

No.

8900241



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

Pure-Seed Testing, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED 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 *eighteen* 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 RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (7 U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RED FESCUE

'Shademaster'

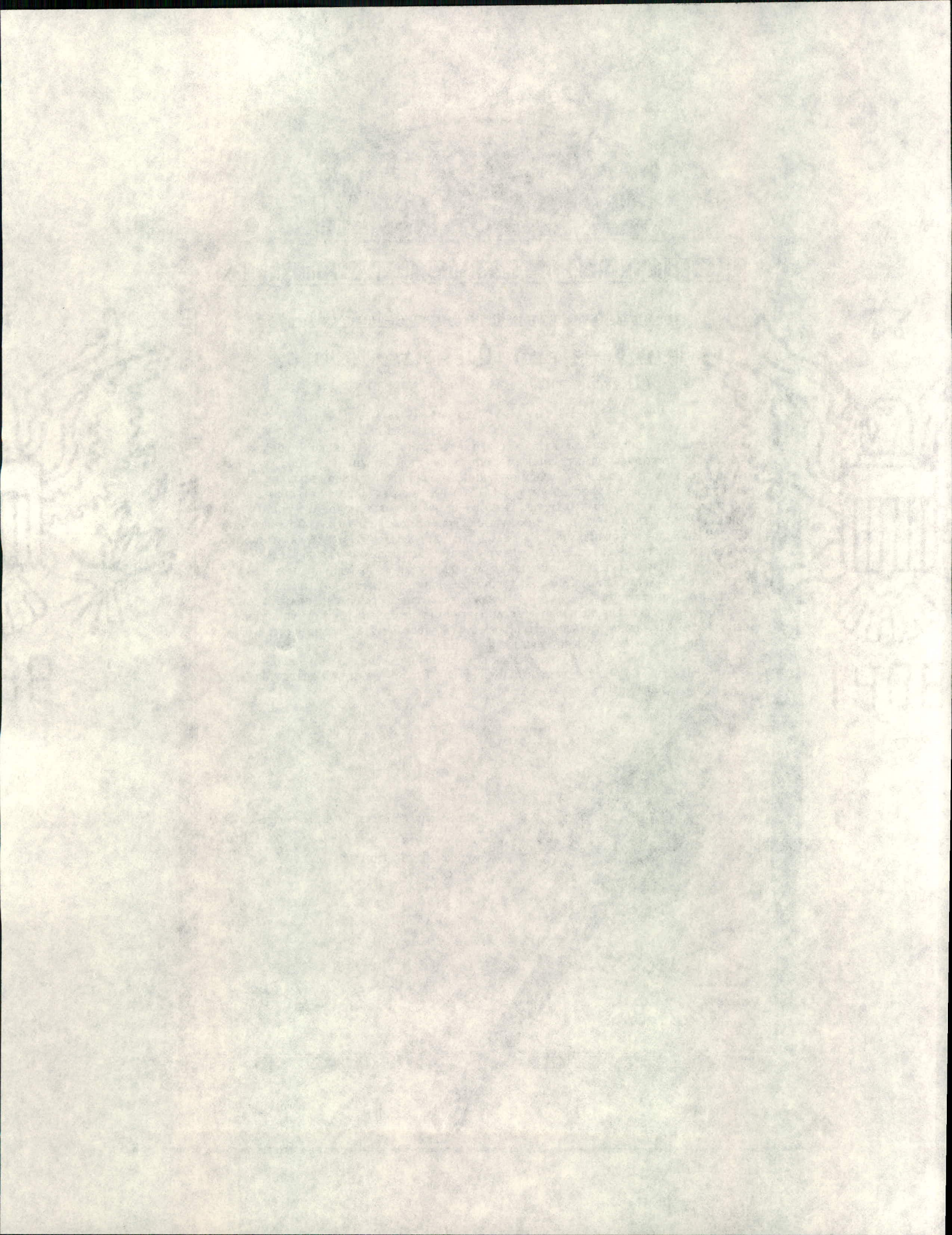


In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of August in the year of our Lord one thousand nine hundred and ninety.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Clayton Gentler
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

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).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S) Pure-Seed Testing, Inc.		2. TEMPORARY DESIGNATION 433	3. VARIETY NAME Shademaster
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 3057 G. St. Hubbard, Or 97032		5. PHONE (Include area code) (503) 981-7333	FOR OFFICIAL USE ONLY PVPO NUMBER 8900241
6. GENUS AND SPECIES NAME Festuca rubra spp. rubra	7. FAMILY NAME (Botanical) Gramineae		FILING DATE June 8 1989 TIME 9:30 <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
8. KIND NAME Spreading Red Fescue	9. DATE OF DETERMINATION September, 1987		FEES RECEIVED AMOUNT FOR FILING \$ 2150.00 DATE June 8, 1989 AMOUNT FOR CERTIFICATE \$ 250.00 DATE Aug. 9, 1990
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Oregon			12. DATE OF INCORPORATION June 2, 1974
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. William A. Meyer and Crystal Rose-Fricker 3057 G. St. Hubbard, OR 97032 PHONE (Include area code): (503) 981-7333			

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

- a. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- b. Exhibit B, Novelty Statement.
- c. Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)
- d. Exhibit D, Additional Description of Variety.
- e. Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) Yes (If "Yes," answer items 16 and 17 below) No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? Yes No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? Foundation Registered Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? Yes (If "Yes," give date) No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? Yes (If "Yes," give names of countries and dates) No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

