



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seed Research-Division of
Agrigenetics Corporation

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 eighteen 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 EXHIBIT OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR OFFERING 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 SAID CERTIFIED SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A 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

'5409'

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, D.C. this 23rd day of September in the year of our Lord one thousand nine hundred and eighty-two

Attest

Kenneth B. Edwards

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1. NAME OF APPLICANT(S) <i>Division Seed Research of Agrigenetics Corp.</i>		2. TEMPORARY DESIGNATION	3. VARIETY NAME <i>5409</i>
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) <i>Route 2, Box 48 Scott City, Mo. 67871</i>		5. PHONE (Include area code) <i>316-872-2807</i>	FOR OFFICIAL USE ONLY PVPO NUMBER <i>8200114</i>
6. GENUS AND SPECIES NAME <i>Triticum aestivum</i>		7. FAMILY NAME (Botanical) <i>Gramineae</i>	
8. KIND NAME <i>Hard red winter wheat</i>		9. DATE OF DETERMINATION <i>July, 1978</i>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <i>Division of Agrigenetics Corp.</i>		FILING DATE <i>4/30/82</i> TIME <i>12:30</i> <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION <i>New Mexico</i> <i>6/1/82</i>		FEES RECEIVED AMOUNT FOR FILING \$ <i>500.00</i> DATE <i>4/30/82</i> AMOUNT FOR CERTIFICATE \$ <i>250.00</i> DATE <i>7/23/82</i>	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <i>Kenneth L. Loertzen Route 2, Box 48 Scott City, Mo. 67871</i>		12. DATE OF INCORPORATION <i>Mo., 1975</i> <i>6/1/82</i>	

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

- a. Exhibit A, Origin and Breeding History of the Variety (See Section 52 Of the Plant Variety Protection Act.)
- b. Exhibit B, Novelty Statement
- c. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- d. Exhibit D, Additional Description of the Variety

15. 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) of the Plant Variety Protection Act.) Yes (If "Yes," answer items 16 and 17 below) No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? Yes No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? Foundation Registered Certified

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES? No *5/24/82*

a. Yes (If "Yes," give names of countries and dates)

19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES? No *5/24/82*

Yes (If "Yes," give names of countries and dates)

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) 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(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT <i>Kenneth L. Loertzen</i>	DATE <i>4/26/82</i>
SIGNATURE OF APPLICANT	DATE

INSTRUCTIONS

General: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (*\$250 filing fee and \$250 examination fee*) to U.S. Department of Agriculture, Agricultural Marketing Service, Livestock, Meat, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (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

- 9 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41 (a) of the Act and (2) the date a decision was made to increase the seed.
- 14a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 14b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop, if the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach, statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 15 If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*) the applicant may **NOT** reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "No," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 16 See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.



14 a. ORIGIN AND BREEDING HISTORY OF 5409

SR 2380 (spring habit, semi dwarf, high protein line) was crossed with SR 2397 (winter habit, short semi dwarf, high protein line with brown chaff). No commonly grown bread wheats are involved in the parentage.

Breeding method was pedigree and this resulted from a single plant selection in the F 10 generation.

This single plant selection was increased to the breeders seed level. Seed classes to be produced beyond breeders seed are foundation, registered, and certified.

No particular requirement are necessary to maintain the purity of 5403 besides using a clean drill for seeding, roguing out any variants, and a clean combine for harvesting.

5489 is stable for such practical agronomic characteristics as heading, maturity, height and seed color. It is less variable than Scout when grown under the same conditions, We consider this variety uniform and stable.

Foundation, registered, and certified seed are to be grown according to Kansas Crop Improvement requirements.

Roguing is used to remove variants. Straw chaff variants should not exceed 1/1,000 plants.

14 b.

D 5/24/82

A

MOST SIMILAR VARIETY TO 5409 IS PLAINSMEN V

A 2

PLAINSMEN V

Gluten strength less than
5459

Elliptical seed

Glumes keeled but 4 mm wide
longer in length 11 mm long

Beak shorter 3 mm

Awns shorter in length
on 2nd & 3rd spikelet
4.8 cm

5409

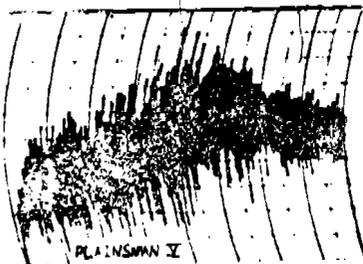
Greater gluten strength
than Pl. V

Ovate seed

Glumes strongly keeled 8.5 mm wide
and shorter in length 9.5 mm long

Beak longer 4 mm

Awns longer in length on
2nd and 3rd spikelet 7.2 cm



Trials under same conditions and year yielded
contrasting measurements dictated by
applicant 6/15/82

5409

AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARY LAND 20706

(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)
Seed Research, Div. of Agrigenetics Corp.
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)
*Route 3, Box 48
Scott City, Ks. 67871*

FOR OFFICIAL USE ONLY
PVPO NUMBER
8200114
VARIETY NAME OR TEMPORARY DESIGNATION
5409

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or 0 9) when number is either 77 or less or 7 or less.

1. KIND:

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

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____ 1 = SOFT 3 = OTH CR (Specify) _____
2 = HARD

1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON . NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT3 = CHRIS
 NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINES 6 = LEEDS

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

CM. HIGH
 CM. TALLER THAN
 CM. SHORTER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
A = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHR COLOR:

1 = YELLOW 2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT Waxy bloom: 1 = ABSENT 2 = PRESENT

Hairiness of last internode of rachis: = ABSENT 2 = PRESENT Internodes: 1 = HOLLOW 2 = SOLID

NO. OF NODES (Originating from node above ground) CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify): _____ Flag leaf: 1 = NOT TWISTED 2 = TWISTED

Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

MM. LEAF WIDTH (First leaf below flag leaf) CM. LEAF LENGTH (First leaf below flag leaf):

14 d. BOTANICAL DESCRIPTION OF 5409

The seed is hard red with genetically high protein. The seed is ovate with a long brush. The crease is narrow, shallow, with ~~slightly angular~~ ^{rounded 6/1/82} cheeks. The germ is ~~large~~ ^{medium 6/1/82}. D

5409 has a white coleoptile. It has flag leaf held upright with a 45 degree clockwise twist. The growth ^{5/24/82 D} prior to heading is yellow green in color ~~with waxy bloom~~. The auricles are white with no hairs on auricle.

The spike is awned, fusiform, lax with brown chaff, The position of spike at maturity is erect.

Glumes are strongly keeled, brown, hard and leathery. The outer glume is 3.6 m.m. wide and 10 m.m. long. Shoulder narrow, oblique, and beak acuminate. Beak from 3 m.m. to 7 m.m.

Awns are brown. Awns on 2nd and 3rd spikelet 7.5 c.m. long.

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SC 1991 REPLICATED YIELD SCOTT CITY

Freeze damage reduced yields in relation to
blossoming date.

	Bu/A.	Season	Ht. cm.	Leaf rust 1-5	Stem rust 1-5
PLV	44.0	VERY EARLY	74	5	5
5409	40.9	VERY EARLY	71	5	5
SCOUT 66	42.9	EARLY MIDSEASON	96	3.5	5
NEWTON	42.1	EARLY MIDSEASON	88	5	5

MOODY, TEXAS REPLICATED YIELD TRIAL
1981

	BLOOM DATE	STEM RUST	LEAF RUST	MILDEW RES.	HT cm.	AVE. YIELD BU./A.
54219	4/9	5	5	5	77	43.3
TAM 105 CHECK	4/16	5	5	5	88	39.15
BEAU CHECK	4/11	5	5	5	94	55.
HART CHECK	4/12	4	4	5	32	50.32

In 1981 laboratory cold tolerance tests at
Saskatoon, Canada Plains V had 50% or more dead at
-19 F. 5409 survived -19 F. 2/24/82

Leaf rust, stem rust, and mildew were 1-5 ratings with 5 best

TEST # 1 SC 1980 SCOTT CITY REPLICATED YIELD
WITS SCOUT 66 CHECK

		(1-5) LEAF RUST RATING	(1-5) STEM RUST RATING
PL v	113.4 BU/A.	5	5
5409	98.9 BU/A.	5	5
SCOUT 66	83.5 BU/A.	3.5	5

TEST # 2 SCOTT CITY 1980 REPLICATED YIELD
WITH SCOUT 65 & NEWTON CHECKS

	BU/A.	LEAF RUST RATING	STEM RUST RATING
5489	104.28	5	5
SCOUT 66	83.99	4	5
NEWTON	100.59	5	5

SC 79 EXPERIMENTAL TEST PLOT YITB SCOUT CHECK

	AVE. BU/A.	YIELD AS % OF SCOUT 66	LBS. PROTEIN/A.	LEAF RUST (1-5)	STEM RUST (1-5)
5409	71.3	110	939.10	5	5
SCOUT 66	64.3	100	638.8	4	5

11. HEAD:

1 Density: 1 = LA% 2 = DENSE

4 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) fusiform

4 Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

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

10 CM. LENGTH

10 MM. WIDTH

12. GLUMES AT MATURITY:

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

a Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
5 3 = WIDE (CA. 4 mm.)

2 Shoulder: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
shape: 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:

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

1 Leaf Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

2 Cheek: 1 = ROUNDED 2 = ANGULAR
6/1/82
6/1/82
E 1 Brush: 1 = NOT COLLARED 2 = COLLARED

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

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

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

6 MM. LENGTH

3 MM. WIDTH

GM. PER 1000 SEEDS

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'

1 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 (Race) _____ a 2 LEAF RUST (Race) _____ c 1 STRIPE RUST (Race) _____ c 1 LOOSE SMUT

2 POWDERY MILDEW 5/24/82 BUNT OTHER (Specify) _____

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

SAWFLY a APHID (Bydv.) GREEN BUG CEREAL LEAF BEETLE
c 1 OTHER (Specify) _____ HESSIAN PLY RACES: 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		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 procedure for completing this form:

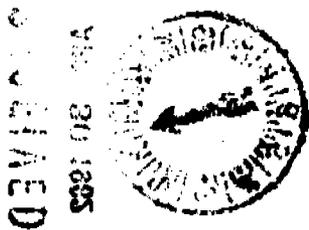
(a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1276, United States Department of Agriculture.

(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.

SC 78 HIGH PROTEIN EXPERIMENTALS
WITH SCOUT 66 CHECK (4 REPLICATIONS)

	YIELD % OF SCOUT 65 CHECK	% PROTEIN	(1-5) LEAF RUST RATING	(1-5) STEM RUST RATING
5409	116.8	17.75	5	5
SCOUT 66	100.0	14.07	4	5
PL v	129.8	16.3	5	5



100

9