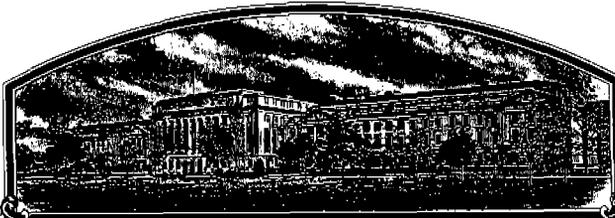


No.

8200062



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Golden'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 APART 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 (P.L. 77-1, CH. 1, SEC. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'LH51'

AMENDED CERTIFICATE

*Original grant June 30, 1983.

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 December in the year of our Lord one thousand nine hundred and ninety-one.

Attest

Kenneth Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

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

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
INSTRUCTIONS: See Reverse.

1a. TEMPORARY DESIGNATION OF VARIETY Ex251		1b. VARIETY NAME LH51		FOR OFFICIAL USE ONLY	
2. KIND NAME Yellow dent corn		3. GENUS AND SPECIES NAME Zea mays		PV NUMBER 8200062	
4. FAMILY NAME (BOTANICAL) Gramineae		5. DATE OF DETERMINATION April/79		FILING DATE 1/20/82	
6. NAME OF APPLICANT(S) Holden's Foundation Seeds, Inc.		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) R. R. 2, Box 839 Williamsburg, Iowa 52361		TIME 12:30 P.M.	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Iowa		FEE RECEIVED \$ 500.00 \$ 250.00	
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: Mr. Art L. Johnson Box 839, Williamsburg, Iowa 52361		11. DATE OF INCORPORATION 1968		DATE 1/20/82 5/6/83	
13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:				8. TELEPHONE AREA CODE AND NUMBER 319-668-1100	

- 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- 13B. Exhibit B, Novelty Statement.
- 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- 13D. Exhibit D, Additional Description of the Variety.

14a. 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). (If "Yes," answer 14B and 14C below.) YES NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? YES NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? FOUNDATION REGISTERED CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? YES NO

17. The applicant(s) declare(s) that a viable sample of basic seed 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 Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

DECEMBER 23, 1981 RJS PER
 (DATE) LETTER OF 5/6/82

Arnold Holden
 (SIGNATURE OF APPLICANT)

(DATE) (SIGNATURE OF APPLICANT)

Exhibit A

LH51

Origin and Breeding History

LH51's development was started from an unrecovered Mo17 in a Mo17Ht Development Program. If the selection was not an outcross, the origin started with material that had five back crosses to Mo17. This unrecovered segregating Mo17 material was given the designation Mo17-H-1. (In 1974 the Mo17-H-1 was changed to Mo17-HI. This was probably done so as not to confuse the number "1" with subsequent selection numbers.)

The Mo17-H-1 was continued through a pedigreed breeding system of line development.

Item I is a schematic outline for the development of LH51, nursery row numbers, nursery locations, and years in which the progeny rows were grown are given.

Attached to Item I are copies of Holden's Foundation Seeds' nursery books. Rows involved in the development of LH51 are underscored.

LH51 was self-pollinated ear to row enough generations to be stable and uniform. Both field and ear inspections by the Iowa Crop Improvement Association in 1981 have been approved for certification of LH51, therefore indicating LH51 to be uniform in plant and ear type. Attached is a copy of these reports.

Item 1

LH51=Ex251=Mo17HI=Selections 1976-6595

<u>Row No.</u>	<u>Pedigree</u>	<u>Location</u>	<u>Year</u>
1178	Mo17-H-1	Iowa	1971
	↓		
2363	Mo17-H-1 ₁	Iowa	1972
	↓		
9732	Mo17-H-1 ₁	Iowa	1973
	↓		
2292	Mo17-HI ₁	Iowa	1974
	↓		
8223	Mo17HI ₁ H	Iowa	1975
	↓		
6595	Mo17HI ₁ 5	Iowa	1976

FIELD INSPECTION REPORT

EXHIBIT A

RFS 2/8/82

Applicant HILDON'S ADDRESS _____

Field Identity LH51 POLLEN PARENT CROP FIELD NO 24

Date 8/17 A.M. (P.M.) Time

Your attention is called to the following conditions in the above described field.

POLENT

Plants shedding pollen 100 %
 Off-type plants shedding pollen 0 %

SEED PA KENT

% Plants	Pedigree				
	LH51				
Shedding Pollen	100				
Receptive to Pollen	95+				
Off-type	0				
Off-type & Shedding Pollen	0				

REMARKS:

FINAL INSPECTION, FIELD
LOOKS GOOD ISO OK
(TIME ISO)
P Fall

GROWER'S COPY

Inspector

3-79-10M

FIELD INSPECTION REPORT

EXHIBIT A
rjs

Applicant Holden's Seeds ADDRESS _____

Field Identity LH51 POLLEN PARENT (CROP) 22 FIELD NO

Date 8-21-81 Time A.M. P.M.

