No. 8900038

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 TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Blue Ridge'

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* 31st *day of* July *in the year of our Lord one thousand nine hundred and* ninety-two.

Attest:

Kenneth B. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

APPROVAL EXPIRES 2-28-88

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

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).

1. NAME OF APPLICANT(S)
FERRY-MORSE SEED COMPANY

2. TEMPORARY DESIGNATION
FM-103

3. VARIETY NAME
BLUE RIDGE

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
8900038

6. GENUS AND SPECIES NAME
Phaseolus vulgaris L.

7. FAMILY NAME *(Botanical)*
LEGUMINOSAE

FILING
DATE Dec. 1, 1988
TIME 1:30 ☐ A.M. ☑ P.M.

8. KIND NAME
(GARDEN) BEAN

9. DATE OF DETERMINATION
2 MAY 1988

FEES RECEIVED
AMOUNT FOR FILING
$ 1800.00
DATE Nov. 21, 1988
AMOUNT FOR CERTIFICATE
$ 200.00
DATE June 29, 1992

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
CORPORATION

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~~ DR. LARRY GAULTNEY
FERRY-MORSE SEED COMPANY
P.O. BOX ~~4938~~ 1010
~~MODESTO, CALIFORNIA 95352~~ SAN JUAN BAUTISTA CA 95045
MAK 11 June 1991
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? N/A
☐ Foundation ☐ Registered ☐ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

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)*
☒ 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
Bill J. Thompson
DATE 17 NOVEMBER 1988

SIGNATURE OF APPLICANT
DATE

FORM LS-470 (3-86) *Edition of 7-84 obsolete.*

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: Blue Ridge (formerly FM-103 (formerly 1D-103-(C)J(W)3(C)Ms (formerly 1C-X1950-(W)MsMsE(MT)18A(W)5(C)Ms)))

Exhibit A: Origin and Breeding History of the Variety

Blue Ridge originated through the combination of pedigree selection and single seed descent breeding procedures as a F_{10} selection from the cross designated 1C-X1950. The seed cross was made in the greenhouse at San Juan Bautista, California, in the spring of 1974; 8 F_1 seed were harvested.

F_1 seed of 1C-X1950 was planted in the field at Sun Prairie, Wisconsin, in the summer of 1975. Four plants survived and resulting F_2 seed was bulk-massed.

F_2 seed of 1C-X1950-(W)Ms was planted back to the field at Sun Prairie, Wisconsin, in the summer of 1976. The segregating progeny row rated very good for generally upright plants and straight, smooth, medium long pods; 4 F_2 selections were taken from the row and their F_3 seed bulk-massed.

F_3 seed of 1C-X1950-(W)MsMs was again planted back to the field at Sun Prairie, Wisconsin, in the summer of 1977. The row of 34 plants was treated as a segregating progeny; it was rated very good for tall, upright plants, and long large sieve pods with a tendency to develop fiber. Six F_3 plants were selected from the row and their F_4 seed harvested separately.

F_4 seed of each selection were evaluated for seed size and germination characteristics (days to emergence, % emergence, and freedom from transverse cotyledon cracking (TVC)) in the fall of 1977. Only F_4 seed of 1C-X1950-(W)MsMsE had an acceptable seed count and was free of TVC.

F_4 seed of 1C-X1950-(W)MsMsE was planted one seed per pot in the greenhouse at Sun Prairie, Wisconsin, in the fall of 1978. Each F_4 seedling was inoculated with Common Bean Mosaic Virus-New York 15 strain (CBMV-NY15); all tested resistant to black root and mosaic symptoms. F_5 seed was harvested from 43 plants separately and five F_5 seed from each plant was immediately planted back to pots in the greenhouse at Sun Prairie, Wisconsin, in the spring of 1979. Each pot was thinned to one F_5 plant per pot; the single plant was inoculated with CBMV-NY15 (again all plants tested resistant); F_6 seed was harvested separately from each plant.

F_6 seed was planted in progeny rows in the field at Sun Prairie, Wisconsin, in the summer of 1979. The progeny row, 1C-X1950-(W)MsMsE(MT)18A rated very good and five F_6 selections were taken from the row and their F_7 seed held separately.

F_7 seed was planted in progeny rows in the field at San Juan Bautista, California, in the summer of 1980. Progeny row 1C-X1950-(W)MsMs(MT)18A(W)4 rated excellent for a tall, upright plant with high pods, a heavy yield of very straight, very smooth, round toward oval, well-filled, medium green pods, and midseason maturity. F_8 seed from the row was bulk-massed.

F_8 seed of 1C-X1950-(W)MsMsE(MT)18A(W)4Ms was planted in a 200 foot double row bed at San Juan Bautista, California, in the summer of 1981. It rated good to very good and five F_8 selections were taken from the plot; F_9 seed from the remaining plants was bulk-massed and redesignated 1D-103.

F_9 seed of five selections from 1D-103 was planted in progeny rows at Sun Prairie, Wisconsin, in the summer of 1982. The progeny row 1D-103-(C)J rated very good with a better yield than 1D-103. Five F_9 selections were taken from this row and F_{10} seed harvested separately.

F_{10} progeny rows selections with small seed size and slow imbibition rate were planted in the field at San Juan Bautista, California, in the summer of 1983. Progeny rows of 1D-103-(C)J(W)3 rated very good for tall plants and excellent yield with good uniformity; F_{11} seed from the row was bulk-massed.

F_{11} seed of 1D-103-(C)J(W)3(C)Ms was evaluated in trials in Wisconsin, Tennessee, New York, and Florida and F_{12} seed increased in California in the summer and fall of 1984. All trials rated very good to excellent and a definite improvement over the original 1D-103. The decision was made to further test and increase seed of 1D-103-(C)J(W)3(C)Ms as FM-103; F_{12} seed of 1D-103-(C)J(W)3(C)MsMs from four 60 foot double-rows at San Juan Bautista, California, in 1984 was bulk-massed for this purpose.

F_{12} seed of FM-103 in 1985 was planted in replicated trials at Sun Prairie, Wisconsin, and single trials in New York, Tennessee, and Florida. Field ratings varied from good to excellent; the line appeared to have particular potential as a dual purpose green podded bean for market and processing. An increase of one acre of F_{13} seed was attempted in Nampa, Idaho, in 1985, but the planting failed.

In 1986, remnant F_{12} seed was planted in trials in Wisconsin, New York, and Tennessee, and to 0.25 acre of F_{13} seed increase at San Juan Bautista, California. The field trials rated fair to excellent. The 0.25 acre F_{13} seed increase in California was quite uniform for type and maturity; 19 flat, oval, or bumpy podded offs were removed from the approximately 25,000 plants. The line was considered genetically stable and reproducible.

In 1987, FM-103 was again planted in trials in Wisconsin, New York, and Tennessee, and F_{13} seed was advanced a generation for a further seed increase in Gilroy, California. FM-103 continued to rate very good to excellent in all areas tested despite very hot,

humid conditions prevailing throughout the Eastern areas in 1987.

No off-types were found in the two acre increase in California; FM-103 was concluded to be genetically stable and reproducible.

The decision to introduce FM-103 as a new variety was made on May 2, 1988, and the variety was named Blue Ridge.

8900038

VARIETY: Blue Ridge (formerly FM-103 (formerly 1D-103-(C)J(W)3(C)Ms (formerly 1C-X1950-(W)MsMsE(MT)18A(W)5(C)Ms)))

Exhibit B: Data Indicative of Novelty

Blue Ridge is most similar to the variety Torrent. Blue Ridge can be distinguished by a shorter pod and more 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 occured, 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.

8900038

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 28, 1984. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	38.1	36.3
s^2	0.11	0.31
s	0.33	0.56
Actual Observed Range	38. - 39.	35. - 37.
95% Confidence Interval	38.0-38.3	36.1-36.5
Coefficient of Variation	0.28	1.53
Difference of Means		1.8
Test for Homogeneity of Variance		
F-value		2.8
Probability		0.00725**
Test for Normality		
skewness	2.4907	0.0101
T-value	5.3717	0.0217
Probability	0.0000**	0.0414
kurtosis	4.5634	-0.5647
T-value	5.0608	-0.6263
Probability	0.0000**	0.2685
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		0.0000
Normal Deviate (z)		6.4559
Probability		0.0000**

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

8900038

TRIAL 2 San Juan Bautista, California. Seed planted in the field on July 6, 1984. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	44.4	44.0
s^2	0.51	0.96
s	0.71	0.98
Actual Observed Range	43. - 45.	41. - 45.
95% Confidence Interval	44.2-44.7	43.6-44.4
Coefficient of Variation	1.14	2.22
Difference of Means		0.4
Test for Homogeneity of Variance		
F-value		1.89
Probability		0.06325
Test for Normality		
skewness	-0.9018	-1.3670
T-value	-1.9448	-2.9482
Probability	0.0318*	0.0035**
kurtosis	-0.3759	2.5655
T-value	-0.4169	2.8451
Probability	0.3402	0.0045**
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		221.5000
Normal Deviate (z)		1.9147
Probability		0.0278*

* = 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 on June 20, 1985. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	39.0	38.2
s^2	0.62	0.72
s	0.79	0.85
Actual Observed Range	38. - 40.	37. - 40.
95% Confidence Interval	38.8-39.3	37.8-38.5
Coefficient of Variation	1.37	2.23
Difference of Means		0.8
Test for Homogeneity of Variance		
F-value		1.16
Probability		0.3596
Test for Normality		
skewness	-0.0733	0.1152
T-value	-0.1581	0.2484
Probability	0.4378	0.4030
kurtosis	-1.3509	-0.7229
T-value	-1.4981	-0.8017
Probability	0.0736	0.2153
Student t-Test for Significant Difference of Means		
t-Value		3.71
Probability		0.000538**

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

8900038

TRIAL 4 Sun Prairie, Wisconsin. Seed planted in the field on June 16, 1987. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	36.6	36.2
s^2	0.25	0.50
s	0.50	0.71
Actual Observed Range	36. - 37.	35. - 37.
95% Confidence Interval	36.4-36.8	35.9-36.5
Coefficient of Variation	1.37	1.95
Difference of Means		0.4
Test for Homogeneity of Variance		
F-value		2.00
Probability		0.048*
Test for Normality		
skewness	-0.4348	-0.3074
T-value	-0.9377	-0.6630
Probability	0.1789	0.2568
kurtosis	-1.9763	-0.8458
T-value	-2.1917	-0.9380
Probability	0.0192*	0.1788
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		217.5000
Normal Deviate (z)		2.0557
Probability		0.0199**

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

8900038

TRIAL 5 San Juan Bautista, California. Seed planted in the field on June 19, 1987. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	46.6	45.8
s^2	1.07	0.58
s	1.04	0.76
Actual Observed Range	44. - 48.	44. - 47.
95% Confidence Interval	46.2-47.1	45.5-46.1
Coefficient of Variation	2.22	1.67
Difference of Means		0.8
Test for Homogeneity of Variance		
F-value		1.84
Probability		0.07118
Test for Normality		
skewness	0.8965	-0.8539
T-value	-1.9335	-1.8415
Probability	0.0325*	0.0390*
kurtosis	0.5275	1.1277
T-value	0.5846	1.2506
Probability	0.2821	0.1116
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		150.5000
Normal Deviate (z)		3.3131
Probability		0.0005**

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

8900038

TRIAL 6 Sun Prairie, Wisconsin. Seed planted in the field on June 23, 1988. Days to first open flower were counted for each of 25 plants per variety.

	Days to First Open Flower	
	Blue Ridge	Torrent
Mean	40.8	40.4
s^2	0.64	0.26
s	0.80	0.51
Actual Observed Range	40. - 42.	40. - 41.
95% Confidence Interval	40.5-41.2	40.2-40.6
Coefficient of Variation	1.96	1.25
Difference of Means		0.4
Test for Homogeneity of Variance		
F-value		2.49
Probability		0.01481*
Test for Normality		
skewness	0.3074	0.2575
T-value	0.6630	0.5552
Probability	0.2568	0.2919
kurtosis	-1.3440	-2.1097
T-value	-1.4905	-2.3397
Probability	0.0746	0.0140*
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		229.5000
Normal Deviate (z)		1.7741
Probability		0.0380*

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

11

8900038

B. Pod Length. When pods reached full diameter and advanced seed development could be felt in the pod, one full pod (no missing seed) was harvested and measured from each of 100 plants per variety.

TRIAL 1 Sun Prairie, Wisconsin. Seed planted in the field on June 28, 1984. One hundred pods, one from each of 100 plants per variety, were measured.

	Pod Length (cm)	
	Blue Ridge	Torrent
Mean	14.2	14.6
s^2	1.15	1.85
s	1.07	1.36
Actual Observed Range	11. - 16.	11. - 18.
95% Confidence Interval	14.0-14.5	14.3-14.9
Coefficient of Variation	7.54	9.32
Difference of Means		0.4
Test for Homogeneity of Variance		
F-value		1.606
Probability		0.00963**
Test for Normality		
skewness	0.3462	-0.5767
T-value	-1.4342	-2.3891
Probability	0.0773	0.0094**
kurtosis	0.0998	0.1354
T-value	0.2087	0.2830
Probability	0.4176	0.3889
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		3951.0000
Normal Deviate (z)		2.5594
Probability		0.0052**

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

8900038

TRIAL 2 San Juan Bautista, California. Seed planted in the field on July 6, 1984. One hundred pods, one pod from each of 100 plants per variety, were measured.

	Pod Length (cm)	
	Blue Ridge	Torrent
Mean	15.0	15.5
s^2	0.68	1.41
s	0.82	1.19
Actual Observed Range	13. - 17.	12. - 18.
95% Confidence Interval	14.9-15.2	15.2-15.7
Coefficient of Variation	5.47	7.67
Difference of Means		0.5
Test for Homogeneity of Variance		
F-value		2.077
Probability		0.00017**
Test for Normality		
skewness	-0.0383	0.0181
T-value	-0.1585	0.0751
Probability	0.4372	0.4701
kurtosis	-2.2874	-0.2433
T-value	-0.6008	-0.5986
Probability	0.2747	0.3061
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		3908.5000
Normal Deviate (z)		2.6694
Probability		0.0038**

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

8900038

TRIAL 3 Sun Prairie, Wisconsin. Seed planted in the field on June 20, 1985. One hundred pods, one pod from each of 100 plants per variety, were measured.

	Pod Length (cm)	
	Blue Ridge	Torrent
Mean	15.0	15.5
s^2	1.08	1.50
s	1.04	1.23
Actual Observed Range	13. - 18.	12. - 18.
95% Confidence Interval	14.8-15.2	15.2-15.7
Coefficient of Variation	6.91	7.92
Difference of Means		0.5
Test for Homogeneity of Variance		
F-value		1.393
Probability		0.05039*
Test for Normality		
skewness	0.3249	-0.0299
T-value	1.3461	-0.1237
Probability	0.0907	0.4509
kurtosis	-0.2754	-0.2336
T-value	-0.5757	-0.4884
Probability	0.2830	0.3132
Mann-Whitney Test for Two Independent Samples		
Test Criterion (U)		3927.5000
Normal Deviate (z)		2.6203
Probability		0.0044**

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

8900038

TRIAL 4 Sun Prairie, Wisconsin. Seed planted in the field on June 16, 1987. One hundred pods, one pod from each of 100 plants per variety, were measured.

	Pod Length (cm)	
	Blue Ridge	Torrent
Mean	14.92	15.55
s^2	1.836	2.363
s	1.355	1.537
Actual Observed Range	11.8-18.0	11.9-18.9
95% Confidence Interval	14.65-15.192	15.24-15.86
Coefficient of Variation	9.080	9.883
Difference of Means		0.63
Test for Homogeneity of Variance		
F-value		1.287
Probability		0.10557
Test for Normality		
skewness	-0.1355	-0.0925
T-value	-0.5614	-0.3834
Probability	0.2879	0.3511
kurtosis	-0.6229	-0.4398
T-value	-1.3022	-0.9195
Probability	0.0979	0.1800
Student t-Test for Significant Difference of Means		
t-Value		3.07
Probability		0.00244**

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

8900038

TRIAL 5 San Juan Bautista, California. Seed planted in the field on June 19, 1987. One hundred pods, one pod from each of 100 plants per variety, were measured.

	Pod Length (cm)	
	Blue Ridge	Torrent
Mean	15.43	16.25
s^2	0.856	1.095
s	0.925	1.046
Actual Observed Range	12.6-17.5	14.1-18.6
95% Confidence Interval	15.24-15.61	16.04-16.46
Coefficient of Variation	5.996	6.438
Difference of Means		0.82
Test for Homogeneity of Variance		
F-value		1.279
Probability		0.1113
Test for Normality		
skewness	0.2249	-0.3755
T-value	0.9318	-1.5557
Probability	0.1769	0.0615
kurtosis	-0.5277	-0.0295
T-value	-1.1031	-0.0617
Probability	0.1363	0.4755
Student t-Test for Significant Difference of Means		
t-Value		5.87
Probability		0.0000**

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

8900038

VARIETY: Blue Ridge (formerly FM-103 (formerly 1D-103-(C)J(W)3(C)Ms (formerly 1C-X1950-(W)MsMsE(MT)18A(W)5(C)Ms)))

Exhibit B: Data Indicative of Novelty

Blue Ridge is most similar to the variety Torrent. Blue Ridge can be distinguished from Torrent by a shorter pod and more days from seeding to 1st open flower.

1) Sun Prairie, Wisconsin. Planted on June 28, 1984.

	Blue Ridge	Torrent	difference	t	d.f.	P
pod length(cm)	14.24	14.60	0.36	2.11	198	0.05-0.025
days to 1st flower	38.12	36.32	1.80	13.94	48	<.001

2) San Juan Bautista, California. Planted on July 6, 1984.

	Blue Ridge	Torrent	difference	t	d.f.	P
pod length(cm)	14.90	15.46	0.56	2.84	198	.005
days to 1st flower	44.44	43.96	0.48	2.00	48	0.05

3) Sun Prairie, Wisconsin. Planted on June 20, 1985.

	Blue Ridge	Torrent	difference	t	d.f.	P
pod length(cm)	15.03	15.48	0.45	2.74	198	0.01-.005
days to 1st flower	39.04	38.16	0.88	3.81	48	<.001

4) Sun Prairie, Wisconsin. Planted on June 16, 1987.

	Blue Ridge	Torrent	difference	t	d.f.	P
pod length(cm)	14.90	15.55	0.65	3.18	198	.005-.001
days to 1st flower	36.60	36.20	0.40	2.30	48	0.025

5) San Juan Bautista, California. Planted on June 19, 1987.

	Blue Ridge	Torrent	difference	t	d.f.	P
pod length(cm)	15.42	16.25	0.83	5.88	198	<.001
days to 1st flower	46.60	45.80	0.80	3.25	48	.005-.001

6) Sun Prairie, Wisconsin. Planted on June 23, 1988.

	Blue Ridge	Torrent	difference	t	d.f.	P
days to 1st flower	40.84	40.44	0.40	2.13	48	.05-.025

FORM APPROVED: OMB NO. 0581-0055

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

EXHIBIT C
(Bean)

OBJECTIVE DESCRIPTION OF VARIETY

BEAN (Phaseolus vulgaris L.)

NAME OF APPLICANT(S)
FERRY - MORSE SEED COMPANY

ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
PO BOX 4938
MODESTO, CA 95352-4938

FOR OFFICIAL USE ONLY

PVPO NUMBER 8900038

VARIETY NAME OR TEMPORARY DESIGNATION
BLUE RIDGE (FM-103)

Place numbers in the boxes (e.g. [0][8][9]) for the characters that best describe this variety. Measured data should be for SPACED PLANTS. Ranges may also be given. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____. The location of test area is SUN PRAIRIE, WI _____. Please answer questions appropriate for your variety if the information is available.

1. TYPE:

[2] 1 = Field *(dry-edible)* 2 = Garden

2. MARKET MATURITY:

[5][4] Days to edible pods

[ ][ ] Days to green shells

[ ][ ][ ] Days to dry seeds

[1][2][3][5] Heat units to edible pods

[ ][ ][ ][ ] Heat units to green shells

[ ][ ][ ][ ] Heat units to dry seeds

[ ][ ] No. days earlier than ..... [ ]

..... Same as .. [1]

[ ][1] No. days later than ..... [8]

1 = Tendercrop
2 = Kentucky Wonder
3 = Kinghorn Wax
4 = White Kidney
5 = Michelite 62
6 = Dwarf Horticultural
7 = Bush Blue Lake 290
8 = Other (specify below)
TORRENT

3. PLANT:

[1] 1 = Determinate 2 = Indeterminate

[0][4][3] cm height

[ ][2] cm shorter than ..... [8]

Same as .. [ ]

[ ][ ] cm taller than ..... [ ]

comparison variety from above

[4][5] cm spread

[0][0][4] Number primary branches near base

[ ][ ] cm narrower than ..... [ ]

width same as ... [8]

[ ][ ] cm wider than ..... [ ]

comparison variety from above

[1] Branching habit: 1 = compact 2 = open

[1] Main stalk: 1 = brittle 2 = wirey

[1] 1 = stout 2 = thin

18

3. PLANT: (Cont'd)

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

[4] Bush form (illustrated below):

1 = spherical bush form 2 = stem bush form 3 = wide bush form 4 = high bush form

5 = other (specify) _____

4. LEAVES:

[1] 1 = smooth 2 = wrinkled

[1] 1 = dull 2 = glossy

[3] 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][8] 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 variagated (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
4%	10%	12%	15%	45%	14%

3 sieve	[1][3] cm length	[ ][8] mm width	[ ][8] mm thickness
4 sieve	[1][5] cm length	[ ][9] mm width	[ ][9] mm thickness
5 sieve	[1][5] cm length	[ ][9] mm width	[1][0] mm thickness
6 sieve	[1][5] cm length	[1][1] mm width	[1][2] mm thickness

19

6. FRESH PODS: (Cont'd)

[3] 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

[2] 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

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

[1] Machine harvest: 1 = adapted 2 = not adapted

[2] Pod flavor:
(1) Standard (Tendercrop)
(2) Mild Blue Lake (BBL 274)
(3) Strong Blue Lake (Pole FM1)
(4) Mild Romano (Roma)
(5) Strony 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) _____

[1] 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

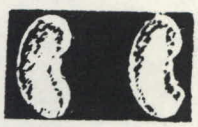
8. SEED SHAPE AND SIZE:

[1] Hilum view: 1 = elliptical 2 = oval 3 = round [2] Cross section: 1 = elliptical 2 = oval 3 = cordate 4 = round

[1] Side view:

1 = oval to oblong

2 = round



3 = reniform

20

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

[2] 1 = truncate ends 2 = rounded ends

[2][5] gm/100 seed

[0][9] 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):

[2] Anthracnose (specify race below) gamma (susc. to alpha, 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

[2] Bean common mosaic virus (specify strain below) CBMV- NY15

[2] Mosaic mottle

[2] 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] Leaf hopper

[0] Lygus

[0] Pod borer

[0] Root knot nematode

[0] Seed corn maggot

[0] Thrips

[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:

VARIETY: Blue Ridge (formerly FM-103 (formerly 1D-103-(C)J(W)3(C)Ms (formerly 1C-X1950-(W)MsMsE(MT)18A(W)5(C)Ms)))

Exhibit D: Botanical Description of the Variety

Seed germination is medium vigorous and emergence medium rapid, seedling growth is vigorous. Flowering is midseason (similar to Tendercrop). Pods reach maturity in late midseason, slightly later than Tendercrop.

Plants are medium upright, tall, slightly spreading. Leaves are medium dark (slightly darker than Tendercrop), deltoid ovate, acuminate, in shape with rounded to truncated bases. Leaves are large, slightly rugose, pubescent (similar to Tendercrop). Stems are medium thick and smooth. Inflorescences arise from the apex and leaf axils and contain 4 to 8 white flowers. Pods are medium high and spread throughout the plant, but under the foliage.

Pods vary from 14 to 17 cm in length, 11 mm diameter from suture to suture and 10 to 11 mm from sidewall to sidewall. Pods are round, straight, medium smooth, with slight pubescence, medium green in color with a medium short spur (12 mm),(greyer and lighter than Tendercrop). Pod flesh is medium in firmness, medium size seed cavity, and none to slight interlocular cavitation (similar in firmness and seed cavity size, but less interlocular cavitation than Tendercrop). Seed and fiber development is at a medium rate (faster than with Tendercrop).

Seeds are white, oblong, and oval in cross-section (not as long and generally smaller in size than Tendercrop).

8900038

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 Blue Ridge, 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: 8900038

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, Blue Ridge

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