



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

U. D. Maffei Seed Co., Inc.

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

LIMA BEAN

'Maffei 76'

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 26th day of January in
the year of our Lord one thousand nine
hundred and seventy-eight

Attest

Samuel H. Lee

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Bob Berglund
Secretary of Agriculture



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1. VARIETY NAME OR TEMPORARY DESIGNATION MAFFEI 676 <i>H-F 11/29/77</i>		2. KIND NAME LIMA BEAN		FOR OFFICIAL USE ONLY	
3. GENUS AND SPECIES NAME Phaseolus lunatus		4. FAMILY NAME (Botanical) Fabaceae		PV NUMBER 7700005	
5. DATE OF DETERMINATION Sept. 4, 1976		FILING DATE 10-29-76		TIME 4:00 P.M.	
6. NAME OF APPLICANT(S) L. D. MAFFEI SEED CO., INC.		7. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) Box 903 Newman, Calif. 95360		8. TELEPHONE AREA CODE AND NUMBER (209) 862-2841	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. STATE OF INCORPORATION California		11. DATE OF INCORPORATION 12/22/1961	
12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:					

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, Botanical Description of the Variety
- 13C. Exhibit C, Objective Description of the Variety
- 13D. Exhibit D, Data Indicative of Novelty
- 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 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.

10/22/76

(DATE)

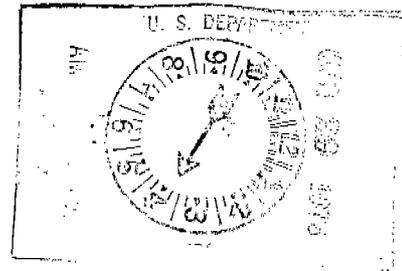
10/22/76

(DATE)

L. D. MAFFEI SEED CO. INC.
Robert L. Maffei

(SIGNATURE OF APPLICANT)
R. L. MAFFEI, President

(SIGNATURE OF APPLICANT)



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.

EXHIBIT D--DATA INDICATIVE OF NOVELTY
(REVISED SEPTEMBER 27, 1977)

Maffei 76 most closely resembles Bridgeton bush lima bean, but has smaller plant size and matures earlier.

Smaller plant size is shown by the data in Table 1. Test 1 was planted at Bell Farms, Gustine, California on June 23, 1977. Plant height was measured August 24, 1977 (Plant width was uniform for all varieties because of mechanical clipping in the routine tillage operation). Fresh weight data were taken September 23, 1977 on 10 ft. sections of row, replicated four times, and maturity data were taken on September 23 and 26, 1977.

Test 2 was planted at the University of Delaware substation farm at Georgetown, Delaware on June 13, 1977. Plant size data were taken August 11, 1977.

Smaller plant size is also indicated by the attached photographs. Photograph No. 1 shows single rows of (from left to right) Bridgeton, Maffei 76, C-Elite, Bridgeton, and Thaxter, from the area represented by Test 2 in Table 1.

Photograph No. 3 compares typical individual plants of Maffei 76 with Bridgeton.

Maffei 76 matures about four days earlier than Bridgeton, as shown by the data in Table 2. As beans mature they become more dense, so mature beans require a stronger salt solution to cause them to float (Reference: W.E. Kee, Jr. and V. J. Fisher, Evaluation of Quality measurement Techniques for Raw Baby Lima Beans. Hortscience 11 (6), December 1976: 613-615).

All of the Bridgeton in samples from Test 1 floated in 96 degree brine on September 23, 1977 (Table 1), but only 97% of the Maffei 76 floated on the same date. 98% of the Bridgeton floated in 96 degree brine three days later. The data on 65 degree brines shows Maffei 76 reaching the stage of maturity at which 95% of the beans floated (September 23) three days earlier than Bridgeton (September 26).

Maffei 76 was also observed to be maturing in Test 2 earlier than Bridgeton, as shown by the earlier dropping of its flowers as senescence approached (Photo No. 2).

77-5

TABLE 1. PLANT SIZE DATA (MEANS \pm ONE STANDARD DEVIATION)

VARIETY	TEST 1		TEST 2	
	Plant ht., in., at 62 da	Fresh wt. of plants, Tons/ A at 92 da.	Plant ht., in., at 59 da.	Plant width, in., at 59 da.
Maffei 76	20.8 \pm 0.6	17.0 \pm 1.5	15.3 \pm 1.0	18.3 \pm 1.7
Bridgeton	22.2 \pm 0.4	19.6 \pm 0.9	20.5 \pm 1.3	22.5 \pm 0.6
Kingston	17.4 \pm 0.7	13.6 \pm 1.7	-	-
C-Elite	-	-	19.3 \pm 1.3	22.5 \pm 1.3
Thaxter	-	-	17.8 \pm 2.2	20.5 \pm 1.0

TABLE 2. DATE OF MATURITY DATA (MEANS \pm ONE STANDARD DEVIATION).

