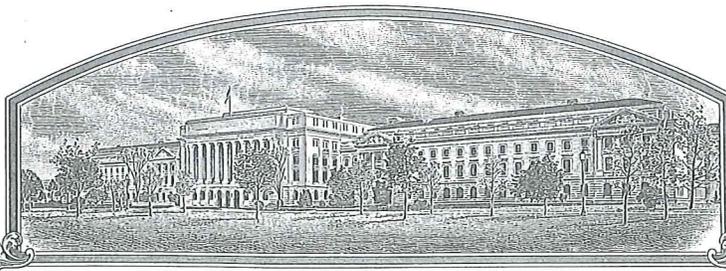


No.

201000084



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

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

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

'Alpine 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 nineteenth day of June, in the year two thousand and thirteen.*

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).

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

1. NAME OF OWNER University of Idaho The State of Idaho (continued on Exhibit E, 11)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME A9305-10	3. VARIETY NAME Alpine Russet
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Office of Technology Transfer Morrill Hall 414 PO Box 443003 Moscow ID 83844 -3003		5. TELEPHONE (include area code) 208-885-4550	FOR OFFICIAL USE ONLY PVPO NUMBER #201000084 FILING DATE December 28, 2009
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Land Grant University Not for Profit		6. FAX (include area code) 208-885-4551	
8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Gaylene Anderson and Jeffrey C. Stark University of Idaho Office of Technology Transfer Morrill Hall 414 PO Box 443033 Moscow ID 83844 -3003		FILING AND EXAMINATION FEES: \$ 4380.00 DATE 12/28/09 CERTIFICATION FEE: \$ DATE
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------------------------

11. TELEPHONE (Include area code) (208) 885-4550 or 529-8376	12. FAX (Include area code) (208) 885-4551 or 522-2954	13. E-MAIL gaylene@uidaho.edu, 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 checked="" type="checkbox"/> NO
----------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) 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) h <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23) <input type="checkbox"/> UNDECIDED
	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

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 checked="" type="checkbox"/> YES <input 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) Gaylene Anderson	NAME (Please print or type) Jeffrey C. Stark
CAPACITY OR TITLE Licensing Associate	CAPACITY OR TITLE Research Professor
DATE 12/18/09	DATE 12/18/09

2009 DEC 28 PM 1:19

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety or by direct deposit soon after filing, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to **reproduce** the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

General E-mail: PVPOmail@usda.gov

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

SPECIFIC INSTRUCTIONS:

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

ITEM

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

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

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

Application filed within one year of release date. First sale January 21, 2009

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).

DRAFT Exhibit A Form

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

Alpine Russet was derived from a sexual hybridization made at the University of Idaho's Aberdeen Research and Extension Center in 1993. It resulted from a cross of A83043-12 and A85103-3. It was first selected in the field in 1996 and subsequently evaluated for 13 Years.

A four generation pedigree is attached.

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

Year	Detail of Stage	Selection Criteria
1996	Alpine Russet was first field selected in 1996.	Yield and maturity, long dormancy and processing potential.
2001	In 2001 Alpine Russet was evaluated in the Tri-State Potato Variety Trials.	
2002-2004	In 2002-2004 Alpine Russet was entered and evaluated in the Western Regional Variety Trials. Because of longer dormancy, and improved fry quality Alpine Russet was selected for use in the french fry processing markets.	
2004-present	Agronomic field trials. Seed source maintained at UI Tetonia R&E Center +	

3a. Is the variety uniform? Yes No

How did you test for uniformity?

Alpine 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?

Alpine Russet has been clonally propagated for 13 years of evaluations. It 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.

DRAFT Exhibit B Form

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

Alpine 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: Alpine Russet is most similar to Russet Burbank however, it has an oblong tuber with fewer eyes.	Applicant's New Variety <u>Alpine Russet</u> Alpine Russet has a length/width ratio of 1.73, average number of eyes/tuber =14.8.	1 st Comparison Variety <u>Russet Burbank</u> Russet Burbank has a length width ratio of 1.95, average number of eyes/tuber =20.7.	Location of Evidence Attached photo.
2. Color traits: Alpine Russet has a lighter tuber skin color and red/purple flowers.	Alpine Russet has tan tuber skin color (164B) and a red/purple outer corolla (76B) with a white halo.	Russet Burbank has brown tuber skin color of (165B) and a white outer corolla color (155A).	Royal Horticultural Society (RHS) color chart. Attached photo.
3. Quantitative traits: Alpine Russet has lower sugar concentrations producing lighter fry color.	Alpine Russet has means glucose = 0.027%, and mean sucrose = 0.154%; mean fry color from 40 F storage = 2.207.	Russet Burbank has mean glucose = 0.102%, mean sucrose = 0.109%; mean fry color from 40F storage = 3.383.	Exhibit D
4. Other: Tuber dormancy for Alpine Russet is ~10 days longer than Russet Burbank.	Mean dormancy length (days after harvest) for Alpine Russet is 185, 165, 140 @ 42, 45, and 48 degrees F respectively.	Mean dormancy length (days after harvest) for Russet Burbank is 175, 155, 130 @ 42, 45, and 48 degrees F respectively.	Data from three years of storage trials at Kimberly, Idaho 2004-2007.

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

ALPINE RUSSET

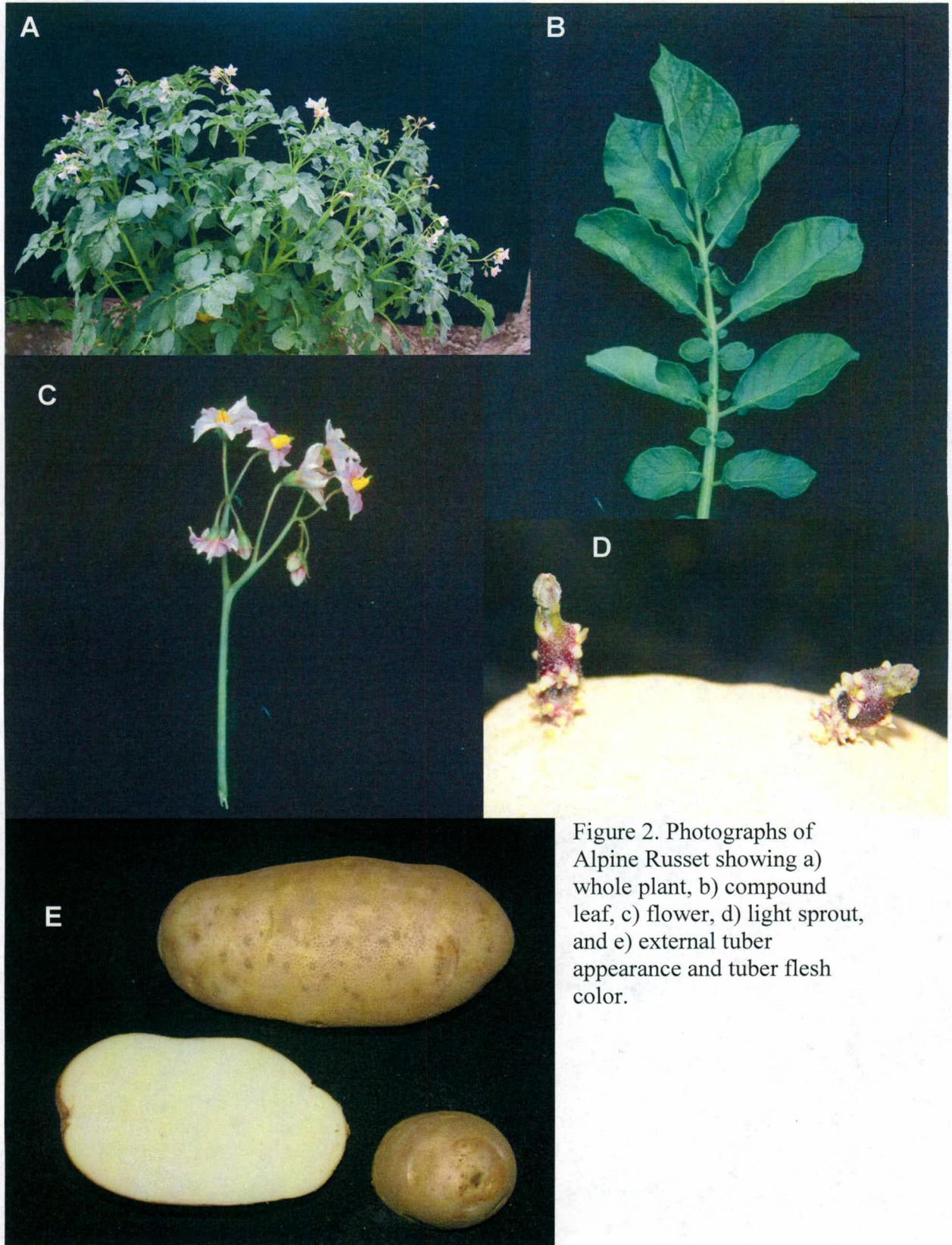


Figure 2. Photographs of Alpine Russet showing a) whole plant, b) compound leaf, c) flower, d) light sprout, and e) external tuber appearance and tuber flesh color.

