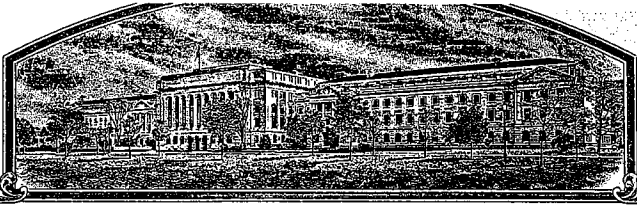


No.

200100139



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Golden's Foundation Seeds L. L. C.

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 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.

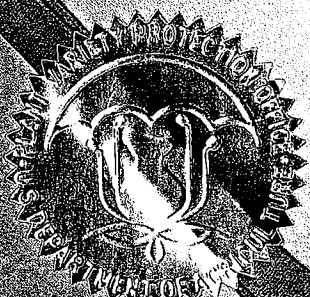
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE 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 (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'LH310'

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 tenth day of March, in the year two thousand three.

Attest:



Paul M. Jordan

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Ernest

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement 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 OWNER Holden's Foundation Seeds L.L.C.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME Ex 5011	3. VARIETY NAME LH310
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 503 S. Maplewood Ave. P.O. Box 839 Williamsburg, IA 52361		5. TELEPHONE (include area code) (319) 668-1100	FOR OFFICIAL USE ONLY PVPO NUMBER 200100139
6. FAX (include area code) (319) 668-2453		7. FILING DATE March 16, 2001	
8. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Limited Liability Company	8. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa	9. DATE OF INCORPORATION December 4, 1997	

JMS 5/21/02

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Mr. Mark Armstrong Holden's Foundation Seeds L.L.C. 503 S. Maplewood Ave. Williamsburg, IA 52361		11. FILING AND EXAMINATION FEES: \$ 2705.00 DATE 03/15/2001 CERTIFICATION FEE: \$ 320.00 DATE 2/10/2003
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1. TELEPHONE (Include area code) (319) 668-1100	12. FAX (Include area code) (319) 668-2453	13. E-MAIL mark.armstrong@holdens.com	14. CROP KIND (Common Name) Corn, Field
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3. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)	19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (if "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (if "no," go to item 22)
	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED
	21. DOES THE OWNER SPECIFY THAT THE CLASSES BE LIMITED AS TO NUMBER OF GENERATIONS? IF YES, SPECIFY THE NUMBER 1, 2, 3, etc. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED <i>(If additional explanation is necessary, please use the space indicated on the reverse.)</i>

4. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)	23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)
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5. The owners 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 owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.
 Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER 	SIGNATURE OF OWNER
NAME (Please print or type) Dave Westphal	NAME (Please print or type)
CAPACITY OR TITLE Chief Operating Officer	DATE March 30, 2001
CAPACITY OR TITLE	DATE

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,700 (\$320 filing fee and \$2,385 examination fee), payable to "Treasurer of the United States" (*See Section 97.6 of the Regulations and Rules of Practice.*) Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2350. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (*See Regulations and Rules of Practice, Section 97.103.*)
21. See Section 83 of the Act for the Contents and Term of Plant Variety Protection.
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

Details listed on page one of Exhibit A

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (*See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.*)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center—East, Beltsville, MD 20705. Telephone: (301) 504-8089.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

S&T-470 (2-99) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (6-98) which is obsolete.

Origin and Breeding History of the Inbred

Exhibit A

LH310 was developed from the double cross LH195 X LH199)(LH194 X LH198 by selfing and using the pedigree system of plant breeding. Yield, stalk quality, root quality, disease tolerance, late plant greenness, late plant intactness, ear retention, pollen shedding ability, silking ability and corn borer tolerance were the criteria used to determine the rows from which ears were selected.

LH194, LH195, LH198 and LH199, the progenitors of LH310, are all proprietary field corn inbred lines developed by Holden's Foundation Seeds, LLC. In 1990, Holden's Foundation Seeds, Inc. applied for plant variety protection of LH194 and LH195. LH194 was awarded certificate #9000125 and LH195 was awarded certificate #9000047. Both certificates were awarded on May 31, 1991. LH195 is also protected by a utility patent #5, 059, 745, granted by the United States Patent Office on October 22, 1991. In 1991, Holden's Foundation Seeds, LLC applied for plant variety protection of LH199 and LH198. On April 30, 1992, LH199 was issued certificate #9200024 while LH198 was awarded certificate #9200021 on March 31, 1993. LH199 and LH198 are both also protected by a utility patent from the U.S. Patent Office. On April 19, 1994 Holden's was issued patent #5,304,715 for LH199 and patent #5,304,717 for LH198.

