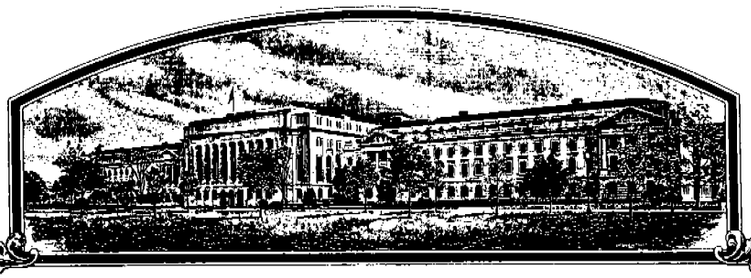

No. 7400108

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Nebraska Agricultural Experiment Station

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 [illegible]ED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*[Waived]

WHEAT

'Buckskin'

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, DC *this* 18th *day of* June *in the year of our Lord one thousand nine hundred and* seventy-six

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz
Secretary of Agriculture

74-108

Seed Regulatory and Testing Branch
Livestock and Seed Division
Building 506, BARC-East
Beltsville, Maryland 20705
(301) 344-4430

21 SEP 1990

In reply refer to:
FSA 90-0689

Melvin Knaub
Rural Route 1
Gering, Nebraska 69341

Dear Mr. Knaub:

We have information that on August 10, 1990, you advertised, by variety name, uncertified seed of the Buckskin variety of wheat in the Star-Herald.

Buckskin is a variety protected under the Plant Variety Protection Act. The certificate of Plant Variety Protection for this variety indicates that the seed shall not be sold by variety name unless it is certified seed. Under Federal law, Title V of the Federal Seed Act, it is illegal to sell or offer for sale or advertise Buckskin by variety name unless the seed is certified.

This warning is issued under Section 412 of the Federal Seed Act which provides that in certain circumstances a suitable warning may be issued instead of other action.

In addition to complying with the Federal Seed Act, persons handling seed of any protected variety are urged to exercise care to avoid infringing rights granted under Section 111 of the Plant Variety Protection Act.

Sincerely,

Stephen J. Hurst
Seed Marketing Specialist

bcc: D. Svik (NE)
✓K. Evans (PVPO)

79-108

Seed Regulatory & Testing Branch
USDA, AMS, Livestock & Seed Division
Building 506, BARC-East
Beltsville, Maryland 20705
(301) 344 4430

19 SEP 1989

Stan Chapman
Rural Route
Lyman, Nebraska 69352

In reply refer to:
FSA 89-0938

Dear Mr. Chapman:

We have information that on August 10, 1989, you advertised, by variety name, uncertified seed of the Buckskin variety of wheat.

Buckskin is a variety protected under the Plant Variety Protection Act. The certificate of Plant Variety Protection for this variety indicates that the seed shall not be sold by variety name unless it is certified seed. Under Federal law, Title V of the Federal Seed Act, it is illegal to sell or offer for sale or advertise Buckskin by variety name unless the seed is certified.

This warning is issued under Section 412 of the Federal Seed Act which provides that in certain circumstances a suitable warning may be issued instead of other action.

In addition to complying with the Federal Seed Act, persons handling seed of any protected variety are urged to exercise care to avoid infringing rights granted under Section 111 of the Plant Variety Protection Act.

Sincerely,

Stephen J. Hurst
Seed Marketing Specialist
Seed Regulatory and Testing Branch
Livestock and Seed Division

bcc: D. Svik (NE)
✓K. Evans (PVPO)

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 Buckskin (C.I. 17263)	2. KIND NAME Hard Red Winter Wheat	FOR OFFICIAL USE ONLY PV NUMBER 7400108
3. GENUS AND SPECIES NAME Triticum aestivum L.	4. FAMILY NAME *(Botanical)* Gramineae	FILING DATE 6.10.74 / TIME 11 A.M.
	5. DATE OF DETERMINATION July, 1968	FEE RECEIVED $ 250.00 / BALANCE DUE $ —
		$ 250.00 / $ —
		$ 250.00 / $ —

6. NAME OF APPLICANT(S) Board of Regents University of Nebraska and Agricultural Research Service U.S. Department of Agriculture	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* Lincoln, Nebraska 68508 Washington, D.C. 20250	8. TELEPHONE AREA CODE AND NUMBER 402-472-2811 202-447-3656

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)* Corporation and U. S. Government Agency	10. STATE OF INCORPORATION Nebraska and Washington, D.C.	11. DATE OF INCORPORATION

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

Dr. Howard W. Ottoson, Director
Agricultural Experiment Station
University of Nebraska - Lincoln
Lincoln, Nebraska 68503

Dr. T. W. Edminster
Office of the Administrator
USDA, Agricultural Research Service
Washington, D.C. 20250

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.

