

No.

840090



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

BEAN

'Tornado'

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 September in the year of our Lord one thousand nine hundred and eighty-six.

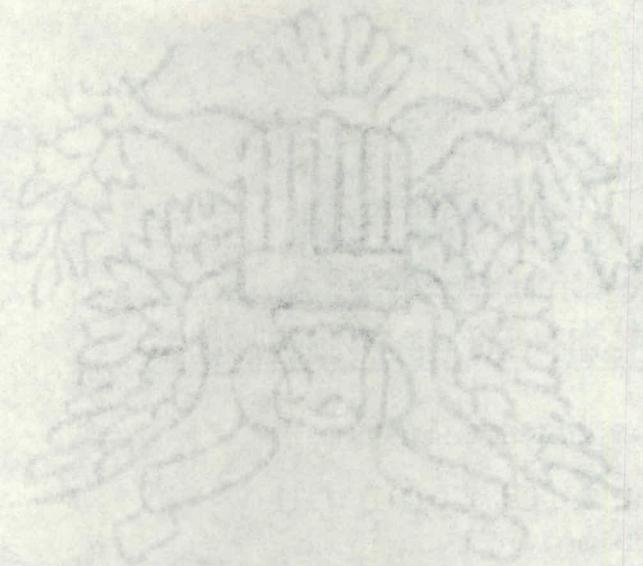
Attest:

Kenneth H. Hans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture



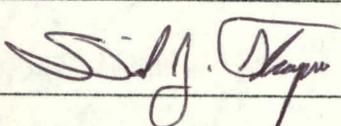
382



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1. NAME OF APPLICANT(S) FERRY-MORSE SEED COMPANY		2. TEMPORARY DESIGNATION FMX 62	3. VARIETY NAME TORNADO
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P.O. BOX 7274 4938 MOUNTAIN VIEW, CA 94039 Modesto 95352-4938		5. PHONE (Include area code) (415) 967-6973 (209) 579-7373	FOR OFFICIAL USE ONLY PVPO NUMBER 8400090
6. GENUS AND SPECIES NAME PHASEOLUS VULGARIS L.	7. FAMILY NAME (Botanical) LEGUMINOSAE		FILING DATE 4/25/84 TIME 2:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.
8. KIND NAME GARDEN BEAN	9. DATE OF DETERMINATION April, 1983		FEES RECEIVED AMOUNT FOR FILING ^{KE} \$ 1,000 DATE 4/25/84 AMOUNT FOR CERTIFICATE \$ 200.00 DATE August 7, 1986
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) CORPORATION			12. DATE OF INCORPORATION 4 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 Dr. David J. Thompson, Vice President Ferry-Morse Seed Company P.O. Box 7274 , Mountain View, CA 94039 4938 Modesto 95352-4938			
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.)		c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)	
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement		d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of the Variety	
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 <input checked="" type="checkbox"/> No 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? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? Has the variety been released, offered for sale, or marketed in the U.S. or other countries? FIRST OFFERED FOR SALE 7/18/86 per letter VAL FERRY-MORSE PRICE LIST OF APRIL 15, 1984 <input checked="" 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 10 April 1984
SIGNATURE OF APPLICANT			DATE 1

1848

[Faint, illegible handwriting]

[Faint, illegible handwriting]

[Faint, illegible handwriting]

4/10/84

VARIETY: Tornado (formerly FMX-62 (formerly 1D-62 (formerly 1D-X109-MsB5C(MT)1A(W)Ms)))

Exhibit A: Breeding History of the Variety

Tornado originated as an F₇ single plant selection from the cross cv. Provider (seed parent) by cv. Intenor (pollen parent) following the pedigree method of breeding. The cross was made in the greenhouse in the fall of 1974 at Sun Prairie, Wisconsin. The resulting 15 F₁ seed were designated 1D-X109 then planted back into the greenhouse in Wisconsin in the spring of 1975; the resulting F₂ seed was bulkmassed.

The F₂ bulkmassed seed, 1D-X109-Ms, was planted to the field in Wisconsin in the summer of 1975. Two single plant selections were made in the row and the F₃ seed was kept separate.

Five progeny rows were planted back to the Wisconsin field in 1977. The fifth row, 1D-X109-MsB5, was rated good, three plants were selected and their F₅ seed held separate.

Five F₅ seed from each of the F₄ selections were planted in the greenhouse at Sun Prairie, WI, in the fall of 1977. The seedlings were inoculated with Common Bean Mosaic Virus (BV-1A). Seed of the resistant plants were harvested individually. Five F₆ seed from each of the resistant F₅ plants were again planted in pots and again inoculated with BV-1A in the greenhouse in Sun Prairie, Wisconsin, in the spring of 1978. F₇ seed from resistant F₆ plants were held separately and planted back to the Wisconsin field in progeny rows in the summer of 1978.

The F₇ progeny row, 1D-X109-MsB5C(MT)1A, rated outstanding for its upright, tall habit with a concentrated heavy yield of 3-4 inch straight, slim, smooth, medium green pods. Three F₇ selections were made in the row and their F₈ seed massed together.

The F₈ mass, 1D-X109-MsB5C(MT)1A(W)Ms, was redesignated 1D-62 in the winter of 1978-79 in anticipation of intensive evaluation and seed increase as a potential new variety. 1D-62 was grown in California in 1979 and the F₈ progeny row was rated good to very good for upright habit and 3 inch, straight, slim pods.

In 1980, 1D-62 was evaluated in trial in Wisconsin, Oregon, and New York; its ratings ranged from good to excellent. Two rows of seed increase in California rated good without any off-types noted.

In 1981, 1D-62 was again evaluated in trial in Wisconsin, Oregon, New York and Tennessee and again rated good to very good. California increases in 5 different rows in 1981 rated good to very good with no off-types noted. The seed was redesignated FMX-62 in anticipation of sampling outside the company.

4/10/84

In 1982 a 5 acre seed increase of FMX-62 was grown in Hansen, Idaho. The variety maintained its genetic stability for type and particularly pod shape, again with no off-types noted.

In April of 1983, FMX-62 was named Tornado and introduced as a new whole pack processing green bean.

VARIETY: Tornado (formerly FMX-62 (formerly 1D-62 (formerly 1D-X109-MsB5C(MT)1A(W)Ms)))

Exhibit B: Data Indicative of Novelty

Tornado is mostly similar to its paternal parent cv. Interior. Tornado is distinct from Interior by having a narrower leaf width (center leaflet of second trifoliate leaf) and narrower seed width.

1. 1982 San Juan Bautista, California. Planted June 14, 1982.

	<u>Tornado</u>	<u>Interior</u>	<u>difference</u>	<u>t-value</u>	<u>d.f.</u>	<u>P</u>
a) leaf width (cm)	6.7	8.8	2.1	4.4	24	<.001
(each comparison is based on 13 measurements in each variety)						
b) seed width (mm)	5.8	6.6	0.8	14.1	198	<.001

2. 1983 San Juan Bautista, California. Planted June 10, 1983.

	<u>Tornado</u>	<u>Interior</u>	<u>difference</u>	<u>t-value</u>	<u>d.f.</u>	<u>P</u>
a) leaf width (cm)	4.8	6.0	1.2	9.96	198	<.001
b) seed width (mm)	4.4	4.7	0.3	4.54	198	<.001
(each comparison is based on 100 measurements in each variety)						

RECEIVED

APR 24 1986

U. S. DEPARTMENT



CULTURE

AMS

PVPO

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	FOR OFFICIAL USE ONLY
	PVPO NUMBER 8400090
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 111 Ferry-Morse Way P.O. Drawer 7274 4938 Tlodesjo Mountain View, CA 94039 95352-4938	VARIETY NAME OR TEMPORARY DESIGNATION TORNADO

Place numbers in the boxes (e.g.) 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, Wisconsin. Please answer questions appropriate for your variety if the information is available.

1. TYPE:

1 = Field (dry-edible) 2 = Garden

2. MARKET MATURITY:

Days to edible pods Days to green shells

Days to dry seeds

Heat units to edible pods Heat units to green shells

Heat units to dry seeds

No. days earlier than }
 Same as .. }
 No. days later than

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)
Interior

3. PLANT:

1 = Determinate 2 = Indeterminate

cm height

cm shorter than }
 Same as .. } comparison variety from above

cm taller than }

cm spread Number primary branches near base

cm narrower than }
 width same as ... } comparison variety from above

cm wider than }

1 Main stalk: 1 = brittle 2 = wirey 2 1 = stout 2 = thin

5

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

1 = truncate ends 2 = rounded ends



2 2 gm/100 seed

 gm/100 seed lighter than

gm/100 seed same as 8

 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):

- 0 Anthracnose (specify race below) _____
- 0 Rust (specify race below) _____
- 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
- 1 Halo blight (specify race below) _____
- 0 Fuscous blight
- 0 Red node virus
- 0 Pod mottle virus
- 2 Bean common mosaic virus (specify strain below)
NY-15
- 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: Tornado (formerly FMX-62 (formerly 1D-62 (formerly 1D-X109-MsB5C(MT)1A(W)Ms)))

Exhibit D: Botanical Description of the Variety

Germination and seedling emergence are moderately rapid. Seedling growth is moderately vigorous. Flowering is early and concentrated in a short period. Pod development is early. Seed and fiber development is slow.

Plant is medium upright, medium to medium tall bush, well-anchored, with pods moderately high but spread on the plant. Leaves are medium small, medium in number, medium green, deltoid ovate shape, medium smooth with slight pubescence.

Flowers are white, develop on the plant apex and in the leaf axils, and are in clusters of 4 to 8 flowers per inflorescence.

Pods are 9-11 cm long, 9 mm x 10 mm in diameter, medium green, very lightly bumpy, slightly pubescent, round, medium short straight spur (8-11 mm). Pod interior is medium green, medium firm, with slight interlocular cavitation.

Seed are white, small, round in cross-section, oblong with truncated ends.

1. The first part of the document is a list of names and addresses.

2. The second part of the document is a list of names and addresses.

3. The third part of the document is a list of names and addresses.

4. The fourth part of the document is a list of names and addresses.

5. The fifth part of the document is a list of names and addresses.

6. The sixth part of the document is a list of names and addresses.

7. The seventh part of the document is a list of names and addresses.

8. The eighth part of the document is a list of names and addresses.

EXHIBIT "E"

Plant Variety Protection Application

No: 8400090

ASSIGNMENT

I, George C. Emery, agree and hereby do transfer and assign to FERRY-MORSE SEED COMPANY all of my rights, title, and interest in and to that certain variety namely, Bean, 'Tornado' 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 23 day of April, 19 86.

BREEDER

George C. Emery

12/72

10

RECEIVED

APR 24 1986

U. S. DEPARTMENT



OF AGRICULTURE

AMS

PVPO

ASSIGNMENT OF INTELLECTUAL PROPERTY

WHEREAS, HARRIS MORAN SEED COMPANY, a corporation duly organized and existing under the laws of the State of Maryland, having its principal place of business at 4511 Willow Road, Suite 3, Pleasanton, California 94588 ("Assignor"), has, pursuant to that certain Bill of Sale and Assignment dated as of June 30, 1997, transferred to FERRY-MORSE SEED COMPANY (CALIFORNIA), a corporation duly organized and existing under the laws of the State of California, having its principal place of business at 555 Codoni Avenue, P.O. Box 4938, Modesto, California 95352-4938 ("Assignee"), all of the intellectual property Assignor had adopted, used and was using as of the effective date of this Assignment, including without limitation, the intellectual property represented by the United States Plant Variety Protection Certificates of Assignor identified on Schedule A hereto (collectively, the "Property"); and

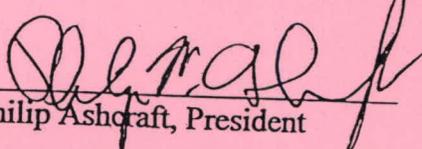
WHEREAS, on the date hereof, Assignee has changed its name to "Harris Moran Seed Company";

NOW, THEREFORE, effective by this instrument as of the close of business on June 30, 1997, and for good and valuable consideration, receipt of which is hereby acknowledged, Assignor hereby assigns to Assignee any and all right, title and interest worldwide in and to the Property and any and all recordations thereof, including, but not limited to, the use of the Property in any manner, all benefit of any and all prior use of the Property, and any and all rights to initiate claims or proceedings for past, present or future infringements of Assignor's rights, title and interest in and to the Property.

Dated: as of June 30, 1997

HARRIS MORAN SEED COMPANY

By:


Philip Ashcraft, President

CERTIFICATE OF AMENDMENT
OF THE
ARTICLES OF INCORPORATION
OF

FERRY-MORSE SEED COMPANY (CALIFORNIA)
(a California corporation)

1400010

ENDORSED
FILED

In the office of the Secretary of State
of the State of California

JUN 30 1997

Bill Jones
BILL JONES, Secretary of State

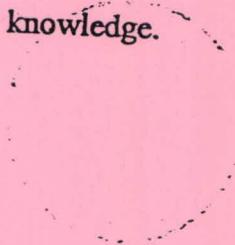
To the Secretary of State
State of California

Pursuant to the provisions of the General Corporation Law of the State of California, the undersigned officers of FERRY-MORSE SEED COMPANY (CALIFORNIA), a California corporation (the "Corporation"), do hereby certify as follows:

1. The name of the Corporation is Ferry-Morse Seed Company (California).
2. Article One of the Corporation's Articles of Incorporation, which relates to the name of the Corporation, is hereby amended in its entirety to read as follows:
 - One. The name of this Corporation is:
HARRIS MORAN SEED COMPANY.
3. The amendment herein provided for has been approved by the Corporation's Board of Directors.
4. The amendment herein provided for was approved by the written consent of the Corporation's sole shareholder in accordance with the provisions of Section 902 of the California General Corporation Law. The total number of outstanding shares of the corporation is 5,000.

IN WITNESS WHEREOF, each of the undersigned does hereby declare under the penalty of perjury that he or she signed the foregoing Certificate of Amendment as of June 30,

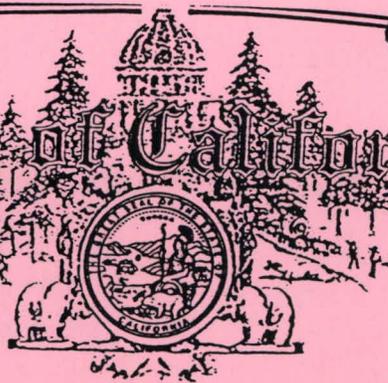
1997, in the Town of Modesto, State of California, in the official capacity set forth beneath his or her signature and that the statements set forth in this certificate are true of his or her own knowledge.



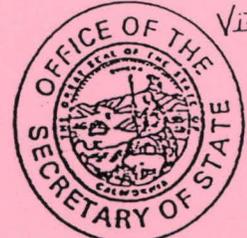
Yves Queste
Yves Queste, President

Helen Andritsakis
Helen Andritsakis, Secretary

State of California



SECRETARY OF STATE



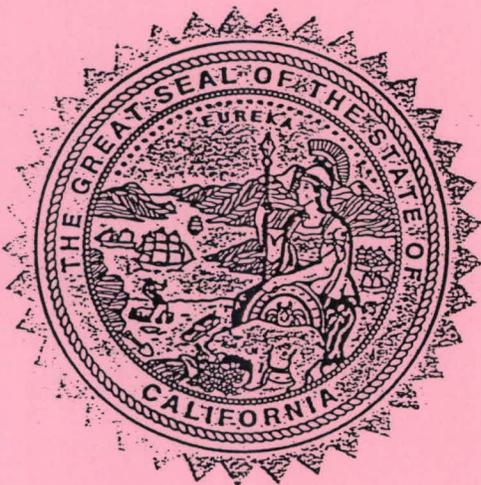
2 PAGES

I, *BILL JONES*, Secretary of State of the State of California, hereby certify:

That the attached transcript has been compared with the record on file in this office, of which it purports to be a copy, and that it is full, true and correct.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this

JUN 30 1997



Bill Jones

Secretary of State