On the following pages are a summary and description of the development of LH310. Also included are copies of pages from Holden's Foundation Seeds, Inc. nursery books. The rows associated with the development of LH310 have been highlighted. Enclosed is a copy of a letter from Seed Branch of the USDA confirming that no other field corn inbreds have been named, 'LH310'.

LH310 has shown uniformity and stability for all traits described in Exhibit C. It has been self-pollinated and ear-rowed a sufficient number of generations, with careful attention to uniformity of plant type to ensure homozygosity and phenotypic stability. The line has been increased both by hand (Iowa 1998 and 1999) and sibbed in isolated production fields (Hawaii 2000 and Iowa 2000) with continued observations for uniformity. Kirk Cravens and Terry J. Foley, the originating plant breeders, have observed LH310 all four generations it has been increased. The line is uniform, stable and no variant traits have been observed or are anticipated in LH310.

Origin and Breeding History of the Inbred
 LH310 = Ex5011 = LH195 x LH199)(LH194 x LH198

<u>Field/Row</u>	<u>Pedigree</u>	<u>Location</u>	<u>Year</u>
Hartz T	LH310	Iowa	2000
Tamura Field #3	LH310	Hawaii	2000
23805-23816	Ex5011	Iowa	1999
30941	LH195 x LH199)(LH194 x LH198 @7	Iowa	1998
41278	LH195 x LH199)(LH194 x LH198 @6	Iowa	1997
2214	LH195 x LH199)(LH194 x LH198 @5	Mexico	1997
1202	LH195 x LH199)(LH194 x LH198 @4	Iowa	1996
4267	LH195 x LH199)(LH194 x LH198 @3	Hawaii	1996
881	LH195 x LH199)(LH194 x LH198 @2	Indiana	1995
6635	LH195 x LH199)(LH194 x LH198 @1	Iowa	1994
4576	LH195 x LH199)(LH194 x LH198	Iowa	1993
41726	LH195 x LH199	Iowa	1992
41725	LH194 x LH198		
40531	LH194	Iowa	1991
40527	LH198		

Novelty Statement

Exhibit B

LH310 is most similar to LH195. However, the most distinguishing difference is leaf color. The leaf color of LH310 is lighter green in color than the leaf color of LH195. When using the Munsell Color Charts for Plant Tissues as a reference, the leaf color of LH310 would be classified as 5GY 4/6 while the leaf color of LH195 would be classified as 5GY 4/4.

The silk color of LH310 is pink while the silk color of LH195 is light green. When using the Munsell Color Charts for Plant Tissues as a reference, the silk color of LH310 would be classified as 2.5R 6/6 while the silk color of LH195 would be classified as 2.5GY 8/6.

The ears of LH310 possess more kernel rows than the ears of LH195 (18 vs 16). Enclosed is data collected at Williamsburg, Iowa, from two different planting dates in 2000, comparing the number of kernel rows of LH310 and LH195 at 50 observations for each planting date. The data suggests a significant difference at the 1% probability level according to a paired T test in both comparisons. Means show that on average LH310 possesses more kernel rows than LH195.

**TWO SAMPLE T-TEST : LH310 VS LH195 NUMBER OF KERNEL ROWS
2000 IMHOFF**

Variety Name	Average	Standard Deviation	Sample Size	Analysis Type	Statistic	Probability Value
LH310	16.88	1.47	50	T-test	T=6.84	0.0000
LH195	14.84	1.52	50		DF=97	

