No. 7400110

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

* [Waived]

WHEAT

'HiPlains'

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

PLANT VARIETY PROTECTION OFFICE · U.S. DEPARTMENT OF AGRICULTURE

Attest:

L. R. Rollin

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz

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 HiPlains (C.I. 17262)	2. KIND NAME Hard Red-Winter Wheat	FOR OFFICIAL USE ONLY PV NUMBER 7400110
3. GENUS AND SPECIES NAME Triticum aestirum 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 / $250.00 / $250.00 / BALANCE DUE $ — / $ — / $ —
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 402-472-7211 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

June 4, 1974
(DATE)

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

8/21/74
(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (REVERSE)

RECEIVED
AUG 23 1974
AMS, GRAIN DIV.
PVPO

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.

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EXHIBIT A

Origin and Breeding History of HiPlains

Pedigree: Gage/Lancer

Date of Cross: Cross 62169, 1962

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

Breeding system: Mass-pedigree

The breeding history of HiPlains is summarized in Table 1. The decision to release NE68427 (C.I.17262) under the name HIPLAINS was made by the Nebraska Agricultural Experiment Station on March 29, 1973. Public release of information on HiPlains as a variety occurred on June 15, 1973.* The North Central Region, Agricultural Research Service, U. S. Department of Agriculture and the Nebraska Agricultural Research Service cooperated in this release.

Breeder seed of NE68427 was seeded in 1972 for the production of foundation seed in 1973. In 1973, the Nebraska Foundation Seed Division produced 950 bushels of foundation seed and 100 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 to produce foundation seed in 1974.

HiPlains is as stable genetically as its parent varieties Gage and Lancer.

* Release statement attached.

No obvious variants noted, frequency of all variants less than 0.1 percent. amendment received may 12, 1975 K.H.E.

7400110

Table 1. Breeding History of HiPlains hard red winter wheat.

Year	Generation	Nursery	Disposition
1962	F_0	Cross 62169 made in greenhouse at Lincoln, Nebraska	To greenhouse for F_1 seed production
1963	F_1	Greenhouse	Advanced to F_2 nursery
1964	F_2	Bulk hybrid	Advanced to F_3 nursery
1965	F_3	Bulk hybrid	Heads selected and advanced to head row nursery.
1966	F_4	Head-row nursery	Row selected and advanced to preliminary observation nursery at Mead
1967	F_5	Observation nursery	Line selected and advanced to observation nursery at Mead and North Platte
1968	F_6	Observation nursery at Mead and North Platte	Plot 427 recognized as having merit and Nebraska Selection Number 68427 assigned. Advanced to Nebraska Intrastate Nursery. Entered in International Winter Wheat Rust Nursery and Uniform Winterhardiness Nursery.
1969	F_7	Nebraska Intrastate Nursery International Winter Wheat Rust Nursery Uniform Winterhardiness Nursery	Continued in tests
1970	F_8	Continued in all of the above nurseries.	Continued in tests and advanced to Nebraska Outstate Tests and Northern Regional Performance Nursery and Collaborative Milling and Baking Tests.
1971	F_9	Continued in all of the above nurseries plus the Northern Regional Performance Nursery and Collaborators Milling and Baking Tests.	Continued in all tests. To breeder seed increase plot

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Table 1. continued

Year	Generation	Nursery	Disposition
1972	F_{10}	All tests continued. Entered in Soil-borne Mosaic Nursery	Continued in all tests. Breeder seed to Foundation Seed Division for production of foundation seed.
1973	F_{11}	All tests continued Foundation seed productive	Cereal Accession Number 17262 assigned. Released to growers.

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EXHIBIT B

Botanical description of HiPlains

The botanical description of HiPlains is as follows: Plant winter-habit, midseason in maturity; height, moderately short; stem white to yellow, mid-strong; spike awned, tapering, mid-dense, erect before maturity and tending to stay erect after maturity; glumes glabrous, white to yellow, short and narrow, shoulders narrow and square to oblique; beaks long and acuminate; awns white 5-9 cm long; kernels red, hard, ovate to elliptical; germ mid-sized; crease shallow; cheeks rounded; brush medium and not collared.