FOR THE BOARD OF REGENTS - UNIVERSITY OF NEBRASKA

6-4-74
(DATE)

Miles Tommeraasen
(SIGNATURE OF APPLICANT)
Miles Tommeraasen, Vice Chancellor for Business & Finance

8/21/74
(DATE)

T. W. Edminster
(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, 6525 Belcrest Road, Hyattsville, Maryland 20782. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Insert the date the applicant determined that he had a new variety based on the definition in Section 41 (a) of the Act and decision is made to increase the seed.

13a 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.

13b 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.

13c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

13d Provide complete data indicative of novelty. Seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty may be submitted. Seeds submitted may be sterile.

13e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

7400108

EXHIBIT A

Origin and Breeding History of Buckskin

Pedigree: Scout/4/Quivira/2/Tenmarq/3/Marquillo/Oro

Date of Cross: Cross 62170, 1962

Place: Agronomy Department, Nebraska Agricultural Experiment Station, Lincoln, Nebraska

The breeding history of Buckskin is summarized in Table 1. The decision to release NE68435 (C.I. 17263) under the name BUCKSKIN was made by the Nebraska Agricultural Experiment Station on March 29, 1973. Public release of information on Buckskin as a variety occurred on June 15, 1973.* The North Central Region, Agricultural Research Service, U. S. Department of Agriculture and the Kansas Agricultural Experiment Station joined the Nebraska Agricultural Experiment Station in the release of Buckskin.

Breeder seed of NE68435 was seeded in 1972 for the production of foundation seed. At the same time, 10 bushels of breeder seed was supplied to the Kansas Agricultural Experiment Station.

In 1973, the Nebraska Foundation Seed Division produced 1400 bushels of foundation seed and 117 bushels of breeder seed. The foundation seed was allocated to Nebraska growers for production of registered seed in 1974 and the breeder seed was used for the production of foundation seed in 1974.

Buckskin is as stable genetically as Scout 66.

* Release statement attached.

An occasional tall plant is the only obvious variant but the frequency of it and all other variants would be less than 0.1 percent.

Amendment received May 12, 1975 KHE

7400108

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
AGRONOMY DEPARTMENT

BUCKSKIN HARD RED WINTER WHEAT

History:

Buckskin (C.I.17263) is an increase of a single F_3 head selection from the 1962 cross, Scout/4/Quivira/2/Tenmarq/3/Marquillo/Oro. It was increased and tested as NE68435 in Nebraska yield trials beginning in 1969 and in the Southern Regional Performance Nursery in 1971.

Contributions:

Buckskin was developed cooperatively by the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U. S. Department of Agriculture. The development was supported in part by grants from the Division of Wheat Development, Marketing and Utilization, Nebraska Department of Agriculture. J. W. Schmidt, V. A. Johnson, A. F. Dreier, and P. J. Mattern of the Agronomy Department and G. Dornhoff, P. Nordquist, P. Grabouski, L. Nelson, and C. Fenster of the out-state stations identified the agronomic and quality characteristics of the variety. K. F. Finney, and J. A. Johnson and A. Ward, A. R. S. and Kansas State University, respectively, participated in the quality evaluation.

Recommendations:

Buckskin is best adapted to the South Central and Southwest cropping districts. In these districts, the production of Buckskin should significantly improve the quality of wheat being produced.

Description:

Buckskin is an awned, white-glumed variety. Awn color varies from white to black depending on the season. Beaks are long. Buckskin is slightly taller and about a day later in maturity than Scout 66, but it has somewhat better straw strength. Buckskin is moderately resistant to soil-borne mosaic, stem rust and Hessian fly. It is susceptible to leaf rust. It is similar to Scout 66 in winterhardiness. Buckskin is a strong gluten variety with excellent bread baking quality.

