No. 7700005

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

L. 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 (84 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:

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

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
MAFFEI 676 RF 11/29/77	LIMA BEAN	PV NUMBER 7700005
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 10-29-76 / TIME 4:00 P.M.
Phaseolus lunatus	Fabaceae	FEE RECEIVED $250.00 / BALANCE DUE $ 10-29-76
	5. DATE OF DETERMINATION Sept. 4, 1976	$250.00 / $ 11-16-76
		$250.00 / $ 11-28-77

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
L. D. MAFFEI SEED CO., INC.	Box 903 Newman, Calif. 95360	(209) 862-2841

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	California	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:

[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 [X] 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.

L. D. MAFFEI SEED CO. INC.

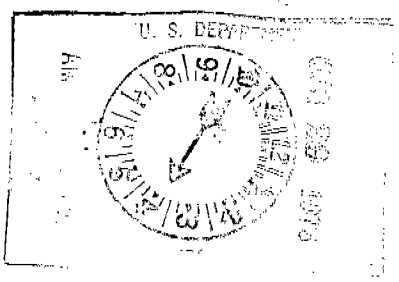
10/22/76
(DATE)

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

10/22/76
(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (REVERSE)



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.

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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).

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TABLE 1. PLANT SIZE DATA (MEANS ± 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±0.6	17.0±1.5	15.3±1.0	18.3±1.7
Bridgeton	22.2±0.4	19.6±0.9	20.5±1.3	22.5±0.6
Kingston	17.4±0.7	13.6±1.7	-	-
C-Elite	-	-	19.3±1.3	22.5±1.3
Thaxter	-	-	17.8±2.2	20.5±1.0

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

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

(1) Expressed as degrees salometer.

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EXHIBIT E. BASIS OF APPLICANTS OWNERSHIP
(REVISIED 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.

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.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-15
(1-15-73)

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

7700005

EXHIBIT C
(Lima Bean)

OBJECTIVE DESCRIPTION OF VARIETY

REFERENCES: See Reverse.

LIMA BEAN *(PHALEOLUS LUNATUS)*

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 #76

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:

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

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

[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):

[9][0] GREEN SHELLS [1][0][0] DRY SEEDS

[0][5] No. of days *Earlier* than: .... [2]
[ ][ ] No. of days *Later* than ..... [ ]

1 = HENDERSON BUSH 2 = THAXTER 3 = BURPEE'S IMPROVED BUSH 4 = SIEVA 5 = FLORIDA BUTTER 6 = KING OF THE GARDEN 7 = OTHER (Specify) _____

4. PLANT:

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

[0][4][6] CM. HEIGHT ~~OR LENGTH OF VINE FROM PRIMARY LEAF NODE~~ [0][1] CM. LENGTH OF FIRST INTERNODE ABOVE PRIMARY LEAF

[6][0] CM. SPREAD [0][8] NUMBER INTERNODES ON MAIN STALK BETWEEN PRIMARY LEAF AND BASE OF TERMINAL INFLORESCENCE

[0][6] MM. STALK DIAMETER ABOVE FIRST TRIFOLIATE LEAF

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

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

5. LEAVES:

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

[1] Size: 1 = SMALL (Sieva) 2 = MEDIUM 3 = LARGE (Prizetaker) [0][5] 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

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

6. FLOWERS:

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

[2][0] Racemes: CM. TO BASE OF TERMINAL FLORET [3][0] NUMBER FLOWERS PER RACEME

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7. FRESH PODS:

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

[0 8] CM. LENGTH [2 0] MM. WIDTH (Between sutures) [0 8] MM. THICKNESS [2 5] WIDTH/THICKNESS X 10

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

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

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

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

[5 0] NUMBER PODS PER PLANT (Once over harvest) [1] Machine harvest: 1 = ADAPTED 2 = NOT ADAPTED

Condition of pods at once-over harvest: [1 0] % DRY [0 0] % YELLOW [9 0] % GREEN

8. SEEDS:

[1] 1 = MONOCHROME 2 = POLYCHROME [2] 1 = SHINY 2 = DULL

[0 3] 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) _____

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

[3] Cotyledon color: 1 = WHITE 2 = PALE GREEN 3 = GREEN [1] Seed coat 1 = SMOOTH 2 = WRINKLE

9. SEED SHAPE AND SIZE:

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

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

[1] Classification: 1 = SIEVA 2 = INTERMEDIATE 3 = FORDHOOK

[1 0] MM. WIDTH (Dorsal to ventral) [0 5] MM. THICKNESS (Side to side)

[1 4] MM. LENGTH [2 0] WIDTH/THICKNESS X 10

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

[1] FLOWERS [1] STEM [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
[0] COMMON BEAN MOSAIC	[0] ANTHRACNOSE	[0] LIMA BEAN MOSAIC
[0] SOUTHERN BEAN MOSAIC	[0] FUSARIUM ROOT ROT	[0] CURLY TOP
[0] N.Y. 15 BEAN MOSAIC	[2] DOWNY MILDEW	[0] POWDERY MILDEW
[0] BEAN MOSAIC VIRUS 4	[0] 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) _____

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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	OTHER (Specify)

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

2 HEAT	0 COLD	0 DROUGHT	OTHER (Specify)

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.

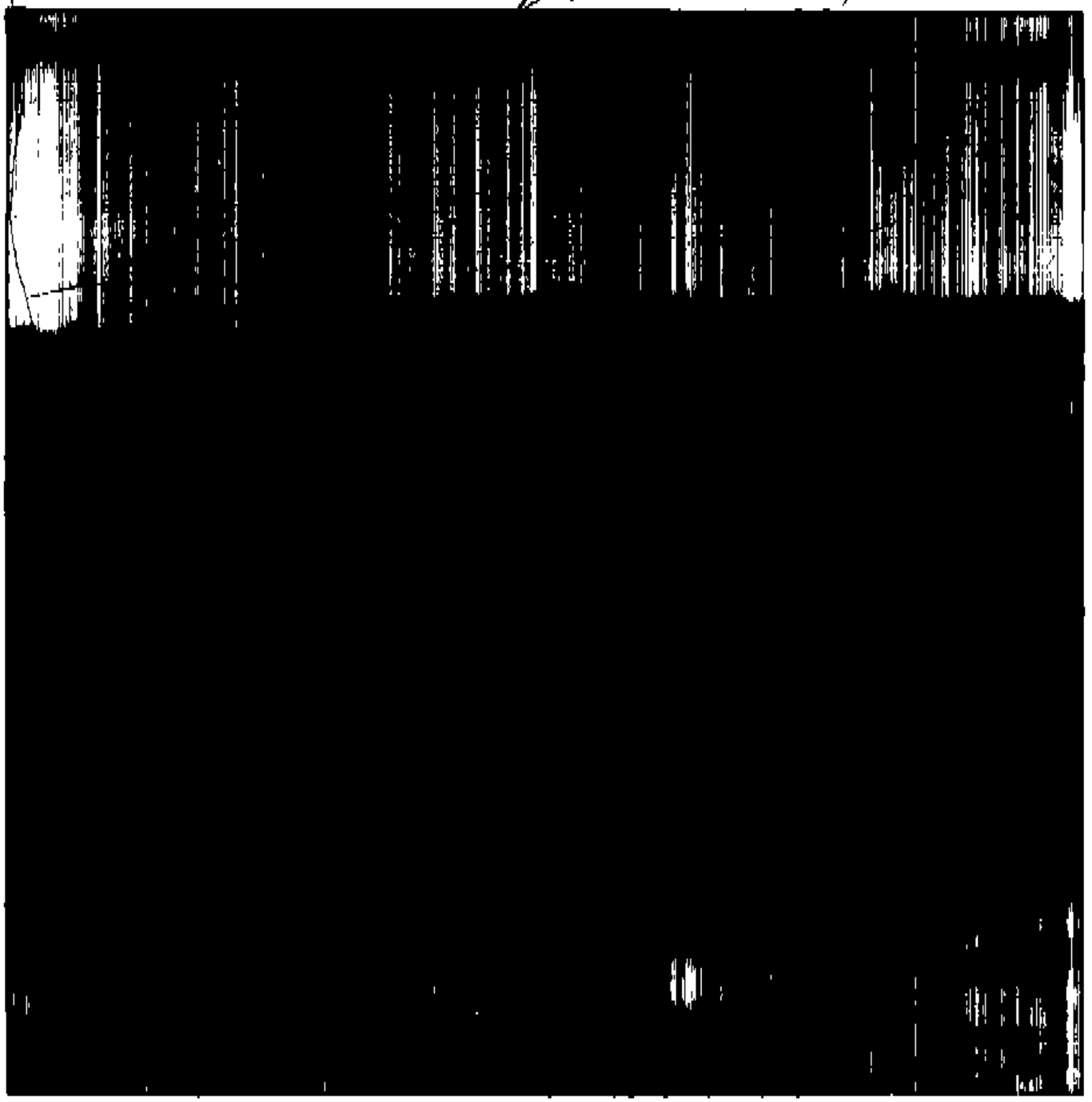
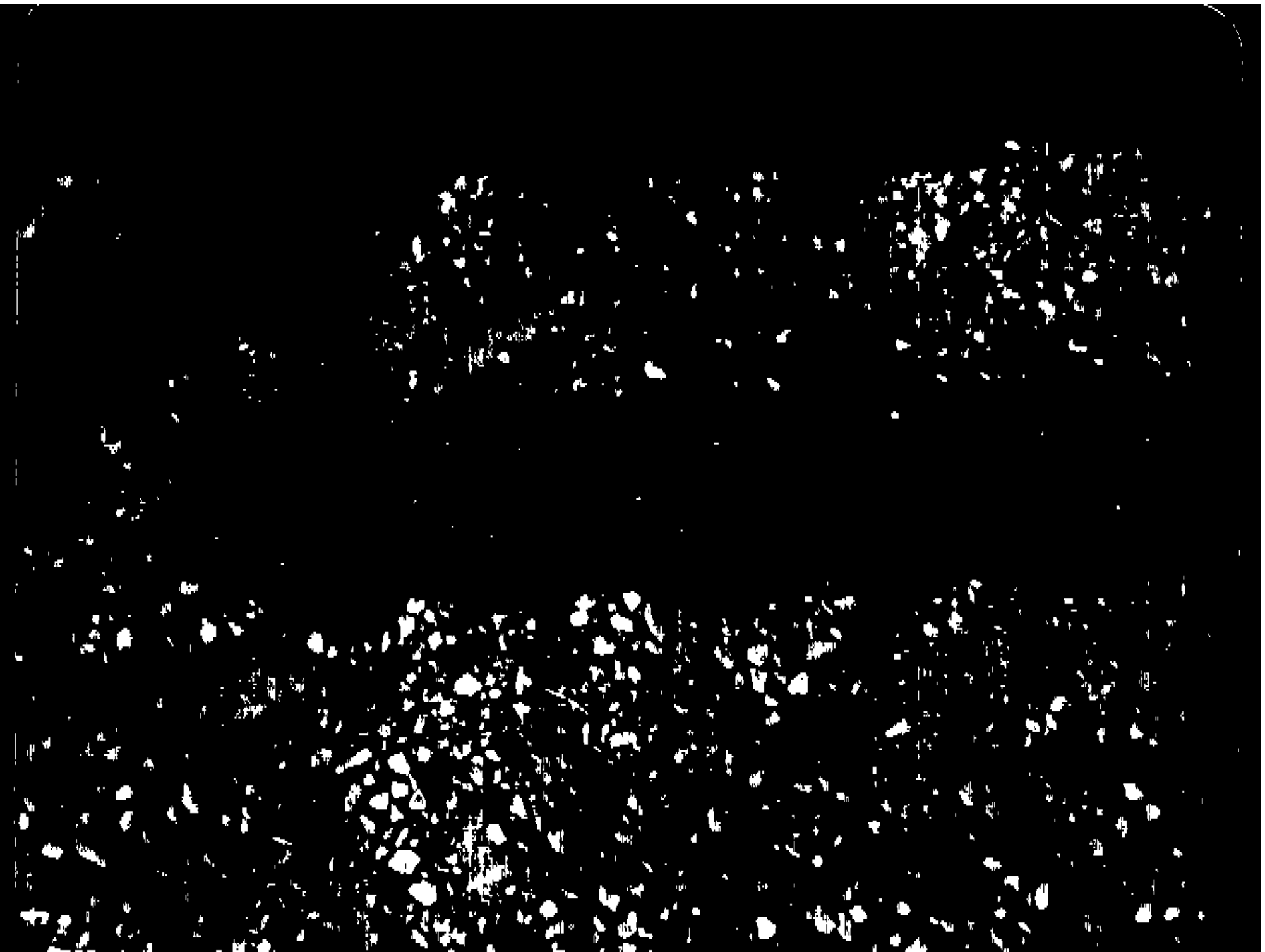
2. Yarnell, S. H., Cytogenetics of the Vegetable Crops IV. Legumes. Bot. Rev. 31:247 - 330. 1965.

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, Moffett 176



Thayer Bridgeton