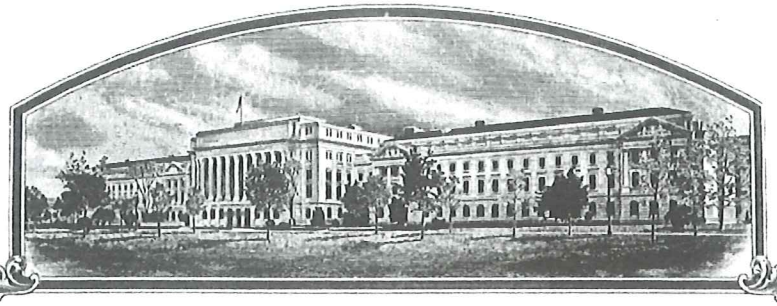


No. 201000085

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

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

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

An application requesting a certificate of protection for an alleged distinct variety of sexually reproduced, or tuber propagated plant, the name and description of which are contained in the application and exhibits, a copy of which is hereunto annexed and made a part hereof, and the various requirements of LAW in such cases made and provided have been complied with, and the title thereto is, from the records of the PLANT VARIETY PROTECTION OFFICE, in the applicant(s) indicated in the said copy, and Whereas, upon due examination made, the said applicant(s) is (are) adjudged to be entitled to a certificate of plant variety protection under the LAW.

Now, therefore, this certificate of plant variety protection is to grant unto the said applicant(s) and the successors, heirs or assigns of the said applicant(s) for the term of TWENTY years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by LAW, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or conditioning it for propagation, or stocking it for any of the above purposes,. or using it in producing a hybrid or different variety therefrom, to the extent provided by the PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Clearwater 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 eleventh day of March, in the year* ***two thousand and fourteen.***

Attest:

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).

RAD
10/02/2012

1. NAME OF OWNER
~~University of Idaho~~
The State of Idaho
(continued on Exhibit E, 11)

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
AOA95154-1

3. VARIETY NAME
Clearwater Russet

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
Office of Technology Transfer
Morrill Hall 414
PO Box 443003
Moscow, ID 83844-3003

5. TELEPHONE *(include area code)*
208-885-4550

6. FAX *(include area code)*
208-885-4551

FOR OFFICIAL USE ONLY

PVPO NUMBER
201000085

FILING DATE
December 28, 2009

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Land Grant University Not for Profit

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESSOF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Gaylene Anderson and Jeffrey C. Stark
University of Idaho Office of Technology Transfer
Morrill Hall 414
PO Box 443003
Moscow ID 83844-3003

FEES RECEIVED

FILING AND EXAMNATION FEES:
$ 4,382.00
DATE December 28, 2009

CERTIFICATION FEE:
$
DATE

11. TELEPHONE (Include area code)
(208) 885-4550 or 529-8376

12. FAX (Include area code)
(208) 885-4551 or 522-2954

13. E-MAIL
gaylene@uidaho.edu , jstark@uidaho.edu

14. CROP KIND *(Common Name)*
Potato

16. FAMILY NAME *(Botanical)*
Solanaceae

15. GENUS AND SPECES NAME OF CROP
Solanum tuberosum

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

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

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
(Follow instructions on reverse)

a. ■ Exhibit A. Origin and Breeding History of the Variety
b. ■ Exhibit B. Statement of Distinctness
c. ■ Exhibit C. Objective Description of Variety
d. ■ Exhibit D. Additional Description of the Variety *(Optional)*
e. ■ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ■ Exhibit F. Declaration Regarding Deposit
g. ■ Voucher Sample *(3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
h. ■ Filing and Examination Fee ($4,382), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
○ YES *(If "yes", answer items 21 and 22 below)*
◉ NO *(If "no", go to item 23)*
○ UNDECIDED

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?
■ YES ☐ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

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

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

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

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

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
NAME *(Please print or type)* Gaylene Anderson		NAME *(Please print or type)* Jeffrey C. Stark	
CAPACITY OR TITLE Licensing Associate	DATE 4/21/11	CAPACITY OR TITLE Research Professor	DATE 21 April, 2011

ST-470 (07-01-2009) designed by the Plant Variety Protection Office

Received April 11, 2011

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

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

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

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

ITEM

19a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

20. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

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

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

Application filed within one year of release date. First sale February 18, 2009.

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

#201000085

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).

Clearwater Russet was derived from a sexual hybridization made at the University of Idaho's Aberdeen Research and Extension Center in 1995. It resulted from a cross of Bannock Russet and A89152-4. It was first selected in the field in 1997 and subsequently evaluated for 12 Years.

A four generation pedigree is attached.

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

Year	Detail of Stage	Selection Criteria
1997	It was first field selected in 1997.	Appearance, higher specific gravity, high protein content, resistance to tuber defects, cold sweetening resistance.
2003-2004	In 2003-2004 Clearwater Russet was evaluated in the Tri-State Potato Variety Trial.	
2005-2007	In 2005-2007 Clearwater Russet was entered and evaluated in the Western Regional Variety Trials. Clearwater Russet was selected for use in the tablestock and french fry processing markets.	
2006-present	Agronomic field trials. Seed source maintained at UI Tetonia R&E Center	

3a. Is the variety uniform? [✓] Yes ____ No

How did you test for uniformity?

Clearwater 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?

Clearwater Russet has been clonally propagated for 11 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.

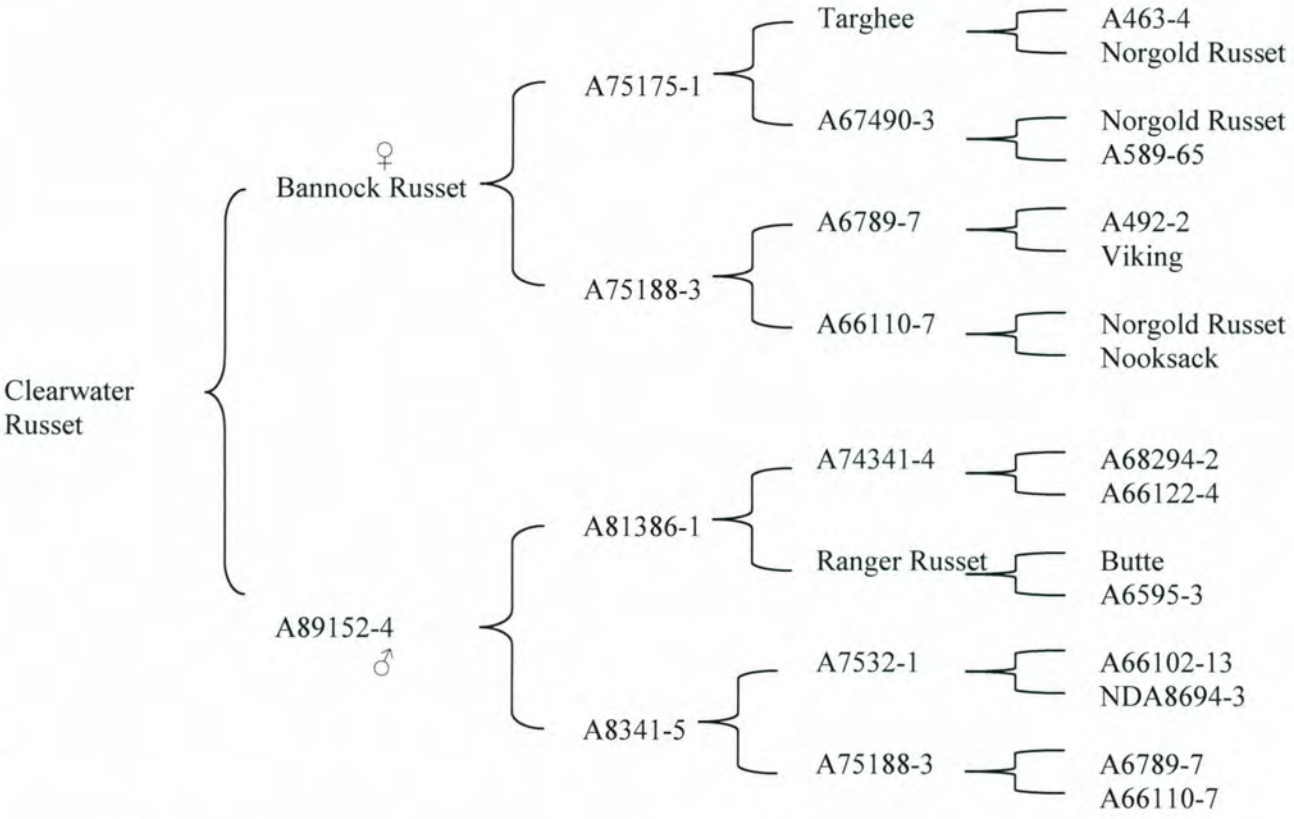


Figure 1. Pedigree of Clearwater Russet

Received December 28, 2009

DRAFT Exhibit B Form

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

Clearwater 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: Clearwater Russet is most similar to Russet Burbank however, it has more primary leaflet pairs, and infloresences per plant.	Applicant's New Variety Clearwater Russet Clearwater has 4.0 pairs of primary leaflets, and 5.3 inflorscences per plant, stipules are non-clasping.	1st Comparison Variety Russet Burbank Russet Burbank has 3.6 pairs of primary leaflets, and 4.2 inflorescences per plant, stipules are clasping.	Location of Evidence Exhibit C and Photos comparison of Figure 2 and Figure 3.
2. Color traits: Clearwater Russet has purple flower color with white tips.	Clearwater Russet flower color is RHS # 76 A. Corolla inner surface color = (15) Violet-white 3:1.	Russet Burbank flower color is RHS # 155 B. Corolla inner surface color = (1) white.	Royal Horticultural Society (RHS) color chart. Exhibit C
3. Quantitative traits: Clearwater Russet has higher specific gravity and lower fry color than Russet Burbank..	Clearwater Russet mean specific gravity was 1.088 in 2003 and 1.090 in 2004. Fry colors at 40F and 45F were 1.5 and 0.4 in 2003 and 1.3 and 0.4 in 2004 respectively.	Russet Burbank mean specific gravity was 1.072 in 2003 and 1.082 in 2004. Fry colors at 40F and 45F were 3.8 and 1.5 in 2003 and 3.2 and 1.2 in 2004 respectively.	Exhibit D 2003 Pr > F 0.0046 Fry40, 0.0012 Fry45, and 0.0031 SG. 2004 P r> F 0.0013, 0.0234,
4. Other:			

