



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Pioneer Hi-Bred International, 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 *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 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 THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (PLANT VARIETY PROTECTION ACT, 1930, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'3580'



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 27th day of January in the year of our Lord one thousand nine hundred and eighty-three.

Attest:

*Kenneth A. Ewing*  
Acting  
Commissioner  
Plant Variety Protection Office  
Grain Division  
Agricultural Marketing Service

*John R. Block*  
Secretary of Agriculture

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**

INSTRUCTIONS: See Reverse.

1a. TEMPORARY DESIGNATION OF VARIETY  3580	1b. VARIETY NAME  3580	FOR OFFICIAL USE ONLY	
		PV NUMBER <b>8000026</b>	
2. KIND NAME  Soybean	3. GENUS AND SPECIES NAME  Glycine max	FILING DATE 12-17-79	TIME 2:00 p.m.
		FEE RECEIVED \$ 500.00	DATE 12-17-79
4. FAMILY NAME (BOTANICAL)  Leguminosae	5. DATE OF DETERMINATION  March, 1975 January, 1978 (Increase)	\$ 250.00	1/13/83
		\$	
6. NAME OF APPLICANT(S)  Pioneer Hi-Bred International, Inc.	7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)  1206 Mulberry Street Des Moines, IA 50308	8. TELEPHONE / CODE AND NU  (515) 245-3500	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.)  Corporation		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION  Iowa	11. DATE OF INCORPORATION  1926

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers.  
 Dale L. Porter  
 1206 Mulberry Street  
 Des Moines, IA 50308  
 DR. C. W. JENNINGS, DIRECTOR  
 DEPT. OF SOYBEAN BREEDING  
 PIONEER HI-BRED INTERNATIONAL, INC.  
 3261 WEST AIRLINE HIGHWAY  
 WATERLOO, IOWA 50701  
 dls 4/24/80

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:
- 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
  - 13B. Exhibit B, Novelty Statement.
  - 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
  - 13D. Exhibit D, Additional Description of the Variety.

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.)  YES  NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations?  YES  NO

14C. If "Yes," to 14B, how many generations of production be breeder seed?  FOUNDATION  REGISTERED  CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal?  YES

16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issue a certificate and will be replenished periodically 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 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 Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

12-6-79 (DATE)

Pioneer Hi-Bred International Inc (SIGNATURE OF APPLICANT)

Dale L. Porter (SIGNATURE OF APPLICANT)

DEC 17 1979

**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, National Agricultural Library, 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**

**5** 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.

**13a** 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 stability.

**13b** 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.

**13c** Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

**13d** 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.

**14A** 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 or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)

8000026



PIONEER HI-BRED INTERNATIONAL, INC.  
PLANT BREEDING DIVISION

DEPARTMENT OF SOYBEAN BREEDING  
3261 WEST AIRLINE HIGHWAY • WATERLOO, IOWA 50701  
PHONE (319) 234-0335

Amendment: 3580 Soybean (April, 1980)

Exhibit A. Variety 3580 evolved from a cross between Williams x Woodworth. It is an  $F_3$  - derived variety which was advanced to the  $F_3$  generation by direct single-seed descent. The  $F_4$  plant row of 3580 was grown in Jamaica in the winter of 1974-75. Subsequently, 3580 has undergone four years of extensive testing and purification and has been observed by the breeder to be uniform and stable for all plant traits from generation to generation with no evidence of variants.

6 acres of 3580 (breeders seed) were grown in 1978 and 185 acres (foundation seed equivalent) were grown in 1979.

Amendment: 3580 Soybean (September 14, 1982)

Exhibit B. Like Woodworth, Williams, and A4268, the varieties it is most similar to, 3580 has white flowers, tawny (brown) pubescence, tan pods, yellow seed coats, and black hila.

3580 most closely resembles Woodworth but uniformly differs from it in its electrophoretic zymogram profile of the enzyme diaphorase (Dia). Whereas, Woodworth has a Type 2 banding pattern which is lacking band no. 5, 3580 exhibits a Type 1 banding pattern, which contains band no. 5. (These zymogram profiles are described in Soybean Genetics Newsletter, Volume 9, April 1982).

3580 differs from Williams in that Williams has a high enzyme peroxidase (Ep) activity and 3580 has a low (Ep) activity. 3580 is also 2 days earlier than Williams.

As compared to A4268 variety, 3580 is significantly earlier maturing by 6 days (see Table 2). 3580 is a Group III variety; A4268 is a Group IV variety.



