No. 201600071

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, INDIA

'IndiGold'

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	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME	3. VARIETY NAME
University of Idaho	03.BJIMI.15.2	IndiGold

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*	5. TELEPHONE *(include area code)*	FOR OFFICIAL USE ONLY
University of Idaho OTT, PO Box 443003 Morrill Hall 414 Moscow, Idaho, 83844-3003	(208) 885 4550 6. FAX *(include area code)* (208) 885 4551	PVPO NUMBER 201600071 FILING DATE 1/27/2016

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION
University of Idaho	N/A	N/A

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*	11. TELEPHONE (Include area code)	FEES RECD	FILING AND EXAMINATION FEES:
Jack Brown PSES, CALS 875 Perimeter Dr. MS 2339 University of Idaho Moscow, ID 83844-2339 Include on all communications: Karen Stevenson OTT, 875 Perimeter Dr. MS 3003 Morrill Hall 414 Moscow, ID 83844-3003	(208) 885 7078 and (208) 885 4550 12. FAX (Include area code) (208) 885 7760 and (208) 885 4551		$ 4382.00 DATE 1/27/2016 CERTIFICATION FEE: $ DATE

13. E-MAIL
jbrown@uidaho.edu, copy to karens@uidaho.edu

14. CROP KIND *(Common Name)*	15. GENUS AND SPECIES NAME OF CROP	16. FAMILY NAME *(Botanical)*
Indian mustard	*Brassica juncea* L.	Brassicaceae

17. IS THE VARIETY A FIRST GENERATION HYBRID?	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL)	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 ■ NO	☐ YES ■ NO IF YES, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	■ YES *(If "yes", answer items 21 and 22 below)* ☐ NO *(If "no", go to item 23)* ☐ UNDECIDED

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. ■ Filing and Examination Fee ($4,382), mDNH FKHFNV payable to "Treasurer of the United States"
(Mail to the Plant Variety Protection Office) RWKHU PHWKRGV RI SDIPHQW H[SODLQHG LQ WKH LQVWUXFWLRQV

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.
X FOUNDATION ___REGISTERED X CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

MAH
8-11-2016

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
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 will be furnished directly to an acceptable depository in support of the variety within three months of filing. Seed will be replenished upon request in accordance with such regulations as may be applicable. For a tuber propagated variety or vegetative propagated parent of the variety, a tissue culture or vegetative sample will be deposited in a public repository within three months of the date of the certificate fee request letter. These will be maintained for the duration of the certificate."
The undersigned owner(s) is (are) the owner(s) 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)*		NAME *(Please print or type)*	
Jack Brown		Karen A Stevenson	
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Plant Breeder/Professor	5/13/2015	Licensing Associate	1/27/2016

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

Production of IndiGold should be limited to Foundation and Certified seed only (i.e. no Registered seed class).

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.)*

N/A

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).)*

N/A

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

EXHIBIT A – ORIGIN AND BREEDING HISTORY
** Use additional pages as needed

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PVPO NUMBER

1. Name of Owner	2. Temporary Designation or Experimental Name	3. Variety Name
University of Idaho	03.BJIMI.15.2	IndiGold

4. Describe the genealogy (back to and including public and commercial varieties, lines, or clones used) and the breeding method(s). **

See Exhibit A attached below

5. Give the details of subsequent stages of selection and multiplication. **

Year	Detail of Stage	Selection Criteria
See Exhibit A attached below	**See Exhibit A attached below**	**See Exhibit A attached below**

6. Is the variety uniform? ✓ Yes No

How did you test for uniformity?

Variety is visually inspected for morphological uniformity. In addition variety was tested throughout the selection process for seed glucosinolate content and type and seed oil fatty acid profile.

7. Is the variety stable? ✓ Yes No

How did you test for stability? Over how many generations?

The variety has been field tested over multiple years and sites and found to have stable performance.

8. Are genetic variants observed or expected during reproduction and multiplication? Yes ✓ No

If yes, state how these variants may be identified, their type and frequency.

No off-types or variants were observed in any of the seed increase stages

'IndiGold'
Condiment Indian Mustard
(*Brassica juncea* L.)

