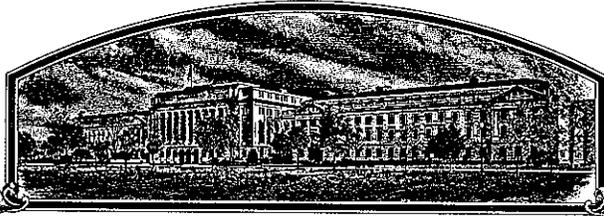


No.

8500037



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Holden's Foundation Seeds, Inc.

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

CORN

'LH82'



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 this 26th day of July in the year of our Lord one thousand nine hundred and eighty-five.

Attest

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

John R. Doherty
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

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) Holden's Foundation Seeds | | 2. TEMPORARY DESIGNATION EX 907 | 3. VARIETY NAME LH82 |
| 4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) R.R.#2, Box 839 Williamsburg, IA. 52361 | | 5. PHONE (Include area code) 319-668-1100 | FOR OFFICIAL USE ONLY PVPO NUMBER 8500037 |
| 6. GENUS AND SPECIES NAME Zea Mays | 7. FAMILY NAME (Botanical) Gramineae | | FILING DATE 12/31/84 TIME 2:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. |
| 8. KIND NAME Corn, Field | 9. DATE OF DETERMINATION November 1982 | | FEES RECEIVED AMOUNT FOR FILING \$ 1,800 DATE 12/31/84 AMOUNT FOR CERTIFICATE \$ 200.00 DATE 7/9/85 |
| 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 Iowa | | | 12. DATE OF INCORPORATION |

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Mr. Mark Armstrong
P.O. Box 839
Williamsburg, Iowa 52361

PHONE (Include area code): 319-668-1100

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? 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  | DATE 12/21/84 |
| SIGNATURE OF APPLICANT | DATE |

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Exhibit A

LH82 was developed through a pedigreed system of breeding. On the following page is a schematic description of the development of LH82. [Also included are copies of pages from Holden's Foundation Seeds nursery books. The rows associated with the development of LH82 have been highlighted.]

NOT MADE PART OF THE CERTIFICATE OF P/S

Upon observing the increase of LH82 as a finished line for 3 generations it is free of variance within the population.

Attached is a statement from the originating plant breeder, Art Johnson, Holden's Foundation Seeds, stating that the line is uniform and stable.

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Exhibit A

Uniformity Statement

I have observed LH82 during the three generations it has been increased, Iowa nursery rows 10013-10022, Hawaii nursery rows 8830-8849, and 9 acre bottom field West Homestead, Iowa. In each of the increases the seeds from the previous generation were planted. The line is very stable from generation to generation and is very uniform.

Art Johnson
Plant Breeder

Exhibit A

Origin and Breeding History of the Inbred

| <u>Row No.</u> | <u>Pedigree</u> | <u>Location</u> | <u>Year</u> |
|---------------------------------|-----------------|-----------------|-------------|
| 3538 | 610 x LH7 | Hawaii | 1976-77 |
| 18538 | 610 x LH7 | Iowa | 1977 |
| 76 | 610 x LH7 | Iowa | 1979 |
| 4618 | 610 x LH7 | Hawaii | 1979-80 |
| 11737 | 610 x LH7 | Iowa | 1980 |
| 3931 | 610 x LH7 | Hawaii | 1980-81 |
| 8453 | 610 x LH7 | Iowa | 1981 |
| 823 | 610 x LH7 | Iowa | 1982 |
| 10013-10022 | Ex907 | Iowa | 1983 |
| 8830-8849 | Ex907 | Hawaii | 1983-84 |
| West Homestead (9 A. Bottom) | LH82 | Iowa | 1984 |

Exhibit B

The Novelty Statement

LH82 most closely resembles W153R; however, the most distinguishing characteristic is the silk color. LH82 has green silks at the silking stage while W153R has pink silks at the silking stage. This difference can be seen below in the photograph.



Photograph 2

The pink silk on the left is W153R and the green silk on the right is LH82. Using Munsell Color Charts for Plant Tissues. as a reference, the color of the W153R silk is 2.5R 7/6 and color of the LH82 silk is 2.5GY 8/4.