VARIETY	DATE	PERCENT OF BEANS THAT FLOATED IN:	
		65 Degree Brine(1)	96 Degree Brine(1)
Maffei 76	9/23	95 \pm 2.9	97 \pm 2.7
Bridgeton	9/23	98 \pm 1.0	100
Maffei 76	9/26	89 \pm 3.3	92 \pm 2.9
Bridgeton	9/26	95 \pm 2.6	98 \pm 1.0

(1) Expressed as degrees salometer.

77-5

EXHIBIT E. BASIS OF APPLICANTS OWNERSHIP
(REVISED SEPTEMBER 27, 1977)

The applicant, L. D. Maffei Seed Co., Inc. is the breeder of the new variety since the acts of final breeding, discovery and determination of the new variety were performed by the agents of L. D. Maffei Seed Co., on behalf of L. D. Maffei Seed Company.

EXHIBIT A -- ORIGIN AND HISTORY

Baby Lima Bean breeding line B 2 C was obtained in the spring of 1975 and screened for desirable seed and plant characteristics. Special attention was given to rapid seedling emergence so as to minimize the hazard of Rhizoctonia root rot damage and to improve uniformity of development to the processing stage of maturity. One selection, designated Maffei 76, was found to be especially promising in this regard in the spring of 1976. Especially promising individual plants have been selected for further purification of the early germination trait, together with incorporating other desirable seed and plant characteristics.

Variants occurred in the form of plants that were excessively elongated in 1976. These variants made up about 1% of the total number of plants.

Stability is demonstrated by the nearly perfect uniformity of the total population in 1976 for date of emergence, plant size, date of bloom, and date of maturity, plus the similarity of these plants to the previous generation.

7700005

EXHIBIT B. BOTANICAL DESCRIPTION

Maffei 76 most closely resembles Bridgeton, with several notable differences. It emerges very quickly, in as little as three days. It grows very upright at first, but its elongation is slowed markedly by the initiation of a terminal inflorescence at a height of about 12 inches. Flowers form profusely from axillary as well as terminal inflorescences, but pods form almost entirely from axillary inflorescences. The plants attain a height of about 20 to 22 inches. The pods are well covered by foliage, protecting them from excessive exposure to the sun. The set of pods is extremely heavy. At maturity the seeds retain an excellent shade of green color such that dry beans can be soaked to very good advantage. Thus harvest can be delayed until essentially all pods have formed usable beans. The pods cling to the plant more tenaciously than those of Bridgeton, facilitating easier shelling.

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OBJECTIVE DESCRIPTION OF VARIETY
LIMA BEAN (PHALEOLUS LUNATUS)

REFERENCES: See Reverse.

NAME OF APPLICANT(S) L. D. MAFFEI SEED CO., INC. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) P. O. Box 903 Newman, Calif. 95360	FOR OFFICIAL USE ONLY
	PVPO NUMBER 7700005
	VARIETY NAME OR TEMPORARY DESIGNATION MAFFEI 476

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

1. TYPE:

1 = GREEN SHELL 2 = DRY EDIBLE 3 = DUAL PURPOSE

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

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

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

GREEN SHELLS DRY SEEDS

<input type="text" value="0"/> <input type="text" value="5"/>	No. of days Earlier than:	<input type="text" value="2"/>	} 1 = HENDERSON BUSH 2 = THAXTER 3 = BURPEE'S IMPROVED BUSH 4 = SIEVA 5 = FLORIDA BUTTER 6 = KING OF THE GARDEN 7 = OTHER (Specify) _____
<input type="text" value=""/> <input type="text" value=""/>	No. of days Later than	<input type="text" value=""/>	

4. PLANT:

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

CM. HEIGHT OR LENGTH OF VINE FROM PRIMARY LEAF NODE CM. LENGTH OF FIRST INTERNODE ABOVE PRIMARY LEAF

CM. SPREAD NUMBER INTERNODES ON MAIN STALK BETWEEN PRIMARY LEAF AND BASE OF TERMINAL INFLORESCENCE

MM. STALK DIAMETER ABOVE FIRST TRIFOLIATE LEAF

Main stalk: 1 = BRITTLE 2 = WIREY Main stalk: 1 = STOUT 2 = THIN

<input type="text" value="1"/>	Flower position: } 1 = LOW, CONCENTRATED 2 = HIGH, CONCENTRATED 3 = SCATTERED
<input type="text" value="1"/>	Pod position: }

5. LEAVES:

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

Size: 1 = SMALL (Sieva) 2 = MEDIUM 3 = LARGE (Prizetaker) CM. PETIOLE LENGTH (To basal leaflets of first trifoliate leaf)

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

<input type="text" value="2"/>	} PUBESCENCE - Dorsal: } 1 = NONE 2 = SLIGHT 3 = CONSIDERABLE
<input type="text" value="2"/>	

Color: 1 = GRAY GREEN 2 = MEDIUM GREEN (Burpee's Improved Bush) 3 = DARK GREEN (Sieva)