Exhibit A: Origin and Breeding History

IndiGold is a pure-line (near homozygous) condiment Indian mustard cultivar that was selected for high adaptability to dryland farming regions of northern Idaho and eastern Washington.

This cultivar was developed from a single plant selection in 2003 from a population from the cross 'Pacific Gold'/'Clearwater', that was thereafter backcrossed twice to 'Pacific Gold'. Pacific Gold (PI No. _____; PVP No. 200300202) is an Indian mustard cultivar developed by the University of Idaho (Brown *et al.,* 2015). Clearwater is an imidazolinone tolerant spring canola (*Brassica napus* L.) cultivar developed by the University of Idaho (Brown *et al.,* 2015). After the initial cross and after each backcross generation, plants were screened by application of a 2x rate of Beyond® herbicide (imazamox) and surviving plants were visually selected to be similar in appearance to Pacific Gold Indian mustard.

From the BC_2F_2 stage (2005) through to the BC_2F_6 stage (2009) the progeny were evaluated initially in single plant plots (2005 and 2006) and thereafter in replicated yield trials at two locations in northern Idaho. At the BC_2F_5 stage, 20 single plants were selected from the population and used to plant further single plant plots the following year. Throughout each of the growing seasons (2005 to 2009), the single plant plots were visually inspected for uniformity and homogeneity. A further 20 single plants were selected from the "best" BC_2F_6 single plant plots. Thereafter, the remainder of the selected single plant plot was bulk harvested and hand threshed, and that seed was used to plant the following year's yield trials. At each generation, the single plant plots were screened for imidazolinone herbicide tolerance by application of a 2x rate of Beyond® herbicide, and any plants showing herbicide damage were eliminated.

In 2010, 200 single plant selections were made from the BC_2F_9 multiplication plots and each plant was threshed separately. Over the winter of 2010-2011, two seeds from each plant were planted into 15-cm pots and grown to maturity in a greenhouse. Prior to flowering, each plant was bagged to minimize cross pollination. At harvest, each plant was harvested separately and evaluated for seed color. Seeds from plants with uniformly yellow/orange seed were retained and used to plant single plant plots in spring of 2011. The growth characteristics of the single plant plots were monitored throughout the growing season and any variants were discarded. At harvest, all non-discarded single plant plots were harvested in bulk as Breeder's Seed. Foundation Seed was planted from this Breeders' Seed stock in 2013.

IndiGold has been observed in yield trials in 2007, 2008 and 2009, and since 2011 the cultivar has been entered into the Pacific Northwest Mustard Variety Trial.

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

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PVPO NUMBER

EXHIBIT B – STATEMENT OF DISTINCTNESS

***** Use additional tables to present clear differences for additional comparison varieties. Use additional pages to present supporting evidence.***

1. Name of Owner	2. Temporary Designation or Experimental Name	3. Variety Name
University of Idaho	O3.BJIMI.15.2	IndiGold

Based on overall morphology, IndiGold _ is most similar to Pacific Gold _. IndiGold most clearly
Applicant's new variety *Most similar comparison variety(ies)* *Applicant's new variety*

differs from Pacific Gold in the following traits Name the specific trait. Then list the value of that trait for each variety in the comparison. Submit
Most similar comparison variety(ies)

appropriate supporting evidence (see the Guidelines for Presenting Evidence in Support of Variety Distinctness in the instructions):

	Eg. Leaf Pubescence ***Eg. Leaf Color*** ***Eg. Plant Height***	***heavy pubescence*** ***Dark Green (5GY 3/4)*** ***200 cm +/- 10 cm (N=25)***	***glabrous*** ***Light Green (2.5GY 8/10)*** ***250 cm +/- 15 cm (N=25)***	***photograph attached*** ***Munsell Color Chart*** ***statistics attached***
	1. Qualitative traits:	**2. Color traits:**	**3. Quantitative traits:**	**4. Other traits:**
Application Variety	Plant height (see attached Table B1)		Glucosinolate type and quantity (see attached statement and Table B2)	Herbicide tolerance (see attached statement)
Comparison Variety 1	Pacific Gold is taller than IndiGold		Pacific Gold has lower seed meal glucosinolates and a different glucosinolate profile	Pacific Gold is susceptible to imidazolinone herbicides and IndiGold is highly tolerant
Comparison Variety 2				
Comparison Variety 3				

***** Use additional tables to present clear differences for additional comparison varieties. Use additional pages to present supporting evidence.***

Exhibit B: Statement of Distinctness

IndiGold is most similar to the Indian mustard cultivar Pacific Gold, the recurrent Indian mustard parent used in its development. However, Pacific Gold is highly susceptible to imidazolinone class herbicides while IndiGold is highly resistant.