OBJECTIVE DESCRIPTION OF VARIETY
CORN (ZEA MAYS)

| | |
|---|---|
| NAME OF APPLICANT(S) Holden's Foundation Seeds ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) R.R.#2, P.O. Box 839 Williamsburg, Iowa 52361 | FOR OFFICIAL USE ONLY |
| | PVPO NUMBER 8500037 VARIETY NAME OR TEMPORARY DESIGNATION LH82 |

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. TYPE:

1 = SWEET 2 = DENT 3 = FLINT 4 = FLOUR 5 = POP 6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST
5 = SOUTHCENTRAL 6 = SOUTHWEST 7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how heat units were calculated)

| | | | |
|---|--|---|------------|
| <input type="text" value="7"/> <input type="text" value="3"/> | DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK | <input type="text" value="1"/> <input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="8"/> | HEAT UNITS |
| <input type="text" value="0"/> <input type="text" value="0"/> | DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY | <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> | HEAT UNITS |
| <input type="text" value="0"/> <input type="text" value="0"/> | DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE | <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> | HEAT UNITS |

4. PLANT:

CM. HEIGHT (To tassel tip) CM. EAR HEIGHT (To base of top ear)

CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

1 = NONE 2 = 1-2 3 = 2-3 4 = > 3

Number of Ears Per Stalk:

1 = SINGLE 2 = SLIGHT TWO-EAR TENDENCY
3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

1 = NORMAL 2 = "T" 3 = "S" 4 = "C" 5 = OTHER (Specify) _____

5. LEAF (Field Corn Inbred Examples Given):

Color: 5GY 4/6 Munsell Color Charts for Plant Tissues

1 = LIGHT GREEN (HY) 2 = MEDIUM GREEN (WF9) 3 = DARK GREEN (B14) 4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

1 = < 30° 2 = 30-60° 3 = > 60°

Sheath Pubescence:

1 = LIGHT (W22) 2 = MEDIUM (WF9)
3 = HEAVY (OH26)

Marginal Waves:

1 = NONE (HY) 2 = FEW (WF9) 3 = MANY (OH7L)

Longitudinal Creases:

1 = ABSENT (OH51) 2 = FEW (OH56A)
3 = MANY (PA11)

Width:

CM. WIDEST POINT OF EAR NODE LEAF

Length:

CM. EAR NODE LEAF

NUMBER OF LEAVES PER MATURE PLANT

6. TASSEL:

8500037

0 8

NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

1

1 = < 30° 2 = 30-40° 3 = > 45°

Penduncle Length:

0 0

CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

2

1 = LIGHT (WF9) 2 = MEDIUM 3 = HEAVY (KY21)

2

Anther Color: } 1 = YELLOW 2 = PINK 3 = RED 4 = PURPLE 5 = GREEN

6

Glume Color: } 6 = OTHER (Specify) green w/ brown margin

Pollen Restoration for Cytoplasm (o = Not Tested, 1 = Partial, 2 = Good)

0

"T"

0

"S"

0

"C"

OTHER (Specify Cytoplasm and degrees of restoration)

7. EAR (Husked Ear Data Except When Stated Otherwise):

1 4

CM LENGTH

4 0

MM. MID-POINT DIAMETER

1

1 6

GM. WEIGHT

Kernel Rows:

2

1 = INDISTINCT

2 = DISTINCT

2 2

NUMBER

1 = STRAIGHT

2 = SLIGHTLY CURVED

3 = SPIRAL

Silk Color (Exposed at Silking Stage):

1

1 = GREEN

2 = PINK

3 = SALMON

4 = RED

Husk Color:

1

FRESH

1 = LIGHT GREEN

2 = DARK GREEN

3 = PINK

6

DRY

4 = RED

5 = PURPLE

6 = BUFF

Husk Extention: (Harvest Stage)

2

1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear) 3 = LONG (8-10CM Beyond Ear Tip) 4 = VERY LONG (> 10 CM)

Husk Leaf:

1

1 = SHORT (< 8 CM) 2 = MEDIUM (8-15 CM) 3 = LONG (> 15 CM)

Shank:

1 4

CM LONG

7

NO. OF INTERNODES

Position at Dry Husk Stage:

1

1 = UPRIGHT

2 = HORIZONTAL

3 = PENDENT

Taper:

1

1 = SLIGHT

2 = AVERAGE

3 = EXTREME

Drying Time (Unhusked Ear):

2

1 = SLOW

2 = AVERAGE

3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

1 1

MM LONG

0 7

MM. WIDE

0 3

MM. THICK

Shape Grade (% Rounds)

2

1 = < 20

2 = 20-40

3 = 40-60

4 = 60-80

5 = > 80

8. KERNEL (Dried) :

1 Pericarp Color: 1 = COLORLESS 2 = RED-WHITE CROWN 3 = TAN 4 = BRONZE
 5 = BROWN 6 = LIGHT RED 7 = CHERRY RED
 8 = VARIEGATED (Describe) _____

1 Aleurone Color: 1 = HOMOZYGOUS 2 = SEGREGATING (Describe) _____

1 1 = WHITE 2 = PINK 3 = TAN 4 = BROWN 5 = BRONZE 6 = RED
 7 = PURPLE 8 = PALE PURPLE 9 = VARIEGATED (Describe) _____

3 Endosperm Color: 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.

Endosperm Type:

3 1 = SWEET (su1) 2 = EXTRA SWEET (sh2) 3 = NORMAL STARCH 4 = HIGH AMYLOSE STARCH
 5 = WAXY STARCH 6 = HIGH PROTEIN 7 = HIGH LYSINE 8 = OTHER (Specify) _____

2 0 GM. WEIGHT /100 SEEDS (Unsize Sample)

9. COB:

2 7 MM. DIAMETER AT MID-POINT

Strength:

2 1 = WEAK 2 = STRONG

Color:

3 1 = WHITE 2 = PINK 3 = RED 4 = BROWN
 5 = VARIEGATED 6 OTHER (Specify) _____

10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

| | | |
|--|---|---|
| <input type="checkbox"/> 0 STALK ROT (Diplodia) | <input type="checkbox"/> 0 STALK ROT (Fusarium) | <input type="checkbox"/> 0 STALK ROT (Gibberella) |
| <input type="checkbox"/> 0 NORTHERN LEAF BLIGHT | <input type="checkbox"/> 0 SOUTHERN LEAF BLIGHT | <input type="checkbox"/> 0 SMUT |
| <input type="checkbox"/> 0 SOUTHERN RUST | <input type="checkbox"/> 0 CORN SMUT | <input type="checkbox"/> 0 BACTERIAL WILT |
| <input type="checkbox"/> 0 BACTERIAL LEAF BLIGHT | <input type="checkbox"/> 0 MAIZE DWARF MOSAIC | <input type="checkbox"/> 0 STUNT |
| <input type="checkbox"/> 0 OTHER (Specify) _____ | | |

11. INSECT RESISTANT (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

| | | | |
|--|--|--------------------------------------|----------------------------------|
| <input type="checkbox"/> 0 CORNBORER | <input type="checkbox"/> 0 EARWORM | <input type="checkbox"/> 0 SAPBEETLE | <input type="checkbox"/> 0 APHID |
| <input type="checkbox"/> 0 ROOTWORM (Northern) | <input type="checkbox"/> 0 ROOTWORM (Western) | | |
| <input type="checkbox"/> 0 ROOTWORM (Southern) | <input type="checkbox"/> 0 OTHER (Specify) _____ | | |

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

| CHARACTER | VARIETY | CHARACTER | VARIETY |
|------------|---------|------------------|---------|
| Maturity | A632Ht | Kernel Type | - |
| Plant Type | W153R | Quality (Edible) | - |
| Ear Type | Wf9 | Usage | LH39 |

REFERENCES:

- U.S. Department Agriculture. Yearbook 1937.
- Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous (Authors)
- Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180. 1935.
- The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.
- Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.
- Butler, D.R. 1954 - A System for the Classification of Corn Inbred Lines - Ph.D. Thesis, Ohio State University.

COMMENTS:

$$\frac{T_{max} = T_{min}}{2} - 50\%F$$

$$\begin{matrix} T_{max} < 86^{\circ}F \\ T_{min} > 50^{\circ}F \end{matrix}$$

Exhibit D

'LH82 has some other characteristics that distinguish it from 'W153R'. The first is plant color. 'LH82' is lighter in color than 'W153R'. When using the Munsell Color for Plant Tissues, LH82 is classified as a 5GY 4/6 and 'W153' as a 7.5GY 3/4. The photograph below helps illustrate this difference.



Photograph 2

'W153R is the darker green plant on the left and 'LH82' is the lighter green plant on the right.

Exhibit D cont.

The tassels of the two inbreds are also different. 'LH82 has a tassel branch angle that is less than 30° . 'W153R' has a branch angle in the 30° - 40° range which makes it a more open tassel. 'W153R' also has more lateral branches on the tassel than does 'LH82. This can be seen in the photograph below.



Photograph 2

The 'W153R' tassel is on the left and the 'LH82' tassel is on the right.

Exhibit D cont.

'LH82' has green glumes with a brown margin. When the anther is exposed at pollination it is pink. 'W153R' on the otherhand, has a green glume and the brown margin is absent. When its anthers are exposed during pollination they are purple.

'LH82' has an average of 22 kernel rows per ear while 'W153R' has an average of 14. This difference has an effect on kernel width. 'W153R' kernels at mid-point in the ear are wider (9mm) than those at mid point on the 'LH82' ear (7mm). 'LH82' has a light yellow kernel color and 'W153R' has a darker yellow and oranger color of kernels.

The brace roots of the 'LH82' are green and the brace roots of the 'W153R' are purple.

'LH82' differs from 'W153R' in that it reaches 50% pollen and 50% silk, 109 and 116 heat units, respectively later than 'W153R'.

Exhibit E

Statement of Applicant's Ownership

Holden's Foundation Seeds, Inc., Williamsburg, Iowa, believes it is the sole owner and breeder of the 'LH82' field corn inbred for which it solicits a certificate of protection.