**PIONEER®**

**PIONEER HI-BRED INTERNATIONAL, INC.**  
**PLANT BREEDING DIVISION**

**WATERLOO SOYBEAN RESEARCH STATION**  
 3261 WEST AIRLINE HIGHWAY • WATERLOO, IOWA 50702  
 PHONE (319) 234-0335

*EXHIBIT B r/s 12/3/80*

**TABLE 1. PAIRED COMPARISON (Days to Maturity) 1977-1979**

YR/EXP/LOG#	3580( $\bar{x}_1$ )	WOODWORTH( $\bar{x}_2$ )	$(\bar{x}_1 - \bar{x}_2)$	$(\bar{x}_1 - \bar{x}_2)^2$
77/WEA3/4	140	137	3	9
77/WEA3/35	126	124	2	4
5 77/WEA3/39	133	131	2	4
77/WEA3/40	126	124	2	4
77/WEA3/41	117	116	1	1
78/WEA3/38	114	113	1	1
78/WEA3/39	119	118	1	1
78/WEA3/41	105	104	1	1
78/STV/39	115	114	1	1
78/SJB/4	129	128	1	1
13 78/SJB302/40	101	97	4	16
78/SJB302/41	106	105	1	1
78/SJB303/40	101	100	1	1
78/SJB303/41	106	105	1	1
78/SJC302/40	103	101	2	4
78/SJC307/66	119	118	1	1
78/SJC308/66	118	117	1	1
78/SJD304/66	118	117	1	1
79/IOWA/SOUTH	120	117	3	9
79/IOWA/SOUTH (narrow rows)	120	118	2	4
STATE TRIALS 79/OHIO/WEST	137	135	2	4
79/OHIO/N-WEST	137	135	2	4
79/ILL/MACOMB	134	128	6	36
79/IND/LAFAYETTE	124	122	2	4
79/IND/RANDOLPH	129	126	3	9

$\Sigma$  2,997 2,950 47 123

$\bar{x}$  120 118 2

$$s_d = \sqrt{\frac{123 - [(47)^2/25]}{25(24)}} = 0.240$$

$$t(.05) = \frac{\bar{d}}{s_d} = \frac{120 - 118}{0.240} = 8.33 \text{ ** for 24 df}$$



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*EXHIBIT B RJS 12/3/80*

**TABLE 2. PAIRED COMPARISON (Days to Maturity) 1979-1980**

YR/TEST/LOCATION	A4268( $X_1$ )	3580( $X_2$ )	$(X_1 - X_2)$	$(X_1 - X_2)^2$
80/PVP Comp/39-1	127	121	6	36
80/PVP Comp/39-2	129	121	8	64
79/IOWA STATE/SOUTH	125	120	5	25
79/ILLINOIS/BROWNSTOWN(30")	125	118	7	49
79/ILLINOIS/BROWNSTOWN(7")	126	118	8	64
79/ILLINOIS/BELLEVILLE	127	121	6	36
79/MISSOURI/NORTH	125	120	5	25
$\Sigma$	884	839	45	299
$\bar{X}$	<b>126</b>	<b>120</b>	<b>6</b>	

$$s_{\bar{d}} = \sqrt{\frac{299 - [(45)^2 / 7]}{7(6)}} = 0.481$$

$$t_{(0.05)} = \frac{\bar{d}}{s_{\bar{d}}} = \frac{126 - 120}{0.481} = 12.5 \text{ ** for 6 df}$$

**OBJECTIVE DESCRIPTION OF VARIETY  
SOYBEAN (GLYCINE MAX)**

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) <u>Pioneer Hi-Bred International, Inc.</u> ADDRESS (Street and No., or R.F.D. No.; City, State, and ZIP Code) <u>1206 Mulberry Street</u> <u>Des Moines, IA 50308</u>	FOR OFFICIAL USE ONLY PVPO NUMBER <u>8000026</u> VARIETY NAME OR TEMPORARY DESIGNATION <u>3580</u>
--	--

Place the appropriate number that describes the varietal character of this variety in the boxes below.

1. SEED SHAPE:

1 = SPHERICAL     2 = SPHERICAL FLATTENED     3 = ELONGATE     4 = OTHER (Specify)

2. SEED COAT COLOR:

1 = YELLOW     2 = GREEN     3 = BROWN     4 = BLACK     5 = OTHER (Specify)    SHADE:  1 = LIGHT     2 = MEDIUM     3 = DARK

3. SEED COAT LUSTER:

1 = DULL     2 = SHINY

4. SEED SIZE

17 <sup>RFS</sup> GRAMS PER 100 SEEDS    4/21/80

5. HILUM COLOR:

1 = BUFF     2 = YELLOW     3 = BROWN     4 = GRAY     5 = IMPERFECT BLACK     6 = BLACK     7 = OTHER (Specify)    SHADE:  1 = LIGHT     2 = MEDIUM     3 = DARK