Year of tests:	2000 IMHOFF
Location of tests:	Williamsburg, Iowa

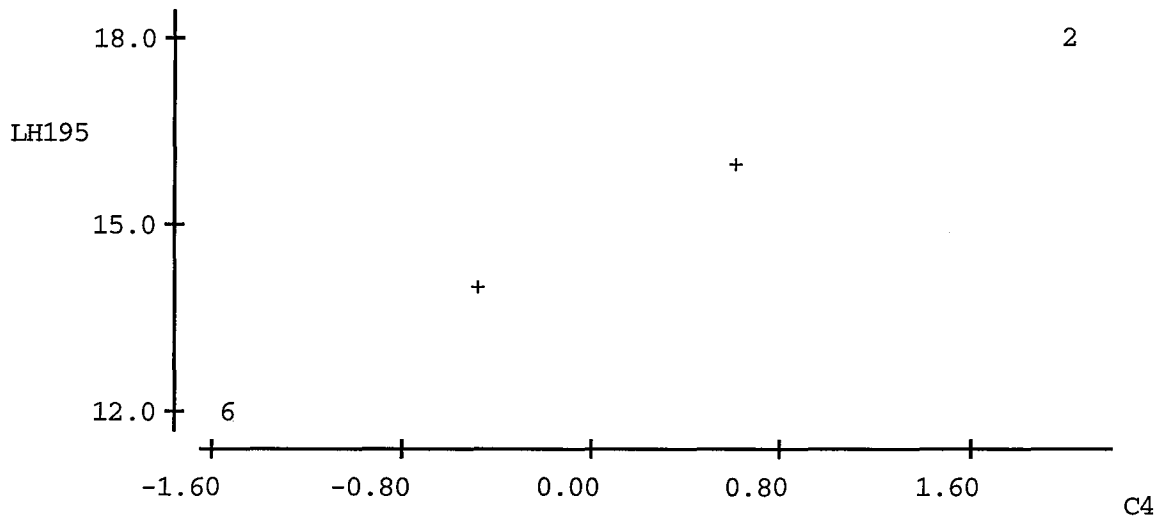
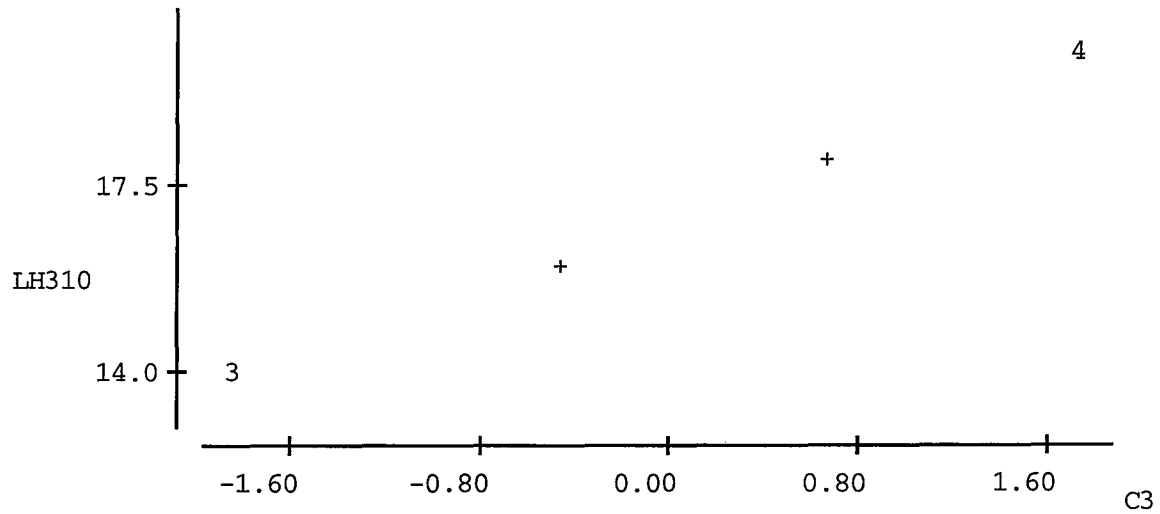
Mann-Whitney Confidence Interval and Test

LH310 N = 50 Median = 16.000
LH195 N = 50 Median = 15.000

Point estimate for ETA1-ETA2 is 2.000
95.0 pct c.i. for ETA1-ETA2 is (2.000,2.000)
W = 3303.5

Test of ETA1 = ETA2 vs. ETA1 n.e. ETA2 is significant at 0.0000
The test is significant at 0.0000 (adjusted for ties)

