No. 200600201

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

'Blazer 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 August, in the year* ***two thousand and ten.***

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

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

Form Approved - OMB No. 0581-0055

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

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

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

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

1. NAME OF OWNER
University of Idaho

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
A8893-1

3. VARIETY NAME
Blazer Russet

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
Idaho Agricultural Experiment Station
PO Box 442337
University of Idaho
Moscow, ID 83844-2337

5. TELEPHONE *(include area code)*
208-885-7173

6. FAX *(include area code)*
208-885-6654

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PVPO NUMBER
20060201

FILING DATE
May 5, 2006

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

RAD 3/16/10

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Gaylene Anderson
Licensing Associate
University of Idaho
Office of Technology Transfer
P.O. Box 443003
Moscow, ID 83844-3003

Jeffrey C. Stark
University of Idaho
1776 Science Center Drive, Suite 205
Idaho Falls, ID 83402-1575

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 4,382.00
DATE May 5, 2006

CERTIFICATION FEE:
$ 768.00
DATE 7/1/2010

11. TELEPHONE (Include area code)
208-885-4550

12. FAX (Include area code)
208-885-6654

13. E-MAIL
~~gbohach@uidaho.edu~~ jstark@uidaho.edu gaylene@uidaho.edu

RAD 3/16/10

14. CROP KIND *(Common Name)*
potato

16. FAMILY NAME *(Botanical)*
Solanaceae

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (***OPTIONAL***)
☐ YES X NO
IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____

15. GENUS AND SPECIES NAME OF CROP
Solanum tuberosom

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

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
(Follow instructions on reverse)
a. xx Exhibit A. Origin and Breeding History of the Variety
b. xx Exhibit B. Statement of Distinctness
c. xx Exhibit C. Objective Description of Variety
d. xx Exhibit D. Additional Description of the Variety *(Optional)*
e. xx Exhibit E. Statement of the Basis of the Owner's Ownership
f. xx Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. xx Filing and Examination Fee ($3,652), 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 AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☐ YES *(If "yes", answer items 21 and 22 below)* X NO *(If "no", go to item 23)*

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☐ YES ☐ NO
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
X YES ☒ NO RAD 3/4/2010
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES X NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER	SIGNATURE OF OWNER
NAME *(Please print or type)*: Gregory A. Bohach	NAME *(Please print or type)*
CAPACITY OR TITLE: Director, Idaho Agricultural Experiment Station	DATE: 4/26/06
CAPACITY OR TITLE	DATE

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

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

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVPOmail@usda.gov
Homepage: http://www.ams.usda.gov/science/pvpo/PVPindex.htm

20060201

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.)*

May 25, 2006 RAO 3/4/2010

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).)*

#200600201

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).

Blazer Russet was derived from a sexual hybridization made at the University of Idaho's Aberdeen Research and Extension Center in 1988. It resulted from a cross of A7816-14 and Norking Russet. 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
1990	It was first field selected in 1990.	Yield, maturity, appearance, higher specific gravity, resistance to tuber defects, storage fry color, and resistance to field diseases including verticillium wilt and common scab.
1998	In 1998 production of limited generation seed initiated.	
1998	In 1998 Blazer Russet was evaluated in the Tri-State Potato Variety Trial.	
1999-2001	In 1999-2001 Blazer Russet was entered and evaluated in the Western Regional Variety Trials. Blazer Russet was selected for use in the early to season tablestock and french fry processing markets.	
2002-present	Agronomic field trials.	

3a. Is the variety uniform? ☑ Yes ____ No

How did you test for uniformity?

Blazer 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? X Yes ____ No

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

Blazer Russet has been clonally propagated for 15 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 X No

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

Continue on additional pages if necessary.

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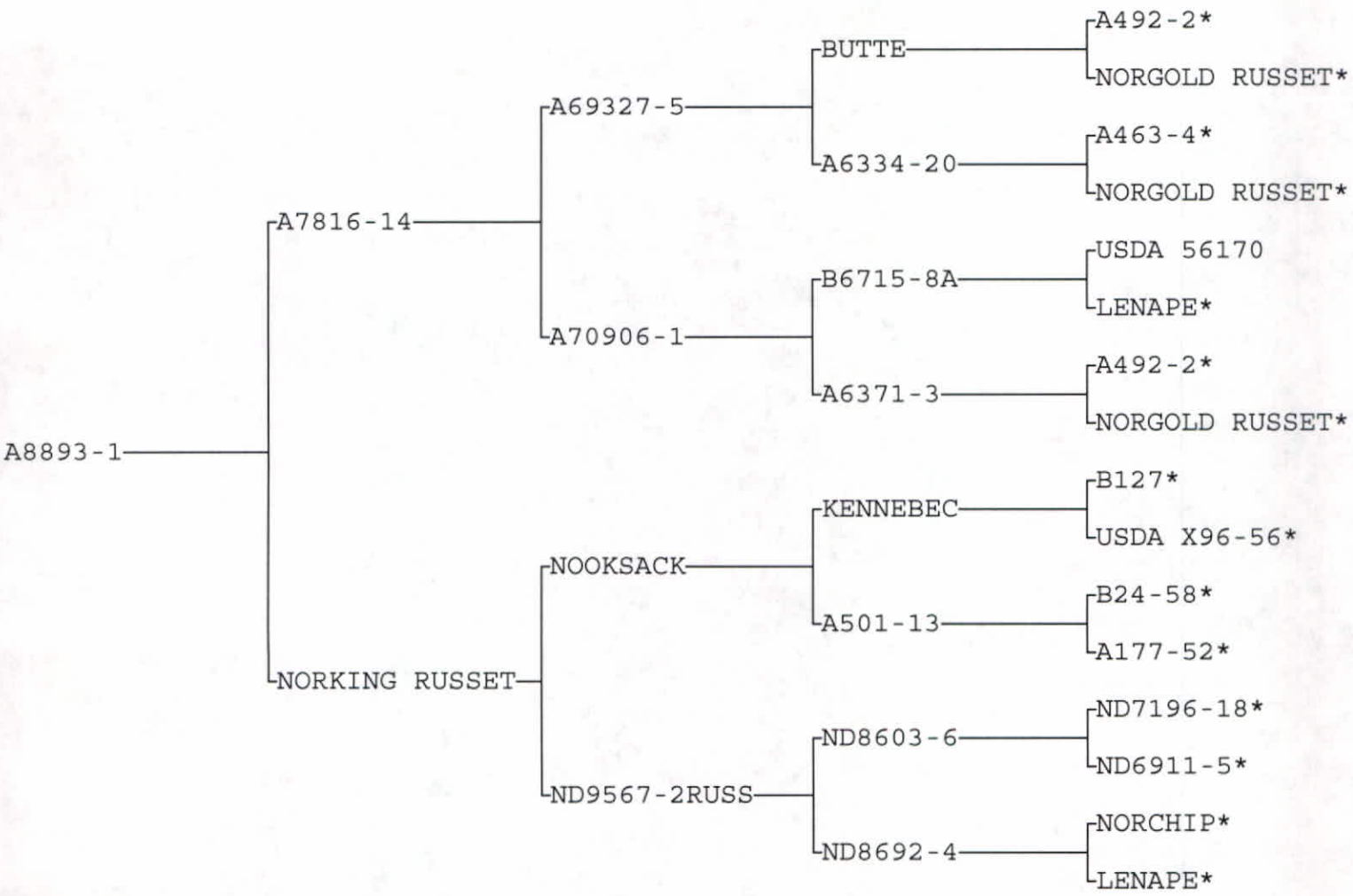
CLONE: A8893-1



CLONE: A8893-1
BREEDER: YEAR:
INSTITUTIONS:
CITATION:

TUBER TYPE: LONG
SKIN TYPE: MED RUSS
FLOWER COLOR: WHITE
MATURITY CLASS: EARLY
YIELD CATEGORY: HIGH
USAGE CLASS: DUAL
OTHER INFORMATION:
SYNONYMS:

* PEDIGREE CONTINUES BEYOND FOURTH GENERATION IN DATABASE

#200600201

DRAFT Exhibit B Form

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

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

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).

Eg. Leaf Pubescence *Eg. Leaf Color* *Eg. Plant Height*	*heavy pubescence* *Dark Green (5GY 3/4)* *200 cm +/- 10 cm (N=25)*	*glabrous* *Light Green (2.5GY 8/10)* *250 cm +/- 15 cm (N=25)*	*photograph attached* *Munsell Color Chart* *statistics attached*
1. Qualitative traits: Blazer Russet has more primary leaflet pairs, & inflorescences per plant. Tubers have more prominent brow.	Applicant's New Variety Clearwater Russet Blazer has 3.7 pairs of primary leaflets, and 3.8 inflorescences per plant. Tuber brows are prominent.	1st Comparison Variety Russet Burbank Russet Burbank has 3.3 pairs of primary leaflets, and 3.3 inflorescences per plant. Tubers have slight brow prominence.	Location of Evidence Exhibit C and Photos comparison of Figure 2, Figure 3, and Figure 4.
2. Color traits: Blazer Russet plants are darker green leaflets, with more anthocyanin on stems and petioles	Blazer Russet plants have RHS #137 B green leaflets, and strong stem and petiole anthocyanin.	Russet Burbank leaflet color is RHS # 147 B yellow-green. Plants have weak anthocyanin coloration.	Royal Horticultural Society (RHS) color chart. Exhibit C, Figure 5 photo.
3. Quantitative traits: Blazer Russet has higher concentrations of protein and Vitamin C than Russet Burbank.	Blazer Russet mean protein was 6.87% (DWB) and Vitamin C was 25.68 (mg/100g).	Russet Burbank mean protein was 5.27% (DWB) and Vitamin C 20.83 (mg/100g).	Exhibit D Protein Pr. <0.0001 and Vitamin C Pr = 0.033.
4. Other: Blazer Russet has a more erect shorter vine size and earlier maturity than Russet Burbank.	Blazer Russet average vine size is 2.75 and vine maturity of 2.38. Rated on scale of 1-5 with 1=short or early, and 5=tall or late.	Russet Burbank average vine size 3.75 and vine maturity as 3.00. Rated on scale of 1-5 with 1=short or early, and 5=tall or late.	Vine size Pr = 0.0072 and Vine maturity Pr = 0.0492.

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

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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).

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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.

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NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
University of Idaho	A8893-1	Blazer 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

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PVPO NUMBER #200600201

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)
Blazer 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	R1	R2	R3	R4
4-5	4-5			

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	R1	R2	R3	R4
2	2			

***LIGHT SPROUT BASE: PUBESCENCE OF BASE**
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
3	2			

***LIGHT SPROUT BASE: ANTHOCYANIN COLORATION**
1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	R1	R2	R3	R4
3	2			

***LIGHT SPROUT BASE: INTENSITY OF ANTHOCYANIN COLORATION (IF PRESENT)**
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
4	3			

*** LIGHT SPROUT TIP: HABIT**
1 = Closed 2 = Intermediate 3 = Open

V	R1	R2	R3	R4
3	2			

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2. **LIGHT SPROUT CHARACTERISTICS**: (continued)

LIGHT SPROUT TIP: PUBESCENCE
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	3	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	2	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	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	2	R2		R3		R4	

MATURITY: Days after planting (DAP) at vine senescence

V	100	R1	130	R2		R3		R4	

PLANTING DATE:

V	27-Apr-2000 May 2,-2001	R1	27 Apr, 2000, May 2, 2001	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	2	R1	4	R2		R3		R4	

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BAD 4/13/10

A8893-1 'Blazer Russet'

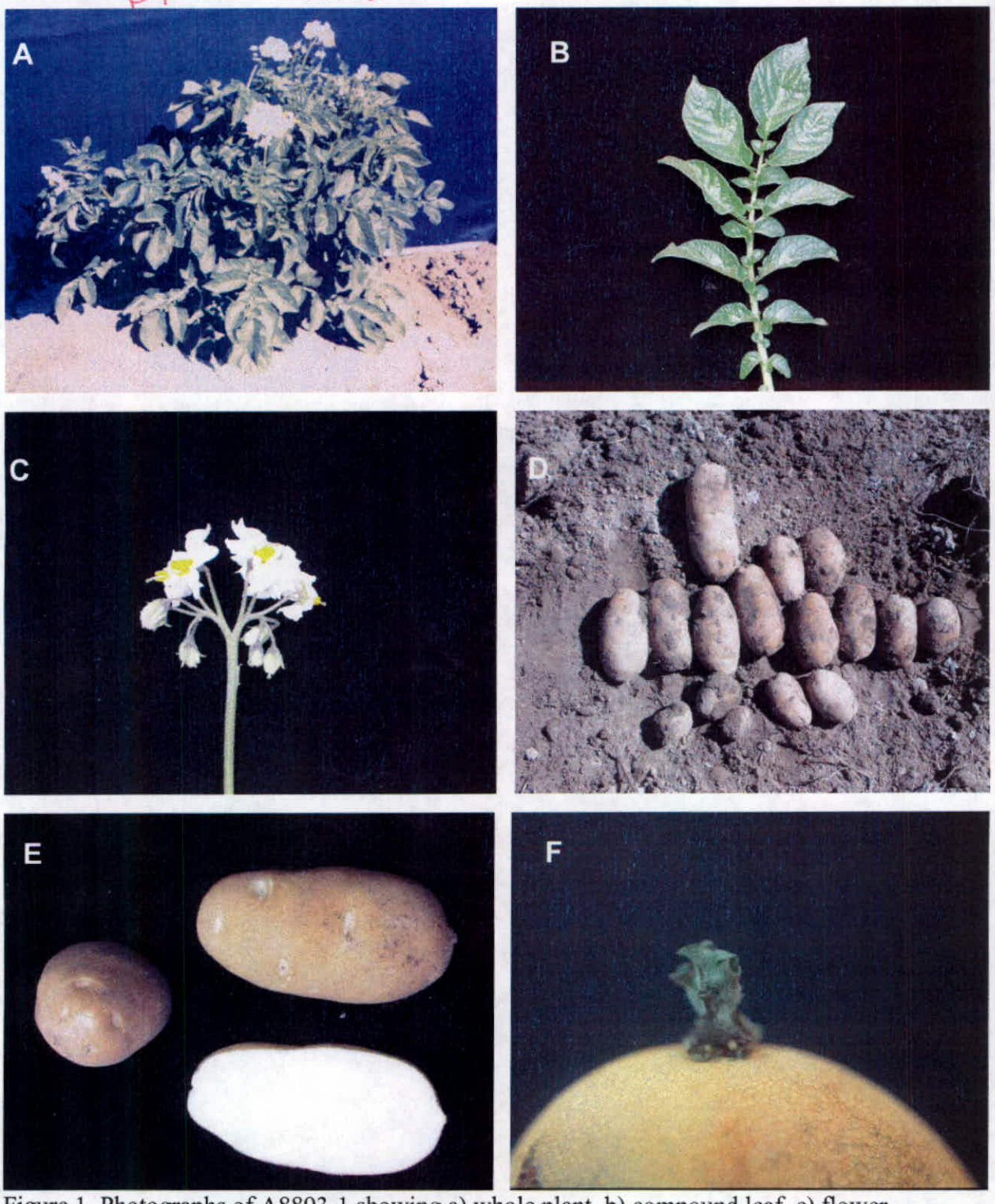

Figure 1. Photographs of A8893-1 showing a) whole plant, b) compound leaf, c) flower, d) field tubers, e) external tuber appearance and tuber flesh color, and f) light sprout.

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RUSSET BURBANK

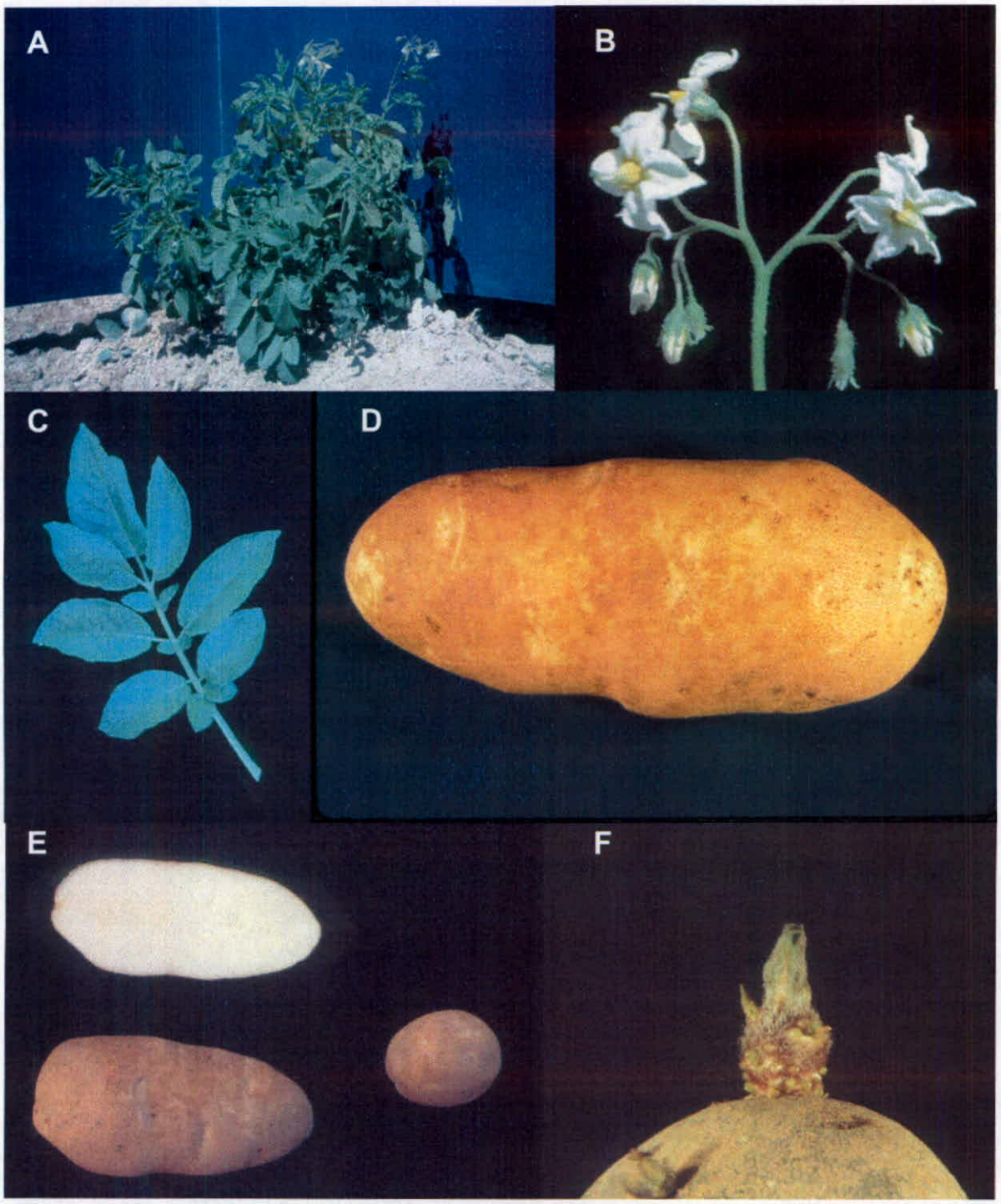

Figure 3. Photographs of Russet Burbank showing a) whole plant, b) flower, c) compound leaf, d) field tuber, e) external tuber appearance and tuber flesh color, and f) light sprout.

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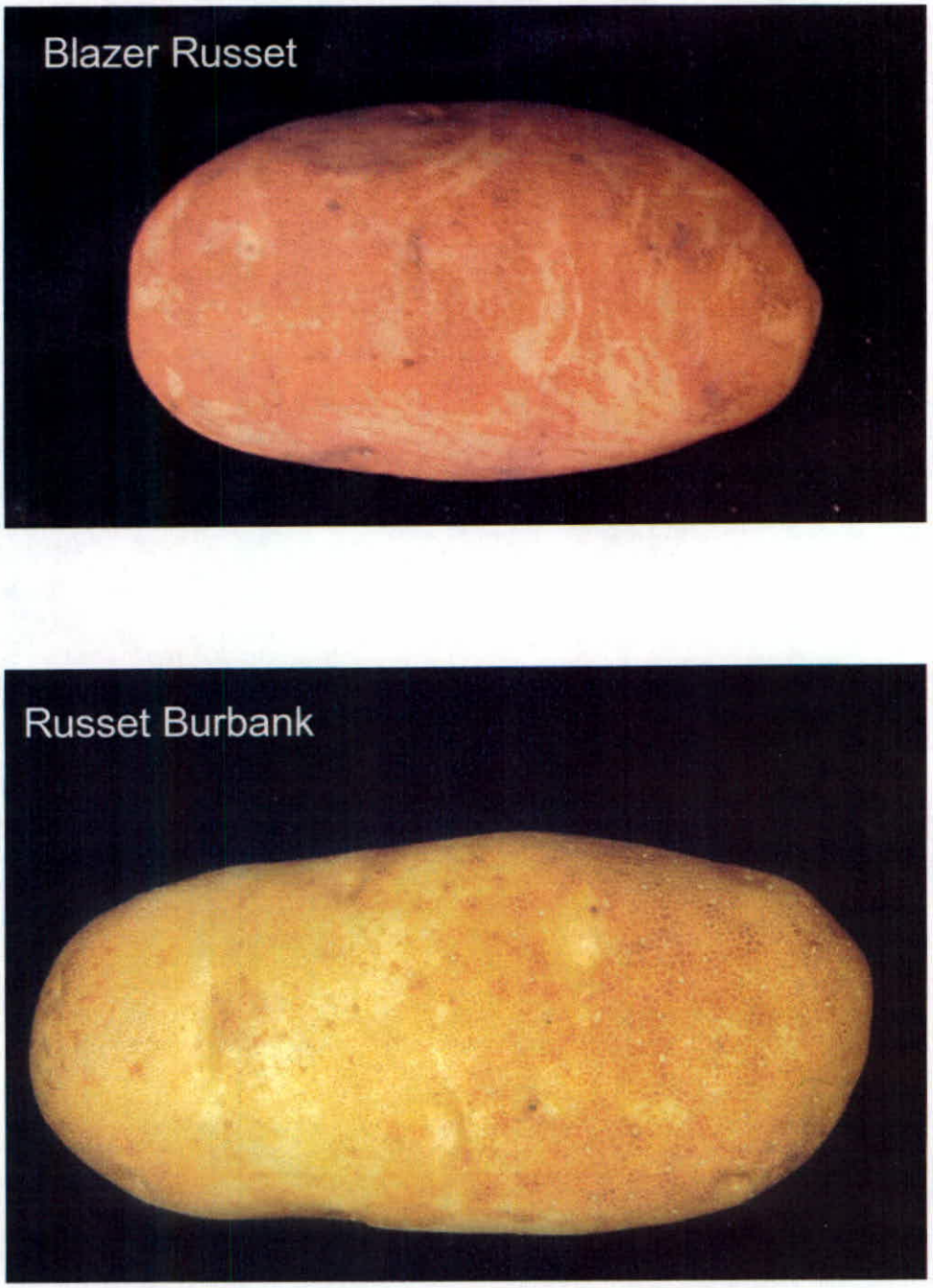

Figure 4. Comparison of tuber brow prominence on Blazer Russet and Russet Burbank.

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4. STEM CHARACTERISTICS: Measure at early first bloom

*** STEM ANTHOCYANIN COLORATION**:
1 = Absent 3= Weak 5 = Medium 7 = Strong 9 = Very Strong

V	7	R1	3	R2		R3		R4	

STEM WINGS: (See Figure 3)
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	5	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	4	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	137 A	R1	146 B	R2		R3		R4	

LEAF PUBESCENCE DENSITY:
1 = Absent 2 = Sparse 3 = Medium 4 = Thick 5 = Heavy

V	3	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	3	R1	3	R2		R3		R4	

PETIOLES ANTHOCYANIN COLORATION:
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	7	R1	3	R2		R3		R4	

LEAF STIPULES SIZE: (Se 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	

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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	2	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	3.7	R1	3.3	R2		R3		R4	

RANGE:

V	3 to 6	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	3	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	1	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	8.7	R1	6.5	R2		R3		R4	

RANGE:

V	1 to 15	R1	2 to 11	R2	to	R3	to	R4	to

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5. **LEAF CHARACTERISTICS**: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	R1	R2	R3	R4
3.8	3.3			

RANGE:

V	R1	R2	R3	R4
2 to 10	3 to 6	to	to	to

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	R1	R2	R3	R4
13.9	12.9			

RANGE:

V	R1	R2	R3	R4
8 to 23	5 to 22	to	to	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	R1	R2	R3	R4
155 B	157 A			

* **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	R1	R2	R3	R4
155 A	157 D			

* **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	R1	R2	R3	R4
1	1			

COROLLA SHAPE: (See Figure 10)
1 = Very rotate 2 = Rotate 3 = Pentagonal 4 = Semi-stellate 5 = Stellate

V	R1	R2	R3	R4
3	4			

6. **INFLORESCENCE CHARACTERISTICS**:

CALYX ANTHOCYANIN COLORATION:
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very strong

V	R1	R2	R3	R4
7	3			

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	R1	R2	R3	R4
17 A	15 A			

ANTHER SHAPE: (See Figure 11)
1 = Broad cone 2 = Narrow cone 3 = Pear-shaped cone 4 = Loose 5 = Other

V	R1	R2	R3	R4
2	3			

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6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:
1 = None 3 = Some 5 = Abundant

V	1	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 Munsel Color Chart (Circle the appropriate color chart)

V	146 B	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	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	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 = Netled 4 = Russetted 5 = Heavily russetted 6 = Other _____

V	4	R1	4	R2		R3		R4	

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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	117	R1	136	R2		R3		R4	

RANGE:

V	87 to 154	R1	92 to 178	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	12.5	R1	16.0	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	256	R1	259	R2		R3		R4	

TUBER WIDTH (mm)

AVERAGE:

V	65	R1	64	R2		R3		R4	

RANGE:

V	55 to 76	R1	52 to 78	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	4.4	R1	5.8	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	256	R1	259	R2		R3		R4	

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7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

V	59	R1	54	R2		R3		R4	

RANGE:

V	48 to 73	R1	41 to 70	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	4.5	R1	5.7	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	256	R1	259	R2		R3		R4	

TUBER EYE DEPTH:

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

V	5	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	16	R1	23	R2		R3		R4	

RANGE:

V	7 to 27	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	3	R1	2	R2		R3		R4	

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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	1	R2		R3		R4	

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8. DISEASES CHARACTERISTICS:

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

LATE BLIGHT: (Phytophthora)

V	9	R1	7	R2		R3		R4	

EARLY BLIGHT: (Alternaria)

V	7	R1	2	R2		R3		R4	

SOFT ROT (Erwinia)

V	0	R1	0	R2		R3		R4	

COMMON SCAB (Streptomyces)

V	0	R1	0	R2		R3		R4	

POWDERY SCAB (Spongospora)

V	0	R1	0	R2		R3		R4	

DRY ROT (Fusarium)

V	3	R1	5	R2		R3		R4	

POTATO LEAF ROLL VIRUS (PLRV)

V	9	R1	9	R2		R3		R4	

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8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

V	R1	R2	R3	R4
0	0			

POTATO VIRUS Y (PVY)

V	R1	R2	R3	R4
5	7			

POTATO VIRUS M (PVM)

V	R1	R2	R3	R4
0	0			

POTATO VIRUS A (PVA)

V	R1	R2	R3	R4
0	0			

GOLDEN NEMATODE (Globodera)

V	R1	R2	R3	R4
0	0			

ROOT – KNOT NEMATODE (Meloidogyne)

V	R1	R2	R3	R4
0	0			

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 Lessions in Number and Size
4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
7 = Susceptible 9 = Highly Susceptible

COLORADO POTATO BEETLE (CPB) (*Leptinotarsa*)

V	R1	R2	R3	R4
0	0			

GREEN PEACH APHID (*Myzus*)

V	R1	R2	R3	R4
0	0			

OTHER:

V	R1	R2	R3	R4

OTHER:

V	R1	R2	R3	R4

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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	4	R2		R3		R4	

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

V	7.0	R1	5.7	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.

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.

Blazer Russet has significently higher Protein and Vitamin C than Russet Burbank.

See protocol and attached Exhibit D

Three years average percent protien content for Blazer Russet is 6.87% and 5.27% for Russet Burbank.

Three years average Vitamin C contern is Blazer Russet 25.68 and Russet Burbank 20.83 (mg/100G).

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. ADDDITIONAL COMMENTS AND CHARACTERISTICS:

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

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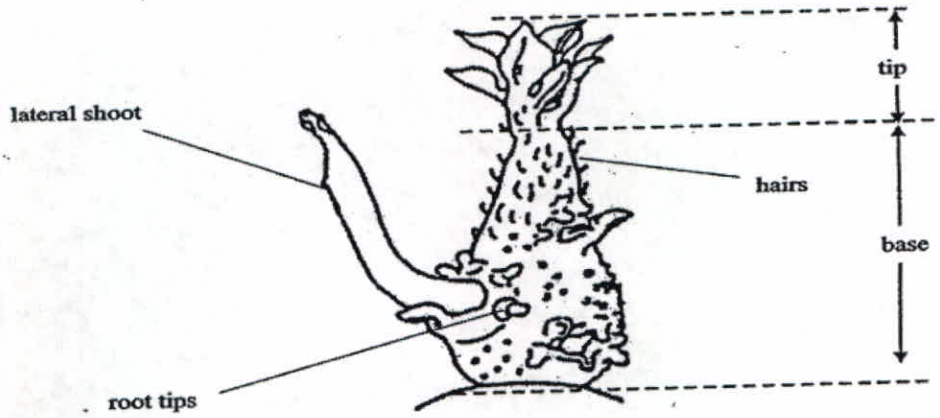
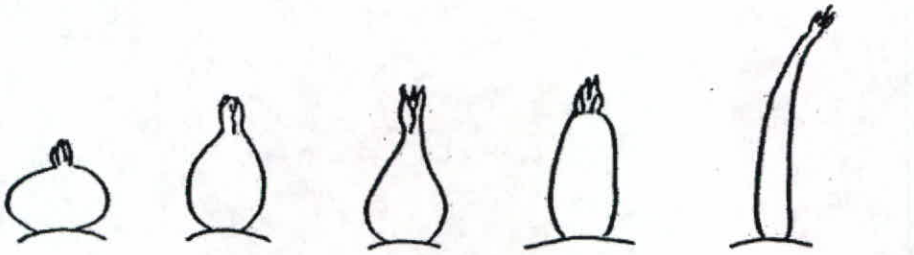
Figure 1: Light sprout

Light sprout dissection

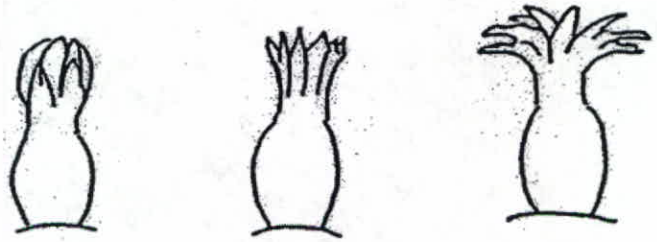


Light sprout shape



1 spherical | 2 ovoid | 3 conical | 4 broad cylindrical | 5 narrow cylindrical

Light sprout tip habit



1 closed | 2 intermediate | 3 open

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

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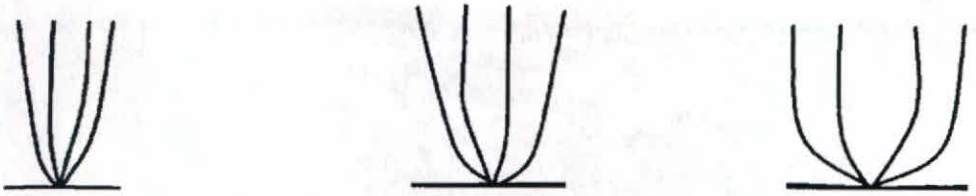
Figure 2: Growth Habit

