No. 8400090

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 (7 U.S.C. 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 A. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0005

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 ☐ A.M. ☒ P.M.
8. KIND NAME GARDEN BEAN	9. DATE OF DETERMINATION April, 1983	FEES RECEIVED AMOUNT FOR FILING $ 1,000 RE DATE 4/25/84
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)* CORPORATION		AMOUNT FOR CERTIFICATE $ 200.00 DATE August 7, 1986
11. IF INCORPORATED, GIVE STATE OF INCORPORATION CALIFORNIA		12. DATE OF INCORPORATION 4 April 1969

13. NAME AND ADDRESS OF APPLICANT REPRESENATIVE(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. [X] Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

b. [X] Exhibit B, Novelty Statement

c. [X] Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*

d. [X] 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.)* ☐ 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

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES? ☐ Yes *(If "Yes," give names of countries and dates)* ☒ No

19. ~~HAVE INQUIRIES BEEN MADE 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
☒ 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 David J. Thompson	DATE 10 April 1984
SIGNATURE OF APPLICANT	DATE

FORM LMGS-470 (9-81) (Edition of 1-78 is obsolete)

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 F_7 single plant selection from the cross cv. Provider (seed parent) by cv. Internor (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 F_1 seed were designated 1D-X109 then planted back into the greenhouse in Wisconsin in the spring of 1975; the resulting F_2 seed was bulkmassed.

The F_2 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 F_3 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 F_5 seed held separate.

Five F_5 seed from each of the F_4 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 F_6 seed from each of the resistant F_5 plants were again planted in pots and again inoculated with BV-1A in the greenhouse in Sun Prairie, Wisconsin, in the spring of 1978. F_7 seed from resistant F_6 plants were held separately and planted back to the Wisconsin field in progeny rows in the summer of 1978.

The F_7 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 F_7 selections were made in the row and their F_8 seed massed together.

The F_8 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 F_8 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. Internor. Tornado is distinct from Internor 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.

	Tornado	Internor	difference	t-value	d.f.	P
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.

	Tornado	Internor	difference	t-value	d.f.	P
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)						

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APR 24 1986
U.S. DEPARTMENT OF AGRICULTURE
AMS
PVPO

FORM APPROVED: OMB NO. 40-R3822

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)*
111 Ferry-Morse Way
P.O. Drawer ~~7274~~ 4938
MODESTO ~~Mountain View~~, CA ~~94039~~ 95352-4938

FOR OFFICIAL USE ONLY
PVPO NUMBER 8400090
VARIETY NAME OR TEMPORARY DESIGNATION
TORNADO

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, Wisconsin. 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 1] Days to edible pods
[ ] Days to green shells
[ ] Days to dry seeds
[1 1 8 0] Heat units to edible pods
[ ] Heat units to green shells
[ ] Heat units to dry seeds
[4] No. days earlier than ..... [1]
..... Same as .. [8]
[ ] 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) Internor

3. PLANT:

[1] 1 = Determinate 2 = Indeterminate

[3 7] cm height
[ ] cm shorter than ..... [ ]
Same as .. [ ]
[2] cm taller than ..... [8]
comparison variety from above
[3 5] cm spread
[0 0 4] Number primary branches near base
[ ] cm narrower than ..... [ ]
width same as ... [ ]
[5] cm wider than ..... [8]
comparison variety from above
[2] Branching habit: 1 = compact 2 = open
[1] Main stalk: 1 = brittle 2 = wirey
[2] 1 = stout 2 = thin

5

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

[1] 1 = truncate ends 2 = rounded ends

[2 2] gm/100 seed

[ ] gm/100 seed lighter than . . . . . [ ]

gm/100 seed same as . . . . [8] 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):

[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:

8

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.

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

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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

NEWY01A:171511:1:09/26/97
26757-1

A496370

ENDORSED
FILED
In the office of the Secretary of State
of the State of California

JUN 30 1997

BILL JONES, Secretary of State

CERTIFICATE OF AMENDMENT

OF THE

ARTICLES OF INCORPORATION

OF

FERRY-MORSE SEED COMPANY (CALIFORNIA)

(a California corporation)

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, President

Helen Andritsakis, Secretary

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State of California

SECRETARY OF STATE

OFFICE OF THE SECRETARY OF STATE

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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

THE GREAT SEAL OF THE STATE OF CALIFORNIA
EUREKA

Bill Jones

Secretary of State

SEC/STATE FORM CE-107 (REV. 4/97)

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