

No.

8900040



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

BEAN

'Hialeah'

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 June in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth H. Coan*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward Madigan*  
Secretary of Agriculture



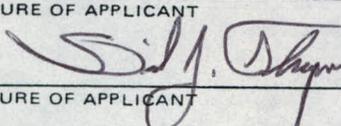
U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

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).

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S) FERRY-MORSE SEED COMPANY		2. TEMPORARY DESIGNATION FM-216	3. VARIETY NAME HIALEAH
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 8900040
6. GENUS AND SPECIES NAME <u>Phaseolus vulgaris</u> L.		7. FAMILY NAME (Botanical) LEGUMINOSAE	FILING DATE Dec. 1, 1988 TIME 1:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.
8. KIND NAME (GARDEN) BEAN		9. DATE OF DETERMINATION 2 MAY 1988	AMOUNT FOR FILING \$ 1800 <sup>00</sup> DATE Nov. 21, 1988
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) CORPORATION			AMOUNT FOR CERTIFICATE \$ 200.- DATE June 8, 1992
11. IF INCORPORATED, GIVE STATE OF INCORPORATION CALIFORNIA		12. DATE OF INCORPORATION 7 APRIL 1969	
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. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)			
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement.			
c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)			
d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety.			
e. <input checked="" type="checkbox"/> 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.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? N/A <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> 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: Hialeah (formerly FM-216 (formerly 1D-X2168-AMs(C)M(W)4))

Exhibit A: Origin and Breeding History of the Variety

Hialeah originated as a  $F_5$  single plant selection following the pedigree method of selection from the cross of Gator Green as the seed parent and the pedigreed line, 1D-X298-MSA(MT)5D(W)3(MT)A, as the pollen parent. The cross was made in the late summer of 1979 in Sun Prairie, Wisconsin, and was designated 1D-X2168.

One  $F_1$  seed resulted from the cross; it was planted in the greenhouse at Sun Prairie, Wisconsin, in the late winter/early spring of 1980. Thirty four  $F_2$  seeds were harvested from the plant.

$F_2$  seed of 1D-X2168-A was planted in a progeny row in the field at Sun Prairie, Wisconsin, in the summer of 1980. Overall rating of the row was excellent in particular for plants with very heavy yields of smooth fresh-market-type pods. Nine single plant selections were made in the row of which one plant was later eliminated because of large seed; seed of the remaining eight plants was bulk-massed.

$F_3$  seed of 1D-X2168-AMs was planted in 60 foot double row plots in the field at San Juan Bautista, California, in the summer of 1981. The row rated very good for its tall, upright plants with slim, smooth fresh market-type pods. Thirty-nine single plant selections were made in the row and their  $F_4$  seed was held separately from each plant.

$F_4$  seed from each selection was planted in progeny rows in Sun Prairie, Wisconsin, in the summer of 1982. Progeny rows of 1D-X2168-AMs(C)M rated very good for its heavy yield and five selections were made in the row;  $F_5$  seed was held separately from each.

$F_5$  seed from each selection was planted in progeny rows in San Juan Bautista, California, in the summer of 1983. Progeny rows of 1D-X2168-AMs(C)M(W)4 stood out for its Gator Green type pods, excellent upright, medium tall plant, heavy yield, early midseason maturity.  $F_6$  seed was bulk-massed from the row and redesignated FM-216 for future intensive evaluation and consideration as a new variety.

In 1984, FM-216 was evaluated in trials in Florida, Wisconsin, New York, and Tennessee;  $F_6$  seed was advanced and increased to the  $F_7$  generation in California. In all the trials FM-216 rated good to excellent; in Florida and Tennessee FM-216 rated better than Gator Green for its earliness and potentially better yield. In California amongst 2500 plants, no off-types were noted and the line was uniform for type.

In 1985, FM-216 was again evaluated in trials in Wisconsin, New York, and Tennessee, and  $F_7$  seed was increased to the  $F_8$  generation in California. Field ratings of FM-216 varied from good to very good, with FM-216 yielding as well as Gator Green, with earlier, more concentrated maturity and more uniform pod length; pods were very similar in type to Gator Green. No off-types were again noted in approximately 1500  $F_7$  plants in California and the line was considered uniform for type and maturity.