Your attention is called to the following conditions in the above described field.

POLLEN PARENT

Plants shedding pollen% 95+
Off-type plants shedding pollen _____ %

SEED PARENT

% Plants	Pedigree				
Shedding Pollen					
Receptive to Pollen	<u>95+</u>				
Off-type					
Off-type & Shedding Pollen					

REMARKS: final inspection - Time
Isolation OK field is
well rogued

P Fall

GROWER'S COPY

Inspector 3-79-10M

EXHIBIT A
RYS

FIELD INSPECTION REPORT

Applicant HOLDEN'S ADDRESS _____

Field Identity LH51 POLLEN PARENT CROP FIELD NO 23

Date 8/12 A.M. Time P.M.

Your attention is called to the following conditions in the above described field.

POLLEN PARENT

Plants shedding pollen 100 %
Off-type plants shedding pollen 0 %

SEED PARENT

% Plants	Pedigree				
	LH51				
Shedding Pollen	100				
Receptive to Pollen	95+				
Off-type	0				
Off-type & Shedding Pollen	A				

REMARKS:

FINAL INSPECTION FIELD
LOOKS GOOD, ISO OK
P. J. [Signature]

GROWER'S COPY

Inspector 3-79-10M

Von Ahsen

8200062

EXHIBIT A rjs

File No 23

Pollinator LH51 Early

Pollinator

Date	Dryer	Bin	Pedigree	Bushels	Inspection Results	Inspector
10/7	4	4	LH51 [®] Black	300	Passed 10-7-81	RJE

10/7	4	4,6,7,8	LH51 Black	1550	Passed 10-7-81	RJE
------	---	---------	------------	------	----------------	----------------

Females

Date	Dryer	Bin	Pedigree	Bushels	Inspection Results	Inspector
Done						

Supplement to Exhibit A
Corn Application No. 8200052,. 'LH51'

LH51 is very stable and uniform. Either self-pollination or sib mating will maintain the identity of LH51 very well.

LH51 has been increased four generations since the line development process was completed in 1976. Each generation was carefully scrutinized for uniformity.

Supplement to Exhibit A
Corn Application #8200062 'LH51'
There are no variants in LH51 inbred.

Exhibit B
Novelty Statement

LH51 most closely resembles Mo17Ht; however, the kernel cap on LH51 is much smaller. The cap of flowery endosperm completely covers the end of Mo17Ht and extends down the side of the kernel; whereas, the flowery cap of LH51 covers only a small portion of the kernel's end. As a result an ear of LH51 looks much darker yellow-orange than does an ear of Mo17Ht.

Enclosed is an ear of LH51 and an ear of Mo17Ht to illustrate the difference.

OBJECTIVE DESCRIPTION OF VARIETY

CORN (ZEA MAW)

NAME OF APPLICANT(S) Holden's Foundation Seeds, Inc.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Box 839 Williamsburg, Iowa 52361	PVP# NUMBER 8200062
	VARIETY NAME OR TEMPORARY DESIGNATION LH51 JMS 11/21/91

Place the appropriate number that describes the varietal character of this variety in the boxes below.
 Place a zero in first box (e.g., 099 or 09) when number is either 99 or less or 9 or less.

1. TYPE:

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

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

7		1		2		3		4
	* NORTHWEST		* NORTHCENTRAL		* NORTHEAST		* -SOUTHEAST	
	* SOUTHCENTRAL		* SOUTHWEST		* MOST REGIONS			

3. MATURITY (In Region of Best Adaptability):

6	7		1		4		6		5
		DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK							HEAT UNITS
		DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY							HEAT UNITS
8	3	DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE			1	2	8	4	HEAT UNITS

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

4. PLANT:

2	0	7		0	8	4
			CM. HEIGHT (To tassel tip)			CM. EAR HEIGHT (To base of top ear)
1	3	CM. LENGTH OF TOP EAR INTERNODE				

Number of Tillers:

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

Number of Ears Per Stalk:

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

Cytoplasm Type:

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

5. LEAF (Field Corn Inbred Examples Given):

Color:

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

Angle from Stalk (Upper half):

1		2		3	
	1 - < 30°		2 - 30-60°		3 - > 60°

Sheath Pubescence:

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

Marginal Waves:

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

Longitudinal Creases:

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

Width:

0	9	
		CM. WIDEST POINT OF EAR NODE LEAF

Length:

0	7	2	
			CM. EAR NODE LEAF

1	1	
		NUMBER OF LEAVES PER MATURE PLANT

6. TASSEL:

08 NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike: 2 1 - < 30° 2 = 30-40° 3 = > 45°

Peduncle Length: 09 CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen shed: 2 1 = LIGHT (WF9) 2 = MEDIUM 3 = HEAVY (KY21)

Anther Color: 6 1 = YELLOW 2 = PINK 3 = RED 4 = PURPLE 5 = GREEN
Glume Color: 6 = OTHER (Specify) Anther is 2.5 GY 8/8 Glume is 2.5 GY 7/8 Source: Small Color Chart

Pollen Restoration for Cytoplasm (0 = Not Tested, 1 = Partial, 2 = Good)

0 "T" c 1 "S" c 1 "C" a OTHER (Specify Cytoplasm and degrees of restoration)

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

17 CM LENGTH 39 MM. MID-POINT DIAMETER 95 GM. WEIGHT

Kernel Rows: 2 1 = INDISTINCT 2 = DISTINCT 10 NUMBER

1 STRAIGHT 2 SLIGHTLY CURVED 3 SPIRAL

Silk Color (Exposed at Silking Stage): 3 1 = GREEN 2 = PINK 3 = SALMON 4 = RED

Husk color: c 2 1 FRESH 1 = LIGHT GREEN 2 = DARK GREEN 3 = PINK
a 6 DRY 4 = RED 5 = PURPLE 6 = BUFF

Husk Ertmtion: (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: c 1 1 = SHORT (< 8 CM) 2 = MEDIUM (8-15 CM) 3 = LONG (> 15 CM)

Shank: 15 CM LONG a 6 NO. OF INTERNODES c 3 1 = UPRIGHT 2 = HORIZONTAL 3 = PENDENT

Taper: 1 1 = SLIGHT 2 = AVERAGE 3 = EXTREME
Drying Time (Unhusked Ear): c 3 1 = SLOW 2 = AVERAGE 3 = FAST

8. KERNEL (Dried):

Sits (From Ear Mid-Point): 12 MM LONG 09 MM. WIDE 05 MM. THICK

Shape Grade (% Rounds) 4 1 = < 20 2 = 20-40 3 = 40-60 4 = 60-80 5 = > 80

JMS 11/21/91

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 6 = BRONZE 6 = RED
 7 = PURPLE 8 = PALE PURPLE 9 = VARIEGATED (Describe) _____

JMS
11/21/91

3 2 Endosperm Color: 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.
 Yellow ~~with pale yellow cap~~ with pale yellow cap (see Exhibit B also)

Endosperm Type:
 3 1 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) _____

3 1 GM. WEIGHT /100 SEEDS (Unsize Sample)

9. MB: 2 2 MM. DIAMETER AT MIDPOINT

Strength: 2 1 = WEAK 2 = STRONG

Color: 3 1 = WHITE 2 = PINK 3 = RED 4 = BROWN
 6 = 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"/> 2	NORTHERN LEAF BLIGHT	<input type="checkbox"/> 2	SOUTHERN LEAF BLIGHT	<input type="checkbox"/> 0	SMUT
<input type="checkbox"/> 0	SOUTHERN RUST	<input type="checkbox"/> 0	CORN SMUT	<input type="checkbox"/> 1	BACTERIAL WILT
<input type="checkbox"/> 0	BACTERIAL LEAF BLIGHT	<input type="checkbox"/> 0	MAIZE DWARF MOSAIC	<input type="checkbox"/> 1	STUNT
<input type="checkbox"/>	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	Mo17Ht	Kernel Type	Mo17Ht
Plant Type	Mo17Ht	Quality (Edible)	-
Ear Type	Mo17Ht	Usage	Mo17

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.. Mom. 180. 1935.
 The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.
 Springfield, 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 = PhD. Thesis, Ohio State University.

COMMENTS: Heat Units= Hi Temp 86° F + Low Temp 50° F - 50

Exhibit D

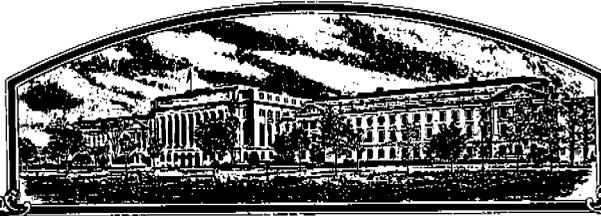
LH51's growth habit very closely resembles that of Mo17Ht.

LH51 has about one-half as much husk extension as Mo17Ht.

LH51 will die 3-5 days later than Mo17Ht.

No.

8200062



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

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Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

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CORN

'LH51'



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 30th day of June in the year of our Lord one thousand nine hundred and eighty-three.

Attest

Kenneth H. ...
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture