No. 9300307

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seed Research of Oregon, 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, OR 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 (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

FESCUE

'SR 3100'

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 29th day of December in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Marsha A. Stanton

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Dan Glickman

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

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) *(as it is to appear on the Certificate)*
Seed Research of Oregon, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
SRX 89-31

3. VARIETY NAME
SR 3100

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
P.O. Box 1416
Corvallis, OR 97339

5. PHONE *(Include area code)*
(503) 757-2663

FOR OFFICIAL USE ONLY

PVPO NUMBER
9300307

FILING
Date: Sept. 23, 1993
Time: 10:45 ☒ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2,325.00
Date: Sept. 21, 1993
Certificate Fee: $ 300.00
Date: November 27, 1995

6. GENUS AND SPECIES NAME
Festuca longifolia

7. FAMILY NAME *(Botanical)*
Gramineae

8. CROP KIND NAME *(Common Name)*
Hard Fescue

9. DATE OF DETERMINATION
Sept. 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
8-1-87

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Leah A. Brilman
Seed Research of Oregon
P.O. Box 1416
Corvallis, OR 97339
PHONE *(Include area code)*: (503) 757-2663

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 9-17-93
g. ☒ Filing and Examination Fee ($2325 ~~$2,150~~) made payable to "Treasurer of the United States."

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 *(If "NO," skip to item 18 below)*

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," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____ .)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates) U.S.A. ~~September, 1992~~ OCTOBER 10, 1992 JLA 10/25/95
☐ 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 *(Owner(s))*	CAPACITY OR TITLE	DATE
Leah A. Brilman	Research Director	9-16-93
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits A,B,C,E; (3) at least 2,500 viable untreated seeds; (4) check, drawn on a U.S. bank, payable to "Treasurer of the United States" in the amount of $2,150 ($250 filing fee and $1,900 examination fee). *(See section 180.175 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for 30 days, then returned to the applicant as unfiled. Mail application and other requirements to: Plant Variety Protection Office, AMS, USDA, Rm. 500, NAL Building, 10301 Baltimore Blvd., Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the Application are self-explanatory unless noted below. Corrections on the Application form and Exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a Certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $250 for issuance of the Certificate.

Plant Variety Protection Office
Telephone: 301/344-2518

ITEM

9. Give the date when there has been at least a tentative determination that the variety has been sexually reproduced with recognized characteristics, whether or not the novelty of those characteristics has been determined. *[See section 41(d) of the Plant Variety Protection Act (Act).]*

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. *(See sections 41 and 52 of the Act.)*

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 which clearly indicate novelty.

14c. Exhibit C forms are available from the PVPO; specify crop kind. Fill in the Exhibit C (Objective Description of Variety form) to describe your variety.

14d. Optional additional characteristics and/or photographs: Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.

14e. Section 52(4) of the 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 this affirmative decision after the variety has either been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified the applicant may change the choice. *(See section 180.16 of the Regulations and Rules of Practice.)*

19. See sections 41 (i, j) and 42 of the Act and section 180.7 of the Regulations and Rules of Practice for eligibility requirements.

NOTES:

It is the responsibility of the applicant/owner to keep the PVPO informed of any change of address or change of ownership or assignment during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment is $25. *[See section 101 of the Act, and sections 180.130, 180.131, 180.132, and 180.175(h) of the Regulations and Rules of Practice.]*

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Seed Branch, AMS, USDA, Rm. 213, Building 306, Beltsville Agricultural Research Center -- East, Beltsville, MD 20705. Telephone: 301/344-2089.

EXHIBIT A.
ORIGIN AND BREEDING HISTORY OF SR 3100 HARD FESCUE

SR 3100 hard fescue is derived from 100 plants in the 1500 plant initial breeder block of SR 3000 hard fescue established near Albany, OR that were dwarfer and darker green than the remainder of the population. The original material used to develop SR 3000 was the result of a long term program initiated in 1968 at the New Jersey Agricultural Experiment Station to improve hard fescues. Cycles of selection were performed to improve general appearance, powdery mildew resistance, and heat and drought tolerance, along with other characteristics. Five single plant progenies, HFD-1, HFD-26, HFD-52, HFD-62 and HFD-31, that showed superior performance and high endophyte levels, were utilized in 1977 to produce 360 plants from tillers. These produced seed in 1978 and 1979 that underwent a second cycle of seedling screening for powdery mildew resistance. Resistant seedlings from this cycle were transferred to an isolated spaced plant nursery at Adelphia, NJ for seed production. Seed from this nursery was sent to Albany, OR to establish the original 1500 plant nursery from which the 100 plants used to develop SR 3100 were removed. The 100 plants were allowed to intercross in isolation and the seed used to establish a breeder block of 720 plants in 1987 at Corvallis, OR. In 1989 this block underwent selection for diseases of production, including leaf spot and *Puccinia crandalii*, uniform maturity and the dwarf, dark green growth habit. After selection approximately 400 plants remained and these were utilized to produce seed in 1989 that was entered in the National Turfgrass Evaluation Program 1989 Fine Fescue Test as SRX 89-31. An examination of the levels of the endophyte, *Acremonium* sp., in this seed showed only approximately 45% infection level. It was unknown if the reduction in endophyte infection level was due to presence of non-infected plants at the beginning of the selection process, failure to transmit the endophyte from some parental plants to offspring during successive generations, or storage of seeds under undesirable conditions during initial increases. In 1991 all individual plants remaining in the breeder block were examined for the presence of the endophyte. Additional plants had been removed from the block in 1990 and 1991 due to reduced seed production. As a result 297 plants remained in the block and the seed was harvested separately from the 161 E and 136 NE plants in 1991. The seed from the endophyte infected plants was utilized to establish a foundation field in August, 1991. Although some modification has occurred since the variety was entered in NTEP trials subsequent trials have shown comparable performance. In NTEP trial sites where differences have been observed between E+ and E- varieties SRX 89-31 (SR 3100) has performed like an E+ variety.