6. FLOWERS:

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

Racemes: CM. TO BASE OF TERMINAL FLORET NUMBER FLOWERS PER RACEME

77-5

7. FRESH PODS:

Color: 1 = LIGHT GREEN (Thaxter) 2 = MEDIUM GREEN (Florida Butter) 3 = DARK GREEN (Thorogreen Early)
 4 = OTHER (Specify)

CM. LENGTH MM. WIDTH (Between sutures) MM. THICKNESS $\frac{\text{WIDTH}}{\text{THICKNESS}} \times 10$

Cross section pod shape: 1 = FLAT 2 = OVAL 3 = ROUND Curvature: 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = CURVED

MM. SPUR LENGTH Spur: 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = CURVED

Surface: 1 = SHINY 2 = DULL Surface: 1 = SMOOTH 2 = BLISTERED

Pubescence: 1 = NONE 2 = SPARSE 3 = CONSIDERABLE NUMBER OF SEEDS PER POD

NUMBER PODS PER PLANT (Once over harvest) Machine harvest: 1 = ADAPTED 2 = NOT ADAPTED

Condition of pods at once-over harvest: % DRY % YELLOW % GREEN

8. SEEDS:

1 = MONOCHROME 2 = POLYCHROME 1 = SHINY 2 = DULL

Primary color: 1 = WHITE 2 = GREENISH WHITE 3 = GREEN 4 = YELLOW 5 = BUFF 6 = TAN
 Secondary color: 7 = BROWN 8 = PINK 9 = RED 10 = PURPLE 11 = BLACK 12 = 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) _____

Hilar ring: 1 = NOT PRESENT 2 = NARROW 3 = WIDE 4 = BUTTERFLY SHAPED Vein-like under coat pattern: 1 = ABSENT 2 = PRESENT

Cotyledon color: 1 = WHITE 2 = PALE GREEN 3 = GREEN Seed coat 1 = SMOOTH 2 = WRINKLED

9. SEED SHAPE AND SIZE:

Hilum view: 1 = FLAT 2 = ELLIPTICAL 3 = OVAL 4 = ROUND Side view: 1 = OVAL 2 = ROUND 3 = KIDNEY 4 = TRUNCATE ENDS

Cross section: 1 = FLAT 2 = ELLIPTICAL 3 = OVAL 4 = ROUND GM. WEIGHT PER 100 SEEDS

Classification: 1 = SIEVA 2 = INTERMEDIATE 3 = FORDHOOK

MM. WIDTH (Dorsal to ventral) MM. THICKNESS (Side to side)

MM. LENGTH $\frac{\text{WIDTH}}{\text{THICKNESS}} \times 10$

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

FLOWERS STEM PODS SEEDS LEAVES

11. DISEASE RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="text" value="0"/> RUST (Specify race) _____	<input type="text" value="0"/> ANGULAR LEAF SPOT	<input type="text" value="0"/> BACTERIAL WILT
<input type="text" value="0"/> COMMON BEAN MOSAIC	<input type="text" value="0"/> ANTHRACNOSE	<input type="text" value="0"/> LIMA BEAN MOSAIC
<input type="text" value="0"/> SOUTHERN BEAN MOSAIC	<input type="text" value="0"/> FUSARIUM ROOT ROT	<input type="text" value="0"/> CURLY TOP
<input type="text" value="0"/> N.Y. 15 BEAN MOSAIC	<input type="text" value="2"/> DOWNY MILDEW	<input type="text" value="0"/> POWDERY MILDEW
<input type="text" value="0"/> BEAN MOSAIC VIRUS 4	<input type="text" value="0"/> HALO BLIGHT	<input type="text" value="0"/> FUSCOUS BLIGHT
<input type="text" value="0"/> ALFALFA MOSAIC VIRUS	<input type="text" value="0"/> ALFALFA MOSAIC VIRUS 2	<input type="text" value="0"/> POD MOTTLE VIRUS
<input type="text" value="0"/> RED NODE VIRUS	<input type="text" value="0"/> ROOT KNOT NEMATODE	<input type="text" value="0"/> OTHER (Specify) _____

12. INSECT RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 0	APHIDS	<input type="checkbox"/> 0	LEAF HOPPERS	<input type="checkbox"/> 0	POD BORER	<input type="checkbox"/> 0	LYGUS
<input type="checkbox"/> 0	THRIPS	<input type="checkbox"/> 0	WEAVILS	<input type="checkbox"/> 0	SEED CORN MAGGOT	<input type="checkbox"/> 0	OTHER (Specify) _____

13. PHYSIOLOGICAL RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input checked="" type="checkbox"/> 2	HEAT	<input type="checkbox"/> 0	COLD	<input type="checkbox"/> 0	DROUGHT	<input type="checkbox"/>	OTHER (Specify) _____
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REFERENCES

The following publications may be used as references 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.

COMMENTS:

Photo No. 1

770 0005, Waffel 776



Thayer
Bridgton







