

No.

8900191



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Rogers Nk Seed Co.

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 VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Schooner'



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 July in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madison
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0681-0065

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) <i>NK MAIL 26 June 1992</i> Rogers Brothers Seed Company		2. TEMPORARY DESIGNATION D83045	3. VARIETY NAME <i>Schooner JMS 3/28/90</i>
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P.O. Box 4727 Boise, Idaho 83711		5. PHONE (Include area code) (208) 322-7272	FOR OFFICIAL USE ONLY PVPO NUMBER 8900191
6. GENUS AND SPECIES NAME Phaseolus vulgaris	7. FAMILY NAME (Botanical) Leguminosae		FILING DATE <i>Apr. 19, 1989</i> TIME <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
8. KIND NAME Dry Edible Bean	9. DATE OF DETERMINATION February 1988		AMOUNT FOR FILING \$ <i>1800.00</i> DATE <i>Apr. 18, 1989</i>
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		FEE RECEIVED AMOUNT FOR CERTIFICATE \$ <i>200.00</i> DATE <i>June 24, 1992</i>	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		12. DATE OF INCORPORATION Feb. 25, 1975	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Ronald Shellenberger Rogers Brothers Seed Company P.O. Box 4727 Boise, Idaho 83711 PHONE (Include area code): (208) 322-7272			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED			
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)			
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement.			
c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)			
d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety.			
e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.			
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.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S. <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? Sale of product for field trials only. <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> 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 <i>Ronald Shellenberger - Pulse Marketing Div.</i>	DATE <i>3/30/89</i>
SIGNATURE OF APPLICANT <i>Allen E. Hill, VICE-PRES.</i>	DATE <i>3-31-89 1</i>

DRY EDIBLE BEAN

Schooner
~~D83045~~

EXHIBIT A

ORIGIN AND BREEDING HISTORY

SMS
3/28/90
The Navy bean ~~D83045~~ *Schooner* was derived from the following cross pollination in the greenhouse during the fall of 1976:

7382-3-3-2 x W-122-16-1

Details of selection and multiplication:

<u>Year</u>	<u>Generation</u>	<u>Field Number</u>	<u>Bulk Harvest</u>	<u>No. of Single Plant Selections</u>
Summer 1977	F ₁	D77-2316	90 g	
Summer 1978	F ₂	D78-1953	1,646 g	
Summer 1979	F ₃	D79-1696		4
Summer 1980	F ₄	D80-1327		2
Summer 1981	F ₅	D81-1150		2
Winter 1981-82	F ₆	GH 81-1088	50 g	
Summer 1982	F ₇	D82-1135	1,020 g	1
Summer 1983	F ₈	D83-0405	4,000 g	
Summer 1984	F ₉	D84-0084	844 g	
Summer 1985	F ₁₀	D85-0425	5,582 g	
Winter 1986	F ₁₁	D86-IN-005	53 lbs.	
Summer 1987	F ₁₂	D86-3128	3,710 lbs.	

Schooner
~~D83045~~ has been observed to be stable and uniform since the F₈ generation.

Stock D86-3128 has been increased to commercial size quantities. Seed stock will be monitored for purity.

DRY EDIBLE BEAN

Schooner
~~D83045~~

EXHIBIT B

NOVELTY STATEMENT

SMS
3/28/90
Our variety ~~D83045~~ *Schooner* is most nearly like the variety Upland, however, it differs in the following areas:

1. ~~D83045~~ *Schooner* has a Type IIA plant habit, whereas Upland has a Type IB plant habit.
2. ~~D83045~~ *Schooner* has a taller plant than Upland.
3. ~~D83045~~ *Schooner* has a marginally narrower pod than Upland.
4. ~~D83045~~ *Schooner* has a longer pod beak than Upland.
5. ~~D83045~~ *Schooner* has a smaller seed size than Upland, 2684 seeds per pound compared to 2347 seeds per pound for Upland.
6. ~~D83045~~ *Schooner* matures four days later than Upland in Twin Falls, Idaho, for the years 1985, 1986 and 1988.

Data file: PVP
 Title: SCHOONER(SAMPLE 1) VS OPAL(SAMPLE 2)

Function: T-TEST

SAMPLE ONE:

 Variable 3 : MATURITY
 Cases 1 through 5
 Mean: 96.4
 Variance: 32.3
 Standard Deviation: 5.7

SAMPLE TWO:

 Variable 3 : MATURITY
 Cases 6 through 10
 Mean: 92.4
 Variance: 18.3
 Standard Deviation: 4.3

F-TEST FOR THE HYPOTHESIS "VARIANCE 1 = VARIANCE 2"

 F Value: 1.7650
 Numerator degrees of freedom: 4
 Denominator degrees of freedom: 4
 Probability: 0.5956

Result: Non-Significant F - Accept the Hypothesis

T-TEST FOR THE HYPOTHESIS "MEAN 1 = MEAN 2"

 Variance of the difference between the means: 1.0000
 Standard Deviation of the difference: 1.0000
 t Value: 4.0000
 Effective degrees of freedom: 4
 Probability of t: 0.0161

Result: Significant t - Reject the Hypothesis
 Confidence limits for the difference of the means (for alpha=0.10):
 4.000 plus or minus 2.132 (1.868 through 6.132)

OBJECTIVE DESCRIPTION OF VARIETY
 Dry Edible Bean (*Phaseolus vulgaris* L.)

JMS
 3/28/90

NAME OF APPLICANT(S) Rogers Brothers Seed Company	EXPERIMENTAL NAME D83045	VARIETY NAME D83045 Schooner
ADDRESS (Street and No. or R.F.D. No., City, State, ZIP) P.O. Box 4727 Boise, Idaho 83711		FOR OFFICIAL USE ONLY PVPO NO. 8900191

Provide data for all characters unless indicated as "optional." Place numbers in the boxes for the characters or numerical values which best describe this variety. Measured data should be the mean of an appropriate number of well spaced (15-20 cm) plants. The Royal Horticulture Society or any recognized color standard may be used to determine plant color. Designate the color system used below.

COLOR SYSTEM USED	LOCATION OF THE TEST(S) TO EVALUATE THIS VARIETY Twin Falls, Idaho
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1. MARKET CLASS

CLASS	CHECK
1 = Navy (Pea)	Sevix Upland
2 = Small White	Aurora
3 = Black	Midnight
4 = Pinto	UI-114
5 = Great Northern	UI-59
6 = Small Red	NW-59
7 = Pink	Viva
8 = Cranberry	UI-50
9 = Dark Red Kidney	Montcalm
10 = Light Red Kidney	Redcloud
11 = Yellow Eye	Steuben
12 = Other (specify)	

2. MATURITY

1 = Early (80-90 days); 2 = Medium (90-100 days); 3 = Late (>100 days)

Days from planting to harvest maturity: 9 1

Physiological maturity (90% of pods dry & buck = skin)
 Heat units from planting to harvest maturity (optional). Specify base temperature used: 50 F

Days from planting to harvest maturity of check variety (use check appropriate to market class shown in item 1): 8 7

3. PLANT HABIT

3

TYPE

1 = Ia Bush-determinate, strong and erect stem and branches
 2 = Ib Bush-determinate, weak stem and branches
 3 = IIa Erect growth habit-indeterminate, guides (runners) short or not developed
 4 = IIb Erect growth habit-indeterminate, guides medium to long, with no ability to climb
 5 = IIIa Vine-indeterminate, short guides with no ability to climb
 6 = IIIb Vine-indeterminate, long guides with ability to climb
 7 = IVa Indeterminate climbing, pods distributed throughout the plant
 8 = IVb Indeterminate climbing, pods concentrated on the upper part of the plant

Average height of mature plant, in cm. 7 3

Average height of check variety, in cm. (use same check as above) 6 0

Pod Position: 3
 1 = Low (lower pods touching soil surface)
 2 = High (lower pods not touching soil surface)
 3 = Scattered (not concentrated high or low)