SR 3100 is a stable and uniform variety. No significant offtypes or variants have been observed in the reproduction or multiplication of the variety. SR 3100 has produced turf of good quality and uniformity.

EXHIBIT B.

Novelty statement for 'SR 3100' Hard Fescue

SR 3100 hard fescue most closely resembles SR 3000, which constitutes the population from which it was selected, and Aurora hard fescue. It can be distinguished from these varieties by a combination of the following characteristics.

SR 3100 can be distinguished from both SR 3000 and Aurora by

1. It has a significanly later anthesis date (Tables 1, 4 and 21)
2. It has a significantly shorter flag leaf height (Tables 4, 7 and 21)
3. It has a significantly darker green color (Tables 6, 1 and 26)
4. It has a significantly shorter canopy height (Table 12)
5. It has improved red thread resistance (Tables 13, 14 and 27)
6. It has improved pink patch resistance (Table 28)

SR 3100 can be distinguished from SR 3000 by

1. It has a significantly shorter plant height (Tables 1, 4, 7 and 21)
2. It has a significantly smaller panicle (Tables 2, 5, 9 and 23)
3. It has a significantly smaller flag leaf (Tables 4, 8 and 22)
4. It has improved leaf spot resistance (Table 29)

SR 3100 can be distinguished from Aurora by

1. It has a longer awn (Tables 3 and 24)
2. It has leaf sheaths with more anthocyanin (Tables 6 and 25)
3. It has improved dollar spot resistance (Table 30)
4. It has more branch pubescence on the panicle (Tables 9 and 23)

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
BELTSVILLE, MARYLAND 20705

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

NAME OF APPLICANT(S)	VARIETY NAME OR TEMPORARY DESIGNATION
Seed Research of Oregon, Inc.	SR 3100
ADDRESS (Street and No., or R.F.D. No., City State, and ZIP Code)	FOR OFFICIAL USE ONLY
P.O. Box 1416 Corvallis, OR 97339	PVPO NUMBER 9300307

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. 0 / 8 / 9 / or 0 / 9 /) when number is either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data must 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 "Δ" indicates decimal.

Cultural Conditions

All measurements must be on spaced plants with a minimum of (30 cm) between plants. A minimum of 30 plants and 60 data points must be used for all measurements. Plants must be established no later than the previous fall for spring and summer measurements. Trials should be irrigated if necessary. Cultural conditions must be stated in comment section and plant number / data points shown in all tables. Specify growing conditions and experimental design.

1. **SPECIES**

5 / 1 = *F. rubra ssp. commutata* (Chewings)
2 = *Festuca rubra ssp. litoralis* (Slender Creeping Red)
3 = *F. rubra ssp. rubra* (Strong Creeping Red)
4 = *F. ovina* (Sheep)
5 = *F. longifolia* (Hard)
6 = *F. tenuifolia* (Fine-Leaved Sheep)
7 = OTHER (Specify) _____

2. **PLOIDY**

___/ 1 = DIPLOID 2 = TETRAPLOID 3= HEXAPLOID 4 = OCTOPLOID
___/___/ CHROMOSOME NUMBER

3. **ADAPTATION** (0 = NOT TESTED 1 = NOT ADAPTED 2= ADAPTED)

2 / NORTHEAST 0 / SOUTHEAST 2 / NORTHCENTRAL 2 / PACIFIC N.W.
2/ OTHER (Specify) Transition Zone

4

4

STANDARD CULTIVARS - Choose cultivars from same species and ploidy level.

F. rubra ssp. commutata	F. rubra ssp. litoralis	F. rubra ssp. rubra	F. ovina	F. longifolia	F. tenuifolia
11 = SHADOW	21= DAWSON	31 = BOREAL	41= BIGHORN	51 = AURORA	61 = SIMA
12 = JAMESTOWN	22 = MERLIN	32= SHADEMASTER	42 = MX 86	52 = BILJART	62 = BAROK
13 =BANNER	23 = BARCROWN	33= FLYER		53 = SEALDIS	
14 =KOKET		34= ENSYLVA		54 = SR 3000	
				55 = RELIANT	

71 = _____ (Specify Species)

4. **MATURITY**

5 / **MATURITY CLASS** (1-9) 1 = Very Early ( ) 2 = Early (Bighorn)
3 = Medium Early (Aurora, SR 3000) 4 = (Koket)
5 = Medium (Flyer, Shadow) 6 = (Shademaster, Dawson)
7 = Late (Jamestown, Banner, Claudia) 8 = (Barcrown)

HEADING DATE (When 50% of plants in the variety have at least 3 spikes emerged from boot.) (1993 Data)

1 / 1 / 6 /	CALENDAR DAY.		
___/___/	DAYS EARLIER THAN	___/___/	
___/___/	SAME AS	5 / 4 /	Comparison Variety.
0 / 3 /	DAYS LATER THAN	5 / 1 /	

ANTHESIS DATE (When 50% of plants in the variety have started anthesis.)

