

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Rogers Brothers 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 *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, 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** (7 U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Zircon'



Attest:

Kenneth
 Acting
 Commissioner
 Plant Variety Protection Office
 Grain Division
 Agricultural Marketing Service

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 28th day of April in the year of our Lord one thousand nine hundred and eighty-three.

John R. Block
 Secretary of Agriculture

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

INSTRUCTIONS: See Reverse.

1e. TEMPORARY DESIGNATION OF VARIETY D76063		1b. VARIETY NAME ZIRCON <i>2/21/82</i>		FOR OFFICIAL USE ONLY PV NUMBER 8200066	
2. KIND NAME Dry Edible Bean		3. GENUS AND SPECIES NAME Phaseolus vulgaris		FILING DATE 2/10/82	TIME 11:00 A.M. P.M.
4. FAMILY NAME (BOTANICAL) Leguminosae		5. DATE OF DETERMINATION Fall, 1976		FEE RECEIVED \$ 500.00	DATE 2/10/82
				\$ 250.00	4/11/83
6. NAME OF APPLICANT(S) Rogers Brothers Seed Company		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) P. O. Box 80 Idaho Falls, ID 83402		8. TELEPHONE AREA CODE AND NUMBER (208)522-0143	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (<i>Corporation, partnership, association, etc.</i>) Corporation		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Delaware		11. DATE OF INCORPORATION 2-25-75	

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
**Mr. Charles Green
 Rogers Brothers Seed Company
 P. O. Box 80, Idaho Falls, ID 83402**

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.)
 a YES NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
 c1 YES NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
 FOUNDATION REGISTERED CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

16. ~~DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE "OFFICIAL JOURNAL?"~~ YES NO

17. The applicant(s) declare(s) that a viable sample of basic seed 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 Act.

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

January 6, 1982
 (DATE)

Charles Green
 (SIGNATURE OF APPLICANT)
 For Rogers Brothers Seed Company

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, 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 uniformity and 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, his decision **published**, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

DRY EDIBLE BEAN
Exhibit A

8200066

Origin and Breeding History

'ZIRCON'

Small White ~~D76063~~ was derived from the following cross pollination in the greenhouse during the Winter 1972-73.

Aurora X Adjutant

Details of selection and multiplication area as follows:

<u>Year</u>	<u>Generation</u>	<u>Field Number</u>	<u>Bulk Harvest</u>	<u># Single Plant Selections</u>
Winter 1972-73	F1	Greenhouse	3 oz.	
Summer 1973	F2	D73-81	2# 3 oz.	5
Summer 1974	F3	D74-223		3
Winter 1974-75	F4	Greenhouse	approx. 2 oz.	
Summer 1975	F5	D75863		2
Winter 1975-76	F6	Greenhouse	approx. 2 oz.	
Summer 1976	F7	D761603		2
Summer 1977	F8	D77378	2#	Increase of Single Plant
Summer 1978	F9	D782792	25#	

Stock ~~D782792~~ ('ZIRCON') has been increased to commercial size quantities. This variety will be maintained through the procedure of pure line selection for stock seed.

8200066

DRY EDIBLE BEAN
ZIRCON
EXHIBIT A (Supplement)

The variety ZIRCON was stabilized in felial generation #8. ZIRCON has been observed to be stable and uniform for 6 generations in the field since 1977. We have made no observation of any variants within the population.

D76063 = 'ZIRCON'
 DRY EDIBLE BEAN *R/S*
 EXHIBIT B
 NOVELTY STATEMENT

8200066

'ZIRCON'

~~D76063~~ is most like Aurora, but with a 400 lb. average increase in yield over Aurora in Twin Falls, Idaho. ~~D76063~~ averages 4 days later in maturity than Aurora in Twin Falls, Idaho. Supporting data for these statements follows: ('ZIRCON')

Yield

Data analysis from our yield trials for past 5 years in Twin Falls, Idaho (1977-81) show the following:

	Mean <u>1977</u>	Mean <u>1978</u>	Mean <u>1979</u>	Mean <u>1980</u>	Mean <u>1981</u>	5 Year Mean
'ZIRCON' D76063	2818	2925	2259	2900	3259	2832
Aurora	2188	2481	2044	2410	3041	2433

These data represent the mean (in lbs./acre) of all 4 replications for each year along with the mean for all 5 years.

Using the t-test the expected value with 19 degrees of freedom at the .05 level is 2.093. Our t value here is 2.48, giving us a significant difference in yield at the .05 level of probability.

