

No.

8900041



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

## Ferry - Morse 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 (P.L. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Primo'

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 *30th* day of April in the year of our Lord one thousand nine hundred and ninety-two.



Attest:

*Kenneth A. Swan*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward M. Digner*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

**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) FERRY-MORSE SEED COMPANY		2. TEMPORARY DESIGNATION FM-168		3. VARIETY NAME PRIMO	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 555 CODONI P.O. BOX 4938 MODESTO, CALIFORNIA 95352		5. PHONE (Include area code) 209/579-7333		FOR OFFICIAL USE ONLY PVPO NUMBER 8900041	
6. GENUS AND SPECIES NAME <u>Phaseolus vulgaris</u> L.		7. FAMILY NAME (Botanical) LEGUMINOSAE		FILING DATE <u>Dec. 1, 1988</u> TIME <u>1:30</u> <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
8. KIND NAME (GARDEN) BEAN		9. DATE OF DETERMINATION 3 MARCH 1988		FEES RECEIVED AMOUNT FOR FILING \$ <u>1800.00</u> DATE <u>Nov. 21, 1988</u> AMOUNT FOR CERTIFICATE \$ <u>200.00</u> DATE <u>Mar. 19, 1992</u>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) CORPORATION				12. DATE OF INCORPORATION 7 APRIL 1969	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION CALIFORNIA					

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS  
 DAVID J. THOMPSON  
 FERRY-MORSE SEED COMPANY  
 P.O. BOX 4938  
 MODESTO, CALIFORNIA 95352  
 PHONE (Include area code): 209/579-7333

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

- a.  Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- b.  Exhibit B, Novelty Statement.
- c.  Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)
- d.  Exhibit D, Additional Description of Variety.
- e.  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.)  
 Yes (If "Yes," answer items 16 and 17 below)  No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
 Yes  No

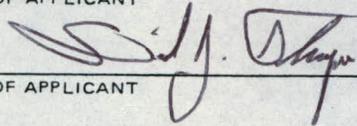
17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?  
 Foundation  Registered  Certified  N/A

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?  
 Yes (If "Yes," give date) disregard per letter of 25 Feb 1992 AAA  
 No

**[ U. S. - FERRY-MORSE PRICE LIST OF 1 NOVEMBER 1988 ]**  
 ↳ per letter of 25 Feb. 1992 AAA

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?  
 Yes (If "Yes," give names of countries and dates) per letter of 25 Feb 1992 AAA  
 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 	DATE 17 NOVEMBER 1988
SIGNATURE OF APPLICANT	DATE

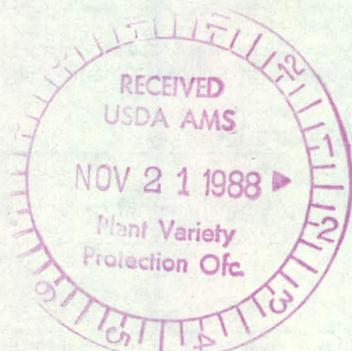
## INSTRUCTIONS

**General:** Send an original copy of the application and exhibits, at least 2,500 viable seeds (*furnish only untreated seed*), and \$1,800 fee (*\$200 filing fee and \$1,600 examination fee*) to the U. S. Department of Agriculture, Agricultural Marketing Service, 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

- 9 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.
- 14a 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.
- 14b 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 are clear differences; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d 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.
- 14e Section 52(4) of the Plant Variety Protection Act requires applicants to furnish a statement of the basis of the applicant's ownership. The applicant may be the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.
- 15 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.*)
- 19 See Sections 41 (i,j) and 42 of the Plant Variety Protection Act and Section 180.7 of the Regulations and Rules of Practice for eligibility requirements.

**NOTE:** All information submitted in support of an application becomes PUBLIC INFORMATION once the certificate is issued. (*See Section 180.17 of the Regulations and Rules of Practice.*)



VARIETY: Primo (formerly FM-168 (formerly 1D-X1257-  
MsMs(C)B(W)Ms(W)Ms(C)Ms))

Exhibit A: Origin and Breeding History of the Variety.

Primo originated as a  $F_4$  single plant selection following the pedigree method of selection from the cross of Gina as seed parent and the pedigreed line, 1C-X1557-(GH)Ms(W)12A as the pollen parent. The cross was made in the field during the summer of 1976 at Sun Prairie, Wisconsin, and was designated 1D-X1257.

$F_1$  seed of 1D-X1257 was planted in the field at Sun Prairie, Wisconsin, in the summer of 1978. The  $F_2$  seed was bulk-massed as 1D-X1257-Ms.

$F_2$  seed of 1D-X1257-Ms was planted in a progeny row in the field at Sun Prairie, Wisconsin, in the summer of 1979. The row rated good to very good while showing segregation for plant height, pod height, plant habit, pod width, and color. Among 20  $F_2$  plants, 9 were selected for further selection; their  $F_3$  seed was bulk-massed.

$F_3$  seed of 1D-X1257-MsMs was planted in the field at San Juan Bautista, California, in the summer of 1980. The row rated good to very good for some good pod types. Five  $F_3$  selections were made in the row; the  $F_4$  seed increase was held separately.

$F_4$  seed of the selection was planted in the progeny rows in the field at Sun Prairie, Wisconsin, in the summer of 1981. The progeny row of 1C-X1257-MsMs(C)B rated very good for medium early maturity of smooth, well-filled pods. Three selections were saved from the row and their seed was bulk-massed.

$F_5$  seed of 1C-X1257-MsMs(C)B(W)Ms was planted in a progeny row in the field at San Juan Bautista, California, in the summer of 1982. The row rated very good for an upright, medium tall plant with concentrated maturity, and heavy yield of relatively wide Romano-type pods. The decision was made to increase seed of the line and to evaluate it as a potential variety.  $F_6$  seed was bulk-massed from the row and was designated as FM-168.

In 1983, FM-168 was compared to other Bush Romano varieties in evaluation trials in Wisconsin and Oregon;  $F_6$  seed was advanced to the  $F_7$  generation at San Juan Bautista, California, in a 30 foot double row bed. General performance of FM-168 was average in Wisconsin and Oregon, but just as good as the other Bush Romano-type varieties. The plants for seed increase in California did well; plants were uniform for type; and no off-types were noted.

In 1984, FM-168 was intensively evaluated in Wisconsin, Oregon, New York, and Tennessee;  $F_7$  seed was advanced to the  $F_8$  generation for seed increase in a 250 foot double row at San Juan

Bautista, California. FM-168 rated fair to very good in each of the trial locations; its yield was equal or better than comparison varieties and its pod was wider than Milano with good resistance to sloughing after cooking. The California seed increase yielded 29 lb. of seed and was free of off-types.

In 1985, FM-168 was again intensively evaluated in Wisconsin, Tennessee, Oregon, and New York;  $F_8$  seed was advanced to the  $F_9$  generation for seed increase at San Juan Bautista, California. FM-168 rated good to very good in all trial situations; it was the earliest to mature its production and maintained a heavy yield of wide, smooth pods. No off-types were observed among approximately 7000 plants at San Juan Bautista, California; FM-168 was considered genetically stable and reproducible.

In 1986, intensive evaluation of FM-168 continued under trial conditions in Wisconsin, New York, and Oregon and  $F_9$  seed was advanced to the  $F_{10}$  generation for seed increase at San Juan Bautista, California. FM-168 continued to do well under all trial conditions rating good to very good, standing out in particular for its earliness, yet able to hold good processing quality on the vine; seed and fiber development were slow. In the 0.75 acre increase in California of approximately 75,000  $F_9$  plants, 20 "smaller" flat-podded-types and 7 round-podded-mixtures were removed; FM-168 continued to show good genetic stability.

FM-168 again was intensively evaluated in 1987 in Wisconsin, Oregon, and New York, and  $F_{10}$  seed was advanced to the  $F_{11}$  generation for seed increase in Nampa, Idaho. FM-168 continued to rate well for its earliness and heavy yield of wide, smooth pods. No off-types were observed in 2 acres of seed increase in Idaho.