1 / 4 / 9 /	CALENDAR DAY.		
___/___/	DAYS EARLIER THAN	___/___/	
___/___/	SAME AS	___/___/	Comparison Variety.
0 / 3 /	DAYS LATER THAN	5 / 4 /	
0 5	Days later than	5 1	

5. **PLANT HEIGHT** (Post - Anthesis) Middle tiller. Not to include tallest 3 heads.

MATURE HEIGHT (Ground to top of panicle - straightened.)

5 / 7 ▲ 6 /	cm. HIGH	___/___/	
___/ 7 ▲ 6 /	SHORTER THAN	5 / 4 /	
1 ▲ 4	Shorter than	5 1	
___/___/___/	SAME AS	___/___/	Comparison Variety.
___/___/___/	TALLER THAN	___/___/	

5

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FLAG LEAF HEIGHT (Ground to collar of flag leaf.)

1 / 7▲4 / cm. HIGH . . . . . ___/___/

___/ 4▲6 / SHORTER THAN . . . . . 5 / 4 /
2▲2 Shorter than 5 1
___/___/___/ SAME AS . . . . . ___/___/ Comparison Variety.

___/___/___/ TALLER THAN . . . . . ___/___/

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6. GROWTH HABIT (Mature - Fully headed reproductive tillers)

2 / 1 = ERECT (Nezpurs) 3 = (Longfellow) 5 = SEMI-ERECT (Center, Koket,) Banner, Shadow) 9 = PROSTRATE (Aurora, Cindy)

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7. RHIZOMES

___/___/___/ mm. LENGTH (1 year spread)

___/___/___/ mm. WIDTH

___/___/___/ mm. INTERNODE LENGTH

1 / 1 = ABSENT (Koket, Shadow, Jamestown)
3 = WEAKLY CREEPING (Dawson)
5 = STRONGLY CREEPING (Ensylva, Claudia, Boreal)
7 = VERY STRONGLY CREEPING (Flyer, Fortress, Shademaster)
9 =

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8. LEAF CHARACTERISTICS

TILLER LEAF (First leaf subtending flagleaf - after anthesis.) - Preferred Leaf. (1992 Data)

___/ 6▲1 / cm. LENGTH (ligule to tip)		0▲7 / 4 / mm. WIDTH (at 1 cm from collar)	
___/ 0▲5 / cm. SHORTER THAN . . .	5 / 4 /	0▲1 / 6 / mm. NARROWER THAN . .	5 / 4 /
___/___/___/ SAME AS	___/___/	___/___/___/ SAME AS	___/___/
___/___/___/ cm. LONGER THAN	___/___/	0▲1 / 5 / mm. WIDER THAN	5 / 1 /

FLAG LEAF

___/ 4▲9 / cm. LENGTH (ligule to tip)		0▲6 / 7 / mm. WIDTH (at 1 cm from collar)	
___/ 0▲8 / cm. SHORTER THAN . . .	5 / 4 /	0▲1 / 4 / mm. NARROWER THAN . .	5 / 4 /
___/___/___/ SAME AS	___/___/	___/___/___/ SAME AS	___/___/
___/ 0▲1 / cm. LONGER THAN	5 / 1 /	0▲0 / 5 / mm. WIDER THAN	5 / 1 /

LEAF BLADE - Percent plants with :

GLAUCOSITY (Sowing year)	:	___/___/	ABSENT	___/___/	PRESENT
ANTHOCYANIN	:	___/0/	ABSENT	10/0/	PRESENT
HAIRS (Basal)	:	___/0/	ABSENT	10/0/	PRESENT
MARGINS Roughness	:	___/0/	ABSENT	10/0/	PRESENT
MARGIN FOLDING	:	10/0/ ROLLED INWARD (Closed-Koket, Aurora, Barcrown, SR3000)		___/0/ FLAT (Open-Jamestown, Ensylva, Dawson, Shadow)	

LEAF SHEATH - Percent plants with :

ANTHOCYANIN (Seedling 3 - 8 tillers)	:	2/7/	ABSENT		7/3/	PRESENT	
AURICLE HAIRINESS	:	___/0/	ABSENT	10/0/	PRESENT		
HAIR LENGTH 1-9 9=long 1.39	:	10/0/	SHORT	___/0/	MEDIUM	___/0/	LONG
MARGINS	:	9/5/	OPEN (Reliant, Banner, SR3000)	0/5/	CLOSED (Jamestown, Barcrown, Bighorn, MX-86)		

GENETIC FOLIAGE COLOR (Summer)

