No. 201000086

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Idaho

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 purposes, or using it in producing a hybrid or different variety therefrom, to the extent provided by the PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'UICF-Grace'

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 thirteenth day of August, in the year* ***two thousand and ten.***

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions*

Form Approved - OMB No. 0581-0055

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

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

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).

1. NAME OF OWNER
University of Idaho

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
IDO651

3. VARIETY NAME
UICF-Grace

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
University of Idaho Office of Technology Transfer
Morrill Hall 414, P.O. Box 443003

5. TELEPHONE *(include area code)*
(208) 885-4550

6. FAX *(include area code)*
(208)885-4551

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PVPO NUMBER
#201000086

FILING DATE
DECEMBER 28, 2009

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Land-Grant University

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Gaylene Anderson, Licensing Associate, University of Idaho, Office of Technology Transfer, Morrill Hall 414, P.O. Box 443003
Jianli Chen, Breeder, U of I Aberdeen R & E center, 1691 S 2700 W, Aberdeen, ID83210

FEES RECEIVED
FILING AND EXAMINATION FEES: $ 4,382.00 DATE 12/28/09
CERTIFICATION FEE: $ 768.00 DATE 5/17/10

11. TELEPHONE (Include area code)
208-885-4550

12. FAX (Include area code)

13. E-MAIL
gaylene@uidaho.edu

14. CROP KIND *(Common Name)*
Hard White Winter Wheat

16. FAMILY NAME *(Botanical)*
Triticeae

15. GENUS AND SPECIES NAME OF CROP
Triticum aestivum

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☑ NO

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (***OPTIONAL***)
☐ YES ☑ NO

IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION. _____

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

a. ☑ Exhibit A. Origin and Breeding History of the Variety
b. ☑ Exhibit B. Statement of Distinctness
c. ☑ Exhibit C. Objective Description of Variety
d. ☑ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☑ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☑ Exhibit F. Declaration Regarding Deposit
g. ☑ Voucher Sample *(3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
h. ☑ Filing and Examination Fee ($4,382), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☑ YES *(If "yes", answer items 21 and 22 below)*
☐ NO *(If "no", go to item 23)*
☐ UNDECIDED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☑ YES ☐ NO
IF YES, WHICH CLASSES? ■ FOUNDATION ■ REGISTERED ■ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☑ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. 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?
☐ YES ☑ 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.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☑ YES ☑ NO 4/13/10
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been 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
Gaylene Anderson	Jianli Chen
NAME *(Please print or type)*	NAME *(Please print or type)*
Gaylene Anderson	Jianli Chen
CAPACITY OR TITLE: Licensing Associate — DATE: 12/22/09	CAPACITY OR TITLE: Assistant Professor — DATE: 11/09/09

ST-470 (07-01-2009) designed by the Plant Variety Protection Office

2009 DEC 28 PM 1:25

(See reverse for instructions and information collection burden statement) #201000086

GENERAL INSTRUCTIONS: 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, F; (3) for a tuber reproduced variety, 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; and (4) payment by credit card or check drawn on a U.S. bank for $4,382 ($518 filing fee and $3,864 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice)*. **NEW:** With the application for a seed reproduced variety **or by direct deposit soon after filing**, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to **reproduce** the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, 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 payment by credit card or check payable to "Treasurer of the United States" in the amount of $768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

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. The fees for filing a change of address; owner's representative; 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.)*

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVPOmail@usda.gov
Homepage: http://www.ams.usda.gov/science/pvpo/PVPindex.htm

SPECIFIC INSTRUCTIONS:
To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870. http://www.ams.usda.gov/lsg/seed.htm.

ITEM

19a. 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

19b. 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 replicated 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.

19c. 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.

19d. 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.*

19e. 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.

20. 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).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

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

23. 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.)*

24. 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).)*

EXHIBIT A: ORIGIN AND BREEDING HISTRY OF UICF-Grace

UICF-Grace originated from a F_4 headrow from the cross IDO551/SWP965001//'Golden Spike'. IDO551 is a hard white winter wheat breeding line derived from a cross between Manning (Dewey, 1981) and Tam200 (Worrall et al., 1995). The experimental line SWP965001(FS2) is a proprietary wheat germplasm developed by BASF Corporation (formerly American Cyanamid) through conventional mutation breeding, with sodium azide and the French wheat cultivar Fidel, to obtain tolerance to the imidazolinone class of herbicides. The development of FS2 was described by Newhouse et al., (1992). Golden Spike (Hole et al., 2002) is a hard white winter wheat released by the Utah Agricultural Experiment Station in 2008. The final cross designated A099135W for UICF-Grace was made in the greenhouse in spring 1999 and F_1 seeds were planted in the field in Aberdeen in 2000 to get F_2 seeds. Generations (F_2 to F_3) were advanced as bulks with selection of resistant plants after spraying with imazamox in the nurseries planted in Aberdeen in 2001 to 2002. In 2003, the F_4 bulk inoculated with smut was planted at Preston and 50 heads were selected based on the resistance to herbicide and dwarf bunt and agronomic performance. Out of the 50 selected heads, 15 with white seed were planted in fall 2003 and twelve head rows (F_5) were selected and harvested in 2004 based on uniformity and resistance to imazamox herbicide and advanced through unreplicated testing at Aberdeen in 2005. One line designated A99135W-C-PR-3 was named as IDO651 in 2005.

IDO651 was evaluated in UI Elite Yield trials (UIEYTs) under irrigation at Aberdeen (2006 and 08), Hazelton (2008), and Kimberly (2008), and under rainfed conditions at Rockland and Arbon (2006 and 2008), ID. IDO651 was also evaluated in the Western Regional Hard Winter Wheat Nurseries (WRHWWN) in 2007 and 2008. In addition, IDO651 was especially evaluated for herbicide resistance in herbicide-spray nurseries (IMI nursery) in one irrigated location Aberdeen, ID (2006, 2008 and 2009) and four rainfed locations Rockland (2006 and 2008), Preston (2006), Arbon Valley (2006), ID, and in Logan (2008), UT. In 2009, IDO651 was officially evaluated by the Pacific Northwest Wheat Quality Council for its end-use quality. IDO651 was evaluated for resistance to stripe rust caused by *P. striiformis* Westend. f. sp. *tritici* Eriks. in the field under natural infections in 2006-2009 and under controlled greenhouse conditions with selected races. To determine whether IDO651 has non-race specific high-

temperature, adult-plant (HTAP) resistance, it was tested, together with entries of 2009 WRHWWN entries and susceptible check PS 279, in the seedling stage with races PST-37, PST-45, PST-100, PST-116, and PST-127 of P. *striiformis* f. sp. *tritici* and in adult-plant stage with the latter three races, which were either the predominant races in the recent years or recently identified most virulent race in the Pacific Northwest.

A total of 400 heads of IDO651 were selected on the basis of head color (light brown), height, heading date, and head type and planted in Aberdeen in 2008. In spring 2009, we firstly observed uniform bacterium black chaff (caused by the bacterium *Xanthomonas campestris* pv. *translucens*) infection in the field of 400 heads planted because of high rain precipitation occurred on the top of irrigation in Southern Idaho. Therefore, we selected 150 headrows with slightly less infection of black chaff and with uniform height, days to heading, and head type. After harvesting the seeds of individual headrow were visually evaluated and headrows with shriveled seeds (20 headrows) were discarded. The remaining headrows (130) were measured for grain protein content. Seeds of 100 headrows with similar protein content were then bulked to form the breeder seeds, which were planted in UI R & E Center at Tetonia, Idaho in fall 2009. The foundation seeds will be harvested and available for the first sale in fall 2010. UICF-Grace is uniform for plant type without obvious phenotypic variants and has remained stable during five generations of evaluation from 2005 to 2009 except for the bacterium black chaff observed in spring 2009.

References:

Dewey, W.G. 1981. Registration of Manning wheat. Crop Sci 21(4):636.

Hole, D.J., S.M. Clawson, S.A. Young and D. Roche. 2002. Registration of 'Golden Spike' Wheat. Crop Sci. 42:1376-1377.

Newhouse, K.E., W.A. Smith, M.A. Starrett, T.J. Schaefer, and B.K. Singh. 1992. Tolerance to imidazolinone herbicides in wheat. Plant Physiol. 100:882-886.

Worrall, W.D., E.C. Gilmore, Jr., K.B. Porter, M.E. McDaniel. 1995. Registration of TAM-200 wheat. Crop Sci 35(4):1223.

EXHIBIT B: NOVELTY STATEMENT FOR UICF-Grace WHEAT

UICF-Grace is a hard white winter ClearField wheat that has good bread baking quality, resistance to stripe rust and dwarf bunt, and good yield potential. The most similar variety of UICF-Grace is Golden Spike (Hole et al., 2002) which was used as one of the parental lines for UICF-Grace. UICF-Grace can be easily differentiated from Golden Spike by spraying Beyond herbicide. UICF-Grace will survive, while Golden Spike will die after spraying. UICF-Grace can also be differentiated by phenotypic characteristics. UICF-Grace is taller than Golden Spike in both irrigated and rainfed conditions. The head color of UICF-Grace is light browned, while Golden Spike is brown. The composition of two dwarf genes (Rht-B1and Rht-D1) is different in the two cultivars. UICF-Grace has Rht-B1a and Rht-D1b, while Golden Spike has RhtB1b and Rht-D1a. UICF-Grace has similar or better bread baking quality than Golden Spike; however, it can be differentiated from Golden Spike by molecular markers for the flour hardness gene PinB-D1. UICF-Grace has seed hardness gene allele PinB-D1b, while Golden Spike has PinB-D1a. In addition, UICF-Grace is resistant, while golden spike is susceptible to stripe rust.

Reference:

Hole, D.J., S.M. Clawson, S.A. Young and D. Roche. 2002. Registration of 'Golden Spike' Wheat. Crop Sci. 42:1376-1377.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Wheat (*Triticum* spp.)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
University of Idaho	IDO651	UICF-Grace

ADDRESS *(Street and No. or RD No., City, State, Zip Code and Country)*

Gaylene Anderson, Licensing Associate, University of Idaho, Office of Technology Transfer, Morrill Hall 414, P.O. Box 443003
Jianli Chen, Breeder, U of I Aberdeen R & E center, 1691 S 2700 W, Aberdeen, ID83210

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PVPO NUMBER

#201000086

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., 0 9 9 or 0 9) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____. Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND: 1

1 = Common
2 = Durum
3 = Club
4 = Other (Specify) _____

2. VERNALIZATION: 2

1 = Spring
2 = Winter
3 = Other (Specify) _____

3. COLEOPTILE ANTHOCYANIN: 1

1 = Absent 2 = Present

4. JUVENILE PLANT GROWTH: 2

1 = Prostrate 2 = Semi-Erect 3 = Erect

5. PLANT COLOR: (Boot Stage) 3

1 = Yellow-Green
2 = Green
3 = Blue-Green

6. FLAG LEAF: (Boot Stage)

2 1 = Erect 2 = Recurved
1 1 = Not Twisted 2 = Twisted
1 1 = Wax Absent 2 = Wax Present

7. EAR EMERGENCE:

164 Number of Days (Average)
01 Number of Days Earlier Than * Golden Spike
Same As * Deloris
01 Number of Days Later Than * Weston

**Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial*

8. ANTHER COLOR: 1 1 = Yellow 2 = Purple

10

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9. PLANT HEIGHT: (From Soil to Top of Head, Excluding Awns)

104 cm (Average)

15 cm Taller Than Golden Spike *

Same As none *

___ cm Shorter Than none *

10. STEM:

1 A. ANTHOCYANIN 1 = Absent 2 = Present

1 B. WAXY BLOOM 1 = Absent 2 = Present

2 C. HAIRINESS (last internode of rachis) 1 = Absent 2 = Present

1 D. INTERNODE 1 = Hollow 2 = Semi-Solid 3 = Solid

4 Number of Nodes

1 E. PEDUNCLE 1 = Erect 2 = Recurved 3 = Semi-Erect

>30 cm Length

___ F. AURICLE

1 Anthocyanin: 1 = Absent 2 = Present

1 Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

2 A. DENSITY

1 = Lax
2 = Middense (Laxidense)
3 = Dense

2 B. SHAPE

1 = Tapering
2 = Strap
3 = Clavate
4 = Other (Specify) _____

1 C. CURVATURE

1 = Erect
2 = Inclined
3 = Recurved

4 D. AWNEDNESS

1 = Awnless
2 = Apically Awnletted
3 = Awnletted
4 = Awned

12. GLUMES: (At Maturity)

2 A. COLOR

1 = White
2 = Tan
3 = Other (Specify) _____

2 B. SHOULDER

1 = Wanting 2 = Oblique
3 = Rounded 4 = Square
5 = Elevated 6 = Apiculate
7 = Other (Specify) _____

2 C. SHOULDER WIDTH

1 = Narrow
2 = Medium
3 = Wide

2 D. BEAK

1 = Obtuse
2 = Acute
3 = Acuminate

2 E. BEAK WIDTH

1 = Narrow
2 = Medium
3 = Wide

2 F. GLUME LENGTH

1 = Short (ca. 7 mm)
2 = Medium (ca. 8 mm)
3 = Long (ca. 9 mm)

2 G. WIDTH

1 = Narrow (ca. 3 mm)
2 = Medium (ca. 3.5 mm)
3 = Wide (ca. 4 mm)

1 H. PUBESCENCE

1 = Not Present
2 = Present

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13. SEED:

1 A. SHAPE
1 = Ovate
2 = Oval
3 = Elliptical

2 B. CHEEK
1 = Rounded
2 = Angular

2 C. BRUSH
1 = Short
2 = Medium
3 = Long

___ 1 = Not Collared
2 = Collared

___ D. CREASE

1 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

1 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

2 E. COLOR
1 = White
2 = Amber
3 = Red
4 = Other (Specify) _____

1 F. TEXTURE
1 = Hard
2 = Soft
3 = Other (Specify) _____

___ G. PHENOL REACTION
1 = Ivory
2 = Fawn
3 = Light Brown
4 = Dark Brown
5 = Black

413 H. SEED WEIGHT
g/1000 Seed (Whole Number Only)

2 I. GERM SIZE
1 = Small
2 = Midsize
3 = Large

14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

1	Stem Rust (*Puccinia graminis* f. sp. *tritici*)	Race: QFCS QTHJ RCRS RKQQ TPMK TTTT
0	Leaf Rust (*Puccinia recondita* f. sp. *tritici*)	Race:
4	Stripe Rust (*Puccinia striiformis*)	Race: P. striiformis Westend. f. sp. tritici Eriks, HTAP
0	Loose Smut (*Ustilago tritici*)	Race:
0	Tan Spot (*Pyrenophora tritici-repentis*)	Race:
0	Flag Smut (*Urocystis agropyri*)	Race:
0	Halo Spot (*Selenophoma donacis*)	Race:
0	Common Bunt (*Tilletia tritici* or T. *laevis*)	Race:
0	*Septoria nodorum* (Glume Blotch)	Race:
2	Dwarf Bunt (*Tilletia controversa*)	Race: Composite races
0	*Septoria avenae* (Speckled Leaf Disease)	Race:
0	Karnal Bunt (*Tilletia indica*)	Race:
0	*Septoria tritici* (Speckled Leaf Blotch)	Race:
0	Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)	Race:
0	Scab (*Fusarium* spp.)	Race:
0	"Snow Molds"	Race:
0	"Black Point" (Kernel Smudge)	Race:
0	Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)	Race:
0	Barley Yellow Dwarf Virus (BYDV)	Race:
0	Rhizoctonia Root Rot (*Rhizoctonia solani*)	Race:
0	Soilborne Mosaic Virus (SBMV)	Race:
3	Black Chaff (*Xanthomonas campestris* pv. *translucens*).	Race: natural infection, very light on the glume
0	Wheat Yellow (Spindle Streak) Mosaic Virus	Race:
1	Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)	Race: natural infection
0	Wheat Streak Mosaic Virus (WSMV)	Race:
0	Other (Specify) _____	Race:
0	Other (Specify) _____	Race:
0	Other (Specify) _____	Race:
0	Other (Specify) _____	Race:

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15. HOMOZYGOUS FOR SPECIFIC DISEASE RESISTANCE GENE

Stem rust NA

Leaf rust NA

Other

16. INSECT: PLEASE SPECIFY BIOTYPE (Where Needed) (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

0	Hessian Fly (*Mayetiola destructor*) General
0	Hessian Fly (*Mayetiola destructor*) Biotype A
0	Hessian Fly (*Mayetiola destructor*) Biotype B
0	Hessian Fly (*Mayetiola destructor*) Biotype C
0	Hessian Fly (*Mayetiola destructor*) Biotype D
0	Hessian Fly (*Mayetiola destructor*) Biotype E
0	Hessian Fly (*Mayetiola destructor*) Biotype F
0	Hessian Fly (*Mayetiola destructor*) Biotype G
0	Hessian Fly (*Mayetiola destructor*) Biotype H
0	Hessian Fly (*Mayetiola destructor*) Biotype I
0	Hessian Fly (*Mayetiola destructor*) Biotype J
0	Hessian Fly (*Mayetiola destructor*) Biotype L
0	Hessian Fly (*Mayetiola destructor*) Biotype M
0	Hessian Fly (*Mayetiola destructor*) Biotype N
0	Hessian Fly (*Mayetiola destructor*) Biotype O
0	Hessian Fly (*Mayetiola destructor*) (Specify)
0	Stem Sawfly (*Cephus* spp.) (Specify)
0	Cereal Leaf Beetle (*Oulema melanopa*) (Specify)
0	Russian Aphid 1 (*Diuraphis noxia*)
0	Russian Aphid 2 (*Diuraphis noxia*)
0	Greenbug (*Schizaphis graminum*) (General)
0	Greenbug (*Schizaphis graminum*) Biotype A
0	Greenbug (*Schizaphis graminum*) Biotype B
0	Greenbug (*Schizaphis graminum*) Biotype C
0	Greenbug (*Schizaphis graminum*) Biotype E
0	Greenbug (*Schizaphis graminum*) Other (Specify)
0	Aphids (Specify)
0	Other (Specify)

17. HIGH MOLECULAR WEIGHT GLUTENIN SUBUNIT PROFILE (Check those that apply):

Glu-A1	*Glu-B1*	*Glu-D1*
1	6+8	2+11
2*	7+8	2+12
null	7+9	3+12
1*	13+16	x 5+10
	13+19	null
	17+18	

18. TRANSLOCATIONS (1=Present 2=Absent 3=Heterogeneous 4= Not Tested):

4	1BL/1RS
4	1A/1R
4	2NS/2AS
4	4DL/4AgS
	OTHER (explain)
	OTHER (explain)

19. IMIDAZOLINONE HERBICIDE TOLERANCE (1=Present 2=Absent 3=Not Tested):

1 *Als-1*

2 *Als-2*

2 *Als-3*

20. ADDITIONAL INFORMATION ON ANY ITEM ABOVE OR GENERAL COMMENTS:

WHEAT DESCRIPTOR ILLUSTRATIONS

Section Numbers Correspond to the Numbers of the Sections on the Form

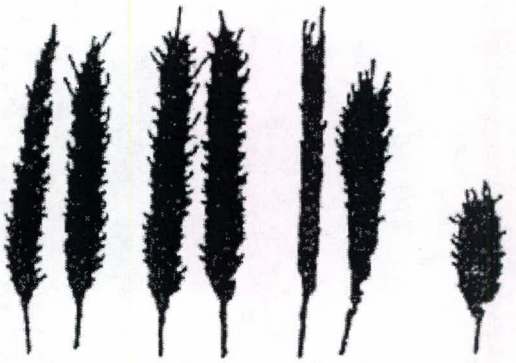
4. EARLY PLANT GROWTH HABIT:

1 Prostrate | 2 Intermediate | 3 Erect

10. (D.) STEM INTERNODE X-SECTION:

1 Hollow | 2 Semi-solid | 3 Solid

11. (B.) SPIKE SHAPE:

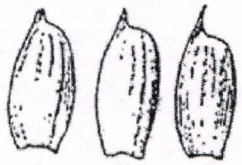


1 Tapering | 2 Oblong | 3 Clavate | 4 Elliptical

11. (D.) AWNEDNESS:

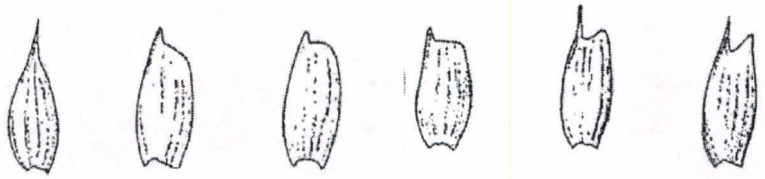
1 Awnless | 2 Apically Awnleted | 3 Awnleted | 4 Awned

12. (D.) BEAK SHAPE:



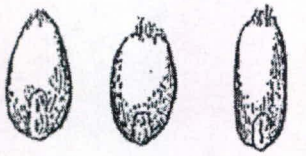
1 Obtuse | 2 Acute | 3 Acuminate

12. (C.) SHOULDER SHAPE:



1 Wanting | 2 Oblique | 3 Rounded | 4 Square | 5 Elevated | 6 Apiculate

13. (A.) SEED SHAPE:

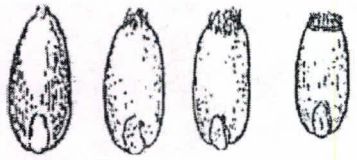


1 Ovate | 2 Oval | 3 Elliptical

13. (B.) CHEEK SHAPE:

1 Rounded | 2 Angular

13. (C.) BRUSH SIZE

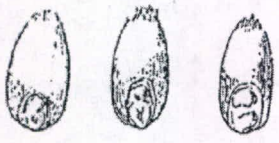


1 Small | 2 Midsized | 3 Large | 4 Collared

13. (C.) BRUSH HAIR LENGTH:

1 Short | 2 Medium | 3 Long

13. (I.) GERM (EMBRYO) SIZE:



1 Small | 2 Midsized | 3 Large

13. (D.) SEED CREASE WIDTH:

1 Narrow | 2 Mid-wide | 3 Wide

13. (D.)SEED CREASE DEPTH:

1 Shallow | 2 Mid-Deep | 3 Deep

2009 DEC 28 PM 1:26

EXHIBIT D: ADDITIONAL DESCRIPTION OF THE VARIEY UICF-Grace

Agronomic Characteristics

UICF-Grace has an unpigmented coleoptile and an erect seedling growth habit. UICF-Grace is tall stature wheat that is similar to Golden Spike (Hole, et al., 2002) in its agronomic characteristics. However, UICF-Grace is much taller than Golden Spike under both rainfed and irrigated conditions with UICF-Grace being on average 15 cm taller under either growing conditions (Table 1). In the Western Regional Trials, UICF-Grace was similar in height to Finley (PI 586757, Donaldson et al., 2000) and Kharkof (CItr 6700, Clark et al., 1926) and 30 cm taller than Boundary (PI 603039, Souza et al., 1999) on average (Table 2). UICF-Grace is blue green in color with broad recurved erect flag leaves. UICF-Grace has a similar heading date to both Golden Spike and Utah 100 (PI 594920, Hole et al., 1997) (Table 1). UICF-Grace showed slightly higher lodging potential than Golden Spike and DW, especially under irrigated conditions, though UICF-Grace was better than Gary for lodging resistance according to the data from the Aberdeen trials. In the two years of the Western Regional trials, UICF-Grace showed a better average yield over all three checks in rainfed production and had a better average lodging resistance over Finley and Kharkof for both irrigated and rainfed (Table 2). Glumes of UICF-Grace are awned and the kernels of UICF-Grace are an intermediate size, elongated, white, and hard. Seed is larger and more plumper than that of the comparable checks Finley, Boundary, DW, and Deloris. The mean kernel weight was 41.35 mg for UICF-Grace verses 36.20 mg for Finley, 36.73 mg for Boundary, 34.92 mg for DW, and 38.87 mg for Deloris. Kernel diameter for UICF-Grace was 2.89 mm versus 2.54 mm for Finley, 2.41 mm for Boundary, 2.55 for DW, and 2.60 mm for Deloris.

End-use Quality

UICF-Grace has good end-use quality for a hard white winter wheat (Table 3). UICF-Grace has equivalent flour protein content compared to Boundary, Deloris (Hole et al., 2004), DW (Souza et al., 2004), and UI Darwin (Souza et al., 2008); higher protein content than Golden Spike, Gary (Souza et al., 2004), and Utah100 while lower than Weston and Bonneville (PI 557015). UICF-

Grace has lower ash content and lower noodle color change than most of the check cultivars, which makes it ideal for Asian raw noodles and buns. UICF-Grace produced equivalent bread loaf volume to Bonneville, Utah100, Golden Spike, Gary, and Boundary, while lower bread loaf volume than DW, Deloris, UI Darwin, and Weston. The mixing quality of UICF-Grace was similar to Weston.

Response to Herbicide Application

UICF-Grace shows a minimal level of injury to application of imazamox in the spring at either the 1X or 2X rate at application time (3-4 leaf stage) based on yield with the greatest reduction occurring with the 2X late application (Tables 4-6). In some cases, UICF-Grace was higher yielding with herbicide application than without based on comparison of performance to the non-herbicide control. It showed less or an equal level of injury to the herbicide in all trials as the commercially available imazamox resistant cultivars IDO 587 (PI 634567, Souza et al., 2004), Above, and UICF-Lambert. We are requesting BASF to review the performance of UICF-Grace with the imazamox herbicide 'Beyond' resistance and to release it as the first hard white imazamox resistant Clearfield cultivar.

Disease Reactions

UICF-Grace has excellent HTAP resistance to stripe rust. In the field tests, it had the mean infection type of 2 and mean severity of 14% compared to the susceptible check Lemhi with the mean infection type of 8 and severity of 69% in 11 test-years in 2007, 2008, and 2009. In the greenhouse tests, it had infection type 8 or 9 to all tested races in the seedling stage under the low temperature profile, but had infection types 1 to 3 with a mean of 2 to predominant and most virulent races PST-100, PST-116, and PST-127. UICF-Grace also has moderate resistance to dwarf bunt caused by *Tilletia controversa* Küln (data not shown). However, UICF-Grace was observed having natural black chaff infection by *Xanthomonas campestris* pv. *translucens* (J. J. & R.) Dye on leave under irrigation in 2009 summer.

REFERENCES

Clark, J.A., et al. 1926. Registration of improved wheat varieties. J Amer Soc Agron 18(10):922.

Donaldson, E., B. Sauer, S.R. Lyon, C.F. Morris, and R.F. Line. 2000. Registration of Finley wheat. Crop Sci 40(4):1197.

Hole, D.J., R.S. Albrechtsen, S.M. Clawson, and S.A. Young. 1997. Registration of Utah-100 wheat. Crop Sci 37(3):1009.

Hole, D.J., S.M. Clawson, S.A. Young and D. Roche. 2002. Registration of 'Golden Spike' Wheat. Crop Sci. 42:1376-1377.

Hole, D.J., D. Roche, S.M. Clawson and S.A. Young. 2004. Registration of 'Deloris' Wheat. Crop Science 44:695-696.

Souza, E.J., J. Windes, D. Sunderman, and K. O'Brien. 1999. Registration of Boundary Wheat. Crop Sci 39:296.

Souza, E.J., M.J. Guttieri, and K. O'Brien. 2004. Registration of 'DW' wheat. Crop Science 44:1475-1476.

Souza, E.J., M.J. Guttieri, and R. McLean. 2004. Registration of 'Gary' Wheat. Crop Science 44:1476-1477.

Souza, E.J., M. Lazar, M. Guttieri, D. Thill, and T. Rauch. 2006. Registration of Idaho 587 wheat. Crop Sci 46(3):1387.

Souza, E.J., M.J. Guttieri, K.M. O'Brien and R.S. Zemetra. 2008. Registration of 'UI Darwin' Wheat. Journal of Plant Registrations 2:43-46.

Worrall, W.D., E.C. Gilmore, Jr., K.B. Porter, M.E. McDaniel. 1995. Registration of TAM-200 wheat. Crop Sci 35(4):1223.

Table 1. Summary of agronomic performance of IDO651 in UIEYTs in four location-years under irrigation (IRR) and four location-years under rainfed (RF) conditions in Southern Idaho in 2006 and 2008.

Line	Grain Yield (kg/ha)			Grain Volume Weight (kg/hl)			Height (cm)			Days to Heading (Julian)			Lodge (0-9)
	RF	IRR	ALL	RF	IRR	ALL	RF	IRR	ALL	RF	IRR	ALL	IRR
Golden Spike	2422	10086	6254	73	76	75	70	107	89	165	164	165	3
Utah100	2567	9339	5953	74	77	75	75	113	94	165	164	164	2
Deloris	2501	9349	5925	74	78	77	73	111	92	165	164	164	2
IDO651	2510	9252	5881	72	78	75	86	122	104	165	163	164	4
DW	2197	9380	5789	74	78	77	64	96	80	165	164	165	3
Gary	2319	9140	5730	73	76	75	70	107	89	166	165	165	5
Boundary	2263	8618	5441	71	76	74	62	93	78	165	165	165	1
Weston	2264	8566	5415	75	79	77	77	117	97	164	162	163	3
Bonneville	2407	8383	5395	75	79	77	72	113	93	166	167	166	3
Mean	2383	9124	5754	74	77	76	72	109	90	165	164	165	3
CV (%)	12	11	13	2	1	1	5	3	4	0	1	1	42
LSD (.05)	420	1450	729	2	1	1	5	5	4	1	1	1	3
Environments	4	4	8	3	4	7	4	4	8	4	4	8	2

Table 2. Summary of agronomic performance of IDO651 Compared with checks in the WRHWWN in four location-years under irrigation (IRR) and fifteen location-years under rainfed (RF) conditions in 2007 and 2008 (Complete data can be found at http://www.ars.usda.gov/Services/docs.htm?docid=3712).

Line	Grain Yield (kg/ha)			Grain Volume Weight (kg/hl)			Height (cm)			Days to Heading (Julian)			Lodge (0-9)		
	RF	IRR	ALL	RF	IRR	ALL	RF	IRR	ALL	RF	IRR	ALL	RF	IRR	ALL
BOUNDARY	5784	5784	5784	75	74	74	84	84	84	157	169	158	0	1	0
IDO651	5205	6792	5470	74	75	74	117	120	117	155	167	157	3	1	3
FINLEY	4905	6232	5126	77	75	77	111	112	111	155	168	157	5	2	4
KHARKOF	4232	4685	4308	75	76	75	116	116	116	155	165	156	6	2	5
MEAN	5031	5873	5172	75	75	75	106	108	106	156	167	157	5	2	4
CV (%)	10	15	12	2	1	2	6	4	6	1	0	1	59		70
LSD (.05)	373	1726	412	1	2	1	5	15	5	1	2	1	8		5
ENVIRONMENTS	15	3	18	12	2	14	13	2	15	14	2	16	2	1	3

Table 3. Quality characteristics of Grace-IMI compared with check cultivars grown in UIEYTs in eight location-years in Southern Idaho in 2006-2008.

Line	Flour Quality			Mixograph				Noodle Color			Pup Loaf Bread	
	Protein ($g\ kg^{-1}$)	Yield ($g\ kg^{-1}$)	Ash ($g\ kg^{-1}$)	Peak (min)	Height (cm)	Tolerance (degree)	Absorption (%)	L0	L24	ΔL*	Time (min)	Volume (ml)
DW	118	692	3.5	3	6	75	61	89	75	-14	3	1219
Deloris	116	715	3.4	3	6	72	60	88	74	-14	2	1213
UI Darwin	119	683	3.3	3	6	73	61	89	80	-9	3	1203
Golden Spike	110	691	3.3	3	6	73	60	89	80	-9	3	1139
IDO651	115	650	3.3	2	6	75	60	89	79	-10	3	1116
Gary	110	677	3.4	4	6	76	60	89	79	-10	3	1098
Weston	122	692	3.6	2	7	68	61	87	75	-12	2	1189
Bonneville	122	708	3.5	3	6	73	61	88	70	-17	2	1151
Utah 100	111	685	3.4	3	6	72	60	88	78	-10	2	1123
Boundary	115	681	3.5	3	6	76	60	87	72	-15	3	1075
MEAN	116	687	3.4	3	6	74	60	88	78	-10	3	1159
CV (%)	5	2	3.2	11	5	4	2	1	2	-8	12	5
LSD (.05)	6.5	13.2	0.1	0.3	0.3	3.2	1.2	1.2	2.1	1.4	0.3	67
Locations	8	8	8	8	8	8	8	8	8	8	8	8

Table 4. Summary of injury response of Grace-IMI (IDO651) and IDO655 compared to resistant check IDO587 to imazamox herbicide (Beyond) at two rates (1X and 2X) at four locations Aberdeen (AB), Arbon (AR), Preston (PR), and Rockland (RK), ID in 2006.

Year	Location	Variety	Herbicide	X rate	Rate (g ai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)
2006	AB	IDO587	Control	0X	0	1	0	152	71	5774
2006	AB	IDO587	Beyond	1X	53	3	1	152	69	4754
2006	AB	IDO587	Beyond	2X	105	9	2	152	63	4341
2006	AB	IDO651	Control	0X	0	4	0	150	85	3959
2006	AB	IDO651	Beyond	1X	53	4	3	150	85	3773
2006	AB	IDO651	Beyond	2X	105	8	8	152	79	3815
2006	AB	IDO655	Control	0X	0	4	0	155	81	5810
2006	AB	IDO655	Beyond	1X	53	6	4	154	77	4940
2006	AB	IDO655	Beyond	2X	105	8	3	154	81	5086
Test Mean						5	4	152	75	4459
LSD (.05) Variety						3	4	1	6	427
LSD (.05) Treatment						2	3	0	4	514

Table 4, Continued

Year	Location	Variety	Herbicide	X rate	Rate (g ai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)
2006	AR	IDO587	Control	0X	0	0	0	160	60	2624
2006	AR	IDO587	Beyond	1X	53	1	0	160	62	2413
2006	AR	IDO587	Beyond	2X	105	1	1	160	61	2660
2006	AR	IDO651	Control	0X	0	0	0	158	83	3013
2006	AR	IDO651	Beyond	1X	53	0	0	158	76	2502
2006	AR	IDO651	Beyond	2X	105	4	0	159	81	2532
2006	AR	IDO655	Control	0X	0	0	0	162	70	3304
2006	AR	IDO655	Beyond	1X	53	4	2	162	69	3010
2006	AR	IDO655	Beyond	2X	105	5	1	162	68	3149
Test Mean						2	0	160	69	2914
LSD (.05) Variety						1.8	10.6	0.5	4.3	197
LSD (.05) Treatment						1.3	0.4	0.4	3.1	139

Table 4, Continued

Year	Location	Variety	Herbicide	X rate	Rate (g ai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)
2006	PR	IDO587	Control	0X	0	0	0	NA	60	2238
2006	PR	IDO587	Beyond	1X	53	0	0	NA	58	2362
2006	PR	IDO587	Beyond	2X	105	5	1	NA	55	1991
2006	PR	IDO651	Control	0X	0	0	0	NA	76	1726
2006	PR	IDO651	Beyond	1X	53	0	0	NA	77	2003
2006	PR	IDO651	Beyond	2X	105	2	0	NA	75	1830
2006	PR	IDO655	Control	0X	0	2	0	NA	64	2312
2006	PR	IDO655	Beyond	1X	53	2	0	NA	60	2199
2006	PR	IDO655	Beyond	2X	105	7	2	NA	64	2027
Test Mean						2	0.2		64	2043
LSD (.05) Variety						1.1	0.6		3	200
LSD (.05) Treatment						0.8	0.4		2	141

Table 4, Continued

Year	Location	Variety	Herbicide	X rate	Rate (g ai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)
2006	RK	IDO587	Control	0X	0	0	0	152	69	4039
2006	RK	IDO587	Beyond	1X	53	0	0	154	68	3394
2006	RK	IDO587	Beyond	2X	105	0	0	153	64	2278
2006	RK	IDO651	Control	0X	0	0	0	152	89	3071
2006	RK	IDO651	Beyond	1X	53	0	0	152	86	3170
2006	RK	IDO651	Beyond	2X	105	0	0	152	86	1708
2006	RK	IDO655	Control	0X	0	2	0	155	76	3399
2006	RK	IDO655	Beyond	1X	53	0	0	155	77	3396
2006	RK	IDO655	Beyond	2X	105	0	0	156	75	2305
Test Mean						1	0	153	74	2713
LSD (.05) Variety						1.0	0.6	1.0	5	570
LSD (.05) Treatment						0.7	0.4	0.7	3	403

Table 5. Summary of injury response of Grace-IMI (IDO651) and IDO655 compared to resistant check Above to imazamox herbicide (Beyond) at two rates (1X and 2X) at three locations Aberdeen (AB) and Rockland (RK), ID, and Logan, UT in 2008.

