No. 9500036

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 DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED 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 TWENTY 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 MULTIPLYING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'9452'

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 twenty-fourth day of April, in the year of our Lord two thousand one.

Attest:

Alan R. Pool

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(INSTRUCTIONS ON REVERSE)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate): Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.:

3. VARIETY NAME: 9452

4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP):
700 Capital Square
400 Locust St.
Des Moines, IA 50309

5. PHONE (include area code): (515)270-3582

FOR OFFICIAL USE ONLY

PVPO NUMBER: 9500036

FILING — Date: NOVEMBER 8, 1994 — Time: ☐ A.M. ☑ P.M.

FEES RECEIVED — Filing and Examination Fee: $ 2,325.00 — Date: OCTOBER 27, 1994 — Certificate Fee: $ 320 — Date: 10/6/00

6. GENUS AND SPECIES NAME: Glycine max

7. FAMILY NAME *(Botanical)*: Leguminosae

8. CROP KIND NAME *(Common Name)*: Soybean

9. DATE OF DETERMINATION: October 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.): Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION: Iowa

12. DATE OF INCORPORATION: 1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

~~John Grace~~ Dr. Daria Schmidt
7300 NW 62ND Ave.
PO Box 1004
Johnston, IA 50131-1004

Mike Roth (copy)
700 Capital square, 400 Locust St.
Des Moines, IA 50309

6 Sept. 2000

PHONE (include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*
- a. ☒ Exhibit A, Origin and Breeding History of the Variety
- b. ☒ Exhibit B, Novelty Statement
- c. ☒ Exhibit C, Objective Description of Variety
- d. ☒ Exhibit D, Additional Description of Variety
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership
- f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 10/28/94
- g. ☒ Filing and Examination Fee ($2,325) made payable to "Treasurer of the United States"

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 *(If "NO," skip to item 18 below)*

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) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____).
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) _____
☒ NO

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 [Owner(s)]	CAPACITY OR TITLE	DATE
[signature]	Soybean Research Coordinator	10/21/94
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

SD-470 (06-93) *Editions of Forms LS-470 (3/86) and CSSD-470 (5/89) are to be destroyed.*

CONTINUED ON REVERSE

Exhibit A:

Variety 9452 evolved from a cross of S4230 / A3803. It is an F5-derived variety which was advanced to the F5 generation by modified single-seed descent. The progeny row of 9452 was grown in the summer of 1988. Subsequently, 9452 has undergone four years of extensive testing, and has been observed to be stable for all plant traits from generation to generation.

3 acres of 9452 (breeders seed) were grown in 1992. 70 acres of parent seedstock (foundation seed equivalent) were grown in 1993.

Exhibit B:

Variety 9452 most closely resembles the variety 9461. However, variety 9452 is low in seed protein peroxidase activity, whereas 9461 is high in seed protein peroxidase activity.

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Pioneer Hi-Bred Int'l Inc,

PVP Application - Exhibit B - Soybean Variety **9452**

Table 1. T-test comparison of 9452 versus A4268 for height in inches, 1999 1-year analysis. Height is measured on a plot basis where the plot is not smaller than 50 square feet. The measurement is from the soil surface to the topmost pod.

YEAR	REP	9452 (X1)	A4268 (X2)	X1-X2	(X1-X2)2
		--- Height in inches ---			
1999	1	**34**	**32**	2	4
	2	**33**	**32**	1	1
	3	**35**	**33**	2	4
	4	**32**	**31**	1	1
	5	**28**	**26**	2	4
	6	**34**	**28**	6	36
	7	**30**	**30**	0	0
1999	**SUM**	226	212	14	50
	MEAN	32.3	30.3	2.0 =**d**	
	n =	7 groups of individuals			

1999 ANALYSIS

Ave 9452 =	32.29	inches
Ave A4268 =	30.29	inches
d=(AveX1-AveX2)=	2.00	
SE diff = SQRT of	0.524	
SE diff =	0.724	
t = d/SE diff =	2.763	
df =	6	
Prob > **t** =	0.0327	significant at <5% level