Days to Maturity

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	Mean
'ZIRCON' D76063	86	97	96	94	93	93
Aurora	83	92	91	90	88	89

Physiological maturity was established when 90% of pods had turned buckskin.

Number of days later in maturity than Pinto UI 111.

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	Mean
'ZIRCON' D76063	10	10	11	11	13	11.0
Aurora	7	5	6	7	8	6.4

For statistical analysis the maturity is expressed as days relative to the standard Pinto UI 111. The expected t value with 4 degrees of freedom at the .010 level of significance = 4.604, hence at our t value of 6.876 the difference in maturity is significant at the .010 level.

8200066

DRY EDIBLE BEAN

ZIRCON

B

1/5 1/25/83

EXHIBIT B (Supplement)

The following data support our claim on the PVP application for ZIRCON that the pods of ZIRCON are longer than Aurora.

	<u>Pod Length cm</u>
ZIRCON	11.44"
	11.36
	11.62
	11.25
	11.22

X	11.38
Aurora	9.66
	9.90
	9.78
	10.14
	9.70

X	9.84

This difference is judged significant at the .05 level because the expected t value is 2,306 and we have a t value of 2.610.

* - each value represents average of 5 pods.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Bean)

OBJECTIVE DESCRIPTION OF VARIETY
BEAN (*Phaseolus vulgaris* L.)

NAME OF APPLICANT(S)
ROGERS BROTHERS SEED COMPANY

FOR OFFICIAL USE ONLY

PVPO NUMBER

8200066

ADDRESS (Street and No., or R.F.O. No., City, State, and Zip Code)
P. O. Box 80
Idaho Falls, ID 83402

VARIETY NAME OR TEMPORARY DESIGNATION

~76063 = ZIRCON
CNS

Place numbers in the boxes (e.g.) for the characters that best describe this variety. Measured data should be for SPACED PLANTS. Ranges may also be given. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Twin Falls,. The location of test area is Idaho. Please answer questions appropriate for your variety if the information is available.

1. TYPE: 1 = Field (dry-edible) 2 = Garden D76063

2. MARKET MATURITY: 5 yr. average

Days to edible pods

Days to green shells

Days to dry seeds

'physiological maturity (90% pods buckskin)

Heat units to edible pods

Heat units to green shells

Heat units to dry seeds

No. days earlier than



Same as ..

- 1 = Tendercrop
- 3 = Kinghorn Wax
- 5 = Michelite 62
- 7 = Bush Blue Lake 290

- 2 = Kentucky Wonder
- 4 = White Kidney
- 6 = Dwarf Horticultural
- 8 = Other (specify below)
small white Aurora

No. days later than

3. PLANT:

= Determinate 2 = Indeterminate

cm height

cm shorter than

Same as ..

comparison variety from above

cm taller than

cm spread

Number primary branches near base

cm narrower than

comparison variety from above

Branching habit:
1 = compact 2 = open

cm wider than

Main stalk: 1 = brittle 2 = wiry

1 = stout 2 = thin

8200066

D76063 = 'ZIRCON' R/S
DRY EDIBLE BEAN
EXHIBIT D

Botanical description of Variety D76063 is a vigorous, upright semi-vine with small leaves and open foliage which matures in 93 days in Southern Idaho. It initially grows more slowly than Aurora but later on attains the size of Aurora with longer pods than Aurora. **D76063** develops less vine than small white Bonus but longer pods and remains more open between rows than Bonus. **D76063** exhibits some tolerance to drought stress and doesn't show the need for irrigation as soon as most varieties. Processing characteristics are acceptable and have been determined so by the canning industry.

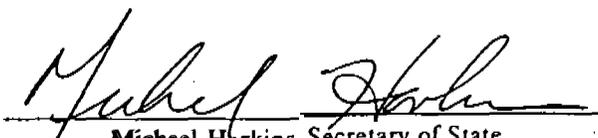
State of Delaware



Office of Secretary of State

I, MICHAEL HARKINS, SECRETARY OF STATE OF THE STATE OF DELAWARE
DO HEREBY CERTIFY THAT 'ROGERS BROTHERS SEED COMPANY=', FILED A
CERTIFICATE OF AMENDMENT, CHANGING ITS CORPORATE TITLE TO *ROGERS
NK SEED CO.", ON THE TWENTY-SIXTH DAY OF DECEMBER, A.D. 1990, AT 10:01
O'CLOCK A.M.




Michael Harkins, Secretary of State

AUTHENTICATION: 

DATE: 10/08/1991

DO NOT WRITE IN THIS SPACE

AMENDED
STATEMENT AND DESIGNATION
BY
FOREIGN CORPORATION

ROGERS NK SEED CO.

