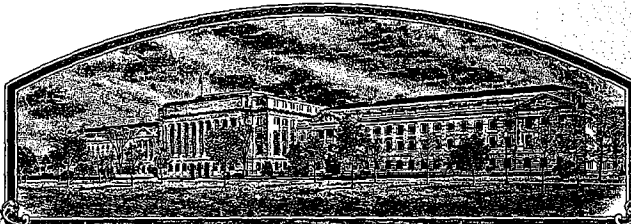


No.

200100136



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

Holden's Foundation Seeds U. S. C.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

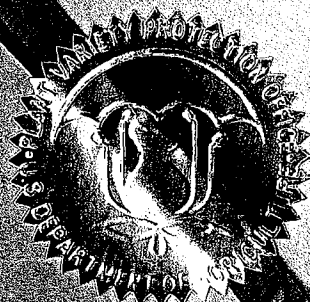
AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS 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. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'LH246'

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. Jabonick

Commissioner
Plant Variety Protection Of
Agricultural Marketing

James E. Green

Secretary of Agriculture

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 5271	3. VARIETY NAME LH246
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 200100136
		6. FAX (include area code) (319) 668-2453	FILING DATE March 16, 2001
7. 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 1, 1997	

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		FILING AND EXAMINATION FEES: \$ 2705.00 DATE 03/15/2001

11. 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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18. 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"/> YES <input type="checkbox"/> NO <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"/> YES <input type="checkbox"/> NO <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)

22. 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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24. 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 \$2,732.00 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 20705-2351. 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>

TEM

- 8a. 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
- 8b. 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.
- 8c. 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.
- 8d. 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.
- 8e. 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
9. 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).
1. See Section 83 of the Act for the Contents and Term of Plant Variety Protection.
 2. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
 3. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

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

2. 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.)

3. 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, 7.175(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.

ST-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

LH246 was developed from the single cross LH195 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.

LH195 and LH198, the progenitors of LH246, are both proprietary field corn inbred lines of Holden's Foundation Seeds, LLC. In 1990, Holden's Foundation Seeds, LLC applied for plant variety protection of LH195. On May 31, 1991 Holden's was awarded certificate #9000047 for LH195. 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 LH198. LH198 was awarded certificate #9200021 on March 31, 1993. A utility patent from the U.S. Patent Office also protects LH198. Holden's was issued patent #5,304,717 for LH198 on April 19, 1994.

Enclosed is a copy of a letter from Seed Branch of the USDA confirming that no other field corn inbreds have been named, 'LH246'.

On the following pages are a summary and description of the development of LH246. Also included are copies of pages from Holden's Foundation Seeds, Inc. nursery books. The rows associated with the development of LH246 have been highlighted.

LH246 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 (Nebraska 1998 and 1999) and sibbed in isolated production fields (Hawaii 2000 and Iowa 2000) with continued observations for uniformity. Keith L. Arnold and Terry J. Foley, the originating plant breeders, have observed LH246 all four generations it has been increased. The line is uniform, stable and no variant traits have been observed or are anticipated in LH246.

200100136

Origin and Breeding History of the Inbred
LH246 = Ex5271 = LH195 x LH198

<u>Field/Row</u>	<u>Pedigree</u>	<u>Location</u>	<u>Year</u>
Chipman & L. Smith	LH246	Iowa	2000
99KA7D1	LH246	Hawaii	2000
2291-2302	Ex5271	Nebraska	1999
2206	LH195 x LH198 @7	Nebraska	1998
6390	LH195 x LH198 @6	Nebraska	1997
33236	LH195 x LH198 @5	Hawaii	1997
2341	LH195 x LH198 @4	Nebraska	1996
28632	LH195 x LH198 @3	Hawaii	1996
3843	LH195 x LH198 @2	Nebraska	1995
6665	LH195 x LH198 @1	Iowa	1994
37997	LH195 x LH198	Iowa	1992
40530	LH195	Iowa	1991
40527	LH198		

Novelty Statement

Exhibit B

LH246 is most similar to LH195. However, the most distinguishing difference is tassel length. The tassel of LH246 is shorter in length and smaller in size than the tassel of LH195. Data collected at Williamsburg, Iowa, from two different planting dates in 2000, comparing the tassel lengths of LH246 and LH195 at 50 observations. 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 LH246 is shorter in tassel length than LH195.

