No. 7500072

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Asgrow Seed Company

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, OR 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 (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Pax'

PLANT VARIETY PROTECTION OFFICE · AGRICULTURAL MARKETING SERVICE · U.S. DEPARTMENT OF AGRICULTURE

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* 17 th *day of* October *in the year of our Lord one thousand nine hundred and* seventy-five

Attest:

L. R. Rollin

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz

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
~~XP-B51~~ 'PAX' RdS	Garden Bean	PV NUMBER 7500072
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 3.13.75 / TIME 10 A.M.
Phaseolus vulgaris	Leguminosea	FEE RECEIVED $ 250 / BALANCE DUE $ —
	5. DATE OF DETERMINATION 1972	$ 250 / $ —
		$ 250 / $ —

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
Asgrow Seed Company	Kalamazoo, Michigan 49001	(616) 382-4000

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	Delaware	March 22, 1968

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

Allen R. Trotter
Asgrow Seed Company
Kalamazoo, Michigan 49001

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.)* [ ] YES [X] 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 beyond breeder seed? [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

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.

3/10/75 (DATE) — Allen R. Trotter (SIGNATURE OF APPLICANT)

(DATE) — (SIGNATURE OF APPLICANT)

7500012

J. D. Atkin
February 21, 1975

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF ~~XP-B51~~ 'PAX' Rf6

1962	Original cross-Roundup x BBL-274 made in fall 1962.
1963	F_1 grown at ARC. F_2 grown in greenhouse, fall 1963
1964	Small increase-F_3
1965	Small bulk planting from 1964 harvest. Single vine selections made.
1966	F_5 Reselected
1967	F_6 Single vine selections grown in greenhouse-winter 1966-67. F_6+1 grown in summer 1967. Small increase of singles. Reselected.
1968	F_8-Small increase and mass selections.
1969	F_8+1 -small increase. Yield trial.
1970	Increase and mass selection. Yield trial.
1971	Increased. Yield trials.
1972	Increased. Yield trials. Desig. XP-B51
1973	Testing throughout company. Increase and produced 300 single vine selections made for testing on a progeny basis.
1974	Testing throughout company. Sampling outside of company.

Planted the 300 SVS on a single progeny basis. All progenies were evaluated for trueness to type and all progenies saved were very similar. Any progeny thought to be different was removed completely. The seed from remaining progenies was harvested as a bulk, and this has become our basic seed stock.

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EXHIBIT B

BOTANICAL DESCRIPTION OF ~~XP-B51~~ 'PAX' Rds SNAP BEAN

~~XP-B51~~ 'PAX' Rds is a small sieve high quality snap bean developed for processing fancy cut beans. It should be harvested at approximately 25% 5 sieve and over and will compete directly with varieties such as Slimgreen and Slenderwhite. The line appears to be very widely adapted.

The plant is large, upright and stiff and bears its pods well up off the ground. The plant has few branches but a large basic frame with strong stem and branches. The medium thick leaves are wrinkled and have a dull surface. The leaves are large and the middle leaflet is taper pointed. There is a slight pubescence on both leaf surfaces and the color is medium green. In summary, the plant could be called a good Tendercrop type and well adapted to machine harvest.

The pods are long, quite straight, smooth with no constrictions, with very low fiber, slow seed development and medium green in color. The pods have a sparse pubescence, no string, and firm flesh. There is very little cavitation and the pod flesh is slow to breakdown as the seeds grow in size.

The flowers and seeds are white.

~~XP-B51~~ 'PAX' Rds has been tested and found to be susceptible to Anthracnose, Curly Top, Halo Blight and resistant to Common Bean and N.Y. 15 bean mosaic viruses. There is no reason to believe that ~~XP-B51~~ 'PAX' Rds is especially resistant to any insects. The wide range of adaptation would suggest that the line is tolerant to a wide range of conditions but resistance cannot be claimed.

