No. 7200029

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

World Seeds, 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 seventeen 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. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS FIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'World Seeds 1809'

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 *this* 16th *day of* May *in the year of our Lord one thousand nine hundred and* seventy-four

Attest:

S. L. Rollin

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz

Secretary of Agriculture

FORM GR-470
(2-12-71)

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMER AND MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION WORLD SEEDS 1809	2. KIND NAME Hard Red Spring Wheat	FOR OFFICIAL USE ONLY PVPO NUMBER 72029
3. GENUS AND SPECIES NAME Triticum aestivum	4. FAMILY NAME *(Botanical)* Gramineae 5. DATE OF DETERMINATION September 1, 1968	FILING DATE 9/13/71 TIME 1:30 P.M. FEE RECEIVED $150 CHARGES —
6. NAME OF APPLICANT(S) WORLD SEEDS, INC.	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* 2605 Oceanside Blvd. Oceanside, California 92054	8. TELEPHONE AREA CODE AND NUMBER Area Code 714 757-5647
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)* Corporation	10. STATE OF INCORPORATION Illinois	11. DATE OF INCORPORATION Jan. 17, 1966

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

John E. Long, President
World Seeds, Inc.
2605 Oceanside Blvd.
Oceanside, California 92054

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 12A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52, P.L. 91-577)*
- [X] 12B. Exhibit B, Botanical Description of the Variety
- [ ] 12C. Exhibit C, Objective Description of the Variety
- [X] 12D. Exhibit D, Data Indicative of Novelty
- [X] 12E. Exhibit E, Statement of the Basis of Applicant's Ownership

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable. *(See Section 52, P.L. 91-577).*

14A. 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), P.L. 91-577) (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [X] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed?
Foundation, Registered and Certified

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes 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 (P.L. 91-577).

September 8, 1971
(DATE)

Alfredo Boscia
(SIGNATURE OF APPLICANT)
Vice President - Research

(DATE)

(SIGNATURE OF APPLICANT)
President

RECEIVED
JUL 25 1972
U. S. DEPARTMENT OF AGRICULTURE
AMS, GRAIN DIV.
PVPO

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $50.00 fee to U.S. Dept. of Agriculture, Consumer and Marketing Service, Grain Division, Hyattsville, Maryland 20782. Retain one copy for your files. All items on the face of the form are self-explanatory unles noted below.

ITEM

5 Insert the date the applicant determined that he had a new variety.

12a First, give the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. Second, give the details of subsequent stages of selection and multiplication. Third, indicate the type and frequency of variants during reproduction and multiplication and state how these variants may be identified. Fourth, provide evidence on stability.

12b First, give any special characteristics of the seed and of the plant as it passes through the seedling stage, flowering stage and the fruiting stage. Second, describe the mature plant and compare it with a similar commercial variety grown under the same conditions, and indicate the differences.

12c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

12d Provide complete data indicative of novelty. Seed and plant specimens may be submitted and seeds submitted may be sterile. Where possible, include photographs of plant comparisons, chemical tests, etc.

12e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

Origin and Breeding History of World Seeds 1809

This variety originated from the cross of an F5 line with Chris. The cross was made in the following manner:

F5, (Sonora 64 x Justin) x Chris

The F1 and F2 were bulked. The pedigree method of individual plant selections was followed from the F3 through the F6 generations where a group of homozygous lines were bulked to establish this variety as outlined in 12A. (2).

12A. (3) Type and frequency of variants during reproduction and multiplication.

Phenotypically speaking, no variants should be expected during reproduction or multiplication of World Seeds 1809. Genotypically speaking, however, some variants may be found among plants of World Seeds 1809. It has been observed that this variety is segregating for both black stem rust, P. graminis tritici, and leaf rust, P. recondita.

a. Evidence of World Seeds 1809 segregating for leaf rust, P. recondita.

This evidence was first observed in Edinburg, Texas, in 1968-1969. Leaf rust readings at that time varied from 0 to 50S, with four plants out of approximately 160 being susceptible, or a little over 2%. A more accurate frequency of susceptible-to-resistant plants was found later as explained in the next paragraphs.