HiPlains is somewhat similar to Gage in field appearance but is later in maturity. Foliage is green and has a waxy bloom. Leaf length is longer and considerably wider than that in Scout. HiPlains may shatter under certain environmental conditions.

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) Board of Regents, University of Nebraska, and Agricultural Research Service, U.S. Department of Agriculture

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*

Lincoln, Nebraska 68503--Washington D.C. 20250

FOR OFFICIAL USE ONLY

PVPO NUMBER 7400110

VARIETY NAME OR TEMPORARY DESIGNATION HiPlains

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 in winter wheat

FIRST FLOWERING

LAST FLOWERING

4. MATURITY *(50% Flowering)*:

NO. OF DAYS *EARLIER* THAN .....

0 3 NO. OF DAYS *LATER* THAN .....

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

2

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

1 0 1 CM. HIGH

CM. TALLER THAN .....

0 9 CM. SHORTER THAN .....

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

2

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

1 — Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

0 5 NO. OF NODES *(Originating from node above ground)*

2 — Waxy bloom: 1 = ABSENT 2 = PRESENT

1 — Internodes: 1 = HOLLOW 2 = SOLID

2 7 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

1 0 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

2 6 CM. LEAF LENGTH *(First leaf below flag leaf)*:

FEB 1(1975

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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 (from 1st rachis node)

[0 9] 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] 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

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

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

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (*Specify*) About 40% of the kernels had part of the kernel black and part brown. These could not be categorically placed in the black class but might have been black had the list continued beyond the usual reading time.

[0 6] MM. LENGTH [0 3] MM. WIDTH [2 6] GM. PER 100 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)

[2] STEM RUST (*Races*) _____ [1] LEAF RUST (*Races*) _____ [0] STRIPE RUST (*Races*) _____ [0] LOOSE SMUT

[ ] POWDERY MILDEW [0] BUNT [ ] OTHER (*Specify*) _____

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

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

[ ] OTHER (*Specify*) _____

HESSIAN FLY RACES: [1] 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	Lancer	Seed size	Lancer
Leaf size	Gage	Seed shape	Lancer
Leaf color	Gage	Coleoptile elongation	----
Leaf carriage	Gage	Seedling pigmentation	Lancer

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 GR-470-6 (REVERSE) 'Hi Plains' 7400110

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 (from 1st rachis node) [0 9] 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.)

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[1] 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

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

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

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) About 40% of the kernels had part of the kernel black and part brown. These could not be categorically placed in the black class but might have been black had the list continued beyond the usual reading time.

[0 6] MM. LENGTH [0 3] MM. WIDTH [2 6] GM. PER 100 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)

[2] STEM RUST (Races) ____ [1] LEAF RUST (Races) ____ [0] STRIPE RUST (Races) ____ [0] LOOSE SMUT

[ ] POWDERY MILDEW [0] BUNT [ ] OTHER (Specify) ____

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

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

[ ] OTHER (Specify) ____

HESSIAN FLY RACES: [1] 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	Lancer	Seed size	Lancer
Leaf size	Gage	Seed shape	Lancer
Leaf color	Gage	Coleoptile elongation	----
Leaf carriage	Gage	Seedling pigmentation	Lancer

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.

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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 C (Additional data)

Table 3. Comparative kernel data for winter wheats grown in Nebraska in 1973. Means of five locations. Kernel length and width based on 25 kernel counts for each location.

Trait	Scout 66	Buckskin	HiPlains	Homestead	Sentinel
1000 kernel weight, grams	28.14	25.57	25.86	26.72	26.59
Kernel length: (length of 25 kernels, mm)	161.0	155.6	147.8	160.0	155.2
Kernel width: (width of 25 kernels, mm)	67.8	65.2	65.4	68.4	68.2

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EXHIBIT D

Data Indicative of Novelty of HiPlains

There is no one item that contributes novelty to the HiPlains variety. It can be distinguished from its parents and other varieties on a cumulative basis, but does have a general resemblance to both of its parents, Gage and Lancer. Overall in field appearances it resembles Gage more than any other variety. It is similar to Gage in beak length (long beaks) and has a similar "grainy" field appearance.

One of the most distinctive features of HiPlains is its broad field and seedling stem rust resistance. In this it is similar to Gage and to some of the soft winter wheat from Indiana. However, it is readily distinguished from these soft wheats by grain characteristics. It resembles Lancer in maturity and in its moderately strong dough handling properties (table 4 and figures 1 and 2). Its mixogram pattern (figure 3) clearly distinguishes its dough mixing characteristics from those of Gage. It has moderately stiff straw (tables 6 and 8) superior to that of Gage. It is susceptible to soil-borne mosaic whereas Gage is intermediate in reaction (table 7). In Nebraska tests, HiPlains has bloomed one and one-half days later, been similar in plant height, had superior straw strength, and produced grain that averaged one and one-half grams less in weight per 1000 kernels than Gage (table 8).

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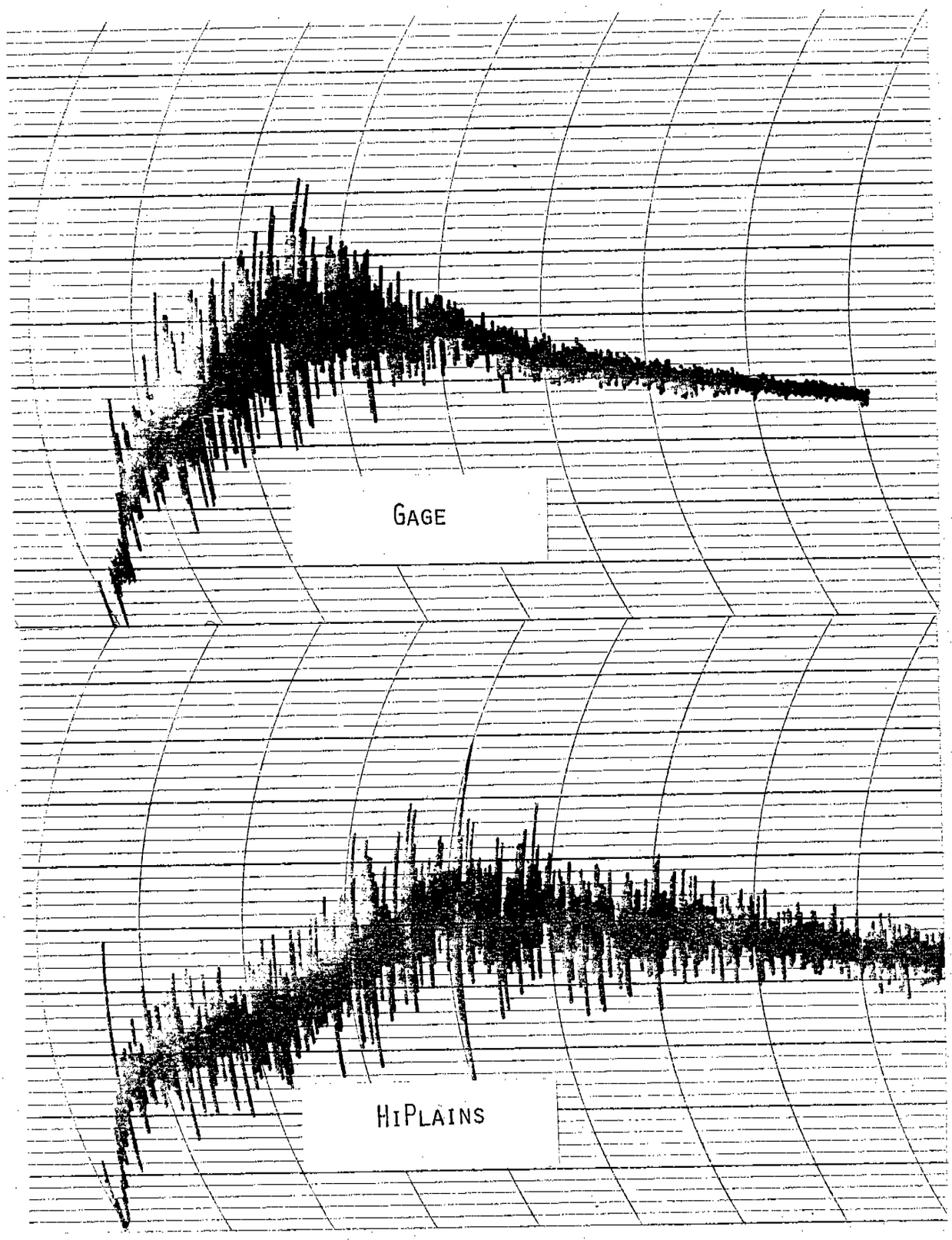