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

SIGNATURE OF APPLICANT <i>William A. Meyer</i>	DATE 6/5/89
SIGNATURE OF APPLICANT <i>Crystal Rose Fricker</i>	DATE 6/5/89

INSTRUCTIONS

General: Send an original copy of the application and exhibits, at least 2,500 viable seeds (*furnish only untreated seed*), and \$1,800 fee (*\$200 filing fee and \$1,600 examination fee*) to the U. S. Department of Agriculture, Agricultural Marketing Service, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (*See Section 180.175 of the Regulations and Rules of Practice.*) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

Item

- 9 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 14a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 14b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 14e Section 52(4) of the Plant Variety Protection Act requires applicants to furnish a statement of the basis of the applicant's ownership. The applicant may be the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.
- 15 If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*) the applicant may **NOT** reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "No," he may change his choice. (*See Section 180.16 of the Regulations and Rules of Practice.*)
- 19 See Sections 41 (i,j) and 42 of the Plant Variety Protection Act and Section 180.7 of the Regulations and Rules of Practice for eligibility requirements.

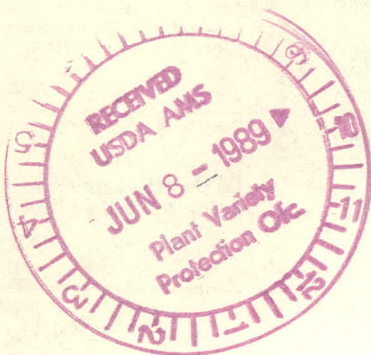


EXHIBIT A.

ORIGIN AND BREEDING HISTORY OF
SHADEMASTER SPREADING RED FESCUE

1. Shademaster spreading red fescue is an advanced generation synthetic variety derived from the progenies of 9 clones. These clones trace back to collections from old turf areas in Tennessee and other southern parts of the U.S. The synthetic of the 9 clones was made and planted in a mowed turf trial in Oregon. After showing improved turf performance and leaf spot resistance 500 plants were sprigged out of the Syn 433 turf plots. This nursery was the first cycle of phenotypic recurrent selection for improved seed yield, leaf spot resistance, and an attractive dark green color. Seed from the remaining superior plants was used to plant an isolated nursery for the second cycle of selection for the same traits with emphasis on seed yield characteristics. 200 clones were selected as the parents of Shademaster spreading red fescue with the experimental code 433.

2. Breeder seed of Shademaster was produced by allowing the 200 parents to interpollinate in an isolated space plant nursery. Seed production is limited to two generations of increase from breeder seed -- one each of foundation and certified.

SHUBHAMSTER SPREADING RED FEEDS
LUREIN AND BREEDING HISTORY OF

1. Shubhamster spreading red feeds is an advanced generation system to variety derived from the progenies of 3 crosses. These three crosses had to collect from old farms areas in Tennessee and other southern parts of the U.S. The synthetic of the F cross was made and planted in a mixed field trial in Oregon. After showing improved performance and leaf spot resistance 500 plants were selected out of the 5000 plants that were in the field. This nursery was the first cycle of selection. A further selection for improved seed yield, leaf spot resistance, and an attractive dark green color. Seed from the remaining superior plants was used to plant an isolated nursery for the second cycle of selection for the same traits with emphasis on seed yield characteristics. 500 clones were selected as the source of Shubhamster spreading red feeds with the experimental code 433.



3. Shademaster is a stable and uniform variety. No off-type or variants have been observed in the production or multiplication of this variety. Shademaster spreading red fescue and the parents of Shademaster have produced turf of good quality and acceptable uniformity.

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Shadman is a stable and uniform variety. No other type or variety have been observed in the production of this variety. Shadman has been selected for seed and the plants of Shadman have produced fruit of good quality and desirable appearance.

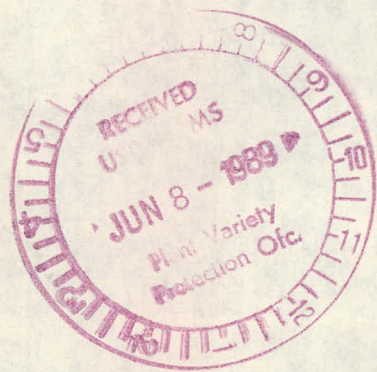


EXHIBIT B.

NOVELTY STATEMENT ON
SHADEMASTER SPREADING RED FESCUE

Shademaster spreading red fescue most resembles the varieties Flyer and Vista. However, close comparisons show that these varieties differ in the following characteristics:

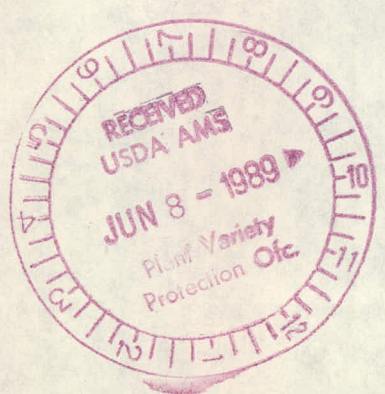
1. Shademaster has a fifty percent heading date at least three days earlier than Vista and five days earlier than Flyer (Table 1).
2. Shademaster has a mature plant height at least 4 cm taller than Flyer and 5 cm taller than Vista (Table 3).
3. Shademaster has a darker green color (137B in the Royal Horticultural Chart) than Vista (138A) (Table 4).
4. Shademaster has at least 20 more tillers per 5 inch row than Flyer and 24 more than Vista (Table 5).

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EXHIBIT B

MULTI-VARIETY
SHOULDERED BRONZE RED LEGUE

Shouldered bronze red legue, not legue root resembles the
varieties Silver and Vista. However, close comparisons show that
these varieties differ in the following characteristics:
Shouldered bronze red legue bears a heavy seed pod and
leaf three have similar characteristics and five have similar
leaf (Table 1).
Shouldered bronze red legue is a variety of the
called the 2 and 5 on the 2 and Vista (Table 2).
Shouldered bronze red legue is a variety of the
Shouldered bronze red legue (Table 3).
Shouldered bronze red legue is a variety of the
Shouldered bronze red legue (Table 4).
Shouldered bronze red legue is a variety of the
Shouldered bronze red legue (Table 5).



U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Fine Leaved Fescues)

OBJECTIVE DESCRIPTION OF VARIETY
FINE LEAVED FESCUES
 (*Festuca spp.*)

NAME OF APPLICANT(S) Pure-Seed Testing, Inc.	TEMPORARY DESIGNATION 433	VARIETY NAME Shademaster
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 3057 G. St. Hubbard, OR 97032		FOR OFFICIAL USE ONLY PVPO NUMBER 8900241

Place the appropriate number that describes the varietal character of this variety in the boxes below. Use leading zeroes when necessary (e.g., or). Characteristics described including numerical measurements, should represent those that are typical for the variety. Measured data should be for SPACED PLANTS. Royal Horticultural Society or any recognized color fan may be used to determine plant colors; designate system used: Royal Horticultural Chart Describe location of test area, conditions and number of plants used: _____

1. SPECIES: (With comparison varieties for use below - use varieties within species of application variety)

- | | | | | |
|--------------------------------|--|---------------------|----------------|---------------------|
| <input type="text" value="3"/> | 1 = <i>F. rubra</i> ssp. <i>commutata</i> (Chewings) | 11 = Cascade | 12 = Highlight | 13 = Jamestown |
| | 2 = <i>F. rubra</i> ssp. <i>litoralis</i> (Creeping Red) | 14 = Banner | 15 = Barfalla | 23 = Merlin |
| | 3 = <i>F. rubra</i> ssp. <i>rubra</i> (Spreading Red) | 21 = Dawson | 22 = Starlight | 33 = Fortress |
| | 4 = <i>F. ovina</i> (Sheep) | 24 = Pennlawn | 32 = Ruby | |
| | 5 = <i>F. longifolia</i> (Hard) | 31 = Boreal | 34 = Enslva | |
| | 6 = <i>F. tenuifolia</i> (Fine-Leaved Sheep) | 41 = Covar | 51 = Durar | 52 = Biljart (C-26) |
| | 7 = Other (<i>Specify</i>) <i>F.</i> _____ | 52 = Biljart (C-26) | 53 = Scaldis | |
| | | 61 = Panda | 62 = Barok | |

2. CYTOLOGY:

- | | | | | | | |
|---|-------------------|--------------------------------|--------|---------------|----------------|---------------|
| <input type="text" value="5"/> <input type="text" value="6"/> | Chromosome Number | <input type="text" value="4"/> | Ploidy | 1 = diploid | 2 = tetraploid | 3 = hexaploid |
| | | | | 4 = octoploid | | |

3. ADAPTATION: (0 = Not Tested; 1 = Not Adapted; 2 = Adapted)

- | | | | | | | | | | |
|--------------------------------|-----------|--------------------------|-----------|--------------------------------|---------------------|--------------------------------|--------------|--------------------------|--------------------------------|
| <input type="text" value="2"/> | Northeast | <input type="checkbox"/> | Southeast | <input type="text" value="2"/> | Upper North Central | <input type="text" value="2"/> | Pacific N.W. | <input type="checkbox"/> | Other (<i>Specify</i>) _____ |
|--------------------------------|-----------|--------------------------|-----------|--------------------------------|---------------------|--------------------------------|--------------|--------------------------|--------------------------------|

4. MATURITY: Date First Headed (panicle emergence) Location(s) of Trail(s) Hubbard, Oregon (See Table 1)

- | | | | | |
|--------------------------------|-----------------|---------------------------------|-----------------------------|-----------------------------------|
| <input type="text" value="3"/> | Maturity Class: | 1 = Very Early (Covar) | 2 = Early (Highlight) | 3 = Medium Early (Boreal, Dawson) |
| | | 4 = Medium Late (Cascade, Ruby) | 5 = Late (Jamestown, Agram) | 6 = Very Late |

Date Headed 4/15 50% Heading Date

- | | | | |
|---|-----------------------------|---|----------------------|
| <input type="text" value="0"/> <input type="text" value="7"/> | Days earlier than | <input type="text" value="3"/> <input type="text" value="4"/> | } Comparison Variety |
| <input type="text" value=""/> | Maturity same as | <input type="text" value=""/> | |
| <input type="text" value=""/> | Days later than | <input type="text" value=""/> | |

