No. 201400386

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.)

MUSTARD, WHITE

'White Gold'

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 twenty-eighth day of November, in the year* ***two thousand and sixteen.***

Attest:

Commissioner
Plant Variety Protection Office

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
UI.3277.74.WH.8.6

3. VARIETY NAME
White Gold

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
University of Idaho,
OTT, Morrill Hall 414
875 Perimeter Dr MS 3003
Moscow, Idaho, 83844-3003

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

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

FOR OFFICIAL USE ONLY

July 9, 2014

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

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)*

Include on all communications:

Jack Brown
University of Idaho PSES Dept
875 Perimeter Dr MS 2339
Moscow, ID, 83844-2339

Karen Stevenson
OTT, Morrill Hall 414
875 Perimeter Dr MS 3003
Moscow, ID 83844-3003

FEES RECEIVED

FILING AND EXAMINATION FEE
$ 4382.00
DATE 7/9/2014

CERTIFICATE FEE:
$
DATE

11. TELEPHONE (Include area code)
(208) 885 4550 and
(208) 885 7078

12. FAX (Include area code)
(208) 885 4551 and
(208) 885 7760

13. E-MAIL
jbrown@uidaho.edu & karens@uidaho.edu

14. CROP KIND *(Common Name)*
Yellow mustard

16. FAMILY NAME *(Botanical)*
Brassicaceae

15. GENUS AND SPECIES NAME OF CROP
Sinapis alba L.

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

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (***OPTIONAL***)
☐ YES X 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. X Exhibit A. Origin and Breeding History of the Variety
b. X Exhibit B. Statement of Distinctness
c. X Exhibit C. Objective Description of Variety
d. X Exhibit D. Additional Description of the Variety *(Optional)*
e. X Exhibit E. Statement of the Basis of the Owner's Ownership
f. X Exhibit F. Declaration Regarding Deposit
g. X 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)*
X 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?
X YES ☐ NO
IF YES, WHICH CLASSES? X FOUNDATION ☐ REGISTERED X CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
X YES NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. 1
X FOUNDATION ☐ REGISTERED X 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?
X 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 X NO
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

NAME *(Please print or type)*
Jack Brown

CAPACITY OR TITLE
Professor/Plant breeder

DATE
4/7/2014

SIGNATURE OF OWNER
Karen A Stevenson

NAME *(Please print or type)*
Karen A. Stevenson

CAPACITY OR TITLE
Licensing Associate

DATE
7/9/2014

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

REC'D 7/9/2014

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.)*
Foundation seed of White Gold was sold in May 2014 to be planted for increasing certified seed.

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).)*

'White Gold'
Yellow Mustard
***Sinapis alba* L.**

Exhibit A: Origin and Breeding History

'White Gold' is a yellow condiment spice mustard (*Sinapis alba* L.) cultivar developed for use as a condiment spice by the Idaho Agricultural Experiment Station and released in April 2014. This cultivar is protected by U.S. Plant Variety Protection (PVP pending).

White Gold is an open-pollinated cultivar selected for high adaptation to the dry-land environments of the Pacific Northwest (Idaho, Oregon and Washington). The cultivar was developed from a population selected from an accession (SIN 32/77) supplied by the Central Institute of Genetics and Crop Plant Research in the German Democratic Republic (DDR), now the Leibniz Institute of Plant Genetics and Crop Plant Research. The original breeding population was evaluated in the field during 1994, and further replicated field evaluation began using this seed source in 1995. After the initial evaluation, the population was re-designated as SN-3277 (i.e. *Sinapis alba* 3277) and later as UI.3277.

UI.3277 was evaluated as a bulk population over 4 years in local yield trials and thereafter tested in the Pacific Northwest Regional Mustard Variety Trials (PNWMVT) from 1998-2001. Throughout this time the population bulk showed good adaptability with yield potential, bright colored large yellow seeds and with good pungency.

In fall of 2001, 400 single plant selections were taken from the UI.3277 bulk population, and one seed from each plant was planted in a pot in the greenhouse. Non-uniform variants or off-type plants were removed throughout the growing season. In spring 2002, seed from 280 of the greenhouse increased plants were planted in pre-breeder seed plots and Breeders Seed was harvested by bulking uniform plots at harvest. This seed source was then used to evaluate the 'selected' UI.3277 in the PNWMVT trial 2004-2008. Results from these evaluations showed that the cultivar still had commercial potential but release was delayed because a number of white flower variants (most likely arising from natural mutation) were observed in the selected population.

In summer of 2007 80 white flower mutants were tagged and later harvested and threshed separately at maturity. Seed from these selections were grown in the greenhouse in fall of 2007, harvested in spring of 2008, and grown in bulk yield trials and progeny yield trials that summer. From among these initial 80 mutant lines, one superior population was selected (UI.3277.74.WH.8.6) and used to plant Breeders' seed of White Gold in spring of 2012. Foundation seed was planted in spring of 2013 and harvested in the fall.

During certification of Breeders and Foundation seed, less than 100 yellow flower variants per acre were observed (i.e. less than 100 of a possible 500,000 plants or 1:5000).

'White Gold'
Yellow Mustard
***Sinapis alba* L.**

Exhibit B: Statement of Distinctness

White Gold is most similar in plant appearance to the spring canola cultivar IdaGold (Brown et al., 1997). However, White Gold has markedly different flower petal color. IdaGold flowers (similar to all other yellow mustard cultivars) has bright yellow flower petal color, compared to White Gold which has a pale, white-cream colored flower (Figure B1).

References

Brown, J., J.B. Davis, A.P. Brown, D.A. Erickson and L. Seip, 1997. Registration of 'IdaGold' spring rapeseed. *Crop Sci.* 38:541.

Figure B1. Flower color comparison between IdaGold and White Gold Yellow mustard.

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

dbc 11/20/2014

OBJECTIVE DESCRIPTION OF VARIETY
YELLOW CONDIMENT MUSTARD (*Sinapis alba* L.)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
University of Idaho ~~Idaho Agricultural Experiment Station~~	UI.3277.74.W.8.6	'White Gold'

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

College of Agricultural and Life Sciences, University of Idaho
875 Perimeter Drive MS 2337, Moscow, ID 83844-2337

FOR OFFICIAL USE ONLY

PVPO NUMBER
201400386

1. SPECIES

Sinapis alba L.

2. TYPE

* _X_ Spring type ____ Winter type

3. PLANT HEIGHT (at pod maturity)

_125.2_ cm Tall (compare to standard variety below)

___ ___.___ cm shorter than Check variety: _____/_____

Height same as Check variety: _____/_____

3.8 cm taller than Check variety: _Tilney___

* Height Class: _4_

1 = Short ( )
2 = Medium short ( )
3 = Medium ( )
4 = Medium tall (X)
5 = Tall ( )

4. STEM ANTHOCYANIN

_3_ 1 = Absent (1) 2 = Weak ( ) 3 = Medium (x) 4 = Strong ( )

5. SEED COTYLEDONS (maximum width fully developed; mean of 50 graded seeds)

_3_ 1 = Narrow ( ) 2 = Medium ( ) 3 = Broad (x)

6. SEEDLING GROWTH HABIT (leaf rosette)

_1_ 1 = Upright 2 = Prostrate (short photoperiod)

7. LEAVES

* _4_ Margins (serration): 1 = Absent or very weak (Akela) 2 = Weak (Arvor, Jet Neuf) 3 = Medium (Primor) 4 = Strong (Candle, Kentan)

* _5_ Lobing (fully developed leaf on plant or rosette)
1 = Absent or very weak ( ) 2 = Weak ( ) 3 = Medium ( )
4 = Medium Strong ( ) 5 = Strong ( )

* _3_ Leaf Attachment to Stem: 1 = Fully clasping ( ) 2 = Partial clasping ( ) 3 = No Clasping (X)

* _1-2_ Color: 1 = Light green ( ) 2 = Medium green (X) 3 = Medium dark green ( ) 4 = Dark green ( )

* _1_ Glaucosity: 1 = Absent (X) 2 = Weak ( ) 3 = Weak to Medium ( ) 4 = Medium ( ) 5 = Medium to strong ( ) 6 = Strong ( )

8. FLOWERS

* _1_ Flower Buds Location 1 = Buds at tip of apical meristem (X) 2 = Buds immediately below apical meristem ( )