LH310 VS LH195 NUMBER OF KERNEL ROWS 2000 IMHOFF



**TWO SAMPLE T-TEST : LH310 VS LH195 NUMBER OF KERNEL ROWS
EAST FAIRGROUND 2000**

Variety Name	Average	Standard Deviation	Sample Size	Analysis Type	Statistic	Probability Value
LH310	17.40	1.36	50	T-test	T=7.98	0.0000
LH195	15.20	1.4	50		DF=97	

Year of tests:	2000 E. FAIRGROUND
Location of tests:	Williamsburg, Iowa

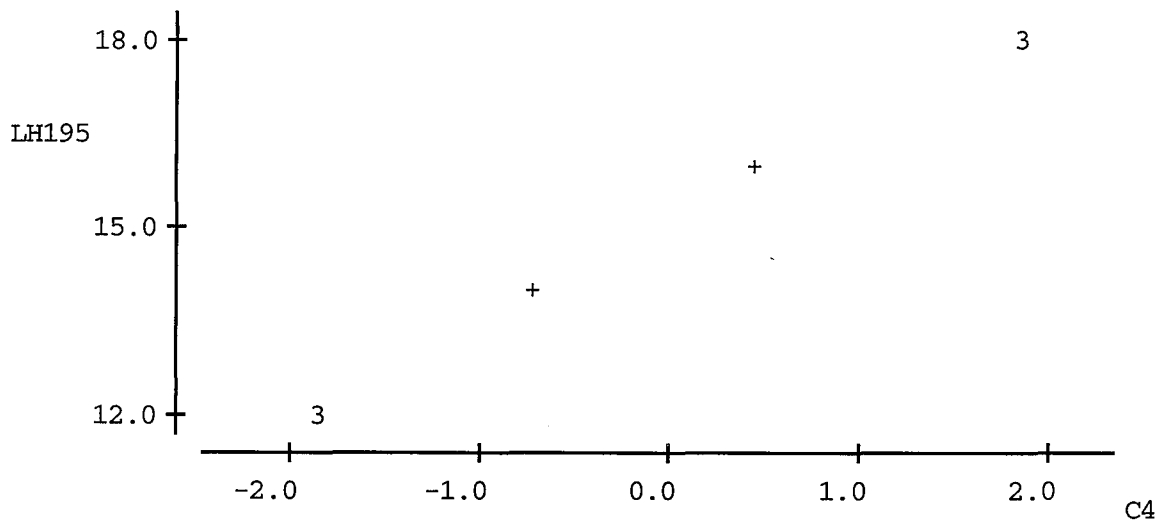
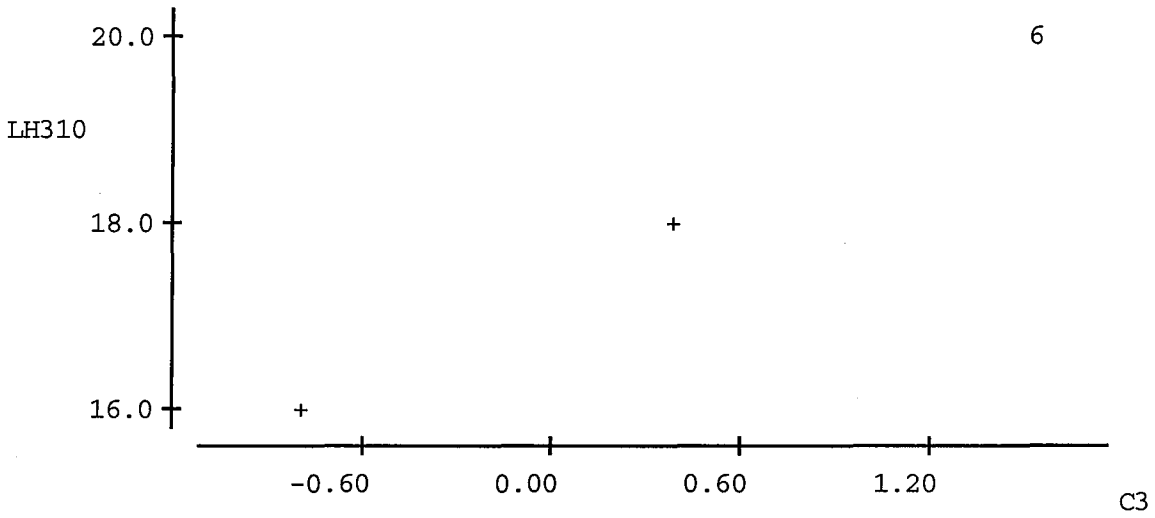
Mann-Whitney Confidence Interval and Test