In 1986, FM-216 was again intensively trialled in Wisconsin, New York, Tennessee, and Florida and advanced to the  $F_9$  generation with seed increases in California and Idaho. In all the trials, FM-216 gave similar yields as Gator Green but matured 3 to 4 days earlier. The earliness of FM-216 was also noted in its maturing its seed-pods earlier in both California and in Idaho. No off-types were noted in approximately 4000 plants in California and 3000 plants in Idaho; FM-216 was considered genetically stable and reproducible.

In 1987, FM-216 was again trialled in Wisconsin, New York, Tennessee, Florida, and in New Jersey as well as advanced to the  $F_{10}$  generation for seed increase in Idaho (0.50 acre) and California (2.5 acres). FM-216 continued to perform well in the various trial situations and in its being consistently earlier than Gator Green. No off-types were noted in the Idaho seed increases and 3 runner mixtures were taken from the 2.5 acres of California seed increase.

In 1988, FM-216 was again trialled in Wisconsin, New York, Tennessee, and Florida and was advanced to the  $F_{11}$  generation of seed increase in Idaho. FM-216 continued to express consistently good yields and earlier maturity than Gator Green. The Idaho seed increase of 1 acre was free of off-types.

On May 2, 1988, the decision was made to introduce FM-216 as a new fresh market snap bean variety and FM-216 was named Hialeah.

VARIETY: Hialeah (formerly FM-216 (formerly 1D-X2168-Ms(C)Ms(W)4))

Exhibit B: Data Indicative of Novelty

Hialeah is most similar to the variety Gator Green. Hialeah can be distinguished from Gator Green by its fewer days to first flower after seeding and by a shorter pod length.

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

A. Days to first flower. The first twenty-five plants in each of the rows of the varieties to be compared were designated for recording the date each had their first open flower. The number of days from the date of seeding to the date of the first open flower was determined and made the data for the following comparisons.

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VARIETY: Hialeah (formerly FM-216 (formerly 1D-X2168-Ms(C)Ms(W)4))

Exhibit B: Data Indicative of Novelty

Hialeah is most similar to the variety Gator Green. Hialeah can be distinguished from Gator Green by its fewer days to first flower after seeding, by a shorter pod length, a darker green pod color (see photograph), and a more rugose leaf surface (see photograph).

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

A. Days to first flower. The first twenty-five plants in each of the rows of the varieties to be compared were designated for recording the date each had their first open flower. The number of days from the date of seeding to the date of the first open flower was determined and made the data for the following comparisons.

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 20, 1985. Days from planting to first open flower were counted on 25 plants per variety.

	<u>Days to First Open Flower</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	36.7	37.3
s <sub>t</sub>	0.31	0.23
s	0.56	0.48
Actual		
observed range	36. - 38.	37. - 38.
95% confidence interval	36.5 - 36.9	37.1 - 37.5
Coefficient of variation	1.52	1.28
Difference of means		0.6
<u>Test for Homogeneity of Variance</u>		
F-value		1.37
Probability		0.22
<u>Test for Normality</u>		
skewness	-0.0101	0.8219
T-value	-0.0217	1.7726
Probability	0.4914	0.0445*
kurtosis	-0.5647	-1.4473
T-value	-0.6263	-1.6051
Probability	0.2685	0.0608
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		148.5000
Normal deviate (z)		3.7333
Probability		0.0001**

\* = significance at the 0.05 level of probability

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

TRIAL 2 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>Hialeah</u>	<u>Gator Green</u>
Mean	38.7	40.9
s	0.23	0.61
s	0.48	0.78
Actual		
observed range	38. - 39.	40. - 42.
95% confidence		
interval	38.5 - 38.9	40.6 - 41.2
Coefficient of		
variation	1.23	1.49
Difference		
of means		2.2
<u>Test for Homogeneity of Variance</u>		
F-value		2.68
Probability		0.048*
<u>Test for Normality</u>		
skewness	-0.8219	0.2199
T-value	-1.7726	0.4743
Probability	0.0445*	0.3198
kurtosis	-1.4473	-1.2803
T-value	-1.6051	-1.4199
Probability	0.0608	0.0843
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		0.0000
Normal deviate (z)		6.2492
Probability		0.0000**