Formula for Standard Error Calculations:

$$\text{SE diff} = \sqrt{\frac{S\,(X1-X2)^2 - (S\,X1-X2)^2/n}{(n)\,(n-1)}}$$

Standard Error Calculation:

$$\text{SE diff} = \sqrt{\frac{50 - ((14)^2/7)}{(7)\,(6)}}$$

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Pioneer Hi-Bred Int'l Inc,

PVP Application - Exhibit B - Soybean Variety **9452**

Table 2. T-test comparison of 4280 versus 9452 for height in inches, 1999 1-year analysis. Height is measured on a plot basis where the plot is not smaller than 50 square feet. The measurement is from the soil surface to the topmost pod.

YEAR	REP	4280 (X1)	9452 (X2)	X1-X2	(X1-X2)2
		--- Height in inches ---			
1999	1	40	34	6	36
	2	39	28	11	121
	3	40	32	8	64
	4	40	35	5	25
	5	38	32	6	36
	6	36	32	4	16
	7	40	32	8	64
	8	35	34	1	1
	9	38	30	8	64
	10	36	30	6	36
1999	**SUM**	382	319	63	463
	MEAN	38.2	31.9	6.3 **=d**	
	n =	10 groups of individuals			

1999 ANALYSIS

Ave 4280 =	38.20	height in inches
Ave 9452 =	31.90	height in inches
d=AveX1-AveX2=	6.30	
SEdiff=SQRT of	0.734	
SE diff =	0.857	
t=d/SE diff =	7.351	
df =	9	
Prob > **t** =	0.0000	significant at <1% level

Formula for Standard Error Calculations:

$$\text{SE diff} = \sqrt{\frac{S(X1-X2)^2 - (S\,X1-X2)^2/n}{(n)(n-1)}}$$

Standard Error Calculation:

$$\text{SE diff} = \sqrt{\frac{463 - ((63)^2/10)}{(10)(9)}}$$

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Pioneer Hi-Bred Int'l Inc,

PVP Application - Exhibit B - Soybean Variety **9452**

Table 3. T-test comparison of 9441 versus 9452 for height in inches, 1999 1-year analysis. Height is measured on a plot basis where the plot is not smaller than 50 square feet. The measurement is from the soil surface to the topmost pod.

YEAR	REP	9441 (X1)	9452 (X2)	X1-X2	(X1-X2)2
		--- Height in Inches ---			
1999	1	34	34	0	0
	2	35	28	7	49
	3	34	32	2	4
	4	38	35	3	9
	5	36	32	4	16
	6	34	32	2	4
	7	30	28	2	4
	8	34	34	0	0
	9	31	30	1	1
	10	33	30	3	9
1999	**SUM**	339	315	24	96
	MEAN	33.9	31.5	2.4 =**d**	
	n =	10 groups of individuals			

1999 ANALYSIS

Ave 9441 =	33.90	Height in inches
Ave 9452 =	31.50	Height in inches
d=(AveX1-AveX2)	2.40	
SE diff = SQRT of	0.427	
SE diff =	0.653	
t = d/SE diff =	3.674	
df =	9	
Prob > **t** =	0.0051	significant at <1% level

Formula for Standard Error Calculations:

$$\text{SE diff} = \sqrt{\frac{S\,(X1-X2)^2 - (S\,X1-X2)^2/n}{(n)\,(n-1)}}$$

Standard Error Calculation:

$$\text{SE diff} = \sqrt{\frac{96 - ((24)^2/10)}{(10)\,(9)}}$$

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Pioneer Hi-Bred Int'l Inc,

PVP Application - Exhibit B - Soybean Variety **9452**

Table 4. T-test comparison of 9471 versus 9452 for height in inches, 1999 1-year analysis. Height is measured on a plot basis where the plot is not smaller than 50 square feet. The measurement is from the soil surface to the topmost pod.