Exhibit B is written from several years experience and is thus rather generalized due to the fact that conditions vary from year to year. Exhibit C is compiled from results of a one year replicated trial planted especially for PVP measurements where varieties can be compared in side by side plantings. Exhibits B and C therefore, compliment each other and may vary slightly.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-12 (10-2-72)

EXHIBIT C (Bean)

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

OBJECTIVE DESCRIPTION OF VARIETY

BEAN (*PHALEOLUS VULGARIS*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
ASGROW SEED COMPANY

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*

FOR OFFICIAL USE ONLY

PVPO NUMBER
7500072

VARIETY NAME OR TEMPORARY DESIGNATION
~~XP-B51~~ 'PAX' RJS

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. TYPE:

[1] 1 = SNAPBEAN 2 = GREEN SHELL 3 = DRY EDIBLE 4 = MULTIPURPOSE

2. SEASON AND REGION OF ADAPTABILITY IN THE U.S.:

[2] Grows best during: 1 = SPRING 2 = SUMMER 3 = FALL 4 = WINTER

[6] Best adapted in: 1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST 5 = SOUTHWEST 6 = MOST REGIONS

3. MATURITY *(Days from seeding to first harvest):*

[7][0] GREEN PODS [ ][ ] GREEN SHELLS [ ][ ] DRY SEEDS

[ ][ ] NO. DAYS EARLIER THAN --------- [ ]
[0][1] NO. DAYS LATER THAN ---------- [1]

1 = TENDERCROP 2 = KENTUCKY WONDER 3 = KINGHORN WAX
4 = WHITE KIDNEY 5 = MICHELITE 62 6 = DWARF HORTICULTURAL
7 = BUSH BLUE LAKE 8 = OTHER *(Specify)*

4. PLANT:

[1] 1 = DETERMINATE, ERECT BUSH 2 = DETERMINATE, SPRAWLING BUSH 3 = DETERMINATE, SEMIPOLE 4 = INDETERMINATE, POLE

[0][5][2] CM. HEIGHT OR LENGTH OF VINE FROM PRIMARY LEAF NODE

[0][0][3] NUMBER PRIMARY BRANCHES PER MAIN STALK

[6][0] CM. SPREAD

[1] Branching habit: 1 = COMPACT 2 = OPEN

[0][4] NUMBER INTERNODES ON MAIN STALK BETWEEN PRIMARY LEAF AND BASE OF TERMINAL INFLORESCENCE

[0][2] CM. LENGTH OF FIRST INTERNODE ABOVE PRIMARY LEAF

[0][9] MM. STALK DIAMETER ABOVE FIRST TRIFOLIATE LEAF

[2] Main stalk: 1 = BRITTLE 2 = WIREY [2] 1. STOUT 2. THIN

[2] Flower position:
[2] Pod Position:
1 = LOW, CONCENTRATED 2 = HIGH, CONCENTRATED 3 = SCATTERED

5. LEAVES:

[2] 1 = SMOOTH 2 = WRINKLED [1] 1 = DULL 2 = GLOSSY [2] Thickness: 1 = THIN 2 = MEDIUM 3 = THICK

[3] Size: 1 = SMALL *(Earliwax)* 2 = MEDIUM 3 = LARGE *(Tendercrop)* [12] CM. PETIOLE LENGTH *(To basal leaflets of first trifoliate leaf)*

[2] Tip shape of center leaflet: 1 = ROUNDED 2 = TAPER POINTED 3 = SHARP POINTED

[2] PUBESCENCE - Dorsal:
[2] PUBESCENCE - Ventral:
1 = NONE 2 = SLIGHT 3 = CONSIDERABLE

[2] Color: 1 = LIGHT GREEN *(Bountiful)* 2 = MEDIUM GREEN 3 = DARK GREEN *(Bush Blue Lake)*

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~~XP-B51~~ 'PAX' RJS

6. FLOWERS:

[1] Color: 1 = WHITE 2 = CREAM 3 = PINK 4 = LILAC 5 = PURPLE 6 = OTHER *(Specify)*_____

[2] Racemes: 1 = LONG 2 = MEDIUM 3 = SHORT [6] NUMBER FLOWERS PER RACEME

7. FRESH PODS: *(Edible maturity, averages for 10 pods)*

[2] Color: 1 = LIGHT GREEN *(Bountiful)* 2 = MEDIUM GREEN *(Tendergreen)* 3 = DARK GREEN *(Wade)* 4 = LIGHT YELLOW *(Brittlewax)* 5 = GOLDEN YELLOW *(Cherokee Wax)* 6 = GREEN-RED VARIAGATED *(Horticultural)* 7 = OTHER *(Specify)*_____