\* = significance at the 0.05 level of probability

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

TRIAL 3 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>Hialeah</u>	<u>Gator Green</u>
Mean	51.2	54.6
s <sup>2</sup>	0.83	0.26
s	0.91	0.51
Actual observed range	50. - 52.	54. - 55.
95% confidence interval	50.8 - 51.6	54.4 - 54.8
Coefficient of variation	1.78	0.92
Difference of means		3.36
<u>Test for Homogeneity of Variance</u>		
F-value		3.24
Probability		0.0028**
<u>Test for Normality</u>		
skewness	-0.4287	-0.2575
T-value	-0.9245	-0.5552
Probability	0.1822	0.2919
kurtosis	-1.7255	-2.1097
T-value	-1.9136	-2.3397
Probability	0.0338*	0.0140**
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		0.0000
Normal deviate (z)		6.2354
Probability		0.0000**

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

TRIAL 4 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>Hialeah</u>	<u>Gator Green</u>
Mean	39.0	39.9
s <sup>2</sup>	0.50	0.58
s	0.71	0.76
Actual		
observed range	38. - 40.	39. - 41.
95% confidence interval	38.7 - 39.3	39.6 - 40.2
Coefficient of variation	1.81	1.90
Difference of means		0.92
<u>Test for Homogeneity of Variance</u>		
F-value		1.15
Probability		0.367
<u>Test for Normality</u>		
skewness	0.0000	0.1380
T-value	0.0000	0.2976
Probability	0.5000	0.3843
kurtosis	-0.8458	-1.1786
T-value	-0.9280	-1.3071
Probability	0.1788	0.1018
<u>Student t-Test for Significant Difference of Means</u>		
t-value		4.34
Probability		0.0000**

\* = significance at the 0.05 level of probability

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

B. Pod length. When pods in each of the rows to be compared 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. Pod length was measured from stem attachment to the point where the pod spur arose from the pod. Pod length was measured in centimeters.

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 15, 1988. One hundred pods per variety were measured for length.

	<u>Pod Length (cm)</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	15.1	15.5
s <sub>1</sub>	0.69	0.75
s <sub>2</sub>	0.83	0.87
Actual		
observed range	13.2 - 17.4	13.4 - 17.8
95% confidence interval	14.94-15.27	15.36-15.70
Coefficient of variation	5.47	5.57
Difference of means		0.4
<u>Test for Homogeneity of Variance</u>		
F-value		1.09
Probability		0.336
<u>Test for Normality</u>		
skewness	0.0726	0.3255
T-value	0.2992	1.3219
Probability	0.3827	0.0947
kurtosis	-0.1486	0.1767
T-value	-0.3092	0.3623
Probability	0.3789	0.3590
<u>Student t-Test for Significant Difference of Means</u>		
t-value		3.50
Probability		0.0006**

\* = significance at the 0.05 level of probability

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

TRIAL 2 Sun Prairie, Wisconsin. Seed planted in the field on June 23, 1988. One hundred pods per variety were measured for length.

	<u>Pod Length (cm)</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	15.0	15.6
s <sup>2</sup>	0.74	0.72
s	0.86	0.85
Actual observed range	13.2 - 17.5	13.5 - 18.3
95% confidence interval	14.86-15.20	15.44-15.77
Coefficient of variation	5.71	5.49
Difference of means		0.6
<u>Test for Homogeneity of Variance</u>		
F-value		1.023
Probability		0.50
<u>Test for Normality</u>		
skewness	0.3767	0.1505
T-value	1.5607	0.6237
Probability	0.0609	0.2671
kurtosis	0.4122	0.4283
T-value	0.8618	0.8955
Probability	0.1954	0.1864
<u>Student t-Test for Significant Difference of Means</u>		
t-value		4.74
Probability		0.0000**

\* = significance at the 0.05 level of probability

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TRIAL 3 Sun Prairie, Wisconsin. Seed planted in the field on June 27, 1988. One hundred pods per variety were measured for length.

	<u>Pod Length (cm)</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	15.5	16.4
s <sup>2</sup>	0.98	0.61
s	0.99	0.78
Actual		
observed range	13.2 - 17.6	14.8 - 19.0
95% confidence interval	15.30-15.69	16.28-16.59
Coefficient of variation	6.39	3.729
Difference of means		0.9

Test for Homogeneity of Variance

F-value	1.60
Probability	0.01**

Test for Normality

skewness	-0.0378	0.5510
T-value	-0.1564	2.2827
Probability	0.4380	0.0123**
kurtosis	-0.3415	0.3119
T-value	-0.7140	0.6521
Probability	0.2384	0.2579

Mann-Whitney Test for Two Independent Samples

Test criterion (U)	2359.5000
Normal deviate (z)	6.4639
Probability	0.0000**

\* = significance at the 0.05 level of probability

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

TRIAL 4 Crossville, Tennessee. Seed planted in the field on July 5, 1988. One hundred pods per variety were measured for length.