7/ **GREEN LEAF COLOR** 1 - 9

1 = LIGHT 2 = (Recent) 3 = MEDIUM LIGHT (Barcrown) 4 = (Shadow) 5 = MEDIUM (Jamestown)
6 = MEDIUM DARK (Aurora, SR 3000) 9 = DARK GREEN

___/ OTHER COLOR ___/___/ % PLANTS WITH

1 = BLUEGREEN 2 = GRAYGREEN 3 = BLUE 4 = POWDER BLUE 5 = OLIVE GREEN

6 = SPECIFY _____

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9. **PANICLE** (Post - Anthesis)

3/2▲3/	cm. PANICLE LENGTH (tip to internode)	7.6 cm (tip to bottom branch)
		0.8 cm shorter than 54
___/7▲1/	cm. SHORTER THAN	5/4/
1▲7	cm shorter than	5 1
___/___/___/	SAME AS	___/___/
___/2▲9/	cm. LONGER THAN	5/2/
2▲3	TYPE (at anthesis) 1 = OPEN 2 = INTERMEDIATE 3 = COMPACT (Appressed)	
2▲7	TYPE (at maturity)	
2▲4	ORIENTATION (at anthesis) 1 = ERECT 9 = NODDING	
___/	ORIENTATION (at maturity)	

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PERCENTAGE PLANTS WITH:

BRANCH PUBESCENCE :	___/_1/_7/	% GLABROUS	___/_8/_3/	% PUBESCENT
GLUME COLOR (at anthesis) :	___/_3/_3/	% GREEN	___/___/_0/	% YELLOWISH GREEN
	___/_1/_8/	% BLUISH GREEN	___/_3/_2/	% PURPLISH
	___/_1/_7/	% REDDISH	___/___/___/	% OTHER (Specify)
ANTHER COLOR (Pre-dehiscent) :	___/___/_4/	% YELLOWISH GREEN	___/___/___/	% GREEN
	1 3	%Yellow and purple		
96% with anthocyanin	___/_7/_8/	% PURPLE	___/___/___/	% BLUISH GREEN
	6	%Yellow w/purple		
	___/___/___/	% REDDISH	___/___/___/	% OTHER (Specify)

10. SEED - From PVP nursery (not commercial sample). All seed just be processed similarly. Specify how data collected.

_4_/ SIZE CLASS (g / 1000 seed) 1 = .3 - .5 g (Barok) 2 = .5 - .7 g 3 = .7 - .9 g 9 =

_1_/_0_/_2_/_2_/ mg. PER 1,000 SEED (Seed should be uniformly dried.)

___/___/___/___/ mg. LESS THAN . . . . . ___/

___/___/_8_/_0_/ mg. MORE THAN . . . . . 51 /
4 2 mg. MORE THAN 54

LEMMA

_4_6_/	mm. LEMMA LENGTH (average of 50)	_9_/_9_/	mm. LEMMA WIDTH (average of 50)
_0_3_/	mm. LESS THAN . . . . . 54 /	_0_/_2_/	mm. LESS THAN . . . . . 54 /
___/___/	SAME AS . . . . . ___/	___/___/	SAME AS . . . . . ___/
___/___/	mm. MORE THAN . . . . . ___/	___/___/	mm. MORE THAN . . . . . ___/

_5_/ HAIRS : 1 = ABSENT (Jamestown) 5 = SEVERAL 9 = MANY (Waldina, Crystal, Fortress, Banner, Merlin, Scaldis, MX-86)

6 1=Absent 5=Short 9=Long

AWNS

_1_/_0_/_0_/ % OF SEEDS WITH AWNS

_2_3_/ mm. AWN LENGTH (of those seeds with awns)

PALEA

_5_/ HAIRS : 1 = ABSENT (Banner) 5 = SHORT (Scaldis) 9 = LONG (Jamestown)

6_5 1=Absent 5=Several 9=Many

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11. DISEASE (0 = NOT TESTED 1 = HIGHLY SUSCEPTIBLE 4 = MODERATELY SUSCEPTIBLE
6 = MODERATELY RESISTANT 9 = HIGHLY RESISTANT)

___/ LEAF RUST *Puccinia crandallii*

___/ BROWN PATCH *Rhizoctonia solani*

___/ MELTING-OUT *Drechslera poae*

7▲5/ LEAF SPOT *D. siccans*

___/ NET BLOTCH *D. dictoiydes*

___/ PYTHIUM BLIGHT *Pythium spp.*

4/ CHOKE *Acremonium ssp.*

___/ OTHER

8/ DOLLAR SPOT *Lanzia and Mollerdiscus spp.*

4/ STEM RUST *P. graminis*

8/ RED THREAD *Laetisaris fusciformis* High Fert.
6 Low Fert.

___/ LEAF SPOT *Bipolaris sorokiniana*

___/ POWDERY MILDEW *Erysiphe graminis*

___/ SNOW MOLD (Gray) *Typhula iotana*

___/ SNOW MOLD (Pink) *Gerlachia nivalis*

8 PINK PATCH

---

12. INSECT (0 = NOT TESTED 1 = HIGHLY SUSCEPTIBLE 4 = MODERATELY SUSCEPTIBLE
6= MODERATELY RESISTANT 9 = HIGHLY RESISTANT)

___/ (Specify) _____

Must specify range of endophyte in this test.