7400108

Seed Availability:

Production from 25 acres of foundation seed increase fields of Buckskin at Mead, Nebraska, will be available for distribution following harvest in 1973. Distribution of foundation seed to eligible certified growers will be by the Foundation Seed Division, Department of Agronomy, University of Nebraska-Lincoln.

Seed Classes:

Seed classes of Buckskin designated by the Nebraska Agricultural Experiment Station are breeder, foundation, registered, and certified. Buckskin will be submitted for registration and variety protection under P. L. 91-577 with the certification option.

Variety Release Information:

Publicity on the release of Buckskin will be on June 15, 1973.

Approved:

D G Hanway Chairman, Department of Agronomy	14 May 73 Date
E A Heinrichs Chairman, Department of Entomology	5/15/73 Date
M G Boosalis Chairman, Department of Plant Pathology	5/16/73 Date
Acting E. F. Frolik Dean, College of Agriculture	22 May 73 Date

7400108

EXHIBIT B

Botanical description of Buckskin

The botanical description of Buckskin is as follows: Plant winter-habit, moderately early, blue-green foliage, waxy bloom; height mid-tall; stem white to yellow, mid-strong; spike awned; tapering; mid-dense, erect early but nodding at maturity; glumes glabrous, white to yellow, short and narrow; shoulders narrow and square to oblique; beaks long and acuminate; awns white early but may be brown to black under certain environmental conditions, 5-9 cm long; kernels red, medium hard, moderately short, ovate; germ mid-sized; crease shallow; cheeks rounded; brush medium, not collared.

In the field, Buckskin has wider and longer leaves than Scout and does not have the "washed out" blue-green foliage color of Scout. It is somewhat taller and later in maturity than Scout.

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) Board of Regents, Uni. of Nebr. and Agr. Research Service. U.S. Dept. of Agr.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Lincoln, Nebr. 68503 - Washington, D.C. 20250

FOR OFFICIAL USE ONLY
PVPO NUMBER 7400108
VARIETY NAME OR TEMPORARY DESIGNATION
Buckskin

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:
[2] 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: Meaningless for winter wheat
[ ][ ][ ] FIRST FLOWERING
[ ][ ][ ] LAST FLOWERING

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

5. PLANT HEIGHT *(From soil level to top of head)*:
[1][1][2] CM. HIGH
[0][2] CM. TALLER THAN .....
[2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[ ][ ] CM. SHORTER THAN .....
[ ] 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
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][5] NO. OF NODES *(Originating from node above ground)*
[2][6] 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] 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
[0][9] MM. LEAF WIDTH *(First leaf below flag leaf)*
[2][9] CM. LEAF LENGTH *(First leaf below flag leaf)*:

Letter of May 2, 75

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EXHIBIT C (additional data)

Table 2. Comparative data for winter wheat varieties at Mead, Nebraska, 1973. Ten observations for plant height and 50 observations for all other traits.

Trait		Scout 66	Buckskin	HiPlains	Homestead	Sentinel
Height: cm.	Mean	109.8	112.2	101.0	87.9	90.1
	Range	103-114	105-116	90-108	80-95	84-94
Internode length: cm.	Mean	24.6	25.5	26.9	24.7	25.3
	Range	19-30	20-30	19-31	15-30	20-30
Leaf length: cm.	Mean	23.8	28.7	25.5	22.4	25.5
	Range	17-30	20-35	18-30	17-28	19-30
Leaf width: mm.	Mean	7.72	9.08	9.78	9.14	9.22
	Range	6-11	7-11	8-12	7-12	7-11
Head length: cm. (from 1st rachis node)	Mean	9.37	9.27	8.68	8.17	8.25
	Range	8.0-11.0	7.3-11.0	7.1-10.2	6.8-9.8	6.9-9.3
Head width: mm.	Mean	8.7	8.3	8.8	8.5	8.6
	Range	6-10	7-12	7-12	7-12	7-11
Awn length: cm.	Mean	7.78	7.61	7.37	7.42	6.95
	Range	5.4-10.0	5.3-9.4	4.6-9.3	5.5-9.5	4.9-9.2
Glume length: mm.	Mean	10.3	7.1	7.3	7.2	7.4
	Range	8-12	6-9	6-9	6-9	6-9
Glume width: mm.	Mean	3.9	2.7	3.0	3.1	3.3
	Range	3-5	2-4	2-4	2-4	3-4
Beak length: mm.	Mean	2.7	9.1	9.5	3.0	1.9
	Range	1-10	5-17	7-17	2-6	1-3