	<u>Pod Length (cm)</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	15.9	16.2
s <sup>2</sup>	0.82	0.73
s	0.91	0.85
Actual		
observed range	12.2 - 18.5	13.8 - 17.8
95% confidence interval	15.69-16.05	16.04-16.38
Coefficient of variation	5.72	4.49
Difference of means		0.3
<u>Test for Homogeneity of Variance</u>		
F-value		1.13
Probability		0.27
<u>Test for Normality</u>		
skewness	-0.1315	-0.1381
T-value	-0.5449	-0.5720
Probability	0.2935	0.2843
kurtosis	1.9749	-0.4986
T-value	4.1287	-1.0424
Probability	0.0000**	0.1499
<u>Mann-Whitney Test for Two Independent Samples</u>		
Test criterion (U)		3788.5000
Normal deviate (z)		2.9646
Probability		0.0015**

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

TRIAL 5 San Juan Bautista, California. Seed planted in the field on June 22, 1988. One hundred pods per variety were measured for length.

	<u>Pod Length (cm)</u>	
	<u>Hialeah</u>	<u>Gator Green</u>
Mean	15.0	15.6
s <sup>2</sup>	0.87	1.28
s	0.94	1.13
Actual		
observed range	12.0 - 17.0	13.0 - 19.0
95% confidence interval	14.84-15.20	15.34-15.78
Coefficient of variation	5.81	7.27
Difference of means		0.6

Test for Homogeneity of Variance

F-value	1.465
Probability	0.029*

Test for Normality

skewness	0.0166	0.6496
T-value	0.0686	2.6912
Probability	0.4727	0.0042**
kurtosis	0.2884	0.7413
T-value	0.6089	1.5498
Probability	0.2740	0.0622

Mann-Whitney Test for Two Independent Samples

Test criterion (U)	3644.0000
Normal deviate (z)	3.3235
Probability	0.0004**

\* = significance at the 0.05 level of probability

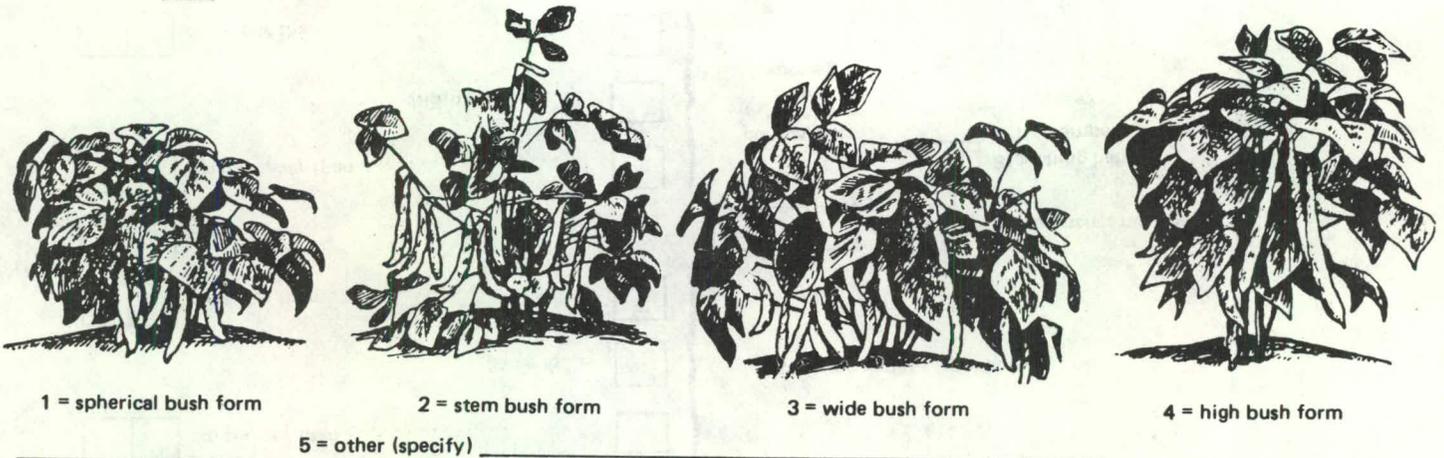
\*\* = significance at the 0.01 or less level of probability



