

No.

201100403



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Idaho

Whereas, THERE HAS BEEN PRESENTED TO THE

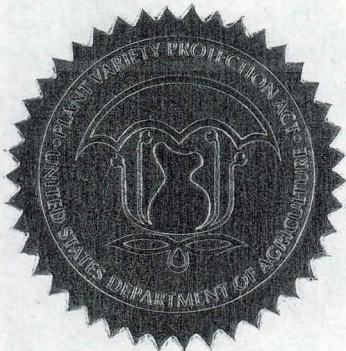
Secretary of Agriculture

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.)

RAPE

'Amanda'



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-fifth day of June, in the year two thousand and fourteen.*

Attest:

Commissioner

Secretary of Agriculture

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

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

Application 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).

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

1. NAME OF OWNER: University of Idaho
2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME: 06.UI.WC.5.09
3. VARIETY NAME: Amanda
4. ADDRESS: University of Idaho, OTT, PO Box 443003, Morrill Hall 414, 875 Perimeter Drive, MS3003, Moscow, Idaho, 83844-3003
5. TELEPHONE: (208) 885 4550
6. FAX: (208) 885 4551
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION: 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: Jack Brown, PSES, CALS, PO Box 442339, University of Idaho, Moscow, ID, 83844-2339; Karen Stevenson, OTT, PO Box 443003, Morrill Hall 414, Moscow, ID 83844-3003; Gaylene Anderson, OTT, PO Box 443003, Morrill Hall 414, Moscow, ID 83844-3003
11. TELEPHONE: (208) 885 4550 and (208) 885 7078
12. FAX: (208) 885 4551 and (208) 885 7760
13. E-MAIL: karens.brown@uidaho.edu & gaylene@uidaho.edu
14. CROP KIND: Rapeseed or Canola
15. GENUS AND SPECIES NAME OF CROP: Brassica napus L.
16. FAMILY NAME: Brassicaceae
17. IS THE VARIETY A FIRST GENERATION HYBRID? [X] YES [] NO
18. DOES THE VARIETY CONTAIN ANY TRANSGENES? [] YES [X] NO
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED: [X] Exhibit A, [X] Exhibit B, [X] Exhibit C, [X] Exhibit D, [X] Exhibit E, [X] Exhibit F, [X] Voucher Sample, [] Filing and Examination Fee
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? [X] YES [] NO [] UNDECIDED
21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? [X] YES [] NO
22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? [] YES [X] NO
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
24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? [] YES [X] NO
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.

dbc 12/12/2013

FOR OFFICIAL USE ONLY
2 0 1 1 0 0 4 0 3
FILING AND EXAMINATION FEE \$ 4,382.00
DATE 6/23/2011
CERTIFICATE FEE: \$
DATE

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: PVP@mail.usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

#201100403

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.) **Amount of seed sold August 2010 and used to plant Certified Seed that will be harvested summer of 2011. Non-certified seed will be sold for crush.**
- 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).)

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

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‘Amanda’
Winter Canola
Brassica napus L.

Exhibit A: Origin and Breeding History

‘Amanda’ is a near-homozygous winter rapeseed [*Brassica napus* L. spp. *oleifera* (Metzg) Sinsk. f. *biennis*] cultivar with canola-quality seed oil and canola-quality seed meal, selected for high adaptability to the dryland and irrigated regions of the inland Pacific Northwest.

This cultivar was developed from a single plant selection in 2004 from an F₈ population from the cross Ceres/Samurai. Ceres is a low erucic acid (less than 20 g kg⁻¹), low glucosinolate content cultivar (less than 30 μmol g⁻¹ of defatted seed meal, developed by Calgene, Inc., California (PVP 8900135, PI 601660). Samurai is a 00 (low erucic acid and low seed meal glucosinolate content) cultivar derived from France.

F₁ seeds from the original cross were produced in 1993 and the F₁ plant generation was increased to F₂ seed in the greenhouse in 1994. Between 1994 and 2001, seed from the original F₂ population were increased to F₇ by five round of natural pollination under field conditions. After each growing season, single plants were selected using a visual assessment of general appearance and pod characteristics. Seed from each single plant were evaluated for oil content, fatty acid profile and glucosinolate content. Seed from plants with high oil content, good fatty acid profiles and low seed glucosinolates, were then bulked together and used to plant the following year’s crop.

In the summer of 2001, 10 single plants were selected from the F₈ population based on visual evaluation of plant uniformity. In the fall of 2001, the seed from each selected plant was planted out as head row (Figure 1). Each head-row plot being a single plot with two rows spaced 18 cm apart and 5 m in length. Head-row plots were visually evaluated for fall establishment, winter survival, days to 50% flowering, plant height, lodging and maturity. At harvest two of the ten head row plots were identified (coded as 93.WC.31.A2.1.2 and 93.WC.31.A2.6).

Ten single plants were taken from each of the two selections and plants were threshed separately. The remainder of the plot was bulked by hand threshing. Seed from the single plant selections were used to plant 10 head row plots in the fall of 2002 (F₁₀) while the bulked seed was used to plant a replicated yield trial in the fall of 2002. Seed from each single plant selected were evaluated for oil content, fatty acid profile and glucosinolate content, and any selections with poor quality were discarded. Head row plots and yield trial plots were visually assessed^{for} fall establishment, winter survival, days to 50% flowering, plant height, lodging and maturity. At harvest one head row was selected from each of the two families for advancement. From each selected head row a further 10 plants were threshed separately, and these seeds used to plant head-row plots in the fall of 2003. The remainder of the 2002-2003 selected head-row plot was bulk threshed by hand and used to plant another replicated yield trial in the fall of 2003 (Figure 1).