* _4_ Petal color: 1 = Pale yellow ( ) 2 = Yellow () 3 = Orange ( ) 4 = White (x)

_1_ Anther Dotting (at opening of flower; given as percentage:__0%__)
1 = Absent (X) 2 = Few ( ) 3 = Medium ( ) 4 = Many ( )

* _3_ Flowering class (Spring sown)
1 = Very early ()
2 = Early ()
3 = Medium early (X)
4 = Medium late ( )
5 = Late ()
6 = (Very late)

9. PODS (Slique)

* _1_ Pod type: 1 = Bilateral single pod (X) 2 = Other ( )

* _3_ Silique beak length: 1 = Short ( ) 2 = Medium () 3 = Long (x)

* _1_ Pod length; (give length: 16.6 mm) 1 = Short (x) 2 = Medium ( ) 3 = Long ( )

* _3_ Pod width; (give width: _4.2 mm) 1 = Narrow ( ) 2 = Medium ( ) 3 = Wide (x)

* _5_ Pod habit: 1 = Erect ( ) 2 = Semi-erect to erect ( ) 3 = Semi-erect ( ) 4 = Horizonal to semi-erect (x) 5 = Horizonal ( )

* _1_ Pedicel length: (give length: 13.6 mm) 1 = Very short (x) 2 = Short ( ) 3 = Long ( )

* _2_ Ripening Class (Spring sown): 1 = Very early ( ) 2 = Early (X) 3 = Medium ( ) 4 = Late ( ) 5 = Very late ( )

* _107 Days to Maturity

* _/_ Days earlier than Check variety: _____/_____

* Maturity same as Check variety: _____/_____

* _2__Days later than Check variety: Tilney

10. SEEDS

* 5.84 g/1000 unsized seed

more
* 0.32 g ~~less~~ than Check variety: IdaGold see Table D1

* Weight same as Check variety: _____/_____

* _/__ g more than Check variety: _____/_____

* _4_ Weight Class (grams): 1 = less than 2.0 ( ) 2 = 2.0 – 2.5 ( ) 3 = 2.5-3.0 (X) 4 = more than 3.0 ( )

* _1_ Seeds Per Pod: (give number: _6.51_ per pod): 1 = Low (x) 2 = Medium ( ) 3 = High ( )

* _4_ Testa Color: 1 = Brown () 2 = Reddish-brown ( )
3 = Yellow ( ) 4 = Orange/yellow (X)
5 = Other _____

dbc 11/20/2014

11. CHEMICAL COMPOSITION OF SEED

* _2_ Euric Acid: 1 = Low (less than 2%) 2 = Intermediate (2-50%) 3 = High (more than 50%): (given as 250 gram/kg of seed oil)

* _3_ Glucosinate Content; (give: 157 µmol/gram defatted seed meal). See Comments for glucosinolate profile.
1 = Low – less than 30 µmol/gram defatted seed meal ( ) 2 = Moderatly high 30-150 µmol/gram defatted seed meal;
3 = High – More than 150 µmol/gram defatted seed meal

* _27.8_ % Oil

_N/A_ Protein (oil free meal)

Fatty Acid Composition (%):

Palmitic	Stearic	Oleic	Linoleic	Linolenic	Eicosenoic	Erucic
16:0	18:0	18:1	18:2	18:3	20:1	22:1
* _2.4_	_1.0_	_30.7_	_9.5_	_9.5_	_9.4_	_33.7_

12. FROST TOLERANCE (Late spring frosts)

* _2_ Tolerance: 1 = Not hardy – susceptible ( ) 2 = Moderately suscesptible (x) 3 = Moderately resistant ( ) 4 = Hardy ( )

13. LODGING RESISTANCE

* _4_ Resistance: 1 = Weak ( ) 2 = Moderately weak ( ) 3 = Moderately strong ( ) 4 = Strong ( )

14. HERBICIDE RESISTANCE

* ___ Atrazine: 1 = Susceptible (Jet Neuf) 2 = Resistant ( )

* ___ Other _____: 1 = Suscept) 4 = Hardy (Bridger)

* _X_ None

15. DISEASE RESISTANCE (0 = Not tested 1 = Susceptible 2 = Low resistance 3 = Moderate resistance 4 = High resistance)

* _0_ Selerotinia Stem Rot (Scerotinia sclerotiorum)

* _0_ Black Let, Stem Canker (*Leptosphaeria maculans*, *Plenodomus lingum*, *Phoma lingam*)

* _0_ White Rust (*Albugo candida*, *A. Cruciferrarum*)

* _0_ Light Leaf Spot (*Pyrenopeziza brassicae*)

* _0_ Downy Mildew (*Peronospora parasitica*)

* _0_ Rhizoctonia Root Rot (*Rhizoctonia solani*)

* _0_ Alternaria Black Spot (*Alternaria brassicicola*)

* _0_ Other _____

16. COMMENTS (Please give any additional comments which characterizes the variety)

Seed glucosinolate profile and total (µmol gm^{-1})

Total	Progoitrin	Sinalbin
157.0	3.0	154.0

17. DIRECTIONS

Select the number which characterizes the variety in the features above. Those characteristics marked with an asterisk "*" should be recorded. Any others should be recorded if possible to help establish novelty or uniqueness. Characteristics described, including numerical measurements, should represent those that are typical for the variety. Give test area _____ conditions _____.

18.

'White Gold'
Yellow Mustard
***Sinapis alba* L.**

Exhibit D: Additional Description of Variety

Morphology and agronomic performance of White Gold were compared to IdaGold yellow mustard (Brown *et al.*, 1998) and/or Tilney yellow mustard. IdaGold was developed at the University of Idaho and has been grown commercially throughout the Pacific Northwest and over a wide range of environments throughout the USA. Tilney was developed by Reckitt & Colman Ltd in England, UK, and has been grown commercially in many mustard producing regions of the world.

Peduncle length, pod length and beak length of White Gold seed pods are all significantly shorter that those from IdaGold (Table D1). White Gold also has significantly fewer seeds per pod that IdaGold but White Gold seeds are significantly larger (considered to be an indicator of high quality) (Table D1).

White Gold plants emerge and establish quickly in the spring, significantly better than Tilney (Table D2). White Gold plants reach 50% flower bloom 58-59 days after planting which was similar to both IdaGold and Tilney (Table D3). After flower ending, White Gold plants were on average 49 inches tall, similar height to IdaGold but significantly taller than Tilney (Table D4). White Gold plants have stiff stems and are not prone to lodging at maturity (Table D5).

Yield performance of White Gold was compared to IdaGold and Tilney when grown in the Pacific Northwest Mustard Variety Trials (PNWMVT) from 2009 through 2013 (Table D6). Over this period White Gold was evaluated for yield potential over 44 different environments covering a range of locations throughout Idaho, Washington and Oregon. Yellow mustard crops in general are suited to the drier and hotter regions of the Pacific Northwest, and this was represented in the sites used for the PNWMVT trials. Sites used for the PNWMVT included traditional tillage systems and direct seed systems. Averaged over the 44 year-sites, White Gold produced 1,679 kg ha^{-1}, which was significantly higher yielding than IdaGold (1,594 kg ha^{-1}) or Tilney (1,585 kg ha^{-1}). Over the 5 years of testing, White Gold was the highest yielding cultivars in 4 of the years.

Total seed glucosinolate content of White Gold was significantly lower than the high glucosinolate cultivar IdaGold (Table D7). The seed glucosinolate composition of White Gold was similar to IdaGold with over 98% of the total glucosinolate being *p*-hydroxybenzyl glucosinolate. Despite having significantly larger seed size, seed mucilage content of White Gold was not significantly lower than the high mucilage cultivar IdaGold (Table D8). However, over the 4 years of mucilage testing (11 year-sites) White Gold mucilage content was significantly lower than Tilney.

Seed oil content of White Gold was significantly higher (278 g kg^{-1}) than both IdaGold (265 g kg-1) and Tilney (264 g kg^{-1}) (Table D9). It should be noted that all three cultivar oil

contents were well within the industry standards for high quality condiment mustard. Fatty acid profile of White Gold seed oil was almost identical to that produced by IdaGold (Table D10). Fatty acid profile of condiment yellow mustard seed oil is not considered a quality consideration and is presented here purely for descriptive purposes.