RUSSET BURBANK

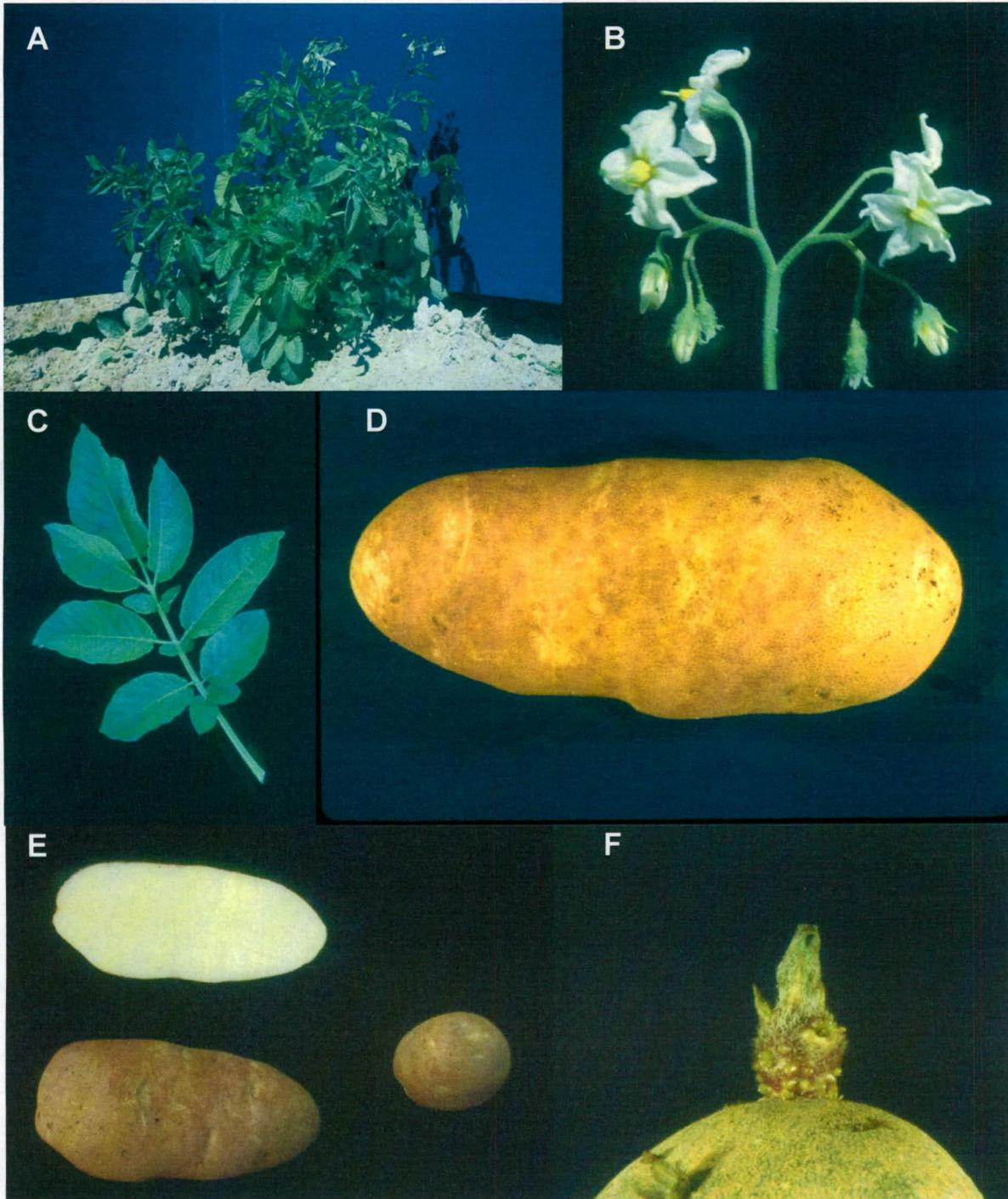


Figure 3. Photographs of Russet Burbank showing a) whole plant, b) flower, c) compound leaf, d) field tuber, e) external tuber appearance and tuber flesh color, and f) light sprout.

Table 1. Mean dormancy length (days after harvest) of Russet Burbank and Alpine Russet potatoes at three storage temperatures. Mean of three years 2004-2007

Variety	42°F	45°F	48°F
Russet Burbank	175	155	130
Alpine Russet	185	165	140

NAME OF APPLICANT (S) University of Idaho	TEMPORARY OR EXPERIMENTAL DESIGNATION <h2 style="margin: 0;">A9305-10</h2>	VARIETY NAME Alpine 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 <h1 style="margin: 0; font-family: monospace;">#201000084</h1>

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)
Alpine 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	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 cylindrica 5 = Narrow cylindrical 6 = Other _____

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

***LIGHT SPROUT BASE: PUBESCENCE OF BASE**

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

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

***LIGHT SPROUT BASE: ANTHOCYANIN COLORATION**

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

V 2	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 5	R1 3	R2	R3	R4
-----	------	----	----	----

*** LIGHT SPROUT TIP: HABIT**

1 = Closed 2 = Intermediate 3 = Open

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

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE

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

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

LIGHT SPROUT TIP ANTHOCYANIN COLORATION

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

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

LIGHT SPROUT ROOT INITIALS: FREQUENCY

1 = Absent 2 = Some 3 = Abundant

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

TYPE:

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

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

MATURITY: Days after planting (DAP) at vine senescence

V	130	R1	125	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

PLANTING DATE:

V	4-28-2003, 4-26-2004	R1	4-28-2003, 4-26-2004	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	
---	---	----	---	----	--	----	--	----	--

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	3	R1	1	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	137 A	R1	146 B	R2		R3		R4	
---	-------	----	-------	----	--	----	--	----	--

LEAF PUBESCENCE DENSITY:

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

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

LEAF PUBESCENCE LENGTH:

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

V	2	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	3	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	
---	---	----	---	----	--	----	--	----	--

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

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	4.0	R1	3.0	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

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

PRIMARY LEAFLET SIZE:

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

V	2	R1	4	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	6.4	R1	7.2	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	1	to	14	R1	3	to	12	R2		to		R3		to		R4		to	
---	---	----	----	----	---	----	----	----	--	----	--	----	--	----	--	----	--	----	--

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	3.9	R1	3.5	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	1	to	8	R1	3	to	6	R2		to		R3		to		R4		to	
---	---	----	---	----	---	----	---	----	--	----	--	----	--	----	--	----	--	----	--

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	11.9	R1	10.9	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

RANGE:

V	5	to	22	R1	4	to	20	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	76 B	R1	155 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	76 B	R1	155 B	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	16	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	5	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

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

V	15 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	2	R1	3	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:

1 = None 3 = Some 5 = Abundant

V	5	R1	1	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

STIGMA SHAPE: (See Figure 12)

1 = Capitata 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	5	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	5	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	164 B	R1	165 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 = Netled 4 = Russetted 5 = Heavily russetted 6 = Other _____

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

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

TUBER LENGTH (mm):

AVERAGE:

V	114	R1	122	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

RANGE:

V	80	to	142	R1	98	to	160	R2		to		R3		to		R4		to	
---	----	----	-----	----	----	----	-----	----	--	----	--	----	--	----	--	----	--	----	--

STANDARD DEVIATION:

V	13.2	R1	15.4	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	239 grams	R1	237grams	R2		R3		R4	
---	-----------	----	----------	----	--	----	--	----	--

TUBER WIDTH (mm)

AVERAGE:

V	66	R1	64	R2		R3		R4	
---	----	----	----	----	--	----	--	----	--

RANGE:

V	55	to	85	R1	55	to	78	R2		to		R3		to		R4		to	
---	----	----	----	----	----	----	----	----	--	----	--	----	--	----	--	----	--	----	--

STANDARD DEVIATION:

V	5.40	R1	4.07	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	239	R1	237	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

V	56	R1	53	R2		R3		R4	
---	----	----	----	----	--	----	--	----	--

RANGE:

V	49	to	70	R1	45	to	66	R2		to		R3		to		R4		to	
---	----	----	----	----	----	----	----	----	--	----	--	----	--	----	--	----	--	----	--

STANDARD DEVIATION:

V	4.19	R1	4.56	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	239	R1	237	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

TUBER EYE DEPTH:

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

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

TUBER LATERAL EYES:

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

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

NUMBER EYE/TUBER:

AVERAGE:

V	14.8	R1	21.7	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

RANGE:

V	9	to	21	R1	15	to	30	R2		to		R3		to		R4		to	
---	---	----	----	----	----	----	----	----	--	----	--	----	--	----	--	----	--	----	--

DISTRIBUTION OF TUBER EYES:

1 = Predominantly apical 2 = Evenly distributed

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

PROMINENCE OF TUBER EYEBROWS:

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

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

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 C	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	2	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

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

SOFT ROT (Erwinia)

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

COMMON SCAB (Streptomyces)

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

POWDERY SCAB (Spongospora)

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

DRY ROT (Fusarium)

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

POTATO LEAF ROLL VIRUS (PLRV)

V	7	R1	9	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

V	9	R1	9	R2		R3		R4	
---	---	----	---	----	--	----	--	----	--

POTATO VIRUS Y (PVY)

V	7	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	7	R1	7	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		R1		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	
---	--	----	--	----	--	----	--	----	--

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 2.5

R1 5.3

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.

Alpine Russet has lighter fry color following 4 months storage at 40F (2.21) than Russet Burbank (3.38).

Using USDA Color chart 0-4 with 4 = darkest. See attached protocol and Exhibit D.

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.

Alpine Russet has a mean glucose concentration of 0.027 and sucrose concentration of 0.154 % fresh weight basis.

Russet Burbank has a mean glucose concentration of 0.102 and sucrose concentration of 0.109 % fresh weight basis.

See protocol and attached Exhibit D

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.

Blank lines for additional comments and characteristics.

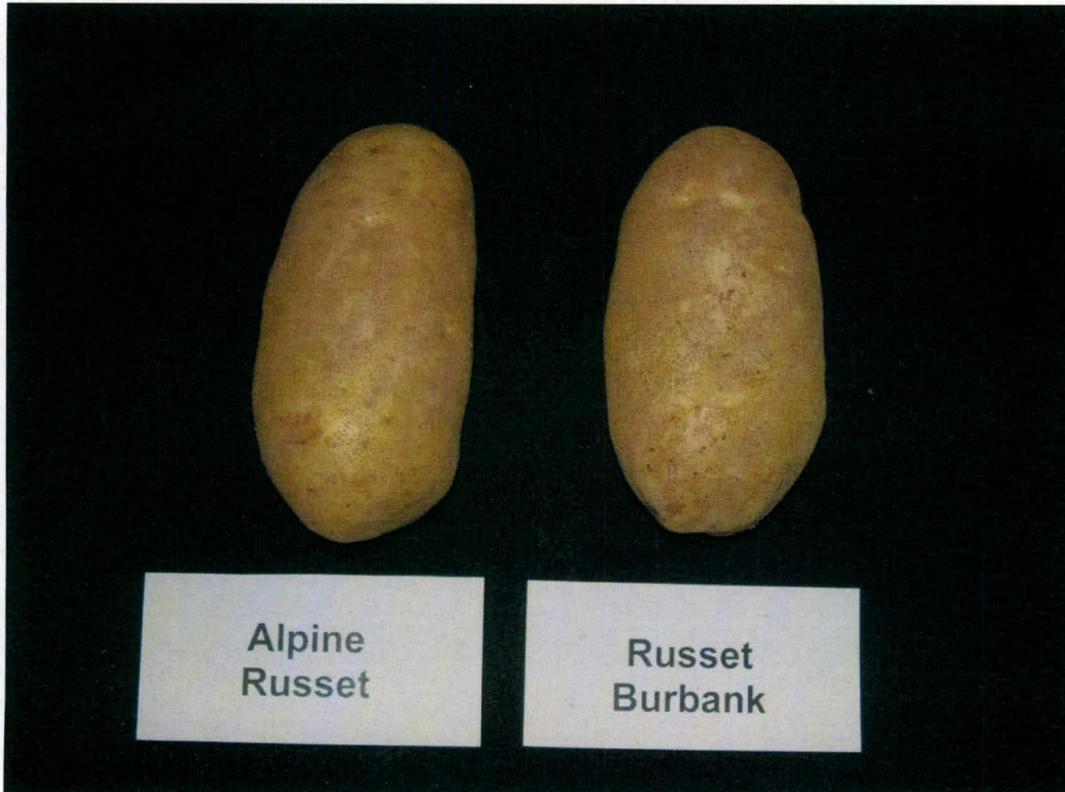


Figure 4. Alpine Russet and Russet Burbank tuber color and shape comparison.

Application for Plant Variety Protection Certificate**Exhibit D: Additional Description Information****Variety:** Alpine Russet**Owner:** Idaho Agricultural Experiment Station

In direct comparison with Russet Burbank, Alpine Russet tubers have lower sugar concentrations. Alpine Russet average glucose concentration = 0.027% and sucrose = 0.154 % vs. 0.102% and 0.109% respectively for Russet Burbank averaged over 3 years (2004-2006). Sugar concentrations were determined using a YSI model 2700 Analyzer (Yellow Springs Instrument Co., Inc., Yellow Springs, OH) and expressed as a percent fresh weight basis. Samples were stored at 45° F for four months.

Alpine Russet tubers have lighter french fry color (2.21 for Alpine Russet at 40° F temperature for approximately four months vs. 3.38 for Russet Burbank average of 2 years). Mean USDA fry color (0-4 with lower number = lighter color) for individual years were 2.20750 at 40° F for Alpine Russet and 3.3.79250 at 40° F for Russet Burbank in 2003, (p=0.01) and 2.2075 at 40° F for Alpine Russet and 2.9750 for Russet Burbank in 2004 (p=0.05).

Protocols are attached. Statistical analysis was performed using the GLM and Univariate procedures from SAS (analysis attached).

Sugar and Fry Quality Analysis

Sucrose and glucose concentrations for the treatments in this trial were determined from a ten-tuber sample within one week of harvest and monthly through 0 months of storage using the method of Sowokinos et al. (2000) with modifications. Tubers were cut using a Keen Kut Shoe Stringer French fry cutter. Two hundred grams of tuber tissue collected from the center of the ten tubers were macerated in an Acme Juicerator (Acme Equipment, Spring Hill, FL). During processing, tuber tissue was washed with 150 mL of sodium-phosphate buffer (0.05 M, pH 7.5) for a final homogenate volume of 275 mL. Glucose and sucrose concentrations were determined using a YSI model 2700 Analyzer (Yellow Springs Instrument Co., Inc., Yellow Springs, OH) and expressed on a percent fresh weight basis.

One fried plank (3.0 cm x 0.8 cm) from each of the ten tubers used in the sugar extraction procedure was used for fry color determination (10 strips per replicate). Strips were fried in canola oil at 375°F for 3.5 minutes. Fry color was determined within 3 minutes using a model 577 Photovolt Reflection Meter (model 577, Photovolt Instruments Inc., Minneapolis, MN). A green filter was used and calibrated using a black-cavity standard as 0.0% reflectance and a white plaque (Cat. No. 26-570-08) as 99.9% reflectance. Measurements were taken on the bud and stem ends of each strip. A relationship between USDA fry color and photovolt reflectance as measured by our instrument and methodology was previously established. The data produced a scale of a USDA fry color rating 1 was equal to a 44.0 or greater reflectance rating, a USDA 2 rating was less than 44.0 to 35.0 reflectance reading, a USDA 3 rating was less than 35.0 to 26.0 reflectance reading, and a USDA 4 rating was less than 26.0 reflectance rating. The lower the reflectance measurement, the darker the fry color.

The incidence and severity of mottling were recorded. The severity rating scale for mottling was 1 = no mottling, 2 = mild mottling (light colored, non-uniform surface browning not covering the entire fried plank, 3 = moderate mottling (light colored, non-uniform surface browning covering the entire fried plank, and 4 = severe mottling (dark colored, non-uniform surface browning covering the entire fried plank).

The presence or absence of sugar end was recorded for each plank. A plank was considered to have a sugar end if a predominant color of number 3 or darker, when compared with the USDA Munsell Color Chart for French Fried Potatoes, was seen on any 2 sides extending $\frac{1}{2}$ inch or more from the end of the fried strip.

A ten-tuber subsample comprised one replicate for sugar and fry color analysis. Analysis of variance was performed utilizing SAS (GLM). Means were separated by LSD at $\alpha=0.05$ and $\alpha=0.10$. Multiple comparisons were evaluated using Fisher's LSD. Percent data (% mottling and sugar ends) was transformed via arcsin of the square root and other potential transformations. Back-transformed values are given in the table.

#201000084

The GLM Procedure

Class Level Information

Class	Levels	Values
year	3	2004 2005 2006
CLONE	2	Alpine RBurbank
REP	3	1 2 3

Number of Observations Read 18
Number of Observations Used 18

#201000084

The GLM Procedure

Dependent Variable: Glucose

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	0.03768391	0.00342581	13.74	0.0022
Error	6	0.00149619	0.00024936		
Corrected Total	17	0.03918010			

R-Square	Coeff Var	Root MSE	Glucose Mean
0.961813	24.49919	0.015791	0.064456

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	2	0.00923602	0.00461801	18.52	0.0027
REP	2	0.00004011	0.00002005	0.08	0.9237
year*REP	4	0.00039884	0.00009971	0.40	0.8029
CLONE	1	0.02490355	0.02490355	99.87	<.0001
year*CLONE	2	0.00310539	0.00155270	6.23	0.0344

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	0.00923602	0.00461801	18.52	0.0027
REP	2	0.00004011	0.00002005	0.08	0.9237
year*REP	4	0.00039884	0.00009971	0.40	0.8029
CLONE	1	0.02490355	0.02490355	99.87	<.0001
year*CLONE	2	0.00310539	0.00155270	6.23	0.0344

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	0.00923602	0.00461801	46.31	0.0017

#201000084

The GLM Procedure

Dependent Variable: Sucrose

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	0.01279358	0.00116305	25.49	0.0004
Error	6	0.00027379	0.00004563		
Corrected Total	17	0.01306736			

