No. 9200077

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Kansas 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 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 ETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'KS5292'

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* 31st *day of* August *in the year of our Lord one thousand nine hundred and* ninety-four.

Attest:

Kenneth R. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #0581-0055), Washington, 20250.

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

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)*: Kansas Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.: K81-27-278

3. VARIETY NAME: KS5292

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*: Waters Hall, Kansas State University

5. PHONE *(Include area code)*: (913) 532-6147

FOR OFFICIAL USE ONLY

PVPO NUMBER: 9200077

FILING — Date: Jan. 23, 1991 — Time: ☐ A.M. ☐ P.M.

FEES RECEIVED — Filing and Examination Fee: $2150.00 — Date: January 21, 1992 — Certificate Fee: $250.00 — Date: Aug. 22, 1994

6. GENUS AND SPECIES NAME: Glycine max

7. FAMILY NAME *(Botanical)*: Leguminosae

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

9. DATE OF DETERMINATION: 11/84

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

11. IF INCORPORATED, GIVE STATE OF INCORPORATION:

12. DATE OF INCORPORATION:

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Vernon A. Schaffer, Department of Agronomy
Kansas State University, Throckmorton Hall
Manhattan, KS 66506-5501

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety.
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [X] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____.
g. [X] Filing and Examination Fee ($2,150) 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.)*
[X] 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?
[X] YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[X] FOUNDATION [X] REGISTERED [X] 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: _____ .)
[X] 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)
[X] 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
George E Ham	Associate Director of Kansas Ag Experiment Station	1/15/92
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

FORM CSSD-470 (5-89) Edition of FORM LS-470, 3-86, is obsolete.

Exhibit A. Origin and Breeding History of 'KS5292' Soybean

1. KS5292 is an F_4 selection from the cross Essex X Forrest. The original cross was made in 1981. F_1 and F_3 generations were grown in a winter nursery. F_2 and F_4 generations were grown in the field. F_2 and F_3 generations were advanced by single-seed descent. Single plant selections were made in 1983 in the F_4 generation. $F_{10:11}$ lines were screened for resistance to soybean cyst nematode race 3, and 14 resistant lines bulked to form breeders seed.

2. KS5292 was evaluated in replicated yield trials for three years in KS, followed by evaluation in the USDA-ARS southern 1988 through 1990 Preliminary and Uniform Tests.

3. KS5292 is stable. When sexually reproduced the variety remains unchanged in its essential and distinctive characteristics.

4. KS5292 is uniform. Variants are limited to taller plants, purple flowered plants and plants with tawny pubescence which occur at a frequency of less than 1 in 10,000. The variants, as well as typical plants, are commercially acceptable.

Exhibit B. Novelty Statement

KS5292 is most similar to 'Essex'. KS5292 differs from Essex in the following characteristics:

1. Essex has purple flowers while KS5292 has white flowers.

2. Essex is susceptable to cyst nematode while KS5292 is resistant to soybean cyst nematode race 3.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

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
Kansas Agricultural Experiment Station	K81-27-278	KS5292

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
Kansas State University
Waters Hall
Manhattan, KS 66506

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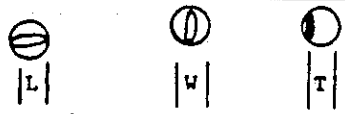
Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered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

1. SEED SHAPE:

[2]



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][2] Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

[1] 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:

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

★ 9. HYPOCOTYL COLOR:

[1] 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)* _____

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11. LEAFLET SIZE:

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

12. LEAF COLOR:

[ ] 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:**

[1] 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:**

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

★ **18. MATURITY GROUP:**

[0 8] 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:

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

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

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [0] 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)*

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

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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)*

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

Phytophthora Rot *(Phytophthora megasperma var. sojae)*

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

[ ] Race 8 [ ] Race 9 [ ] Other *(Specify)* susceptible

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

★ [0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [2] Race 1 [0] Race 2 [2] Race 3 [1] 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

[ ] 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	Essex	Seed Coat Luster	Essex
Leaf Shape	Essex	Seed Size	Forrest
Leaf Color	Essex	Seed Shape	Essex
Leaf Size	Essex	Seedling Pigmentation	Forrest

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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		
KS5292 Submitted	134	1.5	74	7.1	10.2	40.5	21.5	12.0	2.5
Essex Name of Similar Variety	134	1.8	76	7.3	9.7	41.9	20.5	13.2	2.2

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.

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Exhibit D. Additional Description of Variety

Summaries of Preliminary V, 1988 along with Uniform Tests V 1989 and 1990 are shown in Tables 1-3, respectively.

Results of cust screening tests in greenhouse and field are ahown in Tables 4-6.