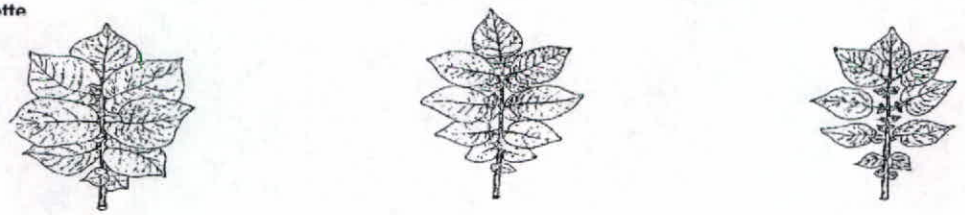


Erect | Semi Erect | Spreading

Figure 3: Stem Wings

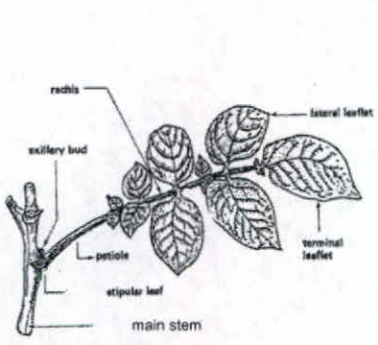
Weak | Medium | Strong

Figure 4: Leaf Sillhouette

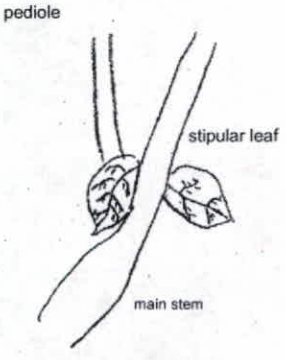


Closed | Medium | Open

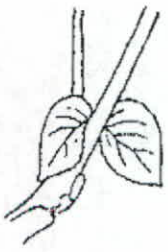
Figure 5: Leaf Stipules



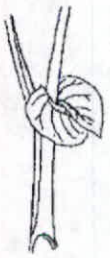
General structures



Small stipular leaf



Medium stipular leaf



Large stipular leaf

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Figure 6: Leaf Dissection

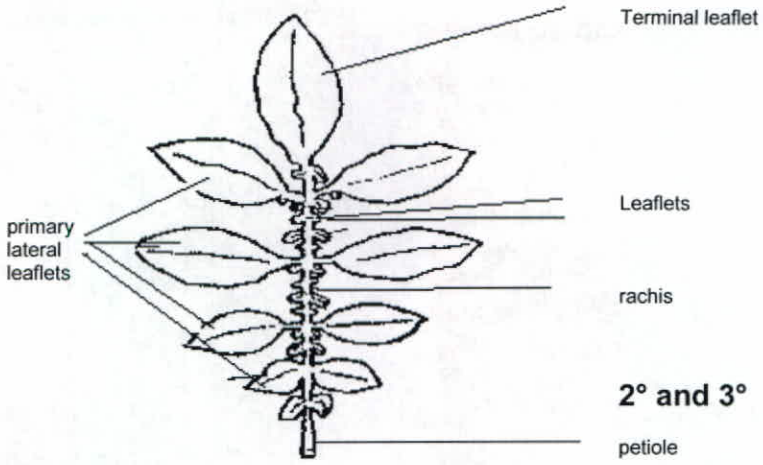

Figure 7: Terminal Leaflet Shape/Primary Leaflet Shape

Narrowly Ovate | Medium Ovate | Broadly Ovate

Lanceolate | Elliptical | Obovate | Oblong

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

Acute | Cuspidate | Acuminate | Obtuse

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

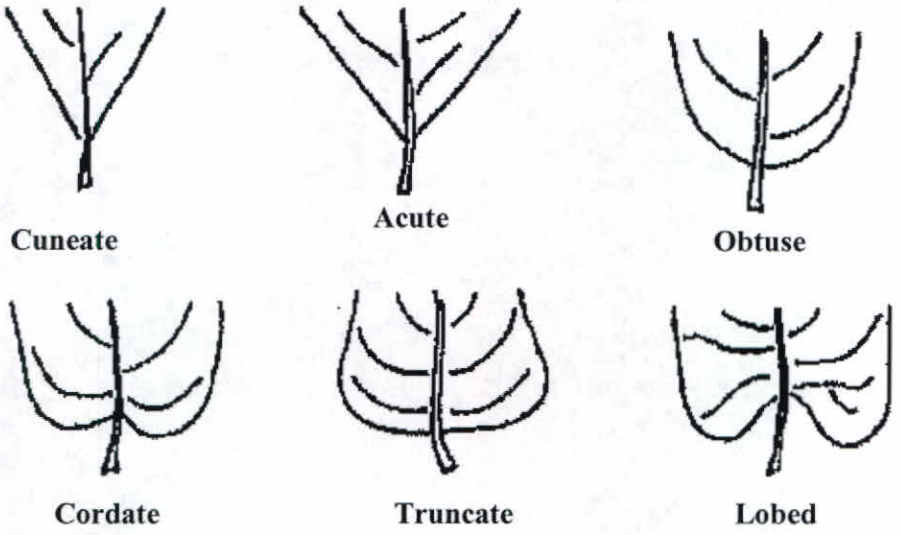

Figure 10: Corolla Shape

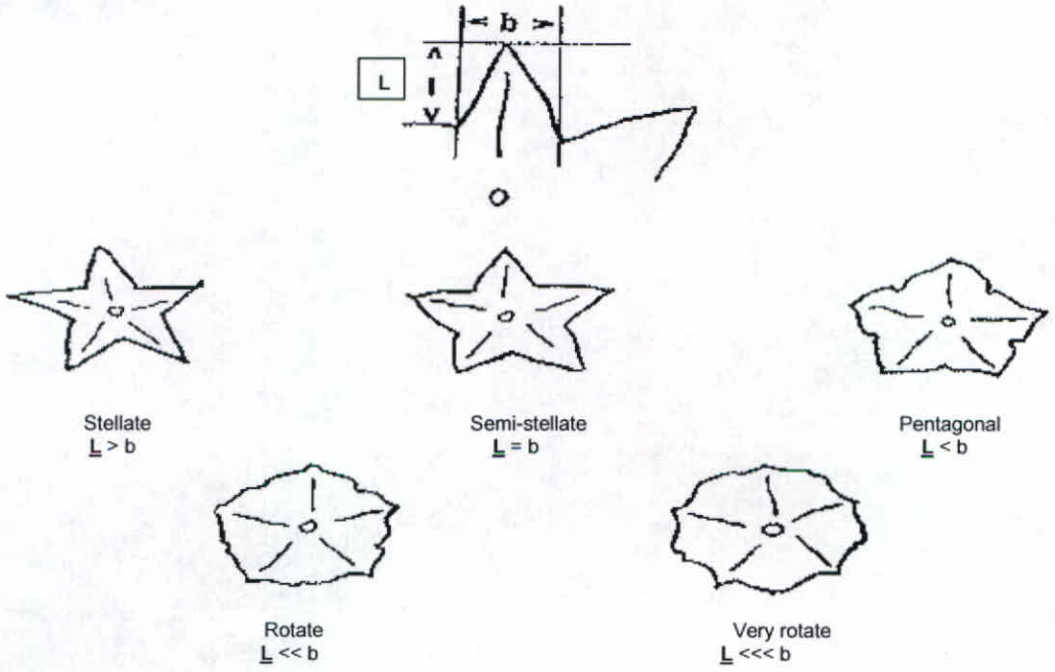

Figure 11: Anther Shape

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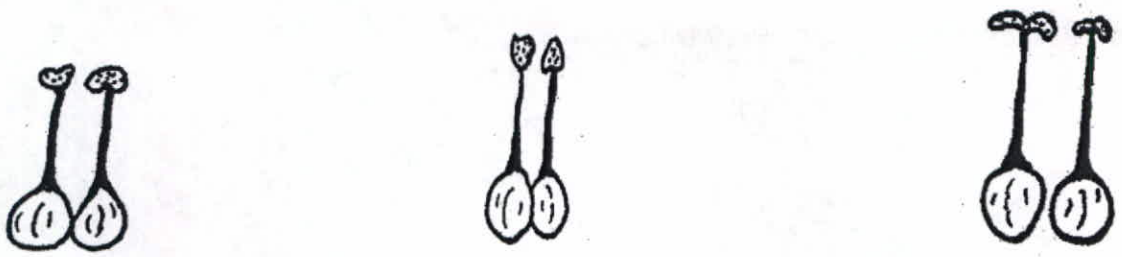
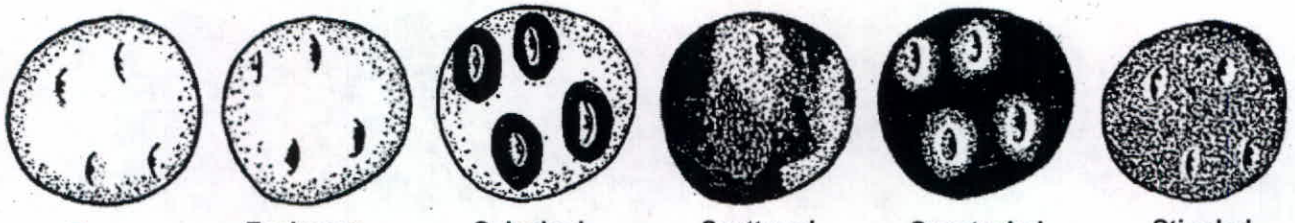
Figure 12: Stigma Shape



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.

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Figure 5. Blazer Russet greenhouse grown plants showing Anthocyanin coloration on stems and petioles.

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Application for Plant Variety Protection Certificate

Exhibit D: Additional Description Information
Variety: Blazer Russet
Owner: Idaho Agricultural Experiment Station

In direct comparison with Russet Burbank, Blazer Russet tubers have higher concentrations of vitamin C and protein than Russet Burbank tubers (see attached).

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 H_2O; 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 H_2O) immediately before use.

3. Sodium Acetate Solution: Dissolve 500 g (sodium acetate – 3 H_2O) in DD H_2O 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.

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

The GLM Procedure

Dependent Variable: VitC

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	166.2417444	15.1128859	1.88	0.2260
Error	6	48.1949000	8.0324833		
Corrected Total	17	214.4366444			

R-Square	Coeff Var	Root MSE	VitC Mean
0.775249	12.18704	2.834164	23.25556

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	2	27.1196944	13.5598472	1.69	0.2620
REP	3	5.1077250	1.7025750	0.21	0.8846
year*REP	3	16.7301250	5.5767083	0.69	0.5884
CLONE	1	105.7058000	105.7058000	13.16	0.0110
year*CLONE	2	11.5784000	5.7892000	0.72	0.5242

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	27.06532500	13.53266250	1.68	0.2626
REP	3	5.10772500	1.70257500	0.21	0.8846
year*REP	3	16.73012500	5.57670833	0.69	0.5884
CLONE	1	60.21120000	60.21120000	7.50	0.0338
year*CLONE	2	11.57840000	5.78920000	0.72	0.5242

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	27.06532500	13.53266250	2.43	0.2361

The GLM Procedure

t Tests (LSD) for VitC

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

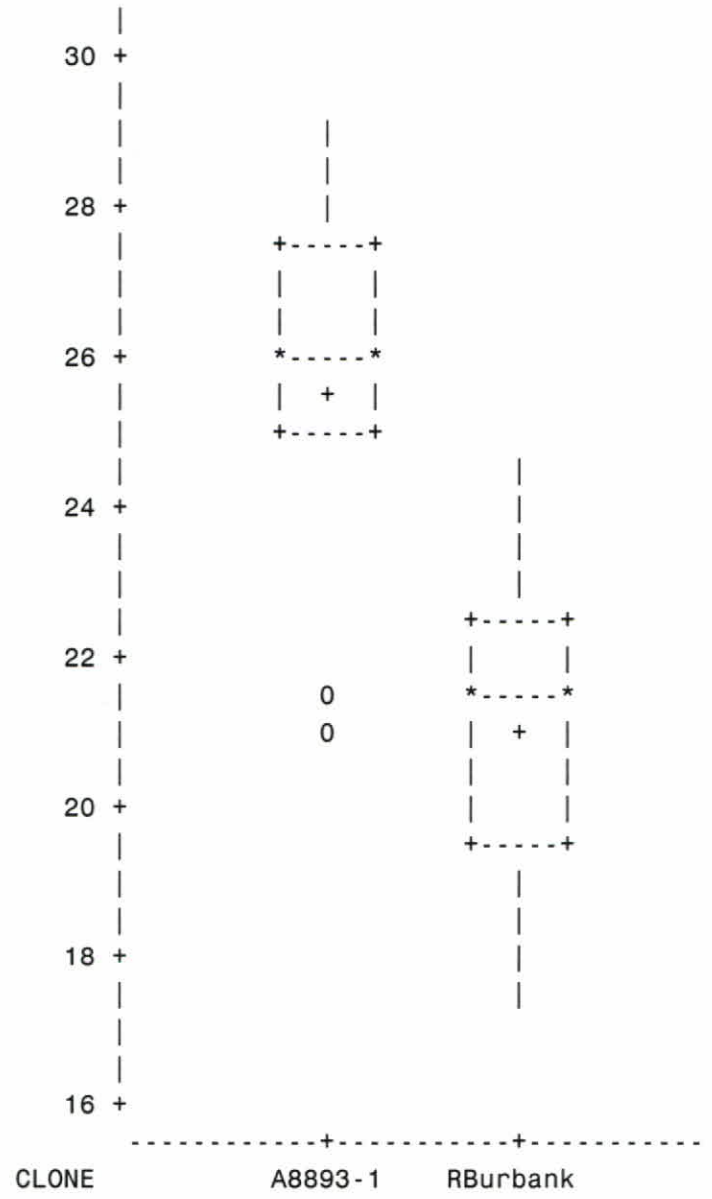
Alpha	0.05
Error Degrees of Freedom	6
Error Mean Square	8.032483
Critical Value of t	2.44691
Least Significant Difference	3.2692

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	25.679	9	A8893-1
B	20.832	9	RBurbank

The UNIVARIATE Procedure
Variable: VitC

Schematic Plots



Standard Operating Procedure

Title: Determination of Protein Content of Freeze-dried Tuber Powder – Coomassie Blue Protein Assay

Reagents:

1. Dye reagent: Dissolve 100 mg Coomassie Blue G-250 (Sigma) in 50 ml of 95% methanol; add several hundred ml double distilled water (DD H_2O), mix, slowly add 100 ml of 85% phosphoric acid, bring to 1 liter final volume with DD H_2O.

2. 0.5N Sodium Hydroxide: Dissolve 20 g NaOH in about 500 ml DD H_2O, cool, make up to 1 liter.

2. Protein standard (100 µg/ml): Make up a stock solution of bovine gamma globulin (BGG) or bovine serum albumin (BSA) 25 mg/250 ml in 0.5N NaOH. BSA dissolves best in H_2O. (Add 125 ml H_2O, dissolve, then add 1N NaOH to approx. 0.5 N NaOH.) BGG dissolves best in 1N NaOH (add 125 ml 1N NaOH, dissolve, then add H_2O) to approx. 0.5N NaOH. The BSA standard can be frozen and thawed as needed. The BGG should be made up fresh daily.

Procedure:

1. Weigh a sample of about 15 mg of freeze dried and ground tuber tissue into a test tube (record exact weight).

2. Add 5 ml of 0.5N NaOH, gently mix (with vortex) with minimum foaming.

3. Let stand at room temp for 2.5 hours.

4. Transfer a 0.2 ml aliquot of the sample extract into a clean test tube and add 0.8 ml of 0.5N NaOH.

5. Add 5 ml dye reagent, mix well, read absorbance at 595 nm after 5 min but within ½ hr of dye addition.

6. For standards add 0.1, 0.2, 0.3, 0.4, and 0.5 ml to tube, bring to 1.0 ml with 0.5N NaOH, add 5 ml of dye reagent, mix, and read absorbance after 5 min but within ½ hr of dye addition.

Calculations:

1. Determine average µg protein per OD unit from standards.

2. Unknown OD x µg protein/OD unit =µg protein in unknown per 0.2 ml aliquot of extract

3. µg protein per 0.2 ml aliquot x 5 ml total extract volume – total µg

4. Total microgram protein ɜ mg tissue extracted = µg/mg (or mg/g)
-- or total microgram protein ɜ µg tissue extracted x 100 - % protein
-- actual protein* = $\frac{\text{coomassie blue protein estimate (mg/g)} - 5.6}{0.86}$

*Actual protein determined from microkjeldahl analysis of 80% ethanol extracted freeze dried powder compared with coomassie blue protein estimate using BGG standard (linear regression analysis 1989).

Reference:

Bradford N.M. (1976). A rapid and sensitive method for the quantitation of microgram quantities of protein using the principle of protein dye binding. Anal. Biochem. 72:248-254.

The GLM Procedure

Dependent Variable: Protein

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	24.32435833	1.73745417	22.67	<.0001
Error	9	0.68983750	0.07664861		
Corrected Total	23	25.01419583			

R-Square	Coeff Var	Root MSE	Protein Mean
0.972422	4.562601	0.276855	6.067917

Source	DF	Type I SS	Mean Square	F Value	Pr > F
year	2	5.69770833	2.84885417	37.17	<.0001
REP	3	0.13037917	0.04345972	0.57	0.6505
year*REP	6	2.03265833	0.33877639	4.42	0.0234
CLONE	1	15.31203750	15.31203750	199.77	<.0001
year*CLONE	2	1.15157500	0.57578750	7.51	0.0121

Source	DF	Type III SS	Mean Square	F Value	Pr > F
year	2	5.69770833	2.84885417	37.17	<.0001
REP	3	0.13037917	0.04345972	0.57	0.6505
year*REP	6	2.03265833	0.33877639	4.42	0.0234
CLONE	1	15.31203750	15.31203750	199.77	<.0001
year*CLONE	2	1.15157500	0.57578750	7.51	0.0121

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	5.69770833	2.84885417	8.41	0.0182

The GLM Procedure

t Tests (LSD) for Protein

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

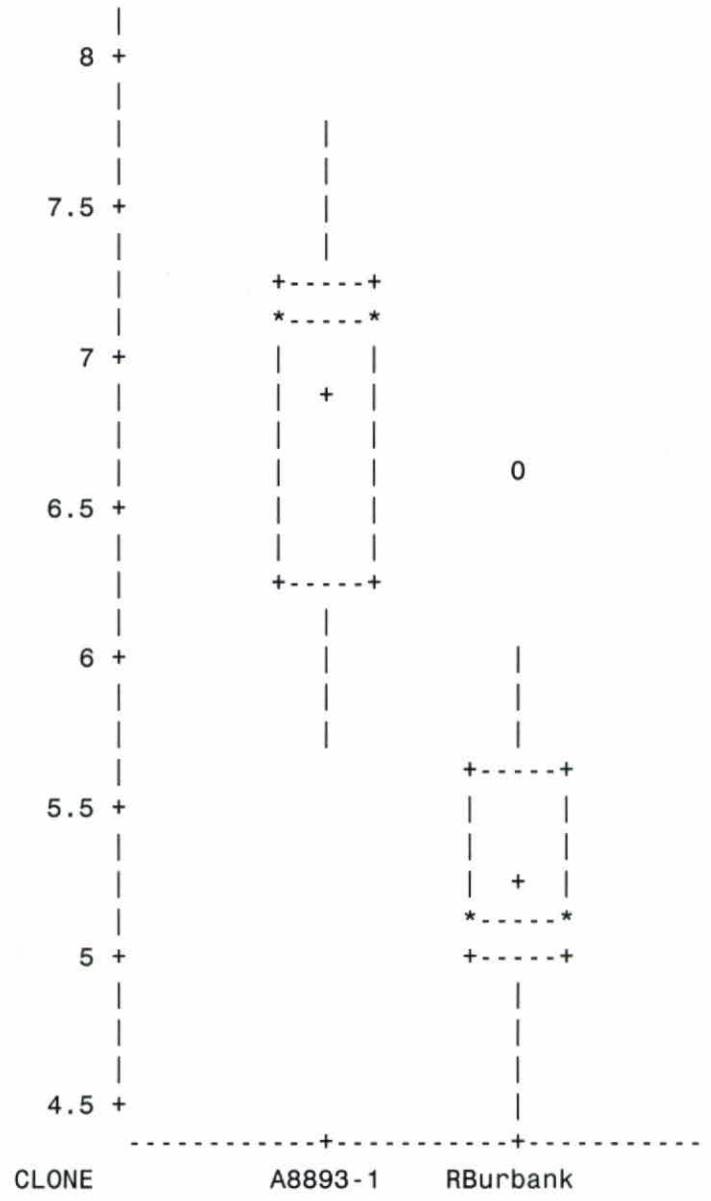
Alpha	0.05
Error Degrees of Freedom	9
Error Mean Square	0.076649
Critical Value of t	2.26216
Least Significant Difference	0.2557

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	6.8667	12	A8893-1
B	5.2692	12	RBurbank

The UNIVARIATE Procedure
Variable: Protein

Schematic Plots



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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

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

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
University of Idaho	A8893-1	Blazer Russet
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
Idaho Agriculture Experiment Station	(208) 885-7173	(208) 885-6654
	7. PVPO NUMBER 20060201	

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)*:

Blazer Russet was bred and developed by the University of Idaho potato variety development program. The USDA-ARS potato breeding program provided the germplasm that resulted in Blazer Russet. The USDA-ARS has granted permission to the University of Idaho to market and claim ownership of all varieties developed as part of this cooperative effort.

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.

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

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	TEMPORARY OR EXPERIMENTAL DESIGNATION
University of Idaho	Morrill Hall 414 PO Box 443003 Moscow, ID 83844-3003	A8893-1 VARIETY NAME Blazer Russet
NAME OF OWNER REPRESENTATIVE (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	FOR OFFICIAL USE ONLY PVPO NUMBER
Gaylene Anderson Jeffrey C. Stark	Morrill Hall 414 PO Box 443003 Moscow, ID 83844-3003	#200600201

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.

Gaylene Anderson
Signature

3-31-2010
Date