LH310 N = 50 Median = 18.000
LH195 N = 50 Median = 16.000

Point estimate for ETA1-ETA2 is 2.000
95.0 pct c.i. for ETA1-ETA2 is (2.000,2.000)
W = 3394.0

Test of ETA1 = ETA2 vs. ETA1 n.e. ETA2 is significant at 0.0000
The test is significant at 0.0000 (adjusted for ties)

LH310 VS LH195 NUMBER OF KERNEL ROWS EAST FAIRGROUND 2000



United States Department of Agriculture, Agricultural Marketing Service
Science Division, Plant Variety Protection Office
National Agricultural Library Building, Room 500
Beltsville, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
CORN (*Zea mays* L.)

Name of Applicant(s) Holden's Foundation Seeds, L.L.C.	Variety Seed Source Iowa 1999	Variety Name or Temporary Designation LH310
Address (Street & No., or R.F.D. No., City, State, Zip Code and Country) 503 S. Maplewood Ave PO Box 839 Williamsburg, IA 52361		FOR OFFICIAL USE PVPO Number <u>200100139</u>

Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by a '*' are considered necessary for an adequate variety description and must be completed.

- COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices; describe #25 and #26 in Comments section):
- | | | | | |
|--------------------|------------------|----------------|-----------------|--------------------------|
| 01=Light Green | 06=Pale Yellow | 11=Pink | 16=Pale Purple | 21=Buff |
| 02=Medium Green | 07=Yellow | 12=Light Red | 17=Purple | 22=Tan |
| 03=Dark Green | 08=Yellow-Orange | 13=Cherry Red | 18=Colorless | 23=Brown |
| 04=Very Dark Green | 09=Salmon | 14=Red | 19=White | 24=Bronze |
| 05=Green-Yellow | 10=Pink-Orange | 15=Red & White | 20=White Capped | 25=Variegated (Describe) |
| | | | | 26=Other (Describe) |

- STANDARD INBRED CHOICES (Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):
- | | | |
|------------------------------|--------------------------|-----------------------------|
| Yellow Dent Families: | Yellow Dent (Unrelated): | Sweet Corn: |
| Family Members | Co109, ND246, | C13, Iowa5125, P39, 2132 |
| B14 CM105, A632, B64, B68 | Oh7, T232 | |
| B37 B37, B76, H84 | W117, W153R | Popcorn: |
| B73 N192, A679, B73, NC268 | W182BN | SG1533, 4722, HP301, HP7211 |
| C103 Mo17, Va102, Va35, A682 | | |
| Oh43 A619, MS71, H99, Va26 | White Dent: | Pipecorn: |
| WF9 W64A, A554, A654, Pa91 | CI66, H105, Ky228 | Mo15W, Mo16W, Mo24W |

1. TYPE: (describe intermediate types in Comments section)

* 2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental 7=Pipecorn

Standard Inbred Name B73
2

2. REGION WHERE DEVELOPED IN THE U.S.A.:

* 2 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral
6=Southwest 7=Other

Standard Seed Source Iowa State Univ.
2

3. MATURITY (In Region Best Adaptability: show Heat Unit formula in "Comments" section):

DAYS	HEAT UNITS	
* <u>84</u>	<u>1499.0</u>	From emergence to 50% of plants in silk
* <u>84</u>	<u>1499.0</u>	From emergence to 50% of plants in pollen
---	---	From 10% to 90% pollen shed
(*) ---	---	From 50% silk to optimum edible quality
---	---	From 50% silk to harvest at 25% moisture

DAYS	HEAT UNITS
<u>80</u>	<u>1438.5</u>
<u>81</u>	<u>1453.5</u>
---	---
---	---
---	---

4. PLANT:

	Standard Deviation	Sample Size
* <u>2 3 5 8</u> cm Plant Height (to tassel tip)	<u>4.17</u>	<u>50</u>
* <u>8 7 1</u> cm Ear Height (to base of top ear node)	<u>4.07</u>	<u>50</u>
<u>1 2 5</u> cm Length of Top Ear Internode	<u>.78</u>	<u>50</u>
<u>0 0</u> Average Number of Tillers	<u>0.0</u>	<u>50</u>
* <u>0 0</u> Average Number of Ears per Stalk	<u>0.0</u>	<u>50</u>
<u>3</u> Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark		