[1 5] CM. LENGTH [0 9] MM. WIDTH *(Between sutures)* [1 0] MM. THICKNESS [0 9] WIDTH / THICKNESS X 10

[4] Cross section pod shape: 1 = FLAT 2 = OVAL 3 = CREASEBACK 4 = ROUND

[2] Curvature: 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = CURVED

[1] Constrictions: 1 = NONE 2 = SLIGHT 3 = DEEP

[2] Surface: 1 = SHINY 2 = DULL

[1] Pod flesh: 1 = LIGHT 2 = DARK

[15] MM. SPUR LENGTH

[1] Fiber: 1 = NONE 2 = SPARSE 3 = CONSIDERABLE

[7] NUMBER OF SEEDS PER POD

[ ] NUMBER MARKETABLE PODS PER PLANT *(Once over harvest)*

[2] Pubescence: 1 = NONE 2 = SPARSE 3 = CONSIDERABLE

[2] Spur: 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = CURVED

[1] Surface: 1 = SMOOTH 2 = BLISTERED

[1] Pod flesh: 1 = FIRM 2 = WATERY

[2] Suture string: 1 = PRESENT 2 = ABSENT

[1] Seed development: 1 = SLOW 2 = MEDIUM 3 = FAST

[ ] NUMBER PODS PER PLANT *(Once over harvest)*

[1] Machine harvest: 1 = ADAPTED 2 = NOT ADAPTED

8. SEED COAT COLOR:

[1] 1 = MONOCHROME 2 = POLYCHROME

[1] 1 = SHINY 2 = DULL

[1] Primary color: [ ] Secondary color:
1 = WHITE 2 = YELLOW 3 = BUFF 4 = TAN
5 = BROWN 6 = PINK 7 = RED 8 = PURPLE
9 = BLUE 10 = BLACK 11 = OTHER *(Specify)*_____

[ ] Color pattern: 1 = SPLASHED 2 = MOTTLED 3 = STRIPED 4 = FLECKED 5 = DOTTED

[ ] Secondary color location:
1 = HILAR RING 2 = HILAR SURFACE
3 = STROPHIOLE 4 = MICROPYLE
5 = SIDES 6 = DORSAL SURFACE
7 = NOT RESTRICTED TO ANY AREA 8 = COMBINATION OF LOCATIONS *(Specify)*_____

[1] Hilar ring: 1 = NOT PRESENT 2 = NARROW 3 = BUTTERFLY SHAPED

[2] Vein-like under coat pattern: 1 = ABSENT 2 = PRESENT

9. SEED SHAPE AND SIZE:

[1] Hilum view: 1 = ELLIPTICAL 2 = OVAL 3 = ROUND

[3] Side view: 1 = OVAL 2 = ROUND 3 = KIDNEY 4 = TRUNCATE ENDS

[4] Cross section: 1 = ELLIPTICAL 2 = OVAL 3 = CORDATE 4 = ROUND

[31] GM. WEIGHT PER 100 SEEDS

[4] Classification: 1 = PEA 2 = MEDIUM 3 = MARROW 4 = KIDNEY 5 = PINTO

[0 5] MM. WIDTH *(Dorsal to ventral)*

[0 5] MM. THICKNESS *(Side to side)*

[1 4] MM. LENGTH

[0 1 0] WIDTH / THICKNESS X 10

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.

RECEIVED
MAR 13 1975
U.S. DEPARTMENT OF AGRICULTURE
AMS, GRAIN DIV.
PVPO

7500072

'PAX' R/S ~~XP-B51~~

10. ANTHOCYANIN: *(1 = Absent 2 = Present):*

[1] FLOWERS [1] STEMS [1] PODS [1] SEEDS [1] LEAVES

11. DISEASE RESISTANCE *(0 = Not tested; 1 = Susceptible; 2 = Resistant):*

[0]	RUST *(Specify race)* _____	[0]	ANGULAR LEAF SPOT
[0]	BACTERIAL WILT	[2]	COMMON BEAN MOSAIC
[1]	ANTHRACNOSE	[0]	YELLOW BEAN MOSAIC
[0]	SOUTHERN BEAN MOSAIC	[0]	FUSARIUM ROOT ROT
[1]	CURLY TOP	[2]	N.Y. 15 BEAN MOSAIC
[0]	POWDERY MILDEW	[0]	BEAN MOSAIC VIRUS 4
[1]	HALO BLIGHT	[0]	FUSCOUS BLIGHT
[0]	ALFALFA MOSAIC VIRUS	[0]	ALFALFA MOSAIC VIRUS 2
[0]	POD MOTTLE VIRUS	[0]	RED NODE VIRUS
[0]	ROOT KNOT NEMATODE	[0]	OTHER *(Specify)* _____

12. INSECT RESISTANCE: *(0 = Not tested; 1 = Susceptible; 2 = Resistant)*

[0]	APHIDS	[0]	LEAF HOPPERS
[0]	POD BORER	[0]	LYGUS
[0]	THRIPS	[0]	WEAVILS
[0]	SEED CORN MAGGOT	[0]	OTHER *(Specify)* _____

13. PHYSIOLOGICAL RESISTANCE: *(0 = Not tested; 1 = Susceptible; 2 = Resistant)*

[0] HEAT [0] COLD [0] DROUGHT [0] OTHER *(Specify)* _____

REFERENCES: The following publications may be used as a reference in completing this form:

1. Beans of New York. Vol. 1 Part II of Vegetables of New York. U.P. Hedrick et al. J. B. Lyon Company, Albany, N.Y. 1931.
2. Yarnell, S. H., Cytogenetics of the Vegetable Crops IV. Legumes. Bot. Rev. 31:247 - 330. 1965.
3. USDA Yearbook of Agriculture. 1937.

COLOR: Nickerson's or any recognized color fan may be used to determine the colors.

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EXHIBIT D

PROOF OF NOVELTY OF ~~XP-B51~~ 'PAX' RJS

'PAX' RJS ~~XP-B51~~ is a small sieve been developed for the processor who wants to pack four sieve fancy cut beans. It resembles Slimgreen, Slenderwhite and Eagle in different characteristics.

'PAX' RJS ~~XP-B51~~ differs radically from Slimgreen but a few specific examples are as follows:

1. Pod length--the average pod length for 1972, 1973 and 1974 yield trials at Twin Falls, Idaho:

   'PAX' RJS ~~XP-B51~~ 153mm
   Slimgreen 126mm

2. Fiber development--'PAX' RJS ~~XP-B51~~ develops much less fiber than Slimgreen.

3. Seed development--Slimgreen is a fast seed developer and ~~B51~~ 'PAX' RJS very slow.

4. Earliness--Slimgreen is much earlier than 'PAX' RJS ~~XP-B51~~.

5. Plant type etc., etc.

'PAX' RJS ~~XP-B51~~ differs from Slenderwhite in many characteristics but a few are as follows:

1. Pod length--the varieties were compared in the replicated trial only in 1974. The pod lengths are:

   'PAX' RJS ~~XP-B51~~ 152mm
   ~~Slimgreen~~ SLENDERWHITE RJS 129mm

2. Pod color--there is a very great difference in pod color. Slenderwhite pods are a glossy yellow green whereas ~~B51~~ 'PAX' RJS pods are a normal medium green.

3. Plant type--'PAX' RJS ~~B51~~ is a larger and more upright plant.

'PAX' ~~XP-B51~~ MOST CLOSELY RESEMBLES 'EAGLE'. (PER LETTER OF 4/4/75 FROM DR. ATKIN RJS) Eagle and 'PAX' RJS ~~XP-B51~~ are quite similar in plant and pod type but the sieve size of the two varieties is quite different. Following are detailed data from the replicated yield trials where a sequence of harvests are made:

SEE PAGE 2 EXHIBIT D FOR TABLE

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EXHIBIT E

Statement of the Basis of Applicant's Ownership

Bean ~~XP-B51~~ 'PAX' RdS.

'PAX' RdS

Bean ~~XP-B51~~ was originated and developed by Dr. W. F. Pierce, Dr. C. G. Briggs, and Dr. John Atkin, all Asgrow plant breeders. By agreement between employee and Asgrow Seed Company, all rights to any invention, discovery, or development made by an employee are assigned to the company. No rights to such invention, discovery, or development are retained by the employee.