_____, a corporation
organized and existing under the laws of Delaware,
and which is presently qualified for the transaction of intrastate business in the
State of California, makes the following statements and/or designation:

That the name of the corporation has been changed to that hereinabove set forth
and that the name relinquished at the time of such change was _____

ROGERS BROTHERS SEED COMPANY

ROGERS NK SEED CO.

(Name of Corporation)

William B. Albers

(Signature of corporate officer)

William B. Albers, President

(Typed name and title of officer signing)

INSTRUCTIONS:

1. If this Amended Statement shows a change of Corporate name, there must be attached to this Amended Statement a certificate of an authorized public officer of the state or place of incorporation, that such change of name was made in accordance with the laws of that state or place.
2. For filing this Amended Statement there is a fee of \$15.00.

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 9:00 CLOCK A.M.



William T. Quillen

William T. Quillen, Secretary of State

AUTHENTICATION: 7120759

DATE: 05 10 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 I, 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** of 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

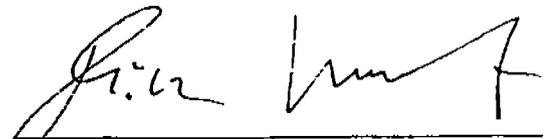
ROGERS NK SEED CO.

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 molder**, **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

10 1 19 94

(1)

ROGERS N-K 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

0 6 2 9 3 2 0 8100M
97 1211787

AUTHENTICATION: 8531908
06-26-97

DATE:

STATE OF DELAWARE
SECRETARY OF STATE
DIVISION OF CORPORATIONS
FILED 09:00 AM 06/25/1997
971211767 - 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: 
Name: Edward C. Resler
Title: Vice President & General Counsel

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20706

EXHIBIT C
(Bean)

OBJECTIVE DESCRIPTION OF VARIETY
BEAN (*Phaseolus vulgaris* L.)

NAME OF APPLICANT(S) ROGERS BROTHERS SEED COMPANY	FOR OFFICIAL USE ONLY
	PVPO NUMBER 8200066
ADDRESS (Street end No. or R.F.D. No., City, State, and Zip Code) P. O. Box 80 Idaho Falls, ID 83402	VARIETY NAME OR TEMPORARY DESIGNATION D76063 = ZIRCON

Place numbers in the boxes (e.g.) for the characters that best describe this variety. Measured data should be for SPACED PLANTS. Ranges may also be given. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Twin Falls, The location of test area is Idaho. Please answer questions appropriate for your variety if the information is available.

1. TYPE: D76063

a 1 = Field (dry-edible) 2 = Garden

2. MARKETMATURITY: **5 yr. average**

Days to edible pods Days to green shells

Days to dry seeds -physiological maturity (90% pods buckskin)

Heat units to edible pods Heat units to green shells

Heat units to dry seeds

No. days earlier than }
 Same as ... c | }
 1 = Tendercrop 2 = Kentucky Wonder
 3 = Kinghorn Wax 4 = White Kidney
 5 = Michelite 62 6 = Dwarf Horticultural
 7 = Bush Blue Lake 290 8 = Other (specify below)
 small white Aurora

No. days later than c | }

3. PLANT:

1 = Determinate 2 = Indeterminate

cm height

cm shorter than }
 Same as ... } comparison variety from above

cm taller than e | }

cm spread Number primary branches near base

cm narrower than* }
 width same as ... } comparison variety from above

cm wider than }


Main stalk: 1 = brittle 2 = wirey

Branching habit:
1 = compact 2 = open

1 = stout 2 = thin

3. PLANT: (Cont'd)

3 Pod position: 1 = low 2 = high 3 = scattered

5 Bush form (illustrated below):



1 = spherical bush form

2 = stem bush form

3 = wide bush form

4 = high bush form

5 = other (specify) semi-vine

4. LEAVES:

2 1 = smooth 2 = wrinkled

1 1 = dull a = glassy

1 Size: 1 = small (Earliwax) 2 = medium 3 = large (Tendercrop)

a 2 Color: 1 = light green (as light or lighter than Bountiful) 2 = medium green 3 = dark green (as dark or darker than Bush Blue Lake 290)

5. FLOWERS:

1 Color: 1 = white 2 = cream 3 = pink 4 = lilac 5 = purple 6 = Other (specify) _____

4 7 ^{first} Days to 50% bloom (5 yr. average) Compare to Aurora at 47 days

6. FRESH PODS: (Edible maturity, average for 20 pods)

1 Exterior color: 1 = light green (as light or lighter than Bountiful) 2 = medium green 3 = dark green (as dark or darker than Bush Blue Lake 290) 4 = light yellow (Brittlewax) 5 = golden yellow (Cherokee Wax) 6 = green-red variegated (Horticultural) 7 = other (specify) _____