R-Square	Coeff Var	Root MSE	Sucrose Mean
0.979048	5.117555	0.006755	0.131998

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	2	0.00105107	0.00052553	11.52	0.0088
REP	2	0.00069239	0.00034619	7.59	0.0228
year*REP	4	0.00051394	0.00012848	2.82	0.1242
CLONE	1	0.00924705	0.00924705	202.65	<.0001
year*CLONE	2	0.00128913	0.00064457	14.13	0.0054

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	0.00105107	0.00052553	11.52	0.0088
REP	2	0.00069239	0.00034619	7.59	0.0228
year*REP	4	0.00051394	0.00012848	2.82	0.1242
CLONE	1	0.00924705	0.00924705	202.65	<.0001
year*CLONE	2	0.00128913	0.00064457	14.13	0.0054

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	0.00105107	0.00052553	4.09	0.1078

The GLM Procedure

#201000084

t Tests (LSD) for Glucose

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

Alpha	0.05
Error Degrees of Freedom	6
Error Mean Square	0.000249
Critical Value of t	2.44691
Least Significant Difference	0.0182

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	0.101652	9	RBurbank
B	0.027260	9	Alpine

The GLM Procedure

#201000084

t Tests (LSD) for Sucrose

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

Alpha	0.05
Error Degrees of Freedom	6
Error Mean Square	0.000046
Critical Value of t	2.44691
Least Significant Difference	0.0078

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	0.154664	9	Alpine
B	0.109333	9	RBurbank

#201000084

----- CLONE=Alpine -----

The UNIVARIATE Procedure
 Variable: Glucose

Moments

N	9	Sum Weights	9
Mean	0.02726046	Sum Observations	0.24534416
Std Deviation	0.01271503	Variance	0.00016167
Skewness	0.70862698	Kurtosis	-0.8219608
Uncorrected SS	0.00798157	Corrected SS	0.00129338
Coeff Variation	46.6427628	Std Error Mean	0.00423834

Basic Statistical Measures

Location		Variability	
Mean	0.027260	Std Deviation	0.01272
Median	0.025824	Variance	0.0001617
Mode	0.014423	Range	0.03407
		Interquartile Range	0.01580

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 6.431866	Pr > t	0.0002
Sign	M 4.5	Pr >= M	0.0039
Signed Rank	S 22.5	Pr >= S	0.0039

Tests for Normality

Test	--Statistic---	-----p Value-----	
Shapiro-Wilk	W 0.890561	Pr < W	0.2022
Kolmogorov-Smirnov	D 0.187604	Pr > D	>0.1500
Cramer-von Mises	W-Sq 0.05698	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq 0.398208	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.0484890
99%	0.0484890
95%	0.0484890

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Glucose

Quantiles (Definition 5)

Quantile	Estimate
90%	0.0484890
75% Q3	0.0326923
50% Median	0.0258242
25% Q1	0.0168956
10%	0.0144231
5%	0.0144231
1%	0.0144231
0% Min	0.0144231

Extreme Observations

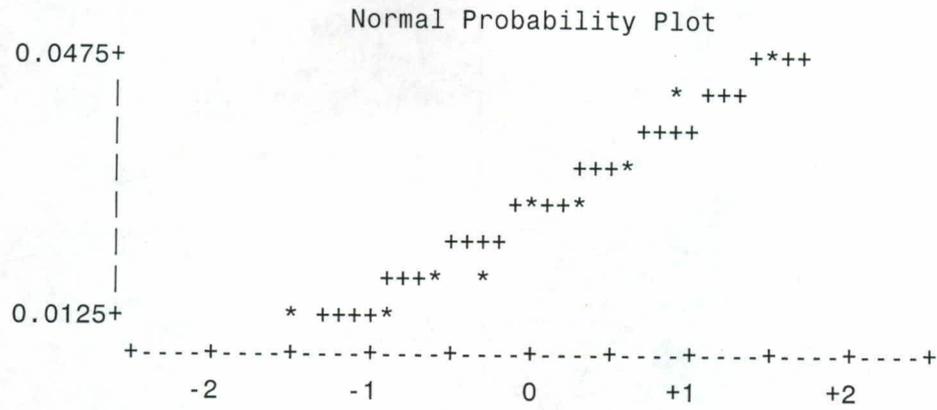
-----Lowest-----		-----Highest-----	
Value	Obs	Value	Obs
0.0144231	3	0.0258242	4
0.0144231	1	0.0289980	5
0.0168956	2	0.0326923	7
0.0189560	6	0.0446429	8
0.0258242	4	0.0484890	9

Stem Leaf	#	Boxplot
4 58	2	
4		
3		
3 3	1	+-----+
2 69	2	*---+---*
2		
1 79	2	+-----+
1 44	2	
-----+-----+-----+-----+		

Multiply Stem.Leaf by 10** -2

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Glucose



----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Sucrose

Moments

N	9	Sum Weights	9
Mean	0.15466369	Sum Observations	1.39197318
Std Deviation	0.01316299	Variance	0.00017326
Skewness	-0.8797014	Kurtosis	1.15097553
Uncorrected SS	0.21667382	Corrected SS	0.00138611
Coeff Variation	8.51071591	Std Error Mean	0.00438766

Basic Statistical Measures

Location		Variability	
Mean	0.154664	Std Deviation	0.01316
Median	0.155297	Variance	0.0001733
Mode	0.163462	Range	0.04492
		Interquartile Range	0.01236

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 35.24968	Pr > t	<.0001
Sign	M 4.5	Pr >= M	0.0039
Signed Rank	S 22.5	Pr >= S	0.0039

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.946769	Pr < W	0.6547
Kolmogorov-Smirnov	D 0.171043	Pr > D	>0.1500
Cramer-von Mises	W-Sq 0.044818	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq 0.287137	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.173077
99%	0.173077
95%	0.173077

----- CLONE=Alpine ----- #201000084 -----

The UNIVARIATE Procedure
 Variable: Sucrose

Quantiles (Definition 5)

Quantile	Estimate
90%	0.173077
75% Q3	0.163462
50% Median	0.155297
25% Q1	0.151099
10%	0.128159
5%	0.128159
1%	0.128159
0% Min	0.128159

Extreme Observations

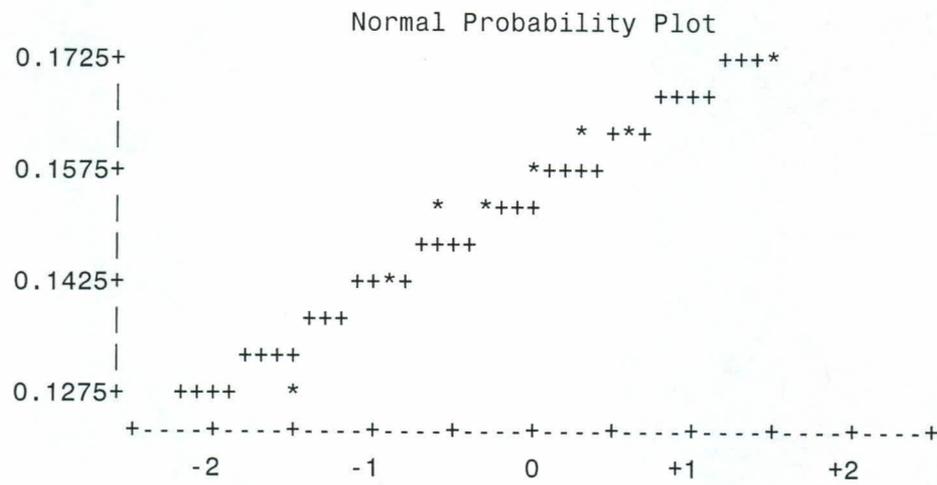
-----Lowest-----		-----Highest-----	
Value	Obs	Value	Obs
0.128159	8	0.155297	5
0.142857	3	0.160714	7
0.151099	2	0.163462	1
0.153846	6	0.163462	9
0.155297	5	0.173077	4

Stem Leaf	#	Boxplot
17 3	1	
16		
16 133	3	+-----+
15 5	1	*---+---*
15 14	2	+-----+
14		
14 3	1	
13		
13		
12 8	1	0

-----+-----+-----+-----+
 Multiply Stem.Leaf by 10**-2

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Sucrose



----- CLONE=RBurbank -----

The UNIVARIATE Procedure
Variable: Glucose

Moments

N	9	Sum Weights	9
Mean	0.10165214	Sum Observations	0.91486925
Std Deviation	0.0402852	Variance	0.0016229
Skewness	-0.380607	Kurtosis	-1.2545328
Uncorrected SS	0.10598159	Corrected SS	0.01298318
Coeff Variation	39.6304463	Std Error Mean	0.0134284

Basic Statistical Measures

Location		Variability	
Mean	0.101652	Std Deviation	0.04029
Median	0.111401	Variance	0.00162
Mode	.	Range	0.11174
		Interquartile Range	0.06813

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 7.569937	Pr > t	<.0001
Sign	M 4.5	Pr >= M	0.0039
Signed Rank	S 22.5	Pr >= S	0.0039

