

No.



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**President, Colorado Certified Potato
Growers' Association, Inc.**

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, 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 BY PUBLIC LAW 85-625, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Rio Grande 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 seventeenth day of March, in the year two thousand and ten.

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

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 President, Colorado Certified Potato Growers' Association, Inc. | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME AC89536-5RU | 3. VARIETY NAME Rio Grande Russet |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 0249 East Road 9 North Center, CO 81125 | | 5. TELEPHONE (include area code) (719) 754-3496 | FOR OFFICIAL USE ONLY PVPO NUMBER 2005 00139 FILING DATE FEBRUARY 5, 2005 |
| 7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Association | | 6. FAX (include area code) (719) 754-2619 | |
| 8. IF INCORPORATED, GIVE STATE OF INCORPORATION CO | | 9. DATE OF INCORPORATION January 1, 1949 | |
| 10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) President Colorado Certified Potato Growers' Association, Inc. 0249 East Road 9 North Center, CO 81125 | | FILING AND EXAMINATION FEES: F E S \$ 3,652.00 R DATE 2/5/05 C CERTIFICATION FEE: E \$ 768.00 I DATE 12/08/09 V E D | |
| 11. TELEPHONE (Include area code) (719) 754-3496 | 12. FAX (Include area code) (719) 754-2619 | 13. E-MAIL slvctr@coop.ext.colostate.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 L. | 17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23) | |
| 19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) 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 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"/> 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. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) | | 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input 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.) | | 22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.) | |
| 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) Mark Peterson | | NAME (Please print or type) | |
| CAPACITY OR TITLE President | DATE 01/24/2005 | CAPACITY OR TITLE | DATE |

(See reverse for instructions and information collection burden statement)

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INSTRUCTIONS

GENERAL: 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; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties 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; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (*See Section 97.6 of the Regulations and Rules of Practice.*) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. 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 check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

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

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <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 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.*)

Tissue-cultured plantlets and tuber seed stocks of AC89536-5RU were pre-released to local seed growers for research and evaluation purposes under an agreement regarding experimental potato selections. A copy of this agreement is attached as Appendix 1.

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).*)

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.*)

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, 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).

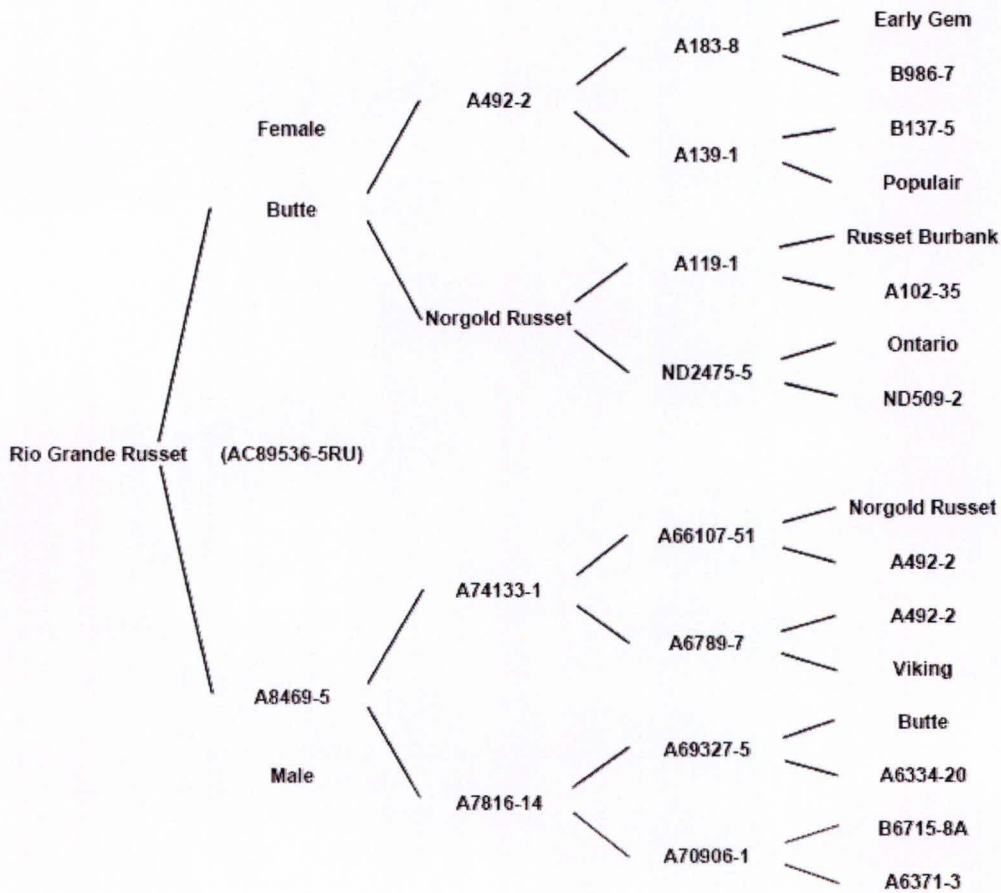
To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

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Exhibit A
Origin and Breeding History of the Variety

1. Pedigree:

Rio Grande Russet, tested under pedigree number AC89536-5RU, was selected in 1991 at the San Luis Valley Research Center - Colorado State University, Center Colorado. It resulted from a cross of Butte and A8469-5 made by the USDA-ARS at the University of Idaho Research and Extension Center, Aberdeen, Idaho in 1989.



2009 MAY 20 PM 1:52

Exhibit A (continued)**Origin and Breeding History of the Variety****2. Selection and Multiplication:**

Refer to Table 1 for an outline of the potato breeding, selection, and multiplication scheme for **Rio Grande Russet**.

Selection and early testing was done by Dr. David G. Holm, San Luis Valley Research Center-Colorado State University, Center, Colorado. Other Colorado State University personnel conducting cultural management trials and disease evaluations/observations were Dr. Samuel Y. C. Essah and Dr. Robert D. Davidson, respectively.

Primary criteria used in selecting **Rio Grande Russet** were yield potential, high percentage of US #1 tubers, attractive tuber type, and resistance to internal and external grade defects such as hollow heart, second growth, growth cracks, blackspot bruise, and shatter bruise.

Rio Grande Russet was evaluated in the Western Regional Trials in 2000-2002. These trials were conducted in several locations around the Western United States as part of WERA027 - Potato Variety Development.

Multiplication of **Rio Grande Russet** tubers for initial selection and research trials and subsequent seed increase was via vegetative means using tubers and/or tissue-cultured disease tested seed stocks.

3. Statement of Uniformity and Stability:

Rio Grande Russet has been observed for more than 14 years of field seed increase and/or tissue-culture production and during this period has been uniform and stable. Variants may appear in **Rio Grande Russet** at a frequency of about 0.5%. These plants are slightly taller and slightly later flowering and are referred to as semi-bolters. These variants are identical to the variety in all other characteristics as described in Exhibit C and are commercially acceptable. These variants are known to be the result of spontaneous mutation. This type of mutation is common in some potato cultivars.

2009 MAY 20 PM 1:52

Exhibit A (continued)Table 1. Potato breeding, selection, and multiplication scheme for **Rio Grande Russet**.

| Year | Comments |
|---|--|
| 1989 (1) | Select parents for crossing and true seed production in the greenhouse at Aberdeen, Idaho. |
| 1991 (2) | Seedling tubers produced from true seed in the greenhouse at Aberdeen, Idaho. |
| 1992 (3) | Seedling tubers of family A89536 were planted in the field as single hills. First cycle of field selection at the San Luis Valley Research Center. A89536-5RU selected. |
| 1993 (4) | Twelve-hills of A89536-5RU were planted. Second cycle of field selection. |
| 1994 (5) | Preliminary Selection 1 (P1). Third cycle of field selection (48 plant tuber-unit seed increase). |
| 1995 (6) | Preliminary Selection 2 (P2). Fourth cycle of field selection (96 plant tuber-unit seed increase). Initial evaluations to characterize selections for blackspot bruise potential, storage weight loss, dormancy, and enzymatic browning. Initial evaluations for french fry potential (french fry color and specific gravity) was conducted this year and subsequently. |
| 1996 (7) | Intermediate Selection. Fifth cycle of field selection. Initial data collected on yield, grade, and growth characteristics. Plant a 144 plant tuber-unit seed increase and a 2 rep x 25 plants intermediate yield trial (IYT). |
| 1997-1998 (8-9) and 2003+ (14+) | Advanced Selection. AC89536-5RU was in the 6th-7th and 12+ cycles of field selection. All Advanced yield trials (AYT) has 4 reps x 25 plants. Planted a 1,600 plant tuber-unit seed increase. Indexing for viruses and cleanup/micropropagation is initiated in the sixth-cycle of selection. Initiated testing for ring rot and PLRV reaction - continue as needed. Selections in the 7th cycle of field selection are entered into cultural management trials and postharvest disease reaction (dry rot and soft rot) evaluations. |
| 1999 (10) | 1/2 acre tuber-unit seed increase planted. Entered in the Southwestern Regional Trials (4 locations - CO, TX, two in CA). Cultural management trials and postharvest disease reaction evaluations continue as needed. |
| 2000-2002 (11-13) | 1 acre or greater seed increase. Entered in the Western Regional Trial. The Western Regional Committee (WERA027) directs these trials at 10+ locations in the Western United States each year. Cultural management trials and postharvest disease reaction evaluations continue as needed. |
| 2000+ (11+) | Grower/industry evaluations. The Colorado Potato Breeding and Selection Project relies on the cooperation of several growers, shippers, and processors to evaluate advanced selections for adaptability and marketability. |
| 2005 | Release of Rio Grande Russet (AC89536-5RU) as a named cultivar. |

2009 MAY 20 PM 1:52

Exhibit B

Statement of Distinctness

Rio Grande Russet is compared to Russet Norkotah, the most similar russet table stock reference cultivar grown in our trials. **Rio Grande Russet** most clearly differs from Russet Norkotah in the following traits:

| Trait | Rio Grande Russet | Russet Norkotah | Evidence |
|--|------------------------|------------------------|-----------------|
| Light Sprout Base: Intensity of Anthocyanin Coloration | Medium | Strong | Figure 1 |
| Light Sprout Tip: Intensity of Anthocyanin Coloration | Medium | Weak | Figure 1 |
| Terminal Leaflet Tip Shape | Cuspidate | Acuminate | Figure 2 |
| Primary Leaflet Tip Shape | Cuspidate | Acuminate | Figure 3 |
| Corolla Inner Surface Color Chart Value | 80D | 155B | RHS Color Chart |
| Corolla Outer Surface Color Chart Value | 84B | 155A | RHS Color Chart |
| Number of Inflorescence/Plant | 3.9 +/- 1.4 (n=80) | 1.8 +/- 0.8 (n=53) | Table 1 |
| Number of Florets/Inflorescence | 13.2 +/- 3.4 (n=80) | 6.5 +/- 2.4 (n=53) | Table 2 |
| Specific Gravity | 1.087 +/- 0.005 (n=22) | 1.078 +/- 0.004 (n=22) | Table 3 |

2009 MAY 20 PM 1:52

| | | |
|---|---|--|
| NAME OF APPLICANT (S) President, Colorado Certified Potato Growers' Association, Inc. | TEMPORARY OR EXPERIMENTAL DESIGNATION AC89536-5RU | VARIETY NAME Rio Grande Russet |
| ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) President Colorado Certified Potato Growers' Association, Inc. 0249 East 9 North Center, CO 81125 | | FOR OFFICIAL USE ONLY PVPO NUMBER #200500139 |