Adaptability to machine harvest: 1
 1 = Adapted 2 = Not Adapted

Lodging resistance: 2
 1 = Good 2 = Fair 3 = Poor

4. LEAFLET MORPHOLOGY (Use terminal leaflet of a fully expanded trifoliolate)

2 1 = Smooth; 2 = Wrinkled

1 1 = Dull; 2 = Glossy; 3 = Semiglossy; 4 = Variable

1 SHAPE: 1 = Ovate 2 = Lanceolate 3 = Deltoid 4 = Cordate 5 = Rhomboid

2 APEX OF LEAFLET: 1 = Acute 2 = Acuminate 3 = Cuspidate 4 = Obtuse

1 BASE OF LEAFLET: 1 = Obtuse 2 = Oblique 3 = Cordate 4 = Cuneate 5 = Attenuate

5

5. FLOWER COLOR AND DAYS TO BLOOM

1 COLOR OF STANDARD: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

1 COLOR OF KEEL: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

1 COLOR OF WINGS: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

4 9 Days to ^{1st}~~90%~~ bloom

6. POD MORPHOLOGY (Green pod morphology optional)

Green Mature

1 1 COLOR PATTERN: 1 = Solid; 2 = Striped; 3 = Blotched; 4 = Mottled; 5 = Other _____

At physiological maturity

3 4 PRIMARY COLOR: 1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other _____

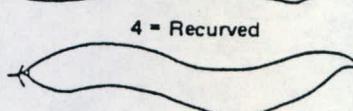
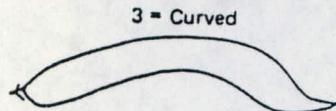
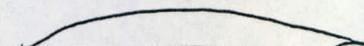
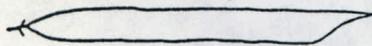
1 1 COLOR MODIFIER: 1 = Light; 2 = Light Medium; 3 = Medium; 4 = Medium Dark; 5 = Dark

SECONDARY COLOR: 1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other _____

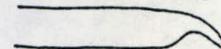
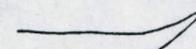
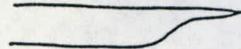
1 1 CROSS SECTION SHAPE: 1 = Flat 2 = Pear 3 = Round 4 = Figure Eight



2 2 POD CURVATURE: 1 = Straight 2 = Slightly Curved 3 = Curved 4 = Recurved



3 3 POD BEAK ORIENTATION: 1 = Straight 2 = Curved Upward 3 = Curved Downward 4 = Variable Average beak length, in cm. _____



3 3 CONSTRICTIONS: 1 = None; 2 = Slight; 3 = Deep

Average number of seeds per pod Not available

7. SEED COLOR

1 1 = Shiny; 2 = Dull; 3 = Semishiny; 4 = Variable

1 1 = Monochrome; 2 = Polychrome

1 PRIMARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other _____

SECONDARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other _____

1 COLOR PATTERN: 1 = Solid; 2 = Splashed; 3 = Mottled; 4 = Striped; 5 = Flecked; 6 = Dotted

1 HILAR RING: 1 = Absent; 2 = Present

HILAR RING COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other _____

8. SEED SHAPE AND WEIGHT

2 SHAPE OF SEED TAKEN FROM MIDDLE OF POD: 1 = Round 2 = Oval 3 = Cuboid 4 = Kidney 5 = Truncate Fastigate



1 7 Dry seed weight in g/100g seeds (adjusted to 12% moisture) 16.9 g/100 seeds 2684 seeds/lb.

9. ANTHOCYANIN PIGMENTATION

1 = ABSENT
2 = PRESENT

Flowers

Stems

Pods

Seeds

Leaves

Petioles

Peduncles

Nodes

10. KNOWN DISEASE REACTION

DISEASES - COMMON NAME: Anthracnose, Rust, Powdery mildew, Fusarium root rot, Pythium root rot, Rhizoctonia root rot, Pythium wilt, Sclerotinia white mold, Angular leaf spot, Bacterial wilt, Halo blight, Fuscos blight, Common bacterial blight, Red node virus, Pod mottle virus, Bean common mosaic virus, Bean yellow mosaic virus, Curly top virus, Bacterial brown spot, Bean southern mosaic virus, Other (specify) _____

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and race(s), where applicable)

DISEASE: CN Bean Common Mosaic Virus; SN Marmor phaseoli; Race(s) NY 15 & BV 1

DISEASE: CN Anthracnose; SN colletotrichum lindemuthianum; Race(s) Delta & Alpha

DISEASE: CN Bean Common Mosaic Virus; SN Marmor phaseoli; Race(s) NL-3

DISEASE: CN Bean Rust; SN Uromyces phaseoli; Race(s) Under determination

DISEASE: CN _____; SN _____; Race(s) _____

DISEASE: CN _____; SN _____; Race(s) _____

11. KNOWN INSECT/NAMATODE RESISTANCE

PESTS - COMMON NAME: Aphids, Bean pod weevil, Bruchid beetle, Corn earworm, Flea beetle, Leaf hopper, Lesion nematode, Lygus, Mexican bean beetle, Root knot nematode, Corn seed maggot, Spider mites, Thrips, Weevils, Western bean cutworm, Other (specify) _____

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and biotype, where applicable)

PEST: CN _____; SN _____; Biotype _____

PEST: CN _____; SN _____; Biotype _____

PEST: CN _____; SN _____; Biotype _____

12. KNOWN PHYSIOLOGICAL STRESS REACTION

1 = Susceptible; 2 = Resistant;
3 = Tolerant; 4 = Avoidance

Heat

Cold

Drought

Air Pollution

Nutrient toxicity or deficiency (specify nutrient) _____

Other _____

13. COMMENTS

PLANT HEIGHT*Schooner*
~~D83045~~UPLAND

84 cm.

62 cm.

85 cm.

51 cm.

72 cm.

56 cm.

60 cm.

57 cm.

85 cm.

59 cm.

70 cm.

54 cm.

77 cm.

61 cm.

74 cm.

48 cm.

68 cm.

73 cm.

78 cm.

60 cm.

58 cm.

60 cm.

79 cm.

60 cm.

80 cm.

56 cm.

64 cm.

56 cm.

67 cm.

59 cm.

62 cm.

70 cm.

85 cm.

66 cm.

69 cm.

59 cm.

75 cm.

70 cm.

77 cm.61 cm.

$$\bar{x} = 73.45$$

$$\bar{x} = 59.90$$

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3/28/90

Data file PVP83045
 Title: PVP ~~83045~~ VS. UPLAND

Schooner

*JMS
3/28/90*

Function: ANOVA-1
 Data case no. 1 to 40
 Without selection

One way ANOVA grouped over variable 1
 VARIETY
 with values from 1 to 2

Variable 3
 PLANT HEIGHT (CM)

A N A L Y S I S O F V A R I A N C E T A B L E

	Degrees of Freedom	Sum of Squares	Error Mean Square	F-value	Prob.
Between	1	1836.0250	1836.02	33.05	.000
Within	38	2110.7500	55.55		
Total	39	3946.7750			

Coefficient of Variation= 11.18%

Var.	V A R I A B L E	No.	3		
1	Number	Sum	Average	SD	SE
1	20.00	1469.000	73.45	8.52	1.67
2	20.00	1198.000	59.90	6.21	1.67
Total	40.00	2667.000	66.68	10.06	1.59
Within				7.45	

Bartlett's Test

Chi-square = 1.82756
 Number of Degrees of Freedom = 1
 Approximate Significance = .1764

POD WIDTH

JMS
3/28/90

Schooner
D83045

UPLAND

7 mm.	8 mm.
8 mm.	8 mm.
9 mm.	10 mm.
8 mm.	8 mm.
8 mm.	9 mm.
8 mm.	9 mm.
8 mm.	10 mm.
8 mm.	9 mm.
7 mm.	8 mm.
6 mm.	8 mm.
9 mm.	9 mm.
6 mm.	8 mm.
8 mm.	8 mm.
8 mm.	6 mm.
8 mm.	9 mm.
7 mm.	8 mm.
9 mm.	7 mm.
7 mm.	9 mm.
8 mm.	7 mm.
<u>8 mm.</u>	<u>7 mm.</u>
$\bar{x} = 7.75$	$\bar{x} = 8.25$

Data file PVP83045
 Title: PVP ~~83045~~ VS. UPLAND
Schooner

JMS
3/28/90

Function: ANOVA-1
 Data case no. 1 to 40
 Without selection

One way ANOVA grouped over variable 1
 VARIETY
 with values from 1 to 2

Variable 5
 POD WIDTH (MM)

A N A L Y S I S O F V A R I A N C E T A B L E

	Degrees of Freedom	Sum of Squares	Error Mean Square	F-value	Prob.
Between	1	2.5000	2.50	2.84	.100
Within	38	33.5000	0.88		
Total	39	36.0000			

Coefficient of Variation= 11.74%

Var.	V A R I A B L E	No.	S	SE
1	Number	Sum	Average	SD
1	20.00	155.000	7.75	0.85
2	20.00	165.000	8.25	1.02
Total	40.00	320.000	8.00	0.96
Within				0.94

Bartlett's Test

Chi-square = .6035965
 Number of Degrees of Freedom = 1
 Approximate Significance = .4372

POD BEAK LENGTHJMS
3/28/90Schooner
D83045UPLAND

8 mm.	5 mm.
8 mm.	7 mm.
7 mm.	9 mm.
9 mm.	7 mm.
8 mm.	8 mm.
9 mm.	6 mm.
9 mm.	7 mm.
9 mm.	6 mm.
8 mm.	5 mm.
9 mm.	7 mm.
9 mm.	4 mm.
9 mm.	5 mm.
8 mm.	7 mm.
9 mm.	6 mm.
8 mm.	8 mm.
7 mm.	6 mm.
6 mm.	7 mm.
9 mm.	7 mm.
9 mm.	9 mm.
<u>7 mm.</u>	<u>6 mm.</u>
$\bar{x} = 8.25$	$\bar{x} = 6.60$

Data file PVP83045
 Title: PVP ~~83045~~ VS. UPLAND
 Schooner

JMS
 3/28/90

Function: ANOVA-1
 Data case no. 1 to 40
 Without selection

One way ANOVA grouped over variable 1
 VARIETY
 with values from 1 to 2

Variable 6
 POD BEAK LENGTH (MM)

A N A L Y S I S O F V A R I A N C E T A B L E

	Degrees of Freedom	Sum of Squares	Error Mean Square	F-value	Prob.
Between	1	27.2250	27.22	21.31	.000
Within	38	48.5500	1.28		
Total	39	75.7750			

Coefficient of Variation= 15.22%

Var.	V A R I A B L E	No.	6		
1	Number	Sum	Average	SD	SE
1	20.00	165.000	8.25	0.91	0.25
2	20.00	132.000	6.60	1.31	0.25
Total	40.00	297.000	7.43	1.39	0.22
Within				1.13	

Bartlett's Test

Chi-square = 2.436754
 Number of Degrees of Freedom = 1
 Approximate Significance = .1185

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Schooner
~~D83045~~

UPLAND

JMS
3/28/90

	<u>Maturity</u>	<u>S/C</u>	<u>Maturity</u>	<u>S/C</u>
1988	90 days	2644	85 days	2192
1986	92 days	2468	86 days	2444
1985	<u>91 days</u>	<u>2940</u>	<u>89 days</u>	<u>2404</u>
$\bar{x} =$	91 days	2684	86.7 days	2347

DRY EDIBLE BEAN

~~Schooner~~
~~D83045~~

EXHIBIT D

BOTANICAL DESCRIPTION

JMS
3/28/90

~~Schooner~~
Navy bean ~~D83045~~ is an upright, wide profile variety with very good yield potential. It has a Type IIA plant habit. Almost all of its pods are held off the ground.

~~Schooner~~
~~D83045~~ matures in 91 days (3 year average) for the years 1985, 1986 and 1988, compared to Upland at 87 days (maturity defined as 90% of pods turned from green to buckskin).

~~Schooner~~
~~D83045~~ has resistance to the NY 15 and BV 1 strains of Bean Common Mosaic Virus, however, it is susceptible to the NL-3 strain. ~~Schooner~~ ~~D83045~~ is susceptible to the Delta and Alpha strains of Anthracnose and does not carry the ARE gene for resistance.

~~Schooner~~
The seed size of ~~D83045~~ averages 2684 seeds per pound which is smaller than Upland at 2347 seeds per pound. In canning tests, ~~Schooner~~ ~~D83045~~ produces an acceptable canned product.

~~Schooner~~
~~D83045~~ has shown adaptability in the production areas of Idaho, North Dakota, Washington and Michigan.

DRY EDIBLE BEAN

Schooner
~~D83045~~

EXHIBIT E

APPLICANT'S OWNERSHIP

JMS
3/28/90

Variety ~~D83045~~ *Schooner* was developed by Ronald Shellenberger, Ph.D., a Rogers Brothers Seed Company plant breeder, with Rogers Brothers Seed Company funding the development of the variety. By agreement between employees and Rogers Brothers Seed Company, all rights to any variety developed by employees are assigned to the Company. No rights to such varieties are retained by employees.

Office of the Secretary of State

I, WILLIAM T. QUILLEN, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THAT THE SAID "ROGERS NK SEED CO.", FILED A CERTIFICATE OF AMENDMENT, CHANGING ITS NAME TO "ROGERS SEED CO.", THE FIFTH DAY OF MAY, A.D. 1994, AT 9 O'CLOCK A.M.



William T. Quillen

William T. Quillen, Secretary of State

0810041 8320

944080001

AUTHENTICATION: 7120759

DATE: 05-16-94

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
ROGERS NK SEED CO.

Adopted in accordance with the provisions
of Section 242 of the General Corporation
Law of the State of Delaware

EFFECTIVE DATE: June 1, 1994

We, Willem van Overschot, President, and Richard B. Geller, Secretary, of Rogers NK Seed Co., a corporation existing under the laws of the State of Delaware, do hereby certify as follows:

FIRST: The Certificate of Incorporation of the corporation was filed on 2/27/75.

SECOND: The Certificate of Incorporation of said corporation has been amended as follows:

By striking out the whole of Article I thereof as it now exists and inserting in lieu and instead thereof, a new Article I, reading as follows:

ARTICLE I

Name

The name of the Corporation is ROGERS SEED CO.

THIRD: Such amendment has been duly adopted in accordance with the provisions of the General Corporation Law of the State of Delaware, by the unanimous written consent of all of the stockholders entitled to vote in accordance with the provisions of Section 228 of the General Corporation Law of the State of Delaware.

FOURTH: See attached Written Consent of Sole Shareholder and Board of Directors' Resolution.

IN WITNESS WHEREOF, we have signed this certificate this 13th day of April, 1994.

Willem van Overschot
Willem van Overschot, President

Richard B. Geller
Richard B. Geller, Secretary

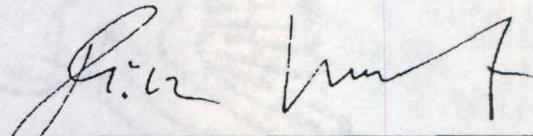
ROGERS NK SEED CO.

WRITTEN CONSENT OF SOLE SHAREHOLDER

SANDOZ CORPORATION, owner of all of the issued and outstanding shares of ROGERS NK SEED CO., hereby consents, pursuant to Section 228 of the Delaware General Corporation Law, to the adoption of the following resolution as and for the act of the shareholder:

RESOLVED, that SANDOZ CORPORATION, as sole shareholder, approves the amendment to Article I of the Certificate of Incorporation of ROGERS NK SEED CO., changing its name to **ROGERS SEED CO.**

Dated: April 22, 1994



Heinz P. Imhof,
Chief Executive Officer
Sandoz Corporation

ROGERS NK SEED CO.

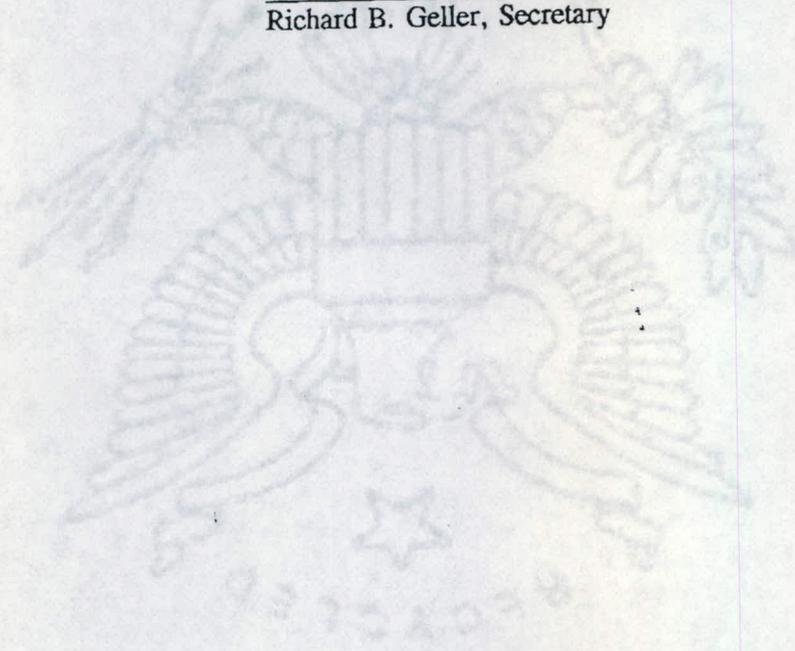
RESOLUTION

RESOLVED, that according to Section 242 of the General Corporation Law of the State of Delaware, that Article I of the Certificate of Incorporation be amended, effective June 1, 1994, to read as follows: The name of the Corporation is **ROGERS SEED CO.**; and, further,

RESOLVED, that the appropriate officers of Rogers NK Seed Co. be, and they hereby are, authorized to take any and all further action and execute and deliver any and all further documents that may be necessary or desirable in order to carry out and effectuate fully the purposes set forth in the foregoing resolution.

ADOPTED UNANIMOUSLY BY THE BOARD
MARCH 31, 1994

Richard B. Geller
Richard B. Geller, Secretary



State of Delaware
Office of the Secretary of State PAGE 1

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:

"ROGERS SEED CO.", A DELAWARE CORPORATION,
WITH AND INTO "NOVARTIS SEEDS, INC." UNDER THE NAME OF "NOVARTIS SEEDS, INC.", A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF THE STATE OF DELAWARE, AS RECEIVED AND FILED IN THIS OFFICE THE TWENTY-FIFTH DAY OF JUNE, A.D. 1997, AT 9 O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



Edward J. Freel

Edward J. Freel, Secretary of State

0829320 8100M
971211787

AUTHENTICATION: 8531908
06-26-97

DATE:

STATE OF DELAWARE
SECRETARY OF STATE
DIVISION OF CORPORATIONS
FILED 09:00 AM 06/25/1997
971211787 - 0829320

**CERTIFICATE OF MERGER
OF
ROGERS SEED CO.
INTO
NOVARTIS SEEDS, INC.**

The undersigned corporation organized and existing under and by virtue of the General Corporation Law of Delaware,

DOES HEREBY CERTIFY:

FIRST: That the name and state of incorporation of each on the constituent corporations of the merger is as follows:

NAME	STATE OF INCORPORATION
Novartis Seeds, Inc.	Delaware
Rogers Seed Co.	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with the requirements of section 251 of the General Corporation Law of Delaware

THIRD: That the name of the surviving corporation is Novartis Seeds, Inc.

FOURTH: That the Certificate of Incorporation of Novartis Seeds, Inc., a Delaware corporation which will survive the merger, shall be the Certificate of Incorporation of the surviving corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving corporation, the address of which is 7500 Olson Memorial Highway, Golden Valley, MN 55427.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving corporation, on request and without cost, to any stockholder of any constituent corporation.

SEVENTH: That this Certificate of Merger shall be effective on July 1, 1997.

Dated June 23, 1997

NOVARTIS SEEDS, INC.

By: Edward C. Resler
Name: Edward C. Resler
Title: Vice President & General Counsel