No. 7300067

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

World Seeds, Incorporated

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. N 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 IED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'W.S. 6'

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* fifth *day of* March *in the year of our Lord one thousand nine hundred and* seventy-six

Attest:

Commissioner
Plant Variety Protection Off
Grain Division
Agricultural Marketing Service

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: ~~MP-6 B~~ W.S. 6 KE	2. KIND NAME: Hard Red Spring Wheat	FOR OFFICIAL USE ONLY — PVPO NUMBER: 73067
3. GENUS AND SPECIES NAME: T. aestivum L. em. Thell. ssp. vulgare (Vill., Host) Mac Key	4. FAMILY NAME (*Botanical*): Gramineae	FILING DATE: 3-1-73 — TIME: 3:30 P.M.
	5. DATE OF DETERMINATION: July, 1971	FEE RECEIVED: $ 750 — 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 Boulevard, 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: Minnesota	11. DATE OF INCORPORATION: 8/1/72

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

Virgil R. Smith, President
World Seeds, Inc.
Professional Building, 172 Main Street
Winona, Minnesota 55987

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
- [X] 12C. Exhibit C, Objective Description of the Variety KE
- [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 * [X] NO

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

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

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).

2/26/73
(DATE)

Virgil R. Smith
President (SIGNATURE OF APPLICANT)

February 23, 1973
(DATE)

Alfredo Barrera
(SIGNATURE OF APPLICANT)
Vice President - Research

* Permission to publish - March 13, 1973

MP-6 B* originated from two F5 lines introduced from Mexico and later crossed to Crim. The parentages of the two F5 lines are as follows:

1. The parentage of one line is:

   (Son 64-TzPP x Y54)*

2. The second F5 line originated from:

   (Son 64-TzPP x Nai 60)*

Abbreviations:*

Son 64	=	Sonora 64 (Mexico)
TzPP	=	Tezanos Pintos Precoz (Argentina)
Y 54	=	Yaqui 54 (Mexico)
Nai 60	=	Nainari 60 (Mexico)

3. The cross was made in two stages and in the following direction:

   Stage 1. [(F5, Son 64-TzPP x Y 54) x Crim]

   Stage 2. [(F1, Son 64-TzPP x Y 54) x Crim] x (F5, Son 64-TzPP x Nai 60)

From the above F2 Bulk, 50 rows (80 to 100 seeds to a row) were planted in Grand Forks, North Dakota, in 1967. Out of 34 F3 plants selected, three were disc rded because of poor seed development. From the F3 through the F7, single plants have been handled under the pedigree method of selection. Four rows of the F7 were planted in Grand Forks, North Dakota, in 1970 and since they were homozygous for general agronomic characteristics they were cut to make the F8 Bulk seed which has been used for preliminary yield, quality and disease information as reported later. The cross and final pedigree of MP-6 B stands as follows:

Cross: [(Son 64-TzPP x Y 54) x Crim] x (Son 64-TzPP x Nai 60)

Pedigree:* F8 Bulk
6W02671-217-2B-1104-15-11-2B

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*In the pedigree, 2 stands for selections under Grand Forks conditions and 1 stands for selections under California conditions. The Capital B letter stands for Bulk.

*'MP-6 B' = 'W.S.6'

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12A. (2)

Procedure for maintaining and producing stock seed classes of MP-6 B.*

Original stock seed of MP-6 B was obtained by bulking four rows 2' x 20' each in the F7 generation in Grand Forks, North Dakota, in 1970. This seed was used to plant preliminary replicated yield trials in Holtville, California, in 1970-1971 and in Grand Forks, North Dakota, in 1971. Due to late plantings and heavy grass infestation, no reliable yield information was obtained from the last-mentioned location. Seed obtained from the above two areas, however, was bulked and most of it increased on approximately 10 acres in Holtville, California, in 1971-1972.

From this preliminary increase, sufficient breeders seed was obtained for further increases and commercial yield testing in North Dakota and Montana in 1972. Approximately 583 acres were grown with key farmers around the St. Thomas area in North Dakota. In order to test the yield potential of MP-6 B under moisture strees, 1.15 acres were grown with an excellent farmer in Dutton, Montana. Foundation seed from the St. Thomas area is being grown on about 115 acres of irrigated land during the present 1972-1973 season in Holtville, California. Most of the ground where MP-6 B is now grown was under alfalfa for two to three years; besides, it is being fertilized heavily in order to produce high quality seed and maximum production. This commercial planting is under the direct supervision of World Seeds personnel.

Seed classes being produced beyond breeders seed are foundation, registered and certified. Only certified seed will be offered to the public.

There are no particular requirements necessary in order to maintain the purity of MP-6 B besides the practical principles of using a clean drill for seeding, a roguing schedule from heading through maturity and a clean combine for harvesting.

* 'MP-6 B' = 'W.S.6' KPE

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Seed Production Summary

Different classes of certified seed are always produced on ground previously occupied by potatoes, sugar beets, cotton or alfalfa. Fields are kept isolated from other varieties by ditches, roadways or barren strips at least 10 feet wide.

The roguing schedule begins at heading time and is maintained through the ripening stage. The variety is carefully inspected for off-types two or three times before harvesting.

MP-6 B* is very stable for such practical agronomic characteristics as heading, maturity, height and rusts reactions.

Off-types, whether taller, shorter, later or earlier than MP-6 B, should represent either mechanical mixtures or natural hybrids with other spring or winter wheat varieties.

Off-types different from those mentioned in the previous paragraph should not be present in a commercial field planted to certified seed of MP-6 B.

*'MP-6 B' = 'W.S.6' xple

12A. (4) Type and Frequency of Variants.

W. S. 6 is segregating for hairiness in the auricles. In order to find out the frequency of this variant, we pulled single plants and found that in 57% of them the auricles showed no hairs while the remainder of them, or 43%, showed hairiness. This variation and its frequency is indicated in the Objective Description of the variety.

12A. (5) Evidence of Stability.

W. S. 6 is very stable for field characteristics such as heading, flowering, height and maturity. Any field rogues deviating from the above characteristics as given in both the botanical and objective descriptions should be considered off-types which must be rogued during the certification process.

W. S. 6 is segregating for hairiness in the auricles, showing that hairiness is exhibited in the auricles of 43% of the plants while 57% show no hairs on the auricles.

W. S. 6 shows some variation in the shape of the cheeks of the kernels. We found that 96% of the kernels showed round cheeks while 6% show rounded-to-angular cheeks.

W. S. 6 seeds show a brown-black color when exposed to the Phenol tests. While there are a number of varieties which show this particular reaction, we decided to mention this as it is stated in the Objective Description.

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12B. (1)

MP-6 B* is equal or possibly better than World Seeds 1812 in shattering resistance. In this respect MP-6 B is superior to any other spring wheat varieties released up to the present time.

MP-6 B yields better than Waldron and World Seeds 1651 under irrigation and dry-land farming conditions. MP-6 B is a semi-dwarf variety with excellent straw strength and has wider adaptation than Chris, Waldron, Era, Manitou and Neepawa.

MP-6 B differs from other varieties in its resistance to stem rust. Of the wheat varieties now grown in the hard red spring wheat belt only Era, Red River 68, World Seeds 1812 and MP-6 B are resistant. MP-6 B is also resistant to leaf rust in North Dakota but susceptible to a new strain found in the lower Rio Grande area of Texas.

MP-6 B is inferior to Chris in protein content and milling and baking characteristics.

* 'MP-6 B' = 'W.S.6'

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Botanical Description of W. S. 6 (1)

I. Plant Characters:

1. Height: Short under irrigation and dry-land farming conditions. Field observations seem to indicate that W. S. 6 carries a major single gene for dwarfness.

2. Maturity: Mid-season (under irrigation and dry-land farming conditions)

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

II. Stem Characters:

1. Color: White

2. Strength: Strong

3. Hollowness: Hollow

III. Spike Characters:

1. Awnedness: Awned, awns white; average of extreme lengths, 72 mm.

2. Shape: Oblong

3. Density: Mid-dense

4. Position: Erect to Inclined

5. Shattering: Very Resistant

*IV. Glume Characters (glabrous):

1. Color: White

2. Length: Long

3. Width: Wide

* All of the observations in Items IV through XI were made on the central one-third of the spike. Kernel characteristics were observed only on those grains from the two largest florets in each spikelet.

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V. Shoulder Characters:

1. Width: Mid-wide

2. Shape: Square

VI. Beak Characters:

1. Width: Narrow

2. Shape: Acuminate

3. Length: 3.2 mm. average; (2.0 mm. minimum; 4 mm. maximum)

VII. Kernel Characters:

1. Color: Red

2. Length: Short; 5.9 mm. average

3. Texture: Hard

4. Shape: Oval

VIII. Germ Character:

1. Size: Mid-size

IX. Crease Characters:

1. Width: Mid-wide

2. Depth: Mid-deep

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X. Cheek Character:

1. Shape: Rounded to Angular
(94%) (6%)

XI. Brush Characters:

1. Size: Mid-sized

2. Length: Mid-long

3. Collar: Non-collared

(1) Reference consulted:

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

Variety Name: W. S. 6

FORM APPROVED. OMB NO. 40-R3712

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

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.

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 73067
VARIETY NAME OR TEMPORARY DESIGNATION W S 6 KEE

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][5] FIRST FLOWERING
[0][5][5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:
[ ][ ] NO. OF DAYS *EARLIER* THAN . . . . . [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[0][2] NO. OF DAYS *LATER* THAN . . . . . [3] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:
[0][7][4] CM. HIGH
[ ][ ] CM. TALLER THAN . . . . . [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[1][5] CM. SHORTER THAN . . . . . [3] 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 (very small)
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][4] NO. OF NODES *(Originating from node above ground)*
[0][6] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1-2] Hairiness: 1 = ABSENT (57%) 2 = PRESENT (43%)

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][7] MM. LEAF WIDTH *(First leaf below flag leaf)* Booting
[2][5] CM. LEAF LENGTH *(First leaf below flag leaf)*: Boot stage

(All notes taken at booting stage.)

12D. (13) Novelty.

W. S. 6 is more similar to Inia 66 than any other spring wheat variety now grown in the United States. Their contrasting characters from seedling through maturity are listed below:

Characters:	W. S. 6	Inia 66
1. Plant color at booting	Blue-green	Green
2. Auricles:		
a. Anthocyanin	Absent	Present
3. Head:		
a. Shattering	Very resistant	Moderately susceptible
b. Awns, average of extreme lengths	72 mm.	98 mm.
4. Glumes:		
a. Shoulder:		
Width	Mid-wide	Narrow
Shape	Square	Wanting to Oblique
b. Beak length in mm.:		
Minimum	2.00	3.00
Average	3.20	3.35

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Characters:	W.S. 6	Inia 66
5. Kernel:		
a. Length	Short Av. 5.9 mm.	Long Av. 7 mm.
b. Shape	Oval	Ovate
c. Crease		
Width	Mid-wide	Narrow
Depth	Mid-deep	Deep
Cheek Shape	Rounded to Angular	Rounded

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

The applicant is the employer of the breeder.

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FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3 = Mid-dense

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

[4] 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): _____

[1 4] CM. LENGTH

[1 4] MM. WIDTH

12. GLUMES AT MATURITY:

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

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

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

[3] 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

[1-2] Cheek: 1 = ROUNDED (94%) 2 = ANGULAR (6%)

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

[1] 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 6] MM. LENGTH

[0 3] MM. WIDTH

[4 0] 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'

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

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

[2] STEM RUST (Races) _____

[1-2*] LEAF RUST* (Races) _____ (at different locations)

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[ ] OTHER (Specify) _____

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

[0] SAWFLY

[1] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

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

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.