% Sieve size distribution at optimum maturity for non-flat pods

Note:

- 1 = 4.76 mm to 6.76 mm
- 2 = 5.76 mm to 7.34 mm
- 3 = 7.34 mm to 6.34 mm
- 4 = 8.34 mm to 9.53 mm
- 5 = 9.53 mm to 10.72 mm
- 6 = 10.72 mm or larger

1	2	3	4	5	6

3 sieve cm length mm width mm thickness

4 sieve cm length mm width mm thickness

5 sieve cm length mm width mm thickness

6 sieve cm length mm width mm thickness

6. FRESH PODS: (Cont'd)

D76063

1 Cross section pod shape: 1 = flat 2 = oval 3 = round 4 = heart

2 Creaseback: 1 = present 2 = absent

3 Pubescence: 1 = none 2 = sparse 3 = considerable

2 Spur: 1 = straight 2 = slightly curved 3 = curved

2 Constrictions: 1 = none 2 = slight 3 = deep

1 Pod flesh: 1 = light 2 = medium 3 = dark

7 mm spur length 7.3 (average of 20 pods)

3 Fiber: 1 = none 2 = sparse 3 = considerable

6.5 Number of seeds per pod (average of 20 pods)

1 Surface: 1 = smooth 2 = rough

1 Suture string: 1 = present 2 = absent

1 Seed development (Snap Bean): 1 = slow 2 = medium 3 = fast

Machine harvest: 1 = adapted 2 = not adapted

Pod flavor: (1) Standard (Tendercrop)
(2) Mild Blue Lake (BBL 274)
(3) Strong Blue Lake (Pole FM1)
(4) Mild Romano (Roma)
(5) Strong Romano (Pole Romano)
(6) Other (specify) _____

7. SEED COAT COLOR:

1 = Monochrome 2 = Polychrome 1 1 = shiny 2 = dull

1 Primary color: 1 = white 2 = yellow 3 = buff 4 = tan

Secondary color: 5 = brown 6 = pink 7 = red 8 = purple
Q = blue 10 = black 11 = other (specify) _____

1 Color Pattern: 1 = none 2 = splashed 3 = mottled 4 = striped 5 = flecked 6 = dotted

Secondary color location: 1 = hilar ring 2 = ventral surface
3 = sides 4 = dorsal surface
5 = not restricted to any area 6 = combination of location (specify below)

Hilar ring on colored seeds: 1 = absent 2 = narrow 3 = butterfly shaped

8. SEED SHAPE AND SIZE:

1 Hilum view: 1 = elliptical 2 = oval
3 = round

4 Cross section: 1 = elliptical 2 = oval 3 = cordate
4 = round

1 Side view:



1 = oval to oblong



2 = round



3 = reniform

8. SEED SHAPE AND SIZE: (Cont'd)

2 1 = truncate ends 2 = rounded ends

1 5 gm/100 seed

gm/100 seed lighter than

gm/100 seed same as c |

gm/100 seed heavier than 8

comparison variety from page one

9. ANTHOCYANIN: (1 = absent 2 = present)

Flowers a | 1 Stems 1 Pods 1 Seeds 1 Leaves

10. DISEASE RESISTANCE (0 = not tested 1 = susceptible 2 = resistant):

0 Anthracnose (specify race below)

0 Fuscous blight

0 Rust (specify race below)

0 Red node virus

0 Powdery mildew

0 Pod mottle virus

0 Fusarium root rot

2 Bean common mosaic virus (specify strain below)
BVI NY15

0 Pythium root rot

c | 0 Mosaic mottle

0 Rhizoctonia root rot

Black root

0 Pythium wilt

c | 0 Bean yellow mosaic virus

0 Angular leaf spot

Curly top

0 Bacterial wilt

0 Other (specify below)

0 Halo blight (specify race below)

11. INSECT RESISTANCE: (0 = not tested 1 = susceptible 2 = resistant)

0 Aphids

c | 0 Root knot nematode

c | 0 Leaf hopper

Seed corn maggot

0 Lygus

0 Thrips

0 Pod borer

0 Weavils

Other (specify below)

12. PHYSIOLOGICAL RESISTANCE: (0 = not tested 1 = susceptible 2 = resistant)

0 Heat 0 Cold 2 Drought 0 Air pollution

13. COMMENTS: