No. 7500033

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup, King and Company

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, 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 A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Probred'

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* 30th *day of* June *in the year of our Lord one thousand nine hundred and* seventy-five

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL 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 Probred	2. KIND NAME Common Wheat	FOR OFFICIAL USE ONLY PV NUMBER 7500033
3. GENUS AND SPECIES NAME Triticum aestivum	4. FAMILY NAME *(Botanical)* Gramineae	FILING DATE 10·30·74 / TIME 3 P.M.
	5. DATE OF DETERMINATION August 1970	FEE RECEIVED $250 / $250 / $250 / BALANCE DUE $ — / $ — / $ —
6. NAME OF APPLICANT(S) Northrup, King & Co.	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* 1500 Jackson Street N. E. Minneapolis, Minnesota 55413	8. TELEPHONE AREA CODE AND NUMBER 612-781-8011

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Minnesota	1896

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

Allenby L. White
Northrup, King & Co.
P. O. Box 959
Minneapolis, Minnesota 55440

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

[x] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

[x] 13B. Exhibit B, Botanical Description of the Variety

[x] 13C. Exhibit C, Objective Description of the Variety

[x] 13D. Exhibit D, Data Indicative of Novelty

[x] 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

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). (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? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

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.

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.

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

October 24, 1974
(DATE)

Allenby L. White
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

7500033

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

EXHIBIT A

Origin and Breeding History of the Variety

Probred is a pure-line selection from Bluebird 2.

Bluebird 2 was developed by hybridization and individual plant selection from the F2 to F4 generation at the International Maize and Wheat Improvement Center in Mexico from the cross:

Ciano sib//Sonora 64/Klein Rendidor/3/8156.

The pedigree of Bluebird 2 is II 23584-26Y-2M-1Y-0M.

Bluebird 2 has a 3:1 ratio of red to white kernels. It also may have an equal proportion of early and late maturing components when grown from spring or summer plantings at U. S. latitudes. These differences in maturity are not noted from fall or winter seedings in the United States.

Probred is a red-seeded selection out of the early-maturing component of Bluebird 2. It is derived from a single head selection made in Orange County, California in the fall of 1970 from a bulk population of red-seeded, early maturing plants that had been selected at Fargo, North Dakota in the summer of 1970.

Probred was grown at Yuma, Arizona, as a head-row in the 1970-71 season, and in yield trials and increases in the 1972-73 and 1973-74 seasons. Good uniformity was observed in these plantings which suggests that Probred exhibits little out-crossing and has good stability.

No describable or characteristic variants of the variety have been noted during reproduction and multiplication.

7500033

EXHIBIT B

Botanical Description

The kernels of Probred are free-threshing, long, hard, red and elliptical. Kernel size is 7-7.5 mm long and 3-3.5 mm wide. The cheeks are rounded with a mid-deep, narrow crease. The brush is large, collared and mid-long. Radicle and plumule are prominent and the embryo is more or less oval. The phenol reaction of the pericarp is brown black (similar to Wakeland).

The coleoptile is white and seedling anthocyanine is absent. Juvenile growth habit is erect. Plant color at boot stage is green. The flag leaf at booting is recurved and not twisted. Waxy bloom is present on the flag-leaf sheath and on the peduncle. Leaf blades and sheaths are not hairy. The auricles are not hairy and have no anthocyanine. The stem is hollow. Usually 3 stem-nodes originate from the node above ground. Anthers are yellow.

The spike is fully awned, lax and inclined. Glumes are glabrous and white. The awns are white.

Probred is of spring growth habit and is well adapted to the high-yield areas of Arizona and California. Probred is a mid-season varity with a maturity equal to Bluebird 2. Date of heading is usually later than Bluebird 2 and earlier than Cajeme 71.

Probred is short wheat intermediate in height between Bluebird 2 and Cajeme 71. The stems are strong and resistance to lodging is excellent. Resistance to shattering is comparable to that of Bluebird 2.

Probred is resistant in the field to the races of *Puccinine graminis* f. sp. Eriks and Henn. and *P. recondita* f. sp. *tritici* Rob. ex Desm. common in the northcentral region of the United States in 1974. It is moderately resistant to the race of *P. striiformis* Westend. prevalent in the Sacramento Valley in 1974 which is avirulent on Chinese 166, Heine VIII, Suwon 92/Omar, and Riebesel 4751 and virulent on Lemhi and Druchamp.

The measurement data in the attached objective description form are based on a date of planting of December 6, 1973 at Yuma, Arizona from a seeding rate of 80 Kg/Ha, good soil fertility, and adequate irrigation.

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): Northrup, King & Co.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*): 1500 Jackson Street No. E.
Minneapolis, Minnesota 55413

FOR OFFICIAL USE ONLY

PVPO NUMBER: 7500033

VARIETY NAME OR TEMPORARY DESIGNATION: Probred KKE

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][8][0] FIRST FLOWERING

[0][8][9] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[0][2] NO. OF DAYS *EARLIER* THAN .....

[0][2] NO. OF DAYS *LATER* THAN .....

[7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 7=Cajeme
4 = LEMHI 5 = NUGAINES 6 = LEEDS
8= Bluebird 2

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

[0][9][0] CM. HIGH

[0][6] CM. TALLER THAN .....

[0][5] CM. SHORTER THAN .....

[8] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 7=Cajeme
4 = LEMHI 5 = NUGAINES 6 = LEEDS
8=Bluebird 2

[7]

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

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

[0][3] NO. OF NODES (*Originating from node above ground*)

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

[1] Internodes: 1 = HOLLOW 2 = SOLID

[ ][ ] 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*): _____

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

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

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

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

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

7500033 KHE

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

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

[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 3] CM. LENGTH KHE*

[1 8] MM. WIDTH KHE*

12. GLUMES AT MATURITY:

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

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

[1] 1 = Glabrous 2 = Pubescent

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

[ ] 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:

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

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[~~1~~ 2 KHE*] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

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

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

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

[0 7] MM. LENGTH [0 3] MM. WIDTH [0 5] GM. PER 1000 SEEDS 50 Gm/1000

17. SEED CREASE:

[1] 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) Not known

[2] LEAF RUST (Races) Not known

[2] STRIPE RUST (Races) 1973 2,3,4,5,7/1

[0] LOOSE SMUT

[ ] POWDERY MILDEW

[ ] BUNT

[ ] OTHER (Specify) _____

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

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

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

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Cajeme	Seed size	
Leaf size	Inia 66	Seed shape	
Leaf color	Inia 66	Coleoptile elongation	
Leaf carriage	Cajeme	Seedling pigmentation	

*Per letter of april 7, 1975

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.

7500033

EXHIBIT D

The variety most similar to Probred is Cajeme. Probred differs from Cajeme in that the leaves are narrower and green in color in contrast with the wide blue-green leaves of Cajeme.

The red kernels of Probred are elliptical and thus different from the ovate kernels of Cajeme. The kernels of Probred are also from 0.5 - 1.0 mm longer than those of Cajeme.

Probred is also shorter and tends to head slightly earlier than Cajeme.

7500033

Table 9. Quality characteristics of Probred, Bluebird 2, and Cajeme 71 grown at Yuma, Arizona in 1972-73.

Characteristic	Variety		
	Probred	Bluebird 2	Cajeme 71
Test Weight, lbs/bu	64.5	65.0	66.5
Protein %	10.4	11.8	11.3
Extraction %	69.1	71.2	69.2
Farinograph Absorption	59.8	60.3	61.2
Farinograph Peak	3.50	5.50	4.75
Farinograph Stability	8.00	9.50	7.50
Farinograph M T I	30	30	40
Farinograph Val	56	61	59
Alveograph P/G	6.6	4.9	4.5
Alveograph W	113	181	135
Flour Ash	0.400	0.400	0.393
Flour Protein	9.3	10.8	10.2
Bake Absorption	62.5	63.0	64.0
Mixing Time	2.75	3.75	3.0
Dough Characteristics	4 F	4 F	4 F
Loaf Volume, cc	775	825	850
Loaf Grain	4 F	3 F-	4 F
Loaf Texture	4 F	3 F-	4 F
Crumb Color	96 Dull	96 Sl Dull	96 Sl Dull
Bake Score	19 F-	19 F-	21 F
Total Score	43 F	45 F	45 F

F = Fair
Sl = Slightly

7500033

EXHIBIT E

Statement of the Basis of Applicant's Ownership

Ownership is predicated upon the fact that Northrup, King and Company, developed Probred as a distinctive, pure-line selection out of the heterogeneous Bluebird 2 population.