Based on the above information, we pulled close to 10,000 single plants out of World Seeds 1809 growing in Holtville, California, in 1968-1969. These selections were actually made in May of 1969. Each plant was seeded in two rows, 22" x 20' each, in Grand Forks, North Dakota, in 1969. All of these selections proved to be resistant to whatever race(s) of leaf rust were prevalent in that area.

Furthermore, these results indicated that the new race(s) from Edinburg capable of attacking World Seeds 1809 had not reached the Dakotas. Based on agronomic characteristics such as tillering, head size, total number of tillers per row, etc., we saved 768 plants by bulking the two rows. It must be mentioned that these plants are phenotypically indistinguishable from plants of the original bulk of World Seeds 1809 now being grown commercially.

A single row from each of the above 768 bulks were planted in Mathis, Texas, in 1969-1970 in order to screen them down against leaf rust. The rest of the seed was planted in Holtville, California, in 1969-1970 for maximum seed production.

a. (Continued)

Frequency of Variants.

Out of the 768 single plants tested in Edinburg, Texas, 641 were susceptible and 127 were resistant to leaf rust. This makes 83.43% susceptible, against 16.53% resistant. Unfortunately, we did not identify the race(s) to which World Seeds 1809 is segregating. The 127 resistant lines were harvested separately in Holtville, California, and they all were again planted in St. Thomas, North Dakota, in 1972. So far, the resistant lines isolated from Texas as well as the original bulk of World Seeds 1809 have shown the resistant reaction to whatever race(s) of leaf rust are prevalent in the Dakotas. The 127 lines will be planted in Grand Forks, North Dakota, in 1973.

b. Evidence of World Seeds 1809 segregating for Black Stem Rust, P. graminis tritici.

This evidence came from Mr. W. K. Voorhees, North Dakota County Agent, as seen in the attached information. No information is given, however, as to the race(s) of stem rust attacking World Seeds 1809. Our 1972 observations from Grand Forks and St. Thomas, North Dakota, indicate that World Seeds 1809 , Manitou, Neepawa, Waldron (segregating), Chris, Bounty 208, Lark and Bonanza are susceptible to new and virulent strains of stem rust. A rust sample collected from Waldron grown in St. Thomas was identified as race TN (3 isolates of 15B-2) by Dr. A. P. Roelph from the Department of Plant Pathology of the University of Minnesota. Since the infection came rather late (and World Seeds 1809 is very early) we could not establish whether this variety is actually segregating for this particular race.

12A. (4) Varietal Stability.

World Seeds 1809 is very stable for practical agronomic characteristics such as heading, maturity and height. Any off-types within World Seeds 1809 should represent either mechanical mixtures or natural hybrids from crosses with other spring wheats.

Botanical Description of World Seeds 1809 Spring Wheat (1)

I. Plant Character:

1. Heading, ripening and height of World Seeds 1809 and other spring wheat varieties grown in Grand Forks, North Dakota, during 1969.

Variety and/or World Seeds No.	Heading In Days	Ripening In Days	Height Cm.
Chris	57	87	100.0
World Seeds 1809	58	90	73.0*
Red River 68	55	85	76.0
World Seeds 1651	56	86	61.0
World Seeds 1812	58	90	71.0
Manitou	58	88	74.0

*Height: Short, 91 cm. tall under irrigation and from 65 to 75 cm. tall when grown under dry-land farming. World Seeds 1809 has two major genes for dwarfness.

2. Habit of growth: Spring habit, daylight-length insensitive.

II. Stem Character:

1. Color: Golden Yellow
2. Strength: Strong
3. Hollowness: Hollow

III. Spike Character:

1. Awnedness: Awnleted, the awnlets are from 1 to 18 mm. long.
2. Shape: Oblong
3. Density: Mid-dense
4. Position: Erect
5. Shattering: Resistant

IV. Glume Character (glabrous):

1. Color: Cream
2. Length: Long
3. Width: Mid-wide

V. Shoulder Character:

1. Width: Mid-wide
2. Shape: Mostly squares but a few obliques can be seen.

VI. Beak Character:

1. Width: Mid-wide
2. Shape: Acute
3. Length: From 1 to 2 mm. (not great differences)

VII. Kernel Character:*

1. Color: Red class, light brown
2. Length: Short
3. Texture: Hard
4. Shape: Oval

VIII. Germ Character:

* Kernel characteristics are based on observations made on the central one-third of a spike from which smaller kernels had been removed.