6. COTYLEDON COLOR:

1 = YELLOW     2 = GREEN

7. LEAFLET SIZE (See Reverse):

1 = SMALL     2 = MEDIUM     3 = LARGE

8. LEAFLET SHAPE:

1 = OVATE     2 = OBLONG     3 = LANCEOLATE     4 = ELLIPTICAL     5 = OTHER (Specify)

9. LEAF COLOR (See reverse):

1 = LIGHT GREEN     2 = MEDIUM GREEN     3 = DARK GREEN

10. FLOWER COLOR:

1 = WHITE     2 = PURPLE     3 = OTHER (Specify)

11. POD COLOR:

1 = TAN     2 = BROWN     3 = BLACK

12. POD SET:

1 = SCATTERED     2 = CONCENTRATED

13. PLANT PUBESCENCE COLOR:

1 = GRAY     2 = BROWN     3 = OTHER (Specify)

SHADE:

1 = LIGHT     2 = MEDIUM     3 = DARK

14. PLANT TYPES (See Reverse):

1 = SLENDER     2 = BUSHY     3 = INTERMEDIATE

15. PLANT HABIT:

1 = DETERMINATE     2 = INDETERMINATE     3 = OTHER (Specify)

16. HYPOCOTYL COLOR:

1 = GREEN     2 = PURPLE

17. SEED PROTEIN:

1 = A     2 = B

18. NUMBER OF DAYS TO FLOWERING

(Place a zero in first box (e.g. 0 9) when days are 9 or less.)

19. MATURITY GROUP:

1 = 00     2 = 0     3 = 1     4 = II     5 = III  
 6 = IV     7 = V     8 = VI     9 = VII     10 = VIII

20. SIZE OF 10 DAY OLD SEEDLING GROWN UNDER CONSTANT LIGHT (Growth Chamber) AT 25° C. (Place a zero in first box (e.g. 0 2) when size is 9 mm. or less.)

MM. LENGTH OF SEEDLING       MM. LENGTH OF COTYLEDON       MM. WIDTH OF COTYLEDON

21. DISEASE: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input checked="" type="checkbox"/> BACTERIAL PUSTULE	<input checked="" type="checkbox"/> SOYBEAN CYST	<input checked="" type="checkbox"/> DOWNY MILDEW	<input type="checkbox"/> PURPLE STAIN	<input type="checkbox"/> POD AND STEM BLIGHT	<input type="checkbox"/> ROOT KNOT
<input type="checkbox"/> FROGEYE	<input type="checkbox"/> STEM CANKER	<input checked="" type="checkbox"/> PHYTO-PHTHORA	<input type="checkbox"/> BROWN STEM ROT	<input type="checkbox"/> TARGET SPOT	<input type="checkbox"/> BROWN SPOT
<input type="checkbox"/> BUD BLIGHT	<input checked="" type="checkbox"/> WILDFIRE	<input type="checkbox"/> RHIZOCTONIA ROT	<input type="checkbox"/> OTHER (Specify)		



FORM GR-470-2 (REVERSE)

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant shape	Woodworth	Petiole angle	Woodworth
Leaf shape	Woodworth	Seed size	Woodworth
Leaf color	Woodworth	Seed shape	Woodworth
Leaf surface	Woodworth	Seedling pigmentation	Woodworth

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY:

VARIETY	NO. OF DAYS TO MATURITY	LODGING SCORE	PLANT HEIGHT	LEAF SIZE		CONTENT		AVERAGE NO. OF PODS PER PLANT	IODINE NO.
				Width	Length	Protein	Oil		
Submitted	109	2.3	41				%		
Name of similar variety Woodworth	108	2.0	41						

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for completing this form:

1. Scott, Walter O. and Samuel R. Aldrich, 1970, Modern Soybean Production, The Farmer Quarterly.
2. Norman, A. G., 1963, The Soybean: Genetics, Breeding, Physiology, Nutrition, Management.
3. McKie, J. W., and K. L. Anderson, 1970, The Soybean Book.

LEAF COLOR: Nickerson's or any recognized color fan may be used to determine the leaf color of the described variety. The following Soybean varieties may be used as a guide to identify the colors listed on the form.

COLOR	VARIETY
Light Green	"Ada"
Medium Green	"Wilkin"
Dark Green	"Swift"

LEAF SIZE: The following varieties may be used as a guide to identify the relative size leaves.

SIZE	VARIETY
Small	"Amsoy"
Medium	"Bonus"
Large	"Anoka"

PLANT TYPE: The following varieties may be used as a guide to identify the plant type.

TYPE	VARIETY
Slender	"Vansoy"
Intermediate	"Wirth"
Bushy	"Adelphia"

DEC 17 1979

2:00 PM

8000026