Figure 3. Representative mixograms for Gage and HiPlains hard red winter wheats harvested in Nebraska in 1973.

Table 4. Chemical, Milling, and Baking Data for some entries of the Kansas Intrastate Nursery Composites of Hard Winter Wheat Progenies Harvested in 1973.[1/]
Hard Winter Wheat Quality Research Unit, ARS, Manhattan, Kansas.

Variety	C.I. or Sel. No.	Wheat[2/] Wt./Bu. lbs.	Wheat[2/] Ash %	Wheat[2/] Protein %	Wheat[2/] Flour yield %	Flour[2/] Ash %	Flour[2/] Protein %	Bread-baking Data[2/] Absorption %	Mixing time[3/] As Rec'd min.	Mixing time[3/] Corrected to min.	$KBrO_3$ Requirement mg.	Crumb Grain	Loaf volume As Rec'd cc.	Loaf volume Corrected to cc.
									12.0% P					11.0% P
Parker	13285	62.0	1.67	12.1	72.8	.38	10.8	59.8	4-3/4	4-1/8	1	Q-S	789	802
Scout	13546	60.8	1.54	12.0	73.8	.40	10.9	59.4	3-3/8	2-7/8	2	S	845	852
HiPlains	NE68427	60.8	1.61	11.3	73.0	.41	10.4	59.7	4-3/4	3-7/8	1-2	S	846	890
Buckskin	NE68435	60.1	1.51	11.7	71.1	.39	10.7	60.9	6-1/8	5-1/8	0-1	S	864	886
Homestead	NE68437	60.3	1.58	12.5	73.8	.37	11.5	59.2	4-5/8	4-3/8	1-2	S	890	855
Sentinel	NE68440	60.0	1.58	12.4	72.2	.38	11.3	62.6	4-1/2	4-1/8	1	S	875	854

[1/] Chemical data expressed on a 14% moisture basis.

[2/] S, Q, and U - Satisfactory, questionable, and unsatisfactory quality with respect to properties in question. A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating, in general, characterizes a variety as undesirable for hard wheat milling and breadmaking purposes. Crumb colors were satisfactory for all entries.

[3/] Mixing time used in baking is evaluated in conjunction with other mixing properties obtained from the 10-g. mixogram.

7400110

Table 5a. Infection type produced by isolates of wheat stem rust on selected commercial hard red winter wheats. (Adapted from data supplied by the Cereal Rust Laboratory, ARS, USDA, University of Minnesota, St. Paul, Minnesota).

Variety	59-14-19	70-44-64C	72-4-1A	70-11-98B	72-00-53A	72-00-1370C	72-44-703C	73-45-977B
CRL Race	MBC	HJC	TNM	RKQ	RTQ	QFB	QSH	QCC
Standard Race	56	17	15B-2	32	32	151	151	151
Gage	2-	2-	0;1,S	2	2	2-	2-	2-
Warrior	S	S	S	S	S	23	23	23
Scout 66	S	S	0;S	0;	0;	23	2	0
Homestead	0;	0;	0;	0;	0;	0;	S	0;
Sentinel	0;	2	0;	0;	0;	0;	S	0;
Buckskin	S	2	0;	0;	0;	23	S	0;
HiPlains	32	2-	0;1	0;	0;	0;	2-	0;
Centurk	0;	0;	0;	0;	0;	0;	S	0
Trapper	0;	0;	0;	S	S	0;	S	0;
Agent	2	2	2	2	2	2	2	2
Lancer	S	0;	S	S	0;1	23	S	R
Triumph	S	2	S	2	2	2	2	2

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Table 7. 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 0-5	Response	Response	% Incidence	Severity 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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Table 8. Comparative maturity, height, lodging and 1000-kernel weight data for Gage and HiPlains from Nebraska yield tests.

Variety	Maturity, heading days after May 1 (11 tests)	Height, inches (16 tests)	Lodging 0-9 basis (6 tests)	1000-kernel weight, grams (8 tests)
Gage	29.9	41.75	3.7	28.6
HiPlains	31.4	41.50	2.0	27.1

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EXHIBIT E

Statement of the Basis of the Applicant's Ownership

HiPlains Hard Red Winter Wheat is a product of the breeding program of the 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.

7400110

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

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
AGRONOMY DEPARTMENT

HIPLAINS HARD RED WINTER WHEAT

History:

HiPlains (C.I.17262) is an increase of a single F_3 head selection from the 1962 cross, Gage/Lancer. It was increased and tested as NE68427. It was entered in Nebraska tests in 1969 and in the Northern Regional Performance Nursery in 1971.

Contributions:

HiPlains 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:

HiPlains is best adapted to the western half of the Central, the northern half of the Southwest, and all of the Western Cropping District. It is intended as a replacement for the Lancer variety which is decreasing in acreage.

Description:

HiPlains is an awned, long-beaked, white-glumed variety. It is slightly shorter in height than Lancer and better-strawed. In maturity, HiPlains is as late or slightly later (perhaps 1 day) in maturity as Lancer. It has good stem rust resistance and is moderately resistant to leaf rust and Hessian fly. It is about as winterhardy as Lancer. It may shatter more easily than Lancer. Bread baking quality of HiPlains is excellent.

Seed Availability:

Production from 25 acres of foundation seed increase fields of HiPlains 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.

1 | 0 MM. LEAF WIDTH *(First leaf below flag leaf)*

2 | 6 CM. LEAF LENGTH *(First leaf below flag leaf)*:

EXHIBIT D

Data Indicative of Novelty of HiPlains

There is no one item that contributes novelty to the HiPlains variety. It can be distinguished from other varieties only on a cumulative basis. It resembles both of its parents, Gage and Lancer.

It is later in maturity and has stronger dough handling properties than Gage and similar to those of Lancer (see table 4 and figures 1 and 2). It has broad field and seedling stem rust resistance not found in Lancer (see table 5). In field appearance it is quite similar to Gage except for a marked difference in maturity. It has the tendency to shatter when over-ripe similar to Gage. It has moderately stiff straw (see table 6). It is susceptible to soil-borne mosaic (see table 7.)

Fig. 1. Mixograms (10-g.) for the Kansas Intrastate Nursery composites of hard winter wheat progenies harvested in 1973. Hard Winter Wheat Quality Research Unit, ARS, Manhattan, Kansas.

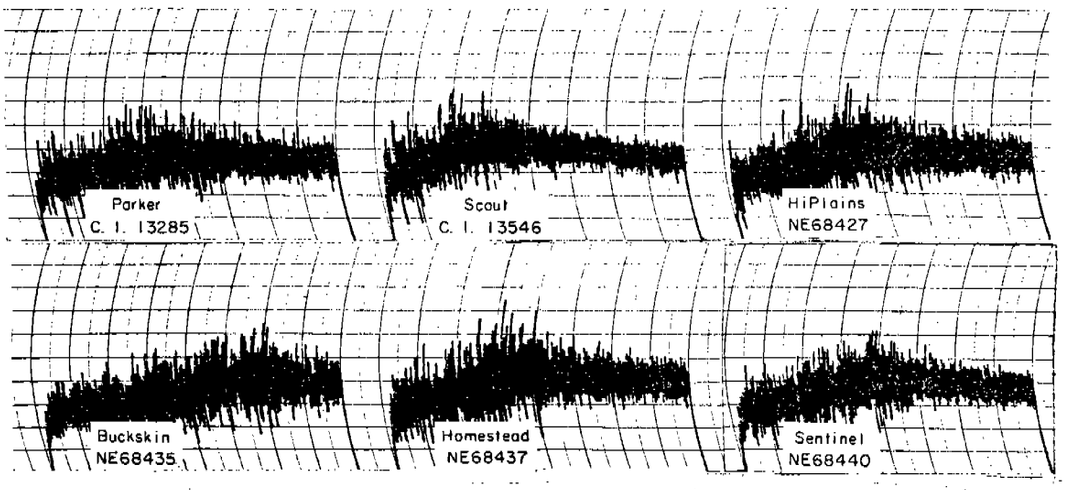

Figure 2. Representative mixograms for six Nebraska hard red winter wheats harvested in Nebraska in 1973.

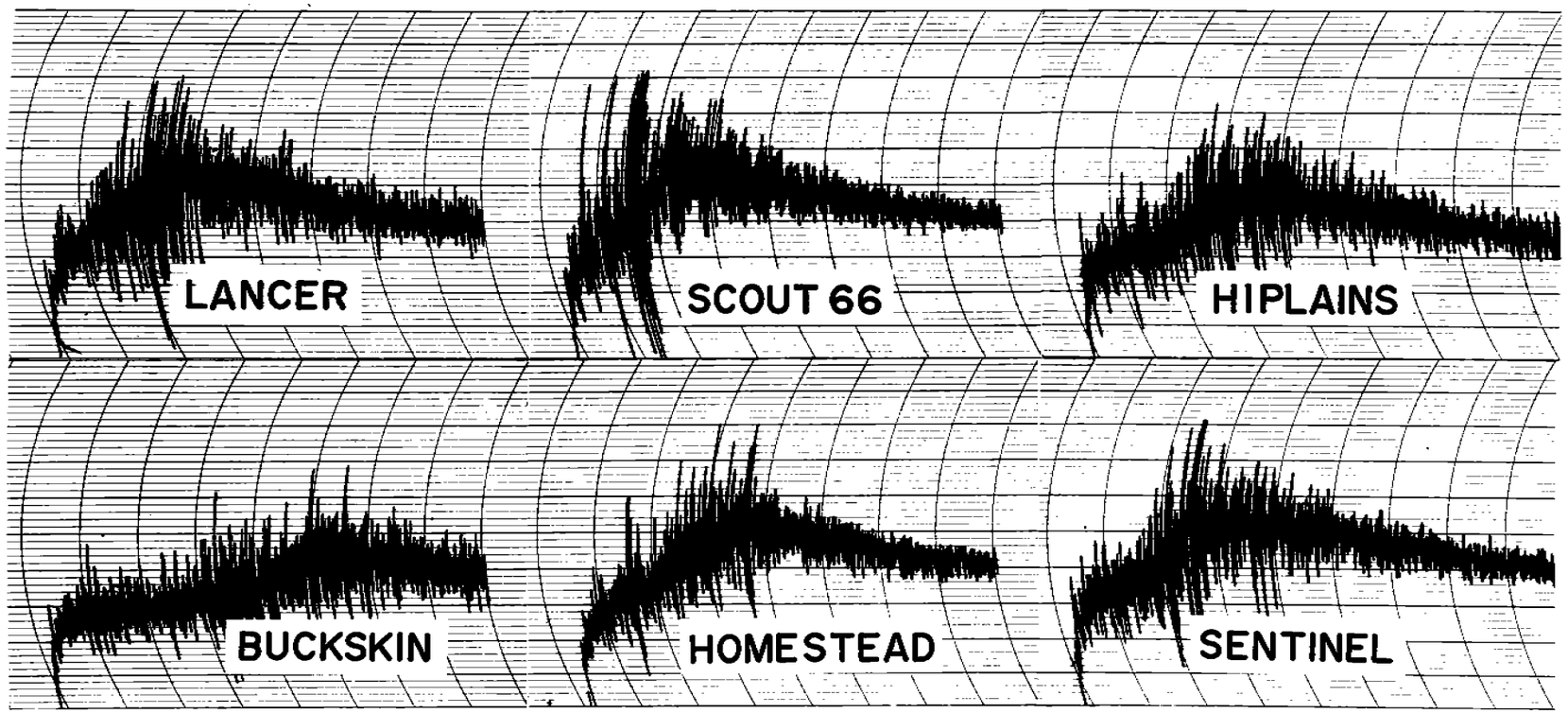

Table 5. Seedling Reaction of the 1974 Southern Regional Hard Red Winter Wheat Performance Nursery to *Puccinia graminis* f. sp. *tritici*.
(by D. V. McVey, Cereal Rust Laboratory, ARS, University of Minnesota, St. Paul, MN)

				Reaction Produced by Isolates												
				72-45-855C	70-44-64A	72-45-1079B	72-21-1184B	65-29-2	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. No. or Sel. No.	Source	MBC* 56	HFC 17	HJC	TBM 15	TLM 15B2	TNM	RPL 11-32-113	RTQ	RHR	RKQ	QSH 151	QFB	QTH
1.	Kharkof	1442	check	S	R	R	S	S	S	R	R	S	R	I	R	I
2.	Scout 66	13996	check	S	S	S	R	R	R,S	R	R	S	S	R	I	I
3.	Sage	KS70H179	Kansas	R	R	R	R	R	R	R	R	R	R	R	R	R
4.	Short Wheat/Sct. Comp.	TX69A330-1	Texas	S	S	S	S	S	S	S	S	S	S	R	R	S
5.	" " " "	TX69A460-1	"	S	S	S	R	R	R	R	R	S	R	R	R	S
6.	" " " "	TX69A509-1	"	S	S	S	S	S	S	S	S	S	R	R	R	I
7.	" " " "	TX69A456-1	"	S	S	S	I	R	I	R	R	R	R	S	I	S
8.	" " " "	TX69A345-2	"	S	S	S	R	R	R	R	R	S	R	I	R	S
9.	62A2712/Centurk	TX71A801	"	S	R	R	R,S	S	S,R	S,R	S,R	I	R	R	R	-
10.	Ottawa/5*Scout	KS70H208	Kansas	R	S	S	R	R	R	R	R	S	S	R	I	I
11.	" "	KS70H210	"	R	S	S	R	R	R	R	R	S	R	R	I	I
12.	II21183/2643/Lcr/3/KS62	CO725055	Colorado	R	R,S	R	R	R	R	R	R	I	R	R	R	I
13.	"	CO725052	"	R	R	R	R	R	R	R	R	I	R	R	R	R
14.	Nrn16/CI 12500//Bsn	NM62-124	N. Mexico	R	S	S	S	S	S	S	S	S	S	R	R	R
15.	Composite Cross	Funk 7166	Funk Seeds	S	S	S	S	S	S	S	S	S	S	S	R	S
16.	" "	Funk 7173	" "	R	S	S	S	-	S	S	S	-	-	-	-	-
17.	" "	Funk 7174	" "	R	S	S	S	S	S	S	S	S	S	S	I	S
18.	Atlas 66/Cmn//Lcr	NE701132	Nebraska	R	R	S	R	R	R	R	R	S	R	S	R	S
19.	Scout Selection	OK66V2621	Oklahoma	S	S	S	R	R	R	R	R	S	S	S	I	I
20.	" "	OK66V2629	"	S	S	S	R	R	R	R	R	S	S	S	I	S
21.	" "	OK66V2619	"	I	S	S	R	R	R	R	R	S	S	S	I	I
22.	HiPlains	17262	Nebraska		R	R	R	R	R	R	R	R	R	R	R	R
23.	Centurk	15075	"	R	R	R	R	R	R	R	R	R	R	S	R	S

*Cereal Rust Laboratory designation based upon 12 isogenic lines.