IX. Crease Characters:

1. Width: Wide

2. Depth: Mid-deep

X. Cheek Characters:

1. Shape: Rounded

(1) Reference consulted:

BRIGGLE, L. W. and L. P. REITZ, 1963. Classification of Triticum species and of Wheat Varieties Grown in the United States. Technical Bulletin 1278, U.S.D.A.

OBJECTIVE DESCRIPTION OF WORLD SEEDS 1809

Type:	Hard red spring wheat.
Dwarfness:	Stiff straw, due to two major genes for dwarfness. Does not lodge even under irrigation and heavy doses of fertilizers.
Drought:	Very good tolerance.
Physiologic[1] Maturity:	Daylight-length insensitive. From one week to 10 days earlier than standard varieties such as Chris, Manitou and Neepawa.
Yield:	High-yielding under both irrigation and dry-land farming conditions.
Resistance:	Very resistant to prevalent races of leaf and stem rusts. Tolerant to *Septoria*.
Shattering:	It is only moderately resistant to shattering.
Quality:	Excellent milling and baking characteristics. Similar in grain and quality to top hard red spring wheats.

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(1) Physiologic Maturity: Indicates the stage at which the stems below the spikes (necks) turn yellow.

FORM GR-470-6
(7-3-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT *(TRITICUM SPP.)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
World Seeds, Inc. (Alfredo Garcia)

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
2605 Oceanside Blvd.
Oceanside, CA. 92054

FOR OFFICIAL USE ONLY

PVPO NUMBER
72029

VARIETY NAME OR TEMPORARY DESIGNATION
World Seed 1809

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[1] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____

[2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[0][4][9] FIRST FLOWERING

[0][5][9] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[0][1] NO. OF DAYS *EARLIER* THAN .....

[ ][ ] NO. OF DAYS *LATER* THAN .....

[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[0][7][3] CM. HIGH

[ ][ ] CM. TALLER THAN .....

[2][7] CM. SHORTER THAN .....

[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[4][ ] NO. OF NODES *(Originating from node above ground)*

[1][8] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][4] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][5] CM. LEAF LENGTH *(First leaf below flag leaf)*:

12D. (8) Field Identification of World Seeds 1809. [1]

The beardless, therefore similar varieties to World Seeds 1809 now grown in the hard red spring wheat belt are Manitou, Neepawa, Chris, Waldron, Justin and Fortuna. All of these varieties are also taller than W. S. 1809. World Seeds 1809 is "most similar" to Chris, and some of their agronomic characteristics under dryland farming may be differentiated as follows:

Heading:

Heading times of World Seeds 1809 and Chris are practically the same under field conditions. Their heading time varies from 42 days (late planting) to 58 days (early planting).

Physiologic Maturity:

In some instances World Seeds 1809 may reach physiologic maturity up to ten days earlier than Chris. As an average, however, World Seeds 1809 reaches physiologic maturity four to five days earlier than Chris.

Height:

When both varieties are grown under commercial 6 to 7 inch-wide rows, World Seeds 1809 is about 23 centimeters (9 inches) shorter than Chris. When both varieties are grown under experimental 22 inches-wide rows, World Seeds 1809 is 30 centimeters (close to 12") shorter than Chris.

Wheat varieties tend to be shorter when planted in rows wider than the 6 to 7 inches normally used in commercial plantings; therefore, true height must be obtained only when the variety is planted in 6 to 7 inch wide rows.

[1] This statement is based on information as shown on the attached sheet.

18. DISEASE:

a. STEM RUST, P. graminis var. tritici.

LEAF RUST, P. recondita.