---

13. STRESS TOLERANCES (0 = NOT TESTED 1-9, 9 = BEST)

___/ HEAT ___/ COLD ___/ WINTER COLD

___/ SALT ___/ DROUGHT ___/ HEAVY METAL

___/ OTHER _____

---

14. 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) USE STANDARD CULTIVARS LIST ABOVE.

RESEMBLENCE	CHARACTER	SIMILAR VARIETY
3/	PLANT HABIT (erectness)	51/
2/	RHIZOME LENGTH	54/
3/	LEAF COLOR	54/and 51
1/	PANICLE COLOR . . green	51/and 54
__/	WINTER COLOR	__/
__/	SHADE TOLERANCE	__/
1/	LEAF WIDTH	54/
2/	PANICLE SHAPE	51/
__/	COLD INJURY	__/
__/	HEAT	__/
__/	DISEASE	__/

15. GIVE AREA TEST RESULTS PRESENTED FROM Plant Morphological Descriptions-Corvallis, OR Disease Ratings-New Jersey, Minnesota, Washington D.C., R.I.

16. ADDITIONAL DESCRIPTION : (Use additional sheets as required.)
Describe all characteristics that cannot be adequately described in the form in Exhibit D. Comparitive varieties should be used as may be appropriate, such as for disease. Append all comparitive trial and evaluation data, including measured characteristics, environmental, and disease tests.

Table 1. Plant characteristics of hard fescue varieties in 1991. Data collected on hard fescues established in a row planting in the fall, 1989. Each variety was established in 3 rows, one foot apart and 6 feet long with 3 replications/variety in a randomized complete block. At the time of measurement approximately 6 inches existed between the crowns of individual plants. All measurements were performed on 100 panicles per variety evenly distributed between the 3 reps. The panicles utilized throughout were identified at the time of heading with the plants at the front and back edges of each row not utilized. Spring and summer of 1991 were primarily very cold and wet with a two week warm period in late March. Fine fescues at certain growth stages responded to this warm period with rapid heading, while others were significantly delayed by the later cold.

Variety	Heading Date (50%)	Anthesis Date (Mean)	Plant Height (cm)	Flag Leaf Length (cm)	Flag Leaf Width (mm)
SR 3100	113	155.1	93.80	4.47	1.52
SR 3000	109	153.3	97.69	4.70	1.59
Biljart	109	153.4	100.21	5.01	1.59
Aurora	109	152.7	97.34	4.16	1.52
Serra	108	152.4	104.04	6.22	1.71
Scaldis	109	153.1	103.26	5.06	1.51
Reliant	108	152.2	103.04	5.22	1.63
Attila	108	152.4	91.85	4.34	1.38
PST-4HD	107	152.1	87.59	4.47	1.48
LSD @ 5%		1.1	2.02	0.48	0.08

Table 2. Panicle characteristics of hard fescue varieties in 1991. Plants and planting design were the same as in Table 1.

Variety	Panicle: Length (tip to bottom branch) (cm)	Panicle: Orientation 1=upright 2=nodding	Panicle: Type, 1-3 1=open 3=compact	Panicle: Shape 1=narrow 2=ovate 3=oblong	Glume Color%[1]			Anther Color%[1]	
					P	GP	G	P	Y
SR 3100	8.70	1.18	2.72	1.03		74	26	92	8
SR 3000	9.83	1.33	2.57	1.07	1	51	48	100	
Biljart	9.35	1.20	2.69	1.02	2	53	45	100	
Aurora	9.04	1.39	2.63	1.06		56	44	100	
Serra	10.94	1.34	2.52	1.15	2	68	30	96	4
Scaldis	10.94	1.37	2.47	1.02		75	25	100	
Reliant	10.13	1.26	2.53	1.08	1	72	27	100	
Attila	8.23	1.46	2.55	1.04		68	32	100	
PST-4HD	8.11	1.15	2.72	1.03		65	35	96	4
LSD @ 5%	0.54	0.12	0.16	0.06					

[1]P=Purple, GP=Green w/Purple, G=Green, Y=Yellow

Table 3. Seed characteristics of hard fescue varieties in 1991. Individual panicles collected from same plants as in Tables 1 and 2. 100 seeds were examined per variety.

Variety	Lemma (mm) Length	Lemma (mm) Width	Awn Length (mm)	Palea Hairs Number 1-3 1=Abs, 3=Many	Palea Hairs Length 1-3 1-Abs, 3=Long	Lemma Hairs Number 1-3 1=Abs, 3=Many	Lemma Hairs Length 1-3 1=Abs, 3=Long
SR 3100	4.61	0.99	2.26	2.34	2.00	2.05	2.09
SR 3000	4.89	1.01	2.29	2.90	2.00	2.04	2.35
Aurora	4.69	1.00	2.00	2.68	2.00	2.02	2.29
Scaldis	5.09	1.00	2.33	2.95	2.00	2.08	2.00
Reliant	4.92	1.02	2.30	2.99	2.05	2.23	2.23
LSD @ 5%	0.1	0.02	0.16	0.10	N.S.	0.09	0.12

Table 4. Plant characteristics of hard fescue varieties in 1992. Plants were space planted in fall, 1991 in 3 reps of 20 plants each with 3 ft. between each plant. The winter of 1991/92 was very warm and dry and many fine fescues did not vernalize well. The hard fescues were much smaller at heading and only plants with more than 3 heads were utilized. The variety Scaldis did not have sufficient plants flowering to be considered representative of the variety and Biljart had many late plants. Fifty data points per variety were collected.