EXHIBIT A

Origin and Breeding History of HiPlains

Pedigree: Gage/Lancer

Date of Cross: Cross 62169, 1962

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

Breeding system: Mass-pedigree

The breeding history of HiPlains is summarized in table 1. The decision to release NE68427 (C.I.17262) under the name HIPLAINS was made by the Nebraska Agricultural Experiment Station on March 29, 1973. Public release of information on HiPlains as a variety occurred on June 15, 1973*. The North Central Region, Agricultural Research Service, U. S. Department of Agriculture and the Nebraska Agricultural Research Service cooperated in this release.

Breeder seed of NE68427 was seeded in 1972 for the production of foundation seed in 1973. In 1973, the Nebraska Foundation Seed Division produced 950 bushels of foundation seed and 100 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 to produce foundation seed in 1974.

* Release statement attached.

Changes in Application No. 7400110, Wheat, 'HiPlains'

1. On Exhibit A, for type and frequency of variants add:

   No obvious variants noted, frequency of all variants less than 0.1 percent.

EXHIBIT D

Data Indicative of Novelty of HiPlains

There is no one item that contributes novelty to the HiPlains variety. It can be distinguished from its parents and other varieties on a cumulative basis, but does have a general resemblance to both of its parents, Gage and Lancer.

One of the most distinctive features of HiPlains is its broad field and seedling stem rust resistance. In this it is similar to Gage (tables 5 and 5a) and to some of the soft winter wheats from Indiana. However, it is readily distinguished from the soft wheats by grain characteristics and its seed size is smaller than that of Gage. It resembles Lancer in maturity and in moderatively strong dough handling properties (see table 4 and figures 1 and 2). In field appearance it is quite similar to Gage except for a marked difference in maturity. It has moderately stiff straw (see table 6). It is susceptible to soil-borne mosaic whereas Gage is intermediate in reaction (see table 7).

Novelty

7400110 wheat

'Hi Plains'

'Hi Plains' is most similar to 'Gage' but 'Hi Plains' ~~[illegible]~~ blooms one and one-half days later than 'Gage' in Nebraska. ~~[illegible]~~ can be distinguished from 'Gage' by the mixogram pattern.

This difference in [illegible] is [illegible]
Kansas AES Research Report of [illegible] 219 19[illegible]

Issued

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
AGRONOMY DEPARTMENT

HIPLAINS HARD RED WINTER WHEAT

History:

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Recommendations:

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Description:

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Seed Availability:

Production from 25 acres of foundation seed increase fields of HiPlains 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 HiPlains designated by the Nebraska Agricultural Experiment Station are breeder, foundation, registered and certified. HiPlains 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 HiPlains will be on June 15, 1973.

Approved:

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

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, University of Nebraska and Agricultural Research Service, U. S. Department of Agriculture

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

FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME OR TEMPORARY DESIGNATION: HiPlains

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 in winter wheat

[ ][ ][ ] FIRST FLOWERING

[ ][ ][ ] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

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

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

[0][3] NO. OF DAYS *LATER* THAN .....

[2]

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

[1][0][1] CM. HIGH

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

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

[0][9] CM. SHORTER THAN .....

[2]

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] 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][7] 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

[1][0] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][6] CM. LEAF LENGTH *(First leaf below flag leaf)*:

FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3. middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = LAVATE 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 (from 1st rachis node)

[0 9] 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] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

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

16. SEED:

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

4 = ovate to 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= 40% brown to black, 60% 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)

[2] STEM RUST (Races) _____

[1] LEAF RUST (Races) _____

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[ ] POWDERY MILDEW

[0] 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: [1] 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	Lancer	Seed size	Lancer
Leaf size	Gage	Seed shape	Lancer
Leaf color	Gage	Coleoptile elongation	---
Leaf carriage	Gage	Seedling pigmentation	Lancer

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.