EXHIBIT D.
TABLE 1 GENERAL SUMMARY OF PERFORMANCE FOR THE STRAINS GROWN IN PRELIMINARY GROUP V, 1988

STRAIN	Seed yield	Mat. index	Percent Ht.	Percent Oil	Percent Protein	M. incognita	M. arenaria	SCN 3	SCN 4
FORREST	44.7	10-22	36	21.7	37.3	1.0	2.0	R	S
STAFFORD	41.4	-10	28	22.0	39.2+	5.0	2.1	S	S
D85-5891	42.7	0	38	21.2	38.1	1.0	4.7	R	S[1]
D85-7762	45.2	-5	34	20.6-	39.9	1.3	3.2	R	R
D85-7985	47.8	-4	36	21.2	40.0+	5.0	2.5	R	R
D86-102	37.0-	+1	44	18.2	43.7+	1.0	2.7	S	S
D86-7721	41.1	-5	33	20.3-	39.3+	3.0	1.4	R	R
D86-7948	42.7	-4	35	20.4-	39.0+	5.0	2.0	R	R
D86-8093	42.4	-6	41	20.3-	39.8+	1.5	1.0	R	R
K81-9-395	44.1	-2	38	21.2	40.0+	5.0	2.1	S	S
K81-27-92	44.4	-1	32	21.9	39.5+	1.7	4.1	R	S
K81-27-178	42.3	-5	31	21.5	40.6+	1.3	1.0	S	S
K81-27-201	43.6	-1	35	21.4	39.2+	5.0	1.7	S	S
K81-27-247	43.6	+1	33	21.4	39.9+	4.7	2.1	S	S
K81-27-278	45.3	-1	32	21.9	38.6+	1.7	2.0	h	S
N86-820	42.1	-2	36	21.4	38.2	1.3	1.7	h	S
N86-7682	46.0	-3	35	21.2	39.1+	5.0	2.3	S	S
N86-7687	46.7	0	33	22.4+	38.7+	5.0	4.2	S	S
N86-7727	46.2	+2	33	21.6	39.1+	5.0	4.0	S	S
R86-209	40.4-	-10	40	20.9-	38.0	2.0	1.4	R	R
R86-549	41.6	-6	39	20.0-	40.9+	5.0	4.7	R	R
R86-772	42.7	-5	37	20.8-	39.8+	1.0	5.0	R	S
R86-2100	41.2	+3	37	21.3	37.3	1.3	1.3	S	S
R86-5289	42.0	+1	35	20.5-	38.8+	5.0	1.3	S	S
RJ84-1822	44.9	-2	41	21.0	36.7	1.0	2.0	h	h
S84-1588	44.2	-1	36	20.4-	40.1+	5.0	4.7	R	R
S85-1009	48.5	-2	33	20.5-	40.5+	4.7	2.3	R	R
S86-2567	44.4	0	36	21.0	37.3	1.0	1.3	R	R
S86-2571	44.1	-1	35	21.3	36.0+	1.3	1.7	R	R
Tn82-268	42.5	-8	30	21.2	40.0+	4.7	2.4	S	S
Tn86-58	42.8	-8	36	22.0	39.2+	4.3		S	S
V84-12	44.2	-7	34	20.6-	40.5+	5.0	3.4	S	S
V84-334	38.9-	-3	31	22.0	40.2+	5.0	3.4	S	S
V84-440	43.1	+2	29	22.2	37.8	5.0	3.3	S	S
V84-667	42.6	+2	33	21.6	38.2	5.0	1.3	S	S
V84-1787	41.1	+1	37	20.7-	40.8+	4.7	2.6	R	R
LSD (.05)	4.0			0.7	1.3				
C.V.	9%			2.5%	2.5%				

+ or - designations refer to differences from Forrest.
[1] resistant to SCN Race 5.

EXHIBIT D.
TABLE 2.

GENERAL SUMMARY OF PERFORMANCE FOR THE STRAINS GROWN IN UNIFORM GROUP V, 1989

	NO. OF LOCATIONS	ESSEX	FORREST	R83-1342	N85-578	R85-3280
Seed Yield - 1989						
East Coast	4	45.6	44.3	47.6	51.2	46.1
Upper and Central South	9	45.3	41.3	41.3	49.6	43.3
Delta	7	43.9	38.2	39.0	49.0	43.8
West	8	36.7	34.4	32.3	41.1	41.6
1988-89						
East Coast		41.3	40.1	41.9	47.0	41.6
Upper & Central South		43.2	41.1	42.8	46.6	44.1
Delta		44.1	41.0	43.8	49.8	46.6
West		38.2	37.8	37.3	42.6	43.9
1987-89						
East Coast		40.5	39.8	42.1		
Upper & Central South		39.7	38.2	40.9		
Delta		41.5	39.4	43.0		
West		38.8	38.7	38.9		
Oil Content - 1989		20.3	20.2	20.1	21.6	19.5
1988-89		20.6	20.8	20.8	21.7	20.3
1987-89		20.6	20.8	20.8		
Protein Content - 1989		41.7	39.5	39.9	37.9	40.9
1988-89		41.4	38.9	39.2	37.8	39.9
1987-89		41.7	39.1	39.8		
Seed size		12.4	11.4	12.2	14.3	12.6
Maturity index		10-7	+1	+1	-3	+1
Height		33	36	35	28	31
Seed quality		1.8	2.0	1.8	2.0	1.7
M. incognita		2.8	1.5	1.5	4.2	1.5
M. arenaria		2.0	1.5	1.5	2.0	1.2
SCN race 3		S	R	R	S	R
SCN race 4		S	S	S	S	S
Flower color		P	W	P	P	P
Pubescence color		G	T	T	G	T
Pod wall color		Tn	Tn	Tn	Tn	Tn

	S85-1706	D85-7985	K81-27-278	N86-7687	RJ84 1822	S85-1009	TN85-157
Seed Yield - 1989							
East Coast	44.4	44.5	51.9	47.9	45.7	48.5	43.9
Upper and Central South	43.9	42.7	45.8	46.3	35.7	43.4	44.2
Delta	46.5	46.7	44.1	48.2	38.4	43.6	42.7
West	34.8	35.9	40.4	41.6	28.8	35.1	32.6
1988-89							
East Coast	42.0						
Upper & Central South	43.0						
Delta	47.4						
West	37.6						
1987-89							
East Coast							
Upper & Central South							
Delta							
West							
Oil Content -1989	20.3	20.1	21.5	21.8	19.0	19.8	19.9
1988-89	20.5						
1987-89							
Protein Content - 1989	38.6	41.9	40.4	38.9	39.0	41.2	39.2
1988-89	38.1						
1987-89							
Seed size	14.2	12.3	11.8	13.9	13.0	12.2	10.6
Maturity index	-2	-2	-2	-1	+5	+4	-1
Height	33	34	30	33	40	33	37
Seed quality	1.9	2.0	1.8	1.8	2.1	2.1	1.8
M. incognita	2.7	2.2	1.5	4.0	1.2	2.5	3.8
M. arenaria	1.0	1.5	2.5	3.5	1.8	3.8	1.4
SCN race 3	R	R	h	S	h	R	R
SCN race 4	R	R	S	S	h	R	S
Flower color	W	P	W	P	W	P	W
Pubescence color	G	T	G	G	G	T	G
Pod wall color	Tn	Tn	Tn	Tn	Tn	Tn	Tn

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EXHIBIT D.

TABLE 3. GENERAL SUMMARY OF PERFORMANCE FOR THE STRAINS GROWN IN UNIFORM GROUP V, 1990

	NO. OF LOCATIONS	ESSEX	WALTERS	N85-578	R85-3280	S85-1706
Seed Yield - 1990						
East Coast	5	58.3	52.9	58.4	52.2	54.4
Upper and Central South	9	40.9	41.1	44.8	38.5	39.0
Delta	9	44.9	48.0	49.8	47.8	45.5
West	6	38.6	41.7	42.5	44.6	38.7
1989-90						
East Coast		52.0	50.3	54.8	49.2	49.4
Upper & Central South		43.1	41.2	47.2	40.9	41.5
Delta		44.4	43.5	49.4	45.8	46.0
West		37.7	37.0	41.8	43.1	36.8
1988-90						
East Coast		47.2	47.7	51.1	45.4	46.3
Upper & Central South		42.4	38.0	46.0	42.2	41.7
Delta		44.3	42.7	49.7	46.9	46.7
West		38.3	38.8	42.5	43.1	38.0
Oil Content - 1990		20.6	20.6	21.8	19.8	20.0
1989-90		20.5	20.4	21.7	19.7	20.2
1988-90		20.6	20.5	21.7	20.1	20.3
Protein Content - 1990		42.0	39.5	37.6	40.9	38.4
1989-90		41.9	39.7	37.8	40.9	38.5
1988-90		41.6	40.1	37.7	40.2	38.2
Seed size		14.5	13.5	15.6	13.4	15.1
Maturity index		10-6	+4	+2	+6	+3
Height		26	32	26	30	30
Seed quality		1.5	1.7	1.8	1.6	1.7
SDS severity score		1.7	1.8	1.6	1.5	1.2
SDS(percent with symptoms)		92	83	62	75	25
M. incognita		1.5	1.0	2.2	1.5	1.0
M. arenaria		5.0	1.5	5.0	2.2	2.2
SCN race 3		S	R	S	R	R
SCN race 4		S	S	S	S	R
Flower color		P	P	P	P	W
Pubescence color		G	T	G	T	G
Pod wall color		T	T	T	T	T