5. PLANT HEIGHT: (At maturity; to top of panicle; Average of 10 tallest culms)

- | | | | |
|--|---------------------------|---|----------------------|
| <input type="text" value="8"/> <input type="text" value="6"/> <input type="text" value="3"/> | mm height | | (See Table 2) |
| <input type="text" value=""/> | mm shorter than | <input type="text" value=""/> | } Comparison Variety |
| <input type="text" value=""/> | Height same as | <input type="text" value=""/> | |
| <input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="4"/> | mm taller than | <input type="text" value="3"/> <input type="text" value="4"/> | |

6. GROWTH HABIT: (Mature)

- | | | | |
|--------------------------------|------------------|----------------------------|-------------------------|
| <input type="text" value="2"/> | 1 = Erect (Ruby) | 2 = Semi-erect (Highlight) | 3 = Prostrate (Silvana) |
|--------------------------------|------------------|----------------------------|-------------------------|

7. RHIZOMES:

- | | | | | | |
|--------------------------------|---------------------------------------|-------------------------------|--------------------------------|-------------------------------|---------------------|
| <input type="text" value=""/> | mm Length | <input type="text" value=""/> | mm Width | <input type="text" value=""/> | mm Internode length |
| <input type="text" value="4"/> | 1 = Absent (Highlight) | 2 = Weakly Creeping (Dawson) | 3 = Strongly Creeping (Boreal) | | |
| | 4 = Very Strongly Creeping (Fortress) | | | | |

5

15. GIVE VARIETY OR VARIETIES THAT MOST CLOSELY RESEMBLE THE APPLICATION VARIETY. For the following characteristics indicate Degree of Resemblance by placing the column marked, D.R., one of the following numbers:

1 = Application variety is less than comparison variety. 2 = Same As
3 = More than, better, greater, darker, more disease resistant, etc.

CHARACTER	VARIETY	D.R.	CHARACTER	VARIETY	D.R.
Rhizome Length	Fortress	2	Growth Habit	Ensylva	2
Leaf Width	Ensylva	2	Leaf Color	Ensylva	3
Panicle Color	Ensylva	2	Panicle Shape	Ensylva	2
Winter Color	Ensylva	3	Cold Injury	Ensylva	2
Shade Tolerance	Ensylva	3	Heat	Ensylva	3
Drought	Ensylva	3	Disease* Powdery Mildew	Ensylva	3

* Specify each disease evaluated.

16. ADDITIONAL DESCRIPTION: (Use additional sheets as required)

Describe all characteristics that cannot be adequately described in the form above in Exhibit D. Comparative varieties should be used as may be appropriate, such as for disease. Append all comparative trial and evaluation data, including measured characters, environmental, and disease tests.



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EXHIBIT D.

ADDITIONAL DESCRIPTION OF
SHADEMASTER SPREADING FESCUE

Shademaster is a low growing turf type spreading red fescue which produced an attractive, dense, fine textured turf with a medium dark green color (Table 4). This variety has improved turf quality in shade (Table 8).

Shademaster has shown improved turf quality in Oregon under moderate maintenance and low maintenance conditions (Table 6 & 7). Shademaster has improved performance in the winter and summer in Chicago and New Jersey (Table 9 & 10).

EXHIBIT A
ADDITIONAL DESCRIPTION OF
SHADEMASTER SPREADING RESCUE

Shademaster is a low growing turf type spreading red fescue which produced an attractive, dense fine textured turf with a medium dark green color (Table A). This variety has improved turf quality in shade (Table B).
Shademaster has shown improved turf quality in Oregon under moderate maintenance and low maintenance conditions (Table C & D). Shademaster has improved performance in the winter and summer in Chicago and New Jersey (Table E & F).



TABLE 1.

FIFTY PERCENT HEADING DATE OF FINE FESCUE
IN SEED YIELD TRIALS IN THE FALL OF 1984 AND 1986.

<u>CULTIVAR</u>	<u>1984 TRIAL</u>		<u>1986 TRIAL</u>
	<u>1985</u> <u>DATA</u>	<u>1986</u> <u>DATA</u>	<u>1987</u> <u>DATA</u>
Shademaster	4/23	4/20	4/15
Flyer	4/28	4/25	4/20
Ensylva	5/2	5/1	4/22
Vista	4/26	4/23	4/21



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TABLE 1
FIFTY PERCENT HEADING DATE OF PINE PESTLE
IN SEEDY FELD TRIALS IN THE FALL OF 1984 AND 1985