Year	Location	Variety	Herbicide	X rate	Rate (gai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)	TWT (kg/hl)
2008	AB	Above	Control	0X	0	0	0	162	85	7154	77
2008	AB	Above	Beyond	1X	53	3	2	164	78	5182	75
2008	AB	Above	Beyond	2X	105	3	3	167	73	2606	71
2008	AB	IDO651	Control	0X	0	0	0	169	108	5599	77
2008	AB	IDO651	Beyond	1X	53	0	0	169	102	5539	77
2008	AB	IDO651	Beyond	2X	105	2	0	169	98	4567	75
2008	AB	IDO655	Control	0X	0	0	0	171	93	7093	76
2008	AB	IDO655	Beyond	1X	53	7	0	173	102	7775	76
2008	AB	IDO655	Beyond	2X	105	23	13	172	80	4126	73
Test Mean						3	1	169	96	5661	76
LSD (.05) Variety						4.6	4.1	1.5	5.5	1005	1.1
LSD (.05) Treatment						3.6	3.2	1.1	4.3	779	0.8

Table 5, continued

Year	Location	Variety	Herbicide	X rate	Rate (gai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)	TWT (kg/hl)
2008	RK	Above	Control	0X	0	0	0	160	53	693	72
2008	RK	Above	Beyond	1X	53	3	0	162	60	1569	71
2008	RK	Above	Beyond	2X	105	3	2	161	57	1161	71
2008	RK	IDO651	Control	0X	0	0	0	168	69	868	72
2008	RK	IDO651	Beyond	1X	53	0	0	168	72	1569	73
2008	RK	IDO651	Beyond	2X	105	17	10	168	68	1189	72
2008	RK	IDO655	Control	0X	0	0	0	170	55	1062	72
2008	RK	IDO655	Beyond	1X	53	3	2	169	60	1672	73
2008	RK	IDO655	Beyond	2X	105	0	0	170	59	1525	71
Test Mean						1	3	167	63	1264	72
LSD (.05) Variety						5	6.5	1.1	3.4	254	.6
LSD (.05) Treatment						3.8	5.1	0.8	2.6	197	.6

Table 5, continued

Year	Location	Variety	Herbicide	X rate	Rate (gai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian	Height (cm)	Yield (kg/ha)	TWT (kg/hl)
2008	Logan	Above	Control	0X	0	0	0	NA	86	4984	61
2008	Logan	Above	Beyond	1X	53	0	0	NA	87	5504	61
2008	Logan	Above	Beyond	2X	105	0	0	NA	86	5335	61
2008	Logan	IDO651	Control	0X	0	0	0	NA	116	5399	59
2008	Logan	IDO651	Beyond	1X	53	0	0	NA	113	5609	60
2008	Logan	IDO651	Beyond	2X	105	0	0	NA	113	5879	61
2008	Logan	IDO655	Control	0X	0	0	0	NA	94	5108	59
2008	Logan	IDO655	Beyond	1X	53	0	0	NA	90	4961	59
2008	Logan	IDO655	Beyond	2X	105	0	0	NA	91	5495	60
Test Mean						0	0	NA	100	5372	61
LSD (.05) Variety						0	0	NA	12	296	0.6
LSD (.05) Treatment						0	0	NA	9	229	0.5

Table 6. Summary of injury response of Grace-IMI (IDO651) and IDO655 compared to resistant check Above to imazamox herbicide (Beyond) at two rates (1X and 2X) at Aberdeen (AB) in 2009.

Year	Location	Variety	Herbicide	X rate	Rate (gai/ha)	Injury at 14 DAT (%)	Injury at 28 DAT (%)	Days to Heading Julian
2009	AB	UICF-Lambert	Control	0X	0	0	0	166
2009	AB	UICF-Lambert	Beyond	1X	53	0	0	165
2009	AB	UICF-Lambert	Beyond	2X	105	0	0	163
2009	AB	IDO651	Control	0X	0	0	0	161
2009	AB	IDO651	Beyond	1X	53	0	0	163
2009	AB	IDO651	Beyond	2X	105	0	2	165
2009	AB	IDO655	Control	0X	0	0	0	166
2009	AB	IDO655	Beyond	1X	53	3	0	165
2009	AB	IDO655	Beyond	2X	105	5	0	165
Test Mean						3	5	164
LSD (.05) Variety						6	6	2
LSD (.05) Treatment						10	21	2

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

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)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
The UNIVERSITY OF IDAHO, ~~representing the interests of the entities listed under Exhibit E, Item 11~~	IDO651	UICF-Grace
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
University of Idaho Office of Technology Transfer Morrill Hall 414, P.O. Box 443003	208-885-4550	
	7. PVPO NUMBER 201000086	

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 a U.S. national or a U.S. based entity? **If no, give name of country.** [X] 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**

Delete per phone conversation
MAH
4-12-2010

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

The STATE OF IDAHO, acting by and through the State Board of Higher Education on behalf of the UNIVERSITY OF IDAHO is a partner in the Northwest (Tri-State) Potato Variety Development Program and a signatory of the General Agreement on Policy and Procedure for Release of New Publicly Developed Plant Varieties in Idaho, Oregon and Washington, between Washington State University, Oregon State University, University of Idaho and the United States of America, as represented by the Secretary of Agriculture. In accordance with provision 2.2 of this Agreement, the University of Idaho is applying for this PVPC.

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.

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To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	TEMPORARY OR EXPERIMENTAL DESIGNATION
University of Idaho	University of Idaho Office of Technology Transfer Morrill Hall 414, P.O. Box 443003	IDO651
		VARIETY NAME: UICF-Grace
NAME OF OWNER REPRESENTATIVE (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	FOR OFFICIAL USE ONLY
Jianli Chen, Breeder Gaylene Anderson, Licensing Associate	Jianli Chen: U of I Aberdeen R & E center, 1691 S 2700 W, Aberdeen, ID83210 Gaylene Anderson: University of Idaho, Office of Technology Transfer, Morrill Hall 414, P.O. Box 443003	PVPO NUMBER: #201000086

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

Jianli Chen
Signature

11/09/09
Date