Tests for Normality

Test	--Statistic---	-----p Value-----	
Shapiro-Wilk	W 0.911937	Pr < W	0.3297
Kolmogorov-Smirnov	D 0.194519	Pr > D	>0.1500
Cramer-von Mises	W-Sq 0.061474	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq 0.377824	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.1567500
99%	0.1567500
95%	0.1567500

#201000084

----- CLONE=RBurbank -----

The UNIVARIATE Procedure
 Variable: Glucose

Quantiles (Definition 5)

Quantile	Estimate
90%	0.1567500
75% Q3	0.1340625
50% Median	0.1114011
25% Q1	0.0659284
10%	0.0450075
5%	0.0450075
1%	0.0450075
0% Min	0.0450075

Extreme Observations

-----Lowest-----		-----Highest-----	
Value	Obs	Value	Obs
0.0450075	11	0.111401	18
0.0465659	10	0.116621	13
0.0659284	12	0.134063	17
0.1044670	14	0.134066	15
0.1114011	18	0.156750	16

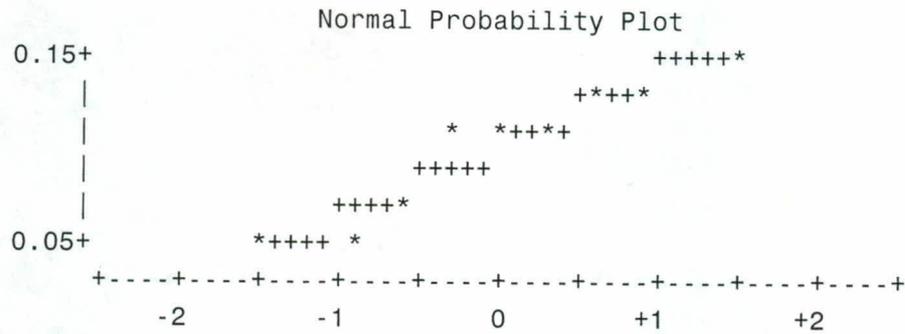
Stem Leaf	#	Boxplot
14 7	1	
12 44	2	+-----+
10 417	3	*-+---*
8		
6 6	1	+-----+
4 57	2	

-----+-----+-----+-----+

Multiply Stem.Leaf by 10** -2

----- CLONE=RBurbank -----

The UNIVARIATE Procedure
Variable: Glucose



----- CLONE=RBurbank -----

The UNIVARIATE Procedure
Variable: Sucrose

Moments

N	9	Sum Weights	9
Mean	0.10933268	Sum Observations	0.98399411
Std Deviation	0.01744347	Variance	0.00030427
Skewness	0.47736462	Kurtosis	-0.989616
Uncorrected SS	0.11001691	Corrected SS	0.0024342
Coeff Variation	15.954491	Std Error Mean	0.00581449

Basic Statistical Measures

Location		Variability	
Mean	0.109333	Std Deviation	0.01744
Median	0.101923	Variance	0.0003043
Mode	.	Range	0.05239
		Interquartile Range	0.02804

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 18.80348	Pr > t	<.0001
Sign	M 4.5	Pr >= M	0.0039
Signed Rank	S 22.5	Pr >= S	0.0039

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.900422	Pr < W	0.2545
Kolmogorov-Smirnov	D 0.247601	Pr > D	0.1097
Cramer-von Mises	W-Sq 0.100916	Pr > W-Sq	0.0943
Anderson-Darling	A-Sq 0.523768	Pr > A-Sq	0.1350

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.137088
99%	0.137088
95%	0.137088

#201000084

----- CLONE=RBurbank -----

The UNIVARIATE Procedure
 Variable: Sucrose

Quantiles (Definition 5)

Quantile	Estimate
90%	0.137088
75% Q3	0.127590
50% Median	0.101923
25% Q1	0.099550
10%	0.084700
5%	0.084700
1%	0.084700
0% Min	0.084700

Extreme Observations

-----Lowest-----		-----Highest-----	
Value	Obs	Value	Obs
0.0847000	17	0.101923	13
0.0973098	14	0.105769	15
0.0995500	16	0.127590	12
0.1017857	18	0.128278	11
0.1019231	13	0.137088	10

Stem Leaf	#	Boxplot
13 7	1	
12 88	2	+-----+
11		
10 0226	4	*---+---*
9 7	1	
8 5	1	

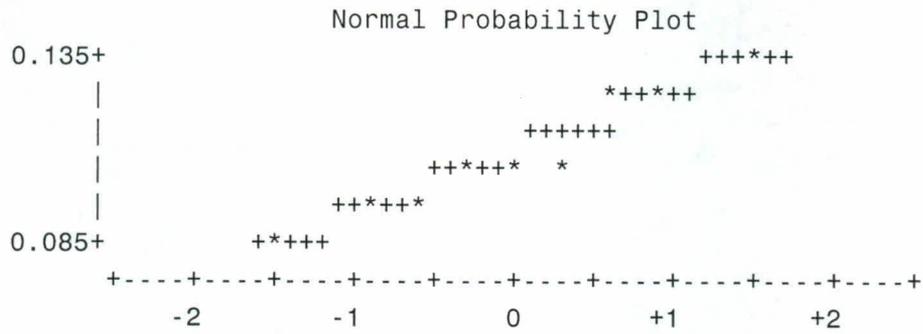
-----+-----+-----+-----+

Multiply Stem.Leaf by 10**-2

#201000084

----- CLONE=RBurbank -----

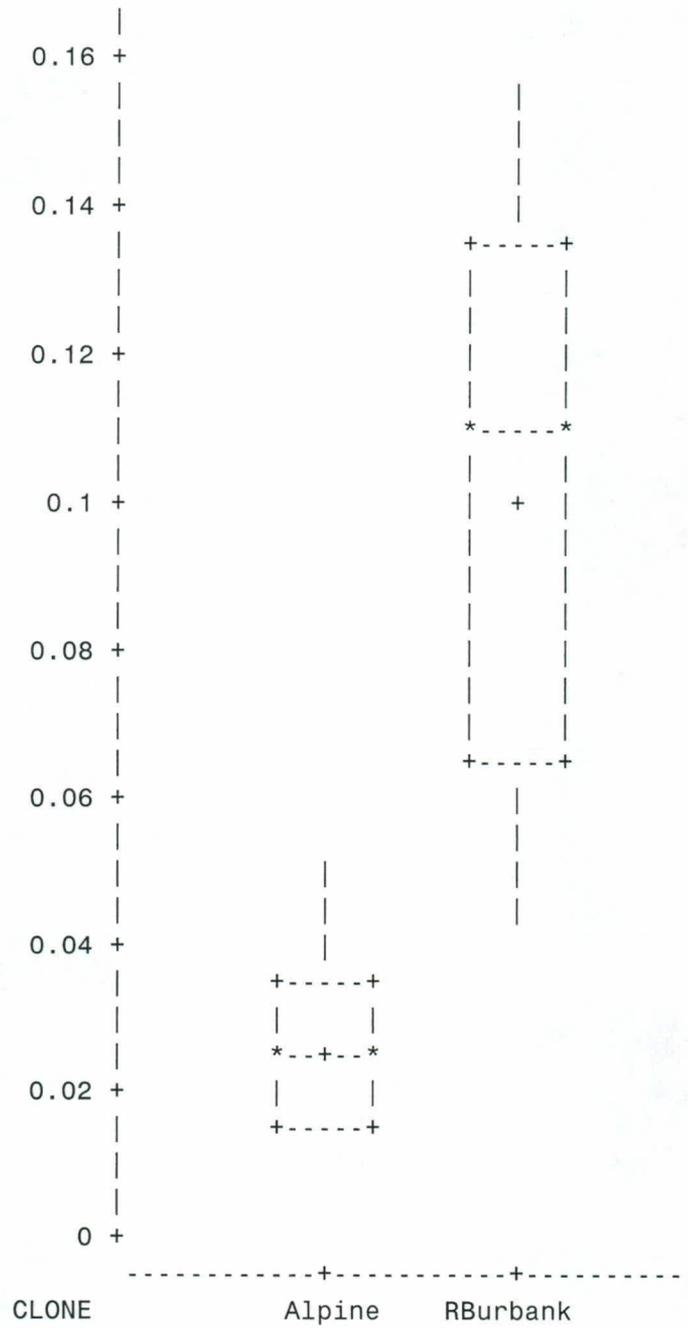
The UNIVARIATE Procedure
Variable: Sucrose



#201000084

The UNIVARIATE Procedure
Variable: Glucose

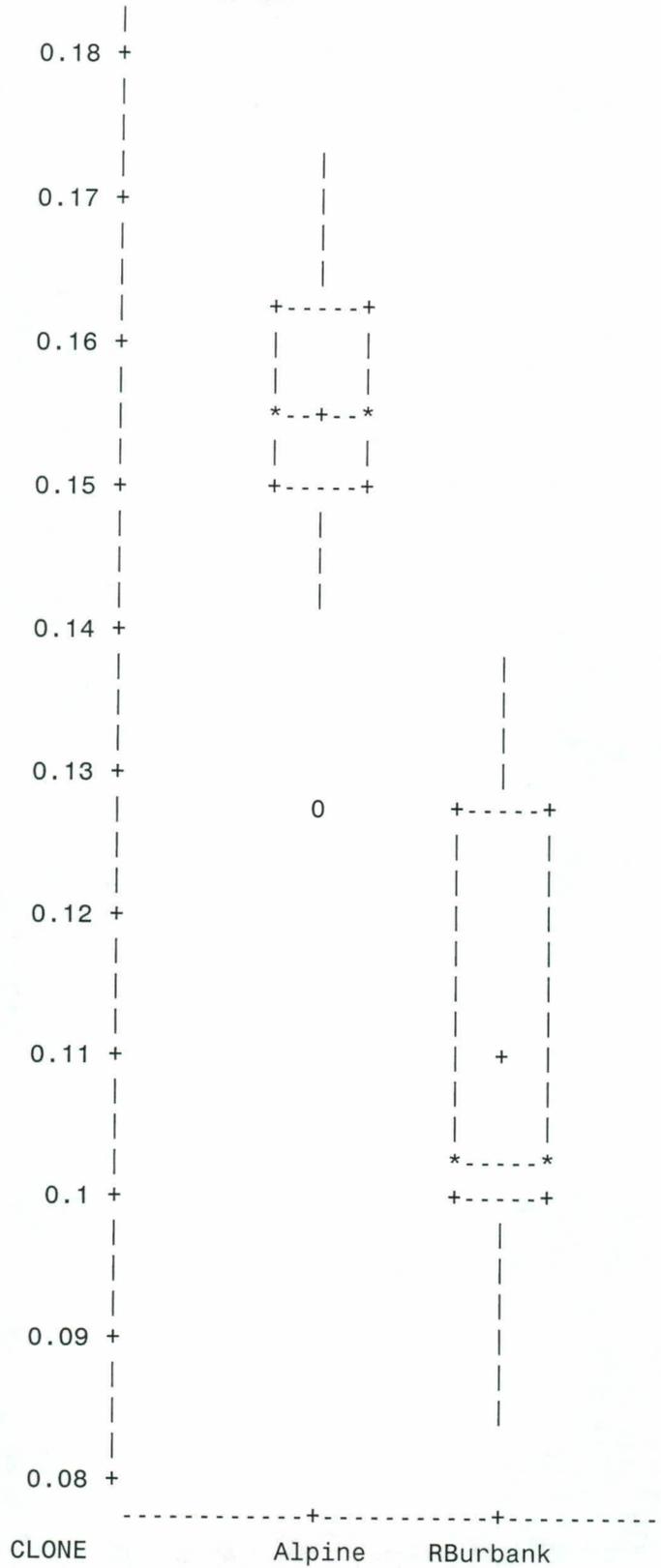
Schematic Plots



The UNIVARIATE Procedure
Variable: Sucrose

#201000084

Schematic Plots



The GLM Procedure

#201000084

Class Level Information

Class	Levels	Values
CLONE	2	Alpine RBurbank
REP	4	1 2 3 4

Number of Observations Read	8
Number of Observations Used	8

#201000084

The GLM Procedure

Dependent Variable: Fry40

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6.21335000	1.55333750	322.49	0.0003
Error	3	0.01445000	0.00481667		
Corrected Total	7	6.22780000			

R-Square	Coeff Var	Root MSE	Fry40 Mean
0.997680	2.313407	0.069402	3.000000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	1.18890000	0.39630000	82.28	0.0022
CLONE	1	5.02445000	5.02445000	1043.14	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	1.18890000	0.39630000	82.28	0.0022
CLONE	1	5.02445000	5.02445000	1043.14	<.0001

11:31 Monday, October 5, 2009

The GLM Procedure

#201000084

t Tests (LSD) for Fry40

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.004817
Critical Value of t	3.18245
Least Significant Difference	0.1562

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	3.79250	4	RBurbank
B	2.20750	4	Alpine

11:31 Monday, October 5, 2009

#201000084

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	2.2075	Sum Observations	8.83
Std Deviation	0.47842624	Variance	0.22889167
Skewness	-1.8400816	Kurtosis	3.38709189
Uncorrected SS	20.1789	Corrected SS	0.686675
Coeff Variation	21.6727628	Std Error Mean	0.23921312

Basic Statistical Measures

Location		Variability	
Mean	2.207500	Std Deviation	0.47843
Median	2.415000	Variance	0.22889
Mode	2.500000	Range	1.00000
		Interquartile Range	0.58500

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 9.228173	Pr > t	0.0027
Sign	M 2	Pr >= M	0.1250
Signed Rank	S 5	Pr >= S	0.1250

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.745621	Pr < W	0.0351
Kolmogorov-Smirnov	D 0.351043	Pr > D	0.0811
Cramer-von Mises	W-Sq 0.107087	Pr > W-Sq	0.0626
Anderson-Darling	A-Sq 0.576605	Pr > A-Sq	0.0471

Quantiles (Definition 5)

Quantile	Estimate
100% Max	2.500
99%	2.500
95%	2.500

#201000084

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	2.500
75% Q3	2.500
50% Median	2.415
25% Q1	1.915
10%	1.500
5%	1.500
1%	1.500
0% Min	1.500

Extreme Observations

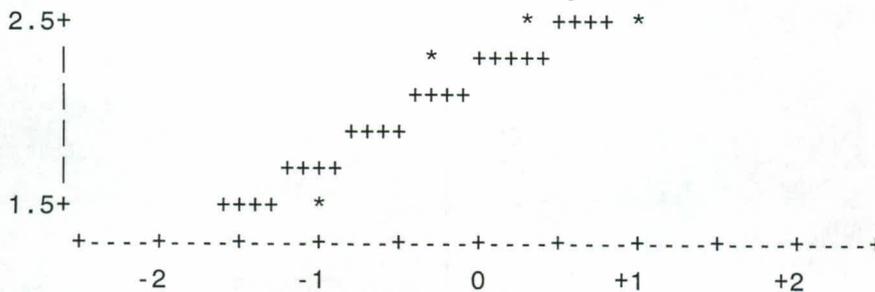
----Lowest----		----Highest---	
Value	Obs	Value	Obs
1.50	1	1.50	1
2.33	3	2.33	3
2.50	4	2.50	2
2.50	2	2.50	4

Stem Leaf	#	Boxplot
24 00	2	+-----+
22 3	1	+
20		
18		+-----+
16		
14 0	1	

-----+-----+-----+-----+

Multiply Stem.Leaf by 10** -1

Normal Probability Plot



----- CLONE=RBurbank -----

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	3.7925	Sum Observations	15.17
Std Deviation	0.415	Variance	0.172225
Skewness	-2	Kurtosis	4
Uncorrected SS	58.0489	Corrected SS	0.516675
Coeff Variation	10.94265	Std Error Mean	0.2075

Basic Statistical Measures

Location		Variability	
Mean	3.792500	Std Deviation	0.41500
Median	4.000000	Variance	0.17223
Mode	4.000000	Range	0.83000
		Interquartile Range	0.41500

Tests for Location: $\mu_0=0$

Test	-Statistic-	-----p Value-----	
Student's t	t 18.27711	Pr > t	0.0004
Sign	M 2	Pr >= M	0.1250
Signed Rank	S 5	Pr >= S	0.1250

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.629776	Pr < W	0.0012
Kolmogorov-Smirnov	D 0.441462	Pr > D	<0.0100
Cramer-von Mises	W-Sq 0.162472	Pr > W-Sq	0.0090
Anderson-Darling	A-Sq 0.826838	Pr > A-Sq	0.0075

Quantiles (Definition 5)

Quantile	Estimate
100% Max	4.000
99%	4.000
95%	4.000

----- CLONE=RBurbank -----

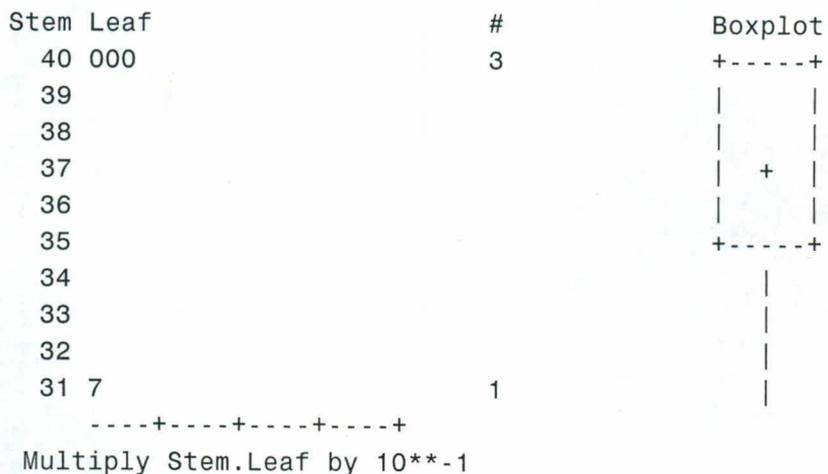
The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	4.000
75% Q3	4.000
50% Median	4.000
25% Q1	3.585
10%	3.170
5%	3.170
1%	3.170
0% Min	3.170

Extreme Observations

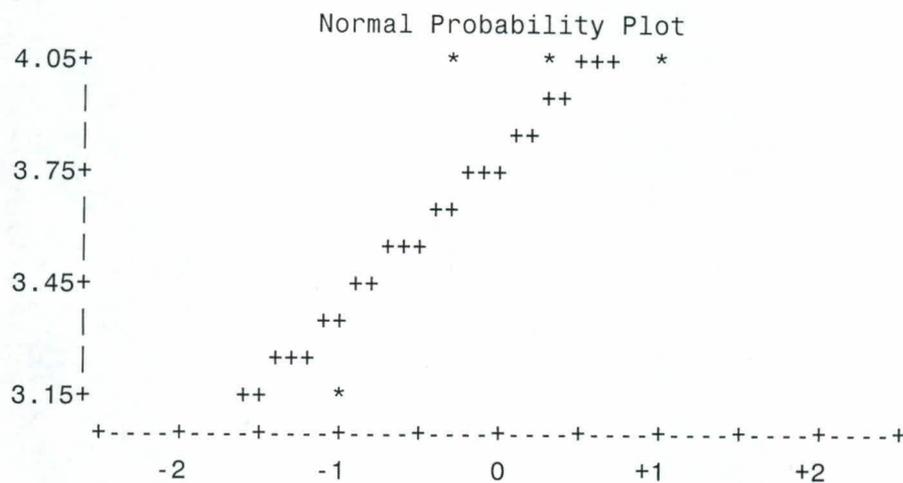
----Lowest----		----Highest---	
Value	Obs	Value	Obs
3.17	5	3.17	5
4.00	8	4.00	6
4.00	7	4.00	7
4.00	6	4.00	8



----- CLONE=RBurbank -----

#201000084

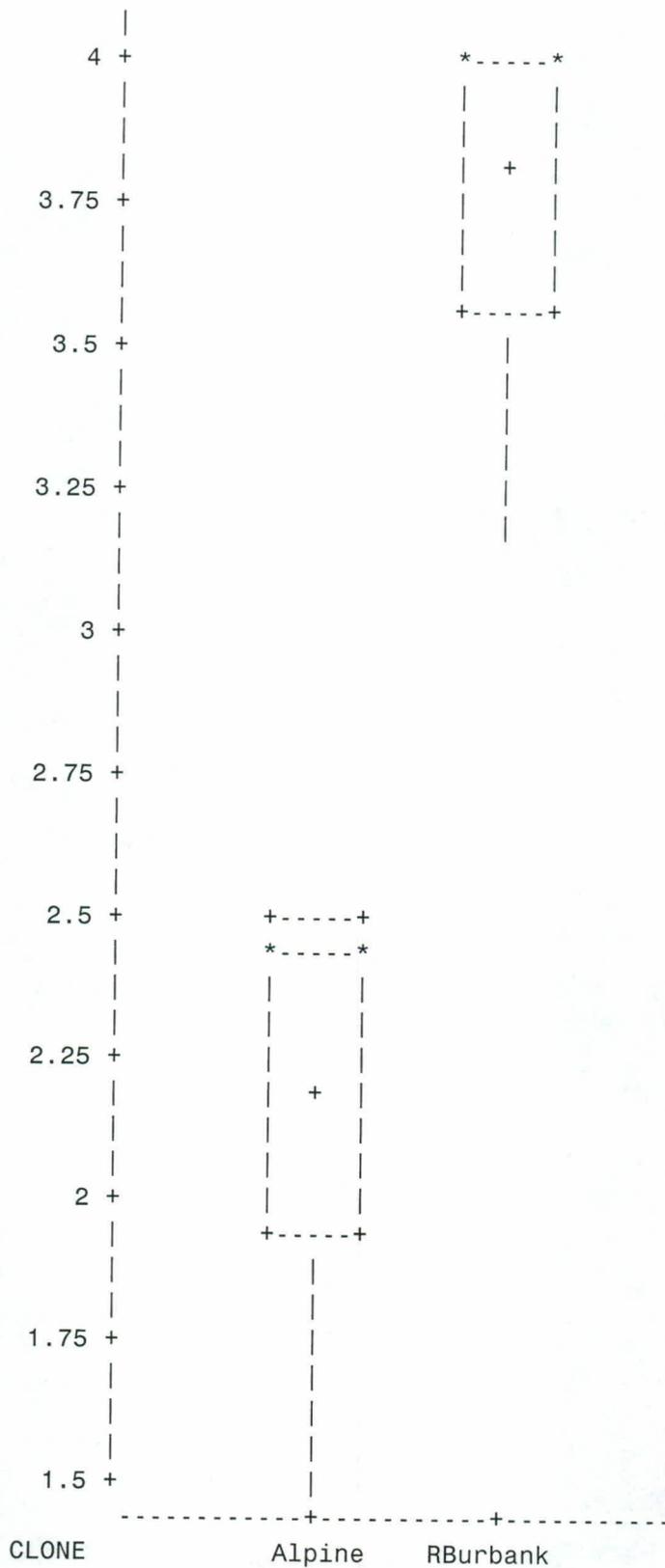
The UNIVARIATE Procedure
Variable: Fry40



#20100084

The UNIVARIATE Procedure
Variable: Fry40

Schematic Plots



The GLM Procedure

#201000084

Class Level Information

Class	Levels	Values
CLONE	2	Alpine RBurbank
REP	4	1 2 3 4

Number of Observations Read	8
Number of Observations Used	8

11:31 Monday, October 5, 2009

#20100084

The GLM Procedure

Dependent Variable: Fry40

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6.21335000	1.55333750	322.49	0.0003
Error	3	0.01445000	0.00481667		
Corrected Total	7	6.22780000			

R-Square	Coeff Var	Root MSE	Fry40 Mean
0.997680	2.313407	0.069402	3.000000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	1.18890000	0.39630000	82.28	0.0022
CLONE	1	5.02445000	5.02445000	1043.14	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	1.18890000	0.39630000	82.28	0.0022
CLONE	1	5.02445000	5.02445000	1043.14	<.0001

The GLM Procedure

#201000084

Class Level Information

Class	Levels	Values
CLONE	2	Alpine RBurbank
REP	4	1 2 3 4

Number of Observations Read 8
Number of Observations Used 8

The GLM Procedure

#201000084

Dependent Variable: Fry40

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.55885000	0.38971250	3.08	0.1910
Error	3	0.37923750	0.12641250		
Corrected Total	7	1.93808750			

R-Square	Coeff Var	Root MSE	Fry40 Mean
0.804324	13.72100	0.355545	2.591250

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.38073750	0.12691250	1.00	0.4987
CLONE	1	1.17811250	1.17811250	9.32	0.0553

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.38073750	0.12691250	1.00	0.4987
CLONE	1	1.17811250	1.17811250	9.32	0.0553

The GLM Procedure

#201000084

t Tests (LSD) for Fry40

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.126412
Critical Value of t	3.18245
Least Significant Difference	0.8001

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	2.9750	4	RBurbank
A			
A	2.2075	4	Alpine

11:46 Monday, October 5, 2009

#201000084

----- CLONE=Alpine -----

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	2.2075	Sum Observations	8.83
Std Deviation	0.24944939	Variance	0.062225
Skewness	0.38633903	Kurtosis	-3.8125996
Uncorrected SS	19.6789	Corrected SS	0.186675
Coeff Variation	11.3000858	Std Error Mean	0.1247247

Basic Statistical Measures

Location		Variability	
Mean	2.207500	Std Deviation	0.24945
Median	2.165000	Variance	0.06223
Mode	2.000000	Range	0.50000
		Interquartile Range	0.41500

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 17.69898	Pr > t	0.0004
Sign	M 2	Pr >= M	0.1250
Signed Rank	S 5	Pr >= S	0.1250

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.850787	Pr < W	0.2287
Kolmogorov-Smirnov	D 0.297248	Pr > D	>0.1500
Cramer-von Mises	W-Sq 0.060577	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq 0.370479	Pr > A-Sq	0.2258

Quantiles (Definition 5)

Quantile	Estimate
100% Max	2.500
99%	2.500
95%	2.500

#201000084

----- CLONE=Alpine -----

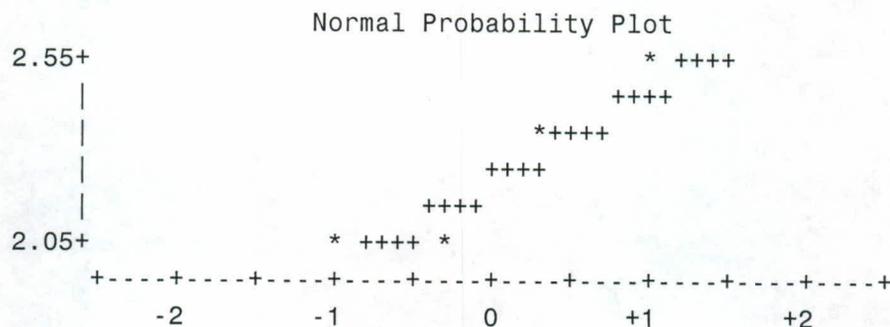
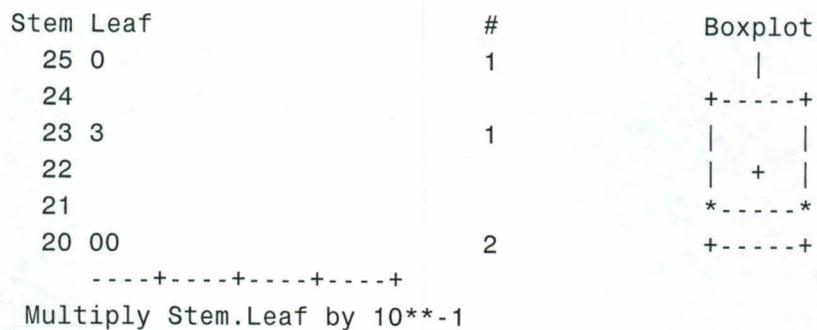
The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	2.500
75% Q3	2.415
50% Median	2.165
25% Q1	2.000
10%	2.000
5%	2.000
1%	2.000
0% Min	2.000

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
2.00	3	2.00	1
2.00	1	2.00	3
2.33	4	2.33	4
2.50	2	2.50	2



----- CLONE=RBurbank -----

The UNIVARIATE Procedure

Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	2.975	Sum Observations	11.9
Std Deviation	0.43714986	Variance	0.1911
Skewness	0.46540948	Kurtosis	-3.3357255
Uncorrected SS	35.9758	Corrected SS	0.5733
Coeff Variation	14.6941129	Std Error Mean	0.21857493

Basic Statistical Measures

Location		Variability	
Mean	2.975000	Std Deviation	0.43715
Median	2.900000	Variance	0.19110
Mode	.	Range	0.90000
		Interquartile Range	0.72000

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 13.61089	Pr > t	0.0009
Sign	M 2	Pr >= M	0.1250
Signed Rank	S 5	Pr >= S	0.1250

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.875237	Pr < W	0.3187
Kolmogorov-Smirnov	D 0.285003	Pr > D	>0.1500
Cramer-von Mises	W-Sq 0.053736	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq 0.331708	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	3.500
99%	3.500
95%	3.500

#201000084

CLONE=RBurbank

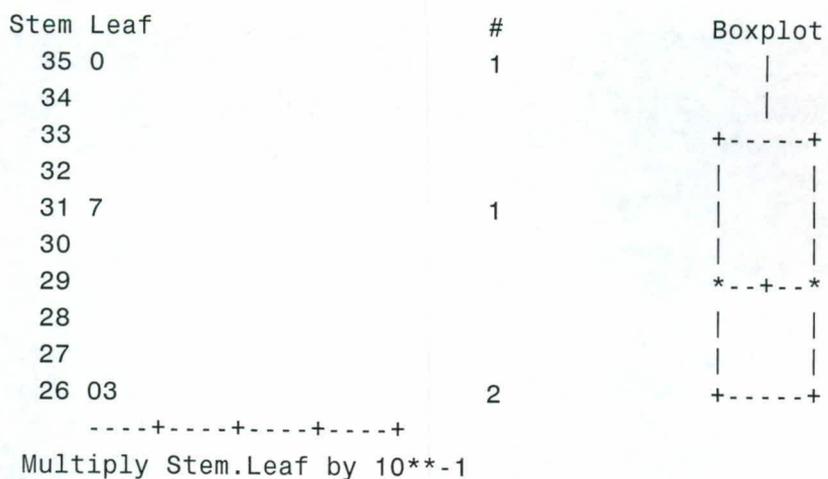
The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	3.500
75% Q3	3.335
50% Median	2.900
25% Q1	2.615
10%	2.600
5%	2.600
1%	2.600
0% Min	2.600

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
2.60	7	2.60	7
2.63	6	2.63	6
3.17	5	3.17	5
3.50	8	3.50	8

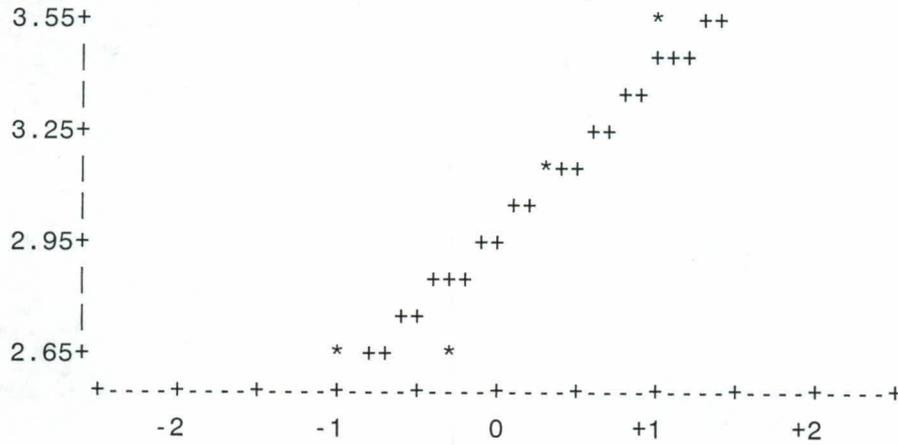


----- CLONE=RBurbank -----

#201000084

The UNIVARIATE Procedure
Variable: Fry40

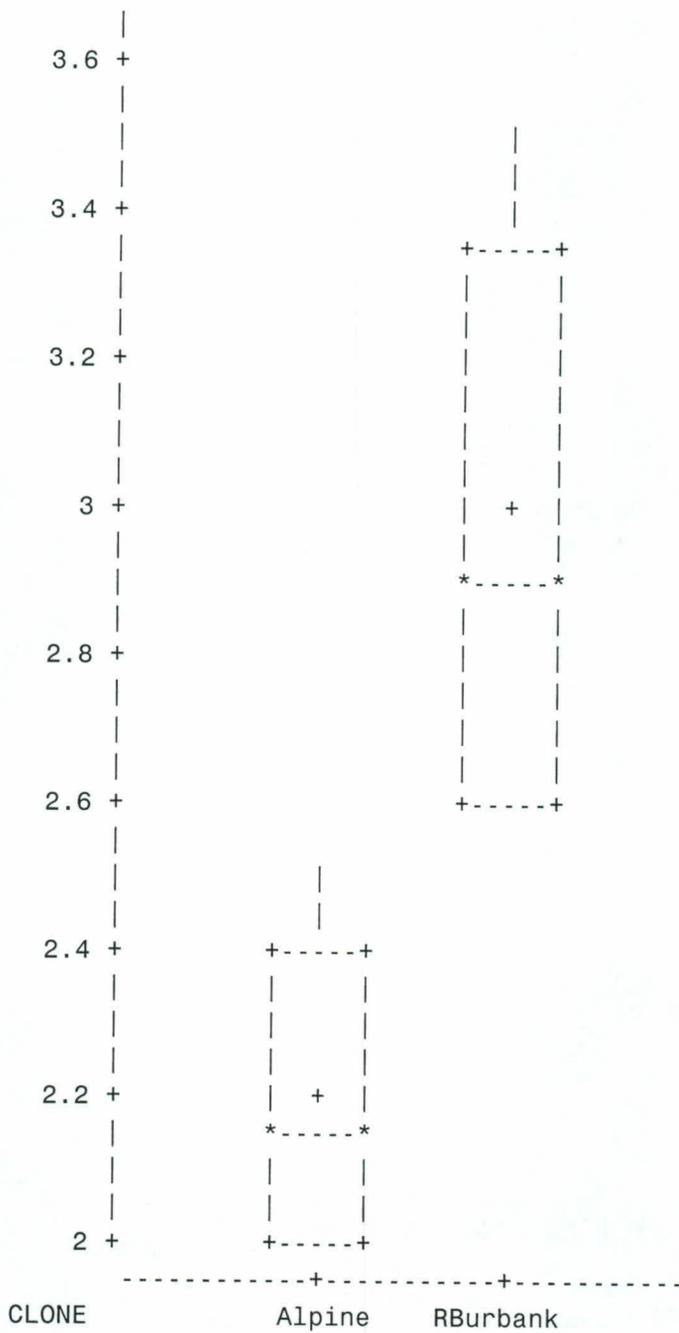
Normal Probability Plot



The UNIVARIATE Procedure
Variable: Fry40

#201000084

Schematic Plots



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**

RAD
10/02/2012

1. NAME OF APPLICANT(S) University of Idaho representing the interests of the entities listed under Exhibit E, item 11 The State of Idaho (continued on question 11)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER A9305-10	3. VARIETY NAME Alpine Russet
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Office of Technology Transfer Morrill Hall 414 PO Box 443003 Moscow ID 83844-3003	5. TELEPHONE (Include area code) (208) 885-4550	6. FAX (Include area code) (208) 885-4551
7. PVPO NUMBER #201000084		

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

RAD
10/02/2012

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

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

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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.

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

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S) University of Idaho The State of Idaho (continued on Exhibit E, 11)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Morrill Hall 414 PO Box 443003 Moscow, ID 83844-3003	TEMPORARY OR EXPERIMENTAL DESIGNATION A9305-10
		VARIETY NAME Alpine Russet
NAME OF OWNER REPRESENTATIVE (S) Gaylene Anderson Jeffrey C. Stark	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Morrill Hall 414 PO Box 443003 Moscow, ID 83844-3003	FOR OFFICIAL USE ONLY
		PVPO NUMBER #201000084

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 Jeffrey C. Stark

Date Oct 20, 2009