Standard Deviation	Sample Size
<u>2 4 5 7</u>	<u>6.30</u>
<u>1 1 8 0</u>	<u>4.60</u>
<u>1 4 4</u>	<u>1.06</u>
<u>0 0</u>	<u>0.0</u>
<u>1 2</u>	<u>.40</u>
<u>3</u>	

SMS 11/2/03

10

Application Variety Data			Page 2			Standard Inbred Data		
5. LEAF:			Standard Deviation	Sample Size	Standard Deviation			Sample Size
* <u>1</u> <u>0.0</u> cm Width of Ear Node Leaf	<u>.68</u>	<u>50</u>	<u>9.8</u>	<u>.57</u>	<u>50</u>			
* <u>8</u> <u>5.7</u> cm Length of Ear Node Leaf	<u>3.86</u>	<u>50</u>	<u>8</u> <u>6.2</u>	<u>3.01</u>	<u>50</u>			
* <u>6</u> Number of leaves above top ear	<u>.52</u>	<u>50</u>	<u>5</u>	<u>.49</u>	<u>50</u>			
<u>1</u> <u>6</u> degrees Leaf Angle (measure from 2nd leaf above ear at anthesis to stalk above leaf)	<u>3.88</u>	<u>50</u>	<u>2</u> <u>0</u>	<u>5.35</u>	<u>50</u>			
* <u>0</u> <u>2</u> Leaf Color (Munsell code <u>5GY 4/6</u>)			<u>0</u> <u>2</u> (Munsell code <u>5GY 4/4</u>)					
<u>7</u> Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			<u>4</u>					
<u>2</u> Marginal Waves (Rate on scale from 1=none to 9=many)			<u>1</u>					
<u>4</u> Longitudinal Creases (Rate on scale from 1=none to 9=many)			<u>3</u>					
6. TASSEL:			Standard Deviation	Sample Size	Standard Deviation			Sample Size
* <u>9</u> Number of Primary Lateral Branches	<u>1.29</u>	<u>50</u>	<u>8</u>	<u>1.48</u>	<u>50</u>			
<u>2</u> <u>4</u> <u>2</u> Branch Angle from Central Spike	<u>4.20</u>	<u>50</u>	<u>1</u> <u>2</u>	<u>4.33</u>	<u>50</u>			
* <u>5</u> <u>1.8</u> cm Tassel Length (from top leaf collar to tassel tip)	<u>2.67</u>	<u>50</u>	<u>4</u> <u>0.2</u>	<u>3.14</u>	<u>50</u>			
<u>6</u> Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed)			<u>6</u>					
<u>1</u> <u>7</u> Anther Color (Munsell code <u>5RP 3/6</u>)			<u>1</u> <u>6</u> (Munsell code <u>5RP 5/4</u>)					
<u>0</u> <u>2</u> Glume Color (Munsell code <u>5GY 6/6</u>)			<u>0</u> <u>2</u> (Munsell code <u>5GY 5/6</u>)					
<u>1</u> Bar Glumes (Glume Bands): 1=Absent 2=Present			<u>1</u>					
7a. EAR (Unhusked Data):								
* <u>1</u> <u>1</u> Silk Color (3 days after emergence) (Munsell code <u>2.5R 6/6</u>)			<u>0</u> <u>1</u> (Munsell code <u>2.5GY 8/6</u>)					
<u>0</u> <u>1</u> Fresh Husk Color (25 days after 50% silking) (Munsell code <u>2.5GY</u>) <u>7/8</u>			<u>0</u> <u>1</u> (Munsell code <u>5GY 6/6</u>)					
<u>2</u> <u>1</u> Dry Husk Color (65 days after 50% Silking) (Munsell code <u>7.5YR</u>) <u>7/4</u>			<u>2</u> <u>0</u> <u>1</u> (Munsell code <u>7.5YR 7/4</u>)					
* <u>3</u> Position of Ear at Dry Husk Stage: 1=Upright 2=Horizontal 3=Pendent			<u>3</u>					
<u>5</u> Husk Tightness (Rate on scale from 1=very loose to 9=very tight)			<u>5</u>					
<u>3</u> Husk Extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm) 3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm)			<u>3</u>					
7b. EAR (Husked Ear Data):			Standard Deviation	Sample Size	Standard Deviation			Sample Size
* <u>1</u> <u>6.2</u> cm Ear Length	<u>1.59</u>	<u>50</u>	<u>1</u> <u>4.4</u>	<u>.77</u>	<u>50</u>			
* <u>4</u> <u>5.2</u> mm Ear Diameter at mid-point	<u>1.90</u>	<u>50</u>	<u>4</u> <u>6.0</u>	<u>1.30</u>	<u>50</u>			
<u>1</u> <u>1</u> <u>9.8</u> gm Ear Weight	<u>5.75</u>	<u>50</u>	<u>9</u> <u>7.6</u>	<u>7.18</u>	<u>50</u>			
* <u>1</u> <u>8</u> Number of Kernel Rows	<u>1.61</u>	<u>50</u>	<u>1</u> <u>6</u>	<u>1.40</u>	<u>50</u>			
<u>2</u> Kernel Rows: 1=Indistinct 2=Distinct			<u>2</u>					
<u>1</u> Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			<u>1</u>					
<u>9</u> <u>2</u> cm Shank Length	<u>1.54</u>	<u>50</u>	<u>8</u> <u>3</u>	<u>2.12</u>	<u>50</u>			
<u>1</u> Ear Taper: 1=Slight 2=Average 3=Extreme			<u>1</u>					
Application Variety Data						Standard Inbred Data		

JMS 5/21/02

JMS 1/02/03

Note: Use chart on first page to choose color codes for color traits.

11

Application Variety Data			Page 3			Standard Inbred Data		
8. KERNEL (Dried):			Standard Deviation	Sample Size		Standard Deviation	Sample Size	
<u> 9.9</u> mm Kernel Length	<u> .50</u>	<u> 50</u>	<u> 10.9</u>	<u> .70</u>	<u> 50</u>	<u> 10.9</u>	<u> .70</u>	<u> 50</u>
<u> 7.6</u> mm Kernel Width	<u> .50</u>	<u> 50</u>	<u> 7.4</u>	<u> .50</u>	<u> 50</u>	<u> 7.4</u>	<u> .50</u>	<u> 50</u>
<u> 5.1</u> mm Kernel Thickness	<u> .30</u>	<u> 50</u>	<u> 4.1</u>	<u> .30</u>	<u> 50</u>	<u> 4.1</u>	<u> .30</u>	<u> 50</u>
<u> 26.0</u> % Round Kernels (Shape Grade)	<u> 2.22</u>	<u> 15</u>	<u> 35.8</u>	<u> 6.30</u>	<u> 15</u>	<u> 35.8</u>	<u> 6.30</u>	<u> 15</u>
<u> 1</u> Aleurone Color Pattern: 1=Homozygous 2=Segregating _____						<u> 1</u> _____		
(*) <u> 1.9</u> Aleurone Color (Munsell code <u> 2.5Y 8/2</u>)						<u> 1.9</u> (Munsell code <u> 2.5Y 8/2</u>)		
* <u> 0.7</u> Hard Endosperm Color (Munsell code <u> 2.5Y 5/6</u>)						<u> 0.7</u> (Munsell code <u> 2.5Y 5/6</u>)		
* <u> 0.3</u> Endosperm Type: 1=Sweet (su1) 2=Extra Sweet (sh2) 3=Normal Starch 4=High Amylose Starch 5=Waxy Starch 6=High Protein 7=High Lysine 8=Super Sweet (se) 9=High Oil 10=Other _____						<u> 0.3</u> _____		
<u> 19.6</u> gm Weight per 100 Kernels (unsized sample)	<u> .25</u>	<u> 15</u>	<u> 23.1</u>	<u> .44</u>	<u> 15</u>	<u> 23.1</u>	<u> .44</u>	<u> 15</u>
9. COB:			Standard Deviation	Sample Size		Standard Deviation	Sample Size	
* <u> 3.4.5</u> mm Cob Diameter at mid-point	<u> 1.70</u>	<u> 50</u>	<u> 35.8</u>	<u> 1.40</u>	<u> 50</u>	<u> 35.8</u>	<u> 1.40</u>	<u> 50</u>
<u> 1.4</u> Cob Color (Munsell code <u> 5R 4/6</u>)						<u> 1.4</u> (Munsell code <u> 10R 5/6</u>)		
10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); leave blank if not tested; leave Race or Strain Options blank if polygenic):								
A. Leaf Blights, Wilts, and Local Infection Diseases								
___ Anthracnose Leaf Blight (<i>Colletotrichum graminicola</i>)						___		
___ Common Rust (<i>Puccinia sorghi</i>)						___		
___ Common Smut (<i>Ustilago maydis</i>)						___		
___ Eyespot (<i>Kabatella zeae</i>)						___		
___ Goss's Wilt (<i>Clavibacter michiganense</i> spp. <i>nebraskense</i>)						___		
___ Gray Leaf Spot (<i>Cercospora zeae-maydis</i>)						___		
___ Helminthosporium Leaf Spot (<i>Bipolaris zeicola</i>) Race _____						___ Race _____		
___ Northern Leaf Blight (<i>Exserohilum turcicum</i>) Race _____						___ Race _____		
___ Southern Leaf Blight (<i>Bipolaris maydis</i>) Race _____						___ Race _____		
___ Southern Rust (<i>Puccinia polysora</i>)						___		
___ Stewart's Wilt (<i>Erwinia stewartii</i>)						___		
___ Other (Specify) _____						___		
B. Systemic Diseases								
___ Corn Lethal Necrosis (MCMV and MDMV)						___		
___ Head Smut (<i>Sphacelotheca reiliana</i>)						___		
___ Maize Chlorotic Dwarf Virus (MCDV)						___		
___ Maize Chlorotic Mottle Virus (MCMV)						___		
___ Maize Dwarf Mosaic Virus (MDMV) Strain _____						___ Strain _____		
___ Sorghum Downy Mildew of Corn (<i>Peronosclerospora sorghi</i>)						___		
___ Other (Specify) _____						___		
C. Stalk Rots								
___ Anthracnose Stalk Rot (<i>Colletotrichum graminicola</i>)						___		
___ Diplodia Stalk Rot (<i>Stenocarpella maydis</i>)						___		
___ Fusarium Stalk Rot (<i>Fusarium moniliforme</i>)						___		
___ Gibberella Stalk Rot (<i>Gibberella zeae</i>)						___		
___ Other (Specify) _____						___		
D. Ear and Kernel Rots								
___ Aspergillus Ear and Kernel Rot (<i>Aspergillus flavus</i>)						___		
___ Diplodia Ear Rot (<i>Stenocarpella maydis</i>)						___		
___ Fusarium Ear and Kernel Rot (<i>Fusarium moniliforme</i>)						___		
___ Gibberella Ear Rot (<i>Gibberella zeae</i>)						___		
___ Other (Specify) _____						___		
Application Variety Data						Standard Inbred Data		

Additional Description of the Inbred

Exhibit D

LH310 is a medium late season field corn inbred line that is best adapted to the central and southern regions of the corn belt. LH310 flowers similar to LH195. LH310 is a good pollinator and an outstanding seed parent.

Hybrids containing LH310 display excellent staygreen and plant health and possess greater yield potential than comparable LH195 crosses. This line contributes superb stalk and root strength and excellent fall plant intactness to its hybrids. Harvest moistures are similar to LH195 crosses.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

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).

**EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) HOLDEN'S FOUNDATION SEEDS, L.L.C.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER EX5011	3. VARIETY NAME LH310
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 503 S. MAPLEWOOD AVENUE PO BOX 839 WILLIAMSBURG, IA 52361	5. TELEPHONE (include area code) (319)668-1100	6. FAX (include area code) (319)668-2453
7. PVPO NUMBER 200100130		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

YES NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country

YES NO

10. Is the applicant the original owner? YES NO If no, please answer the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

YES NO If no, give name of country _____

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?

YES NO If no, give name of country _____

11. Additional explanation on ownership (If needed, use reverse for extra space):

This inbred for which plant variety protection is applied for was developed by Kirk Cravens and Terry Foley employees of Corn States Hybrid Service and Holden's Foundation Seeds, L.L.C. An agreement between the companies and the employees assigns all rights to any invention, discovery or development made by the employees while employed at the companies to the companies with no right of any kind retained by the employees.

PLEASE NOTE:

- Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:
1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
 2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
 3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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15