Table D1. Peduncle, pod, and beak length, number of seeds per pod and weight of 1,000 seeds of White Gold, IdaGold and Tilney. Data are collected from replicated field trials grown at 4 locations.

Cultivar	Length of Peduncle	Length of Pod	Length of Beak	Number of seeds	1000 seed weights
	---------- mm ----------			- no. pod^{-1} -	-grams-
IdaGold	14.1 [a]	17.3 [a]	20.2 [a]	7.15 [a]	5.52 [b]
White Gold	13.4 [b]	16.2 [b]	18.0 [b]	6.51 [b]	5.84 [a]
Average	13.6	16.6	18.9	6.81	5.60
LSD 5%	0.61	0.62	0.80	0.37	0.24

Means within columns with different superscript letters are significantly different (P<0.05).

Table D2. Crop establishment of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009 to 2013 in the Pacific Northwest Mustard Variety Trials.

Cultivar	Average	Rank	Year 2013	2012	2011	2010	2009
			---------- 1-9 Scale † ----------				
IdaGold	7.74 [ab]	2	8.30	7.30	7.30	7.40	8.40
Tilney	7.30 [b]	3	7.40	6.90	7.10	7.10	8.00
White Gold	8.06 [a]	1	8.40	7.40	7.90	8.10	8.50
Average	7.70	-	8.03	7.20	7.43	7.53	8.30
LSD 5%	0.42	-	0.54	0.31	0.45	0.38	0.41

† 1= Poor establishment; 9=Excellent establishment; Means within columns with different superscript letter are significantly different (P<0.05)

Table D3. Days to 50% flower bloom of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009 to 2013 in the Pacific Northwest Mustard Variety Trials.

Cultivar	Average	Rank	Year 2013	2012	2011	2010	2009
			---------- DAP † ----------				
IdaGold	57.6	3	50.6	55.0	60.7	63.5	58.1
Tilney	58.0	2	50.8	56.4	61.1	63.2	58.7
White Gold	58.5	1	51.3	55.6	60.6	66.9	58.2
Average	58.0	-	50.9	55.7	60.8	64.5	58.3
LSD 5%	1.52	-	1.54	1.21	2.40	1.09	1.38

† Days after planting to 50% flower bloom;

Table D4. Plant height (after flower ending) of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009 to 2013 in the Pacific Northwest Mustard Variety Trials.

			Year				
Cultivar	Average	Rank	2013	2012	2011	2010	2009
			cm				
IdaGold	124 [b]	2	123	124	125	136	113
Tilney	121 [c]	3	122	121	120	135	109
White Gold	125 [a]	1	124	122	125	145	111
Average	124	-	123	122	123	138	111
LSD 5%	1.6	-	1.2	1.7	1.3	1.8	2.1

Means within columns with different superscript letter are significantly different (P<0.05)

Table D5. Plant lodging of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009 to 2013 in the Pacific Northwest Mustard Variety Trials.

			Year				
Cultivar	Average	Rank	2013	2012	2011	2010	2009
			1-9 Scale †				
IdaGold	8.8	1	9.0	9.0	9.0	7.9	9.0
Tilney	8.7	2	8.5	9.0	9.0	8.2	8.7
White Gold	8.4	3	8.3	9.0	9.0	7.3	8.5
Average	8.6	-	8.6	9.0	9.0	7.8	8.7
LSD 5%	0.13	-	0.11	n.s.	n.s.	0.19	0.09

† 1= Severe plant lodging; 9= No plant lodging

Table D6. Seed yield of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009 to 2013 in the Pacific Northwest Mustard Variety Trials.

			Year				
			2013	2012	2011	2010	2009
			Number of Sites				
Cultivar	Average	Rank	7	9	9	8	11
	kg ha^{-1}		kg ha^{-1}				
IdaGold	1,594 [b]	1	1,899	1,412	1,597	1,639	1,512
Tilney	1,585 [b]	2	2,115	1,305	1,558	1,633	1,463
White Gold	1,679 [a]	3	1,884	1,456	1,835	1,713	1,577
Average	1,619	-	1,966	1,391	1,663	1,662	1,517
LSD 5%	415	-	502	377	362	471	361

Means within columns with different superscript letter are significantly different (P<0.05)

Table D7. Total seed meal glucosinolate content and glucosinolate profile of White Gold and IdaGold condiment yellow mustard.

	Glucosinolate profile		
Cultivar	Progoitrin†	Sinalbin	Total
	------ µmol g^{-1} defatted seed meal -----		
IdaGold	8.5	162.7	171.2
White Gold	3.0	154.0	157.0
s.e. mean	0.1	4.4	4.3

† Progoitrin = 2-Hydroxy-3-Butenyl glucosinolate; Sinalbin = p-Hydroxybenzyl glucosinolate.

Table D8. Seed mucilage content of White Gold, IdaGold and Tilney yellow mustard. Data collected from regional field trials grown between 2009 and 2012.

			Year			
			2009	2010	2011	2012
			---------- Number of Sites ----------			
Cultivar	Mean	Rank	5	4	3	3
	cSt*ml g^{-1}		---------- centistokes*ml g^{-1} ----------			
IdaGold	45.21 [b]	2	47.46	45.85	30.00	55.82
Tilney	50.63 [a]	1	50.03	52.41	31.37	68.52
White Gold	**44.54** [b]	**3**	**50.76**	**40.01**	**23.42**	**61.32**
Mean	46.41	-	48.11	46.40	29.02	65.35
LSD 5%	4.86	-	7.81	6.91	6.17	15.42

Means within columns with different superscript letter are significantly different (P<0.05)

Table D9. Seed oil content of White Gold, IdaGold, and Tilney condiment mustard evaluated from 2009, 2010 and 2012 Pacific Northwest Mustard Variety Trials.

			Year		
			2012	2010	2009
			------ Number of Sites ------		
Cultivar	Average	Rank	4	4	3
	g kg^{-1}		---------- g kg^{-1} ----------		
IdaGold	265 [b]	1	272	283	233
Tilney	264 [b]	2	273	281	230
White Gold	278 [a]	3	287	293	245
Average	269	-	277	286	236
LSD 5%	30	-	39	25	25

Means within columns with different superscript letter are significantly different (P<0.05)

Table D10. Fatty acid profile of White Gold and IdaGold seed oil.

	Fatty acid profile						
Cultivar	16:0†	18:0	18:1	18:2	18:3	20:1	22:1
	---------- g kg^{-1} ----------						
White Gold	2.4	1.0	30.7	9.5	9.5	9.4	33.7
s.e. mean	0.05	0.00	1.08	0.16	0.21	0.23	1.17
IdaGold	3	1.1	28.1	10.2	10.3	11.1	33.8
s.e. mean	0.04	0.02	0.42	0.14	0.06	0.08	0.56

† 16:0 = palmitic acid; 18:0 = stearic acid; 18:1 = oleic acid; 18:2 = linoleic acid; 18:3 = linolenic acid; 20:1 = eicosenoic acid; and 22:1 = erucic acid.

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)

University of Idaho

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
UI.3277.74.WH.8.6

3. VARIETY NAME

White Gold

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*

OTT, PO Box 443003
Morrill Hall 414
Moscow, Idaho, 838443003

5. TELEPHONE *(Include area code)*

208 885 4550

6. FAX *(Include area code)*

208 885 4551

7. PVPO NUMBER

201400386

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** [X] **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? [X] **YES** [ ] **NO** **If no, please answer <u>one</u> 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 *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

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.

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, OTT, Morrill Hall 414 875 Perimeter Dr. MS 3003 Moscow, Idaho, 83844-3003	VARIETY NAME **White Gold**
NAME OF OWNER REPRESENTATIVE (S)	**ADDRESS** *(Street and No. or RD No., City, State, and Zip Code and Country)*	**FOR OFFICIAL USE ONLY**
Jack Brown & Karen Stevenson	**Jack Brown** Univ of Idaho PSES 875 Perimeter Dr. MS 2339 Moscow, ID 83844-2339 **Karen Stevenson** OTT, Morrill Hall 414 875 Perimeter Dr. MS 3003 Moscow, ID 83844-3003	**PVPO NUMBER** 201400386

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.

Karen A Stevenson

Signature

07/09/2014

Date