THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, there has been presented to the Secretary of Agriculture

An application requesting a certificate of protection for an alleged distinct variety of sexually reproduced, or tuber propagated plant, the name and description of which are contained in the application and exhibits, a copy of which is hereto 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 twenty years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by law, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or conditioning it for propagation, or stocking it for any of the above purpose, or using it in producing a hybrid or different variety therefrom, to the extent provided by the Plant Variety Protection Act. (64 Stat. 1542, as amended, 7 U.S.C. 2321 et seq.)

SUNFLOWER

RC103M

In Testimoniae, whereas, 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 twelfth day of September, in the year two thousand one.

[Signature]

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)

Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

RC103M

3. VARIETY NAME

Helianthus annuus

4. ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code, and Country)

700 Capital Square
400 Locust Street
Des Moines, Iowa 50309

5. TELEPHONE (include area code)

(515) 270-5988

6. FAX (include area code)

(515) 253-2288

7. GENUS AND SPECIES NAME

Helianthus annuus

8. FAMILY NAME (Botanical)

Compositae (Asteraceae)

9. CROP KIND NAME (Common name)

Sunflower

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

Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

Iowa

12. DATE OF INCORPORATION

May 6, 1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. John F. Soper
7300 N.W. 62nd Avenue
PO Box 1004
Johnston, Iowa 50131

14. TELEPHONE (include area code)

(515) 270-5988

15. FAX (include area code)

(515) 253-2288

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ✓ Exhibit A. Origin and Breeding History of the Variety
b. ✓ Exhibit B. Statement of Distinctness
c. ✓ Exhibit C. Objective Description of the Variety
d. ✓ Exhibit D. Additional Description of the Variety
e. ✓ Exhibit E. Statement of the Basis of the Applicant’s Ownership
f. ✓ Voucher Sample (1,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)
g. ✓ Filing and Examination Fee ($2450), made payable to “Treasurer of the United States (Mail to PVPO)"

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLAS OF CERTIFIED SEED (See Section 63(a) of the Plant Variety Protection Act)?

☐ YES (If "yes," answer items 18 and 19 below) ✓ NO (If "no," go to item 20)

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "yes," give names of countries and dates) ✓ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required 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 (Owner(s))

John F. Soper

SIGNATURE OF APPLICANT (Owner(s))

CAPACITY OR TITLE

Director, Sunflower Research

DATE

Mar. 13, 1998

(Capacity or title)

(See reverse for instructions and information collection burden statement)
Exhibit A. **Origin and Breeding History of the Variety**

Sunflower Variety Name: RC103M

RC103M was developed from a complex cross involving two rust resistant large seeded lines, R1 and R2, and a third large seeded RC41-1, carrying the dominant fertility restoration genes for CMS Pet 1 cytoplasm. Complete restoration lines were identified at the S4 generation. RC103M was subsequently selected for its combining ability in the S7 generation.

RC103M was selected for commercialization based on superior combining ability for high yield and desirable confection sunflower seed traits in the Northern Great Plains.

RC103M has been observed by the breeder to be uniform and stable for all plant traits as described in Exhibit C with no evidence of variants.
Exhibit B: Statement of Distinctness

Sunflower Variety Name: RC103M

RC103M is a single headed confection restorer line that is most similar to RHA295. However, RC103M has a descending leaf attitude while RHA295 has a horizontal leaf attitude. RC103M exhibits no branching while RHA295 may exhibit basal branching. Most notably, seed of RC103M is obovate with prolific lateral and marginal stripes, while RHA295 is ovate, typically with marginal and a single lateral stripe (see attached photographic comparison).
Seed of RC103M: obovate with prolific marginal and lateral white and grey stripes

Seed of RHA295: ovate with white marginal and lateral stripes
NAME OF APPLICANT(S)

Pioneer Hi-Bred International, Inc.

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code)
7300 N.W. 62nd Ave., P.O. 1004
Johnston, IA 50131-1004

OBJECTIVE DESCRIPTION OF VARIETY

SUNFLOWER (HELIANthus ANNUUS)

VARIETY NAME OR TEMPORARY DESIGNATION

RC103M

FOR OFFICIAL USE ONLY

PVPO NUMBER

980268

Place numbers in the boxes (e.g. 0 8 9) for the characters that best describe typical plants of this variety.

| COMPARISON VARIETIES |  |  |
|----------------------|--|--
| NON-OIL: 1 = ARROWHEAD | 2 = MINGREN | 3 = SUNDAK | 4 = PEREDOVIK |
| OIL: 5 = KRASNODARETS | 6 = OTHER | RHA295 | 7 = OTHER | 8 = OTHER |

1. CLASS:

| 1 = OIL TYPE | 2 = NON-OIL TYPE (confectionery) |

2. MATURITY:

<table>
<thead>
<tr>
<th>NO. OF DAYS TO HEAD FIRST VISIBLE (from emergence)</th>
<th>NO. OF DAYS TO HARVEST RIPENESS (from emergence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>91</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DAYS EARLIER THAN</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEADING SAME AS</td>
<td>COMPARISON VARIETY</td>
</tr>
<tr>
<td>DAYS LATER THAN</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DAYS EARLIER THAN</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>MATURITY SAME AS</td>
<td>COMPARISON VARIETY</td>
</tr>
<tr>
<td>DAYS LATER THAN</td>
<td></td>
</tr>
</tbody>
</table>

3. HEIGHT:

<table>
<thead>
<tr>
<th>cm TALL AT HARVEST RIPENESS</th>
<th>cm SHORTER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm SHORTER THAN</th>
<th></th>
<th>cm SHORTER THAN</th>
<th>cm LONGER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>cm TALLER THAN</th>
<th>cm TALLER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm TALLER THAN</th>
<th>6</th>
</tr>
</thead>
</table>

4. STEM:

<table>
<thead>
<tr>
<th>LENGTH OF INTERNODE AT HARVEST RIPENESS</th>
<th>NUMBER OF LEAVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm SHORTER THAN</th>
<th>FEWER LEAVES THAN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm SHORTER THAN</th>
<th>FEWER LEAVES THAN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm LONGER THAN</th>
<th>MORE LEAVES THAN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>cm LONGER THAN</th>
<th>MORE LEAVES THAN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRANCHING: 1 = NO BRANCHING</th>
<th>2 = BASAL BRANCHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 = TOP BRANCHING (with central head)</td>
<td>4 = FULLY BRANCHED (without central head)</td>
</tr>
<tr>
<td></td>
<td>5 = OTHER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLOR OF GROWING POINT: 1 = GREEN</th>
<th>2 = YELLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. LEAVES (Midstem at flowering):

<table>
<thead>
<tr>
<th>CM. BLADE LENGTH</th>
<th>CM. BLADE WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.9 (1 decimal place)</td>
<td>24.4 (1 decimal place)</td>
</tr>
</tbody>
</table>

- CM. SHORTER THAN
- COMPARISON VARIETY
- CM. NARROWER THAN
- COMPARISON VARIETY
- LENGTH SAME AS COMPARISON VARIETY
- WIDTH SAME AS COMPARISON VARIETY

<table>
<thead>
<tr>
<th>CM. LONGER THAN</th>
<th>CM. WIDER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6 (1 decimal place)</td>
<td>4.7 (1 decimal place)</td>
</tr>
</tbody>
</table>

- WIDTH: LENGTH RATIO: 1 = NARROWER THAN LONG 2 = EQUAL 3 = WIDER THAN LONG

- LEAF SHAPE: 1 = CORDATE 2 = OTHER
- LEAF APEX: 1 = ACUMINATE 2 = OTHER
- LEAF BASE: 1 = AURICULATE 2 = TRUNCATE

- LEAF MARGIN: 1 = ENTIRE 2 = FINELY CRENATE 3 = COARSELY CRENATE 4 = OTHER
- DEPTH OF MARGIN INDENTATION: 1 = SHALLOW 2 = INTERMEDIATE 3 = DEEP
- ATTITUDE: 1 = ERECT 2 = ASCENDING 3 = HORIZONTAL 4 = DESCENDING

- SURFACE: 1 = SMOOTH 2 = CRINKLED (ridged) 3 = OTHER (Medium leaf wrinkling per Dr. John Soper's approval)

- COLOR: 1 = LIGHT GREEN 2 = GREEN 3 = DARK GREEN 4 = BROWN
- MARGIN COLOR: 1 = GREEN 2 = YELLOW

6. HEAD AT FLOWERING:

<table>
<thead>
<tr>
<th>RAY FLOWERS:</th>
<th>RAY FLOWER COLOR: 1 = YELLOW 2 = SULFUR YELLOW 3 = ORANGE YELLOW 4 = OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 = ABSENT 2 = PRESENT</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISK FLOWER COLOR: 1 = YELLOW 2 = RED 3 = PURPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = ABSENT 2 = PRESENT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLLEN COLOR: 1 = WHITE (colorless) 2 = YELLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = ABSENT 2 = PRESENT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAPPI: 1 = GREEN 2 = RUST (red)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MM. RAY LENGTH</th>
<th>MM. RAY WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>71.0 (1 decimal place)</td>
<td>22.0 (1 decimal place)</td>
</tr>
</tbody>
</table>

- MM. SHORTER THAN
- COMPARISON VARIETY
- MM. NARROWER THAN
- COMPARISON VARIETY
- SAME AS COMPARISON VARIETY
- SAME AS

<table>
<thead>
<tr>
<th>MM. LONGER THAN</th>
<th>MM. WIDER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0 (1 decimal place)</td>
<td>6 (1 decimal place)</td>
</tr>
</tbody>
</table>
7. HEAD AT SEED MATURITY:

25.0  CM. DIAMETER
   (1 decimal place)

CM. NARROWER THAN  
   (1 decimal place)

SAME AS

COMPARISON VARIETY

0.1  CM. WIDER THAN
   (1 decimal place)

2  RECEP'TACLE SHAPE:  1 = FLAT  2 = CONVEX  3 = CONCAVE

4  HEAD ATTITUDE:  1 = VERTICAL (erect)  2 = ASCENDING  3 = HORIZONTAL  4 = DESCENDING

297  NO. OF SEEDS PER HEAD

SEEDS/HEAD LESS THAN  

SEEDS/HEAD SAME AS

COMPARISON VARIETY

122  SEEDS/HEAD MORE THAN

8. SEEDS:

4  OUTER PERICARP:  1 = CLEAR  2 = STRIPED BLACK  3 = NEARLY SOLID BLACK  4 = OTHER

1  MIDDLE PERICARP:  1 = WHITE  2 = SOLID PURPLE

1  INNER PERICARP (seed coat):  1 = NO COLOR  2 = BROWNISH BLACK

5  STRIPES:  1 = ABSENT  2 = EVEN BLACK-WHITE STRIPES  3 = BROAD BLACK-NARROW WHITE

4 = BLACK WITH NARROW DARK-GREY STRIPING  5 = OTHER

Striped Gray
(875-10/14/99)

Grey & White

1  MOTTLING:  1 = ABSENT  2 = PRESENT

2  SHAPE:  1 = OVATE  2 = OBOVATE (shield)  3 = NARROWLY OBOVATE  4 = OBLONG  5 = ELLIPTIC

1  SHAPE (cross-section):  1 = NOT CURVED  2 = CURVED

12.1  MM. LENGTH
   (1 decimal place)

0.6  MM. SHORTER THAN
   (1 decimal place)

SAME AS

COMPARISON VARIETY

14.8  GM./100 SEED
   (1 decimal place)

0.6  GM. LIGHTER THAN
   (1 decimal place)

SAME AS

COMPARISON VARIETY

12.1  MM. LONGER THAN
   (1 decimal place)

3.2  GM. HEAVIER THAN
   (1 decimal place)

97.5  % HELD ON 7.9 MM. (20/64) ROUND-HOLE SCREEN
   (1 decimal place)

% LESS THAN  
   (1 decimal place)

SAME AS

COMPARISON VARIETY

6.0  % MORE THAN
   (1 decimal place)
9. DISEASE AND INSECTS (0 = Not tested, 1 = Susceptible, 2 = Resistant):

2 RUST (Puccinia helianthi)
   GIVE RACES: Races 1 & 3

2 VERTICILLIUM WILT (Verticillium dahliae)

2 DOWNY MILDEW (Plasmopara halstedii)

0 WHITE BLISTER RUST (Albugo tragopogii)

0 BROOM RAPE (Rorobanche cannis)
   GIVE RACES: 

0 EUROPEAN SUNFLOWER MOTH (H. nebulilela)

0 OTHER

1 SCLEROTINIA WILT (Sclerotinia sclerotiorum)

0 LEAF MOTTLE (V. albo-atrum)

0 GRAY-MOLD BLIGHT, BUD ROT (Botrytis cinerea)

0 CHARCOAL ROT, STEM ROT (Macrophomina phaseolina)

0 SUNFLOWER MOTH, N. AMERICAN HEAD MOTH (Homoeosoma electellum)

0 OTHER (specify)

0 OTHER (specify)

10. GIVE VARIETY OR VARIETIES THAT MOST CLOSELY RESEMBLE THE SUBMITTED VARIETY. For the following characteristics indicate degree of resemblance by placing in the column marked, D.R., one of the following numbers: 1 = Submitted variety is less, lighter or inferior than comparison variety 2 = Same as 3 = More than, darker, or superior.

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>VARIETY</th>
<th>D.R.</th>
<th>CHARACTER</th>
<th>VARIETY</th>
<th>D.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frost resistance</td>
<td>RHA295</td>
<td>3</td>
<td>Leaf attitude</td>
<td>RHA295</td>
<td>2</td>
</tr>
<tr>
<td>Lodging resistance</td>
<td>RHA295</td>
<td>3</td>
<td>Head attitude</td>
<td>RHA295</td>
<td>2</td>
</tr>
<tr>
<td>Neck or stem strength</td>
<td>RHA295</td>
<td>3</td>
<td>Ray flower color</td>
<td>RHA295</td>
<td>1</td>
</tr>
<tr>
<td>Branching type</td>
<td>RHA295</td>
<td>2</td>
<td>Seed shape</td>
<td>RHA295</td>
<td>2</td>
</tr>
<tr>
<td>Petiole length</td>
<td>RHA295</td>
<td>1</td>
<td>Seed color</td>
<td>RHA295</td>
<td>1</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>RHA295</td>
<td>2</td>
<td>Seed striping pattern</td>
<td>RHA295</td>
<td>2</td>
</tr>
<tr>
<td>Leaf color</td>
<td>RHA295</td>
<td>1</td>
<td>Seed yield</td>
<td>RHA295</td>
<td>3</td>
</tr>
</tbody>
</table>

11. GIVE THE FOLLOWING DATA FOR SUBMITTED AND A SIMILAR VARIETY*.

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>HULL (%)</th>
<th>PROTEIN (%)</th>
<th>OIL (%)</th>
<th>IODINE NO.</th>
<th>OLEIC (%)</th>
<th>LINOLEIC (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted</td>
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</tr>
<tr>
<td>Similar</td>
<td>45.7</td>
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</tr>
<tr>
<td>Name of similar</td>
<td>RHA295</td>
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</tr>
<tr>
<td>variety</td>
<td></td>
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</tr>
</tbody>
</table>

* Hull, protein and oil percentages expressed for whole undecorticated seed; acids expressed as percentages of oil

12. COMMENTS:

Data collected during crop the 1985 and 1986 crop seasons (May-October) at Crookston, MN.
Exhibit D. Additional Description of the Variety

Sunflower Variety Name RC103M

RC103M is moderately resistant to races 1 and 3 of Puccinia helianthi, resistant to Verticillium dahliae, and resistant to race 2 of Plasmorpara halstedii.

Confection hybrids utilizing RC103M as a parent are well adapted to Central and Northern Great Plains of the USA and Southern Great Plains of Canada.
Exhibit E. Statement of the Basis of the Applicant’s Ownership

Sunflower Variety Name: RC103M

RC103M was originated and developed by plant breeders employed by Dahlgren and Company. The ownership of RC103M was transferred to Pioneer Hi-Bred, International upon its purchase of Dahlgren's sunflower breeding program in July 1992. Pioneer Hi-Bred International, Inc. has obtained exclusive rights and ownership of RC103M. No rights to variety RC103M are retained by the plant breeder or by any other party.