
Mean	36 =	154.0	EFGH	Mean	7 =	153.3	FGHI	CUTTER	
Mean	37 =	154.7	DEFG	Mean	21 =	153.3	FGHI	MAN II	
Mean	38 =	154.0	EFGH	Mean	18 =	152.7	GHI	LYNX	
	39 =	154.0	EFGH	Mean	6 =	152.7	GHI	CIT II	
Mean	40 =	154.7	DEFG	Mean	29 =	152.7	GHI	RACER	
Mean	41 =	154.0	EFGH	Mean	5 =	152.0	HI	CALYPSO II	
Mean	42 =	154.0	EFGH	Mean	32 =	151.3	IJ	LP Q-93	
Mean	43 =	155.3	CDEF	Mean	30 =	151.3	IJ		
Mean	44 =	154.0	EFGH	Mean	35 =	151.3	IJ	PR 97 DII	= June 1
Mean	45 =	156.0	BCDE	Mean	26 =	149.3	J	PENNFINE	= May 29
Mean	46 =	154.0	EFGH	Mean	15 =	146.7	K	LINN	= May 26

18e.

Exhibit E Statement of the Basis of Applicant's Ownership

Ag Biotech of Oregon, Inc. hereby states that ProGram perennial ryegrass is a proprietary variety of the above named company. Dr. John R. Hardison, President of Ag Biotech of Oregon, Inc., is the plant breeder of ProGram Perennial ryegrass.
Cenex Harvest States has been assigned worldwide production and marketing rights to ProGram perennial ryegrass.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Ag Biotech of Oregon, Inc.	TPR96A TPR97A	ProGram
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(include area code)*	**6. FAX** *(include area code)*
1125 S.W. Stopp Place Corvallis, Oregon 97333	(541) 753-4144	
	7. PVPO NUMBER 200100242	

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country

10. Is the applicant the original owner? [X] YES [ ] NO *If no, please answer one of the following:*

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

[ ] YES [ ] NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

[ ] YES [ ] NO If no, give name of country

11. Additional explanation on ownership *(if needed, use reverse for extra space)*:

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to compete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.