The anther color of LH246 is solid purple while the anther color of LH195 is yellow with a purple marking. When using Munsell Color Charts for Plant Tissues as a reference the anther color of LH246 would be classified as 5RP 6/2 and the anther color of LH195 would be classified as 2.5GY 8/6 and the tip color as 5RP 4/6.

200100136

**TWO SAMPLE T-TEST : LH246 VS LH195 TASSEL LENGTH
IMHOFF 2000**

Variety Name	Average	Standard Deviation	Sample Size	Analysis Type	Statistic	Probability Value
LH246	39.84	1.82	50	T-test	T=-16.15	0.0000
LH195	46.06	2.02	50		DF=96	

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

Mann-Whitney Confidence Interval and Test

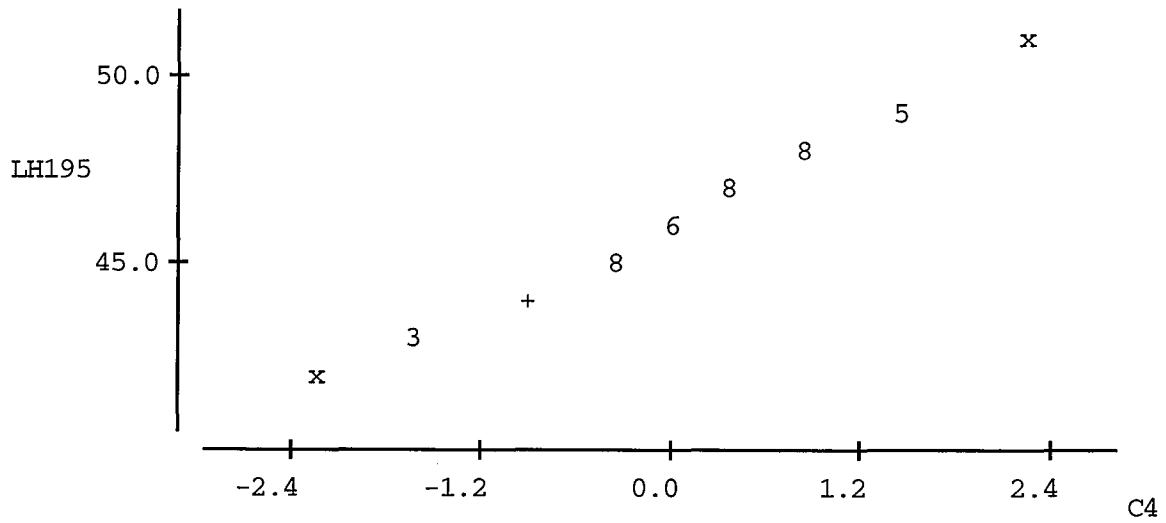
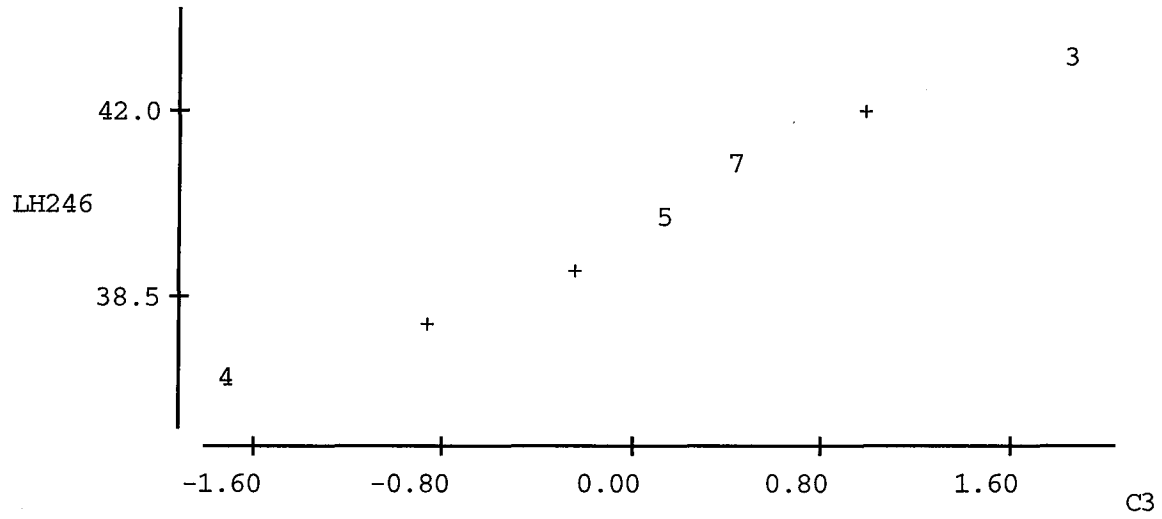
LH246 N = 50 Median = 39.500
LH195 N = 50 Median = 46.000

Point estimate for ETA1-ETA2 is -6.000
95.0 pct c.i. for ETA1-ETA2 is (-7.001,-5.000)
W = 1287.5

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

200100136

LH246 VS LH195 TASSEL LENGTH IMHOFF 2000



200100136

**TWO SAMPLE T-TEST : LH246 VS LH195 TASSEL LENGTH
2000 EAST FAIRGROUND**

Variety Name	Average	Standard Deviation	Sample Size	Analysis Type	Statistic	Probability Value
LH246	35.00	2.25	50	T-test	T=-24.76	0.0000
LH195	47.70	2.84	50		DF=93	

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

Mann-Whitney Confidence Interval and Test

LH246 N = 50 Median = 35.000
LH195 N = 50 Median = 48.000

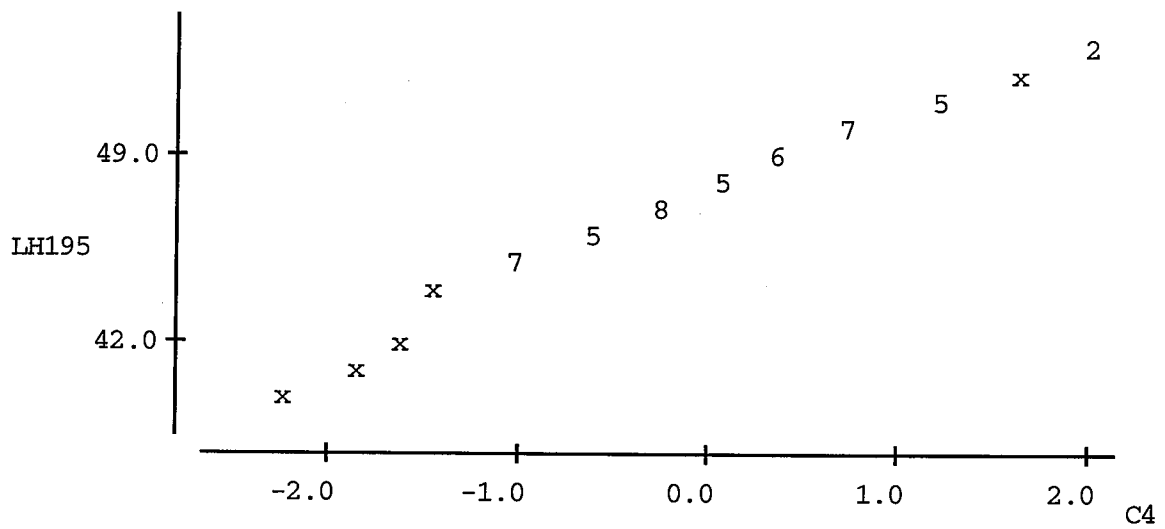
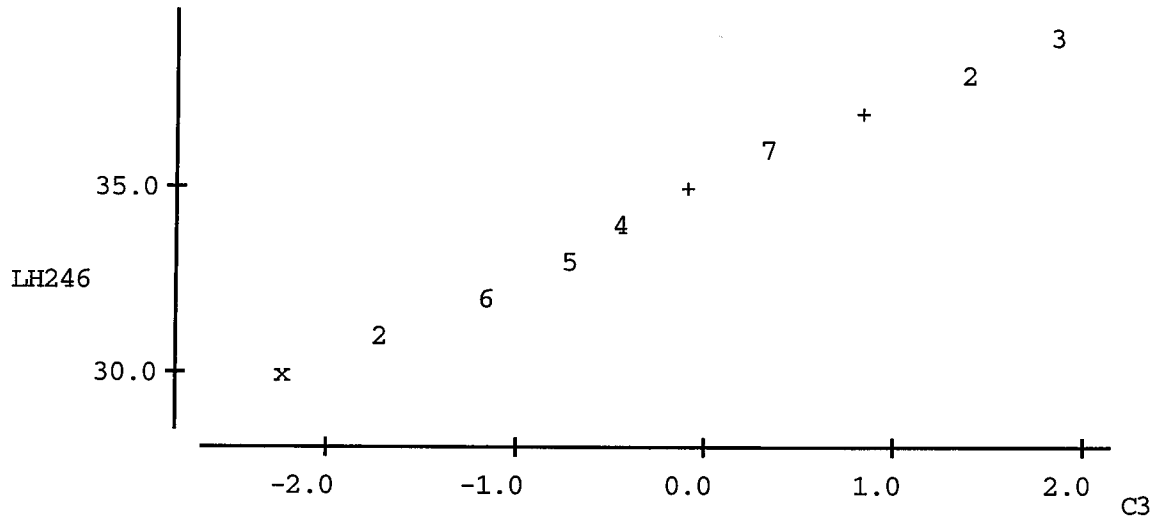
Point estimate for ETA1-ETA2 is -13.000
95.0 pct c.i. for ETA1-ETA2 is (-14.000,-12.000)
W = 1275.0

Test of ETA1 = ETA2 vs. ETA1 n.e. ETA2 is significant at 0.0000

The test is significant at 0.0000 (adjusted for ties)

200100136

LH246 VS LH195 TASSEL LENGTH
2000 EAST FAIRGROUND



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 LH246																														
Address (Street & No., or R.F.D. No., City, State, Zip Code and Country) 503 S. Maplewood Avenue PO Box 839 Williamsburg, IA 52361		FOR OFFICIAL USE PVPO Number 200100136																														
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.																																
<p>COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices; describe #25 and #26 in Comments section):</p> <table style="width:100%; border:none;"> <tr> <td>01=Light Green</td> <td>06=Pale Yellow</td> <td>11=Pink</td> <td>16=Pale Purple</td> <td>21=Buff</td> </tr> <tr> <td>02=Medium Green</td> <td>07=Yellow</td> <td>12=Light Red</td> <td>17=Purple</td> <td>22=Tan</td> </tr> <tr> <td>03=Dark Green</td> <td>08=Yellow-Orange</td> <td>13=Cherry Red</td> <td>18=Colorless</td> <td>23=Brown</td> </tr> <tr> <td>04=Very Dark Green</td> <td>09=Salmon</td> <td>14=Red</td> <td>19=White</td> <td>24=Bronze</td> </tr> <tr> <td>05=Green-Yellow</td> <td>10=Pink-Orange</td> <td>15=Red & White</td> <td>20=White Capped</td> <td>25=Variegated (Describe)</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>26=Other (Describe)</td> </tr> </table>			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)
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				26=Other (Describe)																												
<p>STANDARD INBRED CHOICES (Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):</p> <table style="width:100%; border:none;"> <tr> <td>Yellow Dent Families:</td> <td>Yellow Dent (Unrelated):</td> <td>Sweet Corn:</td> </tr> <tr> <td>Family Members</td> <td>Co109, ND246,</td> <td>C13, Iowa5125, P39, 2132</td> </tr> <tr> <td>B14 CM105, A632, B64, B68</td> <td>Oh7, T232</td> <td></td> </tr> <tr> <td>B37 B37, B76, H84</td> <td>W117, W153R</td> <td>Popcorn:</td> </tr> <tr> <td>B73 N192, A679, B73, NC268</td> <td>W182BN</td> <td>SG1533, 4722, HP301, HP7211</td> </tr> <tr> <td>C103 Mo17, Va102, Va35, A682</td> <td></td> <td></td> </tr> <tr> <td>Oh43 A619, MS71, H99, Va26</td> <td>White Dent:</td> <td>Pipecorn:</td> </tr> <tr> <td>WF9 W64A, A554, A654, Pa91</td> <td>CI66, H105, Ky228</td> <td>Mo15W, Mo16W, Mo24W</td> </tr> </table>			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						
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WF9 W64A, A554, A654, Pa91	CI66, H105, Ky228	Mo15W, Mo16W, Mo24W																														
1. TYPE: (describe intermediate types in Comments section) * <u>2</u> 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental 7=Pipecorn.	Standard Inbred Name <u>B73</u> <u>2</u>																															
2. REGION WHERE DEVELOPED IN THE U.S.A.: * <u>2</u> 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral 6=Southwest 7=Other _____	Standard Seed Source <u>Iowa State Univ.</u> <u>2</u>																															
3. MATURITY (In Region Best Adaptability; show Heat Unit formula in "Comments" section):	<table style="width:100%; border:none;"> <tr> <td style="text-align:center;">DAYS</td> <td style="text-align:center;">HEAT UNITS</td> <td style="text-align:center;">DAYS</td> <td style="text-align:center;">HEAT UNITS</td> </tr> <tr> <td>* <u>80</u></td> <td><u>1438.5</u> From emergence to 50% of plants in silk</td> <td><u>80</u></td> <td><u>1438.5</u></td> </tr> <tr> <td>* <u>80</u></td> <td><u>1438.5</u> From emergence to 50% of plants in pollen</td> <td><u>81</u></td> <td><u>1453.5</u></td> </tr> <tr> <td>_____</td> <td>_____ From 10% to 90% pollen shed</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>(*) _____</td> <td>_____ From 50% silk to optimum edible quality</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____ From 50% silk to harvest at 25% moisture</td> <td>_____</td> <td>_____</td> </tr> </table>		DAYS	HEAT UNITS	DAYS	HEAT UNITS	* <u>80</u>	<u>1438.5</u> From emergence to 50% of plants in silk	<u>80</u>	<u>1438.5</u>	* <u>80</u>	<u>1438.5</u> From emergence to 50% of plants in pollen	<u>81</u>	<u>1453.5</u>	_____	_____ From 10% to 90% pollen shed	_____	_____	(*) _____	_____ From 50% silk to optimum edible quality	_____	_____	_____	_____ From 50% silk to harvest at 25% moisture	_____	_____						
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4. PLANT:	Standard Deviation	Sample Size																														
* <u>228.9</u> cm Plant Height (to tassel tip)	<u>4.10</u>	<u>50</u>																														
* <u>102.2</u> cm Ear Height (to base of top ear node)	<u>3.94</u>	<u>50</u>																														
<u>13.9</u> cm Length of Top Ear Internode	<u>.84</u>	<u>50</u>																														
<u>0.0</u> Average Number of Tillers	<u>0.0</u>	<u>50</u>																														
* <u>1.0</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		<u>3</u>																														
Application Variety Data	Page 1	Standard Inbred Data																														

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Application Variety Data			Page 2			Standard Inbred Data		
5. LEAF:			Standard Deviation	Sample Size	Standard Deviation			Sample Size
*	<u>9.3</u> cm Width of Ear Node Leaf	<u>.66</u>	<u>50</u>	<u>9.8</u>	<u>.57</u>	<u>50</u>		
*	<u>83.4</u> cm Length of Ear Node Leaf	<u>2.54</u>	<u>50</u>	<u>86.2</u>	<u>3.01</u>	<u>50</u>		
*	<u>6</u> Number of leaves above top ear	<u>.44</u>	<u>50</u>	<u>5</u>	<u>.49</u>	<u>50</u>		
	<u>18</u> degrees Leaf Angle (measure from 2nd leaf above ear at anthesis to stalk above leaf)	<u>4.20</u>	<u>50</u>	<u>20</u>	<u>5.35</u>	<u>50</u>		
*	<u>02</u> Leaf Color (Munsell code <u>5GY 4/4</u>)			<u>02</u> (Munsell code <u>5GY 4/4</u>)				
	<u>6</u> Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			<u>4</u>				
	<u>5</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>8</u> Number of Primary Lateral Branches	<u>1.03</u>	<u>50</u>	<u>8</u>	<u>1.48</u>	<u>50</u>		
	<u>16</u> Branch Angle from Central Spike	<u>3.30</u>	<u>50</u>	<u>12</u>	<u>4.33</u>	<u>50</u>		
	<u>35.0</u> cm Tassel Length (from top leaf collar to tassel tip)	<u>2.25</u>	<u>50</u>	<u>40.2</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>16</u> Anther Color (Munsell code <u>5RP 6/2</u>)			<u>16</u> (Munsell code <u>5RP 5/4</u>)				
	<u>01</u> Glume Color (Munsell code <u>2.5GY 7/6</u>)			<u>02</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>01</u> Silk Color (3 days after emergence) (Munsell code <u>2.5GY 8/8</u>)			<u>01</u> (Munsell code <u>2.5GY 8/6</u>)				
	<u>01</u> Fresh Husk Color (25 days after 50% silking) (Munsell code <u>2/5GY 7/8</u>)			<u>01</u> (Munsell code <u>5GY 6/6</u>)				
	<u>21</u> Dry Husk Color (65 days after 50% Silking) (Munsell code <u>7.5YR 7/4</u>)			<u>21</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>14.0</u> cm Ear Length	<u>.97</u>	<u>50</u>	<u>14.4</u>	<u>.77</u>	<u>50</u>		
*	<u>41.9</u> mm Ear Diameter at mid-point	<u>1.70</u>	<u>50</u>	<u>46.0</u>	<u>1.30</u>	<u>50</u>		
	<u>95.4</u> gm Ear Weight	<u>5.57</u>	<u>50</u>	<u>97.6</u>	<u>7.18</u>	<u>50</u>		
*	<u>16</u> Number of Kernel Rows	<u>1.36</u>	<u>50</u>	<u>16</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>7.8</u> cm Shank Length	<u>1.26</u>	<u>50</u>	<u>8.3</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

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



Application Variety Data

Standard Inbred Data

8. KERNEL (Dried):

Standard Deviation Sample Size

Standard Deviation Sample Size

1 0.3 mm Kernel Length

.60 50

1 0.9 .70 50

7.4 mm Kernel Width

.60 50

7.4 .50 50

4.3 mm Kernel Thickness

.40 50

4.1 .30 50

3 3.1 % Round Kernels (Shape Grade)

2.60 15

3 5.8 6.30 15

1 Aleurone Color Pattern: 1=Homozygous 2=Segregating

1

(*) 1 9 Aleurone Color (Munsell code 2.5Y 8/2)

1 9 (Munsell code 2.5Y 8/2)

* 0 7 Hard Endosperm Color (Munsell code 2.5Y 5/6 7/8)

0 7 (Munsell code 2.5Y 5/6)

* 0 3 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

0 3

2 4.7 gm Weight per 100 Kernels (unsized sample) .62 15

2 3.1 .44 15

9. COB:

Standard Deviation Sample Size

Standard Deviation Sample Size

* 3 2.3 mm Cob Diameter at mid-point 1.20 50

3 5.8 1.40 50

1 4 Cob Color (Munsell code 5R 4/6)

1 4 (Munsell code 10R 5/6)

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 (Colletotrichum graminicola)

Common Rust (Puccinia sorghi)

Common Smut (Ustilago maydis)

Eyespot (Kabatiella zae)

Goss's Wilt (Clavibacter michiganense spp. nebraskense)

3 Gray Leaf Spot (Cercospora zae-maydis)

Helminthosporium Leaf Spot (Bipolaris zeicola) Race

Northern Leaf Blight (Exserohilum turcicum) Race

7 Southern Leaf Blight (Bipolaris maydis) Race 0

Southern Rust (Puccinia polysora)

Stewart's Wilt (Erwinia stewartii)

Other (Specify)

7 Race 3
3 Race 2
Race

B. Systemic Diseases

Corn Lethal Necrosis (MCMV and MDMV)

Head Smut (Sphacelotheca reiliana)

Maize Chlorotic Dwarf Virus (MCDV)

Maize Chlorotic Mottle Virus (MCMV)

Maize Dwarf Mosaic Virus (MDMV) Strain

Sorghum Downy Mildew of Corn (Peronosclerospora sorghi)

Other (Specify)

Strain

C. Stalk Rots

Anthracnose Stalk Rot (Colletotrichum graminicola)

Diplodia Stalk Rot (Stenocarpella maydis)

Fusarium Stalk Rot (Fusarium moniliforme)

Gibberella Stalk Rot (Gibberella zae)

Other (Specify)

D. Ear and Kernel Rots

Aspergillus Ear and Kernel Rot (Aspergillus flavus)

Diplodia Ear Rot (Stenocarpella maydis)

Fusarium Ear and Kernel Rot (Fusarium moniliforme)

Gibberella Ear Rot (Gibberella zae)

Other (Specify)

Application Variety Data

Standard Inbred Data

JMS 6/14/02

JMS 6/14/02

Additional Description of the Inbred

Exhibit D

LH246 is a medium season field corn inbred line that is best adapted to the central and southern regions of the corn belt. LH246 flowers similar to LH198 and is a good pollinator and an outstanding seed parent in the seed production field.

LH246 combines high yield potential with excellent stalk and root strength in a number of hybrid combinations. The LH246 hybrids possess improved plant health with harvest moistures similar to comparable LH200 crosses.

Search Results: After reviewing my field notes and records I have found the following differentiating characteristics between LH246 and CM105. The silk color of LH246 is light green while the silk color of CM105 is darker in color. I have described it as salmon in the past, but would be better described as tan or olive green (5Y 7/4). LH246 and CM105 also differ in cob color. The cob color of LH246 is red (5R 4/6) while the cob color of CM105 is very dark red (10R 4/6). LH246 flowers on average later than CM105. Enclosed is flowering data averaged over three years from two of our research locations indicating LH246 flowers later than CM105.

Inbred	Iowa 1999-2001				Minnesota 1999-2001			
	Days to		GDUs to		Days to		GDUs to	
	50% Poll	50% Silk	50% Poll	50% Silk	50% Poll	50% Silk	50% Poll	50% Silk
LH246	81	80	1514	1508	82	80	1540	1501
CM105	71	73	1300	1344	72	74	1305	1348

JMS
6/14/02

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the 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 EX5271	3. VARIETY NAME LH246
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, 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 200100136		

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

9. Is the applicant (individual or company) a U.S. national or a 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 one of the following:

a. If the 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 the original rights to variety were owned by a company(ies), is (are) 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 the reverse for extra space):

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

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet 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 the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

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 information collection is 0581-0055. The time required to complete this information collection is estimated to average 6 minutes per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provide and employer.