	Heading Date		Anthesis Date		Plant Height	Flag Leaf		
Variety	(Mean)	(S.E.)	(Mean)	(S.E.)	(cm)	Height (cm)	Length (cm)	Width (mm)
SR 3100	109.1	(1.9)	141.0	(0.8)	40.91	16.85	4.88	0.67
SR 3000	110.5	(1.3)	138.5	(0.7)	49.23	22.42	5.74	0.81
Aurora	113.6	(1.5)	139.9	(0.7)	42.78	19.48	4.79	0.62
Biljart	115.1	(1.8)	143.2	(0.7)	38.38	17.13	4.70	0.70
LSD @ 5%	4.6		2.0		3.41	1.96	0.83	0.06

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Table 5. Panicle characteristics of hard fescue varieties in 1992. Plants were those utilized in Table 4.

Variety	Panicle Length cm (tip to internode)	Panicle Shape 1=narrow 2=ovate 3=oblong	Panicle Type 1=open 2=inter. 3=compact	Panicle Orientation 1=upright 2=nodding
SR 3100	32.31	2.12	1.52	1.02
SR 3000	39.42	2.18	1.48	1.07
Aurora	34.04	2.12	1.56	1.04
Biljart	29.42	1.91	1.79	1.04
LSD @ 5%	2.89	0.27	n.s.	n.s.

Table 6. Leaf characteristics of hard fescue varieties. Subtending leaf was measured at time plant characteristics were evaluated as in Table 4. Additional data on leaf characteristics were taken on 4/7/93 on 60 tiller leaves removed from these plants and observed at 40 X power. It was cool and wet during the later time period.

Variety	Subtending Leaf Length	Subtending Leaf Width	% Leaves with: Antho-cyanin	Basal Hairs	Margin: Roughness	Margin: Folding (Rolled)	Foliage Color: Green 1-9 9=Dark	Foliage Color: Other 1-6
SR 3100	6.07	0.74	100	100	100	100	6.66	0
SR 3000	6.58	0.90	100	100	100	100	6.25	0
Aurora	6.32	0.69	98	100	98	100	5.93	0
Biljart	5.55	0.82	100	100	100	100	6.12	0
Scaldis			100	97	97	56	6.02	1 (5%)
LSD @ 5%	0.75	0.07					0.19	

Variety	Leaf Sheath: Anthocyanin % with	Auricle Hairs: % with	Auricle Hairs: Length (1-9, 9=Long)	Margins: % with open
SR 3100	73	100	1.39	95
SR 3000	61	100	2.28	95
Aurora	40	100	2.35	92
Biljart	62	100	3.00	85
Scaldis	48	97	1.39	98
LSD @ 5%			0.22	

Table 7. Plant characteristics of hard fescue varieties in 1993. Plants were those utilized in 1992. Sixty measurements (20 per rep) per variety except Scaldis where only one rep survived the previous summers drought. The spring was very cold and wet. Anthesis occurred in waves at specific times when the sun came out which tended to narrow the range. Plant measurements done after anthesis for each plant.

Variety	Heading Date			Anthesis Date			Plant Height (cm)	Flag Leaf Height (cm)
	50%	Mean	(S.E.)	50%	Mean	(S.E.)		
SR 3100	116	115.1	(0.7)	149	147.8	(0.3)	57.59	17.43
SR 3000	116	115.2	(0.7)	146	146.3	(0.3)	65.19	22.03
Aurora	113	112.7	(1.0)	144	146.2	(0.5)	58.97	19.60
Scaldis	112	108.0	(2.5)	144	143.1	(1.5)	71.26	26.97
Biljart	116	114.8	(1.0)	149	146.6	(0.5)	65.93	21.10
LSD @ 5%		2.5			1.2		4.38	1.78

Table 8. Leaf characteristics of hard fescue varieties in 1993. Plants were those used in Table 7 measured after anthesis.

Variety	Flag Leaf		Subtending Leaf	
	Length (cm)	Width (mm)	Length (cm)	Width (mm)
SR 3100	4.00	0.79	4.98	0.76
SR 3000	4.62	0.90	5.45	0.86
Aurora	3.94	0.85	4.98	0.88
Scaldis	8.15	1.96	7.27	1.59
Biljart	4.67	0.81	5.49	0.77
LSD @ 5%	0.50	0.13	0.52	0.12

Table 9. Panicle characteristics of hard fescue varieties in 1993. Plants were those used in Table 7 measured and observed after anthesis. Some plants had both purple and yellow anthers predehiscent possibly influenced by cold weather and low light levels for more anthocyania production. Yellow with purple was both colors on same anther.

Variety	Panicle length (cm - tip to bottom branch)	Panicle Shape (1-9)	Panicle Orientation (1-9)	Branch Pubescence %	Anther Color (%)			
					Yellow	Yellow & Purple	Purple	Yellow w/Purple
SR 3100	7.55	2.32	2.37	83	4	13	78	6
SR 3000	8.38	2.57	3.08	62	11	30	56	4
Aurora	7.64	2.32	2.63	52	19	24	55	2
Scaldis	11.88	1.37	3.16	85	25	58	17	0
Biljart	8.52	2.37	3.03	82	25	17	58	0
LSD @ 5%	0.58	0.28	0.35					

Table 10. Glume colors of hard fescue varieties in 1992 and 1993. Data was collected on the same plants in both years. In 1992 color data was as classified by technicians in field. In 1993 color descriptions utilized were those on fine fescue Exhibit C.

	1992				1993				
	percentage				percentage				
Variety	Light Purple	Greenish Purple	Purple	Green	Reddish	Bluish Green	Purplish	Green	Yellowish Green
SR 3100	13	41	5	41	17	18	32	33	0
SR 3000	26	41	8	25	17	10	18	40	13
Aurora	8	33	0	59	10	13	28	32	15
Biljart	20	30	18	32	10	12	33	43	2
Scaldis					45	0	20	35	0

Light purple in 1992 appears to be equivalent to bluish green but occasionally this was classified as green. 1993 data is representative of breeder classification. Comparing 1991, (Table 2) 1992, 1993 data the easiest way to view it is with or without anthocyanin.

Table 21. Plant characteristics of hard fescue varieties in 1994. Plants were established fall, 1992 but were considered too small for reliable data in 1993. Stem rust occurred in all varieties in 1993 and affected survival of some plants into 1994. All varieties established in 2 replications of 35 plants each for 70 plants total. The fall of 1993 was very dry, with a cold dry November, followed by a warm winter. The spring was warm early, then cycled between warm and cool periods. Tilt was applied 2 times to prevent stem rust and one irrigation was necessary to prevent dormancy during the spring. This was a new site for PVP trials approximately 6 miles south with improved soils.

	Heading Date			Anthesis Date			Plant Height	Flag Leaf Height
Variety	50%	Mean	(S.E.)	50%	Mean	(S.E.)	(cm)	(cm)
SR 3100	110	111.2	(0.7)	143	142.8	(0.3)	54.95	25.58
SR 3000	108	106.4	(0.8)	139	138.9	(0.5)	67.46	32.23
Aurora	110	109.4	(0.7)	140	140.8	(0.3)	58.36	27.97
Scaldis	108	106.1	(0.6)	140	140.0	(0.4)	71.56	33.41
Biljart	108	108.5	(0.9)	142	141.2	(0.4)	56.83	25.48
LSD @ 5%		2.1			1.2		2.10	1.55

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Table 22. Leaf characteristics of hard fescue varieties in 1994. Plant were those used in Table 21 measured after anthesis.

Variety	Flag Leaf		Subtending Leaf	
	Length (cm)	Width (mm)	Length (cm)	Width (mm)
SR 3100	7.81	1.63	8.43	1.57
SR 3000	8.85	1.74	10.01	1.76
Aurora	7.61	1.66	8.88	1.73
Scaldis	9.13	1.66	10.71	1.74
Biljart	6.54	1.66	7.78	1.68
LSD @ 5%	0.75	0.11	0.62	0.11

Table 23. Panicle characteristics of hard fescue varieties in 1994. Plants were those used in Table 21 measured and observed after anthesis.

Variety	Panicle Length (cm) Tip to Node	Panicle Length (cm) Tip to Bottom Branch	Panicle Shape 1=Open 3=Compact	Panicle Orientation (1-9)	Branch Pubescence %
SR 3100	45.76	10.04	1.97	2.17	86
SR 3000	52.33	11.73	2.51	3.23	93
Aurora	48.13	11.16	2.03	2.62	68
Scaldis	58.43	12.84	2.29	3.41	96
Biljart	48.12	10.01	2.38	2.55	91
LSD @ 5%	2.27	0.69	0.21	0.27	9

Variety	Anther Color % Yellow	Green	Yellow w/ Purple	Green w/ Purple	Purple	Other
SR 3100	8	19	4	4	63	2-Orange
SR 3000	7	3	20	22	39	3-Orange 2-Maroon
Aurora	5	5	9	30	50	2-Maroon
Scaldis	12	5	20	18	40	2-red 2-Orange 2-Maroon
Biljart	8	16	25	6	41	2-Maroon

Variety	Glume Color % Green (1)	Blue Green (2)	Red (3)	Yellow Green (4)	Purple (5)	Green/Red (Other=6)
SR 3100	4	33	14	0	42	7
SR 3000	12	14	24	10	21	19
Aurora	6	30	26	0	30	8
Scaldis	5	14	26	2	31	22
Biljart	2	21	15	0	49	13

Table 24. Seed characteristics of hard fescue varieties in 1994. Seed examined were collected from the panicles used for PVP analysis.

Variety	Lemma		Awns	
	Length (mm)	Width (mm)	%	Length (mm)
SR 3100	4.34	0.93	100	1.86
SR 3000	4.37	0.91	100	1.76
Aurora	4.18	0.86	80	1.30
Scaldis	5.36	0.98	90	1.41
Biljart	4.59	0.91	100	1.63
LSD @ 5%	0.14	0.02		0.17

Variety	Hairs (1-9 1=none 9=many or long)					
	Palea		Lemma		Basal	
	Quantity	Length	Quantity	Length	Quantity	Length
SR 3100	3.2	4.0	1.9	1.9	4.5	2.9
SR 3000	3.2	4.9	2.0	2.4	5.2	3.0
Aurora	3.1	4.7	2.1	3.9	4.6	3.0

Table 25. Comparative Leaf Sheath anthocyanin characteristics of Aurora and SR 3100 hard fescues on October 25, 1994. On this date none of the leaves had discernible anthocyanin. The length of the sheath in which the anthocyanin was present is given as a percentage of the length of the leaf sheath. The leaf sheath of the Aurora plants was significantly longer than the leaf sheath of SR 3100 and the above appeared to be the best way to remove this difference. Tillers were removed from the plants at the base and the surrounding leaf sheaths removed so a fresh leaf sheath from the last fully expanded leaf could be examined. When present the anthocyanin varied from pink to a very dark red (purple). It is unknown if this is due to a quantity difference or different pigments.

		Color – % Plants with									
		Pink				Red				Dark Red	
Variety	None	5%<	25%	50%	75%	5%<	25%	50%	75%	50%	75%
Aurora	9	20	25	20	0	11	9	6	0	0	0
Total%	9	% pink = 65				% red = 26				% dark red = 0	
SR 3100	0	3	14	23	6	0	0	31	9	11	3
Total%	0	% pink = 46				% red = 40				% dark red = 14	

	Percentage of each % leaf sheath with Anthocyanin				
Variety	0	5%	25%	50%	75%
Aurora	9	31	34	26	0
SR 3100	0	3	14	66	17

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DOCUMENTATION IN SUPPORT OF CERTIFICATE

A 19 page appendix containing multi-year trial results from the National Turfgrass Evaluation Program and the Rutger's Turfgrass Proceedings was submitted in support of this document and is on file in the Plant Variety Protection Office.

EXHIBIT E.

SR 3100 was developed by Seed Research of Oregon, Inc. utilizing germplasm developed by Dr. C. Reed Funk of Rutgers University, New Brunswick, NJ. By an agreement dated April 30, 1993 between New Jersey Agricultural Experiment Station, Dr. C. Reed Funk and Seed Research of Oregon, Inc. all rights to SR 3100 are assigned to Seed Research of Oregon, Inc.

ASSIGNMENT OF SR-3100 HARD FESCUE

WHEREAS, Cyril R. Funk, Jr., 4 Delaware Drive, East Brunswick, New Jersey 08816; Michael F. Robinson, P.O. Box 1416, Corvallis, Oregon 97339; Bruce Clarke, 93 Trieste St., Iselin, NJ 08830; Ronald Bara, 418 Cedar Grove Lane, Somerset, NJ 08873; Dirk Smith, 410 Raleigh Road, Brick, NJ 08723; and James Murphy, 432 Danbury Lane, East Brunswick, NJ 08816 have directed the breeding of SR-3100 hard fescue.

NOW, THEREFORE, in consideration of one (1.00) DOLLAR and other valuable considerations made to each of us and the New Jersey Agricultural Experiment Station by Seed Research of Oregon, Inc., P.O. Box 1416, Corvallis, Oregon 97339 including those designated in our Agreement dated, April 30, 1993 we hereby assign unto the said Seed Research of Oregon, Inc. our entire interest in SR-3100 hard fescue for the United States of America and all foreign countries and any plant variety protection to be issued therefore in the United States or any foreign country. The commissioner, United States Plant Variety Protection Office is requested to issue the plant variety protection certificate in accordance herewith.

Cyril R. Funk, Jr.

Cyril R. Funk, Jr.

Sworn and subscribed to and before me this 25 day of May, 1993.

Patricia A Wald
Notary Public of New Jersey
commission Expire May 14-95

Michael F. Robinson

Michael F. Robinson

Sworn and subscribed to and before me this 14 day of July, 1993.

Notary Public of Oregon 10-1993

Bruce Clarke

Bruce Clarke

Sworn and subscribed to before me this 26th day of May, 1993.

Patricia A. Wald
Notary Public of New Jersey

Ronald F Bara

Ronald Bara

Sworn and subscribed to before me this 25 day of May, 1993.

Patricia A Wald
Notary Public of New Jersey
Commission Expire 5-14-95

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Dirk A. Smith

Dirk Smith

Sworn and subscribed to

before me this 25 day

of May , 1993.

Patricia A Wald

Notary Public of New Jersey

Commission Expires 5-14-95

James A Murphy

James Murphy

Sworn and subscribed to

before me this 28th day

of May , 1993.

Patricia A. Wald

Notary Public of New Jersey

Commission Expires 5-14-95