Pacific Gold and IndiGold are significantly different in total seed meal glucosinolates and in glucosinolate profile (Table B2). Like its canola parent, IndiGold produced 4-pentenyl glucosinolate, which is not usually produced by *Brassica juncea* L. (Indian mustard) cultivars. Pacific Gold does not produce this glucosinolate. IndiGold has significantly higher total seed meal glucosinolates and significantly higher 2-propenyl glucosinolate, 3-butenyl glucosinolate, 4-pentenyl glucosinolate, and 2-hydroxy-3-butenyl glucosinolate than Pacific Gold.

IndiGold and Pacific Gold have similar leaf structure, but Pacific Gold leaves are larger and more opened (Figure B1).

Table B1. Plant height at maturity of 'IndiGold' and a control cultivar ('Pacific Gold') evaluated in replicated field trials conducted from 2011 to 2014.

Variety	Average		Rank	Plant Height by Year			
				2014	2013	2012	2011
				(2 sites)	(2 sites)	(2 sites)	(2 sites)
				---------- *cm* ----------			
Pacific Gold	147	a	1	130	147	137	173
IndiGold	135	b	2	119	132	130	160
Mean	141			127	141	135	166
LSD 5%	8.4			6.9	11.9	7.6	7.4

Means within columns with different superscript letters are significant (p = 0.05)

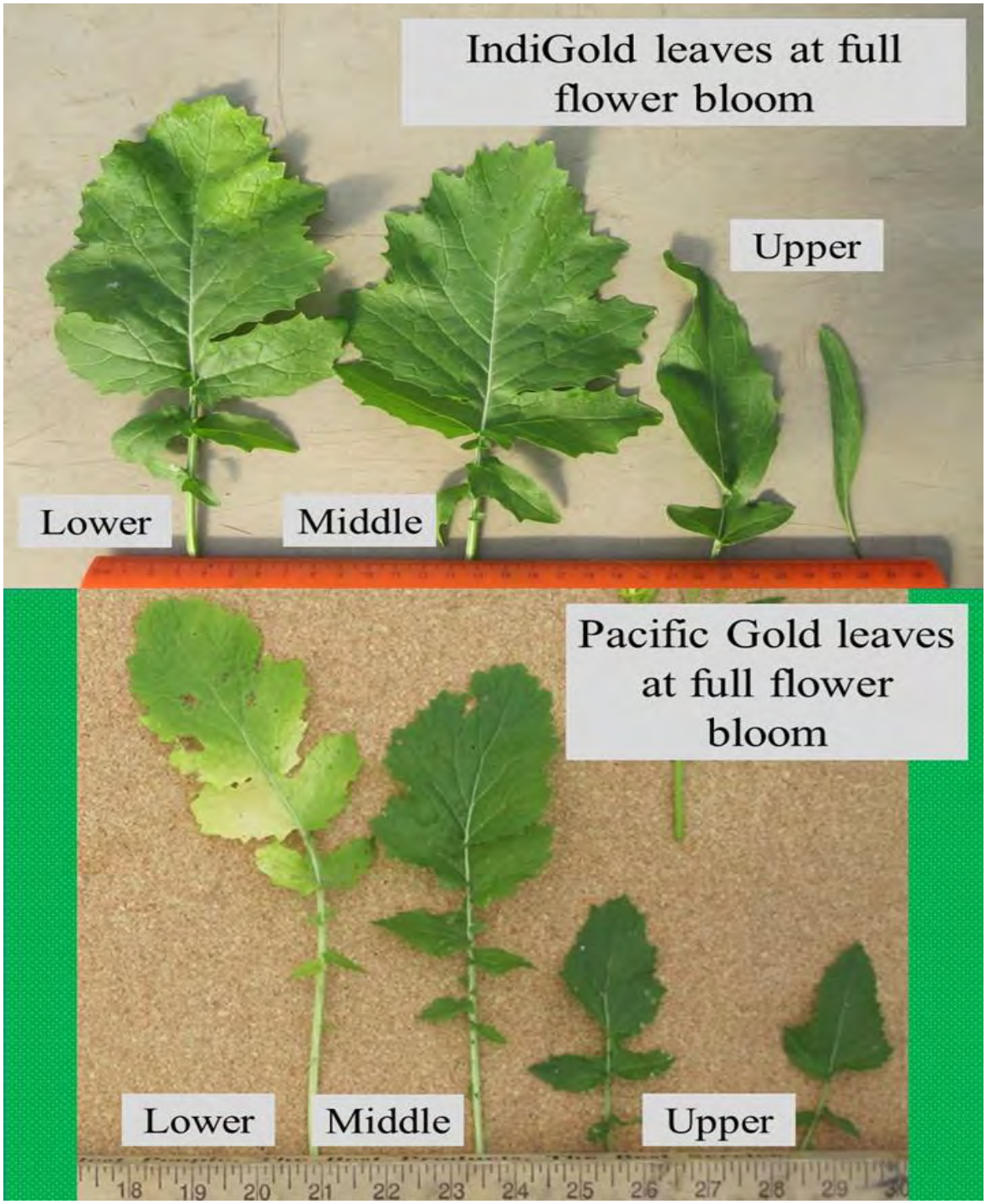
Table B2. Seed meal glucosinolate profile and total glucosinolate content of 'IndiGold' and 'Pacific Gold' grown in replicated field trials at four locations in northern Idaho and eastern Washington in 2013.

Glucosinolate	Cultivar	Average		Sites			
				Craigmont	Davenport	Dayton	Moscow
		---------- micromoles gram^{-1} defatted seed meal ---------					
2-propenyl†	Pacific Gold	149.20	b	134.89	149.4	153.23	159.31
	IndiGold	161.90	a	158.77	161.01	162.69	164.99
3-butenyl	Pacific Gold	1.10	b	0.97	0.95	1	1.31
	IndiGold	2.80	a	3.32	2.05	2.43	3.33
4-pentenyl	Pacific Gold	0.00	b	0	0	0	0
	IndiGold	0.11	a	0.14	0.10	0.06	0.15
2-OH-3-butenyl	Pacific Gold	0.15	b	0.14	0.07	0.12	0.27
	IndiGold	0.70	a	0.57	0.85	0.5	0.9
2-OH-4-pentenyl	Pacific Gold	0.19		0.17	0.2	0.21	0.18
	IndiGold	0.18		0.19	0.18	0.198	0.19
Total	Pacific Gold	151.64	b	138.32	151.14	154.88	162.22
	IndiGold	166.19	a	163.34	164.97	166.32	170.13

2-propenyl glucosinolate; 3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-4-pentenyl glucosinolate.

Means between cultivars with different superscript letters are significant (p =.0.05)

Figure B1. Leaves from the lower to the upper part of the plant from IndiGold and Pacific Gold at full bloom.



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

OBJECTIVE DESCRIPTION OF VARIETY
Indian mustard (*Brassica juncea* L.)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
Idaho Agricultural Experiment Station	03.BJIMI.15.2	'IndiGold'

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

University of Idaho

Moscow, Idaho, 83844-2339

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PVPO NUMBER

201600071

1. SPECIES

Brassica juncea L.

2. TYPE

* **_X_ Spring type** ____ Winter type

3. PLANT HEIGHT (at pod maturity)

_135_ cm Tall (compare to standard variety below)

___12___ cm shorter than Check variety: _Pacific Gold___

Height same as Check variety: _____

___ cm taller than Check variety: ____

* Height Class: _2_

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

4. STEM ANTHOCYANIN

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

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

_2_ 1 = Narrow ( ) **2 = Medium (X)** 3 = Broad ( )

6. SEEDLING GROWTH HABIT (leaf rosette)

_2_ 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 (X-Candle, Kentan)**

* _4_ Lobing (fully developed leaf on plant or rosette)
1 = Absent or very weak ( ) 2 = Weak ( ) 3 = Medium ( )
4 = Medium Strong (X) 5 = Strong ( ) **– See photograph attached**

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

* _2_ Color: 1 = Light green ( ) **2 = Medium green (X)** 3 = Medium dark green ( ) 4 = Dark green ( )

* _2_ Glaucosity: 1 = Absent () **2 = Weak (X)** 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 ( )

* _2_ Petal color: 1 = Pale yellow ( ) **2 = Yellow (X)** 3 = Orange ( ) 4 = White ( )

_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 (Silique)

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

* _2_ Silique beak length: (given length: _8.2_ mm) 1 = Short ( ) **2 = Medium (X)** 3 = Long ( )

* _2_ Pod length; (give length: _26.7_ mm) 1 = Short (x) **2 = Medium (X)** 3 = Long ( )

* _2_ Pod width; 1 = Narrow ( ) **2 = Medium (X)** 3 = Wide ( )

* _4_ Pod habit: 1 = Erect ( ) 2 = Semi-erect to erect ( ) 3 = Semi-erect ( ) **4 = Horizontal to semi-erect (X)** 5 = Horizontal ( )

* _3_ Pedicel length: (give length: _27.6_ mm) 1 = Very short ( ) 2 = Short ( ) **3 = Long (X)**

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

* _45_ Days to 50% bloom

* _1_ Days earlier than Check variety: _Pacific Gold_

* Maturity same as Check variety: _Cutlass_

* ___Days later than Check variety: _N/A_

10. SEEDS

* _3.48_ g/1000 unsized seed

* __ g less than Check variety: _____

* Weight same as Check variety: Cutlass

* _0.25__ g more than Check variety: _Pacific Gold_

* _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 (X)**

* _3_ Seeds Per Pod: (give number: 27.4 per pod): 1 = Low ( ) 2 = Medium ( ) **3 = High (X)**

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

11. CHEMICAL COMPOSITION OF SEED

* _1_ Euric Acid: 2 = Low (less than 2%) 2 = Intermediate (2-50%) 3 = High (more than 50%): (given as 250 gram/kg of seed oil)

* _1_ Glucosinolate Content; (give: _189_ µmol/gram defatted seed meal). See Comments for glucosinolate profile.
1 = Low – less than 30 µmol/gram defatted seed meal ( ) 2 = Moderately high 30-150 µmol/gram defatted seed meal;
3 = High – More than 150 µmol/gram defatted seed meal

* _34.5_ % Oil

34.8 % Protein (oil free meal)

Fatty Acid Composition (g kg^{-1}):

Cultivar	Fatty Acid Profile						
	16:0†	18:0	18:1	18:2	18:3	20:1	22:1
	---------- g kg^{-1} ----------						
IndiGold	24.0	14.3	197.7	208.8	118.0	126.3	255.3
s.e. mean	1.6	0.0	0.1	0.6	0.0	0.7	0.3

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

12. FROST TOLERANCE (Late spring frosts)

* _3_ Tolerance: 1 = Not hardy – susceptible ( ) 2 = Moderately susceptible ( ) 3 = Moderately resistant (x) 4 = Hardy ( )

13. LODGING RESISTANCE

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

14. HERBICIDE RESISTANCE

* _1__ Atrazine: 1 = Susceptible (Jet Neuf) 2 = Resistant ( )

* _4__ Other _Imidazolinone: 1 = Suscept ( ) 4 = Resistant/tolerant (x)

* _1__ Other _Glyphosate, Glufosinate: 1 = Suscept (x) 4 = Resistant/tolerant ()

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)

17.

Seed glucosinolate profile and total (µmol glucosinolate g^{-1} defatted seed meal)

Cultivar	Glucosinolate type					
	2 prop†	3-but	4-pent	2-OH-3-but	2-OH-4-pent	Total
	---------- micromoles gram-1 defatted seed meal ----------					
IndiGold	182.55	4.27	0.30	1.55	0.28	188.95
s.e. mean	6.98	0.26	0.00	0.15	0.04	7.06

† 2-propenyl glucosinolate, 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3-butenyl glucosinolate, 4-pentenyl glucosinolate and 2-hydroxy-4-pentenyl glucosinolate.

18. 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 _Inland Pacific Northwest _conditions _Dryland agriculture.

19. N/A

'IndiGold'
Condiment Indian Mustard
(*Brassica juncea* L.)

Exhibit D: Additional Description of Variety

IndiGold seedlings have small-medium size cotyledons and a semi-upright seedling growth habit at the rosette stage. Leaves are light-mid green in color with very slight glaucosity. Leaves are pointed and leaf margins have a strong serration. Fully developed leaves have high lobing and leaf attachment to the main stem shows no clasping. Flower buds appear at the tip of the apical meristem. Flowers open medium-early (45 days after planting), which is similar to Cutlass and one day earlier than Pacific Gold (Table D1). Petals are bright yellow, and anther dotting is absent. Bilateral single pods (siliques) are semi-erect to erect. Pod length and width is short-medium (26.7 mm long and 4.1 mm wide) with a long pedicel (27.6 mm) and short pod beak (8.2 mm). Each pod contain on average 17.4 bright yellow/orange seeds (Table D2) with a thousand-seed weight of 3.48 g (Table D3).

Plants of IndiGold emerge quickly after planting, and crop establishment is rapid. Plants are mature on average 102 days after planting, being 2-3 days earlier than Pacific Gold. IndiGold is highly resistant to lodging and seed shatter at maturity. IndiGold is moderately susceptible to cabbage flea beetle (*Phyllotreta cruciferae* (*Phyllotreta cruciferae* (Goeze) (Coleoptera: Chrysomelidae)) and cabbage seedpod weevil (*Ceutorhynchus assimilis* Paykull), and diamondback moth (*Plutella xylostella* L.). IndiGold has a short plant stature (135 cm tall at maturity), which was significantly shorter than Pacific Gold's height of 147 cm (Table D4)

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IndiGold has low to intermediate seed oil content (345 g kg^{-1}) that is similar to Pacific Gold (349 g kg^{-1}) and significantly higher than Cutlass (339 g kg^{-1}) (Table D5). Seed fatty acid profile of IndiGold (Table D6) shows high levels of oleic, linoleic and erucic acid (21%, 22% and 27% respectively), intermediate levels of linolenic and eicosenoic acid (12% and 13%, respectively) and low levels of the saturated fats stearic acid and palmitic acid.

IndiGold has high levels of seed meal glucosinolates. Seed meal glucosinolates were determined from replicated field trials in 2013 (Table D7) and were also determined on IndiGold Breeders' Seed grown in 2012 (Table D8). In both cases, IndiGold was compared to Pacific Gold. In the former, the two cultivars were grown side-by-side in the same field trials, while in the latter, the two cultivars were grown in different fields but in the same area and same year. Total seed meal glucosinolates of IndiGold from replicated field trials was 166.2 micromoles $gram^{-1}$ defatted seed meal, which was significantly higher than Pacific Gold at 151.6. Indigold Breeders Seed in 2012 was again markedly higher at 188.9 micromoles $gram^{-1}$ defatted seed meal than Pacific Gold, 164.5 micromoles $gram^{-1}$ defatted seed meal. The primary glucosinolate found in both IndiGold and Pacific Gold was 2-propenyl (allyl) glucosinolate, accounting for 97% and 98%, respectively, of the total glucosinolates in the replicated field trials. IndiGold has significantly higher total seed meal glucosinolates and significantly higher 2-propenyl, 3-butenyl, 4-pentenyl, and 2-hydroxy-3-butenyl glucosinolates than Pacific Gold. Like its canola parent, IndiGold produces 4-pentenyl glucosinolate, which is not usually produced by *Brassica juncea* L. (Indian mustard) cultivars, and Pacific Gold does not produce any of this glucosinolate type.

IndiGold was included in replicated yield trials known as the Pacific Northwest Mustard Variety Trials (PNW-MVT) that were grown in northern Idaho, eastern Washington and north eastern Oregon. The PNW-MVT was planted at 8 sites in 2010, 2013, and 2014, and at 9 sites in 2011 and 2012. At each site and year, cultivars were replicated 4 times in a randomized complete block design with plot size of 1.5 m x 5 m. Averaged over all 42 year*sites, Indigold produced 2,210 kg ha^{-1}, which was significantly higher that Pacific Gold (2,076 kg ha^{-1}) and Cutlass (1,872 kg ha^{-1}). Until IndiGold was entered into the PNW-MVT, Pacific Gold was usually the highest yielding trial entry. In the 42 years*sites where IndiGold was included in these trials, IndiGold out-yielded Pacific Gold at 40 of the 42 years*sites (Table D9).