YEAR	REP	9471 (X1)	9452 (X2)	X1-X2	(X1-X2)2
		--- Height in inches ---			
1999	1	**41**	**34**	7	49
	2	**34**	**28**	6	36
	3	**36**	**32**	4	16
	4	**41**	**35**	6	36
	5	**35**	**32**	3	9
	6	**42**	**32**	10	100
	7	**40**	**32**	8	64
	8	**34**	**28**	6	36
	9	**39**	**34**	5	25
	10	**37**	**30**	7	49
	11	**37**	**30**	7	49
1999	**SUM**	416	347	69	469
	MEAN	37.8	31.5	6.3 =**d**	
	n =	11 groups of individuals			

1999 ANALYSIS

Ave 9471 =	37.82	height in inches
Ave 9452 =	31.55	height in inches
d = (AveX1-AveX2)	6.27	
SE diff = SQRT of	0.329	
SE diff =	0.574	
t = d/SE diff =	10.937	
df =	10	
Prob > **t** =	0.0000	significant at <1% level

Formula for Standard Error Calculations:

$$\text{SE diff} = \sqrt{\frac{S\,(X1-X2)^2 - (S\,X1-X2)^2/n}{(n)\,(n-1)}}$$

Standard Error Calculation:

$$\text{SE diff} = \sqrt{\frac{469 - ((69)^2/11)}{(11)\,(10)}}$$

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Pioneer Hi-Bred International, Inc.		9452

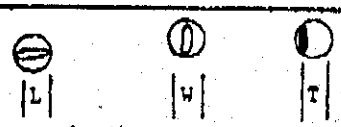
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
700 Capital Square
400 Locust
Des Moines, IA 50309

FOR OFFICIAL USE ONLY
PVPO NUMBER
9500036

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[1]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[1] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

[1][7] Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ 6. COTYLEDON COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

[1] 1 = Low 2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ 9. HYPOCOTYL COLOR:

[2] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

[2] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17') 3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton') 3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton') 3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will') 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][7] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V 9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [0] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [1] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [1] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [ ] Other *(Specify)* _____

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [0] Brown Stem Rot *(Cephalosporium gregatum)*

[0] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [1] Pod and Stem Blight *(Diaporthe phaseolorum var; sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[1] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma var. sojae)*

★ [1] Race 1 [1] Race 2 [1] Race 3 [1] Race 4 [1] Race 5 [0] Race 6 [1] Race 7

[1] Race 8 [1] Race 9 [ ] Other *(Specify)* _____

VIRAL DISEASES:

[1] Bud Blight (Tobacco Ringspot Virus)

[1] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [1] Cowpea Mosaic (Cowpea Chlorotic Virus)

[1] Pod Mottle (Bean Pod Mottle Virus)

★ [1] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [1] Race 3 [0] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify)*: _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [1] Iron Chlorosis on Calcareous Soil

[0] Other *(Specify)* _____

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

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	9461	Seed Coat Luster	9451
Leaf Shape	9461	Seed Size	9451
Leaf Color	9461	Seed Shape	9461
Leaf Size	9461	Seedling Pigmentation	9461

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
9452 Submitted	130	2.0	84			43.0	21.3	17	3
9461 Name of Similar Variety	130	2.5	86			42.1	21.8	15	3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Exhibit D:

In Exhibit C we have identified 9452 as susceptible to bacterial blight, brown spot, pod and stem blight, rhizoctonia root rot, bud blight, yellow mosaic, cowpea mosaic, pod mottle, seed mottle, and iron chlorosis. This does not mean that we consider 9452 to be worse than other varieties of similar maturity in reaction to these challenges. Rather, we do not consider 9452 to be immune to them. Therefore, we have chosen to be conservative and have identified 9452 as "susceptible".

Table 8. Isozyme information for 9452

ACO2	ACO3	ACO4	ACP	DIA	ENP	IDH1	IDH2	MDH	MPI	PGM1	PHI1
1	1	1	A	A	A	2	1	A	A	1	1

9452 is a mid group IV variety. If group IV varieties are divided into tenths, the relative maturity of 9452 is 4.5.

Exhibit E.

Variety 9452 was originated and developed by plant breeders from whom, by agreement, Pioneer Hi-Bred International, Inc. has obtained exclusive rights to protect and market variety 9452. No rights to such invention, discovery, or development are retained by the plant breeders or by any other party.