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

2 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  9 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      4 = 8.34 mm to 9.53 mm  
2 = 5.76 mm to 7.34 mm      5 = 9.53 mm to 10.72 mm  
3 = 7.34 mm to 8.34 mm      6 = 10.72 mm or larger

1	2	3	4	5	6
0%	3%	22%	28%	44%	3%

3 sieve  1  4 cm length       0  8 mm width       0  7 mm thickness

4 sieve  1  5 cm length       1  0 mm width       0  9 mm thickness

5 sieve  1  5 cm length       1  1 mm width       1  0 mm thickness

6 sieve  1  5 cm length       1  1 mm width       1  1 mm thickness

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6. FRESH PODS: (Cont'd)

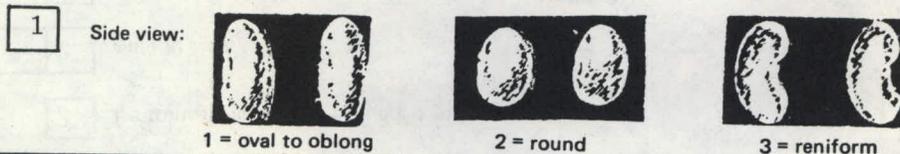
- 2 Cross section pod shape: 1 = flat 2 = oval 3 = round 4 = heart
- 1 Creaseback: 1 = present 2 = absent
- 2 Pubescence: 1 = none 2 = sparse 3 = considerable
- 2 Spur: 1 = straight 2 = slightly curved 3 = curved
- 2 Constrictions: 1 = none 2 = slight 3 = deep
- 2 Pod flesh: 1 = light 2 = medium 3 = dark
- 1  4 mm spur length
- 3 Fiber: 1 = none 2 = sparse 3 = considerable
- 6 Number of seeds per pod
- 1 Surface: 1 = smooth 2 = rough
- 2 Suture string: 1 = present 2 = absent
- 2 Seed development (Snap Bean): 1 = slow 2 = medium 3 = fast
- 1 Machine harvest: 1 = adapted 2 = not adapted
- 1 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 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) \_\_\_\_\_
- 2 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



17  
8900040

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

2 1 = truncate ends 2 = rounded ends

2  2 gm/100 seed

0  2 gm/100 seed lighter than .....  8 }  
gm/100 seed same as ....  } comparison variety from page one  
  gm/100 seed heavier than .....  }

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):

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

18 RECEIVED  
MEDA AMS  
NOV 21 1988  
Plant Variety  
Protection Ofc.

VARIETY: Hialeah (formerly FM-216 (formerly 1D-X2168-AMS(C)M(W)4))

Exhibit D: Botanical Description of the Variety

Seed germination is vigorous, seedling emergence rapid, and seedling growth vigorous. Flowering is midseason and concentrated into a short period (slightly earlier than Tendercrop).

Plants are upright to medium, medium tall, and medium wide. Leaves are medium green, medium in smoothness, pubescent. Leaf shape is deltoid-ovate, acuminate, with rounded to truncated bases (very similar to Tendercrop in color and smoothness). Leaf size is medium large (slightly smaller than Tendercrop). Stems are medium thick and smooth. Inflorescences arise from the apex and leaf axils with 4 to 8 flowers per inflorescence. Pods are high in the plant and under the foliage.

Pods are 14 to 17 cm in length, 8 to 11 mm diameter from suture to suture and 9 to 10 mm diameter from sidewall to sidewall and oval to slightly round-oval in shape. Pods are medium straight, medium smooth, medium green, and slightly pubescent. Pod flesh is medium firm, the seed cavity medium small, with none to slight interocular cavitation. Seed and fiber development occurs at a medium rate.

Seeds are white, oblong, oval in cross-section, medium to medium small in size (smaller in size than Tendercrop).

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, snapbean Hialeah, 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 31 day of October, 1988.

BREEDER

George C. Emery

EXHIBIT "E"

Plant Variety Protection Application

No: 8900040

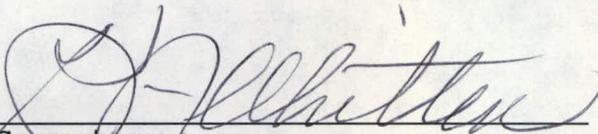
STATEMENT OF OWNERSHIP

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, Hialeah

\_\_\_\_\_

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