Year	Field	Heading Date
1984	1	10/15
1984	2	10/20
1984	3	10/25
1984	4	10/30
1984	5	10/35
1984	6	10/40
1984	7	10/45
1984	8	10/50
1984	9	10/55
1984	10	10/60
1984	11	10/65
1984	12	10/70
1984	13	10/75
1984	14	10/80
1984	15	10/85
1984	16	10/90
1984	17	10/95
1984	18	10/100
1984	19	10/105
1984	20	10/110
1984	21	10/115
1984	22	10/120
1984	23	10/125
1984	24	10/130
1984	25	10/135
1984	26	10/140
1984	27	10/145
1984	28	10/150
1984	29	10/155
1984	30	10/160
1984	31	10/165
1984	32	10/170
1984	33	10/175
1984	34	10/180
1984	35	10/185
1984	36	10/190
1984	37	10/195
1984	38	10/200
1984	39	10/205
1984	40	10/210
1984	41	10/215
1984	42	10/220
1984	43	10/225
1984	44	10/230
1984	45	10/235
1984	46	10/240
1984	47	10/245
1984	48	10/250
1984	49	10/255
1984	50	10/260
1984	51	10/265
1984	52	10/270
1984	53	10/275
1984	54	10/280
1984	55	10/285
1984	56	10/290
1984	57	10/295
1984	58	10/300
1984	59	10/305
1984	60	10/310
1984	61	10/315
1984	62	10/320
1984	63	10/325
1984	64	10/330
1984	65	10/335
1984	66	10/340
1984	67	10/345
1984	68	10/350
1984	69	10/355
1984	70	10/360
1984	71	10/365
1984	72	10/370
1984	73	10/375
1984	74	10/380
1984	75	10/385
1984	76	10/390
1984	77	10/395
1984	78	10/400
1984	79	10/405
1984	80	10/410
1984	81	10/415
1984	82	10/420
1984	83	10/425
1984	84	10/430
1984	85	10/435
1984	86	10/440
1984	87	10/445
1984	88	10/450
1984	89	10/455
1984	90	10/460
1984	91	10/465
1984	92	10/470
1984	93	10/475
1984	94	10/480
1984	95	10/485
1984	96	10/490
1984	97	10/495
1984	98	10/500
1984	99	10/505
1984	100	10/510
1984	101	10/515
1984	102	10/520
1984	103	10/525
1984	104	10/530
1984	105	10/535
1984	106	10/540
1984	107	10/545
1984	108	10/550
1984	109	10/555
1984	110	10/560
1984	111	10/565
1984	112	10/570
1984	113	10/575
1984	114	10/580
1984	115	10/585
1984	116	10/590
1984	117	10/595
1984	118	10/600
1984	119	10/605
1984	120	10/610
1984	121	10/615
1984	122	10/620
1984	123	10/625
1984	124	10/630
1984	125	10/635
1984	126	10/640
1984	127	10/645
1984	128	10/650
1984	129	10/655
1984	130	10/660
1984	131	10/665
1984	132	10/670
1984	133	10/675
1984	134	10/680
1984	135	10/685
1984	136	10/690
1984	137	10/695
1984	138	10/700
1984	139	10/705
1984	140	10/710
1984	141	10/715
1984	142	10/720
1984	143	10/725
1984	144	10/730
1984	145	10/735
1984	146	10/740
1984	147	10/745
1984	148	10/750
1984	149	10/755
1984	150	10/760
1984	151	10/765
1984	152	10/770
1984	153	10/775
1984	154	10/780
1984	155	10/785
1984	156	10/790
1984	157	10/795
1984	158	10/800
1984	159	10/805
1984	160	10/810
1984	161	10/815
1984	162	10/820
1984	163	10/825
1984	164	10/830
1984	165	10/835
1984	166	10/840
1984	167	10/845
1984	168	10/850
1984	169	10/855
1984	170	10/860
1984	171	10/865
1984	172	10/870
1984	173	10/875
1984	174	10/880
1984	175	10/885
1984	176	10/890
1984	177	10/895
1984	178	10/900
1984	179	10/905
1984	180	10/910
1984	181	10/915
1984	182	10/920
1984	183	10/925
1984	184	10/930
1984	185	10/935
1984	186	10/940
1984	187	10/945
1984	188	10/950
1984	189	10/955
1984	190	10/960
1984	191	10/965
1984	192	10/970
1984	193	10/975
1984	194	10/980
1984	195	10/985
1984	196	10/990
1984	197	10/995
1984	198	10/1000
1984	199	10/1005
1984	200	10/1010
1984	201	10/1015
1984	202	10/1020
1984	203	10/1025
1984	204	10/1030
1984	205	10/1035
1984	206	10/1040
1984	207	10/1045
1984	208	10/1050
1984	209	10/1055
1984	210	10/1060
1984	211	10/1065
1984	212	10/1070
1984	213	10/1075
1984	214	10/1080
1984	215	10/1085
1984	216	10/1090
1984	217	10/1095
1984	218	10/1100
1984	219	10/1105
1984	220	10/1110
1984	221	10/1115
1984	222	10/1120
1984	223	10/1125
1984	224	10/1130
1984	225	10/1135
1984	226	10/1140
1984	227	10/1145
1984	228	10/1150
1984	229	10/1155
1984	230	10/1160
1984	231	10/1165
1984	232	10/1170
1984	233	10/1175
1984	234	10/1180
1984	235	10/1185
1984	236	10/1190
1984	237	10/1195
1984	238	10/1200
1984	239	10/1205
1984	240	10/1210
1984	241	10/1215
1984	242	10/1220
1984	243	10/1225
1984	244	10/1230
1984	245	10/1235
1984	246	10/1240
1984	247	10/1245
1984	248	10/1250
1984	249	10/1255
1984	250	10/1260
1984	251	10/1265
1984	252	10/1270
1984	253	10/1275
1984	254	10/1280
1984	255	10/1285
1984	256	10/1290
1984	257	10/1295
1984	258	10/1300
1984	259	10/1305
1984	260	10/1310
1984	261	10/1315
1984	262	10/1320
1984	263	10/1325
1984	264	10/1330
1984	265	10/1335
1984	266	10/1340
1984	267	10/1345
1984	268	10/1350
1984	269	10/1355
1984	270	10/1360
1984	271	10/1365
1984	272	10/1370
1984	273	10/1375
1984	274	10/1380
1984	275	10/1385
1984	276	10/1390
1984	277	10/1395
1984	278	10/1400
1984	279	10/1405
1984	280	10/1410
1984	281	10/1415
1984	282	10/1420
1984	283	10/1425
1984	284	10/1430
1984	285	10/1435
1984	286	10/1440
1984	287	10/1445
1984	288	10/1450
1984	289	10/1455
1984	290	10/1460
1984	291	10/1465
1984	292	10/1470
1984	293	10/1475
1984	294	10/1480
1984	295	10/1485
1984	296	10/1490
1984	297	10/1495
1984	298	10/1500
1984	299	10/1505
1984	300	10/1510
1984	301	10/1515
1984	302	10/1520
1984	303	10/1525
1984	304	10/1530
1984	305	10/1535
1984	306	10/1540
1984	307	10/1545
1984	308	10/1550
1984	309	10/1555
1984	310	10/1560
1984	311	10/1565
1984	312	10/1570
1984	313	10/1575
1984	314	10/1580
1984	315	10/1585
1984	316	10/1590
1984	317	10/1595
1984	318	10/1600
1984	319	10/1605
1984	320	10/1610
1984	321	10/1615
1984	322	10/1620
1984	323	10/1625
1984	324	10/1630
1984	325	10/1635
1984	326	10/1640
1984	327	10/1645
1984	328	10/1650
1984	329	10/1655
1984	330	10/1660
1984	331	10/1665
1984	332	10/1670
1984	333	10/1675
1984	334	10/1680
1984	335	10/1685
1984	336	10/1690
1984	337	10/1695
1984	338	10/1700
1984	339	10/1705
1984	340	10/1710
1984	341	10/1715
1984	342	10/1720
1984	343	10/1725
1984	344	10/1730
1984	345	10/1735
1984	346	10/1740
1984	347	10/1745
1984	348	10/1750
1984	349	10/1755
1984	350	10/1760
1984	351	10/1765
1984	352	10/1770
1984	353	10/1775
1984	354	10/1780
1984	355	10/1785
1984	356	10/1790
1984	357	10/1795
1984	358	10/1800
1984	359	10/1805
1984	360	10/1810
1984	361	10/1815
1984	362	10/1820
1984	363	10/1825
1984	364	10/1830
1984	365	10/1835
1984	366	10/1840
1984	367	10/1845
1984	368	10/1850
1984	369	10/1855
1984	370	10/1860
1984	371	10/1865
1984	372	10/1870
1984	373	10/1875
1984	374	10/1880
1984	375	10/1885
1984	376	10/1890
1984	377	10/1895
1984	378	10/1900
1984	379	10/1905
1984	380	

TABLE 2.

MORPHOLOGICAL MEASUREMENTS TAKEN JUNE, 1986
ON FINE FESCUE SEED YIELD TRIAL SEEDED FALL OF 1985
NEAR HUBBARD, OREGON.

CULTIVAR	PLANT HEIGHT		FLAG LEAF LENGTH		FLAG LEAF WIDTH		PANICLE LENGTH		AWN LENGTH		#OF TILLERS PER 5 "	
	CM	S.E.	CM	S.E.	MM	S.E.	CM	S.E.	MM	S.E.	5 "	S.E.
Shademaster	86.26	0.90	11.54	0.60	1.75	0.09	14.49	0.38	1.90	0.28	57.25	4.36
Flyer	80.72	1.05	10.77	0.46	1.79	0.08	14.19	0.50	1.30	0.24	36.13	3.98
Ensylva	83.83	1.12	10.93	0.62	1.66	0.08	14.45	0.45	1.28	0.21	17.25	2.93
Vista	81.14	0.95	10.79	0.54	1.76	0.08	14.10	0.43	1.43	0.25	33.38	5.64

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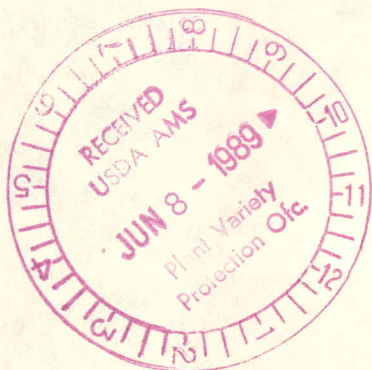


TABLE 3.
 PLANT HEIGHT MEASUREMENTS OF FINE FESCUES
 SEEDED FALL 1984, 1985 AND 1987
 NEAR HUBBARD, OREGON.

CULTIVAR	1984 TRIAL 1985 DATA		1985 TRIAL 1986 DATA		1987 TRIAL 1988 DATA	
	PLANT HEIGHT CM	STAN. ERROR OF MEAN	PLANT HEIGHT CM	STAN. ERROR OF MEAN	PLANT HEIGHT CM	STAN. ERROR OF MEAN
Shademaster	86.26	0.90	83.00	0.82	87.76	1.39
Flyer	80.72	1.05	79.00	1.28	80.56	1.00
Ensylva	83.83	1.12	82.50	1.26	86.85	1.26
Vista	81.14	0.95	76.50	1.01	NIT*	NIT*

* NIT = NOT IN TRIAL

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TABLE 2.

PLANT HEIGHT MEASUREMENTS OF FINE FRODOES
 SOWN FALL 1984, 1985 AND 1986
 MEAN PLANT HEIGHT

PLANT	1984 DATA	1985 DATA	1986 DATA
HEIGHT	CM	CM	CM
OF MEAN			
PLANT	88.35	85.00	87.75
HEIGHT	1.05	1.28	1.00
OF MEAN	87.30	83.72	86.75
PLANT	81.94	78.50	81.75
HEIGHT	0.95	1.07	0.95
OF MEAN			

* HT = NOT IN TRIAL



TABLE 4.

ROYAL HORTICULTURAL CHART COLORS OF
FINE FESCUES SEEDED IN TURF TRIALS
FALL OF 1985 AND 1987 NEAR HUBBARD, OREGON.

<u>CULTIVAR</u>	<u>1985 TRIAL</u>	<u>1987 TRIAL</u>
Shademaster	137B	137B
Flyer	137A	137A
Ensylva	141A	141A
Boreal	NIT*	137C
Vista	138A	138A

*NIT =NOT IN TRIAL

130024

TABLE 4

FALL OF 1982 AND 1987 WEAR HUBBARD, OREGON
PINE RESIN SEEDS IN TUBE TRIALS
BY AN UNIDENTIFIED SHORT COLOR OF

1987	1982	Color
1379	1379	Red
1378	1378	Red
1377	1377	Red
1376	1376	Red
1375	1375	Red
1374	1374	Red
1373	1373	Red
1372	1372	Red
1371	1371	Red
1370	1370	Red

NOT IN TRIAL

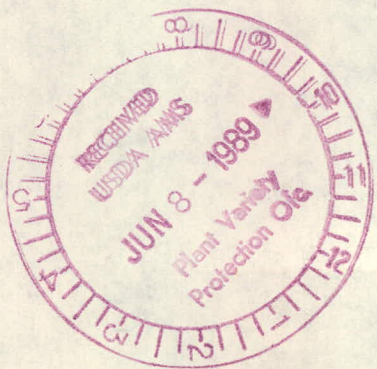


TABLE 5.

NUMBER OF TILLERS PER 5 INCH SECTION OF ROWS
IN SEED YIELD TRIALS SEEDED FALL 1984, 1985, AND 1987
NEAR HUBBARD, OREGON.

CULTIVAR	1984 TRIAL		1985 TRIAL		1987 TRIAL	
	NUMBER OF TILLERS	STAN. ERROR OF MEAN	NUMBER OF TILLERS	STAN. ERROR OF MEAN	NUMBER OF TILLERS	STAN. ERROR OF MEAN
Shademaster	103.50	5.23	57.30	4.36	97.60	6.82
Flyer	66.00	4.95	36.10	3.98	76.90	11.15
Ensylva	30.50	3.85	17.30	2.93	70.00	9.63
Vista	60.00	3.28	33.40	5.64	NIT*	NIT*

* NIT = NOT IN TRIAL

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TABLE 2

NUMBER OF TILLERS PER 2 INCH SECTION OF ROW
IN SEED TRIALS SOWN FALL 1984, 1985, AND 1987
HEAR, HUBBARD, & HEDON

CULTIVAR	1984 TRIAL		1985 TRIAL		1987 TRIAL	
	MEAN	STDEV	MEAN	STDEV	MEAN	STDEV
Chadwell	103.50	8.25	77.50	4.25	57.50	4.50
Flyer	66.00	4.50	56.50	3.98	72.50	4.17
Exeter	50.50	3.85	17.50	5.93	57.00	3.63
Vista	50.00	3.50	53.50	5.64	41.50	4.13



TABLE 6.
FINE FESCUE TURF TRIAL SEEDED FALL OF 1986 AND 1987
NEAR HUBBARD, OREGON.

9-1 9=BEST

CULTIVAR	1986 TRIAL			1987 TRIAL	
	1986 ESTABLISHMENT RATING	1987 TURF QUALITY	1988 TURF QUALITY	1987 ESTABLISHMENT RATING	1988 TURF QUALITY
Shademaster	6.7	6.7	6.5	7.7	6.6
Flyer	6.5	6.0	5.8	7.0	6.8
Ensylva	4.9	6.0	4.8	6.3	5.4
Boreal	2.3	4.9	4.3	NIT*	NIT*
Vista	6.4	6.0	5.5	7.0	6.3
L.S.D. .05		0.49	0.82	0.99	0.39

* NIT = NOT IN TRIAL

TABLE 2

FIELD BEETLE TRAP RESULTS FOR 1985 AND 1986
 (See Appendix B)

1-1-85

CULTIVAR	1985		1986	
	ESTABLISHMENT	QUANTITY	ESTABLISHMENT	QUANTITY
Shanerstar	2.1	2.7	2.7	2.7
Flyer	2.2	2.0	2.8	2.0
Proxima	2.3	2.0	2.8	2.3
Boreal	2.4	2.9	2.3	2.4
Vista	2.4	2.0	2.3	2.3
L.S. 105		0.2	0.2	0.2

MIT = NOT IN FIELD

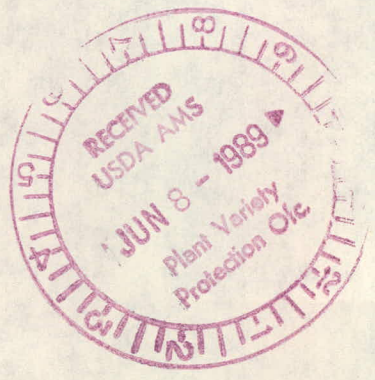


TABLE 7.

LOW MAINTENANCE TURF TRIAL
SEEDED FALL OF 1986, NEAR HUBBARD, OREGON.

<u>CULTIVAR</u>	<u>1988 TURF QUALITY</u>
Shademaster	4.0
Flyer	3.7
Ensylva	3.7
Boreal	NIT*
Vista	4.0
L.S.D. .05	0.89

* NIT = NOT IN TRIAL

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TABLE 2
LOW MAINTENANCE TRIP TRIAL
SEEDED FALL OF 1988, NEAR HUBBARD'S GROUND

1988	1989	QUALITY	YIELD
4.0	3.5	4.0	3.5
3.5	3.0	3.5	3.0
3.0	2.5	3.0	2.5
2.5	2.0	2.5	2.0
2.0	1.5	2.0	1.5
1.5	1.0	1.5	1.0
1.0	0.5	1.0	0.5

* WITH A LOT IN TRIAL



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TABLE 8.

FINE FESCUE SHADE TRIAL
SEEDED FALL OF 1987 NEAR HUBBARD, OREGON.

9-1 9=BEST

<u>CULTIVAR</u>	<u>1987 TURF QUALITY</u>	<u>1988 TURF QUALITY</u>
Shademaster	7.3	6.2
Flyer	7.7	6.0
L.S.D. .05	1.04	0.45

TABLE 1
 FINE FESCUE-SHADE TRIAL
 BEETON FARM, 1987 NEAR HILBARD, OREGON
 0-1-9888

1988 TURF QUALITY	1987 TURF QUALITY	CULTIVAR
5.3	5.3	anderson
5.0	5.5	River
5.15	5.05	L.S.G.

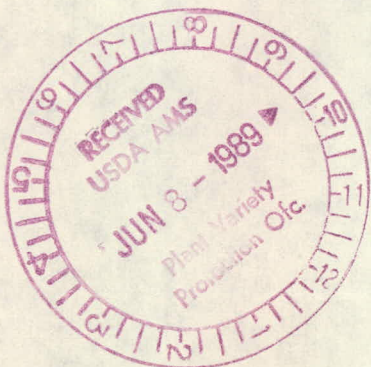


TABLE 9.

FINE FESCUE TURF TRIAL
SEEDED FALL OF 1986 IN HARVARD, ILLINOIS.

<u>CULTIVAR</u>	<u>1987 TURF QUALITY</u>
Shademaster	5.5
Flyer	5.0
Ensylva	1.5
Boreal	2.5
Vista	NIT*

* NIT = NOT IN TRIAL

TABLE 2
 FIVE FESCUE TURF TRIAL
 SEEDED FALL OF 1986 IN HARVARD, ILLINOIS

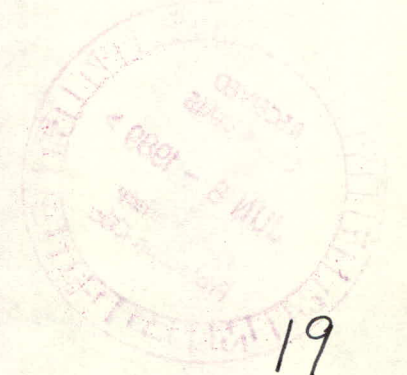
1987 TURF QUALITY	CULTIVAR
5.5	Shadcaster
5.0	Fiver
4.5	Shayva
5.5	Bonda
NT*	Vieta

* NT = NOT IN TRIAL



Table 10 . Performance of strong creeping red fescue cultivars and selections
in a turf trial seeded September 1987 at North Brunswick, N.J.
(Test 2)

Cultivar or Selection	Turf Quality 1988 Avg.	Estab- lish- ment 1987	Color		Purple color Sept 1988	Green cover June 1988	Patch disease June 1988	Leaf spot May 1988
			Nov.	Feb.				
			1987	1988				
1 Shademaster	5.2	4.7	5.2	4.7	7.0	9.0	5.0	5.7
2 Flyer	4.9	6.3	6.2	4.7	6.3	9.0	3.7	5.7
3 Vista	4.7	6.0	5.0	2.3	7.0	9.0	4.0	3.7
4 JGDS	4.4	7.0	5.9	2.3	5.5	9.0	3.3	4.8
5 Fortress	3.9	7.0	6.2	7.3	5.0	9.0	2.3	2.0
6 Suzette	3.4	7.7	3.8	2.3	2.7	8.7	3.3	3.0
LSD at 5% =	0.6	1.1	0.5	1.3	1.5	NS	1.4	1.7



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EXHIBIT E.

SHADEMASTER SPREADING RED FESCUE

Shademaster was originated and developed by the grass breeders at Pure-Seed Testing, Inc. By agreement between the grass breeders and Pure-Seed Testing, Inc. all rights to any invention, discovery or development made by the grass breeders are assigned to the corporation. No rights to such invention, discovery, or development are retained by these employees.

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EXHIBIT E

SPADAMASTER CROWNING PEP PERCUSS

Spadmaster was originated and developed by the group
of Forward Test, Inc. By agreement between the
group and Forward Test, Inc. all rights to any
invention discovered in development made by the group members
are assigned to the corporation. No rights to such invention
discovered or developed are retained by those employees.