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) |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Rio Grande Russet | Russet Norkotah | | | |

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

2. LIGHT SPROUT CHARACTERISTICS: (See Figure 1)

***LIGHT SPROUT: GENERAL SHAPE**

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

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

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

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

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 4 | R1 | 2 | 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 | 3 | R1 | 4 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

*** LIGHT SPROUT TIP: HABIT**

1 = Closed 2 = Intermediate 3 = Open

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

2009 MAR 20 PM 1:53

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE

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

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 2 | R1 | 2 | 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 ANTHOCYANIN COLORATION (IF PRESENT)

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

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

LIGHT SPROUT ROOT INITIALS: FREQUENCY

1 = Short 2 = Medium 3 = Long

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

3. PLANT CHARACTERISTICS:

GROWTH HABIT: (See Figure 2)

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

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

TYPE:

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

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

MATURITY: Days after planting (DAP) at vine senescence

| | | | | | | | | | |
|---|-----|----|----|----|--|----|--|----|--|
| V | 120 | R1 | 99 | R2 | | R3 | | R4 | |
|---|-----|----|----|----|--|----|--|----|--|

PLANTING DATE:

| | | | | | | | | | |
|---|------|----|------|----|--|----|--|----|--|
| V | 5/15 | R1 | 5/15 | 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 | R1 | 1 | 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 | 3 | R1 | 1 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

8

2009 MAR 20 PM 1:53

4. STEM CHARACTERISTICS: Measure at early first bloom

* STEM ANTHOCYANIN COLORATION:

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

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 1 | R1 | 1 | 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 | 2 | 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 | 137B | R1 | 137A | 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 | 5 | R1 | 3 | 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 | 3 | R1 | 3 | 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 | |
|---|---|----|---|----|--|----|--|----|--|

2009 MAY 20 PM 1:53

5. LEAF CHARACTERISTICS: (continued)

TERMINAL 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 | |
|---|---|----|---|----|--|----|--|----|--|

* TERMINAL LEAFLET BASE SHAPE: (See Figure 9)

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

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

TERMINAL LEAFLET MARGIN WAVINESS:

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

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

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 3.6 | R1 | 3.9 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|--------|----|--------|----|----|----|----|----|----|
| V | 2 to 5 | R1 | 3 to 6 | 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 | 3 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

PRIMARY LEAFLET SHAPE: (See Figures 6 and 7)

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

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 2 | R1 | 1 | 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 | 4 | R1 | 4 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

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

AVERAGE:

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 4.5 | R1 | 5.9 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|---------|----|---------|----|----|----|----|----|----|
| V | 1 to 11 | R1 | 2 to 12 | R2 | to | R3 | to | R4 | to |
|---|---------|----|---------|----|----|----|----|----|----|

10

2009 MAY 20 PM 1:53

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 3.9 | R1 | 1.8 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|--------|----|--------|----|----|----|----|----|----|
| V | 2 to 7 | R1 | 1 to 4 | R2 | to | R3 | to | R4 | to |
|---|--------|----|--------|----|----|----|----|----|----|

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

| | | | | | | | | | |
|---|------|----|-----|----|--|----|--|----|--|
| V | 13.2 | R1 | 6.5 | R2 | | R3 | | R4 | |
|---|------|----|-----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|---------|----|---------|----|----|----|----|----|----|
| V | 6 to 24 | R1 | 3 to 12 | 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 | 80D | R1 | 155B | 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 | 84B | R1 | 155A | R2 | | R3 | | R4 | |
|---|-----|----|------|----|--|----|--|----|--|

* COROLLA INNER SURFACE COLOR: (Measure predominant color of newly open flower)

- 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 = Other

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 3 | 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 | 3 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

6. INFLORESCENCE CHARACTERISTICS:

CALYX ANTHOCYANIN COLORATION:

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

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

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

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 14A | R1 | 14A | 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 | 1 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

11

2009 MAY 20 PM 1:53

6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:

1 = None 3 = Some 5 = Abundant

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

STIGMA SHAPE: (See Figure 12)

1 = Capitate 2 = Clavate 3 = Bi-lobed

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

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

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

BERRY PRODUCTION: (Under field conditions)

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

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

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

| | | | | | | | | | |
|---|------|----|------|----|--|----|--|----|--|
| V | 199B | R1 | 199B | 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 | |
|---|---|----|---|----|--|----|--|----|--|

12

2009 MAY 20 PM 1:53

7. TUBER CHARACTERISTICS: (continued)

* TUBER SHAPE: (See Figure 14)

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

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

TUBER THICKNESS:

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

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

TUBER LENGTH (mm):

AVERAGE:

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 110 | R1 | 106 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|-----------|----|-----------|----|----|----|----|----|----|
| V | 85 to 135 | R1 | 78 to 135 | R2 | to | R3 | to | R4 | to |
|---|-----------|----|-----------|----|----|----|----|----|----|

STANDARD DEVIATION:

| | | | | | | | | | |
|---|----|----|----|----|--|----|--|----|--|
| V | 11 | R1 | 12 | R2 | | R3 | | R4 | |
|---|----|----|----|----|--|----|--|----|--|

AVERAGE WEIGHT OF SAMPLE TAKEN:

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 200 | R1 | 187 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

TUBER WIDTH (mm)

AVERAGE:

| | | | | | | | | | |
|---|----|----|----|----|--|----|--|----|--|
| V | 62 | R1 | 61 | R2 | | R3 | | R4 | |
|---|----|----|----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|----------|----|----------|----|----|----|----|----|----|
| V | 52 to 75 | R1 | 50 to 74 | R2 | to | R3 | to | R4 | to |
|---|----------|----|----------|----|----|----|----|----|----|

STANDARD DEVIATION:

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

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 200 | R1 | 187 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

2009 MAY 20 PM 1:53

7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

| | | | | | | | | | |
|---|----|----|----|----|--|----|--|----|--|
| V | 52 | R1 | 52 | R2 | | R3 | | R4 | |
|---|----|----|----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|----------|----|----------|----|----|----|----|----|----|
| V | 41 to 65 | R1 | 42 to 64 | R2 | to | R3 | to | R4 | to |
|---|----------|----|----------|----|----|----|----|----|----|

STANDARD DEVIATION:

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

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 200 | R1 | 187 | R2 | | R3 | | R4 | |
|---|-----|----|-----|----|--|----|--|----|--|

TUBER EYE DEPTH:

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

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

TUBER LATERAL EYES:

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

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

NUMBER EYE/TUBER:

AVERAGE:

| | | | | | | | | | |
|---|----|----|----|----|--|----|--|----|--|
| V | 18 | R1 | 18 | R2 | | R3 | | R4 | |
|---|----|----|----|----|--|----|--|----|--|

RANGE:

| | | | | | | | | | |
|---|----------|----|----------|----|----|----|----|----|----|
| V | 12 to 25 | R1 | 10 to 22 | 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 | |
|---|---|----|---|----|--|----|--|----|--|

14

2009 MAY 20 PM 1:53

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 | 160D | R1 | 160D | 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 | 2 | R1 | 1 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

2009 MAY 20 PM 1:53

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 | | R1 | | R2 | | R3 | | R4 | |
|---|--|----|--|----|--|----|--|----|--|

EARLY BLIGHT: (Alternaria)

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

SOFT ROT (Erwinia)

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

COMMON SCAB (Streptomyces)

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

POWDERY SCAB (Spongospora)

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

DRY ROT (Fusarium)

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

POTATO LEAF ROLL VIRUS (PLRV)

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

16

2009 MAY 20 PM 1:53

8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

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

POTATO VIRUS Y (PVY)

| | | | | | | | | | |
|---|---|----|---|----|--|----|--|----|--|
| V | 5 | R1 | 7 | R2 | | R3 | | R4 | |
|---|---|----|---|----|--|----|--|----|--|

POTATO VIRUS M (PVM)

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

POTATO VIRUS A (PVA)

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

GOLDEN NEMATODE (Globodera)

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

ROOT - KNOT NEMATODE (Meloidogyne)

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

OTHER DISEASE Bacterial Ring Rot; Foliar Reaction/Tuber Reaction

| | | | | | | | | | |
|---|-----|----|-----|----|--|----|--|----|--|
| V | 7/5 | R1 | 7/7 | 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 | | R1 | | R2 | | R3 | | R4 | |
|---|--|----|--|----|--|----|--|----|--|

GREEN PEACH APHID (*Myzus*)

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

OTHER:

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

OTHER:

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

2009 MAY 20 PM 1:53

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

R2

R3

R4

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

V 3.0

R1 2.5

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.

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.

18

2009 MAY 20 PM 1:53

Rio Grande Russet Tuber and Sprout Photos



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Figure 1. Light Sprout Base: Intensity of Anthocyanin Coloration and Light Sprout Tip: Intensity of Anthocyanin Coloration for Rio Grande Russet (top) and Russet Norkotah (bottom).



2009 MAY 20 PM 1:52

Figure 2. Terminal leaflet tip shape for Rio Grande Russet (left) and Russet Norkotah (right).

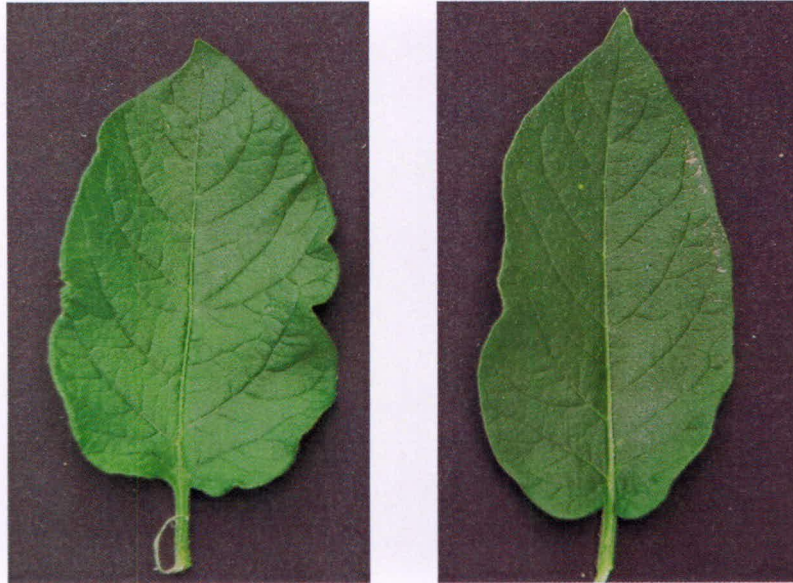


Figure 3. Primary leaflet tipe shape for Rio Grande Russet (left) and Russet Norkotah (right).



2009 MAY 20 PM 1:52

22

Table 1.

| # Inflorescence/Plant Analysis | | | | | | | | | | | | |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|--------|-----|
| Rio Grande Russet | 3 | 5 | 6 | 5 | 6 | 5 | 5 | 6 | 6 | 3 | Number | 80 |
| | 7 | 2 | 4 | 5 | 4 | 6 | 5 | 3 | 3 | 4 | Mean | 3.9 |
| | 6 | 2 | 3 | 3 | 4 | 5 | 4 | 3 | 3 | 7 | SD | 1.4 |
| | 7 | 2 | 5 | 2 | 4 | 4 | 3 | 5 | 4 | 5 | | |
| | 3 | 2 | 2 | 5 | 2 | 4 | 2 | 3 | 3 | 2 | | |
| | 3 | 3 | 3 | 3 | 5 | 3 | 4 | 3 | 3 | 5 | | |
| | 5 | 6 | 2 | 5 | 3 | 3 | 3 | 2 | 4 | 2 | | |
| | 6 | 4 | 5 | 4 | 3 | 5 | 4 | 4 | 5 | 3 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Russet Norkotah | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 4 | 3 | 2 | Number | 53 |
| | 1 | 1 | 4 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | Mean | 1.8 |
| | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | SD | 0.8 |
| | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | | |
| | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 2 | | |
| | 3 | 2 | 1 | | | | | | | | | |
| | | | | | | | | | | | | |

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2009 MAY 20 PM 1:52

Table 2.

| # Florets/Inflorescence Analysis | | | | | | | | | | | | |
|----------------------------------|----|----|----|----|----|----|----|----|----|----|--|-----------|
| | | | | | | | | | | | | |
| Rio Grande Russet | 24 | 12 | 15 | 15 | 15 | 16 | 15 | 22 | 14 | 14 | | Number 80 |
| | 14 | 18 | 13 | 13 | 20 | 19 | 15 | 11 | 14 | 16 | | Mean 13.2 |
| | 14 | 14 | 12 | 10 | 10 | 13 | 6 | 15 | 14 | 18 | | SD 3.4 |
| | 12 | 10 | 12 | 11 | 10 | 11 | 10 | 12 | 13 | 24 | | |
| | 14 | 20 | 13 | 14 | 19 | 7 | 14 | 14 | 9 | 14 | | |
| | 12 | 9 | 12 | 12 | 12 | 13 | 12 | 11 | 9 | 11 | | |
| | 12 | 15 | 14 | 13 | 12 | 8 | 13 | 10 | 8 | 17 | | |
| | 8 | 11 | 11 | 12 | 14 | 12 | 10 | 11 | 12 | 13 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Russet Norkotah | 6 | 6 | 7 | 8 | 8 | 6 | 9 | 5 | 4 | 4 | | Number 53 |
| | 4 | 9 | 6 | 3 | 10 | 8 | 6 | 6 | 10 | 10 | | Mean 6.5 |
| | 6 | 6 | 6 | 8 | 8 | 4 | 6 | 6 | 3 | 3 | | SD 2.4 |
| | 3 | 3 | 6 | 6 | 6 | 3 | 3 | 12 | 9 | 8 | | |
| | 3 | 3 | 9 | 10 | 12 | 8 | 8 | 7 | 8 | 9 | | |
| | 5 | 6 | 6 | | | | | | | | | |
| | | | | | | | | | | | | |

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2009 MAY 20 PM 1:52

Table 3.

| Specific Gravity Analysis | | |
|---------------------------|-------------------|-----------------|
| Trial | Rio Grande Russet | Russet Norkotah |
| 1 | 1.089 | 1.081 |
| 2 | 1.091 | 1.079 |
| 3 | 1.090 | 1.081 |
| 4 | 1.088 | 1.077 |
| 5 | 1.092 | 1.081 |
| 6 | 1.088 | 1.083 |
| 7 | 1.092 | 1.081 |
| 8 | 1.078 | 1.078 |
| 9 | 1.088 | 1.085 |
| 10 | 1.082 | 1.078 |
| 11 | 1.091 | 1.079 |
| 12 | 1.080 | 1.080 |
| 13 | 1.083 | 1.080 |
| 14 | 1.093 | 1.077 |
| 15 | 1.093 | 1.081 |
| 16 | 1.094 | 1.079 |
| 17 | 1.084 | 1.070 |
| 18 | 1.089 | 1.080 |
| 19 | 1.082 | 1.071 |
| 20 | 1.086 | 1.078 |
| 21 | 1.079 | 1.071 |
| 22 | 1.080 | 1.073 |
| | | |
| | | |
| Mean | 1.087 | 1.078 |
| SD | 0.005 | 0.004 |
| Max | 1.094 | 1.085 |
| Min | 1.078 | 1.070 |

2009 MAY 20 PM 1:52

Table 2. Plant and processing characteristics for **Rio Grande Russet** compared with Russet Burbank and Russet Norkotah, 2001-2003.

| Clone | % Stand | Vine Size ¹ | Vine Maturity ² | Specific Gravity | Fry Color ³ | Fry Color ⁴ |
|--------------------------|---------|------------------------|----------------------------|------------------|------------------------|------------------------|
| 2001 | | | | | | |
| Rio Grande Russet | 99 | 3.5 | 3.0 | 1.094 | 1 | 3 |
| Russet Burbank | 99 | 3.0 | 3.0 | 1.088 | 2 | 4 |
| Russet Norkotah | 100 | 2.0 | 2.0 | 1.077 | 2 | 1 |
| LSD (0.05) ⁵ | NS | 0.5 | 0.5 | ---- | ---- | ---- |
| 2002 | | | | | | |
| Rio Grande Russet | 98 | 4.3 | 2.5 | 1.093 | 3 | 3 |
| Russet Burbank | 99 | 3.0 | 2.8 | 1.091 | 1 | 1 |
| Russet Norkotah | 99 | 2.0 | 2.0 | 1.080 | 3 | 2 |
| LSD (0.05) ⁵ | NS | 0.5 | 0.5 | ---- | ---- | ---- |
| 2003 | | | | | | |
| Rio Grande Russet | 100 | 3.8 | 3.0 | 1.080 | 2 | 3 |
| Russet Burbank | 99 | 4.0 | 3.0 | 1.082 | 3 | 3 |
| Russet Norkotah | 100 | 2.0 | 2.0 | 1.079 | 3 | 3 |
| LSD (0.05) ⁵ | NS | 0.6 | 0.4 | ---- | ---- | ---- |

¹Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

²Vine maturity is rated on a 1 to 5 scale, with 5 indicating very late maturing vines.

³Fry color was rated at harvest on a 0 to 4 scale (USDA color standards), with 0 being the lightest color. Color ratings of ≤ 2 are acceptable. Fries were cooked for 3 ½ minutes at 375F.

⁴Fry color was rated after 8 weeks of storage at 45F.

⁵LSD=least significant difference; NS=not significant.

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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**

2222
 11/10/09

| | | |
|---|--|--|
| 1. NAME OF APPLICANT(S) President, Colorado Certified Potato Growers' Association, Inc. | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER AC89536-5RU | 3. VARIETY NAME Rio Grande Russet |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 0249 East Road 9 North Center, CO 81125 | 5. TELEPHONE (Include area code) (719) 754-3496 | 6. FAX (Include area code) (719) 754-2619 |
| 7. PVPO NUMBER 2005 00139 | | |

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

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

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

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

YES NO If no, give name of country

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

YES NO If no, give name of country

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

The Colorado Certified Potato Growers' Association, Inc., and the Board of Governors of Colorado State University System entered into an agreement on February 1, 1998 (renewed on July 1, 2002). This agreement allows the transfer of ownership of potato cultivars developed at Colorado State University by the Agricultural Experiment Station to the Colorado Certified Potato Growers' Association.

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.

26

'05 FEB 9 AM 12:37

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

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

EXHIBIT F
DECLARATION REGARDING DEPOSIT

| | | |
|--|--|--|
| NAME OF OWNER (S) President, Colorado Certified Potato Growers' Association, Inc. | ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 0249 East Road 9 North Center, CO 81125 | TEMPORARY OR EXPERIMENTAL DESIGNATION AC89536-5RU |
| NAME OF OWNER REPRESENTATIVE (S) Mark Peterson | ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 0249 East Road 9 North Center, CO 81125 | VARIETY NAME Rio Grande Russet FOR OFFICIAL USE ONLY PVPO NUMBER 2005 00139 |

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

1-31-05
Date

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