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

CLEARWATER RUSSET

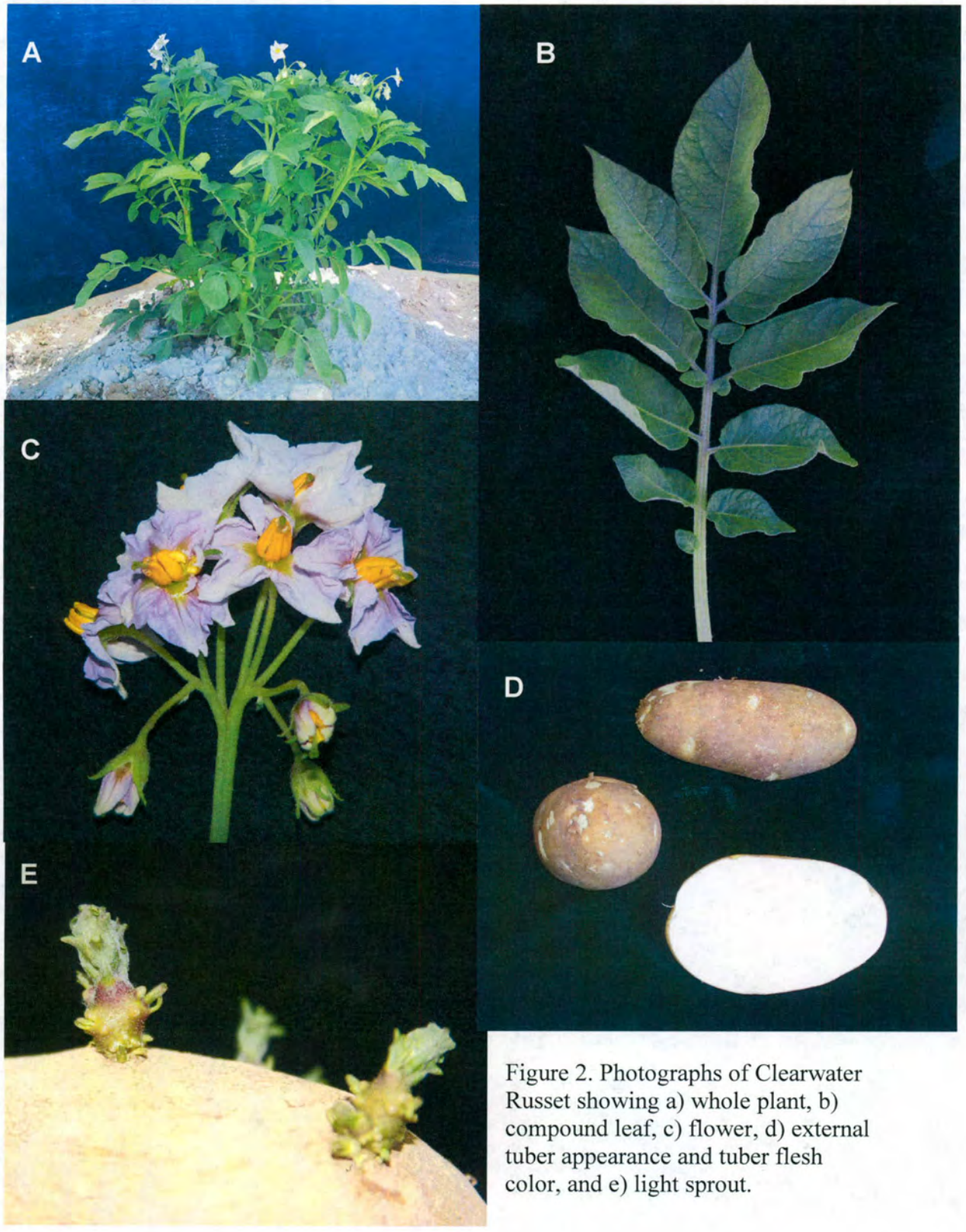


Figure 2. Photographs of Clearwater Russet showing a) whole plant, b) compound leaf, c) flower, d) external tuber appearance and tuber flesh color, and e) light sprout.

Received December 28, 2009

RUSSET BURBANK

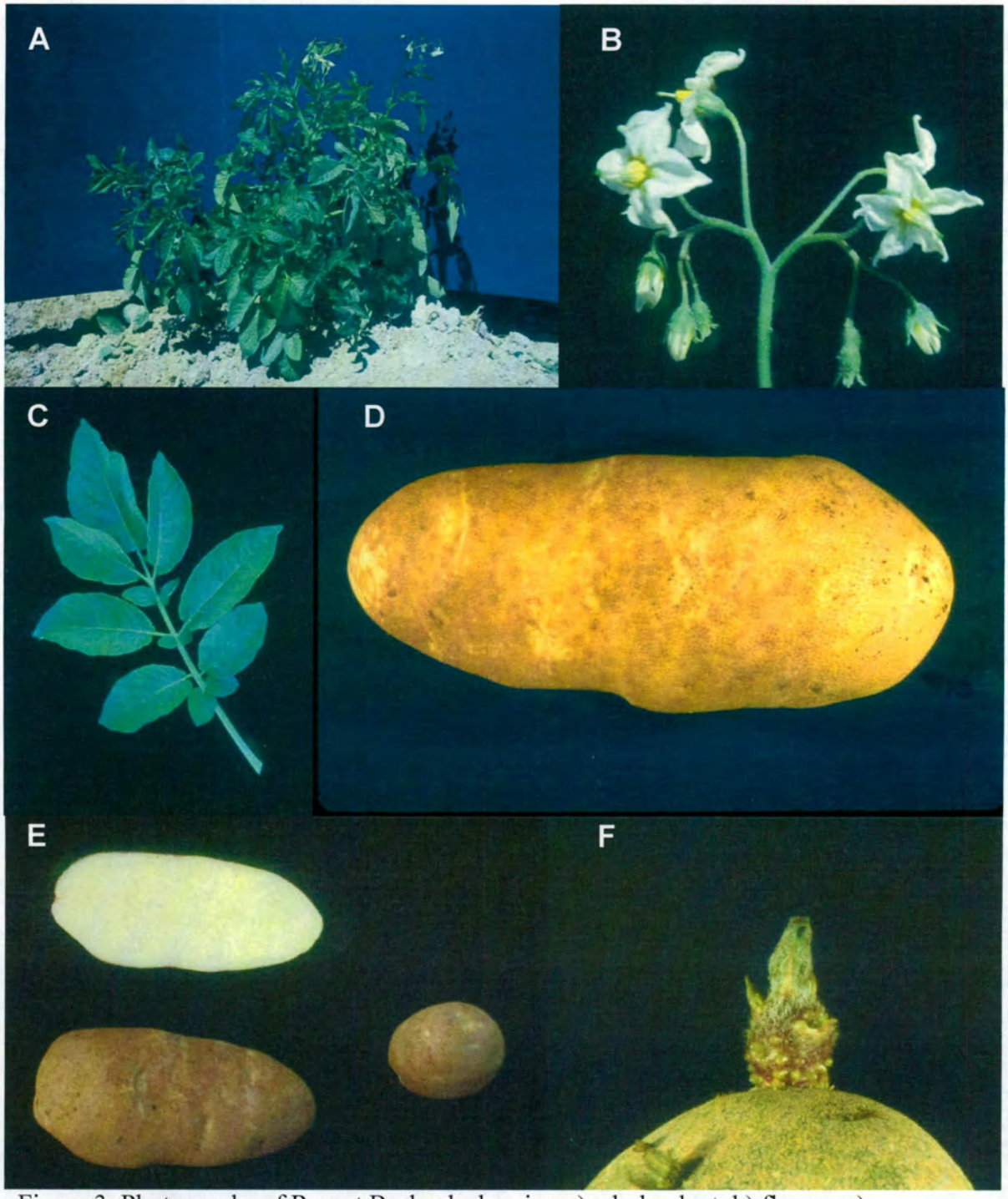


Figure 3. Photographs of Russet Burbank showing a) whole plant, b) flower, c) compound leaf, d) field tuber, e) external tuber appearance and tuber flesh color, and f) light sprout.

Received December 28, 2009

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).

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.

RAD
09/27/2012

NAME OF APPLICANT (S) ~~University of Idaho~~
The State of Idaho (continued on Exhibit E, 11)

TEMPORARY OR EXPERIMENTAL DESIGNATION
AOA95154-1

VARIETY NAME Clearwater Russet

ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)
Office of Technology Transfer
Morrill Hall 414
PO Box 443003
Moscow ID 83844-3003

FOR OFFICIAL USE ONLY

PVPO NUMBER
#201000085

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)
Clearwater 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	3			

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

V	R1	R2	R3	R4
2	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
3	3			

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

V	R1	R2	R3	R4
2	2			

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	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	5	R1	5	R2		R3		R4	

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

V	1	R1	1	R2		R3		R4	

MATURITY: Days after planting (DAP) at vine senescence

V	130	R1	125	R2		R3		R4	

PLANTING DATE:

V	5-1-2006, 5-1-2007	R1	5-1-2006, 5-1-2007	R2		R3		R4	

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

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

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

V	4	R1	4	R2		R3		R4	

4. STEM CHARACTERISTICS: Measure at early first bloom

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

V	3	R1	3	R2		R3		R4	

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

V	3	R1	3	R2		R3		R4	

5. LEAF CHARACTERISTICS:

LEAF COLOR: (*Observe fully developed leaves located on middle 1/3 of plant)*
1 = Yellowing-green 2 = Olive-green 3 = Medium Green 4 = Dark Green 5 = Grey-green 6 = Other _____

V	1	R1	1	R2		R3		R4	

LEAF COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart
(Observe fully developed leaves located on middle 1/3 of plant and circle the appropriate color chart)

V	146 B	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	5	R1	5	R2		R3		R4	

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

V	5	R1	3	R2		R3		R4	

LEAF STIPULES SIZE: (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	

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	3	R1	2	R2		R3		R4	

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	4.0	R1	3.6	R2		R3		R4	

RANGE:

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

PRIMARY LEAFLET BASE SHAPE: (See Figures 6 and 9)
1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	3	R1	3	R2		R3		R4	

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

AVERAGE:

V	5.5	R1	6.1	R2		R3		R4	

RANGE:

V	1 to 9	R1	2 to 11	R2	to	R3	to	R4	to

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	5.3	R1	4.2	R2		R3		R4	

RANGE:

V	2 to 12	R1	1 to 9	R2	to	R3	to	R4	to

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	10.2	R1	12.5	R2		R3		R4	

RANGE:

V	4 to 22	R1	7 to 24	R2	to	R3	to	R4	to

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

V	76 A	R1	155 A	R2		R3		R4	

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

V	76 B	R1	155 B	R2		R3		R4	

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

V	15	R1	1	R2		R3		R4	

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

V	5	R1	4	R2		R3		R4	

6. INFLORESCENCE CHARACTERISTICS:

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

V	3	R1	3	R2		R3		R4	

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

V	15 A	R1	15 A	R2		R3		R4	

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

V	3	R1	3	R2		R3		R4	

6. INFLORESCENCE CHARACTERISTICS: (continued)

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

V	5	R1	1	R2		R3		R4	

STIGMA SHAPE: (See Figure 12)
1 = 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	5	R1	1	R2		R3		R4	

7. TUBER CHARACTERISTICS:

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

V	6	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	165 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	

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	124	R1	135	R2		R3		R4	

RANGE:

V	91	to 178	R1	85	to 180	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	15.6	R1	18.6	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	176	R1	236	R2		R3		R4	

TUBER WIDTH (mm)

AVERAGE:

V	67	R1	61	R2		R3		R4	

RANGE:

V	54	to 80	R1	49	to 79	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	5.8	R1	5.82	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	176	R1	236	R2		R3		R4	

7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

V	57	R1	53	R2		R3		R4	

RANGE:

V	45 to 73	R1	43 to 72	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	5.6	R1	5.56	R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	176	R1	236	R2		R3		R4	

TUBER EYE DEPTH:

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

V	3	R1	5	R2		R3		R4	

TUBER LATERAL EYES:

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

V	3	R1	5	R2		R3		R4	

NUMBER EYE/TUBER:

AVERAGE:

V	18.0	R1	26.6	R2		R3		R4	

RANGE:

V	11 to 27	R1	19 to 42	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	

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 B	R1	158 C	R2		R3		R4	

SECONDARY TUBER FLESH COLOR:

1 = Absent 2 = Present, please describe: _____

V	1	R1	1	R2		R3		R4	

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

V		R1		R2		R3		R4	

NUMBER OF TUBERS/PLANT:
1 = Low (<8) 2 = Medium (8-15) 3 = High (>15)

V	1	R1	2	R2		R3		R4	

8. DISEASES CHARACTERISTICS:

DISEASES REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lessions 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
7	7			

EARLY BLIGHT: (Alternaria)

V	R1	R2	R3	R4
6	6			

SOFT ROT (Erwinia)

V	R1	R2	R3	R4
7	7			

COMMON SCAB (Streptomyces)

V	R1	R2	R3	R4
4	4			

POWDERY SCAB (Spongospora)

V	R1	R2	R3	R4
0	0			

DRY ROT (Fusarium)

V	R1	R2	R3	R4
7	6			

POTATO LEAF ROLL VIRUS (PLRV)

V	R1	R2	R3	R4
9	9			

8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

V	3	R1	9	R2		R3		R4	

POTATO VIRUS Y (PVY)

V	4	R1	7	R2		R3		R4	

POTATO VIRUS M (PVM)

V	0	R1	0	R2		R3		R4	

POTATO VIRUS A (PVA)

V	0	R1	0	R2		R3		R4	

GOLDEN NEMATODE (Globodera)

V	0	R1	0	R2		R3		R4	

ROOT – KNOT NEMATODE (Meloidogyne)

V	7	R1	7	R2		R3		R4	

OTHER DISEASE _____

V		R1		R2		R3		R4	

PHYSIOLOGICAL DISORDER

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

V		R1		R2		R3		R4	

9. PESTS CHARACTERISTICS:

PEST REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few 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	0	R1	0	R2		R3		R4	

GREEN PEACH APHID *(Myzus)*

V	0	R1	0	R2		R3		R4	

OTHER:

V		R1		R2		R3		R4	

OTHER:

V		R1		R2		R3		R4	

10. GENE TRAITS:

INSERTION OF GENES: 1 = YES 2 = NO ✔

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

11. QUALITY CHARACTERISTICS:

CHIEF MARKET:

SPECIFIC GRAVITY (wt. air/wt. air – wt. water)
1 = <1.060 2 = 1.060-1.069 3 = 1.070-1.079 4 = 1.080-1.089 5 = >1.090

V	4	R1	3-4	R2		R3		R4	

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

V	1.6	R1	3.5	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.

Clearwater Russet has better french fry processing. See protocol and attached Exhibit D.

Average fry color following 4 month storage at 45 degree F for Clearwater is 0.40 and 1.42 at 40 F.

Russet Burbank fry color average following 4 months storage is 1.35 at 45 F and 3.54 at 40 F.

Using USDA color chart of 0-4 with color greater than 2 is undesireable.

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.

Clearwater Russet has significently higher specific gravity than Russet Burbank.

See protocol and attached Exhibit D

Three years average percent protien content for Clearwater Russet is 6.48 and 4.72 for Russet Burbank.

13. FINGER PRINTING MARKERS:

ISOZYMES 1 = YES 2 = NO ✔

IF YES, attach information

14. DNA PROFILE: 1 = YES 2 = NO ✔

IF YES, attach information

15. ADDDITIONAL COMMENTS AND CHARACTERISTICS:

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

Application for Plant Variety Protection Certificate

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

In direct comparison with Russet Burbank, Clearwater Russet tubers have higher specific gravity (1.089 for Clearwater Russet vs. 1.080 for Russet Burbank averaged over 2 years) Mean specific gravity for individual years were 1.088 for Clearwater Russet and 1.072 for Russet Burbank in 2003 (p=0.01) and 1.090 for Clearwater Russet and 1.082 for Russet Burbank in 2004 (p=0.01).

Clearwater Russet tubers have lower french fry color (0.405 at 45° F storage and 1.44 at 40° F temperature for approximately four months vs. 1.355 and 3.54 average of 2 years). Mean USDA fry color (0-4 with lower number = lighter color) for individual years were 0.417at 45° F and 1.50 at 40° F for Clearwater Russet and 1.54 at 45° F and 3.83 at 40° F for Russet Burbank in 2003, (p=0.01) and 0.390 at 45° F and 1.33 at 40° F for Clearwater Russet and 1.167 at 45° F and 3.24 at 40° F for Russet Burbank in 2004 (p=0.01).

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

Protocol for frying russet variety potatoes at the University of Idaho

After harvest, potatoes are graded sized and weighed. A three-tuber sample is used for two temperature regimes. Tubers are gradually cooled to approximately 45-50° F during a 4-6 week period. The samples are then moved to 40 and 45° storage units, where they remain for 6-10 weeks.

Tubers are cut stem to bud end using a Shaver Specialty Co Cutter (20608 Earl Street Torrance, CA 90503. Phone (310) 370-6941). Four or nine 3/8" fry strips are cut from the center of each of the three tubers. Oil temperature is 375° F and fry time is 3.5 minutes. A creamy liquid frying shortening "Pocahontas" made from soybean oil. (Purchased from the local grocery/bakery). Frying is done in a Hobart commercial fryer.

Color is rated visually using the USDA fry color chart with a scale of 000-4. A scale modification is made to .01, .03, .05, 1, 2, 3, 4 for calculating averages.

.01 .03 .05

This is not an official USDA chart. The USDA chart is copyrighted.

Received December 28, 2009

Standard Operating Procedure

Title: Determination of Specific Gravity

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

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

For example,

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

$$= 1.081$$

The GLM Procedure

Class Level Information

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

Number of Observations Read	8
Number of Observations Used	8

The GLM Procedure

Dependent Variable: Fry40

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	11.01670000	2.75417500	14.90	0.0255
Error	3	0.55445000	0.18481667		
Corrected Total	7	11.57115000			

R-Square	Coeff Var	Root MSE	Fry40 Mean
0.952083	16.11633	0.429903	2.667500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.11225000	0.03741667	0.20	0.8888
CLONE	1	10.90445000	10.90445000	59.00	0.0046

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.11225000	0.03741667	0.20	0.8888
CLONE	1	10.90445000	10.90445000	59.00	0.0046

The GLM Procedure

Dependent Variable: Fry45

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	2.58795000	0.64698750	37.01	0.0069
Error	3	0.05245000	0.01748333		
Corrected Total	7	2.64040000			

R-Square	Coeff Var	Root MSE	Fry45 Mean
0.980136	13.49230	0.132225	0.980000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.05670000	0.01890000	1.08	0.4752
CLONE	1	2.53125000	2.53125000	144.78	0.0012

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.05670000	0.01890000	1.08	0.4752
CLONE	1	2.53125000	2.53125000	144.78	0.0012

The GLM Procedure

Dependent Variable: SpecGrav

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	0.00056050	0.00014013	20.63	0.0161
Error	3	0.00002038	0.00000679		
Corrected Total	7	0.00058088			

R-Square	Coeff Var	Root MSE	SpecGrav Mean
0.964924	0.241332	0.002606	1.079875

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.00003237	0.00001079	1.59	0.3564
CLONE	1	0.00052813	0.00052813	77.76	0.0031

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.00003237	0.00001079	1.59	0.3564
CLONE	1	0.00052813	0.00052813	77.76	0.0031

The GLM Procedure

t Tests (LSD) for Fry40

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.184817
Critical Value of t	3.18245
Least Significant Difference	0.9674

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	3.8350	4	RBurbank
B	1.5000	4	Clearwat

Received December 28, 2009

The GLM Procedure

t Tests (LSD) for Fry45

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.017483
Critical Value of t	3.18245
Least Significant Difference	0.2975

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	1.54250	4	RBurbank
B	0.41750	4	Clearwat

The GLM Procedure

t Tests (LSD) for SpecGrav

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	6.792E-6
Critical Value of t	3.18245
Least Significant Difference	0.0059

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	1.088000	4	Clearwat
B	1.071750	4	RBurbank

---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	1.5	Sum Observations	6
Std Deviation	0.43119988	Variance	0.18593333
Skewness	0	Kurtosis	-1.2865194
Uncorrected SS	9.5578	Corrected SS	0.5578
Coeff Variation	28.7466584	Std Error Mean	0.21559994

Basic Statistical Measures

Location		Variability	
Mean	1.500000	Std Deviation	0.43120
Median	1.500000	Variance	0.18593
Mode	.	Range	1.00000
		Interquartile Range	0.67000

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	6.95733	Pr > |t|	0.0061
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.991872	Pr < W	0.9669
Kolmogorov-Smirnov	D	0.153301	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.022442	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.160387	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	2.000
99%	2.000
95%	2.000

---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

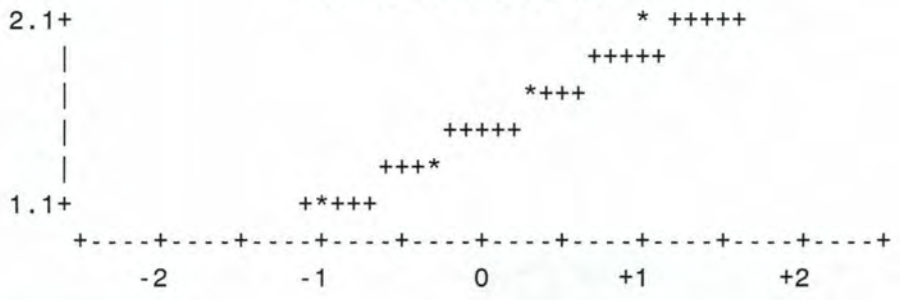
Quantile	Estimate
90%	2.000
75% Q3	1.835
50% Median	1.500
25% Q1	1.165
10%	1.000
5%	1.000
1%	1.000
0% Min	1.000

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
1.00	1	1.00	1
1.33	4	1.33	4
1.67	2	1.67	2
2.00	3	2.00	3

```
Stem Leaf                     #             Boxplot
  20 0                        1                |
  18                                           +-----+
  16 7                        1                |     |
  14                                           *--+--*
  12 3                        1                |     |
  10 0                        1                +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot



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CLONE=Clearwat

The UNIVARIATE Procedure
Variable: Fry45

Moments

N	4	Sum Weights	4
Mean	0.4175	Sum Observations	1.67
Std Deviation	0.09945686	Variance	0.00989167
Skewness	-0.4109092	Kurtosis	-3.6765351
Uncorrected SS	0.7269	Corrected SS	0.029675
Coeff Variation	23.822002	Std Error Mean	0.04972843

Basic Statistical Measures

Location		Variability	
Mean	0.417500	Std Deviation	0.09946
Median	0.435000	Variance	0.00989
Mode	0.500000	Range	0.20000
		Interquartile Range	0.16500

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	8.3956	Pr > |t|	0.0035
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.85275	Pr < W	0.2352
Kolmogorov-Smirnov	D	0.296591	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.05989	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.367191	Pr > A-Sq	0.2306

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.500
99%	0.500
95%	0.500

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---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry45

Quantiles (Definition 5)

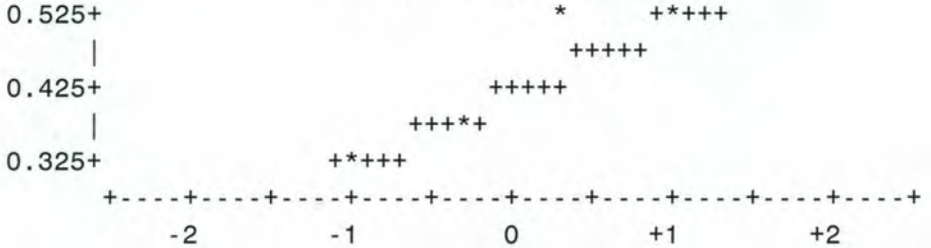
Quantile	Estimate
90%	0.500
75% Q3	0.500
50% Median	0.435
25% Q1	0.335
10%	0.300
5%	0.300
1%	0.300
0% Min	0.300

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
0.30	3	0.30	3
0.37	2	0.37	2
0.50	4	0.50	1
0.50	1	0.50	4

```
Stem Leaf                     #             Boxplot
   5 00                       2             +-----+
   4                                        |     |
   4                                        *--+--*
   3 7                        1             |     |
   3 0                        1             +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot



---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: SpecGrav

Moments

N	4	Sum Weights	4
Mean	1.088	Sum Observations	4.352
Std Deviation	0.00244949	Variance	6E-6
Skewness	0	Kurtosis	1.5
Uncorrected SS	4.734994	Corrected SS	0.000018
Coeff Variation	0.22513692	Std Error Mean	0.00122474

Basic Statistical Measures

Location		Variability	
Mean	1.088000	Std Deviation	0.00245
Median	1.088000	Variance	6E-6
Mode	1.088000	Range	0.00600
		Interquartile Range	0.00300

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	888.3483	Pr > |t|	<.0001
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.944664	Pr < W	0.6830
Kolmogorov-Smirnov	D	0.25	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.052513	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.283891	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.0910
99%	1.0910
95%	1.0910

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---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: SpecGrav

Quantiles (Definition 5)

Quantile	Estimate
90%	1.0910
75% Q3	1.0895
50% Median	1.0880
25% Q1	1.0865
10%	1.0850
5%	1.0850
1%	1.0850
0% Min	1.0850

Extreme Observations

-----Lowest----		----Highest----	
Value	Obs	Value	Obs
1.085	4	1.085	4
1.088	2	1.088	1
1.088	1	1.088	2
1.091	3	1.091	3

Stem	Leaf	#	Boxplot
1091	0	1	|
1090			|
1089			+-----+
1088	00	2	*--+--*
1087			| |
1086			+-----+
1085	0	1	|

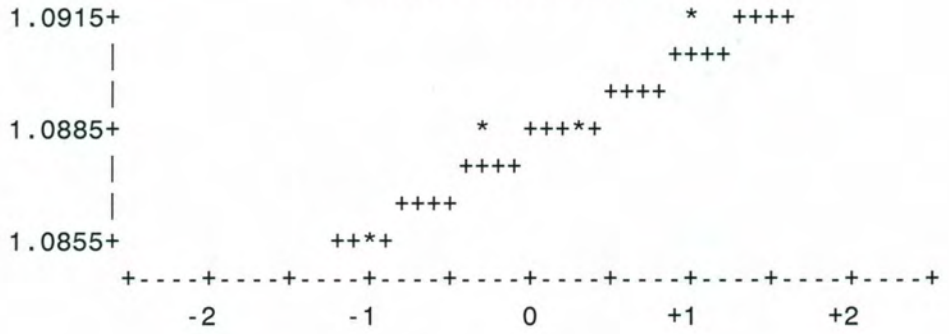
----+----+----+----+

Multiply Stem.Leaf by 10**-3

---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: SpecGrav

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	3.835	Sum Observations	15.34
Std Deviation	0.19052559	Variance	0.0363
Skewness	0	Kurtosis	-6
Uncorrected SS	58.9378	Corrected SS	0.1089
Coeff Variation	4.96807272	Std Error Mean	0.09526279

Basic Statistical Measures

Location		Variability	
Mean	3.835000	Std Deviation	0.19053
Median	3.835000	Variance	0.03630
Mode	3.670000	Range	0.33000
		Interquartile Range	0.33000

NOTE: The mode displayed is the smallest of 2 modes with a count of 2.

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	40.25706	Pr > |t|	<.0001
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.728634	Pr < W	0.0239
Kolmogorov-Smirnov	D	0.306762	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.096221	Pr > W-Sq	0.0903
Anderson-Darling	A-Sq	0.576024	Pr > A-Sq	0.0473

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

The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
100% Max	4.000
99%	4.000
95%	4.000
90%	4.000
75% Q3	4.000
50% Median	3.835
25% Q1	3.670
10%	3.670
5%	3.670
1%	3.670
0% Min	3.670