World Seeds 1809 has been resistant to field race(s) present in the United States and Canada from 1967 thru 1971. A 5% susceptible type of infection to Leaf Rust was read in Saskatoon, Sasketehewan in 1968 from an artificial innoculation of Stem Rust races.

b. POWDERY MILDEW, Erysiphe graminis var. tritici.

World Seeds 1809 was found to be susceptible to field race(s) of Mildew present in Royal Slope, Washington in 1969-1970 and resistant to field race(s) present in Saddlebow (Norfolk), England in 1971; Winnipeg, Manitoba 1967-1968, and Encinitas, California in 1968-1969. The same variety was susceptible to race(s) of Mildew present in Taber, Alberta (tested two years) and in Ladner, B. Columbia.

c. STRIPE RUST, P. striiformis.

World Seeds 1809 was found resistant to field strip rust race(s) present in Pullman, Washington and Pendleton, Oregon, during a test conducted in 1969-1970. The same variety was also resistant to field race(s) present in Saddlebow (Norfolk), England in 1971.

12E. Exhibit E, Statement of the Basis of Applicant's Ownership.

The applicant is the employer of the breeder.

AMENDMENT NO. 2, APPLICATION NO. 7200029, WHEAT VARIETY W.S. 1809

FORM GR-470-6 (2-15-73)

FORM APPROVED. OMB NO. 40-R3712

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C (Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): WORLD SEEDS, INC. (ALFREDO GARCIA)

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*): 2605 OCEANSIDE BLVD. OCEANSIDE, CALIFORNIA 92054

FOR OFFICIAL USE ONLY

PVPO NUMBER: 7200029

VARIETY NAME OR TEMPORARY DESIGNATION: WORLD SEEDS 1809

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[1] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____

[2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[0][4][9] FIRST FLOWERING

[0][5][9] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[0][1] NO. OF DAYS *EARLIER* THAN .....

[ ][ ] NO. OF DAYS *LATER* THAN .....

[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):

[0][7][3] CM. HIGH

[ ][ ] CM. TALLER THAN .....

[2][7] CM. SHORTER THAN .....

[ ] [3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES (*Originating from node above ground*)

[1][8] CM. INTERNODE LENGTH BETWEEN FLAG AND LEAF BELOW

9. AURICLES:

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][4] MM. LEAF WIDTH (*First leaf below flag leaf*)

[2][5] CM. LEAF LENGTH (*First leaf below flag leaf*):

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11. HEAD:

[3] Density: 1 = LAX 2 = DENSE **3= Middense**

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* **Oblong**

[3] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[0 9] CM. LENGTH

[1 2] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[4-2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[2] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[2] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[2] Brush: 1 = NOT COLLARED 2 = COLLARED

[4-5] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[1] Embryo size: 1 = SMALL *(Lemhi)* 2 = MEDIUM *(Scout)* 3 = LARGE *(Arthur)*

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[0 5] MM. LENGTH

[0 4] MM. WIDTH

[0 3.5] GM. PER 100 SEEDS

17. SEED CREASE:

[3] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' (Equal to) 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

* [2] STEM RUST *(Races)* _____

* [2] LEAF RUST *(Races)* _____

* [2] STRIPE RUST *(Races)* _____

[0] LOOSE SMUT

* [1-2] POWDERY MILDEW

[0] BUNT

[ ] OTHER *(Specify)* _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[1] SAWFLY

[0] APHID *(Bydv.)*

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* _____

HESSIAN FLY RACES: [0] GP [ ] A [ ] B [ ] C [0] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

*** See additional information.**

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

FORM CR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=MID-DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) OBLONG

[3] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0 9] CM. LENGTH

[1 2] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[4-2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[2] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[2] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[2] Brush: 1 = NOT COLLARED 2 = COLLARED

[4-5] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0 5] MM. LENGTH

[0 4] MM. WIDTH

[0 3.5] GM. PER 1000 SEEDS

17. SEED CREASE:

[3] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) _____ * [2] LEAF RUST (Races) _____ * [2] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[1-2] POWDERY MILDEW [0] BUNT [ ] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[1] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [0] GP [ ] A [ ] B [ ] C [0] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

INSTRUCTIONS

*SEE ADDITIONAL INFORMATION.

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (see attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.