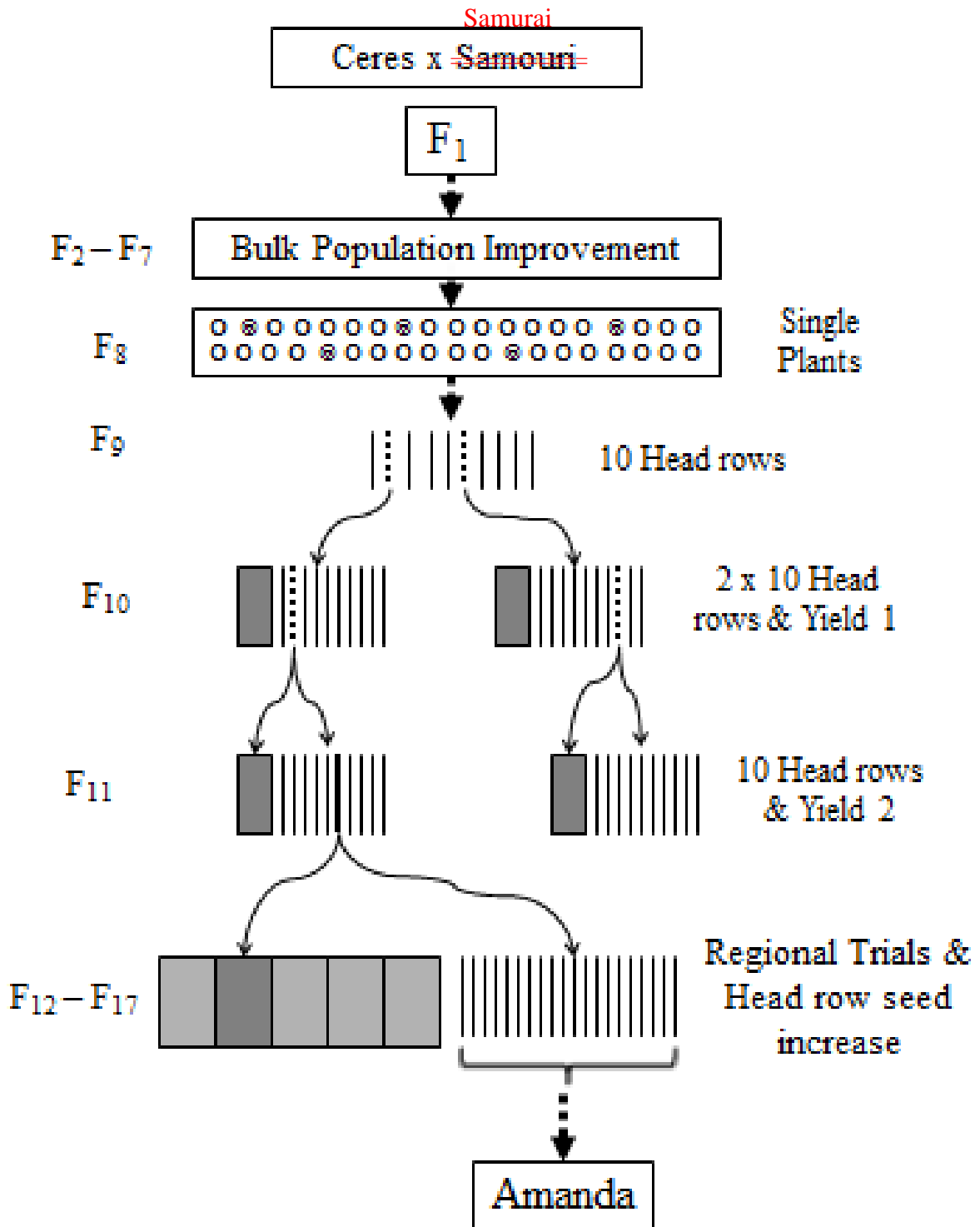
Based on a further round of visual assessment, combined with seed yield and quality information assessed from the yield trials, a single head-row plot was selected in the summer of 2004 (coded as 03.WC.31.34.2122.12 later coded as 06UIWC.5.09). Twenty single plants were threshed separately from this selected head-row plot. In addition the remainder of the 2-row x 5 m plot was bulk harvested by hand threshing. Seed from the single plant selections were used to plant 20 head-row plots in the fall of 2004. The hand threshed bulk seed was used to plant yield trials planted at locations throughout Idaho, Oregon and Washington (the Pacific Northwest Winter Canola Variety Trial). This pattern of screening head-row plots for visual and quality uniformity, ^{was maintained} discarding head-row plots which failed to meet uniformity standards. Each year single plants were threshed separately to plant head-row plots the following year while the bulked head-row plot seed was used to plant regional yield trials.

After the fourth year of regional yield trials 2007-2008, 300 seeds were planted in a glasshouse, artificially vernalized and grown to maturity in the glasshouse. Any plants which did not show visual uniformity were discarded. After harvest each plant was threshed separately and the seed tested for oil content, fatty acid profile and glucosinolate content. Seed from plants which showed high oil content, good fatty acid profile and low seed meal glucosinolate content (290 single plants) were planted in the field in the fall of 2009 to produce Breeders seed. Each single plant from the glasshouse increase was used to plant two 2-rows x 5 m plots arranged at random in the Breeders seed increase block. Plots were visually assessed throughout the growing season for uniformity. Any non-uniform plots were removed and the remaining plots were combine harvested to produce Breeders Seed. Breeder's seed was planted in the fall of 2010 to produce Foundation seed which will be harvested in the summer of 2011. Throughout the stages of Amanda seed increases including pre-Breeders seed, Breeders seed, Foundation seed and finally Certified seed production, plants were consistently uniform and stable, and no variants were observed over this four year period.

References

- Lein, K.A., 1970. Methods for quantitative determination of seed glucosinolates of *Brassica* spp. and their application in plant breeding of rape low in glucosinolate content. *Z. Pflanzenzuecht* 63:137-154.

Figure 1. Breeding scheme used to develop Amanda winter canola.



‘Amanda’
Winter Canola
Brassica napus L.

Exhibit B: Statement of Distinctness

Amanda is most similar in plant appearance (i.e. leaf shape, plant stature, and color) to the cultivar Athena (Brown *et al.*, 2004). However, Amanda plants have a different leaf shape. Amanda lower leaves have greater attachment than those of Athena, and have markedly lower lobbing (Figure 2). Amanda middle leaves are longer and thinner and ~~less~~ lobes have fewer compared to Athena, and Amanda upper leaves are shorter and stubbier than those from Athena.

On average Amanda produced 50% flower bloom after 140 Julian days while Athena flowers significantly earlier, on average 137 Julian days (Table 1). In addition Athena has short stature (on average 136 cm tall) and is significantly shorter than Amanda plants which average 141 cm tall (Table 2).

References

Brown, J., D. Wysocki, J.B. Davis, D.A. Erickson, L. Seip, S. Ott, and T. Gosselin. 2004. Registration of ‘Athena’ winter rapeseed. *Crop Sci* **45**:800-801.

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Figure 2. Lower, middle and upper leaf structure and flowering raceme of Amanda winter canola.

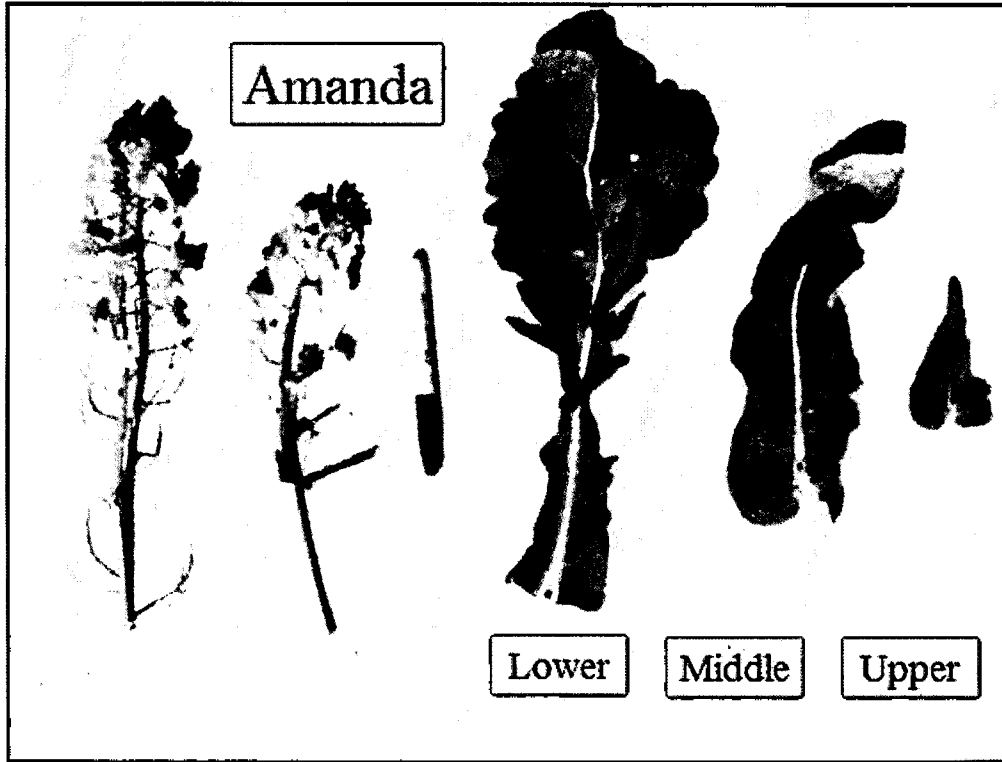


Figure 3. Lower, middle and upper leaf structure and raceme with pods of Athena winter canola.

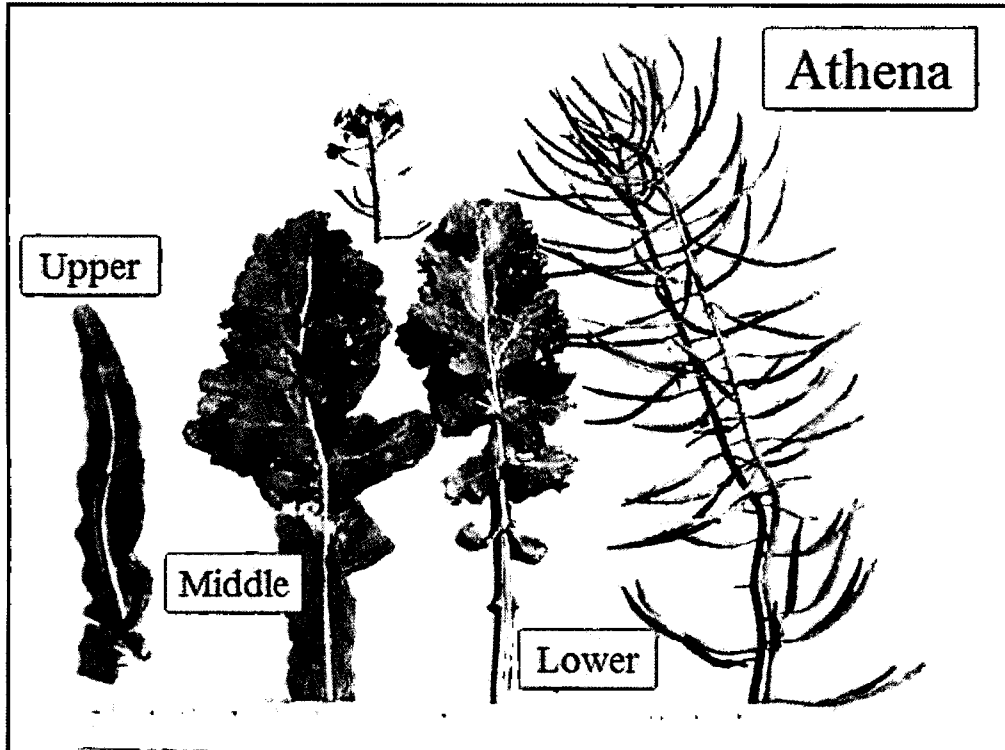


Figure 2. Lower, middle and upper leaf structure and flowering raceme of Amanda winter canola.

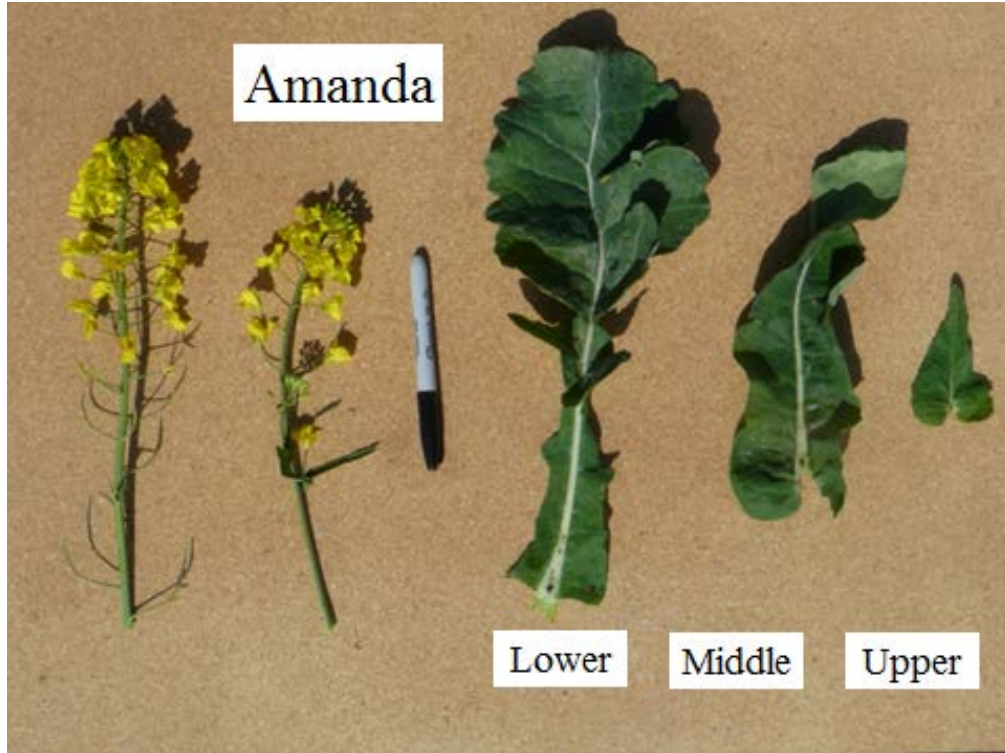
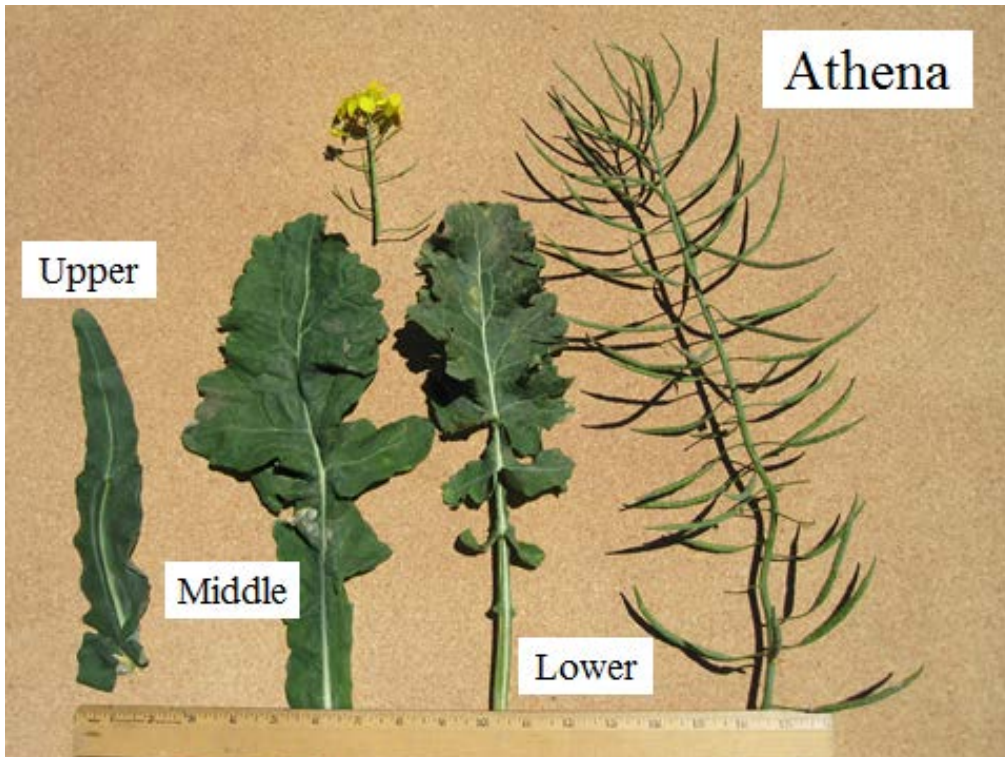


Figure 3. Lower, middle and upper leaf structure and raceme with pods of Athena winter canola.



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

OBJECTIVE DESCRIPTION OF VARIETY
RAPESEED (*Brassica napus* and *B. campestris*)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
University of Idaho	06.UI.WC.5-09	Amanda
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)		FOR OFFICIAL USE ONLY
University of Idaho, PO Box 443003, Morrill Hall 414, 875 Perimeter Drive, MS3003		PVPO NUMBER
Moscow, Idaho, 83844-3003.		# 201100403

1. SPECIES

* Brassica napus ___ Brassica campestris

2. TYPE

* ___ Spring Winter

3. PLANT HEIGHT (at pod maturity)

1 5 2 0 cm Tall (compare to standard variety below)

___ 5 2 cm shorter than Check variety: Baldur

Height same as Check variety: ___

___ 5 1 cm taller than Check variety: Athena

* Height Class: 4 Autumn sown ___ Spring sown

- 1 = Short (Candle) 1 = Short (Erglu)
- 2 = Medium short () 2 = Medium short ()
- 3 = Medium (Jet Neuf) 3 = Medium (Cresus)
- 4 = Medium tall () 4 = Medium tall ()
- 5 = Tall (Dwarf Essex) 5 = Tall (Petranova)

4. STEM ANTHOCYANIN

1 1 = Absent 2 = Weak 3 = Medium 4 = Strong

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

2 1 = Narrow (Erglu) 2 = Medium (Primor) 3 = Broad (Expander)

6. SEEDLING GROWTH HABIT (leaf rosette)

1 1 = Upright 2 = Prostrate (short photoperiod)

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7. LEAVES

- * 2 Margins (serration): 1 = Absent or very weak (Akela) 2 = Weak (Arvor, Jet Neuf) 3 = Medium (Primor) 4 = Strong (Candle, Kentan)
- * 3 Lobing (fully developed leaf on plant or rosette)
1 = Absent or very weak (Akela) 2 = Weak (Arvor) 3 = Medium (Primor)
4 = Medium Strong (Argus) 5 = Strong (Kentan)
- * 2 Leaf Attachment to Stem: 1 = Fully clasping (Candle) 2 = Partial clasping (Jet Neuf) 3 = No Clasping ()
- * 3 Color: 1 = Light green (Arvor) 2 = Medium green (Primor) 3 = Medium dark green (Oro) 4 = Dark green (Brunowski, Rapora)
- * 1 Glaucoesity: 1 = Absent 2 = Weak (Span) 3 = Weak to Medium (Gulliver) 4 = Medium (Magnus) 5 = Medium to strong (Oro) 6 = Strong

8. FLOWERS

- * 1 Flower Buds Location 1 = Buds at tip of apical meristem (Jet Neuf) 2 = Buds immediately below apical meristem (Candle)
- * 2 Petal color: 1 = Pale yellow () 2 = Yellow (Jet Neuf, Primor) 3 = Orange () 4 = White ()
- * 1 Anther dotting (at opening of flower; given percentage %) 1 = Absent () 2 = Few () 3 = Medium (Primor) 4 = Many ()
- * 5 Flowering class (Autumn sown) x Flowering class (Spring sown)
1 = Very early (Arvor) 1 = Very early (Tower)
2 = Early (Primor) 2 = Early (Kosa)
3 = Medium early () 3 = Medium early ()
4 = Medium late () 4 = Medium late ()
5 = Late (X) 5 = Late (Petranova)
6 = Very late () 6 = (Very late)

9. PODS (Slique)

- * 1 Pod type: 1 = Bilateral single pod (Jet Neuf) 2 = Other ()
- * 2 Siliqae beak length: (given length: 12.8 mm. 1 = Short (Forto) 2 = Medium (Liragold) 3 = Long (Rapol)
- * 3 Pod length; (give length: 72 . 9 mm) 1 = Short () 2 = Medium () 3 = Long (x)
- * 2 Pod width; (give width: 5 . 7 mm) 1 = Narrow () 2 = Medium (X) 3 = Wide ()
- * 4 Pod habit: 1 = Erect (Gulliver) 2 = Semi-erect to erect (Oro) 3 = Semi-erect 4 = Horizontal to semi-erect (Brink) 5 = Horizontal
- * 2 Pedicel length: (given length 21.2 mm) 1 = Very short () 2 = Short (x) 3 = Long ()
- * 2 Ripening Class (Autum sown): 1 = Very early () 2 = Early (X) 3 = Medium (x) 4 = Late () 5 = Very late ()
- * 2 1 2 Days to Maturity
- * 3 Days earlier than Check variety: Baldur
- * Maturity same as Check variety: Athena
- * 6 Days later than Check variety: Ericka

10. SEEDS

- * 5 3 g/1000 unsized seed
- * g less than Check variety: _____
- * Weight same as Check variety: Athena
- * 0 6 g more than Check variety: Cascade
- * 4 Weight Class (grams): 1 = less than 3.0 (Candle) 2 = 3.0 - 3.9 () 3 = 4.0 - 5.0 (Jet Neuf) 4 = more than 5.0 (X)
- * 3 Seeds Per Pod: (give number: 28.1 per pod): 1 = Low () 2 = Medium () 3 = High (x)
- * 4 Testa Color: 1 = Black (Jet Neuf) 2 = Red ()
3 = Yellow (Yellow Sarson) 4 = Dark to black (X)
5 = Reddish-brown to black () 6 = Other _____

11. CHEMICAL COMPOSITION OF SEED

* 1 Erucic Acid: 1 = Low (less than 2%) 2 = Intermediate 3 = High (more than 50%)

* 1 Glucosinolate Content; (give: 1 4 3 μmol/gram of defatted seed meal)
1 = Low – less than 30 μmol/gram of defatted seed meal (Candle) 2 = High – More than 30 μmol/gram of defatted seed meal (Mikado)

* 40 2 % Oil

_____ % 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
* <u>4.2</u>	<u>1.6</u>	<u>63.1</u>	<u>19.6</u>	<u>8.4</u>	<u>1.2</u>	<u>0.2</u>

12. FROST TOLERANCE (Late spring frosts)

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

13. LODGING RESISTANCE

* 3 Resistance: 1 = Weak (Span) 2 = Moderately weak (Olga) 3 = Moderately strong (X) 4 = Strong (Torpe)

14. HERBICIDE RESISTANCE

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

* 1 Other Glyphosate & Imaxamox: 1 = Suscept () 4 = Hardy (Bridger)

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

* 0 Sclerotinia Stem Rot (*Scerotinia sclerotiorum*)

* 0 Black Let, Stem Canker (*Leptosphaeria maculans, Plenodomus lingam, 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)

Glucosinolate composition of seed meal (μmol g⁻¹ defatted seed meal)

Butenyl	OH Butenyl	Pentenyl	OH Pentenyl
3.3	10.3	0.5	0.2

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 _____.

‘Amanda’
Winter Canola
Brassica napus L.

Exhibit D: Additional Description of Variety

After fall seeding, Amanda seedlings emerges quickly and produce a good fall stand which was not significantly different from the other three cultivars (Ericka, Athena and Baldur) (Table 3). Amanda showed significantly better winter-hardiness than Athena or Baldur, although all cultivars tested did indeed have good winter-hardiness. Flower bloom dates of Amanda were 134 Julian days, which was significantly later than Athena and Ericka and earlier than Baldur. Amanda plants were on average 152 cm tall after flower ending, and were significantly taller than Athena and Ericka and shorter than Baldur. Amanda is resistant to lodging.

Amanda was evaluated in field trials in Idaho, Washington and Oregon for six growing seasons from 2004-2005 to 2009-2010. All these evaluations trials were part of the Pacific Northwest Winter Canola Variety Trials (Brown *et al.*, 2005, 2006, 2007, 2008, 2009, and 2010). Performance was compared to three commercially available cultivars: ‘Athena’, ‘Ericka’, and ‘Baldur’. The cultivars Ericka (Brown *et al.*, 1997) and Athena (Brown *et al.*, 2004) were both developed in the University of Idaho Canola Breeding Program. Baldur is a hybrid winter canola cultivar developed in Europe. Athena and Baldur have occupied almost the total acreage of winter canola in the region over the past 5 years.

Over 41 evaluation trials, Amanda produced significantly higher seed yield (3,541 kg ha⁻¹), and yield similar to the high yielding hybrid cultivar Baldur (3,490 kg ha⁻¹) (Table 4). Amanda produced high seed yield under conventional tillage, direct seeding and under irrigation (Table 5). In more recent trials (data not shown), Amanda has shown good potential for early seeding into fallow ground (i.e. June to July) and, having a long vernalization requirement, will not flower in the planted year even when planted in May.

Averaged over 39 year sites, Amanda produced high seed oil content (402 g kg⁻¹), but was not significantly different from the other three commercial check cultivars (Table 6).

Averaged over 5 year sites, total glucosinolate content of Amanda seed meal was 20.9 μmol g⁻¹ of defatted seed meal, which was not significantly different from Athena. Seed meal glucosinolate content of Amanda breeders’ seed was lower than from field trials (Table 8), most likely due to mixing which occurred with field trial harvest. Breeders’ seed total glucosinolate content of Amanda was not significantly different from certified seed of Athena harvested in the same year, albeit at a different location. Primary glucosinolate of Amanda seed meal is 2-hydroxy-3-butenyl glucosinolate, accounting for approximately 72% of the total glucosinolates. Other glucosinolates included 3-butenyl (23% of total), with trace amounts of 4-pentenyl and 2-hydroxy-4-pentenyl glucosinolates.

Amanda has consistently produce excellent canola-quality seed oil (Table 9) with less than 0.2% erucic acid content, and over 63% oleic acid. Seed oil fatty acid profile of Amanda

was not significantly different from that of Athena or Ericka.

Amanda produced a long seed pod and a high seed number per pod (Table 10). Amanda pod length is not significantly different than Ericka or Athena but significantly longer than Baldur. Amanda pod width and pedicel length is not significantly different from the other three cultivars. Amanda produces significantly more seeds pod⁻¹ than Ericka or Baldur.

References

- Brown, J., D.A. Erickson, J.B. Davis, A.P. Brown, L. Seip & D.L. Auld, 1997.
Registration of 'Ericka' winter rapeseed. *Crop Sci.* **38**:543.
- Brown, J., D. Wysocki, J.B. Davis, D.A. Erickson, L. Seip, S. Ott, and T. Gosselin. 2004.
Registration of 'Athena' winter rapeseed. *Crop Sci* 45:800-801.

Table 1. Julian days to 50% flower bloom of Athena, Ericka and Amanda winter canola grown in 2007-2008, 2008-2009 and 2009-2010 growing seasons at Moscow and Genesee.

Variety	Mean	Rank	2009-2010		2008-2009		2007-2008	
			Moscow	Genesee	Moscow	Genesee	Moscow	Genesee
----- Julian days -----								
Athena	137	2	133	136	132	138	140	142
Ericka	134	3	126	133	129	136	139	140
Amanda	140	1	135	139	136	140	143	144
Mean	137		131	136	132	138	141	142
LSD 5%	1.1		1.1	1.2	1.8	0.9	1.2	0.6

Table 2. Plant height after flower end of Athena, Ericka and Amanda winter canola grown in 2007-2008, 2008-2009 and 2009-2010 growing seasons at Moscow and Genesee.

Variety	Mean	Rank	2009-2010		2008-2009		2007-2008	
			Moscow	Genesee	Moscow	Genesee	Moscow	Genesee
----- cm -----								
Athena	136	2	140	139	138	137	145	115
Ericka	130	3	132	133	130	131	140	113
Amanda	141	1	144	146	142	141	153	120
Mean	136		139	139	137	136	146	116
LSD 5%	2.8		2.9	2.2	2.3	0.9	5.7	2.8

Table 3. Fall crop establishment, winter hardiness, days to 50% flower bloom, plant height after flowering and crop lodging of Athena, Ericka, Baldur and Amanda winter canola grown over locations throughout Idaho, Oregon and Washington. Data presented are from the Pacific Northwest Winter Canola Variety Trial 2004 through 2010.

Variety	Establi- shment	Winter Hardiness	50%	Plant height	Lodge
			Flower Bloom		
#sites†	17	3	17	10	4
	- 1 to 9‡ -	- 1 to 9 -	- days -	- inch -	- 1 to 9 -
Athena	6.4	5.4	132	147	8.0
Ericka	6.9	7.1	128	144	7.6
Baldur	6.4	5.5	138	157	7.7
Amanda	6.8	6.8	134	152	7.8
Mean	6.4	6.0	132	150	7.0
LSD 5%	ns [§]	1.6	1.8	3.2	ns

† Number of locations each with 4 replicates included in the estimate.

‡ 1 to 9 scale where 9 = desirable characteristics (i.e. good establishment, good winter hardiness, absence from crop lodging).

§ ns = no significant difference between varieties.

Table 4. Seed yield of Athena, Ericka, Baldur and Amanda winter canola grown over 41 year sites at locations throughout Idaho, Oregon and Washington. Data presented are from the Pacific Northwest Winter Canola Variety Trial 2004 through 2010.

Variety	Average	Rank	Year					
			2004-5	2005-6	2006-7	2007-8	2008-9	2009-10
#sites†	41		8	8	6	9	4	6
			----- kg ha ⁻¹ -----					
Athena	3,121	3	3,379	3,056	3,163	2,652	4,071	2,893
Ericka	2,832	4	2,902	2,866	2,588	2,472	3,746	2,866
Baldur	3,490	2	3,902	.	.	2,793	4,622	3,230
Amanda	3,541	1	3,889	3,543	3,378	2,995	4,253	3,584
Mean	3,184		3,460	3,150	3,081	2,716	3,950	3,158
LSD 5%	318		278	218	287	297	530	299

† Number of locations each with 4 replicates included in the estimate.

Table 5. Seed yield of Athena, Ericka, Baldur and Amanda winter canola grown over 41 year sites at locations throughout Idaho, Oregon and Washington. Data presented are from the Pacific Northwest Winter Canola Variety Trial 2004 through 2010 and averages were calculated according to whether each site was conventionally tilled, direct seeded or irrigated.

Variety	Average		Conventional Tillage [‡]		Direct seeded		Irrigated	
	41 sites [†]	Rank	24 sites	Rank	6 sites	Rank	11 sites	Rank
----- kg ha ⁻¹ -----								
Athena	3,121	3	3,082	3	2,376	3	3,458	3
Ericka	2,832	4	2,794	4	2,062	4	3,180	4
Baldur	3,490	2	3,360	2	2,889	1	3,756	2
Amanda	3,541	1	3,546	1	2,783	2	3,811	1
Mean	3,184		3,144		2,454		3,534	
LSD 5%	311		275		246		389	

[†] Number of locations each with 4 replicates included in the estimate.

[‡] Conventional tillage, full cultivation and planting using a double disc opener into prepared seedbed, rain fed and no irrigation; Direct seeding using a Flexi-Coil shank seeder and planted into standing cereal straw stubble, rain fed and no irrigation; Irrigated, full cultivation and planting using a double disc opener into prepared seedbed, irrigation before and after planting.

Table 6. Seed oil content of Athena, Ericka, Baldur and Amanda winter canola grown at 39 year sites at locations throughout Idaho, Oregon and Washington. Data presented are from the Pacific Northwest Winter Canola Variety Trial 2004 through 2010.