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
3.67	7	3.67	6
3.67	6	3.67	7
4.00	8	4.00	5
4.00	5	4.00	8

```
Stem Leaf                     #             Boxplot
  40 00                       2             +-----+
  39                                        |     |
  39                                        |     |
  38                                        |     |
  38                                        *--+--*
  37                                        |     |
  37                                        |     |
  36 77                       2             +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

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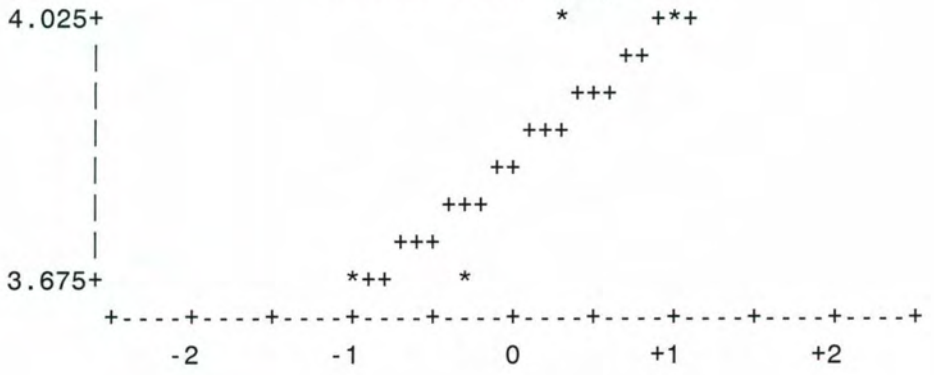
---------- CLONE=RBurbank ----------

The UNIVARIATE Procedure
Variable: Fry40

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: Fry45

Moments

N	4	Sum Weights	4
Mean	1.5425	Sum Observations	6.17
Std Deviation	0.16276261	Variance	0.02649167
Skewness	-0.854563	Kurtosis	-1.2892562
Uncorrected SS	9.5967	Corrected SS	0.079475
Coeff Variation	10.5518709	Std Error Mean	0.0813813

Basic Statistical Measures

Location		Variability	
Mean	1.542500	Std Deviation	0.16276
Median	1.585000	Variance	0.02649
Mode	1.670000	Range	0.34000
		Interquartile Range	0.25500

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	18.95398	Pr > |t|	0.0003
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.863369	Pr < W	0.2725
Kolmogorov-Smirnov	D	0.283289	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.055634	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.349688	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.670
99%	1.670
95%	1.670

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

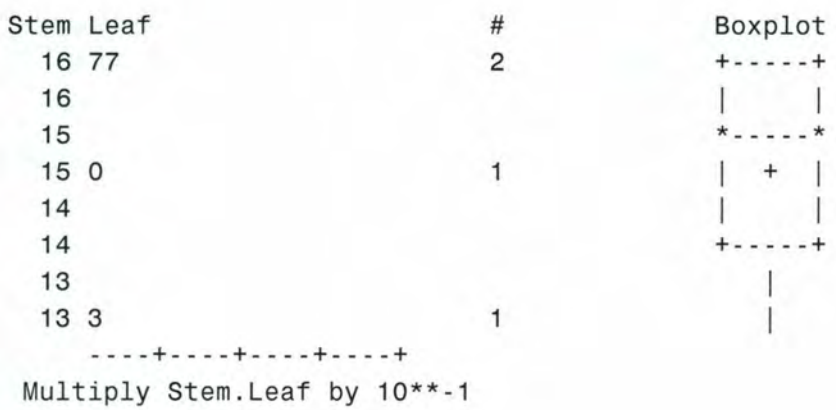
The UNIVARIATE Procedure
Variable: Fry45

Quantiles (Definition 5)

Quantile	Estimate
90%	1.670
75% Q3	1.670
50% Median	1.585
25% Q1	1.415
10%	1.330
5%	1.330
1%	1.330
0% Min	1.330

Extreme Observations

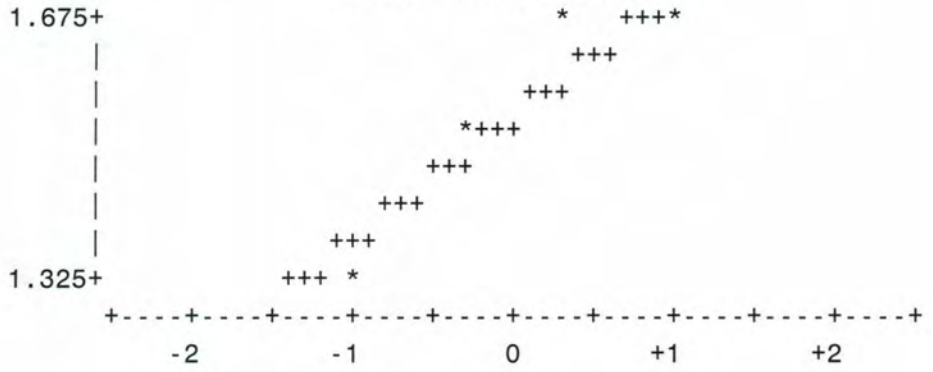
----Lowest----		----Highest---	
Value	Obs	Value	Obs
1.33	6	1.33	6
1.50	8	1.50	8
1.67	7	1.67	5
1.67	5	1.67	7



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

The UNIVARIATE Procedure
Variable: Fry45

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: SpecGrav

Moments

N	4	Sum Weights	4
Mean	1.07175	Sum Observations	4.287
Std Deviation	0.00340343	Variance	0.00001158
Skewness	-1.1985371	Kurtosis	1.97940065
Uncorrected SS	4.594627	Corrected SS	0.00003475
Coeff Variation	0.31755817	Std Error Mean	0.00170171

Basic Statistical Measures

Location		Variability	
Mean	1.071750	Std Deviation	0.00340
Median	1.072500	Variance	0.0000116
Mode	.	Range	0.00800
		Interquartile Range	0.00450

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	629.8059	Pr > |t|	<.0001
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.923338	Pr < W	0.5558
Kolmogorov-Smirnov	D	0.279278	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.048878	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.288226	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.0750
99%	1.0750
95%	1.0750

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

The UNIVARIATE Procedure
Variable: SpecGrav

Quantiles (Definition 5)

Quantile	Estimate
90%	1.0750
75% Q3	1.0740
50% Median	1.0725
25% Q1	1.0695
10%	1.0670
5%	1.0670
1%	1.0670
0% Min	1.0670

Extreme Observations

-----Lowest----		----Highest----	
Value	Obs	Value	Obs
1.067	5	1.067	5
1.072	6	1.072	6
1.073	8	1.073	8
1.075	7	1.075	7

Stem	Leaf	#	Boxplot
1075	0	1	
1074			+-----+
1073	0	1	| |
1072	0	1	*-----*
1071			| + |
1070			| |
1069			+-----+
1068			|
1067	0	1	|

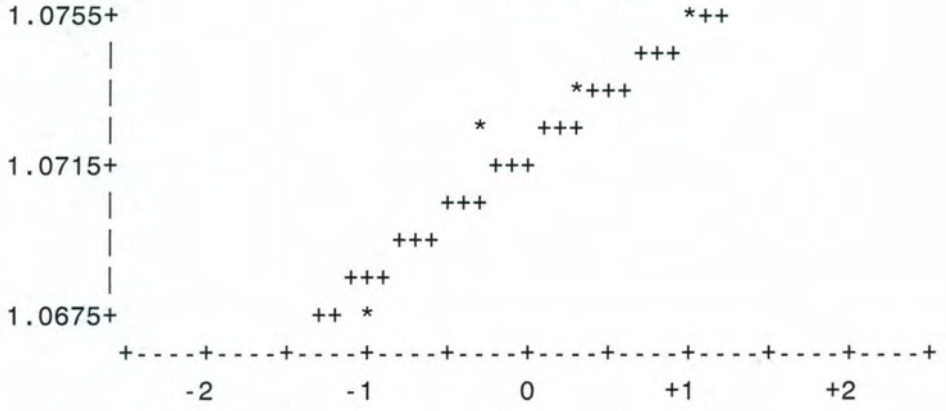
----+----+----+----+

Multiply Stem.Leaf by 10**-3

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

The UNIVARIATE Procedure
Variable: SpecGrav

Normal Probability Plot



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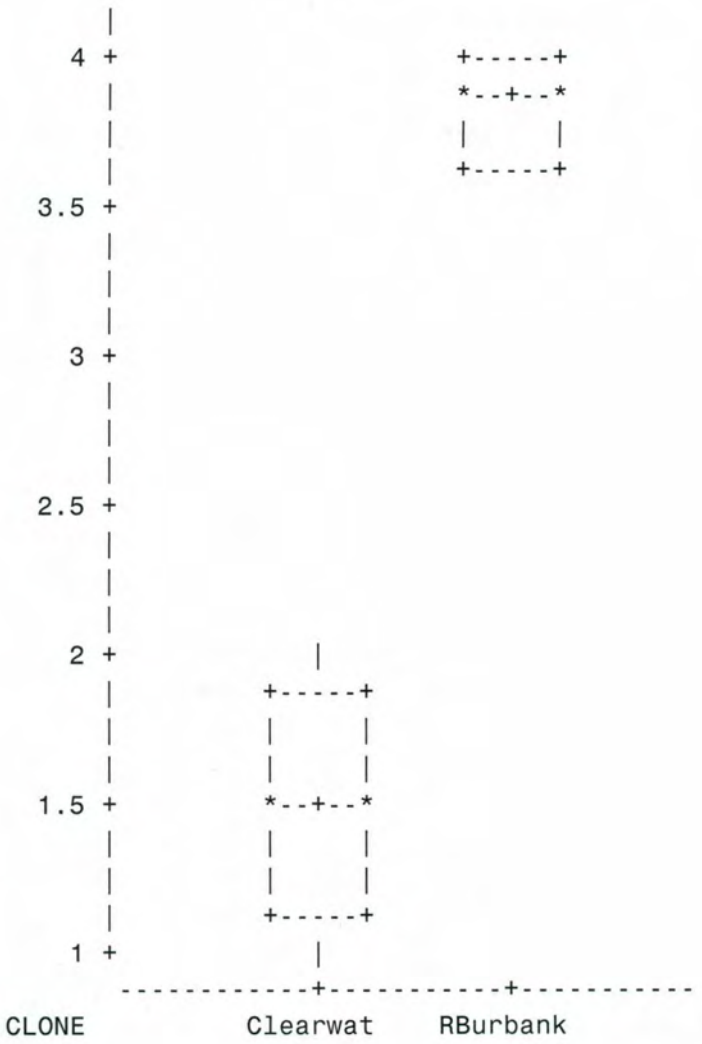
The UNIVARIATE Procedure
Variable: Fry40

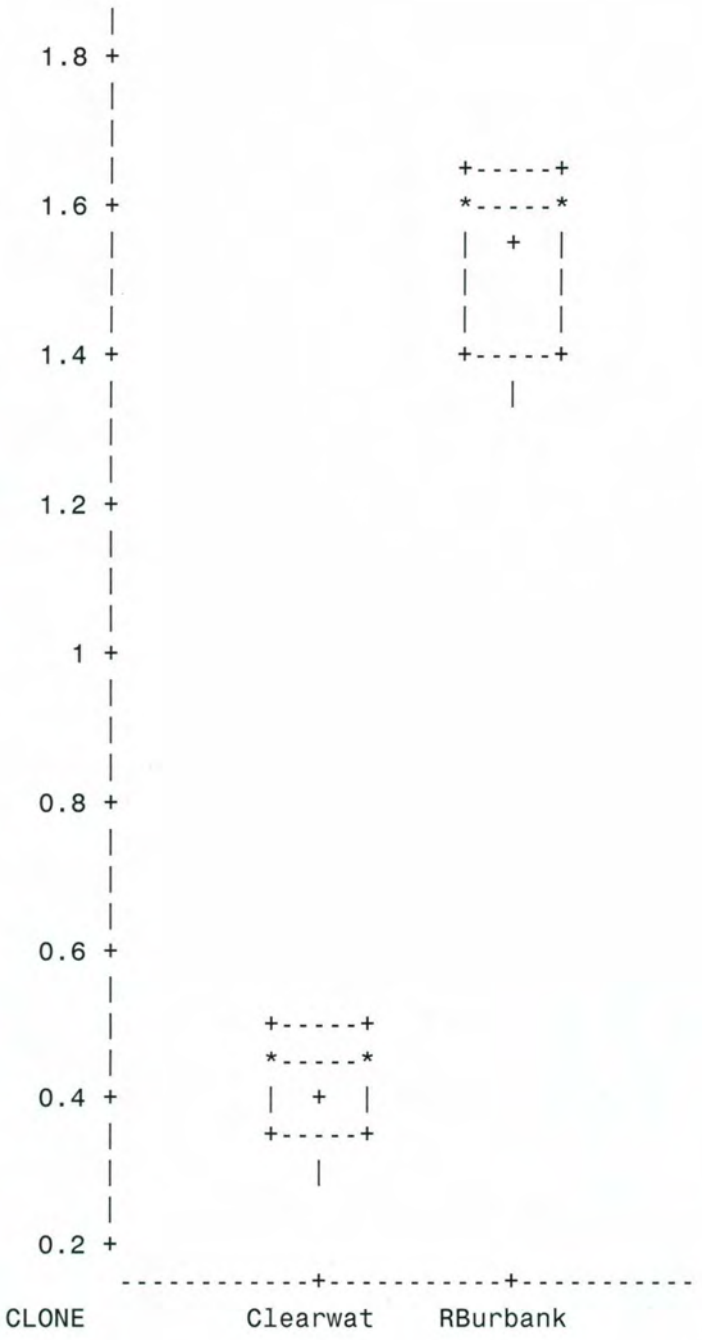
#2010000085

Schematic Plots



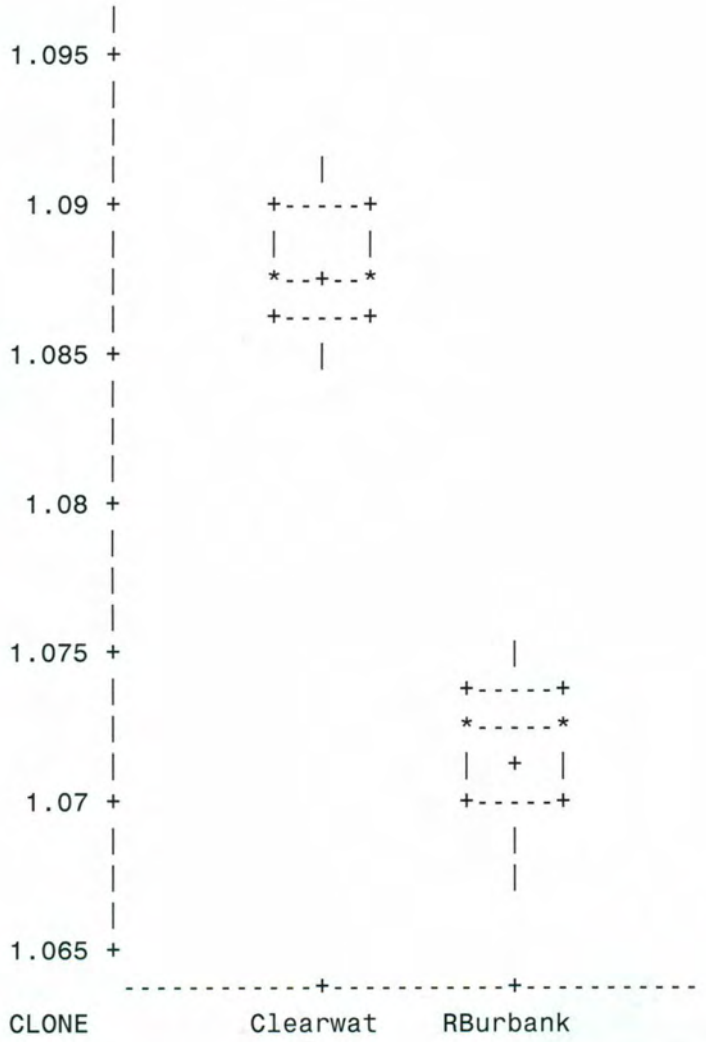
The UNIVARIATE Procedure
Variable: Fry45

Schematic Plots



The UNIVARIATE Procedure
Variable: SpecGrav

Schematic Plots



The GLM Procedure

Class Level Information

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

Number of Observations Read	8
Number of Observations Used	8

The GLM Procedure

Dependent Variable: Fry40

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	9.68540000	2.42135000	47.62	0.0048
Error	3	0.15255000	0.05085000		
Corrected Total	7	9.83795000			

R-Square	Coeff Var	Root MSE	Fry40 Mean
0.984494	9.857899	0.225499	2.287500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	2.42735000	0.80911667	15.91	0.0240
CLONE	1	7.25805000	7.25805000	142.73	0.0013

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	2.42735000	0.80911667	15.91	0.0240
CLONE	1	7.25805000	7.25805000	142.73	0.0013

The GLM Procedure

Dependent Variable: Fry45

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.27395000	0.31848750	4.86	0.1124
Error	3	0.19665000	0.06555000		
Corrected Total	7	1.47060000			

R-Square	Coeff Var	Root MSE	Fry45 Mean
0.866279	32.82402	0.256027	0.780000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.07270000	0.02423333	0.37	0.7823
CLONE	1	1.20125000	1.20125000	18.33	0.0234

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.07270000	0.02423333	0.37	0.7823
CLONE	1	1.20125000	1.20125000	18.33	0.0234

The GLM Procedure

Dependent Variable: SpecGrav

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	0.00014700	0.00003675	6.68	0.0753
Error	3	0.00001650	0.00000550		
Corrected Total	7	0.00016350			

R-Square	Coeff Var	Root MSE	SpecGrav Mean
0.899083	0.215999	0.002345	1.085750

Source	DF	Type I SS	Mean Square	F Value	Pr > F
REP	3	0.00000250	0.00000083	0.15	0.9223
CLONE	1	0.00014450	0.00014450	26.27	0.0144

Source	DF	Type III SS	Mean Square	F Value	Pr > F
REP	3	0.00000250	0.00000083	0.15	0.9223
CLONE	1	0.00014450	0.00014450	26.27	0.0144

The GLM Procedure

t Tests (LSD) for Fry40

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.05085
Critical Value of t	3.18245
Least Significant Difference	0.5074

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	3.2400	4	RBurbank
B	1.3350	4	Clearwat

The GLM Procedure

t Tests (LSD) for Fry45

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	0.06555
Critical Value of t	3.18245
Least Significant Difference	0.5761

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	1.1675	4	RBurbank
B	0.3925	4	Clearwat

The GLM Procedure

t Tests (LSD) for SpecGrav

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

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	5.5E-6
Critical Value of t	3.18245
Least Significant Difference	0.0053

Means with the same letter are not significantly different.

t Grouping	Mean	N	CLONE
A	1.090000	4	Clearwat
B	1.081500	4	RBurbank

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---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	1.335	Sum Observations	5.34
Std Deviation	0.70868423	Variance	0.50223333
Skewness	0.36882506	Kurtosis	-3.4656028
Uncorrected SS	8.6356	Corrected SS	1.5067
Coeff Variation	53.0849608	Std Error Mean	0.35434211

Basic Statistical Measures

Location		Variability	
Mean	1.335000	Std Deviation	0.70868
Median	1.250000	Variance	0.50223
Mode	.	Range	1.50000
		Interquartile Range	1.17000

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	3.767545	Pr > |t|	0.0327
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.909503	Pr < W	0.4798
Kolmogorov-Smirnov	D	0.26195	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.045249	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.279439	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	2.17
99%	2.17
95%	2.17

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---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	2.17
75% Q3	1.92
50% Median	1.25
25% Q1	0.75
10%	0.67
5%	0.67
1%	0.67
0% Min	0.67

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
0.67	3	0.67	3
0.83	4	0.83	4
1.67	2	1.67	2
2.17	1	2.17	1

```
Stem Leaf                     #             Boxplot
  20 7                        1                |
  18                                           +-----+
  16 7                        1                |     |
  14                                           |     |
  12                                           *--+--*
  10                                           |     |
   8 3                        1                |     |
   6 7                        1                +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

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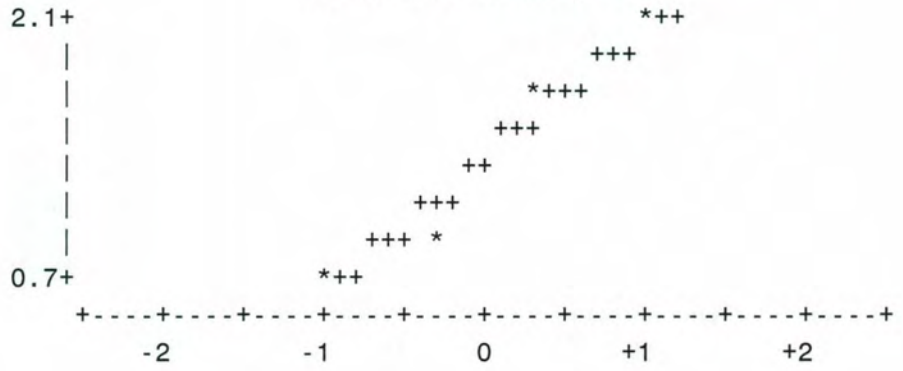
---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry40

Normal Probability Plot



---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry45

Moments

N	4	Sum Weights	4
Mean	0.3925	Sum Observations	1.57
Std Deviation	0.185	Variance	0.034225
Skewness	2	Kurtosis	4
Uncorrected SS	0.7189	Corrected SS	0.102675
Coeff Variation	47.133758	Std Error Mean	0.0925

Basic Statistical Measures

Location		Variability	
Mean	0.392500	Std Deviation	0.18500
Median	0.300000	Variance	0.03423
Mode	0.300000	Range	0.37000
		Interquartile Range	0.18500

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	4.243243	Pr > |t|	0.0240
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

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

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.670
99%	0.670
95%	0.670

---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry45

Quantiles (Definition 5)

Quantile	Estimate
90%	0.670
75% Q3	0.485
50% Median	0.300
25% Q1	0.300
10%	0.300
5%	0.300
1%	0.300
0% Min	0.300

Extreme Observations

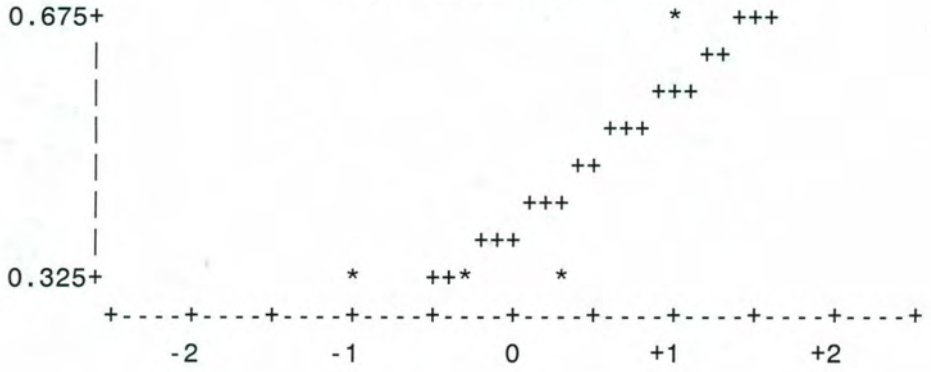
----Lowest----		----Highest---	
Value	Obs	Value	Obs
0.30	4	0.30	1
0.30	2	0.30	2
0.30	1	0.30	4
0.67	3	0.67	3

```
Stem Leaf                     #             Boxplot
   6 7                        1                |
   6                                           |
   5                                           |
   5                                           |
   4                                       +-----+
   4                                       |     |
   3                                       |  +  |
   3 000                      3            *-----*
     ----+----+----+----+
Multiply Stem.Leaf by 10**-1
```

---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: Fry45

Normal Probability Plot



---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: SpecGrav

Moments

N	4	Sum Weights	4
Mean	1.09	Sum Observations	4.36
Std Deviation	0.00182574	Variance	3.33333E-6
Skewness	6.5665E-13	Kurtosis	-3.3
Uncorrected SS	4.75241	Corrected SS	0.00001
Coeff Variation	0.16749925	Std Error Mean	0.00091287

Basic Statistical Measures

Location		Variability	
Mean	1.090000	Std Deviation	0.00183
Median	1.090000	Variance	3.33333E-6
Mode	.	Range	0.00400
		Interquartile Range	0.00300

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	1194.035	Pr > |t|	<.0001
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.949706	Pr < W	0.7143
Kolmogorov-Smirnov	D	0.208059	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.034903	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.219318	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.0920
99%	1.0920
95%	1.0920

Received December 28, 2009

---------- CLONE=Clearwat ----------

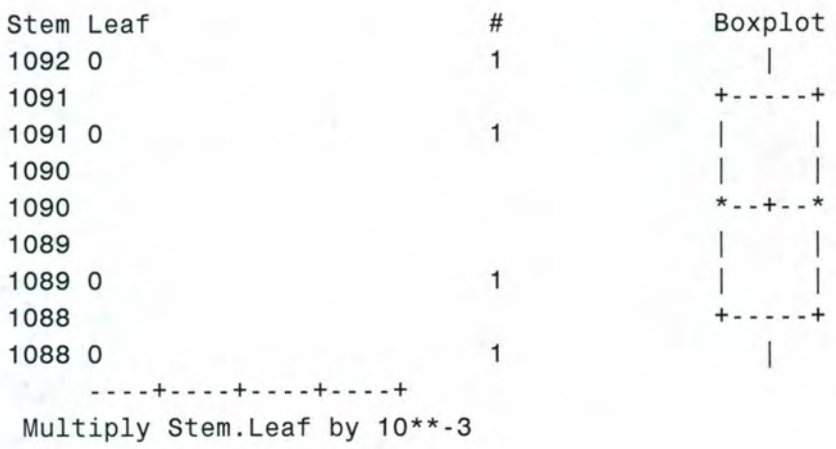
The UNIVARIATE Procedure
Variable: SpecGrav

Quantiles (Definition 5)

Quantile	Estimate
90%	1.0920
75% Q3	1.0915
50% Median	1.0900
25% Q1	1.0885
10%	1.0880
5%	1.0880
1%	1.0880
0% Min	1.0880

Extreme Observations

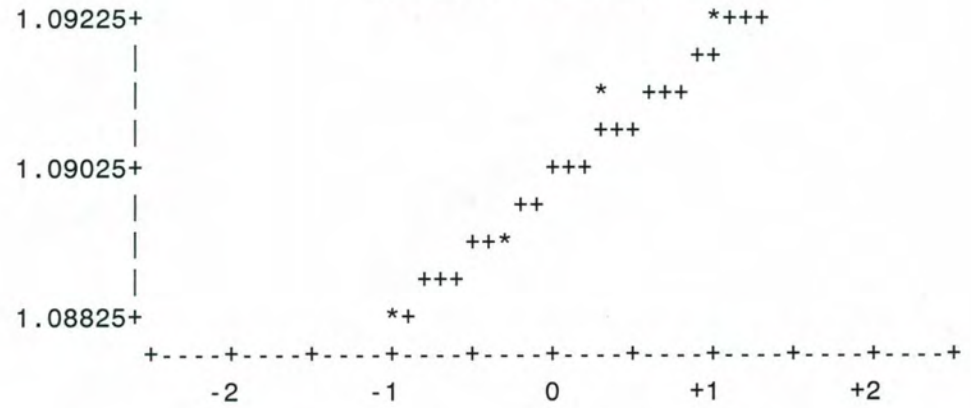
-----Lowest----		----Highest----	
Value	Obs	Value	Obs
1.088	3	1.088	3
1.089	2	1.089	2
1.091	1	1.091	1
1.092	4	1.092	4



---------- CLONE=Clearwat ----------

The UNIVARIATE Procedure
Variable: SpecGrav

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: Fry40

Moments

N	4	Sum Weights	4
Mean	3.24	Sum Observations	12.96
Std Deviation	0.59810813	Variance	0.35773333
Skewness	-0.0343237	Kurtosis	-5.1108009
Uncorrected SS	43.0636	Corrected SS	1.0732
Coeff Variation	18.4601274	Std Error Mean	0.29905406

Basic Statistical Measures

Location		Variability	
Mean	3.240000	Std Deviation	0.59811
Median	3.250000	Variance	0.35773
Mode	.	Range	1.20000
		Interquartile Range	1.02000

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	10.83416	Pr > |t|	0.0017
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.866701	Pr < W	0.2849
Kolmogorov-Smirnov	D	0.263909	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.058838	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.347965	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	3.83
99%	3.83
95%	3.83

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

The UNIVARIATE Procedure
Variable: Fry40

Quantiles (Definition 5)

Quantile	Estimate
90%	3.83
75% Q3	3.75
50% Median	3.25
25% Q1	2.73
10%	2.63
5%	2.63
1%	2.63
0% Min	2.63

Extreme Observations

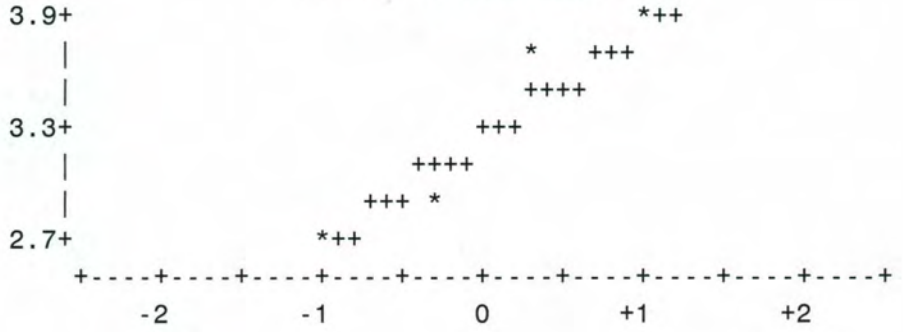
----Lowest----		----Highest---	
Value	Obs	Value	Obs
2.63	8	2.63	8
2.83	7	2.83	7
3.67	5	3.67	5
3.83	6	3.83	6

```
Stem Leaf                     #             Boxplot
  38 3                        1                |
  36 7                        1              +-----+
  34                                         |     |
  32                                         *--+--*
  30                                         |     |
  28 3                        1              |     |
  26 3                        1              +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

CLONE=RBurbank

The UNIVARIATE Procedure
Variable: Fry40

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: Fry45

Moments

N	4	Sum Weights	4
Mean	1.1675	Sum Observations	4.67
Std Deviation	0.23570815	Variance	0.05555833
Skewness	1.3928966	Kurtosis	1.39926008
Uncorrected SS	5.6189	Corrected SS	0.166675
Coeff Variation	20.1891352	Std Error Mean	0.11785408

Basic Statistical Measures

Location		Variability	
Mean	1.167500	Std Deviation	0.23571
Median	1.085000	Variance	0.05556
Mode	1.000000	Range	0.50000
		Interquartile Range	0.33500

Tests for Location: Mu0=0

Test		-Statistic-	-----p Value------	
Student's t	t	9.906318	Pr > |t|	0.0022
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test		--Statistic---	-----p Value------	
Shapiro-Wilk	W	0.829858	Pr < W	0.1674
Kolmogorov-Smirnov	D	0.261342	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.069026	Pr > W-Sq	0.2285
Anderson-Darling	A-Sq	0.411249	Pr > A-Sq	0.1663

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.500
99%	1.500
95%	1.500

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

The UNIVARIATE Procedure
Variable: Fry45

Quantiles (Definition 5)

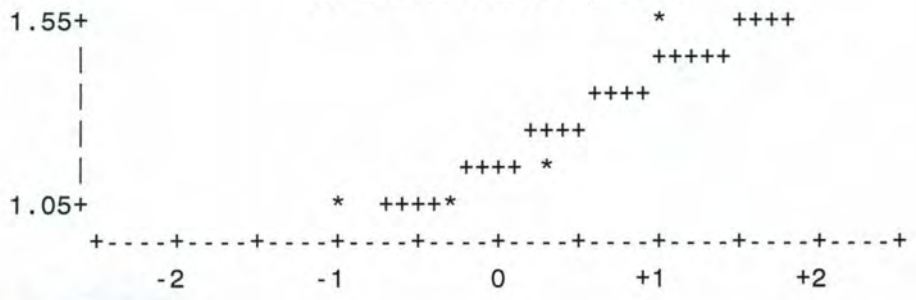
Quantile	Estimate
90%	1.500
75% Q3	1.335
50% Median	1.085
25% Q1	1.000
10%	1.000
5%	1.000
1%	1.000
0% Min	1.000

Extreme Observations

----Lowest----		----Highest---	
Value	Obs	Value	Obs
1.00	8	1.00	7
1.00	7	1.00	8
1.17	5	1.17	5
1.50	6	1.50	6

```
Stem Leaf                     #             Boxplot
  15 0                        1                |
  14                                           |
  13                                        +-----+
  12                                        |     |
  11 7                        1             |  +  |
  10 00                       2             *-----*
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot



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

The UNIVARIATE Procedure
Variable: SpecGrav

Moments

N	4	Sum Weights	4
Mean	1.0815	Sum Observations	4.326
Std Deviation	0.00173205	Variance	3E-6
Skewness	-1.5396007	Kurtosis	2.88888889
Uncorrected SS	4.678578	Corrected SS	9E-6
Coeff Variation	0.16015264	Std Error Mean	0.00086603

Basic Statistical Measures

Location		Variability	
Mean	1.081500	Std Deviation	0.00173
Median	1.082000	Variance	3E-6
Mode	1.082000	Range	0.00400
		Interquartile Range	0.00200

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	1248.809	Pr > |t|	<.0001
Sign	M	2	Pr >= |M|	0.1250
Signed Rank	S	5	Pr >= |S|	0.1250

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.839702	Pr < W	0.1945
Kolmogorov-Smirnov	D	0.363585	Pr > D	0.0611
Cramer-von Mises	W-Sq	0.085097	Pr > W-Sq	0.1318
Anderson-Darling	A-Sq	0.450078	Pr > A-Sq	0.1237

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.0830
99%	1.0830
95%	1.0830

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

The UNIVARIATE Procedure
Variable: SpecGrav

Quantiles (Definition 5)

Quantile	Estimate
90%	1.0830
75% Q3	1.0825
50% Median	1.0820
25% Q1	1.0805
10%	1.0790
5%	1.0790
1%	1.0790
0% Min	1.0790

Extreme Observations

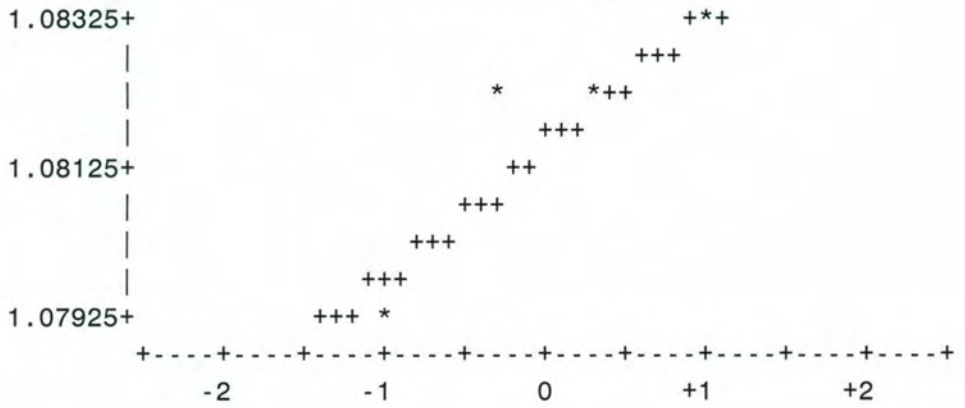
-----Lowest----		----Highest----	
Value	Obs	Value	Obs
1.079	8	1.079	8
1.082	7	1.082	5
1.082	5	1.082	7
1.083	6	1.083	6

```
Stem Leaf                  #             Boxplot
1083 0                     1                |
1082                                        +-----+
1082 00                    2                *-----*
1081                                        |  +  |
1081                                        |     |
1080                                        +-----+
1080                                           |
1079                                           |
1079 0                     1                   |
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-3
```

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

The UNIVARIATE Procedure
Variable: SpecGrav

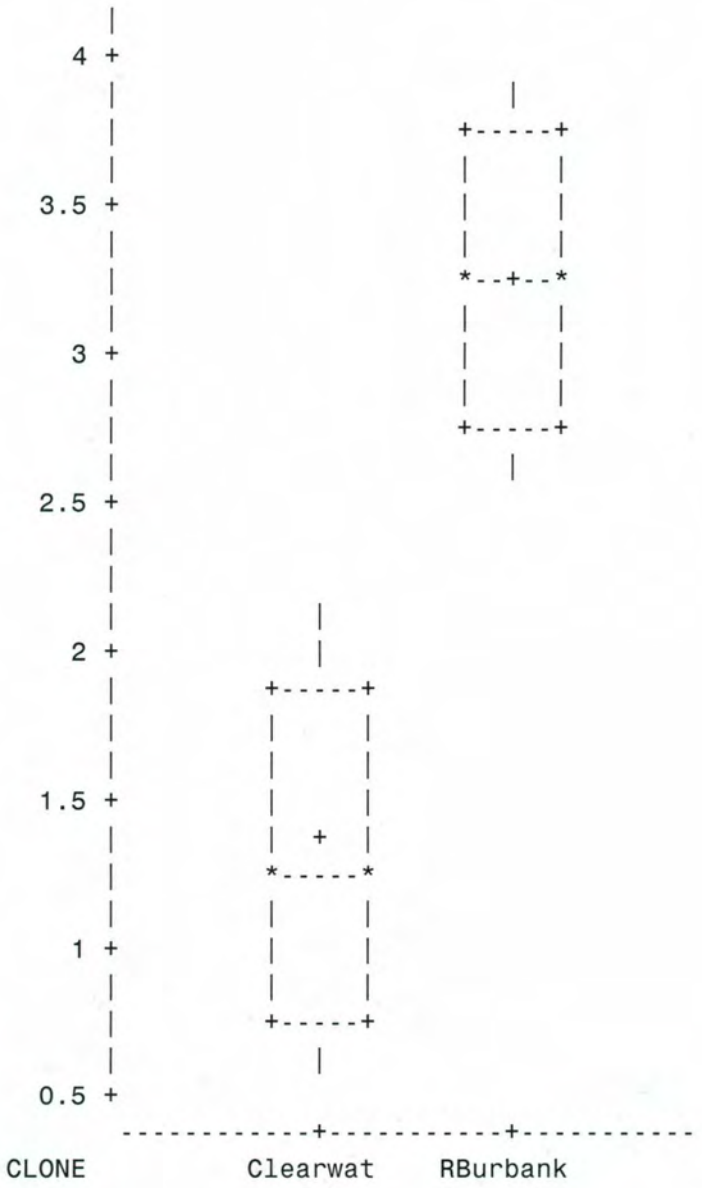
Normal Probability Plot



The UNIVARIATE Procedure
Variable: Fry40

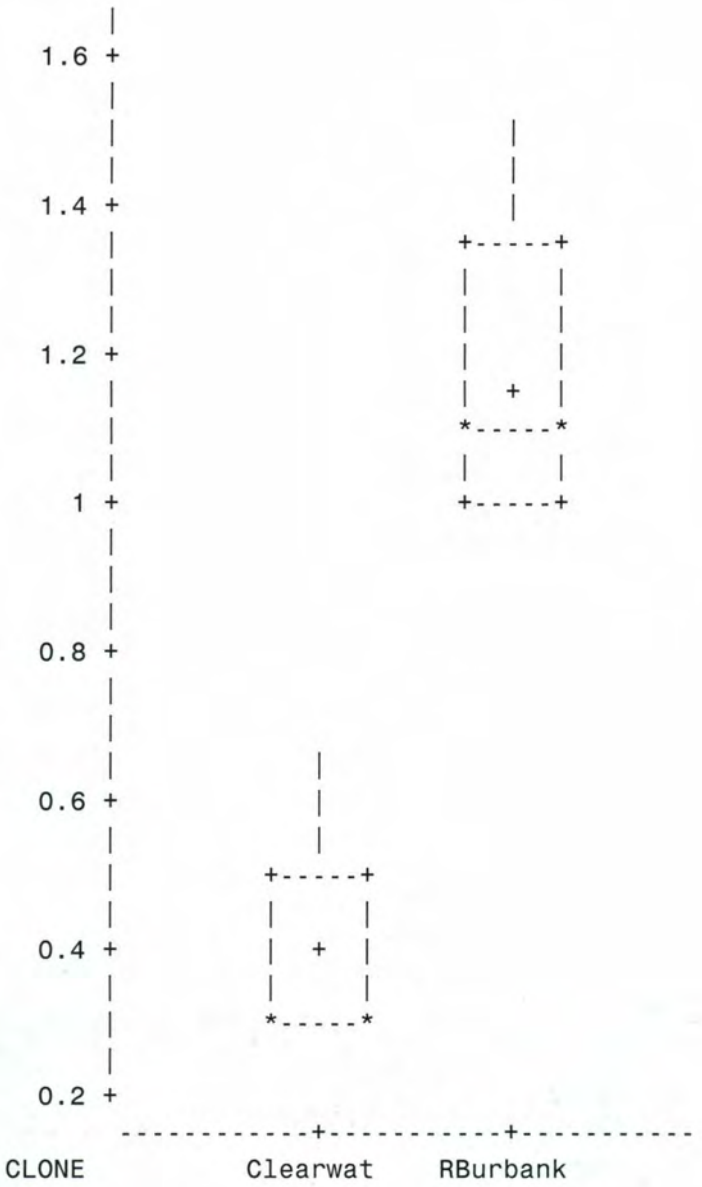
#2010000085

Schematic Plots



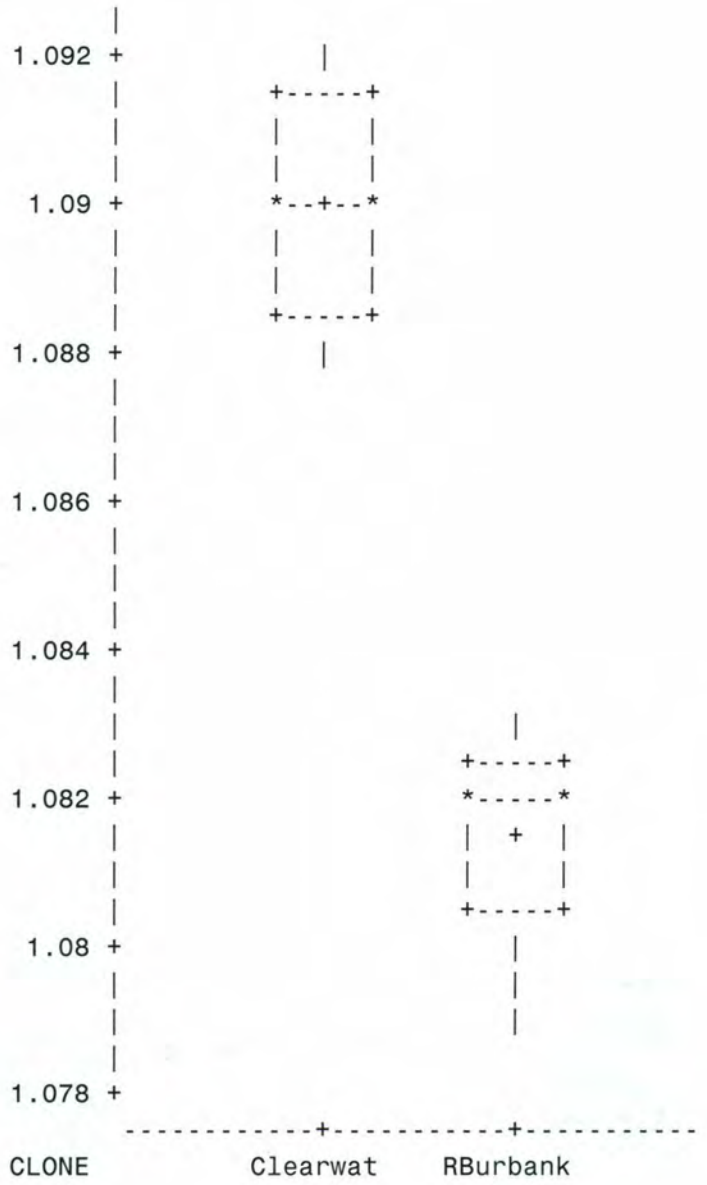
The UNIVARIATE Procedure
Variable: Fry45

Schematic Plots



The UNIVARIATE Procedure
Variable: SpecGrav

Schematic Plots



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)*.

RAD
10/02/2012

1. NAME OF APPLICANT(S) The State of Idaho ~~University of Idaho~~ (continued below question 11)

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER: AOA9515491

3. VARIETY NAME: Clearwater Russet

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*:
Office of Technology Transfer
Morrill Hall 414 PO Box 443003
Moscow, ID 83844-3003

5. TELEPHONE *(Include area code)*: 208-885-4550

6. FAX *(Include area code)*: 208-885-4551

7. PVPO NUMBER: 20100085

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

9. Is the applicant a U.S. national or a U.S. based entity? **If no, give name of country.** [X] **YES** ☐ **NO**

10. Is the applicant the original owner? ■ **YES** ☐ **NO** **If no, please answer <u>one</u> of the following:**

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

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

RAD
10/02/2012

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

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

PLEASE NOTE:

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

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

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

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
BELTSVILLE, MD 20705

RAD
10/01/2012

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~~ The State of Idaho (continued on Exhibit E, 11)	Morrill Hall 414 PO Box 443003 Moscow, ID 83844-3003	AOA95154-1 **VARIETY NAME** Clearwater Russet
NAME OF OWNER REPRESENTATIVE (S)	**ADDRESS** *(Street and No. or RD No., City, State, and Zip Code and Country)*	**FOR OFFICIAL USE ONLY**
Gaylene Anderson Jeffrey C. Stark	Morrill Hall 414 Po Box 443003 Moscow, ID 83844-3003	**PVPO NUMBER** 201000085

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

4/21/11
Date

Received April 11, 2011