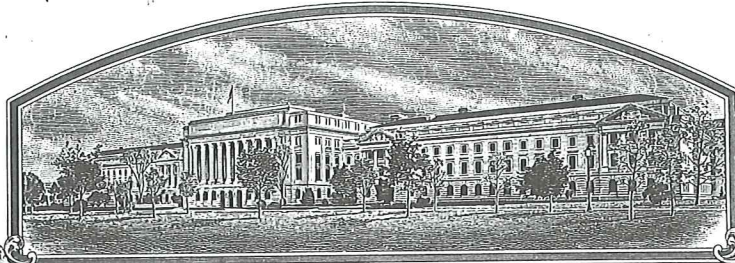


No.

200700285



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Idaho

Whereas, THERE HAS BEEN PRESENTED TO THE

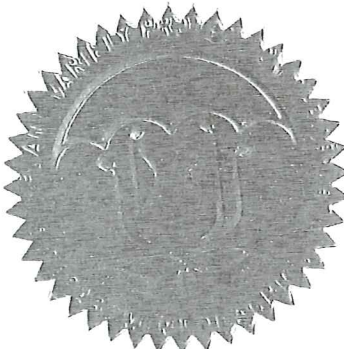
Secretary of Agriculture

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. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Highland Russet'



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 sixteenth day of July, in the year two thousand and twelve.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

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).

2-15 7/26/09

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 A9045-7		3. VARIETY NAME A9045-7 Highland Russet	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Idaho Agricultural Experiment Station University of Idaho, Moscow, ID 83844-4196		5. TELEPHONE (include area code) 208-885-7173		FOR OFFICIAL USE ONLY PVPO NUMBER # 200700285 FILING DATE April 26, 2007	
		6. FAX (include area code) 208-885-6654			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Land Grant University		8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Jeffrey C. Stark 1776 Science Center Dr. Suite 201 Idaho Falls, ID 83402-1575				FILING AND EXAMINATION FEES: \$ 4,382.00 DATE March 29, 2007 CERTIFICATION FEE: \$ DATE	
11. TELEPHONE (include area code) 208-529-8376		12. FAX (include area code) 208-522-2954		13. E-MAIL jstark@uidaho.edu	
14. CROP KIND (Common Name) Potato		16. FAMILY NAME (Botanical) Solanaceae		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Solanum tuberosum		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input type="checkbox"/> NO		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)				21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Exhibit F. Declaration Regarding Deposit g. <input checked="" type="checkbox"/> 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) g. <input type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)				22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)				24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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 		SIGNATURE OF OWNER	
NAME (Please print or type) Gregory A. Bohack		NAME (Please print or type)	
CAPACITY OR TITLE Director	DATE 3/28/07	CAPACITY OR TITLE	DATE

(See reverse for instructions and information collection burden statement)

2007 MAR 29 AM 10:16

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>

200700285

SPECIFIC INSTRUCTIONS:

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

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

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

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

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

1000 4000

2007 MAR 29 AM 10:16

#200700285

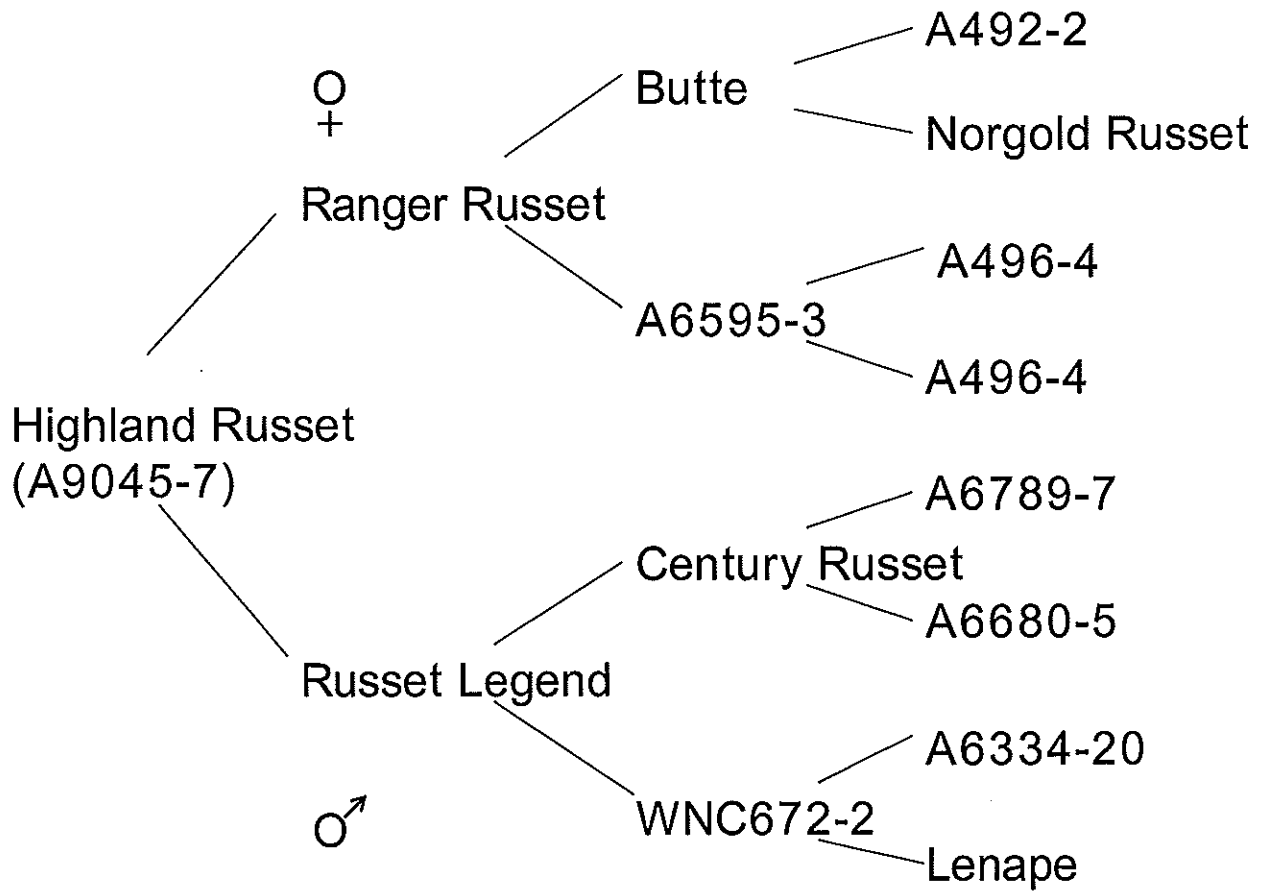


Figure 1. Four-generation pedigree of Highland Russet (A9045-7)

2007 MAR 29 AM 10:16

Exhibit A Form

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

Highland Russet was derived from a sexual hybridization made at the University of Idaho's Aberdeen Research and Extension Center in 1990. It resulted from a cross of Ranger Russet and Russet Legend. It was first selected in the field from an F1 population in 1990 and subsequently evaluated for 15 Years.

A four generation pedigree is attached.

2. Give the details of subsequent stages of selection and multiplication.

Year	Detail of Stage	Selection Criteria
1992	It was first field selected in 1992.	Yield, maturity, tuber uniformity and appearance, higher specific gravity, resistance to tuber defects, storage fry color, and resistance to field diseases including PVY, verticillium wilt and common scab.
2005	In 2005 production of limited generation seed initiated.	
1998	In 1998 Highland Russet was evaluated in the Tri-State Potato Variety Trial.	
1999-2001	In 1999-2001 Highland Russet was entered and evaluated in the seven state Western Regional Variety Trials. Highland Russet was selected for use in the mid to late season russet french fry processing markets.	
2002-present	Agronomic field trials.	

3a. Is the variety uniform? Yes No

How did you test for uniformity?

Highland Russet has been clonally propagated since the first year of selection. The variety has remained uniform during all subsequent years of maintenance and propagation.

3b. Is the variety stable? Yes No

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

Highland Russet has shown stability in over ten generations. It has not produced recognizable variants.

4. 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.

Continue on additional pages if necessary.

Received Thursday 10/21/2010 8:19 PM by email RAD

Exhibit B Form

Based on overall morphology, 'Highland Russet' is most similar to 'Russet Burbank'
Applicant's new variety *Most similar comparison variety(ies)*

'Highland Russet' most clearly differs from 'Russet Burbank' in the following traits:
Applicant's new variety *Most similar comparison variety(ies)*

Name the specific trait, then list the value of that trait for each variety in the comparison. Attach appropriate supporting evidence (see the Guidelines for Presenting Evidence in Support of Variety Distinctness, available from the PVP Office or website).

<i>Eg. Leaf Pubescence</i> <i>Eg. Leaf Color</i> <i>Eg. Plant Height</i>	<i>heavy pubescence</i> <i>Dark Green (5GY 3/4)</i> <i>200 cm +/- 10 cm (N=25)</i>	<i>glabrous</i> <i>Light Green (2.5GY 8/10)</i> <i>250 cm +/- 15 cm (N=25)</i>	<i>photograph attached</i> <i>Munsell Color Chart</i> <i>statistics attached</i>
1. Qualitative traits: Skin texture	Applicant's New Variety 'Highland Russet' Netted	1 st Comparison Variety 'Russet Burbank' Russetted	Location of Evidence Exhibit C and photographs
2. Color traits: tuber skin color* * measured using the Royal Horticultural Society Colour Chart (RHS)	greyed-yellow (RHS 161B)	greyed-orange (RHS 164B)	Exhibit C and photographs
3. Quantitative traits:			
4. Other:			

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

Received Mon 11/1/2010 5:28 PM by email RAD

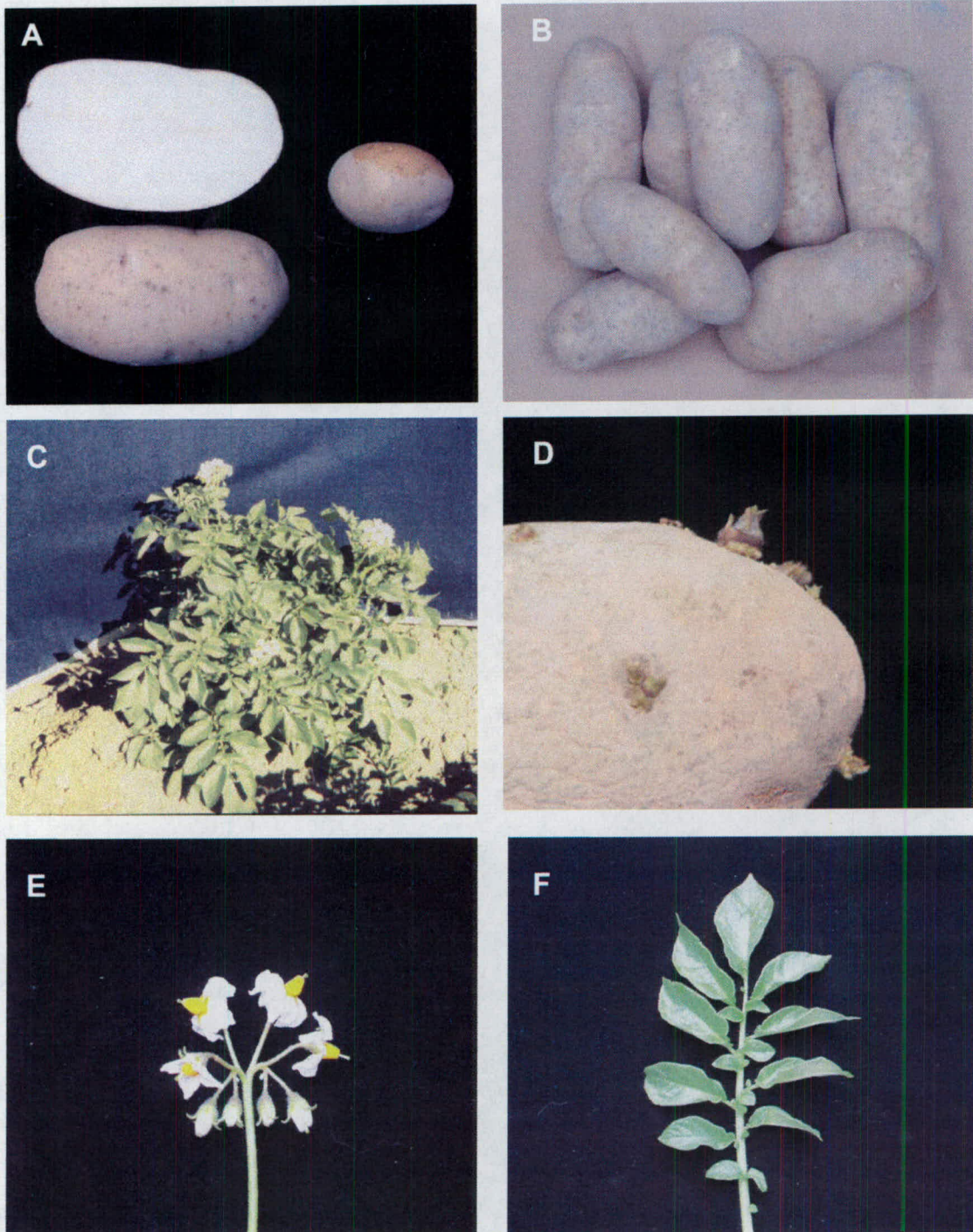


Figure 2. Photographs of Highland Russet showing a) external tuber appearance and tuber flesh color, b) field tubers, c) whole plant, d) light sprout, e) flower and f) compound leaf.

Sat 6/19/2010 8:59 PM Received by E-mail RAD

RUSSET BURBANK

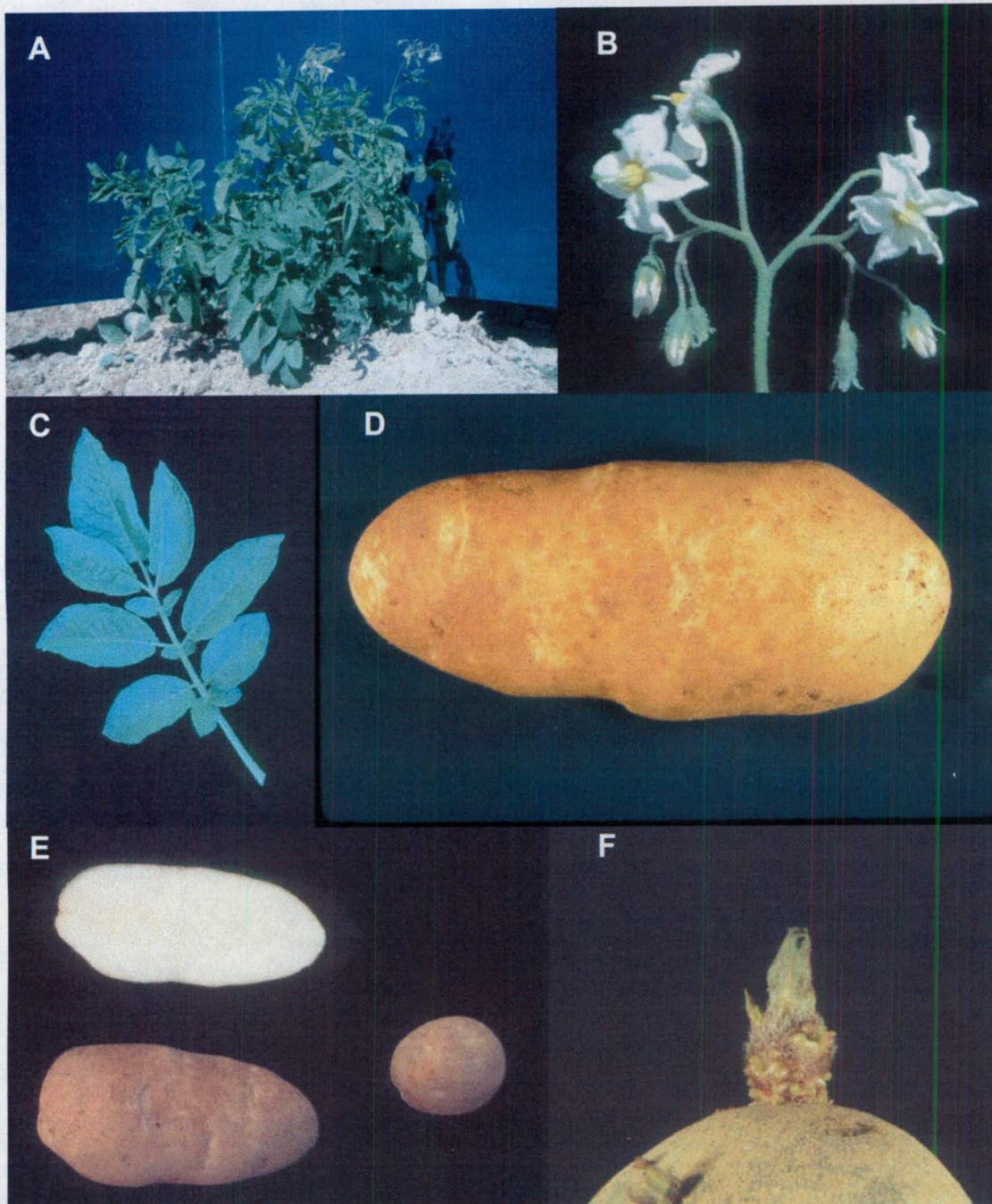


Figure 3. Photographs of Russet Burbank showing a) whole plant, b) flower, c) compound leaf, d) field tuber, e) external tuber appearance and tuber flesh color, and f) light sprout.

Sat 6/19/2010 8:59 PM Received by E-mail RAD

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

Form Approved OMB NO 0581-0055

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 8.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

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

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

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Potato (*Solanum tuberosum* L.)

INSTRUCTIONS

The Objective Description Form:

The objective description form lists characteristics to be used as the basis for developing the description of potato varieties. It is designed to guide the applicant in describing a variety in detail so a meaningful comparison with other potato varieties can be accomplished. It is recommended that this form be completed in as much detail as possible to ensure an accurate description. Please fill in the requested data and place the appropriate number that describes the varietal characters typical of this potato variety and the reference varieties in the respective boxes.

Test Guidelines:

Any statistical and trial (field test) data that may be necessary to support the variety description should be attached to this form. Please include for trial data the plot size, number of replications, number of plants, plant spacing, trial locations and growing periods. Trials should normally be conducted at one place, in the region that the variety has been adapted for, with a minimum of one growing period in the United States. All comparative data should be determined from varieties entered in the same trials. The size of the plots should be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made at the end of the growing period. As a minimum, each test should include a total of 60 plants which should be divided between two or more replicates. Separate plots for observation and measuring can only be used if they have been subject to similar environmental conditions. To determine color for a plant or plant parts a recognized standard color chart must be used such as the Royal Horticultural Society (RHS) Color Chart or Munsell Color Chart (MCC).

Reference Varieties:

The application variety should be compared to at least one reference variety preferably a set of reference varieties. The reference varieties should be market class standard varieties currently grown in the United States and or the variety (ies) most similar. The following varieties are recommended as market class standards to be used as reference varieties:

- Yellow-flesh table-stock..... Yukon Gold
- Round-white table-stock..... Superior
- Chip-processing..... Atlantic, Snowden, Norchip
- Frozen-processing..... Russet Burbank
- Russet table-stock..... Russet Burbank, Russet Norkotah, Goldrush
- Red table-stock..... Red Pontiac, Red Norland, Red Lasoda

If the applicant does not use one of the recommended reference varieties by the PVP office, a complete description of the reference variety should be submitted by the applicant (Exhibit C).

Sat 6/19/2010 8:59 PM Received by E-mail RAD

Characteristics:

Light sprout characteristics are supplied in **Figure 1**. The plant type and growth habit characteristics are collected at early first bloom. **Figure 2** is supplied to help visualize the growth habit. For this descriptor, look at the stems rather than the stems and foliage. Plant maturity is measured at natural vine senescence.

Stem characteristics are also collected at early bloom. Stem anthocyanin coloration is divided into two descriptors: Location and intensity. **Figure 3** is supplied to give an example of stem wings.

Leaf characteristics are observed at early first bloom. Fully-developed leaves located on the middle third of the plant should be used. Leaf pubescence refers to general trichomes. **Figure 4** is supplied for examples of leaf silhouette. Leaf stipules are shown in **Figure 5** for visual definition. **Figure 6** is supplied to define leaf characteristics. **Figure 7** should be used to describe terminal and primary leaflet shape. **Figures 8 and 9** are used to describe the terminal and primary leaflet shape of tip and base, respectively. To measure the total number of primary leaflets pairs, collect 10 fully developed petioles (with leaves attached from each replication) and take the average number of secondary and tertiary leaflets. Glandular trichomes should be described in the Additional Comments and Characteristics (Descriptor 15).

Inflorescence characteristics should be measured at early first bloom. **Figures 10, 11 and 12** are supplied to describe anther and stigma shape, respectively. Corolla, calyx, anther, stigma, and pollen should be observed on newly opened flowers. Berry production should be based on field-grown plants rather than greenhouse plants.

Tuber characteristics should be observed following harvest. **Figures 13 and 14** are available to describe distribution of secondary color and tuber shape, respectively.

Disease and pest reactions should be based upon specific tests or statistical analysis rather than just field observations, rating 1 as Highly Resistance and 9 as Highly Susceptible, please follow the scale on each descriptor. Other diseases or pests reactions not requested can be described if it is felt that it would be helpful to determine novelty of the variety.

Quality characteristics should be described according to the market use.

If the plant is transgenic, this gene insertion(s) should be described.

Chemical identification and any other characteristics can be described if they are helpful in distinguishing the variety.

Legend:

V = Application Variety

R1-R4 = Reference Varieties

* = Both the reference variety (ies) and application variety must be described for characteristics designated with an asterisk.

Sat 6/19/2010 8:59 PM Received by E-mail RAD

NAME OF APPLICANT (S) University of Idaho	TEMPORARY OR EXPERIMENTAL DESIGNATION A9045-7	VARIETY NAME Highland Russet
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) Office of Technology Transfer Morrill Hall 414 PO Box 443003 Moscow ID 83844-3003		FOR OFFICIAL USE ONLY PVPO NUMBER

REFERENCE VARIETIES: Enter the reference variety name in the appropriate box.

Application Variety (V)	Reference Variety 1 (R1)	Reference Variety 2 (R2)	Reference Variety 3 (R3)	Reference Variety 4 (R4)
Highland Russet	Russet Burbank			

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

1. MARKET CHARACTERISTICS:

*MARKET CLASS:

1 = Yellow-flesh Tablestock 2 = Round-white Tablestock 3 = Chip-processing 4 = Frozen-processing
5 = Russet Tablestock 6 = Other _____

V	4-5	R1	4-5	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

2. LIGHT SPROUT CHARACTERISTICS: (See Figure 1)

*LIGHT SPROUT: GENERAL SHAPE

1 = Spherical 2 = Ovoid 3 = Conica 4 = Broad cylindrical 5 = Narrow cylindrical 6 = Other _____

V	1	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

*LIGHT SPROUT BASE: PUBESCENCE OF BASE

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	1	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

*LIGHT SPROUT BASE: ANTHOCYANIN COLORATION

1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	3	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

*LIGHT SPROUT BASE: INTENSITY OF ANTHOCYANIN COLORATION (IF PRESENT)

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	4	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

* LIGHT SPROUT TIP: HABIT

1 = Closed 2 = Intermediate 3 = Open

V	1	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	2	R1	4	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LIGHT SPROUT TIP ANTHOCYANIN COLORATION

1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	1	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LIGHT SPROUT TIP: INTENSITY OF ANTHOCANIN COLORATION (IF PRESENT)

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	1	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LIGHT SPROUT ROOT INITIALS: FREQUENCY

1 = Absent 2 = Some 3 = Abundant

V	2	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

3. PLANT CHARACTERISTICS:

GROWTH HABIT: (See Figure 2)

3 = Erect (>45° with ground) 5 = Semi-erect (30-45° with ground) 7 = Spreading

V	3	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TYPE:

1 = Stem (foliage open, stems clearly visible) 2 = Intermediate 3 = Leaf (Foliage closed, stems hardly visible)

V	2	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

MATURITY: Days after planting (DAP) at vine senescence

V	120	R1	125	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

PLANTING DATE:

V	27-04-00 2-05-01	R1	27-04-00 2-05-01	R2		R3		R4	
---	------------------	----	------------------	----	--	----	--	----	--

*REGIONAL AREA:

1 = Pacific North West (WA, OR, ID, CO, CA) 2 = North Central (ND, WI, MI, MN, OH) 3 = North East (ME, NY, PA, NJ, MD, MA, RI,)
 4 = Mid-Atlantic Erect (VI, NC, SC, South NJ, FL) 5 = South (LA, TX, AZ, NE) 6 = Canada
 7 = Europe 8 = England 9 = Latin America 10 = Brazil 11 = Other _____

V	1 Aberdeen, ID	R1	1 Aberdeen, ID	R2		R3		R4	
---	----------------	----	----------------	----	--	----	--	----	--

MATURITY CLASS:

1 = Very Early (<100 DAP) 2 = Early (100-110 DAP) 3 = Mid-season (111-120 DAP) 4 = Late (121-130 DAP) 5 = Very Late (>130 DAP).

V	4	R1	4	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

4. STEM CHARACTERISTICS: Measure at early first bloom

* STEM ANTHOCYANIN COLORATION:

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

STEM WINGS: (See Figure 3)

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

5. LEAF CHARACTERISTICS:

LEAF COLOR: (Observe fully developed leaves located on middle 1/3 of plant)

1 = Yellowing-green 2 = Olive-green 3 = Medium Green 4 = Dark Green 5 = Grey-green 6 = Other _____

V	1	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LEAF COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart

(Observe fully developed leaves located on middle 1/3 of plant and circle the appropriate color chart)

V	146 B	R1	146 A	R2		R3		R4	
---	-------	----	-------	----	--	----	--	----	--

LEAF PUBESCENCE DENSITY:

1 = Absent 2 = Sparse 3 = Medium 4 = Thick 5 = Heavy

V	4	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LEAF PUBESCENCE LENGTH:

1 = None 2 = Short 3 = Medium 4 = Long 5 = Very Long

V	3	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

(Note Descriptor #15 can be used to describe the type and length of the glandular trichomes observed.)

* LEAF SILHOUETTE: (See Figure 4)

1 = Closed 3 = Medium 5 = Open

V	5	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PETIOLES ANTHOCYANIN COLORATION:

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	5	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

LEAF STIPULES SIZE: (See Figure 5)

1 = Absent 3 = Small 5 = Medium 7 = Large

V	5	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TERMINAL LEAFLET SHAPE (See Figures 6 and 7)

1 = Narrowly ovate 2 = Medium Ovate 3 = Broadly Ovate 4 = Lanceolate 5 = Elliptical 6 = Obovate 7 = Oblong 8 = Other _____

V	2	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

5. LEAF CHARACTERISTICS: (continued)

TERMINAL LEAFLET TIP SHAPE: (See Figures 6 and 8)

1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

* TERMINAL LEAFLET BASE SHAPE: (See Figure 9)

1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TERMINAL LEAFLET MARGIN WAVINESS:

1 = Absent 2 = Slight 3 = Weak 4 = Medium 5 = Strong

V	2	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	4.0	R1	3.3	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	2	to	5	R1	2	to	5	R2		to	R3		to	R4		to
---	---	----	---	----	---	----	---	----	--	----	----	--	----	----	--	----

PRIMARY LEAFLET TIP SHAPE: (See Figures 6 and 8)

1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PRIMARY LEAFLET SIZE:

1 = Very Small 2 = Small 3 = Medium 4 = Large 5 = Very Large

V	2	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PRIMARY LEAFLET SHAPE: (See Figures 6 and 7)

1 = Narrowly ovate 2 = Medium ovate 3 = Broadly ovate 4 = Lanceolate 5 = Elliptical 6 = Ovate 7 = Oblong 8 = Other _____

V	2	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PRIMARY LEAFLET BASE SHAPE: (See Figures 6 and 9)

1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

NUMBER OF SECONDARY AND TERTIARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	6.1	R1	6.5	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	2	to	11	R1	2	to	11	R2		to	R3		to	R4		to
---	---	----	----	----	---	----	----	----	--	----	----	--	----	----	--	----

Sat 6/19/2010 8:59 PM Received by E-mail RAD

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	4.0	R1	3.3	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	1	to	9	R1	3	to	6	R2		to		R3		to		R4		to	
---	---	----	---	----	---	----	---	----	--	----	--	----	--	----	--	----	--	----	--

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	11.7	R1	12.9	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

RANGE:

V	6	to	24	R1	5	to	22	R2		to		R3		to		R4		to	
---	---	----	----	----	---	----	----	----	--	----	--	----	--	----	--	----	--	----	--

* COROLLA INNER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	84 C	R1	157 A	R2		R3		R4	
---	------	----	-------	----	--	----	--	----	--

* COROLLA OUTER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	85 D	R1	157 D	R2		R3		R4	
---	------	----	-------	----	--	----	--	----	--

* COROLLA INNER SURFACE COLOR: (Measure predominant color of newly open flower, if flowers are bi-color please use the ratio codes)
 1 = White 2 = Red-violet 3 = Blue-violet 4 = Cream 5 = Red-purple 6 = Blue 7 = Pink 8 = Pink-white 9 = Purple 10 = Violet
 11 = Purple-violet 13 = Violet-White 1:1 14 = Violet-White 1:3 15 = Violet-White 3:1 16 = Violet-White Halo 17 = Pink-White 1:1 18 = Pink-White 1:3
 19 = Pink-White 3:1 20 = Pink-White Halo 21 = RedViolet-White 1:1 22 = RedViolet-White 1:3 23 = RedViolet-White 3:1
 24 = RedViolet-White Halo 25 = BlueViolet-White 1:1 26 = BlueViolet-White 1:3 27 = BlueViolet-White 3:1 28 = BlueViolet-White Halo
 12 = Other

V	10	R1	1	R2		R3		R4	
---	----	----	---	----	--	----	--	----	--

COROLLA SHAPE: (See Figure 10)

1 = Very rotate 2 = Rotate 3 = Pentagonal 4 = Semi-stellate 5 = Stellate

V	4	R1	4	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

6. INFLORESCENCE CHARACTERISTICS:

CALYX ANTHOCYANIN COLORATION:

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very strong

V	7	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

ANTHER COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure when newly opened flower is fully expanded and circle the appropriate color chart)

V	14 A	R1	15 A	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

ANTHER SHAPE: (See Figure 11)

1 = Broad cone 2 = Narrow cone 3 = Pear-shaped cone 4 = Loose 5 = Other

V	1	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:

1 = None 3 = Some 5 = Abundant

V	3	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

STIGMA SHAPE: (See Figure 12)

1 = Capitate 2 = Clavate 3 = Bi-lobed

V	1	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

STIGMA COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	146 A	R1	146 B	R2		R3		R4	
---	-------	----	-------	----	--	----	--	----	--

BERRY PRODUCTION: (Under field conditions)

1 = Absent 3 = Low 5 = Moderate 7 = Heavy 9 = Very Heavy

V	3	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

7. TUBER CHARACTERISTICS:

* PREDOMINANT SKIN COLOR:

1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
10 = Purple 11 = Dark purple-black 12 = Other _____

V	4	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PREDOMINANT SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	161 B	R1	164 B	R2		R3		R4	
---	-------	----	-------	----	--	----	--	----	--

SECONDARY SKIN COLOR:

1 = Absent 2 = Present (please describe)

V	1	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

SECONDARY SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color)

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

SECONDARY SKIN COLOR DISTRIBUTION: (See Figure 13)

1 = Eyes 2 = Eyebrows 3 = Splashed 4 = Scattered 5 = Spectacled 6 = Stippled 7 = Other _____

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

SKIN TEXTURE:

1 = Smooth 2 = Rough (flaky) 3 = Nelled 4 = Russetted 5 = Heavily russetted 6 = Other _____

V	3	R1	4	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

7. TUBER CHARACTERISTICS: (continued)

* TUBER SHAPE: (See Figure 14)

1 = Compressed 2 = Round 3 = Oval 4 = Oblong 5 = Long 6 = Other _____

V	4	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TUBER THICKNESS:

1 = Round 2 = Medium thick 3 = Slightly flattened 4 = Flattened 5 = Other _____

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TUBER LENGTH (mm):

AVERAGE:

V	125	R1	136	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	87	to	175	R1	92	to	178	R2		to	R3		to	R4		to
---	----	----	-----	----	----	----	-----	----	--	----	----	--	----	----	--	----

STANDARD DEVIATION:

V	14.64	R1	16.0	R2		R3		R4	
---	-------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	286	R1	259	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

TUBER WIDTH (mm)

AVERAGE:

V	65	R1	64	R2		R3		R4	
---	----	----	----	----	--	----	--	----	--

RANGE:

V	54	to	90	R1	52	to	78	R2		to	R3		to	R4		to
---	----	----	----	----	----	----	----	----	--	----	----	--	----	----	--	----

STANDARD DEVIATION:

V	5.32	R1	5.80	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	268	R1	259	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

V	55.2	R1	54.0	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

RANGE:

V	45	to	83	R1	41	to	70	R2		to		R3		to		R4		to	
---	----	----	----	----	----	----	----	----	--	----	--	----	--	----	--	----	--	----	--

STANDARD DEVIATION:

V	4.73	R1	5.70	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	268	R1	259	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

TUBER EYE DEPTH:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

TUBER LATERAL EYES:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	3	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

NUMBER EYE/TUBER:

AVERAGE:

V	17.3	R1	23.0	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

RANGE:

V	8	to	30	R1	12	to	36	R2		to		R3		to		R4		to	
---	---	----	----	----	----	----	----	----	--	----	--	----	--	----	--	----	--	----	--

DISTRIBUTION OF TUBER EYES:

1 = Predominantly apical 2 = Evenly distributed

V	2	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PROMINENCE OF TUBER EYEBROWS:

1 = Absent 2 = Slight prominence 3 = Medium prominence 4 = Very prominent 5 = Other _____

V	2	R1	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

7. TUBER CHARACTERISTICS: (continued)

PREDOMINANT TUBER FLESH COLOR

1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
10 = Purple 11 = Dark purple-black 12 = Other _____

V	1	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

PRIMARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	158 D	R1	158 C	R2		R3		R4	
---	-------	----	-------	----	--	----	--	----	--

SECONDARY TUBER FLESH COLOR:

1 = Absent 2 = Present, please describe: _____

V	1	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

SECONDARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

NUMBER OF TUBERS/PLANT:

1 = Low (<8) 2 = Medium (8-15) 3 = High (>15)

V	1	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

8. DISEASES CHARACTERISTICS:

DISEASES REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lesions in Number and Size
4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
7 = Susceptible 9 = Highly Susceptible

LATE BLIGHT: (Phytophthora)

V	7	R1	7	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

EARLY BLIGHT: (Alternaria)

V	6	R1	6	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

SOFT ROT (Erwinia)

V	6	R1	7	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

COMMON SCAB (Streptomyces)

V	4	R1	4	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POWDERY SCAB (Spongospora)

V	4	R1	6	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

DRY ROT (Fusarium)

V	6	R1	5	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POTATO LEAF ROLL VIRUS (PLRV)

V	7	R1	7	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

V	3	R1	7	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POTATO VIRUS Y (PVY)

V	4	R1	7	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POTATO VIRUS M (PVM)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POTATO VIRUS A (PVA)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

GOLDEN NEMATODE (Globodera)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

ROOT - KNOT NEMATODE (Meloidogyne)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

OTHER DISEASE _____

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

PHYSIOLOGICAL DISORDER

1 = Malformed shape 2 = Tuber cracking 3 = Feathering 4 = Hollow heart 5 = Internal necrosis
 6 = Blackheart 7 = Internal sprouting 8 = Other

V	None	R1	1	R2		R3		R4	
---	------	----	---	----	--	----	--	----	--

9. PESTS CHARACTERISTICS:

PEST REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lesions in Number and Size
 4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
 7 = Susceptible 9 = Highly Susceptible

COLORADO POTATO BEETLE (CPB) (*Leptinotarsa*)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

GREEN PEACH APHID (*Myzus*)

V	0	R1	0	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

OTHER:

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

OTHER:

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

Sat 6/19/2010 8:59 PM Received by E-mail RAD

10. GENE TRAITS:

INSERTION OF GENES: 1 = YES 2 = NO

IF YES, describe the gene(s) introduced or attach information:

11. QUALITY CHARACTERISTICS:

CHIEF MARKET:

SPECIFIC GRAVITY (wt. air/wt. air - wt. water)

1 = <1.060 2 = 1.060-1.069 3 = 1.070-1.079 4 = 1.080-1.089 5 = >1.090

V	4	R1	3-4	R2		R3		R4	
---	---	----	-----	----	--	----	--	----	--

TOTAL GLYCOALKALOID CONTENT (mg./100 g. fresh tuber)

V	2.2	R1	3.6	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

OTHER QUALITY CHARACTERISTICS: Describe any other quality characteristics that may aid in identification, (e.g., chip-processing, french fry processing, baking, boiling, after-cooking darkening). Please attach data and corresponding protocol.

Highland Russet has better specific gravity. See protocol and attached Exhibit D.

Average specific gravity for Highland Russet is 1.088.

Russet Burbank average specific gravity is 1.082.

12. CHEMICAL IDENTIFICATION:

Describe chemical traits of the candidate variety that aid in its identification (e.g., protien or DSN electrophoresis). Please attach data and the corresponding protocol.

Highland Russet has significantly higher Vitamin C content than Russet Burbank.

See protocol and attached Exhibit D

Three years average Vitamin C content for Highland Russet is 24.5 and 19.9 for Russet Burbank.

13. FINGER PRINTING MARKERS:

ISOZYMES 1 = YES 2 = NO

IF YES, attach information

14. DNA PROFILE: 1 = YES 2 = NO

IF YES, attach information

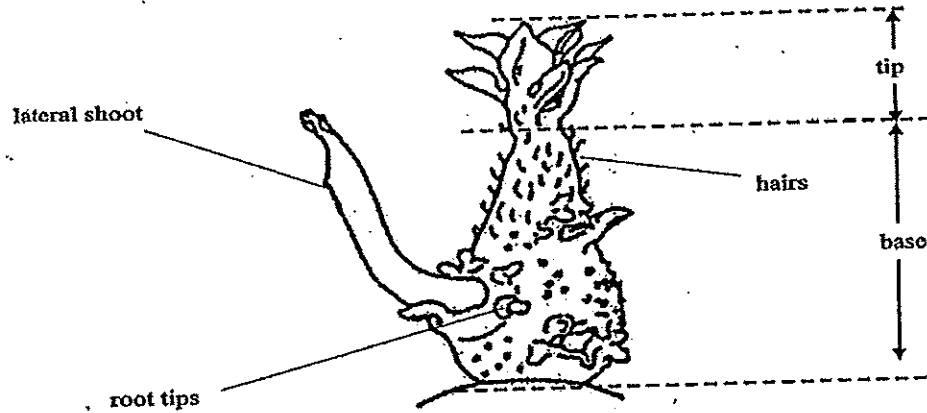
15. ADDITIONAL COMMENTS AND CHARACTERISTICS:

Include any additional descriptors that would be useful in distinguishing the candidate variety.

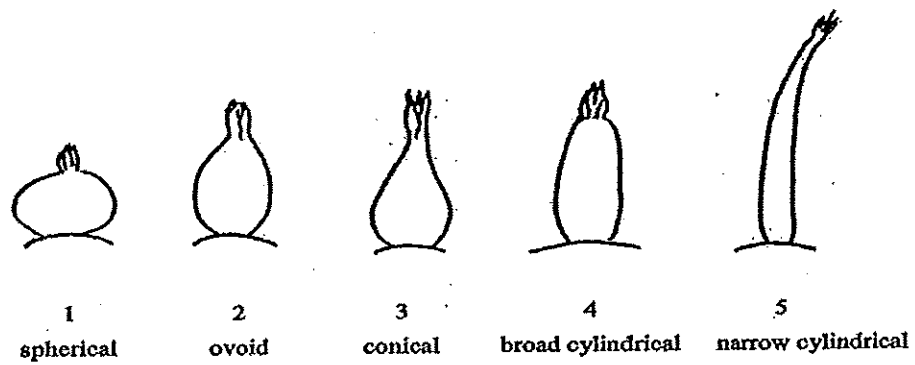
Sat 6/19/2010 8:59 PM Received by E-mail RAD

Figure 1: Light sprout

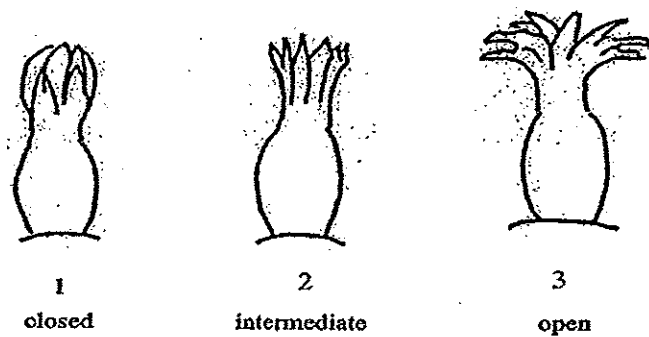
Light sprout dissection



Light sprout shape



Light sprout tip habit



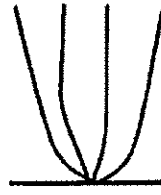
The characteristic should be observed after about 10 weeks to obtain a good differentiation in the collection.

Sat 6/19/2010 8:59 PM Received by E-mail RAD

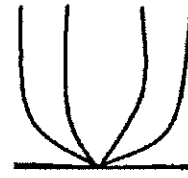
Figure 2: Growth Habit



Erect



Semi Erect



Spreading

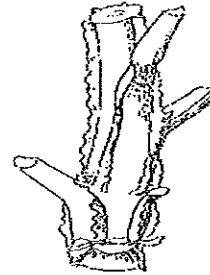
Figure 3: Stem Wings



Weak



Medium



Strong

Figure 4: Leaf Silhouette



Closed

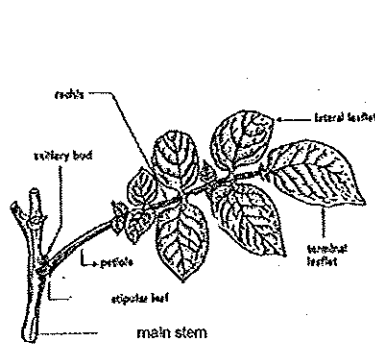


Medium

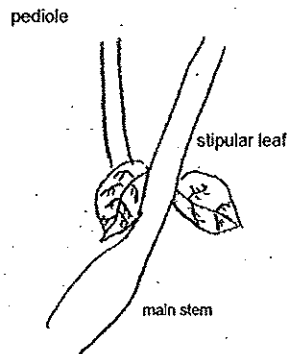


Open

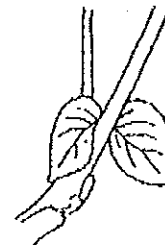
Figure 5: Leaf Stipules



General structures



Small stipular leaf



Medium stipular leaf



Large stipular leaf

Sat 6/19/2010 8:59 PM Received by E-mail RAD

Figure 6: Leaf Dissection

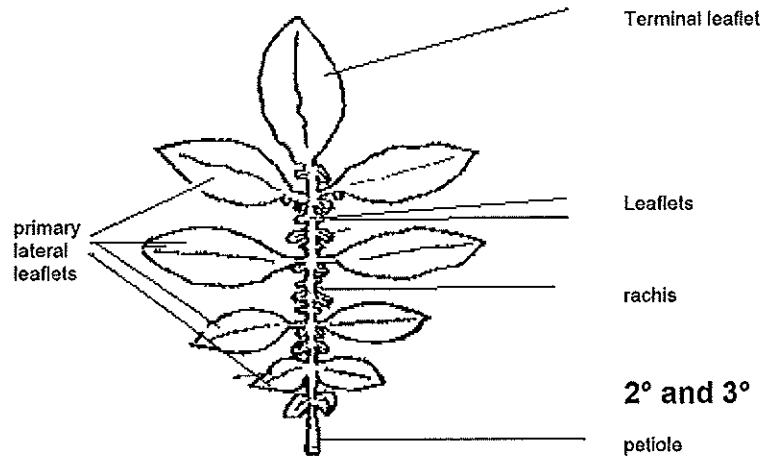


Figure 7: Terminal Leaflet Shape/Primary Leaflet Shape

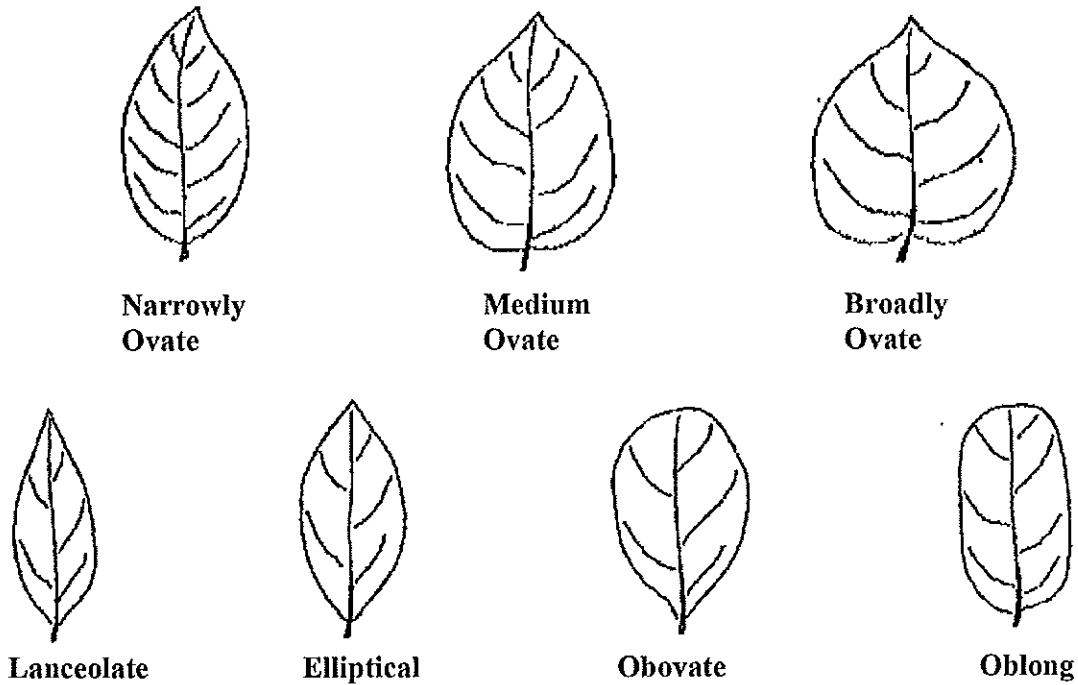
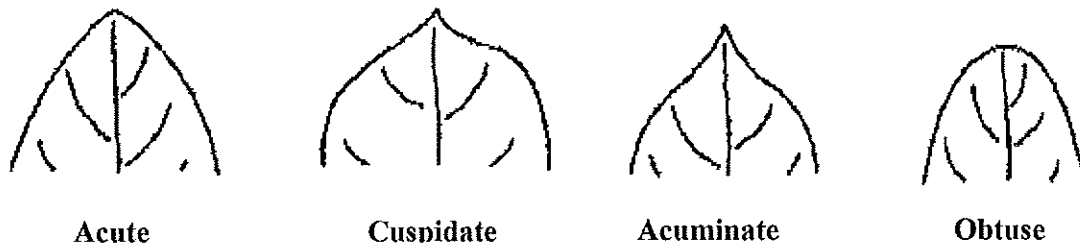


Figure 8: Terminal Leaflet Shape of Tip/Primary Leaflet Shape of Tip



Sat 6/19/2010 8:59 PM Received by E-mail RAD

Figure 9: Terminal Leaflet Shape of Base/Primary Leaflet Shape of Base

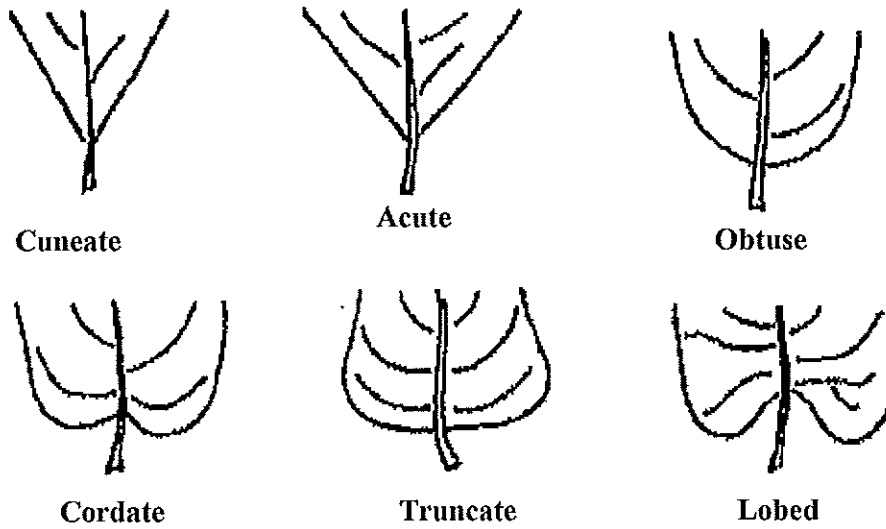


Figure 10: Corolla Shape

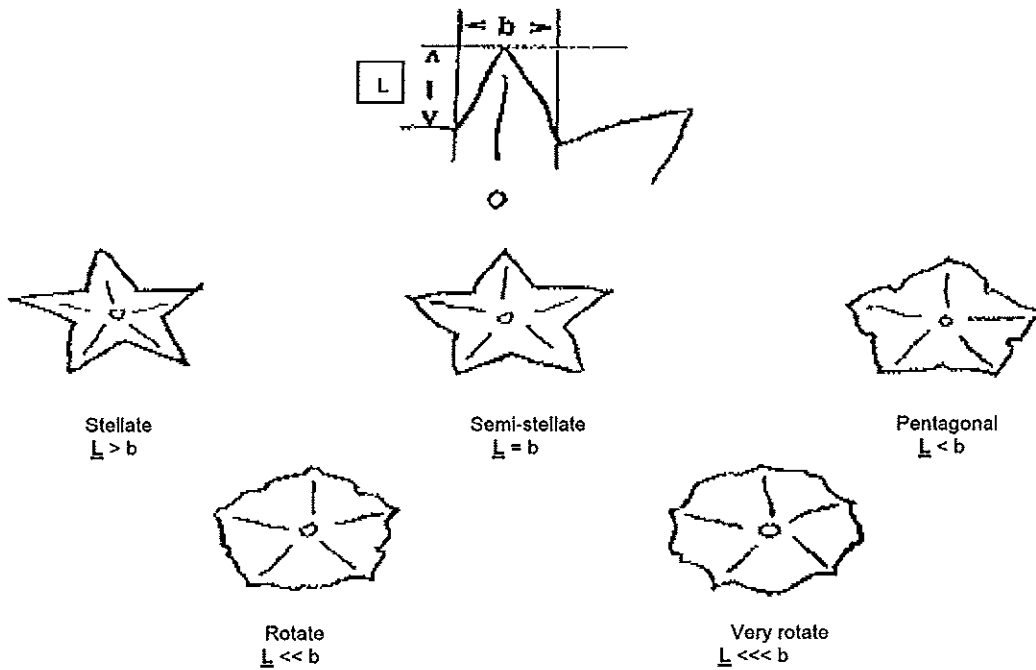
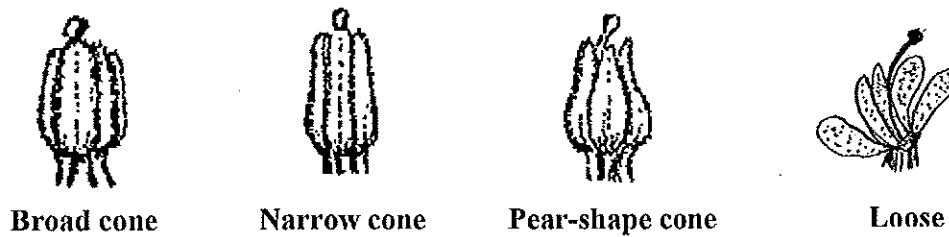


Figure 11: Anther Shape



Sat 6/19/2010 8:59 PM Received by E-mail RAD

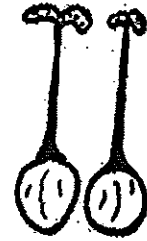
Figure 12: Stigma Shape



Capitate

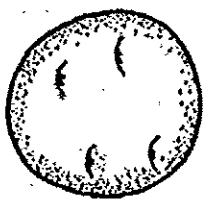


Clavate

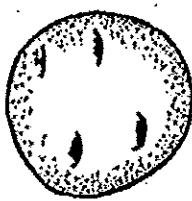


Bi-lobed

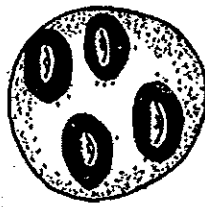
Figure 13: Distribution of Secondary Skin Tuber Color



Eyes



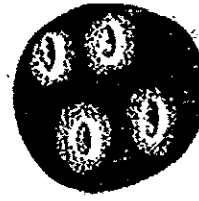
Eyebrows



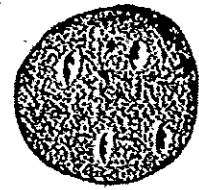
Splashed



Scattered



Spectacled



Stippled

Figure 14: Tuber Shape



Compressed



Round



Oval



Oblong



Long

References:

Huaman, Z. 1986. Systematic botany and morphology of the potato. Technical information Bulletin 6. International Potato Center, Lima, Peru.

Huaman, Z., Williams, J.T., Salhuana, W. and Vincent, L. Descriptors for the cultivated potato and the maintenance and distribution of germplasm collections. 1977. International Board for Plant Genetic Resources. Rome, Italy.

Potato (*Solanum tuberosum* L.) Guidelines for the conduct of tests for distinctness, uniformity and stability. International union for the protection of new varieties of plants (UPOV). 2004-03-31.

Sat 6/19/2010 8:59 PM Received by E-mail RAD

#200700285

Application for Plant Variety Protection Certificate

Exhibit D: Additional Description Information

Variety: A9045-7

Owner: Idaho Agricultural Experiment Station

In direct comparison with Russet Burbank, A9045-7 tubers have higher specific gravities (1.088 vs. 1.082) and vitamin C concentrations (24.5 vs. 19.9 mg/100 g).

2007 MAR 29 AM 10:17

Standard Operating Procedure

Title: Determination of Vitamin C Content of Freeze-dried Tuber Powder -- Total Ascorbic Acid Microfluorometric Method

Reagents:

1. Extracting solution: Dissolve with shaking 15 g metaphosphoric acid in 40 ml glacial-acetic and 200 ml H₂O; dilute to 500 ml and filter rapidly through fluted paper into glass stoppered bottle; store in refrigerator -- good for 1 week.
2. O-Phenylenediamine solution: for each 100 ml solution required, weight 20 mg O-Phenylenediamine • 2 HCL; dilute to volume with double distilled water (DD H₂O) immediately before use.
3. Sodium Acetate Solution: Dissolve 500 g (sodium acetate - 3 H₂O) in DD H₂O and dilute to 1 liter.
4. Boric Acid - Sodium Acetate Solution: Dissolve 3 g boric acid in 100 ml sodium acetate solution; prepare fresh for each assay.
5. Activated Charcoal (VWR)

Procedure:

1. Preparation of standard curve: Dissolve 10 mg L-ascorbic acid in 100 ml extracting solution; dilute 10 ml, 20 ml, and 30 ml aliquots to 100 ml with extracting solution. Proceed with these standard solutions in the ascorbic acid determination. Final concentrations of standard solutions are 10 µg/ml, 20 µg/ml, and 30 µg/ml.
2. Sample preparation: Use 1.5 g freeze dried material per 50 ml extracting solution (25 g fresh tuber tissue per 150 ml). Place in 125 ml flask; allow to sit at least 5 min; filter through a Whatman #4 filter paper. Proceed with ascorbic acid determination.
3. Add 2 g acid-washed Norit to 100 ml sample extract or standard solution (with above sample extract use 25 ml extract and 0.5 g norit in a 125 ml erlenmeyer). Shake vigorously and filter through a Whatman #4 filter paper discarding first few ml.

2007 MAR 29 AM 10:17

4. Transfer 5 ml of this filtrate to a 100 ml volumetric flask containing 5 ml boric acid – sodium acetate solution. Let stand 15 min swirling occasionally. This is the blank determination since the H_3BO_3 – dehydroascorbate complex will not produce a fluorophor with phenylenediamine. After 15 min dilute to volume with H_2O .
5. During the 15 min period during which the blank is sitting, transfer a second 5 ml of filtrate to a 100 ml volumetric containing 5 ml sodium acetate solution and 75 ml of H_2O ; dilute to volume with H_2O .
6. Transfer 2 ml of each solution to a test tube. Add 5 ml O-Phenylenediamine solution to each tube; mix well; let stand 35 min at room temp protected from light (i.e. in closed cabinet).
7. Measure fluorescence of each tube at 1 X setting in a Turner fluorometer primary filter 7-60 secondary filter 2A. Net fluorescence is the difference between the borate treated and non-treated extract. Unknown samples are determined by comparison with known readings as defined by the standard curve.

Reference:

AOAC Handbook 12th Edition 43.056

2007 MAR 29 AM 10:17

The GLM Procedure

#200700285

Dependent Variable: VitC

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	201.6209857	22.4023317	4.88	0.0706
Error	4	18.3487000	4.5871750		
Corrected Total	13	219.9696857			

R-Square	Coeff Var	Root MSE	VitC Mean
0.916585	9.661909	2.141769	22.16714

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	2	77.62358571	38.81179286	8.46	0.0366
REP	3	14.05758750	4.68586250	1.02	0.4716
year*REP	1	10.88111250	10.88111250	2.37	0.1984
CLONE	1	72.86882857	72.86882857	15.89	0.0163
year*CLONE	2	26.18987143	13.09493571	2.85	0.1697

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	70.40941250	35.20470625	7.67	0.0427
REP	3	14.05758750	4.68586250	1.02	0.4716
year*REP	1	10.88111250	10.88111250	2.37	0.1984
CLONE	1	21.92502857	21.92502857	4.78	0.0941
year*CLONE	2	26.18987143	13.09493571	2.85	0.1697

Tests of Hypotheses Using the Type III MS for year*REP as an Error Term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	70.40941250	35.20470625	3.24	0.3659

2007 MAR 29 AM 10:17

The GLM Procedure

#200700285

t Tests (LSD) for VitC

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	4
Error Mean Square	4.587175
Critical Value of t	2.77645
Least Significant Difference	3.1785

Means with the same letter are not significantly different.

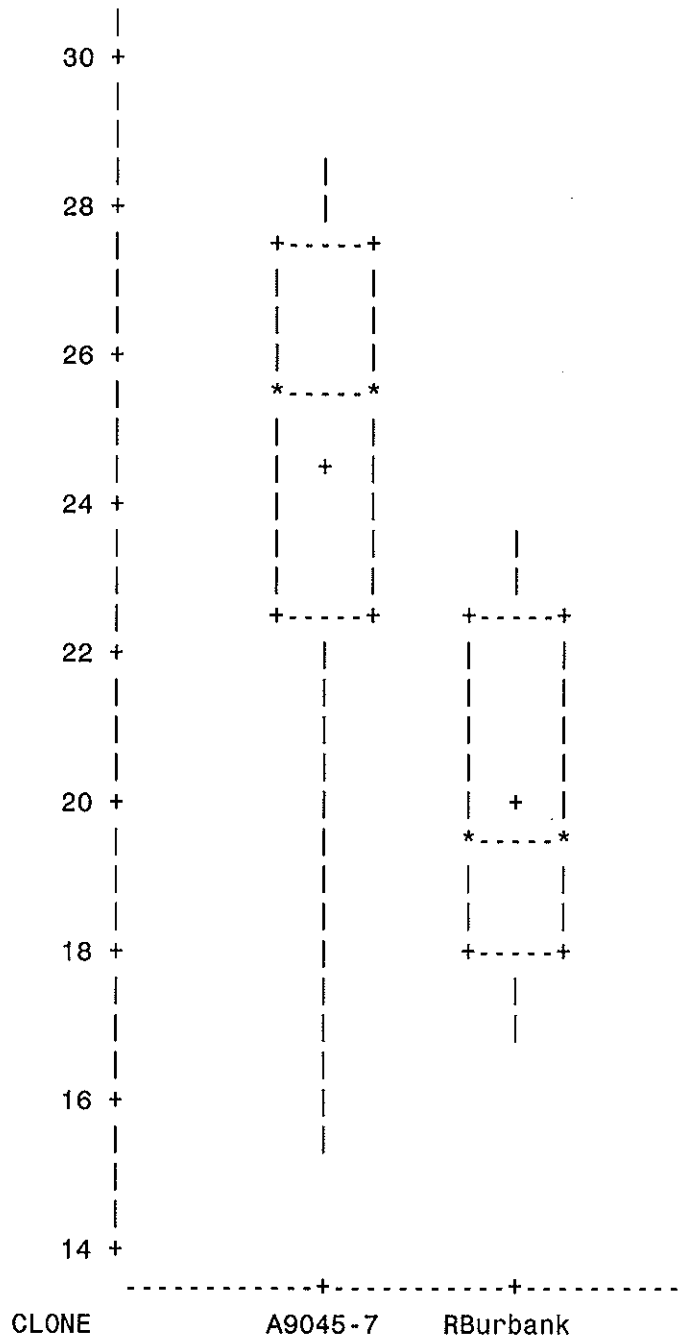
t Grouping	Mean	N	CLONE
A	24.449	7	A9045-7
B	19.886	7	RBurbank

2007 MAR 29 AM 10:17

The UNIVARIATE Procedure
Variable: VitC

#200700285

Schematic Plots



2007 MAR 29 AM 10:17

Standard Operating Procedure

Title: Determination of Specific Gravity

1. A random 8-10 lb sample of dry, 6-12 oz U.S. No. 1 tubers is first weighed in air.
2. After submerging the same tuber sample in water, the tubers are weighed again.
3. From these two measurements, specific gravity is calculated by the following formula:

$$\text{Specific gravity} = \frac{\text{Weight in air}}{\text{Weight in air} - \text{Weight in Water}}$$

For example,

$$\frac{10.0 \text{ lb}}{10.0 \text{ lb} - 0.81 \text{ lb}} \\ = 1.081$$

2007 MAR 29 AM 10:17

The GLM Procedure

#200700285

Dependent Variable: SpecGrav

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	19	0.00097363	0.00005124	5.53	0.0021
Error	12	0.00011125	0.00000927		
Corrected Total	31	0.00108488			

R-Square	Coeff Var	Root MSE	SpecGrav Mean
0.897454	0.280579	0.003045	1.085188

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	3	0.00052763	0.00017588	18.97	<.0001
REP	3	0.00000062	0.00000021	0.02	0.9952
year*REP	9	0.00003962	0.00000440	0.47	0.8652
CLONE	1	0.00033800	0.00033800	36.46	<.0001
year*CLONE	3	0.00006775	0.00002258	2.44	0.1152

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	3	0.00052763	0.00017588	18.97	<.0001
REP	3	0.00000063	0.00000021	0.02	0.9952
year*REP	9	0.00003962	0.00000440	0.47	0.8652
CLONE	1	0.00033800	0.00033800	36.46	<.0001
year*CLONE	3	0.00006775	0.00002258	2.44	0.1152

Tests of Hypotheses Using the Type III MS for year*REP as an Error Term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	3	0.00052763	0.00017588	39.95	<.0001

2007 MAR 29 AM 10:17

The GLM Procedure

#200700285

t Tests (LSD) for SpecGrav

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	12
Error Mean Square	9.271E-6
Critical Value of t	2.17881
Least Significant Difference	0.0023

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	1.088438	16	A9045-7
B	1.081938	16	RBurbank

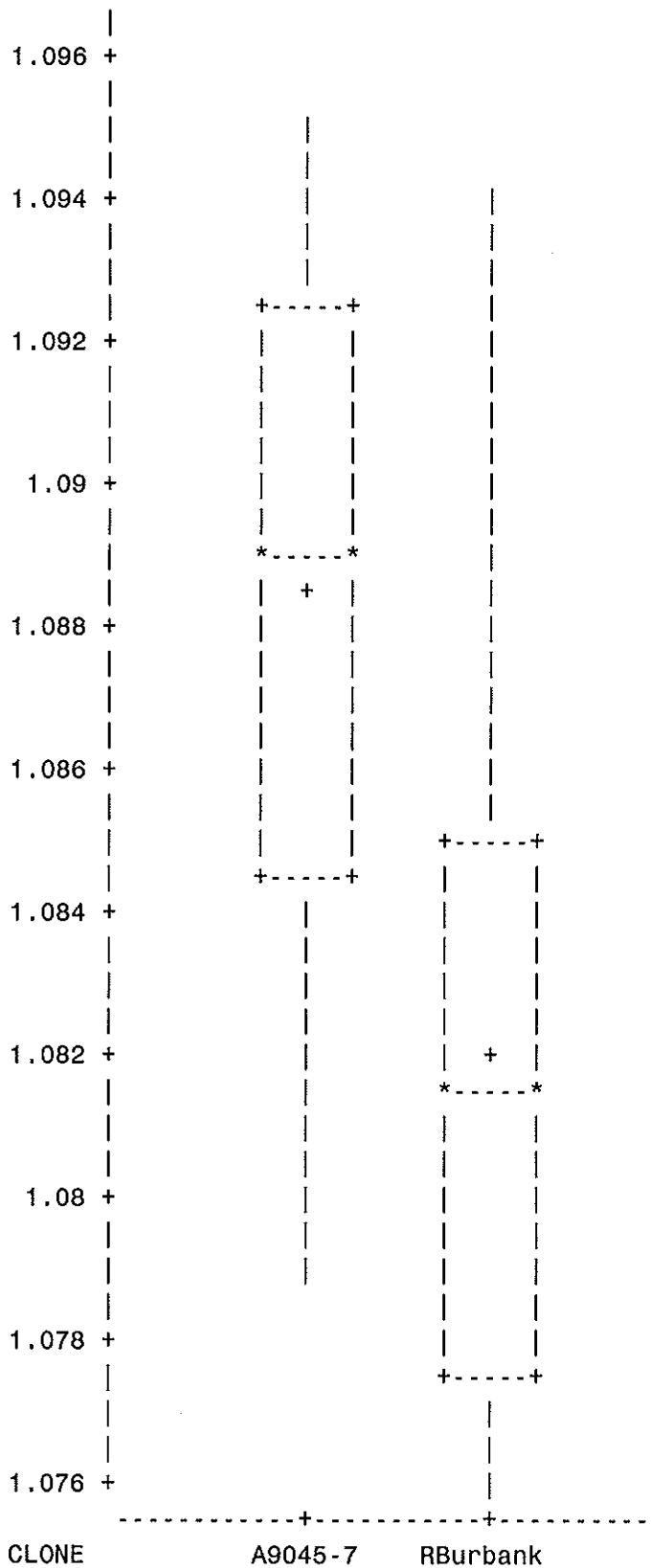
2007 MAR 29 AM 10:17

The UNIVARIATE Procedure

Variable: SpecGrav

#200700285

Schematic Plots



2007 MAR 29 AM 10:17

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 A9045-7	3. VARIETY NAME A9045-7
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Idaho Agricultural Experiment Station University of Idaho Moscow, ID 83844-2337	5. TELEPHONE (Include area code) 208-885-7173	6. FAX (Include area code) 208-885-6654
7. PVPO NUMBER # 2 0 0 7 0 0 2 8 5		

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

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. YES NO

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

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

YES NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

YES NO If no, give name of country

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

The University of Idaho (representing the interests of Washington State University Research Foundation, State of Oregon.... and the United States of America, as represented by the Secretary of Agriculture, Agricultural Research Service.

The University of Idaho is a partner in the Northwest (Tri-State) Potato Variety Development Program and a signatory of the General Agreement on Policy and Procedures for Release of New Publicly Developed Plant Varieties in Idaho, Oregon and Washington, between Washington State University, Oregon State University, University of Idaho and the United State of America, as represented by the Secretary of Agriculture, Agricultural Research Service. In accordance with provision 2.2 of this Agreement, University of Idaho is applying for this PVPC.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

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 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

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

2007 MAR 29 AM 10:17

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

Form Approved OMB NO 0581-0055

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 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

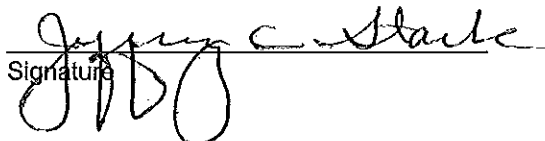
To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S) University of Idaho	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Idaho Agricultural Experiment Station University of Idaho Moscow, ID 83844-4196	TEMPORARY OR EXPERIMENTAL DESIGNATION A9045-7 VARIETY NAME A9045-7
NAME OF OWNER REPRESENTATIVE (S) Jeffrey C. Stark	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 1776 Science Center Dr. Ste. 205 Idaho Falls, ID 83402-1575	FOR OFFICIAL USE ONLY PVPO NUMBER #200700285

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

30 March, 2007
Date

2007 APR 5 AM 10:22