The decision to introduce FM-168 as a new variety was made on March 3, 1988, and FM-168 was named Primo.

VARIETY: Primo (formerly FM-168 (formerly  
1D-X1257-MsMs(C)B(W)Ms(C)Ms))

Exhibit B: Data Indicative of Novelty

Primo is most similar to the variety Milano. Primo can be distinguished from Milano by having a wider pod (suture to suture) a deeper seed (hilum to dorsal edge); see also the accompanying photograph, and by its earlier flowering as measured by days from seeding to first open flower.

Experimental Procedure: Plants of each variety to be compared were grown in rows side by side. Row length was 20 foot with plants spaced two inches apart in the row and rows 30 inches apart in Wisconsin, 40 inches center to center of double rows in California.

When significant departures from a normal distribution of the data, a non-parametric test, the Mann-Whitney U-test, was applied to test for significance of differences between the compared variety samples.

A. Date of First Open Flower. Date of first open flower was noted for each of the first 25 plants in each row and was used to count the days from seeding to the first open flower.

B. Pod Width. When pods reached full diameter and advanced seed development could be felt in the pod, one full pod (no missing seed) was harvested from each plant, up to 100 plants maximum.

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 20, 1985. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	19.1	16.2
s <sup>2</sup>	1.52	0.84
s	1.23	0.92
Actual		
observed range	17. - 22.	14. - 18.
95% confidence interval	18.8-19.3	16.0-16.4
Coefficient of variation	6.48	5.65
Difference of means		2.9
<u>Test for Homogeneity of Variance</u>		
F-value		1.81
Probability		0.001**
<u>Test for Normality</u>		
skewness	0.1666	-0.0529
T-value	0.6903	-0.2191
Probability	0.2458	0.4135
kurtosis	-0.6554	-0.0649
T-value	-1.3702	-0.1357
Probability	0.0869	0.4462
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		328.0000
Normal deviate (z)		11.4373
Probability		0.0000**

\* = probability at the 0.05 level of probability

\*\* = probability at the 0.01 or less level of probability

TRIAL 2 Sun Prairie, Wisconsin. Seed planted in the field on June 3, 1986. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	17.1	16.2
s <sup>2</sup>	1.55	1.60
s	1.25	1.27
Actual		
observed range	14. - 20.	12. - 20.
95% confidence		
interval	16.9-17.4	16.0-16.5
Coefficient of		
variation	7.28	7.81
Difference		
of means		0.9
<u>Test for Homogeneity of Variance</u>		
F-value		1.03
Probability		0.442
<u>Test for Normality</u>		
skewness	-0.3401	-0.0093
T-value	-1.4089	-0.0387
Probability	0.0810	0.4846
kurtosis	-0.5139	0.7813
T-value	-1.0745	1.6333
Probability	0.1426	0.0528*
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		3035.5000
Normal deviate (z)		4.7998
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

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TRIAL 3 San Juan Bautista, California. Seed planted in the field on July 10, 1986. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	19.4	17.1
s <sup>2</sup>	2.05	0.79
s	1.43	0.89
Actual observed range	14.0-20.3	15.0-19.5
95% confidence interval	19.1-19.7	16.9-17.3
Coefficient of variation	7.40	5.19
Difference of means		2.3

Test for Homogeneity of Variance

F-value	2.609
Probability	0.000**

Test for Normality

skewness	-5.0234	0.4398
T-value	-20.8111	1.8222
Probability	0.0000**	0.0357*
kurtosis	39.7752	0.0233
T-value	83.1541	0.0487
Probability	0.0000**	0.4806

Mann-Whitney Test for Two Independent Samples

Test criterion (U)	395.0000
Normal deviate (z)	11.3067
Probability	0.0000**

\* = significance at the 0.05 level of probability  
 \*\* = significance at the 0.01 or less level of probability

TRIAL 4 San Juan Bautista, California. Seed planted in the field on June 19, 1987. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	19.5	15.6
s <sup>2</sup>	0.76	0.78
s	0.87	0.88
Actual		
Observed range	18.0-22.0	13.0-17.8
95% confidence interval	19.3-19.6	15.4-15.8
Coefficient of variation	4.47	5.66
Difference of means		3.9
<u>Test for Homogeneity of Variance</u>		
F-value		1.02
Probability		
<u>Test for Normality</u>		
skewness	0.1488	-0.2118
T-value	0.6164	-0.8776
Probability	0.2695	0.1911
kurtosis	-0.4161	0.0884
T-value	-0.8698	0.1847
Probability	0.1933	0.4269
<u>Student t-Test for Significant Difference of Means</u>		
t-value		31.26
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 5 Sun Prairie, Wisconsin. Seed planted in the field on June 23, 1988. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	17.8	17.1
s <sup>2</sup>	0.78	0.60
s	0.88	0.77
Actual		
observed range	15.5-20.0	14.5-18.7
95% confidence interval	17.6-18.0	16.9-17.2
Coefficient of variation	4.94	4.53
Difference of means		0.7
<u>Test for Homogeneity of Variance</u>		
F-value		1.076
Probability		0.358
<u>Test for Normality</u>		
skewness	0.0686	-0.3605
T-value	0.2840	-1.4935
Probability	0.3885	0.0692
kurtosis	-0.3131	0.1735
T-value	-0.6546	0.3628
Probability	0.2571	0.3588
<u>Student t-Test for Significant Difference of Means</u>		
t-value		5.71
Probability		0.0000**

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TRAIL 6 San Juan Bautista, California. Seed planted in the field on June 22, 1988. One hundred pods from each variety were measured for pod width in millimeters.

	<u>Pod Width (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	16.4	14.5
s <sup>2</sup>	1.25	1.27
s	1.12	1.13
Actual		
observed range	13. - 19.	12. - 16.
95% confidence interval	16.2-16.6	14.3-14.7
Coefficient of variation	6.82	7.78
Difference of means		1.9
<u>Test for Homogeneity of Variance</u>		
F-value		1.016
Probability		0.500
<u>Test for Normality</u>		
skewness	-0.5557	-0.0093
T-value	-2.3020	-0.0387
Probability	0.0117*	0.4846
kurtosis	1.4778	0.7813
T-value	3.0894	1.6333
Probability	0.0013**	0.0528
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		1184.0000
Normal deviate (z)		9.3534
Probability		0.0000

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 2 San Juan Bautista, California. Seed planted in the field on June 7, 1990. One hundred seed per variety were measured for seed depth in millimeters.

	<u>Seed Depth (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	7.26	7.72
s <sup>2</sup>	0.129	0.182
s	0.359	0.426
Actual observed range	6.3 - 8.2	6.8 - 9.4
95% confidence interval	7.19-7.33	7.63-7.81
Coefficient of variation	4.94	5.52
Difference of means		0.46
<u>Test for Homogeneity of Variance</u>		
F-value		1.41
Probability		0.044*
<u>Test for Normality</u>		
skewness	-0.0230	0.6811
T-value	-0.0952	2.8219
Probability	0.4622	0.0029**
kurtosis	0.3375	1.4577
T-value	0.7056	3.0475
Probability	0.2411	0.0016**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		2000.5000
Normal deviate (z)		7.3544
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

C. Seed Depth. Seeds from 100 dried pods were mass together and 100 seeds randomly counted out from the mass for measurement.

TRIAL 1 San Juan Bautista, California. Seed planted in the field on June 21, 1989. One hundred seed per variety were measured for seed depth in millimeters.

	<u>Seed Depth (mm)</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	7.33	8.13
s <sup>2</sup>	0.168	0.283
s	0.410	0.532
Actual		
observed range	6.4 - 8.2	6.7 - 10.
95% confidence interval	7.25-7.41	8.02-8.23
Coefficient of variation	5.59	6.55
Difference of means		0.80
<u>Test for Homogeniety of Variance</u>		
F-value		1.68
Probability		0.005**
<u>Test for Normality</u>		
skewness	-0.0361	0.1912
T-value	-0.1494	0.7920
Probability	0.4408	0.2151
kurtosis	-0.5584	1.1232
T-value	-1.1673	2.3481
Probability	0.1229	0.0104**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		1148.0000
Normal deviate (z)		9.4255
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 3, 1986. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	38.8	40.5
s <sup>2</sup>	0.19	0.26
s	0.44	0.51
Actual		
observed range	38. - 39.	40. - 41.
95% confidence		
interval	38.6-39.0	40.2-40.7
Coefficient of		
variation	1.12	1.26
Difference		
of means		1.7
<u>Test for Homogeneity of Variance</u>		
F-value		1.36
Probability		0.228
<u>Test for Normality</u>		
skewness	-1.2967	0.0853
T-value	-2.7965	0.1839
Probability	0.0050**	0.4278
kurtosis	-0.3537	-2.1739
T-value	-0.3922	-2.4109
Probability	0.3492	0.0120**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		0.0000
Normal deviate (z)		6.3479
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 2 San Juan Bautista, California. Seed planted in the field on July 10, 1986. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	50.7	56.7
s <sup>2</sup>	0.39	0.21
s	0.63	0.46
Actual		
observed range	50. - 52.	56. - 57.
95% confidence interval	50.4-50.9	56.5-56.9
Coefficient of variation	1.24	0.81
Difference of means		6.0
<u>Test for Homogeneity of Variance</u>		
F-value		1.87
Probability		0.066
<u>Test for Normality</u>		
skewness	0.3455	1.0437
T-value	0.7450	-2.2508
Probability	0.2317	0.0169**
kurtosis	-0.5275	-0.9976
T-value	-0.5850	-1.1063
Probability	0.2820	0.1398
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		0.0000
Normal deviate (z)		6.3033
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 3 Sun Prairie, Wisconsin. Seed planted in the field on June 16, 1987. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	35.3	36.6
s <sup>2</sup>	0.23	0.25
s	0.48	0.50
Actual		
observed range	35. - 36.	36. - 37.
95% confidence interval	35.1-35.5	36.5-36.7
Coefficient of variation	1.35	1.37
Difference of means		1.3
<u>Test for Homogeneity of Variance</u>		
F-value		1.10
Probability		0.409
<u>Test for Normality</u>		
skewness	0.8219	-0.4348
T-value	1.7726	-0.9377
Probability	0.0445*	0.1789
kurtosis	-1.4473	-1.9763
T-value	-1.6051	-2.1917
Probability	0.0608	0.0192**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test Criterion (U)		40.0000
Normal deviate (z)		5.6127
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 4 San Juan Bautista, California. Seed planted in the field on June 19, 1987. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	43.2	44.7
s <sup>2</sup>	1.86	0.29
s	1.36	0.54
Actual		
observed range	41. - 45.	44. - 46.
95% confidence		
interval	42.7-43.8	44.6-44.9
Coefficient of		
variation	3.15	1.21
Difference		
of means		1.5
<u>Test for Homogeneity of Variance</u>		
F-value		6.34
Probability		0.0000**
<u>Test for Normality</u>		
skewness	-0.5805	-0.1533
T-value	-1.2520	-0.3305
Probability	0.1113	0.3719
kurtosis	-0.7809	-0.3467
T-value	-0.8660	-0.3844
Probability	0.1975	0.3520
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		100.0000
Normal deviate (z)		4.3599
Probability		0.0000**

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability

TRIAL 5 Sun Prairie, Wisconsin. Seed planted in the field on June 23, 1988. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Primo</u>	<u>Milano</u>
Mean	38.0	39.6
s <sup>2</sup>	0.71	0.25
s	0.84	0.50
Actual		
observed range	37. - 39.	39. - 40.
95% confidence interval	37.8-38.3	39.4-39.8
Coefficient of variation	2.21	1.26
Difference of means		1.6
<u>Test for Homogeneity of Variance</u>		
F-value		2.83
Probability		0.007**
<u>Test for Normality</u>		
skewness	-0.0790	-0.4348
T-value	-0.1705	-0.9377
Probability	0.4330	0.1789
kurtosis	-1.5926	-1.9763
T-value	-1.7662	-2.1917
Probability	0.0450	0.0192**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		45.0000
Normal deviate (z)		5.4400
Probability		0.0000

\* = significance at the 0.05 level of probability

\*\* = significance at the 0.01 or less level of probability



3. PLANT: (Cont'd)

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

4 Bush form (illustrated below):



4. LEAVES:

1 1 = smooth 2 = wrinkled

1 1 = dull 2 = glossy

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

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) \_\_\_\_\_

3  2 Days to 50% bloom

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

2 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 5.76 mm
- 2 = 5.76 mm to 7.34 mm
- 3 = 7.34 mm to 8.34 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
1%	5%	10%	14%	45%	25%

3 sieve	<input type="checkbox"/> 1 <input type="checkbox"/> 2 cm length	<input type="checkbox"/> 1 <input type="checkbox"/> 3 mm width	<input type="checkbox"/> <input type="checkbox"/> 8 mm thickness
4 sieve	<input type="checkbox"/> 1 <input type="checkbox"/> 3 cm length	<input type="checkbox"/> 1 <input type="checkbox"/> 6 mm width	<input type="checkbox"/> <input type="checkbox"/> 9 mm thickness
5 sieve	<input type="checkbox"/> 1 <input type="checkbox"/> 3 cm length	<input type="checkbox"/> 1 <input type="checkbox"/> 7 mm width	<input type="checkbox"/> 1 <input type="checkbox"/> 0 mm thickness
6 sieve	<input type="checkbox"/> 1 <input type="checkbox"/> 3 cm length	<input type="checkbox"/> 1 <input type="checkbox"/> 7 mm width	<input type="checkbox"/> 1 <input type="checkbox"/> 1 mm thickness

6. FRESH PODS: (Cont'd)

- 1 Cross section pod shape: 1 = flat 2 = oval 3 = round 4 = heart
- 2 Creaseback: 1 = present 2 = absent
- 2 Pubescence: 1 = none 2 = sparse 3 = considerable
- 2 Spur: 1 = straight 2 = slightly curved 3 = curved
- 2 Constrictions: 1 = none 2 = slight 3 = deep
- 2 Pod flesh: 1 = light 2 = medium 3 = dark
- 1  2 mm spur length
- 2 Fiber: 1 = none 2 = sparse 3 = considerable
- 5 Number of seeds per pod
- 1 Surface: 1 = smooth 2 = rough
- 2 Suture string: 1 = present 2 = absent
- Seed development (Snap Bean): 1 = slow 2 = medium 3 = fast
- 1 Machine harvest: 1 = adapted 2 = not adapted
- 4 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 1 = Monochrome 2 = Polychrome  1 = shiny 2 = dull
- 1 Primary color: } 1 = white 2 = yellow 3 = buff 4 = tan
- 0 Secondary color: } 5 = brown 6 = pink 7 = red 8 = purple  
 9 = blue 10 = black 11 = other (specify) \_\_\_\_\_
- 0 Color Pattern: 1 = none 2 = splashed 3 = mottled 4 = striped 5 = flecked 6 = dotted
- 0 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) \_\_\_\_\_
- 0 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  2 Cross section: 1 = elliptical 2 = oval 3 = cordate  
 4 = round
- 2 Side view:     
 1 = oval to oblong 2 = round 3 = reniform

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

2 1 = truncate ends 2 = rounded ends

4  5 gm/100 seed

6 gm/100 seed lighter than .....  8  
gm/100 seed same as ....   
  gm/100 seed heavier than .....

} comparison variety from page one

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

1 Flowers  1 Stems  1 Pods  1 Seeds  1 Leaves

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

2 Anthracnose (specify race below) gamma (susc. to alpha, beta, delta)  0 Fuscous blight  
 2 Rust (specify race below) Race 38, 49 (susc. to Race 45, 52)  0 Red node virus  
 0 Powdery mildew  0 Pod mottle virus  
 0 Fusarium root rot  2 Bean common mosaic virus (specify strain below)  
CBMV- NY-15 strain  
 0 Pythium root rot  2 Mosaic mottle  
 0 Rhizoctonia root rot  2 Black root  
 0 Pythium wilt  0 Bean yellow mosaic virus  
 0 Angular leaf spot  0 Curly top  
 0 Bacterial wilt  0 Other (specify below) \_\_\_\_\_  
 0 Halo blight (specify race below) \_\_\_\_\_

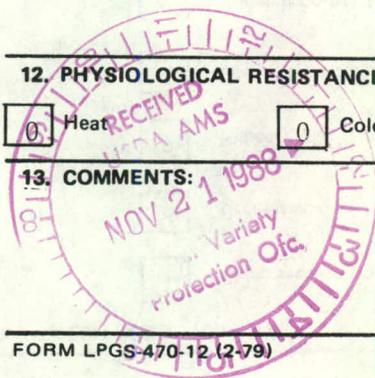
11. INSECT RESISTANCE: (0 = not tested 1 = susceptible 2 = resistant)

0 Aphids  0 Root knot nematode  
 0 Leaf hopper  0 Seed corn maggot  
 0 Lygus  0 Thrips  
 0 Pod borer  0 Weavils  
 0 Other (specify below) \_\_\_\_\_

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

0 Heat  0 Cold  0 Drought  0 Air pollution

13. COMMENTS:



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8900041

VARIETY: Primo (formerly FM-168 (formerly 1D-X1257-  
MsMs(C)B(W)Ms(C)Ms))

Exhibit D: Botanical Description of the Variety

Seed germination is medium in vigor and seedlings emerge at a medium rate. Seedling growth is medium vigorous. Flowering occurs early and is concentrated into a short period (earlier and more concentrated than Tendercrop). Seed development is very slow.

Plants are upright, medium tall, only slightly spreading (slightly shorter and narrower than Tendercrop). Leaves are medium green, smooth, and medium to small (similar color but smaller and smoother than Tendercrop). Leaves are deltoid ovate, acuminate in shape with rounded to truncated bases. Stems are medium in thickness and smoothness. Inflorescences arise from the apex and leaf axils with 4 to 8 white flowers per inflorescence. Pods are medium high in the plant but under the foliage.

Pods are 13 to 15 cm in length, 16 to 20 mm diameter from suture to suture and 8 to 10 mm from sidewall to sidewall. Pods are straight, smooth, and flat, with medium short (10 to 12 mm) spurs. Pods are medium green in color with medium large seed cavities, medium firm flesh, and no interlocular cavitation. Fiber development is medium slow.

Seeds are white, oval round shape, slightly elliptical in cross-section, medium to medium large size.

EXHIBIT "E"  
Plant Variety Protection Application  
No: .....

ASSIGNMENT

I, George C. Emery, agree and hereby do transfer and assign to FERRY-MORSE SEED COMPANY all my rights, title, and interest in and to that certain variety namely, snap bean Primo, for which application for Plant Variety Protection Certificate has been filed. This agreement shall be binding on my administrators, successors, and assigns.

In Witness Whereof, I have executed this agreement this 14 day of November, 1988.

BREEDER

George C. Emery

EXHIBIT "E"

Plant Variety Protection Application

No: 8900041

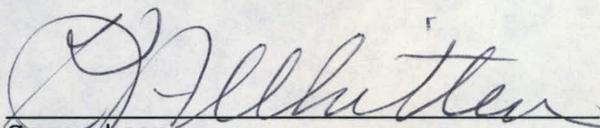
STATEMENT OF OWNERSHIP

I, George R. Allbritten, Secretary of Ferry-Morse Seed Company do hereby certify that Ferry-Morse Seed Company is the breeder and owner of that certain variety namely, Bean, Primo

\_\_\_\_\_

for which an application for Plant Variety Protection has been filed.

In witness whereof I have executed this statement of ownership and caused the Ferry-Morse Corporate Seal to be affixed this 27 day of April, 1990.

  
Secretary

SEAL

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