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EXHIBIT D

Data Indicative of Novelty of Buckskin

The Buckskin variety can be distinguished from other currently-grown hard red winter wheat varieties when environmental conditions permit the development of brown to black awns as the variety matures. Probable selections from C. I. 12406, such as Golden 50 and Rodco, that could have this trait do not have the adult plant stem rust resistance of Buckskin. While in field appearance Buckskin is more similar to Scout 66 than to other varieties, it can be readily be distinguished from Scout 66 by its long beaks, intermediate reaction to soil-borne mosaic virus, Hessian fly reaction similar to Parker and strong dough handling properties, whereas Scout 66 has very short beaks (table 2, Exhibit C) and is very susceptible to soil-borne mosaic virus (NebGuide G74-202 attached). Thus Buckskin can be described as:

1. An awned hard red winter wheat that has

   a. Moderate field resistance to current stem rust races.

   b. Seedling resistance to a number of stem rust races (see table 4).

   c. An intermediate reaction to soil-borne mosaic virus (see table 5).

   d. Hessian fly reactions similar to the Parker variety (see table 6).

   e. Susceptibility to leaf rust.

   f. Improved lodging resistance as compared with Scout 66 (see table 7).

   g. A hard red winter wheat with strong gluten dough handling properties (see table 8 and figures 1 and 2).

The Buckskin variety may under certain environmental conditions show the head and peduncle melanism (pseudo-black chaff) associated with the field stem rust resistance obtained from the Hope wheat variety.

'BuckSkin' 7400108

FORM GR-470-6 (REVERSE)

11. HEAD:

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

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

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

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

[0 9] CM. LENGTH

[0 8] MM. WIDTH

12. GLUMES AT MATURITY:

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

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

[1] 1 Glabrous 2 Pubescent

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

really square to oblique

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

13. COLEOPTILE COLOR:

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

14. SEEDLING ANTHOCYANIN:

[ ] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

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

16. SEED:

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

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

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

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

[6] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK 6 = 90% black, 10% brown to black

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

[0 6] MM. LENGTH

[0 3] MM. WIDTH

[2 6] GM. PER 1000 SEEDS

17. SEED CREASE:

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

[ ] 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)

[ ] STEM RUST *(Races)* Suec. to some Res. to some

[1] LEAF RUST *(Races)* _____

[0] STRIPE RUST *(Races)* _____

[ ] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER *(Specify)* Moderately resistant to soil borne mosaic

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: Mod. Res. 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	Scout	Seed size	Lancer
Leaf size	Scout	Seed shape	Lancer
Leaf color	Scout	Coleoptile elongation	-
Leaf carriage	Scout	Seedling pigmentation	Scout

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.

RECEIVED AUG 23 1974 U.S. DEPARTMENT OF AGRICULTURE

NebGuide

7400108

G74-202

Soil-Borne Wheat Mosaic

L. T. Palmer, M. K. Brakke and W. G. Langenberg
Extension Plant Pathologist, Research Chemist, ARS, USDA, and
Research Plant Pathologist, ARS, USDA

Soil-borne wheat mosaic virus (SBWMV) infects wheat *(Triticum aestivum* L.) growing in central and eastern Nebraska. This virus was first reported by Illinois workers in 1919, and since then the disease has spread to most of the eastern soft red and hard red winter wheat areas of the U.S. This virus has been reported in Japan, Italy, Egypt and Brazil.

Losses in wheat production due to this virus vary from year to year because of the varieties of wheat grown, strains of the virus, and environmental conditions favoring disease development. Yield reductions in infested areas of individual fields will vary from 0-50 percent.

Symptoms

The virus comprises a number of strains that induce symptoms ranging from mild green to yellow mottling and striping (mosaic) and from moderate to severe stunting. Sometimes, certain wheat varieties have a rosette appearance. Leaf symptoms *(Figure 1)* first appear in early spring, persist until heading time, then disappear. Symptom expression is favored by temperatures below 68 degrees Fahrenheit. Infected plants are stunted and yields are reduced. In the field, the disease appears as irregular patches of light color.

Virus

The virus particles are stiff rods of two lengths, 110-160 nm (43-63 millionths of an inch) and 300 nm (108 millionths of an inch) long and 20 nm (8 millionths of an inch) wide. The length of the shorter rods may vary with the strain of virus, but the significance of this variation is not known. The virus rods appear to be hollow. The virus has remained infectious for more than 11 years in dried leaves.

Figure 1. Wheat leaves; (left) a healthy leaf; (right) three leaves showing symptoms of soil-borne mosaic virus.

Vector

A fungus, *Polymyxa graminis* Led., which is an obligate parasite of roots, is the vector or agent that transmits the virus. The virus particles are either inside the special spores of the fungus (zoospores and resting spores) or attached to the surface of the spores. The fungus invades the

Table 4 Seedling Reaction of the 1974 Northern Regional Hard Red Winter Wheat Performance Nursery to *Puccinia graminis* f. sp. *tritici*.
(by D. V. McVey, Cereal Rust Laboratory, ARS, University of Minnesota, St. Paul, MN)

				Reaction Produced by Isolates												
				72-45-855C	70-44-644A	72-45-1079B	72-21-1184B	65-39-2	72-4-1A	72-14-504C	72-00-53A	71-21-584B	72-25-639C	72-44-703C	72-00-1370C	72-11-486B
Entry No.	Variety or Cross	C.I. or Sel. No.	Source	MCB* 56	HFC 17	HJC 17	TBM 15	TLM 15B-2	TNM 15B-2	RPL 11-32-113	RTQ 11-32-113	RHR 11-32-113	RKQ 11-32-113	QSH	QFB 151	QT
1.	Kharkof	CI 1442	check	S	R	R	S	S	S	R	R	S	R	I	R	I
2.	Warrior	CI 13190	check	S	S	S	S	S	S	S	S	S	S	I	I	I
3.	Pnc/3*Cnn/3/Ky58/Nth/2/2*Cnn/Tm/Mi/ Hope/4/Sut	NE69441	Nebraska	R	R	R	R	R	R	R	R	R	R	R	R	R
4.	"	NE69442	"	R	R	R	R	R	R	R	R	R	R	R	R	R
5.	Warrior/Scout	NE70711	"	S	S	S	S	S	S	S,R	S	S	R	I	R	R
6.	" "	NE70712	"	S	S	S	S	S	S	S	S	S	S	I	R	I
7.	Hume/Nebr. Semidwarf Comp.	SD697	So. Dak.	S	R	R	R	R	R	R	R	R	R	S,R	R	R
8.	SS/D8//Wnt/4/Hume/3/SS/12500/Rch/ Pn//Cnn	SD7216	" "	R	R	R	R	R	R	R	R	R	R	R	R	R
9.	"	SD7219	" "	R	S	S	S	R	S	S	R,S	S	S	I	I	I
10.	"	SD72134	" "	R	R	R	R	R	R	R	R	R	R	R	R	R
11.	"	SD72172	" "	R	R	S	R	R	R	R	R	S	R	R	R	I
12.	"	SD72175	" "	R	S	S	R	R	R	R	R	R	R	R	R	R
13.	"	SD72193	" "	R	R	R	R	R	R	R	R	R	R	R,S	R	R
14.	SS/D8//Wnt/3/Urr/III -54-12	SD7227	" "	R	R	R	R	I	I	R	R	S	S	R	R	R
15.	Yg*3/Cnn Sel. 2-3-13-6	MT6715	Montana	S	S	S	S	S	S	R	R	S	S,R	S	R,S	S
16.	BWH 1376-8/YTO 117, Sel. 1-3-2-1	MT6916	"	S	R,S	S	S	S	S	S	S	S	R	S	I	S
17.	Nb176/Y 18181//YTO 117, Sel. 1-1-4-3	MT6930	"	S	S,R	S	S	S	S	S	S	S	R	R	R	R
18.	Homestead	CI 17264	Nebraska	R	R	R	R	R	R	R	R	R	R	S	R	S
19.	Sentinel	CI 17265	"	R	R	R	R	R	R	R	R	R	R	S	R	S
20.	Buckskin	CI 17263	"	S	R,S	R	R	R	R	R	R	S	R	S	I	S
21.	Sage	KS70H179	Kansas	R	R	R	R	R	R	R	R	R	R	R	R	R
22.	Cloud	KS7016	"	R	R	R	R	R	R	R	R	R	R	R	R	R

*Cereal Rust Laboratory designation based upon 12 isogenic lines.

Table 5 . Field reaction to soil-borne mosaic virus for selected entries, 1972-73.

Variety	1972				1973			
	Newton, Ks	Powhattan, Ks	Urbana, Ill.		Newton, Ks	Powhattan, Ks	Urbana, Ill.	
	Response	Response	% Incidence	Severity	Response	Response	% Incidence	Severity
				0-5				0-10
Pawnee	S	MS	40.0	3	S	S	50	6
Bison (Susc. Check)	S	MS	2.5	1	S	S	10	1(10% R)
Concho (Res. Check)	R	R	2.5	1	R	R	0	0
Homstead	R	R	20	3	R	R	0	0
Sentinel	S	MS-	50	3	MS-	S	30	7
Buckskin	MR	R-	60	2	MR-	S	10	5
HiPlains	S	MR	50	2.5	MS	S	0	0

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Figure 2. Representative mixograms for six Nebraska hard red winter wheats harvested in Nebraska in 1973.

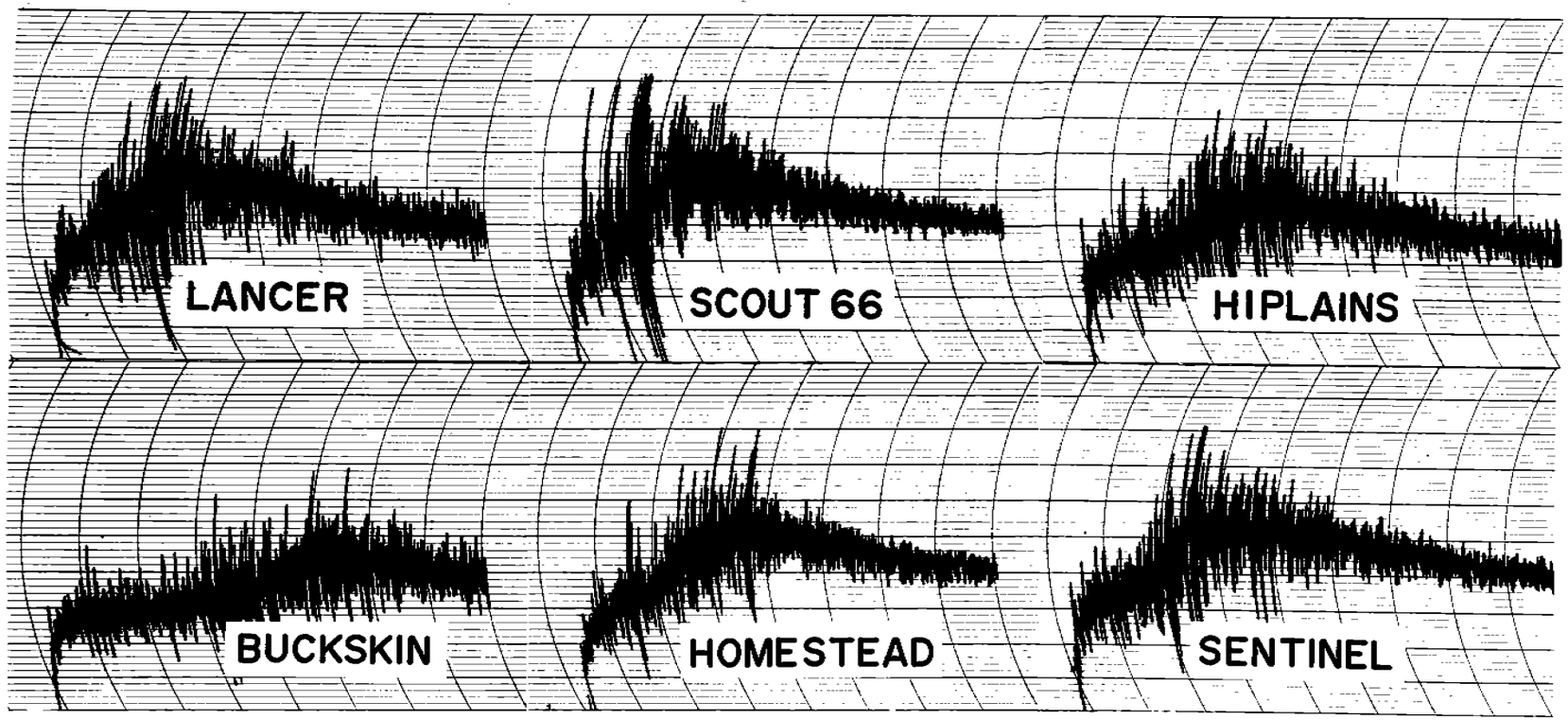

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EXHIBIT E

Statement of the Basis of the Applicant's Ownership

Buckskin Hard Red Winter Wheat is a product of the breeding program of ten Nebraska Agricultural Experiment Station, University of Nebraska-Lincoln, Lincoln, Nebraska. The breeders were Dr. John W. Schmidt and Dr. Virgil A. Johnson, employees of the Experiment Station (Department of Agronomy) and the Agricultural Research Service, USDA (stationed and functioning also as a staff member in the Department of Agronomy), respectively.

By established policy, release of varieties developed by the Nebraska Agricultural Experiment Station programs is the sole prerogative of the Experiment Station as the responsible agency providing the staff and funds for the breeding program.

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SUBJECT: Plant Variety Protection Certificates on Buckskin (C.I. 17263), Homestead (C.I. 17264), Sentinel (C.I. 17265), and HiPlains (C.I. 17262)

TO: Stanley F. Rollin, Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificates on the subject wheat varieties issue with the following notice on each Certificate:

> The right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is hereby waived.

FOR THE BOARD OF REGENTS - UNIVERSITY OF NEBRASKA

7/31/74
Date

Miles Tommeraasen, Vice Chancellor for Business & Finance

FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE

8/21/74
Date

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roots in the fall, when the soil is cool and wet *(Figure 2).*

Host Range

Soil-borne wheat mosaic virus occurs in fall-sown wheat, rye, barley, annual bromegrass, and some weeds.

Disease Cycle

The virus survives in the soil from season to season, protected by the fungus vector. Once the soil becomes infested, the virus and the vector persist for many years. The disease is associated with wet soil and is usually found in the low-lying areas of a field. Note the light areas of the field and irregular pattern in *Figure 3.* Symptoms seldom appear in the fall, but are expressed as a light green color in infected plants in early spring. The virus and its fungal vector are spread from field to field in soil on equipment. The virus is not seed borne.

Control

Growing resistant varieties is the only method of control. Several new releases by the Nebraska Agriculture Experiment Station are resistant to SBWMV. 'Homestead' and 'Buckskin' are resistant and moderately resistant, respectively, whereas 'Centurk', 'Gage' and 'Sentinel' are moderately susceptible. All other wheat varieties* suggested for planting in Nebraska are susceptible. The disease increases in fields planted year after year to susceptible varieties, but decreases in fields planted to resistant varieties or to other crops.

The Cooperative Extension Service provides information and educational programs to all people without regard to race, color or national origin.

*includes Scout and Scout 66

Figure 2. *Polymyxa graminis* resting spores in a wheat root. Photo courtesy of C.M.I.

Figure 3. Symptoms of SBWMV in the field. Light areas are infected with the virus and darker areas are healthy.

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Extension work in "Agriculture, Home Economics and subjects relating thereto," The Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Cooperating with the Counties and the U. S. Department of Agriculture
J. L. Adams, Director

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