No. 7800006

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seed Research Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IT IS UNLAWFUL FOR ANY UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'4578'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 18th *day of* October *in the year of our Lord one thousand nine hundred and* seventy-nine

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION	2. KIND NAME	FOR OFFICIAL USE ONLY	
4578	Hard red winter wheat	PV NUMBER 7800006	
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 11-8-77	TIME 11:00 A.M. P.M.
Triticum aestivum	Graminaeae	FEE RECEIVED $250.00	BALANCE DUE $ 11-8-77
	5. DATE OF DETERMINATION	$250.00	$ 11-8-77
	1973	$ 250.00	$ 8-17-79

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
Seed Research Associates Inc.	Route 2, Box 48 Scott City, Kansas, 67871	316-872-2807

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Kansas	June, 1973

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

Kenneth L. Goertzen, President
Seed Research Associates, Inc.
Route 2, Box 48
Scott City, Kansas, 67871

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
3/25/80

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.

10/25/77
(DATE)

Kenneth L. Goertzen
(SIGNATURE OF APPLICANT)

1

(DATE)

(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.

13A Origin and Breeding History of 4578 **7800006**

Parentage: Sturdy X Scout

Original seed stock of 4578 was obtained by bulking four 1' X 10' rows. This F_6 bulk was from a single plant selections made in the F_5 generation.

From this preliminary increase sufficient seed was obtained to start test and evaluation. It now has had three years of testing information.

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

No particular requirements are necessary in order to maintain the purity of 4555 besides using a clean drill for seeding, roguing out any variants, and a clean combine for harvesting.

4578 is very stable for such practical agronomic characteristics as heading, maturity, height, and rust reaction.

4578 has no known variants, other than 1 brown head per 3000. 9/27/79

Different generations produce plants that have the same appearance and performance.

Foundation and certified seed will be grown according to Kansas Crop Improvement requirements.

13B Botanical Description of 4578

The seed is hard red with long brush.

The juvenile growth is prostrate. 8/2/79

At maturity the strap shaped head is ~~nodding to~~ upright. The head is mid dense, awned and straw colored. A well matured head is 13 mm wide and 9 cm long.

The glumes are long and wide with a rounded shoulder. They are straw colored and glabrous. The beak is acuminate.

4578 is semi dwarf height and is early midseason in maturity.

Seed Research Inc.
Route 2, Box 48
Scott City, Kansas 67871
June 22, 1979

Kenneth H. Evans
Acting Commissioner
Plant Variety Protection Office
USDA
Beltsville, Maryland 20705

Dear Dr. Evans:

Subject: Wheat Application No. 7800006, '4578'
Wheat Application No. 7700106, '5466'

An unvernalized planting of 4555, 4578, and Payne was grown in the greenhouse. Juvenile growth at the third leaf stage showed distinct differences in leaf color and leaf width. Payne was deeper green in color and with narrower leaves than 4555 or 4578. The deeper green color was also present at time of the enclosed pictures in the field.

The narrow leaves of Payne had a corresponding lower number of veins. It had an average of 7.6 veins per leaf.

4578 had an average of 9 veins per leaf.
4555 had an average of 9.7 veins per leaf.

We have done considerable work with phenol tests and 4578 has far less pigmentation from phenol than any of the wheats we have examined including 4555 and Payne. The pigmentation is limited primarily to the germ and crease areas.

In a field plot, we planted Payne, 4555, and 4578 on the same date, same planting rate and depth and in the same plot. They all had the same cultural practices.

Observations made on the 19th of May were as follows: Payne was in boot stage, 4555 had headed and was in early bloom, 4578 was in late boot to heading. (See enclosed pictures).

A foliar application of nitrogen was made on this plot to determine varietal response to this practice. The stages of maturity at the time of nitrogen application is clearly demonstrated by the amount of dessication on the leaves.

The 4555 was in boot at the time of application and many of the flag leaves were dessicated. 4578 was pre boot and only the lower leaves were dessicated. The Payne was the least developed and shows less dessication from the application due to leaves

emerging after nitrogen treatment.

On our original application we used blossoming data from a more nearly average environmental condition. 4555 is consistently earlier than 4578 and both are consistently earlier than Payne.

We would like a time extension on 5466. It is different from 5422 in quality characteristic, shattering resistance, and straw size. We have not started harvesting our plots to date. We need time to make more detailed measurements and some of these cannot be made until after harvest.

Sincerely,

Kenneth L. Goertzen

enclosures: 3 pictures of Payne, 4555, & 4578.
Copy SRI letter Jan. 20, 1979
USDA letter Jan. 30, 1979

Seed Research Inc.
Route 2, Box 48
Scott City, Kansas 67871
July 17, 1979

Larry Dosier
Plant Variety Protection
USDA
Agricultural Mktg. Service
Grain & Seed Division
Nat'l. Agr. Library Bldg.
Beltsville, Maryland 20705

Dear Dr. Dosier:

Subject: PVP No. 7800006 `4578' wheat

4578 has a strap head.
Payne head is tapering.

Payne has an inclined head at maturity.
4578 has an erect head at maturity.
4555 has an erect to inclined head position.

Mature plants of Payne after weathering have straw color with much yellow pigment.

After weathering mature plants of 4555 have straw color that approach white.

After weathering the planting of 4578 has straw color but an overall reddish or reddish brown cast.

Payne, 4555, & 4578 all show resistance to prevalent races of leaf and stem rust.

Maturity: 4555 first to bloom 1979 Scott County, Kansas.
4575 2 days later than 4555.
Payne 4 days later than 4555.

Sincerely,

Kenneth L Goertzen

Kenneth L. Goertzen

encl: 3 photographs

13D Novelty of 4578

4578 is most similar to 4555.

4578 differs from 4555, which has the same parentage, in maturity.

	4555	4578
Blossom Date		
Scott City 1974	5/12/74	5/14/74
Scott City 1975	5/18/75	5/20/75
Scott City 1976	5/15/76	5/17/76
Haven, Kansas 1977	Early	Early Midseason

Additionally, '4578' has strap-shaped heads; whereas the heads of '4555' are tapering.

8/2/79

13E Ownership of 4578

Seed Research Associates Inc. has ownership of this wheat. The plant breeders are Kenneth L. and Betty L. Goertzen.

Milling and Baking Data for 4578-from data obtained from Carl Finney, cereal chemist Manhattan, Kansas.

LB7781	Wheat Protein	16.4%
	Flour Protein	15.5%
	% Ash	.49%
	Flour yield	73.5%
	Absorption	64.2%
	Mixing Time	Short 2 7/8 minutes