Variety	Average	Rank	Year					
			2004-5	2005-6	2006-7	2007-8	2008-9	2009-10
#sites [†]	39		8	8	6	5	6	6
----- g kg ⁻¹ -----								
Athena	398	6	400	395	395	381	410	405
Ericka	388	7	390	385	382	374	398	398
Baldur	404	4	404	.	394	385	414	411
Amanda	402	5	411	405	392	378	408	411
Mean	398		401	395	391	380	408	406
LSD 5%	14		14	11	ns	11	14	12

[†] Number of locations each with 4 replicates included in the estimate.

Table 7. Glucosinolate profile and total glucosinolate content in the seed meal of *Ericka*, *Athena*, and *Amanda*. Data were collected from field tests conducted over three years at a total of 5 year/sites.

Variety	Glucosinolate Type				Total
	But [†]	Pent	OH-But	OH-Pent	
	----- μmol g ⁻¹ defatted seed meal -----				
Athena	4.2	0.6	9.3	0.3	14.3
Amanda	5.5	0.7	14.3	0.4	20.9
Mean	4.9	0.7	11.8	0.4	17.6
LSD 5%	ns [§]	ns	ns	ns	ns

[†] 3-butenyl glucosinolate, 2-hydroxy-3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-4-pentenyl glucosinolate. [§] ns = no significant difference between varieties.

Table 8. Glucosinolate profile and total glucosinolate content in the seed meal of *Athena* and *Amanda*. Data presented were estimated from over 200 single plant selections taken from *Athena* certified seed lot and *Amanda* Breeders' seed increase.

Variety	Glucosinolate Type				Total
	But [†]	Pent	OH-But	OH-Pent	
	----- μmol g ⁻¹ defatted seed meal -----				
Athena C'seed	2.7	0.6	7.2	0.3	10.8
s.e. mean	0.11	0.08	0.44	0.04	0.62
Amanda B'seed	3.3	0.5	10.3	0.2	14.3
s.e. mean	0.19	0.04	0.57	0.00	0.79

[†] 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3-butenyl glucosinolate, 2-hydroxy-4-pentenyl glucosinolate.

Table 9. Fatty acid profile of the seed oil from *Athena*, *Ericka* and *Amanda* winter canola cultivars.

Cultivar	Palmitic [†]	Stearic	Oleic	Linoleic	Linolenic	Eicosenoic	Erucic
	16:0	18:0	18:1	18:2	18:3	20:1	22:1
	----- g kg ⁻¹ -----						
Athena	42	18	626	191	92	12	1
Ericka	46	19	643	174	85	12	1
Amanda	42	16	631	196	84	12	2
Average	43	18	633	187	87	12	1
LSD 5%	ns [§]	ns	ns	ns	ns	ns	ns

[†] 16:0 = palmitic acid; 18:0 = stearic acid; 18:1 = oleic acid; 18:2 = linoleic acid; 18:3 = linolenic acid; 20:1 = eicosenoic acid; 22:1 = erucic acid; and 24:1 = nervonic acid. [§] ns = no significant difference between varieties.

Table 10. Pod length, pod width, beak length, pedicel length and number of seed pod⁻¹ of Athena, Ericka, Baldur and Amanda winter canola grown over locations throughout Idaho, Oregon and Washington. Data presented are based on 5 year/sites from the Pacific Northwest Winter Canola Variety Trial 2008-2009 and 2009-2010.

Variety	Pod Length	Pod width	Beak length	Pedicel length	Seeds/pod
#sites & pods†	5 x 30	5 x 30	5 x 30	5 x 30	5 x 30
	- mm -	- mm -	- mm -	- mm -	- #/pod -
Athena	74.0	6.2	12.3	22.9	26.8
Ericka	72.2	5.1	11.4	21.1	24.5
Baldur	65.7	5.7	13.3	21.6	24.7
Amanda	72.9	5.7	12.8	21.2	28.1
Mean	71.2	5.7	12.5	21.7	26.0
LSD 5%	1.1	0.7	ns [§]	ns	1.8

† Number of location, and number of pods location⁻¹ to estimate cultivar means.

§ ns = no significant difference between varieties.

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

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

1. NAME OF APPLICANT(S) University of Idaho	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER 06.UI.WC.5.09	3. VARIETY NAME Amanda
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) University of Idaho 875 Perimeter Drive, MS3003 PO Box 443003, Morrill Hall 414, Moscow, ID 83844-3003	5. TELEPHONE (Include area code) (208) 885 4550	6. FAX (Include area code) (208)885 4551
7. PVPO NUMBER #201100403		

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. YES NO

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

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)? YES NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company? YES NO If no, give name of country

11. Additional explanation on ownership (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:

- 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.
- 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.
- 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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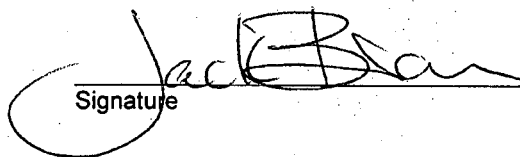
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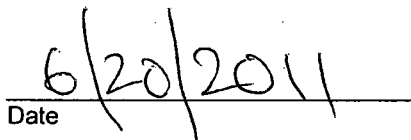
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SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S) University of Idaho	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) PO Box 443003, Morrill Hall 414, Moscow, ID 83844-3003	TEMPORARY OR EXPERIMENTAL DESIGNATION 06.UI.WC.5.09
		VARIETY NAME Amanda
NAME OF OWNER REPRESENTATIVE (S) Jack Brown & Gaylene Anderson	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) University of Idaho, PO Box 443003, Moscow ID 83844-3003. University of Idaho, PO Box 442339, Moscow, ID 83844-2339	FOR OFFICIAL USE ONLY
		PVPO NUMBER # 2 0 1 1 0 0 4 0 3

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.


Signature


Date