	K81-27-278	N86-7687	TN85-157	D87-5967	KY85-11020	N87-3250	S88-2036
Seed Yield - 1990							
East Coast	58.7	58.4	49.2	50.9	57.3	60.9	49.0
Upper and Central South	44.0	43.6	40.8	34.9	42.1	44.6	37.9
Delta	44.7	49.1	44.5	40.6	46.0	51.4	45.0
West	39.9	45.3	36.6	35.9	39.9	43.5	36.3
1989-90							
East Coast	55.3	53.2	46.6				
Upper & Central South	52.3	45.0	42.5				
Delta	44.4	48.7	43.6				
West	40.2	43.5	34.6				
1988-90							
East Coast							
Upper & Central South							
Delta							
West							
Oil Content - 1990	21.4	21.6	19.8	20.5	21.0	20.9	20.3
1989-90	21.5	21.7	19.9				
1988-90							
Protein Content - 1990	40.5	39.4	38.9	41.0	40.6	40.1	39.2
1989-90	40.5	39.2	39.1				
1988-90							
Seed size	12.8	15.1	11.5	13.6	16.1	17.7	12.6
Maturity index	10-09	+2	+1	-1	-2	+0	+2
Height	27	30	34	29	28	28	30
Seed quality	1.4	1.8	1.6	1.6	1.7	1.9	2.0
SDS severity score	1.4	1.9	1.6	1.1	1.6	1.7	1.3
SDS(percent with symptoms)	39	70	52	5	59	71	5
M. incognita	1.0	1.2	4.4	2.0	2.5	2.0	1.5
M. arenaria	3.0	4.8	4.7	3.0	5.0	2.2	4.0
SCN race 3	S	S	R	R	S	S	R
SCN race 4	S	S	R	R	S	S	R
Flower color	W	P	W	P	P	W	W
Pubescence color	G	G	G	G	G	G	T
Pod wall color	T	T	T	T	T	T	T

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Exhibit D.

Table 4. Number of cysts on 5 week old greenhouse grown plants of K81-27-278 lines used to produce the breeders seed of KS5292. Soil infested with Soybean Cyst Nematode race 3.

	Spring 1990	Fall 1990
	# cysts/entry	# cysts/entry
K81-27-278-2	15.5	80.0
K81-27-278-14	34.3	46.7
K81-27-278-15	20.0	93.3
K81-27-278-19	10.0	43.3
K81-27-278-25	35.0	106.7
K81-27-278-27	37.7	83.3
K81-27-278-29	16.7	50.0
K81-27-278-31	12.3	113.3
K81-27-278-34	18.7	60.0
K81-27-278-36	15.0	40.0
K81-27-278-37	20.0	93.3
K81-27-278-39	16.7	80.0
K81-27-278-42	10.0	96.7
K81-27-278-43	20.0	110.0
Williams 82	400.0	
Carter	21.5	
Bay		1833.0
LSD (0.05)	211.0	71.7

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Exhibit D.

Table 5. Number of cysts on 5 week old greenhouse grown plants of KS5292. Soil infested with Soybean Cyst Nematode race 3.

	December 1991 - January 1992	
	# cysts/entry	Std. dev.
Essex	43.8	14.9
Williams 82	45.0	25.0
KS5292	2.5	2.9
Fayette	7.5	6.4

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Exhibit D.

Table 6. Initial and final cyst counts of KS5292 on soil infested with Soybean Cyst Nematode race 3 in a field study with 4 replications.

	Cherokee County							
	1990				1991			
	Initial †	s.d.‡	Final	s.d.	Initial	s.d.	Final	s.d.
	# cysts/unit of soil							
Essex	43	41	117	58	28	23	53	39
Bay	50	20	205	66	19	13	69	52
Forrest	48	39	20	14	8	6	6	9
KS5292	53	44	10	8	8	3	5	8
	# eggs/unit of soil							
Essex	4660	4937	11100	6638	3414	3872	7285	9287
Bay	5100	1554	19100	6154	1524	1204	6184	6348
Forrest	5670	5224	1900	959	1144	1199	612	890
KS5292	4550	3640	1100	621	1156	1290	204	255

† initial soil samples collected at planting and final soil samples collected at plant maturity.

‡ s.d. = standard deviation

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'KS5292' JSS 29 August 1994

Exhibit E. Statement of the Basis of Applicant Ownership

The variety for which Plant Variety Protection is hereby sought was developed by Dr. W.T. Schapaugh, Jr., an employee of Kansas State University Experiment Station. By agreement between the employees and Kansas State University Experiment Station, all rights to any invention, discovery, or development made by the employee while employed by Kansas State University Experiment Station, were assigned by Kansas State University Experiment Station with no rights of any kind retained by the employees.