Table D1. Days from planting to 50% bloom of 'IndiGold' and two controls ('Pacific Gold' and 'Cutlass') evaluated in replicated field trials conducted from 2011 to 2014.

					Days to 50% bloom by Year			
Variety		**Average**		**Rank**	**2014**	**2013**	**2012**	**2011**
					(2 sites)	(2 sites)	(2 sites)	(2 sites)
					Days after planting			
	Pacific Gold	46	a	1	45	43	48	46
	Cutlass	45	a	2	44	43	48	46
	IndiGold	45	a	3	43	42	47	46
Mean		45			44	43	48	46
LSD 5%		0.9			1.1	0.5	0.9	1.2

Means within columns with different superscript letters are significant (p = 0.05)

Table D2. Peduncle, pod length, beak length and number of seeds per pod of 'IndiGold and one control cultivar (Pacific Gold') evaluated in replicated field trials at three locations in 2013.

	Length of				**Seeds**
Cultivar	**Peduncle**		**Pod**		**Beak**	**per Pod**
	cm					**- ct -**
Pacific Gold	19.9	b	30.9	a	8.1	17.7
IndiGold	27.6	a	26.7	b	8.2	17.4
Mean	23.8		28.8		8.2	17.6
LSD 5%	1.90		2.30		0.98	1.67

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

Table D3. Thousand-seed weight 'IndiGold and two control cultivars (Pacific Gold' and 'Cutlass') evaluated in replicated field trials conducted at three locations in 2013.

Variety	Average		Rank	1,000 seed weight by Site		
				Dayton	Moscow	Genesee
	---------- *gm* ----------					
Pacific Gold	3.23	a	2	3.30	3.60	2.80
Cutlass	2.97	b	3	3.10	3.15	2.65
IndiGold	3.48	a	1	3.50	3.70	3.25
Mean	3.23			3.30	3.48	2.90
LSD 5%	1.45			0.70	3.35	0.30

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

Table D4. Plant height at maturity of 'IndiGold' and two control cultivars ('Pacific Gold' and 'Cutlass') evaluated in replicated field trials conducted from 2011 to 2014.

Variety	Average		Rank	Plant Height by Year			
				2014	2013	2012	2011
				(2 sites)	(2 sites)	(2 sites)	(2 sites)
	---------- *cm* ----------						
Pacific Gold	147	a	1	130	147	137	173
Cutlass	145	a	2	132	145	137	165
IndiGold	135	b	3	119	132	130	160
Mean	142			127	141	135	166
LSD 5%	8.4			6.9	11.9	7.6	7.4

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

Table D5. Seed oil content of 'IndiGold' and two control cultivars ('Cutlass' and 'Pacific Gold') evaluated in replicated field trials conducted from 2012 to 2014.

			Oil Content by Year		
Variety	**Average**	**Rank**	**2014**	**2013**	**2012**
			(3 sites)	(5 sites)	(4 sites)
	---------- *g kg^{-1}* ----------				
Pacific Gold	349 [a]	1	349	339	361
Cutlass	339 [b]	3	335	329	354
IndiGold	345 [a]	2	342	336	359
Mean	344		342	335	358
LSD 5%	4.8		4.2	4.3	6.0

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

Table D6. Seed oil fatty acid profile of 'IndiGold' based on a sample of breeders seed in 2012.

	Fatty Acid Profile						
Cultivar	**16:0†**	**18:0**	**18:1**	**18:2**	**18:3**	**20:1**	**22:1**
	---------- g kg^{-1} ----------						
IndiGold	24.0	14.3	197.7	208.8	118.0	126.3	255.3
s.e. mean	1.6	0.0	0.1	0.6	0.0	0.7	0.3

† 16:0=Steric acid; 18:0=Palmitic acid; 18:1=Oleic acid; 18:2 = linoleic acid; 18:3 = linolenic acid; 20:1 = eicoseneic acid; 22:1 = erucic acid

Table D7. Seed meal glucosinolate profile and total glucosinolate content of 'IndiGold' and 'Pacific Gold' grown in replicated field trials at four locations in northern Idaho and eastern Washington in 2013.

				Sites			
Glucosinolate	**Cultivar**	**Average**		**Craigmont**	**Davenport**	**Dayton**	**Moscow**
		---------- micromoles gram^{-1} defatted seed meal ---------					
2-propenyl†	Pacific Gold	149.20	b	134.89	149.4	153.23	159.31
	IndiGold	161.90	a	158.77	161.01	162.69	164.99
3-butenyl	Pacific Gold	1.10	b	0.97	0.95	1	1.31
	IndiGold	2.80	a	3.32	2.05	2.43	3.33
4-pentenyl	Pacific Gold	0.00	b	0	0	0	0
	IndiGold	0.11	a	0.14	0.10	0.06	0.15
2-OH-3-butenyl	Pacific Gold	0.15	b	0.14	0.07	0.12	0.27
	IndiGold	0.70	a	0.57	0.85	0.5	0.9
2-OH-4-pentenyl	Pacific Gold	0.19		0.17	0.2	0.21	0.18
	IndiGold	0.18		0.19	0.18	0.198	0.19
Total	Pacific Gold	151.64	b	138.32	151.14	154.88	162.22
	IndiGold	166.19	a	163.34	164.97	166.32	170.13

2-propenyl glucosinolate; 3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-4-pentenyl glucosinolate.

Means between cultivars with different superscript letters are significant (p =.0.05)

Table D8. Seed meal glucosinolate profile and total glucosinolate content of 'IndiGold' Breeders' Seed in 2012 based on 30 samples, compared to 'Pacific Gold' Foundation Seed grown in the same year.

	Glucosinolate type					
Cultivar	**2 prop†**	**3-but**	**4-pent**	**2-OH-3-but**	**2-OH-4-pent**	**Total**
	micromoles gram-1 defatted seed meal					
Pacific Gold	163.65	0.85	0.00	0.00	0.00	164.50
s.e. mean	0.92	0.07	0.00	0.00	0.00	0.85
IndiGold	**182.55**	**4.27**	**0.30**	**1.55**	**0.28**	**188.95**
s.e. mean	**6.98**	**0.26**	**0.00**	**0.15**	**0.04**	**7.06**

† 2-propenyl glucosinolate; 3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-3-butenyl glucosinolate; 4-pentenyl glucosinolate; 2-hydroxy-4-pentenyl glucosinolate.

Table D9. Seed yield of 'IndiGold' and two control cultivars ('Pacific Gold and 'Cutlass') evaluated from replicated field trials from 2010 to 2014.

				Yield by Year				
Variety	**Mean Yield**		**Rank**	**2014**	**2013**	**2012**	**2011**	**2010**
				(8 sites)	(8 sites)	(9 sites)	(9 sites)	(8 sites)
	lbs./acre			*lbs./acre*				
Pacific Gold	2,076	b	2	2,055	2,161	1,843	2,124	2,198
Cutlass	1,872	c	3	1,848	1,966	1,612	2,000	1,932
IndiGold	2,210	a	1	2,188	2,297	1,969	2,283	2,311
Mean	2,052			2,030	2,141	1,808	2,135	2,147
LSD 5%	147			112	119	141	192	171

Means within columns with different superscript letters are significant (p = 0.05)

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

EXHIBIT E - STATEMENT OF THE BASIS OF OWNERSHIP

FOR OFFICIAL USE ONLY

PVPO NUMBER

1. Name of Owner	2. Temporary Designation or Experimental Name	3. Variety Name
University of Idaho	03.BJIMI.15.2	IndiGold

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

5. Is the applicant a U.S. national or a U.S. based entity? **If no, give name of country.** ☑ **YES** ☐ **NO**

6. 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**

7. 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.

REPRODUCE LOCALLY. Include form number and date on all reproductions. Form Approved OMB NO 0581-0055

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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 875 Perimeter Dr., MS 3003 Moscow, ID 83844-3003	VARIETY NAME IndiGold
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 PSES 875 Perimeter Dr., MS2339 Moscow, ID 83844-2339 Karen A. Stevenson OTT 875 Perimeter Dr., MS3003 Moscow, ID 83844-3003	PVPO NUMBER

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

1/27/2016 — Date