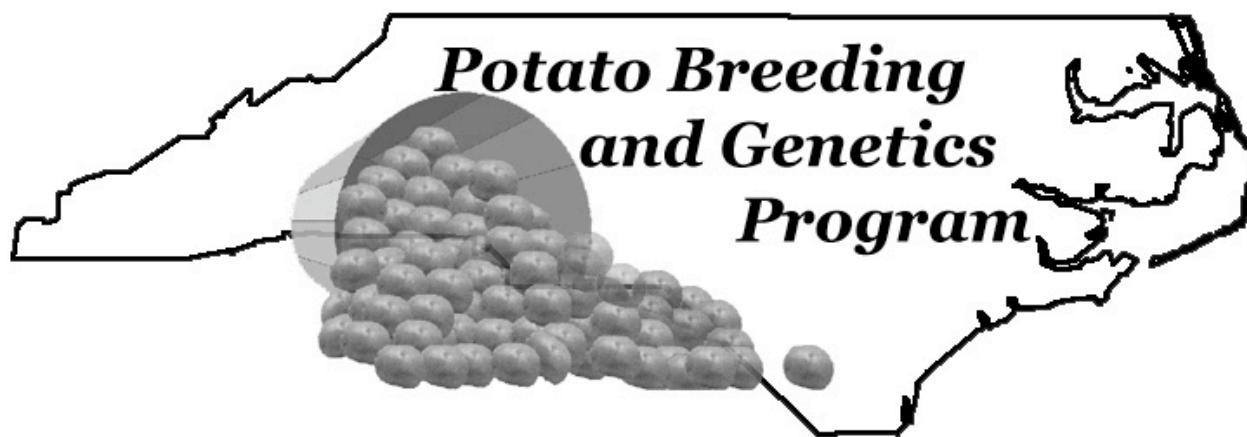


NC STATE UNIVERSITY

NORTH CAROLINA POTATO VARIETY TRIAL AND BREEDING REPORT

2010



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I. OBJECTIVES AND RESEARCH SPONSORS:

The objective of the NC State University potato breeding and genetics program is to develop, select and release new potato varieties that are suitable for use by North Carolina growers. We collaborate extensively with the eastern US potato breeding and variety development community, as well as programs located in other parts of the US and internationally. The common goal of all our project collaborations is the development high yielding, disease and insect resistant, table- and chip-stock potato varieties for potato growers in the eastern US. Because our research sites are primarily located in the hot, humid, lower coastal areas of the mid-Atlantic we expect that the materials selected and developed in our environment will also perform well in the broader southeastern US geographic region, and contribute to a more sustainable and economically viable potato production system in the eastern US.

Our variety development research efforts are supported by the USDA Cooperative States Research Extension and Education Service State Agricultural Experiment Station (CSREES SAES) NE1031 Regional Potato Variety Development and Evaluation Project, the USDA National Institute of Food and Agriculture Potato Special Research Grants Program, the NC Potato Association, and the US Potato Board and the Snack Food Association, as well as several other industry members.

II. PROJECT SUMMARY

Our program focuses on three areas: the development of new potato germplasm and varieties through our own breeding efforts; collaborative early-generation breeding and selection projects with the USDA-ARS, Cornell University and the University of Maine; and the evaluation of preliminary and advanced breeding clones for adaptation to NC from a wide range of potato breeding programs in the US and Canada.

Breeding Program

Our in-house efforts to develop varieties begin with crossing in the greenhouses at the NC Department of Agriculture and Consumer Services Tidewater Research Station/NC State University Vernon G. James Research and Extension Center (TRS/VGJREC) in Plymouth, NC. Planting, selection and advance to 6-hill, 20-hill, and 60-hill plots depend on relative performance at each of these stages over a period of four years. Clones that survive the first four cycles of selection are entered into preliminary and advanced yield trials conducted at the TRS/VGJREC and on-farm, and are also maintained in 160-hill plots for seed increase.

During 2010, we planted 13,260 single-hills and selected 104 clones resulting in a 0.8% selection rate. This was the lowest selection percentage of single-hills that we have ever had in the program. We believe the extremely low selection rate was due largely to late planting imposed by early season rains and excessive heat experienced during the season around bulking time (see also environmental summary on page 7). Out of the 872 clones in our 6-hill plots, 60 (6.9%) were selected for future evaluation. In the 20-hill plots, 73 clones were planted with 14 (19%) being selected for further evaluation. In our 60-hill plots, 15 clones were planted and 4 (27%) were selected. As with our single-hills, the selection rates were lower in these materials too.

In our Colorado potato beetle (CPB) nursery we continued our project to select and screen specific families with potential CPB resistance. We planted 1,432 2-hill plots for selection

purposes and also planted a duplicate set in our CPB nursery for resistance screening. The data collected in the nursery was used as a major but not exclusive selection criteria, resulting in 76 clones which will be advanced for CPB screening as two replicated 3-hill plots (2by3 trial), and for parallel horticultural adaptation selection as non-replicated 6-hill plots in 2011. In this year's 2by3 trial, 67 clones were evaluated for CPB resistance and adaptation in our non-replicated 6-hill plots simultaneously. After making our selections in both of these trials, we decided to advance 10 clones to next year's screening trial of three replications with 5-hills each (3by5 trial) and for parallel horticultural adaptation selection as non-replicated 20-hill plots in 2011. In this year's 3by5 trial we evaluated 28 clones for CPB resistance and for adaptation in our non-replicated 20-hill plots simultaneously. We selected 5 clones for advancement to next year's three replications by 10-hills (3by10) and our non-replicated 60-hill trial. The 3by10 trial is open to collaborators in other states to submit materials for screening this year's trial included clones from North Dakota State University, a clone submitted for evaluation by the University of Maine that was developed by a private breeder, and our own materials. In this year's 3by10 we had a total of 14 clones, 3 were from NC and one of those was selected for evaluation next year. The 3by10 trial is our most advanced screening trial and the most advanced clones will remain in this trial until testing is determined complete

Yield Trials

In our 11 yield trials, we evaluated 292 preliminary and advanced clones. The evaluations were conducted either on-farm, and/or at the TRS/VGJREC. We typically evaluate advanced clones at more than one site in NC. The results of the yield trials are summarized later in this report, and in Tables 1-11. Each table has two parts, the first (a) being devoted to yield information, specific gravity measurements, and chip color scores, and the second (b) providing potato plant and tuber quality characteristics. This report can also be viewed and downloaded at our website <http://potatoes.ncsu.edu>.

III. 2010 PROMISING LINES:

Chip-stock clones

AF0338-17

Developed by: Univ. of Maine

Released: N/A

trials evaluated: 6 since(2006)

Skin Color: Tan to Light Brown

Flesh Color: White

Historical Data;

Maturity: medium

% Standard (Atlantic): MKTB YLD 103%

Specific Gravity: 1.075

Chip score: 2.0 (good)

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: *This is a late maturing clone with good yield, gravity and chip scores. Because of its maturity this may be a good alternative to Snowden but needs further testing to confirm the promising results we have seen so far. This clone may also be available for testing on a larger scale if growers are interested.*

Harley Blackwell

Developed by: USDA-ARS

Released: 2003

trials evaluated: 52 since(1995)

Skin Color: Tan to Light Brown

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 104%

Specific Gravity: 1.072

Chip score: 2.0 (good)

Overall Appearance: 7 (good)

Other Attributes or Comments: *This variety stands out because its yield is equal to Atlantic, it is very attractive, resistant to IHN, and typically has low incidence of other internal defects. It is primarily a chip-stock potato, but its SG and appearance are also suitable for table-stock use. It's major flaw however, is the expression of what we believe is a physiological skin disorder known as star cracking. The disorder is expressed by cracking sometimes as much as 1/8 inch deep that radiates in 3 to 5 directions from a central point. We believe lack of adequate moisture is the causal agent.*

NC0349-3

Developed by: NC State Univ.

Released: N/A

trials evaluated: 8 since(2007)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: slightly later than medium

% Standard (Atlantic): MKTB YLD 92%

Specific Gravity: 1.074

Chip Score: 2.0 (good)

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: *This is a mid to late season clone with good chip scores. This is the fourth year of testing and it has performed well. It did express IHN in one of three trials it was in during 2010, though less than Atlantic. This variety will need more evaluation but to date has been promising.*

NCB2497-17

Developed by: NC State Univ.

Released: N/A

trials evaluated: 9 since(2007)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: slightly later than medium

% Standard (Atlantic): MKTB YLD 107%

Specific Gravity: 1.070

Chip Score: 2.0 (good)

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: *This is a mid to late season clone with good chip scores. This clone may be highly susceptible to Rhizoctonia and if this is confirmed it will be dropped. To date we have seen very few internal defects.*

Table-stock clones

NY136

Developed by: Cornell Univ.

Released: N/A

trials evaluated: 19 since(2005)

Skin Color: Dark Red

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Chieftain): MKTB YLD 87%

Specific Gravity: 1.061

Skin Texture: Moderately Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: *We have evaluated this clone for 6 years, and have been impressed by its rich dark red skin. Darker than Dark Red Norland with typically higher yields, this clone may have a place in Southern growing conditions where the warmer temperatures often cause other red-skinned varieties to washout. We have not seen any IHN or hollow heart in any of our trials. We intend to trial this clone in 2011 in a least one commercial scale trial.*

NY140

Developed by: Cornell Univ.

Released: N/A

trials evaluated: 14 since(2005)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 112%

Specific Gravity: 1.070

Chip Score: 2.0 (good)

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: *This is mid to late season clone with good chip scores. Internal heat necrosis was seen in this clone in 2005 at low levels, but not since. Its size has been medium large and shape is mostly oblong with an intermediate to oval cross-section. This clone may have potential as a dual-purpose clone (table and chip).*

Vivaldi

Developed by: De ZPC (now HZPC)

Released: 1999

trials evaluated: 28 since(2001)

Skin Color: Buff

Flesh Color: Light Yellow (YF1)

Historical Data:

Maturity: mid to late

% Standard (Atlantic): MKTB YLD 88%

% Standard (Yukon Gold): MKTB YLD 114%

Specific Gravity: 1.063

Skin Texture: Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: *This variety tends to be oblong and has excellent culinary qualities. Some IHN has been noted in trials but incidence and severity are typically low and less than Yukon Gold overall. Yields are good.*

Specialty-type clones

B2152-17

Developed by: USDA-ARS.

Released: N/A

trials evaluated: 11 since(2005)

Skin Color: Red

Flesh Color: Yellow (YF1)

Historical Data;

Maturity: Early to Mid-season

% Standard (Chieftain): MKTB YLD 69%

Specific Gravity: 1.071

Skin Texture: Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: *We have evaluated this clone for 6 years, and believe it may have a place as a specialty type. The contrast presented with the red skin and medium to pale yellow flesh is quite attractive. It is important to note with this variety however that its size profile tends to small to medium sizes only very rarely will it produce potatoes over 3 ¼ inches and typically over 30% are less than 1 7/8 inches.*

Russet-type clones

Goldrush

Developed by: North Dakota State Univ.

Released: 1992

trials evaluated: 14 since(1996)

Skin Color: Brown

Flesh Color: White

Historical Data;

Maturity: medium

% Standard (Russet Nokotah): MKTB YLD 117%

Specific Gravity: 1.061

Skin Texture: Moderate Russet

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: *This variety was developed primarily for table use. It has a tough brown skin and shapes tend to be oblong to long. Size is a step better than medium overall. One of the traits that make this russet attractive to our region is its mid-season maturity. Also this was the first year we have seen secondary growth, this is typically not a defect associated with this variety. While not perfect this is a reasonable choice for a grower interested in this type of market*

IV. RESEARCH STATION AND ON-FARM COOPERATOR LOCATIONS:

Tidewater Research Station (NCDA&CS)/Vernon G. James Research and Extension Center,
(NCSU), Plymouth, NC (Washington Co.)
Black Gold Farms, Gum Neck, NC (Tyrrell Co.)
Bateman Farms, Weeksville, NC (Pasquotank Co.)

COOPERATING COUNTY EXTENSION AGENTS:

Tom Campbell, Elizabeth City, Pasquotank Co.
Frank Winslow, Columbia, Tyrrell Co.

V. PROCEDURES:

SITE, SOIL TYPE, PLANTING AND HARVEST DATES FOR YIELD TRIALS

| Site | Soil Type | Planting Date | Harvest Date | Days to Harvest |
|------------|----------------------------|---------------------------|--|-------------------|
| Black Gold | Cape Fear silt loam | Mar 18 | Jun 28, 29 | 102,103 |
| Bateman's | Gertie silt loam | Mar 10 | Jun 21 | 103 |
| TRS/VGJREC | Portsmouth fine sandy loam | Mar 25, 26 Apr 6-8, 12 | Jul 6, 8, 12, 13,15,16,19,21- 23,26-28 | Variable 91 - 125 |

EXPERIMENTAL DESIGN: All yield trials were planted in a randomized complete block design with 4 replications except the US Potato Board/Snack Food Association (USPB/SFA) Trial that had 5 replications and the preliminary evaluation trial, which had only one plot per clone. Forty-six clones in three trials were evaluated at Black Gold Farms, and twenty-eight clones were evaluated at Bateman's on-farm trial. Plots consisted of one row with 28 hills spaced 9 inches apart. Spacing between rows was 34 inches at Black Gold Farms, 40 inches at Bateman's and 38 inches for all trials at the TRS. Weed and pest control practices for on-farm trials were in accordance with those practiced by the cooperators (Appendix 1).

The on-farm trials were dug using a single-row digger and hand harvested. The TRS/VGJREC trials were harvested using a two-row harvester modified to dig one row at a time. Bateman's, was graded using a portable Lockwood Grader which sorts to two grades: A+B's $\geq 1 \frac{7}{8}$ "; and C's $< 1 \frac{7}{8}$ ". Black Gold, Snack Food and the TRS/VGJREC trials were graded to five classes: 1's $< 1 \frac{7}{8}$ "; 2's $> 1 \frac{7}{8}$ to $2 \frac{1}{2}$ "; 3's $> 2 \frac{1}{2}$ to $3 \frac{1}{4}$ "; 4's $> 3 \frac{1}{4}$ to 4"; 5's > 4 ". Culls were removed and weighed separately in all trials. Each clone was evaluated for tuber quality and appearance during grading using standardized NE-1031 rating codes. A description of the rating codes is provided in Appendix 2.

After grading and weighing, 40 marketable tubers (10 tubers/replication) were randomly sampled from each entry, and 50 tubers were sampled from the USPB/SFA trial. The tubers were cut and scored for the presence of hollow heart, heat necrosis and any other internal defects. A second sub-sample of marketable tubers from each replication was taken and bulked by entry for specific gravity readings and chipping tests. Specific gravity was determined using the weight-in-air/weight-in-water method. Chip evaluations were conducted at the TRS/VGJREC for all trials. Chipping at the TRS/VGJREC was done with in 48 hrs of harvest and again 5 to 7 days later.

VI. RESULTS:

Environmental Summary

Planting was delayed by wet conditions early in the season persisting throughout March pushing us into April to plant many of the TRS trials. During the season rainfall was adequate early in the season but rainfall tapered off in mid-May followed by excessive heat. In fact, May - July 2010 was the hottest spring/summer season on record in NC. Rainfall was also well below normal for the state (http://www.noaanews.noaa.gov/stories2010/20100809_julytemps.html 11/10). Our on-farm trials were harvested without any problems but yields were down due to reduced tuber size. On the TRS the late planting and elevated temperatures during the season resulted in early vine senescence and a large amount of soft rot.

A. Yield Trials

1. On-Farm Trials

Black Gold Tablestock Variety Trial (Tables 1a and 1b)

The marketable yields of the 13 clones in this trial were compared to Chieftain (368 cwt/a). One clone NY136 (397 cwt/a) had a higher marketable yield than Chieftain but not significantly greater. Six clones (Gold Rush, NCB2607-3, NY136, Superior, Vivaldi, and Yukon Gold) had overall appearance ratings of 7 (good). Six clones expressed 10% or greater symptoms of internal heat necrosis (IHN); Chieftain (83% with an average internal heat necrosis severity rating (HNR) of 6.0), Yukon Gold (70% with an HNR of 6.3), Super Red Norland (20% with an HNR 8.0), Superior (10% with an HNR of 8.3) and Vivaldi (10% with an HNR of 6.2). Clones with 10% or greater incidence of Brown Center (BC) were Classic Russet (13%) and Super Red Norland (10%). No other internal defects were expressed at levels greater than 10%. Other external defects observed in the trial were sunscald, misshapes, soft rot, silver scurf, heat sprouts, and skin blemishes due to Rhizoctonia.

Black Gold Chip Variety Trial (Tables 2a and 2b)

Atlantic, our standard, had a marketable yield of 273 cwt/a and four of the clones in the trial had significantly greater marketable yields: Marcy (383 cwt/a), NY140 (343 cwt/a), Snowden (336 cwt/a), and Dakota Crisp (332 cwt/a). Clones with higher but not statistically significant marketable yields greater than Atlantic were: NCB2497-17 (329 cwt/a), NY141 (329 cwt/a), NC182-5 (312 cwt/a), Harley Blackwell (300 cwt/a), NC0349-3 (299 cwt/a), AF0338-17 (298 cwt/a), NC0349-8 (287 cwt/a), and NC178-1 (278 cwt/a). Atlantic had a gravity of 1.078. None of the other clones had higher gravities but one clone had an equal gravity, NCB2489-5. One clone, NCB2489-5 had a chip score rating of 1 (exceptional) in the 24 to 48 hour chip test. Four clones: Harley Blackwell, Marcy, NC0349-3, and NCB2489-5 had appearance scores of 8 (better than good), AF0338-17, Atlantic, Dakota Crisp, and NCB2497-17 had overall appearance scores of 7 (good). Clones that expressed symptoms of internal heat necrosis (IHN) at 10% or greater incidence were: Atlantic (78% with an HNR of 6.6), Marcy (53% IHN with an HNR of 6.4), NC0349-8 (48% with an HNR 6.8), Snowbird (30% with an HNR of 6.4), Snowden (23% with an HNR of 8.0, and NY140 (10% with an HNR of 8.6). One clone, NC182-5, had 18% incidence of BC. No other internal defects were expressed at levels greater than 10%. Other external defects observed in the trial were sunscald, growth cracks, skin blemishes due to Rhizoctonia, common scab, heat sprouts, and misshapes.

US Potato Board/Snack Food Association Trial at Black Gold Farms (Tables 3a and 3b)

Atlantic had a marketable yield of 299 cwt/a. Only one clone in this trial, MSL292-A (359 cwt/a), had a significantly greater marketable yield than Atlantic. Other clones with greater marketable yields were: W2324-1 (347 cwt/a), Snowden (333cwt/a), NY139 (318 cwt/a) and W5015-12 (302 cwt/a). Atlantic had a gravity of 1.072 and two other clones had greater gravities: W2310-3 (1.075) and W2717-5 (1.075). Two clones received a chip score rating of 1 at the 24 to 48 hour chip test: W2324-1 and W2717-5. One clone scored a 1 in the 5 to 7 day chip tests, CO97043-14W. One clone rated an 8 for over all appearance, W2978-3. Four clones received an appearance rating of a 7: Atlantic, CO97043-14W, MSJ126-9Y, and Snowden. Six clones expressed IHN at levels greater than 10% incidence: Atlantic (48% with an HNR of 6.9), W5015-12 (36% with an HNR of 6.8), W2324-1 (32% with an HNR of 7.4), MSQ086-3 (26% with an HNR of 7.0), MSL292-A (12% with an HNR of 7.9) and Snowden (12% with an HNR of 8.3). No other internal defects were expressed at levels greater than 10%. Other external defects observed were: sunscald, common scab, misshapes, sun scald, growth cracks, soft rot, and skin blemishes due to Rhizoctonia.

Bateman's Variety Trial (Tables 4a and 4b)

The clones in this on-farm trial yielded significantly less than our other trials due to abnormally harsh environmental factors, and a lower than optimal application of fertilizer coupled with significant CPB pressure, which resulted in substantial levels of plant defoliation just before tuber bulking phase. This was due to a miscommunication on our part, which resulted in the trial being planted in the same site for two years in a row. Fertilizer was also not applied in the second year, leaving only residual fertilizer from the previous year. To correct the situation, 70 units of N were applied prior to emergence. The plants emerged on time and with good vigor. However, a substantial residual CPB population that had developed late in the prior season emerged during the middle of May causing significant defoliation throughout the entire plot. Based on this, the yield data presented for this trial should be viewed with caution.

In this trial three yield standards were chosen: Atlantic (round white standard), Chieftain (red standard), and Russet Norkotah (russet skin types). Superior (204 cwt/a) had a marketable yield significantly greater than Atlantic (150 cwt/a). Within the class of reds, three clones had significantly higher marketable yields than Chieftain (80 cwt/a): Red Maria, formerly NY129, (203cwt/a), NY136 (151 cwt/a), and Dark Red Norland (146 cwt/a). Russet Norkotah (135 cwt/a) had a higher marketable yield than all other russets in the trial. The specific gravity for Atlantic in this trial was 1.077. NC178-1, had a gravity that was equal to this, while all other clones had lower specific gravities. B2575-14, had a chip score rating of 1 in the 24 to 48 hour fry test. NC41-1 was the only clone to have a chip score rating of 1 in the 5 to 7 day chip test. Only one clone, NY129, had an overall appearance score of 8. Clones with an overall appearance score of 7 were; BNC182-5, NC0349-8, NC182-5, Snowden, Superior, and Yukon Gold. Six clones had incidence of heat necrosis greater than 10% and these were: Atlantic (33% IHN with a HNR of 7.8), Chieftain (30% IHN with a HNR of 5.8), Super Red Norland (15% with an HNR of 8.3), Superior (15% with and HNR of 8.0), Vivaldi (15% with an HNR of 8.3) and Yukon Gold (15% with an HNR of 8.5). Clones with 10% or greater incidence of hollow heart were NCB2645-11 (18%) and NC0349-4 (10%). No other internal defects with 10% or greater incidence were recorded in this trial. Culls were primarily due to misshapes, soft rot, heat sprouts, common scab, sun scald and skin blemishes due to Rhizoctonia.

2. TRS/VGJREC Yield Trials

Round White Trial One (Tables 5a and 5b)

This trial, which included 30 clones, is designed to give us a first look at white skinned materials we are evaluating in a replicated trial. The other two round white trials are loosely divided between early and late maturing clones. Atlantic had a marketable yield of 153 cwt/a. One clone had a significantly great marketable yield, Snowden (241 cwt/a). Eight other clones also had higher, but non-significant marketable yields: AF4130-7 (206 cwt/a), AF4138-8 (204 cwt/a), AF4145-1 (200 cwt/a), AF4125-1 (191 cwt/a), AF4157-6 (187 cwt/a), AF4047-3 (185 cwt/a), AF4147-1 (170 cwt/a) and AF4047-2 (157 cwt/a). Atlantic had a gravity of 1.073, and three clones had a gravity that was equal or greater: NCB2753-1 (1.081), AF4047-3, (1.078) and AF4013-3 (1.073). One clone, AF4125-1 had a chip score of 1 in both the 24 to 48 hour and the 5 to 7 day chip tests. AF4125-1, also had an overall appearance rating of 8 while AF4130-13 had a rating of 7. Nine clones expressed IHN at 10% or greater incidence: AF4047-2 (30% with an HNR of 7.5), AF4149-1 (25% with an HNR of 7.5), Atlantic (25% with an HNR of 7.6), AF2873-2 (18% with an HNR of 7.7), AF4147-4 (15% with an HNR of 7.8), Snowden (15% with an HNR of 7.5), AF4006-3 (13% with an HNR of 8.0), AF4014-1 (13% with an HNR of 7.3) and AF4145-1 (13% with an HNR of 7.8). No other internal defects with 10% or greater incidence were recorded in this trial. Common external defects were misshapes, sunscald, soft rot, growth cracks, and skin blemishes attributed to Rhizoctonia.

Round White Trial Two (Tables 6a and 6b)

Of the ten clones in this trial none had higher average marketable yields higher than Atlantic (184 cwt/A). Atlantic had the highest specific gravity at 1.075. One clone, NC41-1 had a chip score of 1 in the 24 to 48 hour chipping test. B2575-19 was the only clone in this trial with an appearance score of 7. Clones expressing 10% or greater incidence of IHN were: Atlantic (30% with an HNR of 6.6) and NYF47-3 (10% with an HNR of 8.7). No other internal defects were expressed at levels of 10% or greater. Common defects were misshapes, soft rot, sunscald, growth cracks, and skin blemishes attributed to Rhizoctonia.

Round White Trial Three (Tables 7a and 7b)

Atlantic had a marketable yield of 219 cwt/A, and one clone, Snowden (284 cwt/a) had a significantly higher marketable yield. NC0349-8 (1.071) had a higher gravity than Atlantic (1.069). Clones that scored 1 in the 24 to 48 hour chip test were: Atlantic, and NC0349-3. NC182-5 had an appearance score of 8. Three clones had overall appearance scores of 7: Atlantic, BNC182-5 and NYE105-16. One clone expressed IHN at equal or greater than 10%, Atlantic (23% with an HNR of 7.7). Two clones had incidence of HH at levels 10% or greater: AF4047-2 (15%) and Atlantic (10%). No other internal defects were expressed at levels of 10% or greater. Common external defects were: misshapes, soft rot, growth cracks, sunscald, and skin blemishes due to Rhizoctonia.

NE-1031 Round White Trial. (Tables 8a and 8b)

None of 16 clones in this trial had greater marketable yield than Atlantic (243 cwt/A). Atlantic had a specific gravity of 1.078, AF0338-17 (1.080) was the only clone to have a gravity greater than Atlantic. None of the clones received a chip rating of 1 in the 24 to 48 hour or 5 to 7 day chip tests. Atlantic had an overall appearance rating of 8 and AF0338-17 had an overall appearance rating of 7. Clones in this trial that expressed IHN with 10% or greater incidence were: Atlantic (38% with an HNR of 7.0), AF3001-6 (13% with an HNR of 7.5) and

NY139 (13% with an HNR of 7.5). Atlantic had 15% hollow heart. Three clones, Yukon Gem (23%), Atlantic (18%) and Yukon Gold (15%), expressed 10% or greater incidence of brown center. The most common culls were misshapes, sunscald, soft rot, growth cracks, and skin blemishes attributed to Rhizoctonia.

NE-1031 Red Trial. (Tables 9a and 9b)

The standard, Chieftain, had a marketable yield of 150 cwt/a. Two clones had significantly higher marketable yields: Adirondack Blue (207 cwt/a) and NC293-7 (204 cwt/a). Three clones received an overall appearance score of 7: B2152-17, NCB2607-3, and Peter Wilcox. None of the clones in this trial expressed significant levels of any internal defects. Culls were due mostly to misshapes, sunscald, growth cracks, secondary growth, and skin blemishes attributed to Rhizoctonia.

NE-1031 Russet Trial. (Tables 10a and 10b)

The standard, Russet Norkotah 3117, had a marketable yield of 79 cwt/A. Of the fourteen clones in the trial two had marketable yields that were significantly greater: AF3362-1 (139 cwt/a) and Gold Rush (119 cwt/a). Three clones had an equal or higher specific gravity than Russet Norkotah 3117 (1.059), these were: AF4067-1 (1.060), Premier Russet (1.060), and AF3325-2 (1.059). The highest overall appearance scores were fair (5), two clones receiving this rating were: AF3327-28 and Classic Russet. One clone expressed IHN at 10% or greater incidence, AF3362-1 (15% with an HNR of 7.8). No clones expressed significant levels of HH, VR, or SR. The only clone to express BC at a level of 10% or greater was Russet Burbank (10%). Culls were due mostly to soft rot, misshapes, sunscald, secondary growth, and skin blemishes attributed to Rhizoctonia.

Observational Trial. (Tables 11a and 11b)

Twenty-nine clones were evaluated in this trial along with the standards: Atlantic, Snowden and Superior. . Each 28-hill plot was non-replicated. Clones with promising attributes such as high yield, high specific gravity (for chipping lines), exceptional appearance and/or high disease resistance will be evaluated in following years in replicated trials.

B. Breeding and Early Generation Selection Efforts

NCSU Potato Variety Development Efforts

Our efforts to develop varieties in North Carolina begin with selection as single-hill plots in year one. Because potatoes are clonally propagated via tubers each hill selected has the potential to become a new variety. The single-hill selections are advanced to 6-hill and 20-hill plots with selection in years two and three, respectively. Following this, materials are placed in a sixty-hill plot in year four for a final cycle of selection before entering into yield trials. Our single-hill materials have come from the USDA-ARS, Cornell University, Virginia Tech University and our own crosses made at the TRS. Mini-tubers, which are planted in the field as single-hills, are generated in the TRS greenhouses. This year, 13,260 single-hills were planted and 104 clones were selected averaging a 0.8% selection rate. In our single hill plots this year we had materials derived from Virginia Tech University as well as our own materials and those from crosses by the USDA-ARS. Evaluation of germplasm from different breeding programs allows us to review a wider breadth of materials increasing the likelihood of developing varieties suitable not only for

NC and the Southeast, but with broad adaptability overall. Unlike the USDA-ARS and NCSU materials, Virginia Tech sent us families of mini-tubers for our program to evaluate. This is of great benefit to our program because we are currently at maximum capacity of our greenhouse facilities and this allows us another avenue for growth and helps build the program.

In our second to fourth year selection plots out of the 872 clones planted in our 6-hill plots (Yr. 2), 60 (6.9%) were selected for future evaluation. While in the 20-hill plots (Yr. 3), 73 clones were planted with 14 (19%) being selected for further evaluation. In our 60-hill plots (Yr. 4), 15 clones were planted and 4 (27%) were selected.

Germplasm Enhancement for CPB Resistance

This is the fourth year of a selection and screening program to develop CPB resistant materials. Parental material used in crosses to generate the families come from one or more of three species of potato: *Solanum tuberosum*, *S. chacoense*, and *S. berthaultii*. Unlike our other variety development work, the CPB resistance project requires two identical plots to be planted the first year materials go to the field. To get a better look at the clones, we plant 2-hill plots in both the CPB screen and selection trials. This year we planted roughly 941 clones to evaluate resistance and selected 56 clones for resistance and another 20 clones in the set for agronomic traits for a total of 76 clones. These will be advanced next year in both our CPB nursery and as 6 hill plots for selection purposes. In our 6 hill plots this year, 67 of the 872 clones came from this CPB resistance project. From the 67 CPB clones, 10 were selected for advancement to the 20 hill selection plots and the next cycle of CPB resistance screening. Of the 73 clones in our 20 hill plots 24 clones were part of the CPB resistance screen and 5 of those were selected for advancement to the 60 hills. Of the 15 clones in this year's 60 hill plots 3 were CPB clones and 1 was selected for further evaluation.

Early Generation Selection Trials

Early generation selection involves selection and evaluation of materials at early stages in breeding/variety development process. By selecting early generation materials in multiple environments we hope to identify materials that are broadly adapted. Early generation selection efforts also promote collaboration and reduce overall breeding costs, and they are especially important when the success of a variety depends on seed being produced in the north while the crop is produced in the south as is the case with all varieties grown in NC.

University of Maine Trial

In this trial we evaluate and select clones that have gone through only one selection cycle in Maine as 4 hill plots in NC. After selection in NC, we send a list of selected clones to our cooperators at the University Maine (UME) and they use the information when they select their materials. This year we evaluated 946 ME clones and selected 30. Because of limited seed we will not see these clones in NC again until 2012 when we will evaluate them as non-replicated 28 hill plots in a yield trial.

This year we also evaluated a set of 34 red skin clones for UME in an 8-hill, non-replicated format. Craig Yencho and Mark Clough each selected the materials they believed had merit and warranted further evaluation. We kept a total of 6 clones, 3 we both selected 1 Craig selected Mark did not and 2 Mark selected that Craig did not. These will be evaluated in 2012 in a non-replicated 28 hill plot in a yield trial.

USDA-ARS Trial

This is the third year that we have participated in this USDA-ARS lead trial. Several institutions/states were involved: University of Florida (FL), NC State University (NC), USDA-ARS (MD, trial location in ME), Rutgers University (NJ), Penn State University (PA), Cornell University (NY) and the University of Maine (ME). Each state received 8 hills of the same 394 clones. All were weighed for total yield, rated for the nine standard NE1031 external ratings, and specific gravities were measured. In addition each location had two principle evaluators that independently selected on the set. At our location Craig Yencho and Mark Clough had 84.0% agreement on clones overall to drop or keep. Next year we will reevaluate these clones in our non-replicated 28-hill yield trial (Unreplicated trial).

Unreplicated Trial.

One hundred thirty-one clones were evaluated in this trial as well as the standards: Atlantic, Chieftain, Dark Red Norland, Snowden, Superior and Yukon Gold. Each 28-hill plot was non-replicated. This trial is part of an early generation study we are conducting with the USDA-ARS and is our 2nd opportunity to evaluate them. Last year we selected these clones in an 8-hill non-replicated format and the 131 clones represent those both Dr. Craig Yencho and Mr. Mark Clough selected. This year we made notes on these clones and indicated which ones we thought had potential as cultivars and made another round of selections. We selected a total of 46 clones, 23 we both liked and selected, 17 that Craig liked that Mark did not and 6 that Mark liked that Craig did not. We will evaluate all clones that either of us selected in a trial with two replications next year (2by20 Trial).

2by20 Trial.

Twenty-one clones were evaluated in this trial along with the standards: Atlantic, Chieftain, Dark Red Norland, Snowden and Superior. This is the 3rd cycle of evaluation and selection of these USDA-ARS early generation materials. Like the 8 hills and the Unreplicated trial we keep all clones that either Dr. Craig Yencho or Mr. Mark Clough select. Out of the 21 in this trial we kept a total of 9 clones: 4 we both selected, 3 Craig liked that Mark did not and 2 Mark liked that Craig did not. Next year these will be evaluated in one of our standard replicated trials (4 reps, 28 hills, randomized complete block design).

VII. ACKNOWLEDGMENTS

This work could not be conducted without the assistance of the growers, county extension agents and NCDA&CS TRS staff. We are grateful for their continued support and assistance. Seed for the trials was provided by: Dr. Walter De Jong Cornell University; Dr. Dave Douches, Michigan State University; Dr. Greg Porter, University of Maine; Dr. Richard Veilleux, Virginia Tech University; and Dr. Kathleen Haynes, USDA/ARS, Beltsville, MD. Also a special thanks goes to Mr. Todd Bradley and the staff at Maine Farmers Exchange, Presque Isle, ME for their efforts to procure small amounts of seed for shipment to NC. And another very special thank you to Dan Corey, Monticello, ME, for taking the time to send small amounts of seed. This project is funded in part by The North Carolina Potato Growers Association, the U.S. Potato Board, the Snack Food Association, and the USDA-NIFA Potato Special Research Grants program. Their continuing support is very much appreciated.

Table 1a. Black Gold Farms Tablestock Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 103 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield | | | | Size Distribution by Class ² (% of total yield) | | | | | | | Specific Gravity ³ | |
|-------------------|----------------------|------------------|-------|---------|------|---|-----|-----|-----|-----|-------|----------------|----------------------------------|----------------|
| | | cwt/A | %Chf. | %RusNor | %Yuk | 1's | 2's | 3's | 4's | 5's | Culls | 1 7/8 to 4" | | 2 1/2 to 4" |
| Chieftain | 484 | 368 | 100 | 113 | 134 | 8 | 45 | 31 | 1 | 0 | 16 | 76 | 31 | 1.061 |
| Classic Russet | 337 | 284 | 78 | 89 | 103 | 5 | 44 | 40 | 0 | 0 | 11 | 85 | 40 | 1.061 |
| Dark Red Norland | 337 | 276 | 76 | 86 | 100 | 10 | 50 | 32 | 0 | 0 | 8 | 82 | 32 | 1.058 |
| Goldrush | 407 | 349 | 96 | 108 | 126 | 7 | 43 | 43 | 0 | 0 | 7 | 86 | 43 | 1.064 |
| NCB2607-3 | 197 | 86 | 23 | 26 | 32 | 50 | 42 | 1 | 0 | 0 | 7 | 43 | 1 | 1.073 |
| NY129 | 431 | 359 | 98 | 110 | 131 | 8 | 37 | 46 | 0 | 0 | 9 | 83 | 46 | 1.058 |
| NY136 | 477 | 397 | 108 | 121 | 144 | 11 | 52 | 31 | 0 | 0 | 6 | 83 | 31 | 1.061 |
| Peter Wilcox | 354 | 308 | 85 | 95 | 113 | 10 | 63 | 24 | 0 | 0 | 3 | 87 | 24 | 1.065 |
| Russet Norkotah | 376 | 332 | 90 | 100 | 122 | 5 | 49 | 40 | 0 | 0 | 7 | 88 | 40 | 1.063 |
| Super Red Norland | 367 | 316 | 86 | 98 | 115 | 6 | 21 | 57 | 8 | 0 | 8 | 86 | 65 | 1.044 |
| Superior | 387 | 355 | 97 | 111 | 129 | 7 | 44 | 47 | 0 | 0 | 2 | 92 | 47 | 1.064 |
| Vivaldi | 415 | 330 | 90 | 101 | 121 | 14 | 58 | 21 | 0 | 0 | 6 | 79 | 21 | 1.060 |
| Yukon Gold | 352 | 279 | 77 | 88 | 100 | 12 | 40 | 40 | 0 | 0 | 8 | 80 | 40 | 1.070 |
| Grand Mean | 379 | 311 | | | | | | | | | | | | |
| CV (%) | 10.8 | 11.2 | | | | | | | | | | | | |
| LSD(K=100) | 54.5 | 45.9 | | | | | | | | | | | | |

¹ DAP= Day After Planting; DVK= Days of Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air / water method.

Table 1b. Black Gold Farms Tablestock Variety Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 103 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|-------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|--|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| Chieftain | 9 | 9 | 8 | 6 | 3 | 7 | 5 | 6 | 3 | 7 | 6 | 5 | 4 | 83 | 6.0 | 0 | 0 | 0 | 0 | ^SG,^RZ,SR,SS,33IHN(2-8,6-7,16-6,9-5) |
| Classic Russet | 9 | 9 | 9 | 7 | 5 | 4 | 7 | 7 | 5 | 8 | 6 | 8 | 5 | 0 | 9.0 | 0 | 0 | 13 | 0 | MS,SS,RZ,SR,HS,PTS |
| Dark Red Norland | 6 | 8 | 7 | 3 | 2 | 8 | 7 | 7 | 2 | 8 | 5 | 6 | 5 | 10 | 8.1 | 0 | 0 | 0 | 3 | MS,SG,SS,variable clr,5IHN(3-8,1-7) |
| Goldrush | 6 | 9 | 9 | 5 | 4 | 2 | 5 | 7 | 5 | 8 | 6 | 8 | 7 | 5 | 8.5 | 0 | 0 | 0 | 0 | SG,SR,MS,SS,2IHN(2-8) |
| NCB2607-3 | 5 | 6 | 7 | 3 | 2 | 8 | 9 | 7 | 2 | 8 | 1 | 6 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,SISC,YF1 |
| NY129 | 9 | 9 | 9 | 6 | 2 | 6 | 9 | 7 | 1 | 8 | 6 | 5 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SISC,RZ,SS,^^EL |
| NY136 | 9 | 9 | 9 | 7 | 2 | 8 | 7 | 5 | 3 | 8 | 6 | 7 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,GC,SISC,SS,~PTS |
| Peter Wilcox | 6 | 9 | 8 | 4 | 1 | 6 | 5 | 7 | 5 | 8 | 6 | 3 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^^SISC,SS,RZ,YF2 |
| Russet Norkotah | 9 | 9 | 9 | 5 | 5 | 3 | 7 | 5 | 7 | 8 | 7 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SS,SG,RZ,SR |
| Super Red Norland | 6 | 9 | 8 | 4 | 2 | 7 | 7 | 6 | 3 | 6 | 7 | 6 | 6 | 20 | 8.0 | 5 | 0 | 10 | 3 | SR,SS,MS,GC,SISC,8IHN(6-8,2-6) |
| Superior | 6 | 9 | 8 | 4 | 6 | 6 | 7 | 7 | 2 | 6 | 7 | 8 | 7 | 10 | 8.3 | 0 | 0 | 5 | 0 | MS,SR,4IHN(2-8,2-7) |
| Vivaldi | 8 | 9 | 9 | 5 | 6 | 8 | 7 | 7 | 5 | 8 | 6 | 7 | 7 | 10 | 6.2 | 3 | 0 | 0 | 0 | MS,SR,RZ,18IHN(4-8,5-7,4-6,2-5,2-4,1-2) |
| Yukon Gold | 8 | 9 | 8 | 5 | 7 | 7 | 5 | 7 | 3 | 7 | 7 | 6 | 7 | 70 | 6.3 | 0 | 0 | 0 | 0 | SR,CS,GC,YF1,28IHN(4-8,5-7,14-6,3-5,2-4) |

¹ DAP= Day After Planting; DVK= Days of Vine Kill

² See NE1031 Standard Potato Rating System for to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in A and B size classes. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for comments codes

Table 2a. Black Gold Farms Chip Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 103 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A | % Atl. | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|---------------------------|--------|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| AF0338-17 | 345 | 298 | 111 | 8 | 35 | 48 | 3 | 0 | 6 | 86 | 51 | 1.074 | 2 | 3 | |
| Atlantic | 329 | 272 | 100 | 10 | 37 | 44 | 1 | 0 | 8 | 83 | 46 | 1.078 | 2 | 3 | |
| Dakota Crisp | 391 | 332 | 122 | 11 | 48 | 35 | 2 | 0 | 4 | 85 | 37 | 1.074 | 2 | 2 | |
| Harley Blackwell | 380 | 300 | 111 | 20 | 59 | 20 | 0 | 0 | 1 | 79 | 20 | 1.068 | 2 | 2 | |
| Marcy | 420 | 383 | 141 | 7 | 40 | 50 | 1 | 0 | 2 | 91 | 51 | 1.066 | 2 | 2 | |
| NC0349-3 | 345 | 299 | 111 | 12 | 40 | 46 | 1 | 0 | 1 | 87 | 47 | 1.073 | 2 | 2 | |
| NC0349-8 | 367 | 287 | 106 | 20 | 54 | 24 | 0 | 0 | 2 | 78 | 24 | 1.071 | 3 | 3 | |
| NC178-1 | 315 | 278 | 103 | 11 | 45 | 42 | 0 | 0 | 1 | 87 | 42 | 1.076 | 2 | 2 | |
| NC182-5 | 390 | 312 | 115 | 18 | 55 | 25 | 0 | 0 | 2 | 80 | 25 | 1.070 | 2 | 3 | |
| NC41-1 | 321 | 224 | 82 | 27 | 52 | 17 | 0 | 0 | 3 | 70 | 17 | 1.068 | 2 | 3 | |
| NCB2489-5 | 326 | 265 | 98 | 16 | 60 | 21 | 0 | 0 | 3 | 81 | 21 | 1.078 | 1 | 2 | |
| NCB2497-17 | 408 | 329 | 121 | 19 | 60 | 20 | 0 | 0 | 1 | 81 | 20 | 1.066 | 2 | 2 | |
| NCB2645-11 | 303 | 241 | 89 | 17 | 59 | 21 | 0 | 0 | 3 | 80 | 22 | 1.073 | 3 | 3 | |
| NY140 | 413 | 343 | 126 | 16 | 51 | 31 | 0 | 0 | 1 | 83 | 31 | 1.069 | 3 | 3 | |
| NY141 | 382 | 329 | 121 | 6 | 39 | 46 | 0 | 0 | 8 | 86 | 46 | 1.069 | 2 | 2 | |
| Snowbird | 300 | 245 | 90 | 11 | 49 | 33 | 0 | 0 | 7 | 82 | 33 | 1.067 | 3 | 3 | |
| Snowden | 389 | 336 | 124 | 13 | 54 | 32 | 0 | 0 | 1 | 86 | 32 | 1.074 | 3 | 2 | |
| Grand Mean | 359 | 299 | | | | | | | | | | | | | |
| CV (%) | 11.4 | 13.6 | | | | | | | | | | | | | |
| LSD(K=100) | 62.4 | 61.1 | | | | | | | | | | | | | |

¹ DAP= Day After Planting; DVK= Days of Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air / water method.

⁴ Chip Color Ratings conducted by NCSU Potato Breeding Program at TRS/VGJREC:

1= no defects, exceptionally bright; 2= excellent, bright; 3= good, light or golden; 4= dark defects, marginal; 5= not acceptable

Table 2b. Black Gold Farms Chip Variety Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 103 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | | Comments ⁴ |
|------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|----|---|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | SR | |
| AF0338-17 | 9 | 9 | 9 | 7 | 6 | 5 | 5 | 7 | 3 | 7 | 7 | 7 | 7 | 3 | 8.5 | 0 | 0 | 3 | 0 | GC,SR,SS,CS,1IHN(1-7) |
| Atlantic | 6 | 9 | 8 | 5 | 5 | 5 | 5 | 7 | 2 | 6 | 7 | 7 | 7 | 78 | 6.6 | 5 | 0 | 5 | 0 | SS,MS,RZ,GC,31IHN(6-8,9-7,13-6,2-5,1-4) |
| Dakota Crisp | 9 | 9 | 9 | 6 | 6 | 6 | 7 | 7 | 2 | 7 | 6 | 8 | 7 | 5 | 8.5 | 0 | 0 | 0 | 3 | GC,CS,SR,SS,HS,2IHN(2-8) |
| Harley Blackwell | 8 | 9 | 8 | 5 | 6 | 5 | 8 | 7 | 2 | 8 | 6 | 7 | 8 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,HS,SS,3/40SC |
| Marcy | 9 | 9 | 9 | 8 | 4 | 5 | 6 | 6 | 2 | 8 | 8 | 7 | 8 | 53 | 6.4 | 0 | 0 | 0 | 3 | SS,SR,21IHN(3-8,7-7,5-6,6-5) |
| NC0349-3 | 6 | 9 | 8 | 6 | 6 | 5 | 7 | 7 | 2 | 8 | 6 | 8 | 8 | 3 | 8.8 | 5 | 0 | 0 | 0 | SS,STST,1IHN(1-8) |
| NC0349-8 | 6 | 9 | 8 | 5 | 6 | 5 | 7 | 7 | 2 | 8 | 3 | 8 | 6 | 48 | 6.8 | 0 | 0 | 10 | 0 | SS,SR,MS,19IHN(7-8,5-7,4-6,1-4,1-3) |
| NC178-1 | 9 | 9 | 9 | 9 | 9 | 6 | 5 | 7 | 3 | 6 | 6 | 8 | 5 | 0 | 9.0 | 3 | 0 | 3 | 0 | MS,STST |
| NC182-5 | 6 | 9 | 9 | 9 | 6 | 5 | 7 | 7 | 2 | 8 | 5 | 8 | 6 | 5 | 8.3 | 3 | 0 | 18 | 0 | MS,STST,HS,SS,SR,2IHN(1-8,1-7) |
| NC41-1 | 6 | 9 | 8 | 4 | 5 | 5 | 7 | 7 | 1 | 8 | 3 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR |
| NCB2489-5 | 6 | 9 | 8 | 4 | 6 | 6 | 5 | 7 | 2 | 8 | 5 | 8 | 8 | 0 | 9.0 | 3 | 0 | 0 | 3 | SR,MS,SS |
| NCB2497-17 | 6 | 9 | 8 | 7 | 6 | 6 | 5 | 6 | 3 | 8 | 6 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,SR,MS |
| NCB2645-11 | 9 | 8 | 8 | 4 | 6 | 6 | 5 | 7 | 4 | 8 | 6 | 8 | 6 | 3 | 8.8 | 0 | 0 | 0 | 0 | SR,SS,1IHN(1-8) |
| NY140 | 9 | 9 | 9 | 6 | 6 | 7 | 4 | 7 | 3 | 6 | 6 | 8 | 5 | 10 | 8.6 | 0 | 0 | 0 | 0 | SS,SR,RZ,GC,HS,4IHN(2-8,1-7,1-6) |
| NY141 | 8 | 9 | 8 | 5 | 9 | 8 | 7 | 7 | 4 | 8 | 7 | 7 | 6 | 0 | 9.0 | 0 | 0 | 8 | 0 | SS,HS,SR,RZ,^SG,CS |
| Snowbird | 8 | 9 | 8 | 5 | 9 | 9 | 7 | 7 | 3 | 5 | 6 | 7 | 4 | 30 | 6.4 | 0 | 0 | 0 | 0 | MS,SR,RZ,CS,SS,12IHN(1-8,1-7,8-6,2-5) |
| Snowden | 9 | 9 | 8 | 7 | 5 | 5 | 7 | 7 | 2 | 6 | 6 | 8 | 6 | 23 | 8.0 | 0 | 0 | 0 | 0 | SS,SR,9IHN(6-8,3-7) |

¹ DAP= Day After Planting; DVK= Days of Vine Kill

² See NE1031 Standard Potato Rating System for to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in A and B size classes. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for comments codes

Table 3a. US Potato Board/Snack Food Association Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones of potato clones harvested 102 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A | % Atl. | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|---------------------------|--------|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| AF2291-10 | 260 | 192 | 65 | 7 | 23 | 48 | 3 | 0 | 19 | 73 | 51 | 1.069 | 3 | 3 | |
| Atlantic | 340 | 299 | 100 | 10 | 47 | 41 | 1 | 0 | 2 | 88 | 41 | 1.072 | 2 | 2 | |
| CO97043-14W | 317 | 264 | 90 | 16 | 49 | 34 | 0 | 0 | 1 | 83 | 34 | 1.066 | 2 | 1 | |
| CO97065-7W | 313 | 260 | 88 | 16 | 50 | 33 | 0 | 0 | 1 | 83 | 33 | 1.065 | 3 | 2 | |
| MSJ126-9Y | 302 | 251 | 86 | 16 | 50 | 32 | 1 | 0 | 1 | 83 | 33 | 1.062 | 3 | 2 | |
| MSL292-A | 406 | 359 | 122 | 4 | 26 | 59 | 3 | 0 | 8 | 88 | 62 | 1.071 | 2 | 2 | |
| MSQ086-3 | 393 | 251 | 84 | 26 | 51 | 13 | 0 | 0 | 10 | 64 | 13 | 1.059 | 3 | 3 | |
| NY138 | 359 | 292 | 99 | 6 | 27 | 53 | 2 | 0 | 12 | 82 | 55 | 1.060 | 2 | 3 | |
| NY139 | 361 | 318 | 107 | 10 | 57 | 31 | 0 | 0 | 2 | 88 | 31 | 1.067 | 2 | 3 | |
| Snowden | 393 | 333 | 114 | 15 | 59 | 25 | 1 | 0 | 1 | 84 | 26 | 1.071 | 2 | 2 | |
| W2310-3 | 285 | 172 | 58 | 14 | 42 | 18 | 0 | 0 | 25 | 60 | 18 | 1.075 | 2 | 2 | |
| W2324-1 | 420 | 347 | 116 | 10 | 38 | 43 | 1 | 0 | 8 | 82 | 44 | 1.070 | 1 | 3 | |
| W2717-5 | 279 | 236 | 80 | 9 | 38 | 47 | 0 | 0 | 7 | 84 | 47 | 1.075 | 1 | 2 | |
| W2978-3 | 329 | 260 | 88 | 18 | 57 | 22 | 0 | 0 | 3 | 79 | 22 | 1.066 | 2 | 3 | |
| W5015-12 | 415 | 302 | 102 | 19 | 60 | 12 | 0 | 0 | 8 | 73 | 12 | 1.069 | 2 | 3 | |
| Grand Mean | 345 | 276 | | | | | | | | | | | | | |
| CV(%) | 13.7 | 16.6 | | | | | | | | | | | | | |
| LSD(K=100) | 64.7 | 62.8 | | | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU potato breeding program at the TRS/VGJREC and by Utz Quality Foods in Hanover PA: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 3b. US Potato Board/Snack Food Association Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 102 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | | Comments ⁴ |
|-------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|----|---|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | SR | |
| AF2291-10 | 9 | 9 | 9 | 8 | 6 | 7 | 7 | 5 | 4 | 6 | 7 | 8 | 4 | 2 | 8.8 | 0 | 0 | 6 | 0 | MS,GC,CS,SG,RZ,HS,1IHN(1-8) |
| Atlantic | 6 | 9 | 8 | 5 | 5 | 5 | 7 | 7 | 2 | 7 | 6 | 9 | 7 | 48 | 6.9 | 0 | 0 | 2 | 0 | MS,SS,RZ,GC,24IHN(7-8,10-7,5-6,1-5,1-4) |
| CO97043-14W | 6 | 9 | 7 | 5 | 9 | 8 | 5 | 7 | 2 | 7 | 5 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 2 | SS,CS,SR |
| CO97065-7W | 6 | 9 | 8 | 5 | 6 | 6 | 5 | 7 | 2 | 7 | 6 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,CS,SS,FS |
| MSJ126-9Y | 8 | 9 | 8 | 4 | 6 | 5 | 7 | 7 | 2 | 7 | 6 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,MS,YF1 |
| MSL292-A | 9 | 9 | 9 | 5 | 5 | 5 | 3 | 5 | 3 | 6 | 7 | 7 | 4 | 12 | 7.9 | 0 | 0 | 0 | 0 | SS,CS,MS,SR,DAE,DSE,6IHN(1-8,5-7) |
| MSQ086-3 | 9 | 9 | 9 | 7 | 9 | 7 | 7 | 7 | 2 | 8 | 4 | 5 | 4 | 26 | 7.0 | 0 | 0 | 0 | 0 | ^CS,SS,MS,SG,HS,13IHN(4-8,8-7,3-6) |
| NY138 | 8 | 9 | 8 | 6 | 6 | 6 | 6 | 7 | 3 | 8 | 7 | 4 | 4 | 6 | 8.3 | 0 | 0 | 0 | 0 | ^RZ,SS,3IHN(1-8,2-7) |
| NY139 | 7 | 9 | 8 | 5 | 6 | 5 | 5 | 6 | 4 | 8 | 6 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,SS,MS,GC |
| Snowden | 9 | 9 | 8 | 7 | 5 | 5 | 7 | 6 | 2 | 6 | 5 | 8 | 7 | 12 | 8.3 | 0 | 0 | 6 | 0 | SS,STST,SR,DSE,DAE,6IHN(4-8,2-7) |
| W2310-3 | 6 | 8 | 8 | 6 | 5 | 6 | 4 | 7 | 3 | 7 | 5 | 4 | 4 | 2 | 8.8 | 0 | 0 | 0 | 0 | ^CS,SS,SG,1IHN(1-8) |
| W2324-1 | 8 | 9 | 8 | 8 | 6 | 6 | 7 | 7 | 3 | 7 | 5 | 5 | 5 | 32 | 7.4 | 0 | 0 | 0 | 0 | CS,MS,SS,16IHN(9-8,5-7,1-6,1-5) |
| W2717-5 | 9 | 8 | 7 | 5 | 9 | 7 | 5 | 7 | 3 | 8 | 5 | 7 | 6 | 6 | 8.6 | 2 | 0 | 4 | 0 | CS,GC,SS,3IHN(3-8) |
| W2978-3 | 6 | 8 | 8 | 4 | 6 | 7 | 7 | 7 | 3 | 8 | 6 | 8 | 8 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SS,GC,SR,CS |
| W5015-12 | 9 | 9 | 8 | 6 | 5 | 5 | 4 | 7 | 2 | 7 | 6 | 4 | 4 | 36 | 6.8 | 0 | 0 | 0 | 0 | ^CS,SS,MS,RZ,21IHN(3-8,6-7,3-6,1-5,8-4) |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (50 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 4a. Bateman's Farm Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 103 DAP¹ at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield | | | | | Size Distribution by Class ² (% of total yield) | | | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|------------------|--------|-------|---------|------|---|-----|-------|-------------------------------|-------------------------|----------------|
| | | cwt/A | % Atl. | %Chf. | %RusNor | %Yuk | A's + B's | C's | Culls | | 24 to 48 hrs | 5 to 7 Days |
| AF0338-17 | 185 | 134 | 94 | 206 | 101 | 118 | 72 | 16 | 11 | 1.075 | 2 | 2 |
| Atlantic | 188 | 150 | 100 | 230 | 113 | 132 | 79 | 16 | 5 | 1.077 | 3 | 2 |
| B2538-5 | 192 | 45 | 32 | 64 | 33 | 38 | 23 | 7 | 71 | 1.068 | . | . |
| B2575-14 | 131 | 80 | 56 | 151 | 64 | 73 | 55 | 26 | 19 | 1.066 | 1 | 2 |
| B2676-2 | 173 | 85 | 58 | 130 | 64 | 75 | 49 | 42 | 8 | 1.076 | . | . |
| BNC182-5 | 146 | 105 | 77 | 154 | 79 | 93 | 71 | 25 | 4 | 1.066 | 3 | 3 |
| Chieftain | 223 | 81 | 56 | 100 | 57 | 67 | 35 | 8 | 56 | 1.060 | . | . |
| Classic Russet | 61 | 30 | 24 | 43 | 22 | 27 | 42 | 26 | 32 | 1.061 | . | . |
| Dark Red Norland | 216 | 146 | 98 | 212 | 108 | 127 | 67 | 17 | 16 | 1.057 | . | . |
| Goldrush | 132 | 79 | 54 | 129 | 60 | 69 | 60 | 34 | 7 | 1.065 | . | . |
| NC0349-3 | 113 | 57 | 40 | 69 | 40 | 47 | 48 | 45 | 7 | 1.074 | 2 | 3 |
| NC0349-8 | 100 | 42 | 31 | 48 | 30 | 35 | 38 | 54 | 8 | 1.073 | 2 | 2 |
| NC178-1 | 174 | 109 | 74 | 161 | 81 | 95 | 62 | 27 | 11 | 1.077 | 2 | 2 |
| NC182-5 | 158 | 80 | 54 | 119 | 60 | 71 | 51 | 46 | 3 | 1.072 | 3 | 3 |
| NC41-1 | 191 | 130 | 91 | 186 | 96 | 111 | 67 | 28 | 5 | 1.069 | 2 | 1 |
| NCB2497-17 | 173 | 82 | 55 | 109 | 59 | 70 | 46 | 28 | 26 | 1.068 | 2 | 2 |
| NCB2607-3 | 50 | 11 | 8 | 16 | 8 | 9 | 19 | 77 | 3 | 1.072 | . | . |
| NCB2645-11 | 180 | 120 | 82 | 183 | 90 | 106 | 66 | 28 | 6 | 1.074 | 2 | 3 |
| NY129 | 253 | 203 | 139 | 308 | 152 | 176 | 80 | 9 | 11 | 1.058 | . | . |
| NY136 | 213 | 151 | 109 | 230 | 114 | 133 | 70 | 23 | 7 | 1.061 | . | . |
| NY140 | 164 | 91 | 66 | 137 | 69 | 81 | 55 | 39 | 6 | 1.069 | 3 | 3 |
| Peter Wilcox | 165 | 102 | 73 | 179 | 80 | 92 | 59 | 34 | 8 | 1.065 | . | . |
| Russet Norkotah | 183 | 135 | 93 | 195 | 100 | 117 | 74 | 20 | 6 | 1.064 | . | . |
| Snowden | 216 | 164 | 107 | 244 | 122 | 139 | 73 | 19 | 8 | 1.075 | 2 | 2 |
| Super Red Norland | 126 | 78 | 53 | 105 | 57 | 66 | 62 | 18 | 21 | 1.05 | . | . |
| Superior | 236 | 204 | 141 | 295 | 151 | 175 | 87 | 8 | 6 | 1.065 | 4 | 4 |
| Vivaldi | 206 | 109 | 72 | 175 | 83 | 97 | 52 | 44 | 4 | 1.061 | . | . |
| Yukon Gold | 158 | 116 | 80 | 168 | 86 | 100 | 74 | 12 | 15 | 1.071 | . | . |
| Grand Mean | 168 | 104 | | | | | | | | | | |
| CV(%) | 23.1 | 32.5 | | | | | | | | | | |
| LSD(K=100) | 53.0 | 45.5 | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: A's + B's > 1 7/8"; C's ≤ 1 7/8"; Culls = all defective potatoes

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 4b. Bateman's Farm Variety Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 103 DAP¹ at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | | Comments ⁴ |
|-------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|----|-------------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | SR | |
| AF0338-17 | 6 | 8 | 9 | 7 | 6 | 5 | 5 | 7 | 7 | 7 | 4 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | HS,SS,MS,SG,RZ,CS |
| Atlantic | 6 | 8 | 8 | 5 | 6 | 5 | 7 | 7 | 2 | 7 | 5 | 7 | 6 | 33 | 7.8 | 0 | 0 | 0 | 0 | ^RZ,GC,SS,MS,13IHN(7-8,4-7,1-6,1-5) |
| B2538-5 | 6 | 9 | 8 | 5 | 1 | 7 | 5 | 4 | 5 | 6 | 6 | 4 | 3 | 3 | 8.0 | 0 | 0 | 0 | 0 | ^SISC,^HS,^SG,^MS,GC,1IHN(1-5) |
| B2575-14 | 7 | 8 | 9 | 6 | 7 | 6 | 7 | 7 | 3 | 8 | 6 | 4 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^RZ,SR,SS |
| B2676-2 | 5 | 8 | 6 | 4 | 3 | 7 | 5 | 7 | 4 | 8 | 3 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SS,PTS |
| BNC182-5 | 6 | 9 | 9 | 7 | 6 | 5 | 7 | 7 | 2 | 7 | 5 | 8 | 7 | 0 | 9.0 | 0 | 0 | 3 | 0 | MS,SR,CS |
| Chieftain | 9 | 9 | 9 | 6 | 3 | 7 | 6 | 4 | 3 | 6 | 6 | 8 | 3 | 30 | 5.8 | 0 | 0 | 3 | 0 | ^SG,^HS,MS,12IHN(2-8,4-6,5-5,1-4) |
| Classic Russet | 8 | 9 | 9 | 8 | 6 | 4 | 7 | 7 | 7 | 8 | 6 | 8 | 2 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,HS |
| Dark Red Norland | 5 | 8 | 7 | 4 | 2 | 7 | 6 | 6 | 3 | 6 | 4 | 7 | 6 | 5 | 8.3 | 0 | 0 | 0 | 0 | ^SG,^HS,^SISC,RZ,MS,2IHN(1-8,1-7) |
| Goldrush | 6 | 9 | 9 | 5 | 5 | 2 | 5 | 7 | 6 | 8 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS |
| NC0349-3 | 5 | 8 | 8 | 5 | 6 | 5 | 7 | 7 | 2 | 6 | 3 | 8 | 6 | 0 | 9.0 | 10 | 0 | 0 | 0 | MS,SS,CS |
| NC0349-8 | 5 | 8 | 8 | 5 | 6 | 5 | 7 | 7 | 2 | 8 | 3 | 9 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS |
| NC178-1 | 9 | 9 | 9 | 8 | 7 | 7 | 3 | 5 | 3 | 7 | 3 | 8 | 4 | 0 | 9.0 | 3 | 0 | 0 | 0 | CS,RZ,MS |
| NC182-5 | 5 | 8 | 9 | 6 | 6 | 5 | 7 | 7 | 7 | 7 | 3 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,CS,RZ,SR |
| NC41-1 | 5 | 8 | 8 | 4 | 5 | 5 | 7 | 7 | 2 | 7 | 4 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,CS,SR,SS |
| NCB2497-17 | 6 | 8 | 9 | 6 | 6 | 6 | 5 | 7 | 3 | 8 | 4 | 4 | 4 | 0 | 9.0 | 3 | 0 | 3 | 0 | ^RZ,SR |
| NCB2607-3 | 4 | 6 | 8 | 3 | 2 | 7 | 7 | 7 | 2 | 8 | 2 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS |
| NCB2645-11 | 6 | 8 | 8 | 6 | 6 | 6 | 6 | 7 | 4 | 8 | 6 | 8 | 5 | 5 | 8.8 | 18 | 0 | 8 | 3 | MS,SS,SR,CS,2IHN(2-8) |
| NY129 | 9 | 9 | 9 | 7 | 2 | 6 | 7 | 6 | 3 | 9 | 7 | 7 | 8 | 0 | 9.0 | 0 | 0 | 0 | 0 | GC,HS,RZ |
| NY136 | 9 | 8 | 8 | 7 | 2 | 7 | 5 | 6 | 4 | 8 | 5 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^MS,AC |
| NY140 | 9 | 9 | 9 | 8 | 6 | 7 | 5 | 7 | 4 | 8 | 3 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | HS,MS,CS |
| Peter Wilcox | 6 | 9 | 9 | 4 | 1 | 6 | 6 | 5 | 4 | 8 | 4 | 6 | 6 | 5 | 8.8 | 0 | 0 | 0 | 0 | MS,HS,SISC,2IHN(2-8) |
| Russet Norkotah | 6 | 8 | 9 | 5 | 5 | 2 | 4 | 7 | 7 | 8 | 6 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR |
| Snowden | 9 | 8 | 7 | 7 | 5 | 5 | 7 | 7 | 2 | 6 | 6 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR,SS,CS |
| Super Red Norland | 8 | 8 | 8 | 5 | 2 | 7 | 7 | 7 | 3 | 7 | 5 | 7 | 6 | 15 | 8.3 | 0 | 0 | 0 | 0 | AC,GC,HS,RZ,6IHN(6-8) |
| Superior | 6 | 9 | 8 | 4 | 6 | 6 | 6 | 7 | 3 | 6 | 6 | 8 | 7 | 15 | 8.0 | 0 | 0 | 0 | 0 | SR,FS,SS,MS,HS,6IHN(5-8,1-7) |
| Vivaldi | 9 | 9 | 9 | 7 | 7 | 8 | 6 | 7 | 5 | 8 | 5 | 8 | 6 | 15 | 8.3 | 0 | 0 | 0 | 0 | 6IHN(6-8) |
| Yukon Gold | 8 | 8 | 7 | 5 | 7 | 7 | 7 | 7 | 4 | 7 | 6 | 8 | 7 | 15 | 8.5 | 0 | 0 | 0 | 0 | MS,HS,SR,SS,6IHN(6-8) |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in A and B size classes. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 5a. Round White Trial One. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones of potato clones harvested 102 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A % Atl. | | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|----------------------------------|-----|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| AF2873-1 | 150 | 95 | 73 | 18 | 48 | 16 | 0 | 0 | 18 | 63 | 16 | 1.064 | 3 | 3 | |
| AF2873-2 | 111 | 63 | 51 | 16 | 45 | 11 | 0 | 0 | 28 | 56 | 11 | 1.064 | 3 | 3 | |
| AF4006-3 | 144 | 98 | 71 | 12 | 43 | 22 | 0 | 0 | 23 | 65 | 22 | 1.059 | 3 | 4 | |
| AF4013-3 | 200 | 127 | 105 | 14 | 45 | 16 | 0 | 0 | 24 | 61 | 16 | 1.073 | 2 | 2 | |
| AF4014-1 | 183 | 139 | 100 | 10 | 38 | 36 | 2 | 0 | 15 | 76 | 38 | 1.051 | 2 | 2 | |
| AF4047-2 | 194 | 157 | 119 | 9 | 28 | 48 | 3 | 1 | 10 | 80 | 51 | 1.059 | 2 | 3 | |
| AF4047-3 | 225 | 185 | 185 | 9 | 35 | 40 | 6 | 0 | 9 | 81 | 47 | 1.078 | 2 | 3 | |
| AF4081-2 | 141 | 89 | 53 | 6 | 26 | 29 | 1 | 0 | 38 | 56 | 30 | 1.063 | 2 | 2 | |
| AF4125-1 | 226 | 191 | 135 | 8 | 36 | 45 | 2 | 0 | 9 | 83 | 47 | 1.066 | 1 | 1 | |
| AF4129-2 | 226 | 151 | 108 | 16 | 40 | 25 | 1 | 0 | 18 | 66 | 26 | 1.062 | 2 | 3 | |
| AF4130-13 | 175 | 146 | 99 | 6 | 23 | 53 | 6 | 0 | 12 | 82 | 59 | 1.056 | 2 | 2 | |
| AF4130-3 | 217 | 144 | 113 | 22 | 46 | 20 | 0 | 0 | 11 | 66 | 20 | 1.058 | 2 | 2 | |
| AF4130-7 | 241 | 206 | 152 | 8 | 38 | 45 | 2 | 0 | 7 | 85 | 48 | 1.068 | 2 | 3 | |
| AF4134-2 | 157 | 104 | 62 | 17 | 34 | 26 | 0 | 0 | 22 | 60 | 26 | 1.058 | 3 | 3 | |
| AF4138-8 | 254 | 204 | 165 | 10 | 39 | 38 | 3 | 0 | 10 | 80 | 41 | 1.055 | 2 | 3 | |
| AF4139-1 | 169 | 123 | 98 | 11 | 43 | 30 | 0 | 0 | 16 | 73 | 30 | 1.072 | 2 | 2 | |
| AF4145-1 | 243 | 200 | 128 | 6 | 31 | 42 | 5 | 0 | 16 | 77 | 46 | 1.065 | 2 | 3 | |
| AF4147-1 | 208 | 170 | 115 | 6 | 44 | 38 | 0 | 0 | 12 | 82 | 38 | 1.067 | 2 | 2 | |
| AF4147-4 | 149 | 93 | 54 | 14 | 24 | 28 | 1 | 0 | 33 | 53 | 29 | 1.062 | 2 | 3 | |
| AF4149-1 | 182 | 133 | 99 | 18 | 48 | 24 | 0 | 0 | 10 | 72 | 24 | 1.062 | 2 | 2 | |
| AF4157-6 | 253 | 187 | 134 | 10 | 34 | 39 | 0 | 0 | 17 | 73 | 39 | 1.067 | 2 | 2 | |
| Atlantic | 189 | 153 | 100 | 6 | 24 | 46 | 10 | 0 | 13 | 81 | 56 | 1.073 | 2 | 2 | |
| NCB2753-1 | 101 | 56 | 43 | 17 | 36 | 17 | 0 | 0 | 30 | 53 | 17 | 1.081 | 2 | 3 | |
| Opera | 122 | 25 | 19 | 39 | 21 | 0 | 0 | 0 | 41 | 21 | 0 | 1.070 | . | . | |
| Snowbird | 65 | 29 | 20 | 21 | 32 | 11 | 0 | 0 | 35 | 43 | 11 | 1.058 | 3 | 4 | |
| Snowden | 275 | 241 | 185 | 4 | 20 | 61 | 6 | 1 | 7 | 87 | 67 | 1.068 | 2 | 3 | |
| Superior | 154 | 110 | 87 | 10 | 33 | 36 | 3 | 0 | 18 | 72 | 39 | 1.064 | 3 | 3 | |
| Sylvania | 192 | 99 | 69 | 8 | 24 | 25 | 1 | 0 | 43 | 49 | 25 | 1.055 | . | . | |
| Yukon Gold | 100 | 68 | 42 | 6 | 23 | 30 | 3 | 0 | 39 | 55 | 33 | 1.066 | . | . | |
| Grand Mean | 180 | 130 | | | | | | | | | | | | | |
| CV(%) | 23.3 | 31.0 | | | | | | | | | | | | | |
| LSD(K=100) | 57.8 | 54.6 | | | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 5b. Round White Trial One. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 102 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|---|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| AF2873-1 | 6 | 4 | 7 | 4 | 6 | 7 | 7 | 7 | 2 | 6 | 4 | 6 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^RZ,SR,SS,GC,MS |
| AF2873-2 | 8 | 8 | 8 | 5 | 6 | 6 | 6 | 7 | 5 | 7 | 4 | 7 | 3 | 18 | 7.7 | 3 | 3 | 3 | 0 | ^RZ,GC,SS,SR,MS,6IHN(4-8,2-6) |
| AF4006-3 | 9 | 8 | 8 | 9 | 6 | 6 | 5 | 7 | 2 | 7 | 5 | 6 | 4 | 13 | 8.0 | 3 | 0 | 5 | 3 | MS,SS,SR,RZ,5IHN(2-8,1-7,1-5,1-4) |
| AF4013-3 | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 3 | 8 | 5 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,HS,YF1 |
| AF4014-1 | 9 | 8 | 8 | 8 | 6 | 6 | 7 | 7 | 2 | 7 | 6 | 6 | 4 | 13 | 7.3 | 0 | 0 | 3 | 0 | SR,RZ,MS,FS,GC,SS,5IHN(1-8,2-7,1-6,1-5) |
| AF4047-2 | 7 | 8 | 7 | 6 | 5 | 6 | 7 | 7 | 2 | 6 | 7 | 7 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SC,^RZ,SS |
| AF4047-3 | 9 | 8 | 8 | 8 | 5 | 5 | 7 | 6 | 2 | 5 | 7 | 7 | 5 | 30 | 7.5 | 5 | 0 | 5 | 0 | MS,SG,SS,SR,6IHN(2-8,1-6,2-5,1-4) |
| AF4081-2 | 8 | 8 | 7 | 7 | 5 | 6 | 5 | 5 | 3 | 7 | 6 | 6 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^GC,^SR,RZ,MS,SS,YF1 |
| AF4125-1 | 6 | 9 | 8 | 5 | 9 | 6 | 7 | 7 | 2 | 6 | 8 | 7 | 8 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,RZ,DAE |
| AF4129-2 | 9 | 9 | 8 | 9 | 6 | 6 | 7 | 6 | 3 | 7 | 4 | 4 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^SR,MS,GC,RZ |
| AF4130-13 | 7 | 8 | 8 | 6 | 9 | 8 | 7 | 6 | 2 | 8 | 7 | 7 | 7 | 0 | 9.0 | 0 | 0 | 0 | 3 | SS,MS,SR |
| AF4130-3 | 9 | 8 | 8 | 8 | 5 | 6 | 7 | 6 | 2 | 8 | 4 | 4 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,FS,IL,RZ,HS |
| AF4130-7 | 9 | 8 | 8 | 9 | 5 | 5 | 6 | 6 | 3 | 6 | 7 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,SR,MS |
| AF4134-2 | 8 | 9 | 8 | 8 | 9 | 7 | 6 | 7 | 3 | 8 | 5 | 5 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^SR,^SG,SS,SC |
| AF4138-8 | 6 | 9 | 8 | 5 | 6 | 7 | 7 | 6 | 3 | 7 | 6 | 6 | 5 | 8 | 8.1 | 0 | 0 | 0 | 3 | SR,SS,MS,RZ,HS,3IHN(1-8,2-7) |
| AF4139-1 | 6 | 9 | 8 | 5 | 6 | 6 | 6 | 7 | 2 | 7 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,RZ |
| AF4145-1 | 7 | 9 | 8 | 7 | 6 | 5 | 7 | 5 | 2 | 7 | 7 | 6 | 5 | 13 | 7.8 | 0 | 0 | 0 | 0 | HS,SG,SS,SR,RZ,FS,5IHN(4-8,1-6) |
| AF4147-1 | 7 | 8 | 8 | 5 | 5 | 6 | 7 | 7 | 2 | 5 | 7 | 6 | 4 | 3 | 8.5 | 0 | 0 | 3 | 3 | MS,SS,RZ,SR,HS,1IHN(1-7) |
| AF4147-4 | 6 | 9 | 8 | 7 | 5 | 6 | 7 | 7 | 2 | 5 | 7 | 4 | 3 | 15 | 7.8 | 0 | 0 | 0 | 0 | ^RZ,SR,MS,SS,GC,SG,DAE,6IHN(3-8,3-7) |
| AF4149-1 | 7 | 8 | 7 | 5 | 6 | 6 | 6 | 7 | 2 | 8 | 5 | 7 | 6 | 25 | 7.5 | 0 | 0 | 0 | 3 | GC,SS,RZ,SR,10IHN(5-8,5-7) |
| AF4157-6 | 8 | 8 | 8 | 6 | 6 | 6 | 7 | 7 | 2 | 8 | 7 | 6 | 4 | 5 | 8.5 | 3 | 0 | 3 | 0 | GC,SS,SR,2IHN(2-8) |
| Atlantic | 6 | 8 | 8 | 5 | 5 | 5 | 7 | 6 | 3 | 5 | 7 | 7 | 6 | 25 | 7.6 | 3 | 0 | 5 | 3 | GC,SR,MS,SS,10IHN(3-8,5-7,1-6,1-5) |
| NCB2753-1 | 6 | 9 | 8 | 4 | 7 | 6 | 7 | 7 | 2 | 7 | 5 | 5 | 2 | 0 | 9.0 | 0 | 0 | 3 | 3 | ^SR,GC,FS,MS |
| Opera | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 2 | 8 | 1 | 7 | 2 | 0 | 9.0 | 0 | 0 | 0 | 3 | ^^SG/HS,SR,YF2 |
| Snowbird | 6 | 8 | 8 | 7 | 6 | 7 | 7 | 7 | 2 | 6 | 2 | 4 | 2 | 0 | 9.0 | 0 | 0 | 0 | 3 | ^^SR,GC,HS |
| Snowden | 9 | 8 | 8 | 7 | 5 | 5 | 7 | 6 | 3 | 5 | 8 | 8 | 6 | 15 | 7.5 | 0 | 0 | 0 | 0 | SR,SS,MS,CS,6IHN(2-8,2-7,2-6) |
| Superior | 6 | 9 | 7 | 4 | 6 | 6 | 6 | 7 | 3 | 6 | 7 | 6 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR,RZ,SS |
| Sylvana | 9 | 9 | 8 | 9 | 6 | 6 | 7 | 5 | 3 | 7 | 6 | 7 | 1 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^^PTS,SG,SR,HS,SS,^^IL,YF1 |
| Yukon Gold | 9 | 9 | 8 | 5 | 6 | 7 | 6 | 7 | 3 | 7 | 6 | 5 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^SR,SS,MS,GC,YF1 |

¹ DAP = Days After Planting; DVK = Days to Vine Kill.

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 6a. Round White Trial Two. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 103 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A | % Atl. | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|---------------------------|--------|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| Atlantic | 209 | 184 | 100 | 5 | 29 | 58 | 1 | 0 | 9 | 87 | 58 | 1.075 | 2 | 2 | |
| B2575-19 | 165 | 129 | 76 | 12 | 41 | 36 | 1 | 0 | 10 | 77 | 37 | 1.074 | 2 | 3 | |
| Harley Blackwell | 188 | 126 | 74 | 14 | 46 | 21 | 0 | 0 | 18 | 67 | 21 | 1.071 | 2 | 2 | |
| NC41-1 | 150 | 112 | 64 | 19 | 51 | 23 | 0 | 0 | 7 | 74 | 23 | 1.070 | 1 | 2 | |
| NY141 | 190 | 155 | 93 | 5 | 41 | 41 | 0 | 0 | 14 | 82 | 41 | 1.069 | 3 | 3 | |
| NYF47-3 | 212 | 162 | 97 | 17 | 56 | 20 | 0 | 0 | 7 | 76 | 20 | 1.068 | 2 | 3 | |
| NYF48-4 | 116 | 78 | 46 | 26 | 56 | 11 | 0 | 0 | 7 | 67 | 11 | 1.065 | 2 | 2 | |
| NYF52-1 | 149 | 41 | 23 | 66 | 27 | 0 | 0 | 0 | 6 | 27 | 0 | 1.074 | 3 | 3 | |
| Superior | 149 | 130 | 72 | 5 | 35 | 49 | 2 | 0 | 10 | 86 | 51 | 1.063 | 3 | 2 | |
| Yukon Gold | 119 | 94 | 55 | 8 | 34 | 44 | 0 | 0 | 14 | 79 | 44 | 1.070 | . | . | |
| Grand Mean | 165 | 121 | | | | | | | | | | | | | |
| CV(%) | 19.9 | 25.6 | | | | | | | | | | | | | |
| LSD(K=100) | 49.7 | 43.9 | | | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 6b. Round White Trial Two. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 103 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|----------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| Atlantic | 6 | 8 | 8 | 5 | 6 | 5 | 7 | 7 | 3 | 7 | 6 | 7 | 6 | 35 | 6.6 | 8 | 0 | 0 | 0 | SR,MS,RZ,14IHN(4-8,3-7,3-6,4-5) |
| B2575-19 | 8 | 8 | 8 | 5 | 9 | 7 | 6 | 7 | 5 | 8 | 7 | 7 | 7 | 0 | 9.0 | 5 | 0 | 0 | 3 | GC,SS,SR,FS |
| Harley Blackwell | 8 | 8 | 8 | 5 | 6 | 5 | 8 | 7 | 1 | 8 | 5 | 6 | 6 | 0 | 9.0 | 0 | 0 | 0 | 3 | SC,RZ,SR,10/40SC |
| NC41-1 | 5 | 8 | 8 | 3 | 5 | 5 | 7 | 7 | 1 | 8 | 4 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,RZ,MS |
| NY141 | 9 | 9 | 8 | 5 | 6 | 8 | 5 | 7 | 5 | 8 | 6 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,GC,SS,RZ,HS |
| NYF47-3 | 6 | 9 | 8 | 5 | 6 | 6 | 5 | 7 | 3 | 7 | 4 | 8 | 5 | 10 | 8.7 | 0 | 0 | 3 | 0 | RZ,SR,HS,BS,MS,4IHN(2-8,1-7,1-6) |
| NYF48-4 | 8 | 5 | 6 | 4 | 6 | 6 | 4 | 7 | 2 | 7 | 3 | 8 | 6 | 3 | 8.8 | 0 | 0 | 0 | 0 | SR,1IHN(1-8) |
| NYF52-1 | 9 | 9 | 8 | 4 | 6 | 7 | 7 | 7 | 4 | 8 | 2 | 8 | 6 | 0 | 9.0 | 0 | 0 | 3 | 3 | SR,SS |
| Superior | 5 | 9 | 8 | 4 | 6 | 7 | 6 | 7 | 4 | 6 | 7 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR,CS,GC |
| Yukon Gold | 8 | 8 | 7 | 5 | 7 | 7 | 7 | 7 | 4 | 8 | 5 | 8 | 6 | 0 | 9.0 | 3 | 0 | 0 | 3 | SR,SS,GC,YF2 |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 7a. Round White Trial Three. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 99 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A | % Atl. | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|---------------------------|--------|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| Atlantic | 246 | 219 | 100 | 4 | 25 | 54 | 9 | 0 | 8 | 88 | 64 | 1.069 | 1 | 3 | |
| BNC182-5 | 276 | 240 | 116 | 6 | 28 | 56 | 3 | 0 | 7 | 87 | 59 | 1.060 | 3 | 4 | |
| NC0349-3 | 214 | 167 | 82 | 9 | 23 | 46 | 8 | 1 | 13 | 77 | 54 | 1.064 | 1 | 2 | |
| NC0349-8 | 178 | 136 | 63 | 14 | 41 | 33 | 3 | 0 | 9 | 76 | 35 | 1.071 | 2 | 3 | |
| NC182-5 | 274 | 242 | 114 | 7 | 27 | 55 | 6 | 0 | 5 | 88 | 61 | 1.063 | 2 | 3 | |
| NCB2497-17 | 277 | 247 | 118 | 6 | 27 | 57 | 5 | 0 | 4 | 89 | 62 | 1.062 | 2 | 2 | |
| NY143 | 113 | 89 | 42 | 10 | 43 | 33 | 1 | 0 | 13 | 78 | 35 | 1.057 | 3 | 3 | |
| NYE105-16 | 237 | 198 | 93 | 12 | 48 | 35 | 0 | 0 | 4 | 83 | 35 | 1.059 | 3 | 3 | |
| NYE50-8 | 107 | 67 | 32 | 14 | 42 | 20 | 0 | 0 | 24 | 62 | 20 | 1.063 | 2 | 3 | |
| NYF29-1 | 167 | 140 | 67 | 10 | 42 | 41 | 1 | 0 | 7 | 83 | 41 | 1.060 | 3 | 4 | |
| Snowden | 310 | 284 | 133 | 3 | 19 | 64 | 8 | 0 | 6 | 91 | 73 | 1.068 | 2 | 2 | |
| Vivaldi | 136 | 99 | 46 | 17 | 53 | 18 | 0 | 0 | 11 | 72 | 18 | 1.057 | . | . | |
| Yukon Gold | 76 | 55 | 26 | 12 | 35 | 34 | 4 | 0 | 15 | 73 | 38 | 1.061 | . | . | |
| Grand Mean | 201 | 168 | | | | | | | | | | | | | |
| CV(%) | 14.5 | 18.5 | | | | | | | | | | | | | |
| LSD(K=100) | 37.2 | 39.7 | | | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 7b. Round White Trial Three. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 99 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|----------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| Atlantic | 6 | 9 | 8 | 5 | 5 | 5 | 7 | 7 | 2 | 5 | 7 | 8 | 7 | 23 | 7.7 | 5 | 0 | 3 | 0 | SR,GC,SS,MS,RZ,8IHN(5-8,3-7,1-6) |
| BNC182-5 | 9 | 9 | 7 | 9 | 6 | 5 | 9 | 5 | 1 | 7 | 7 | 6 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR, SS, MS |
| NC0349-3 | 6 | 7 | 8 | 5 | 6 | 5 | 7 | 6 | 4 | 7 | 7 | 6 | 5 | 0 | 9.0 | 3 | 0 | 5 | 0 | SR, MS, HS, SS, FS |
| NC0349-8 | 5 | 8 | 7 | 4 | 6 | 5 | 7 | 7 | 3 | 7 | 6 | 7 | 5 | 0 | 9.0 | 5 | 0 | 0 | 0 | SR SS, MS, IL,GC |
| NC182-5 | 9 | 9 | 8 | 9 | 6 | 5 | 7 | 7 | 2 | 7 | 7 | 8 | 8 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR, SS |
| NCB2497-17 | 9 | 9 | 8 | 8 | 6 | 5 | 5 | 5 | 3 | 7 | 6 | 6 | 6 | 0 | 9.0 | 0 | 0 | 0 | 3 | MS, GC, RZ, SR,SS |
| NY143 | 5 | 7 | 8 | 4 | 6 | 8 | 5 | 7 | 5 | 8 | 5 | 7 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,RZ,GC |
| NYE105-16 | 9 | 9 | 8 | 7 | 6 | 6 | 7 | 6 | 3 | 7 | 5 | 7 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS |
| NYE50-8 | 9 | 7 | 8 | 7 | 9 | 6 | 7 | 6 | 2 | 7 | 3 | 4 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | GC,SS,RZ,SR |
| NYF29-1 | 9 | 8 | 8 | 5 | 7 | 7 | 6 | 7 | 3 | 8 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 3 | SS, SR |
| Snowden | 9 | 9 | 8 | 7 | 5 | 5 | 7 | 5 | 3 | 4 | 7 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS, SS, SR |
| Vivaldi | 8 | 9 | 7 | 6 | 7 | 8 | 5 | 7 | 5 | 8 | 5 | 6 | 5 | 0 | 9.0 | 0 | 0 | 3 | 8 | SR,MS,CS |
| Yukon Gold | 8 | 9 | 7 | 5 | 7 | 7 | 7 | 7 | 3 | 7 | 5 | 4 | 3 | 0 | 9.0 | 3 | 0 | 0 | 3 | ^SR, MS, SS,GC |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 8a. NE-1031 Round White Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A | % Atl. | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ | Chip Color ⁴ | |
|-------------------|----------------------|---------------------------|--------|---|-----|-----|-----|-----|-------|-----------------|----------------|----------------|----------------------------------|-------------------------|--|
| | | | | 1's | 2's | 3's | 4's | 5's | Culls | 24 to 48 hrs | | | | 5 to 7 Days | |
| AF0338-17 | 212 | 165 | 72 | 11 | 36 | 37 | 4 | 0 | 11 | 77 | 41 | 1.080 | 3 | 2 | |
| AF2865-4 | 241 | 199 | 84 | 7 | 30 | 50 | 2 | 0 | 11 | 81 | 52 | 1.059 | 3 | 4 | |
| AF3001-6 | 254 | 216 | 90 | 7 | 70 | 14 | 0 | 0 | 9 | 85 | 14 | 1.069 | 3 | 3 | |
| Atlantic | 287 | 243 | 100 | 5 | 30 | 51 | 4 | 0 | 10 | 84 | 55 | 1.078 | 2 | 2 | |
| B1992-106 | 191 | 142 | 61 | 10 | 49 | 25 | 0 | 0 | 16 | 73 | 25 | 1.070 | 2 | 2 | |
| Katahdin | 143 | 111 | 46 | 13 | 58 | 19 | 0 | 0 | 11 | 76 | 19 | 1.051 | 3 | 4 | |
| Kennebec | 200 | 135 | 55 | 8 | 37 | 29 | 1 | 0 | 26 | 66 | 29 | 1.056 | 3 | 4 | |
| NY138 | 121 | 83 | 36 | 11 | 29 | 36 | 2 | 0 | 21 | 67 | 38 | 1.060 | 2 | 3 | |
| NY139 | 199 | 157 | 69 | 7 | 36 | 41 | 0 | 0 | 16 | 77 | 41 | 1.064 | 2 | 2 | |
| NY145 | 193 | 148 | 64 | 15 | 56 | 20 | 0 | 0 | 10 | 76 | 20 | 1.077 | 2 | 2 | |
| NY147 | 243 | 204 | 88 | 6 | 31 | 51 | 2 | 0 | 11 | 84 | 53 | 1.058 | 3 | 3 | |
| NYB38-40 | 164 | 121 | 48 | 9 | 40 | 34 | 1 | 0 | 17 | 74 | 34 | 1.058 | 2 | 3 | |
| Snowden | 262 | 219 | 91 | 6 | 26 | 56 | 2 | 0 | 11 | 83 | 57 | 1.073 | 3 | 3 | |
| Superior | 134 | 91 | 38 | 19 | 49 | 19 | 0 | 0 | 13 | 68 | 19 | 1.060 | 3 | 3 | |
| Yukon Gem | 226 | 145 | 61 | 11 | 35 | 24 | 1 | 0 | 29 | 60 | 25 | 1.059 | . | . | |
| Yukon Gold | 151 | 110 | 47 | 9 | 42 | 31 | 0 | 0 | 18 | 73 | 31 | 1.066 | . | . | |
| Grand Mean | 201 | 156 | | | | | | | | | | | | | |
| CV(%) | 20.3 | 27.7 | | | | | | | | | | | | | |
| LSD(K=100) | 57.5 | 61.8 | | | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's > 1 7/8 to 2 1/2"; 3's > 2 1/2 to 3 1/4"; 4's > 3 1/4 to 4"; 5's > 4" Culls = all defective potatoes.

³ Determined by weight in air/water method.

⁴ Chip Color Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

Table 8b. NE-1031 Round White Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|---------------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| AF0338-17 | 9 | 9 | 9 | 8 | 6 | 6 | 7 | 7 | 2 | 7 | 6 | 8 | 7 | 0 | 9.0 | 0 | 0 | 8 | 0 | SR,SS,SG,RZ,SC |
| AF2865-4 | 8 | 9 | 8 | 7 | 6 | 6 | 7 | 7 | 2 | 8 | 7 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,SG,GC |
| AF3001-6 | 9 | 9 | 8 | 9 | 5 | 6 | 6 | 6 | 7 | 8 | 5 | 8 | 5 | 13 | 7.5 | 0 | 0 | 0 | 0 | GC,MS,SS,RZ,2IHN(1-8,1-7) |
| Atlantic | 7 | 9 | 8 | 7 | 6 | 5 | 7 | 7 | 2 | 7 | 7 | 8 | 8 | 38 | 7.0 | 15 | 0 | 18 | 0 | MS,GC,RZ,SS,SR,15IHN(4-8,7-7,3-6,1-4) |
| B1992-106 | 7 | 9 | 7 | 6 | 5 | 5 | 7 | 7 | 3 | 8 | 5 | 6 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,RZ,SS,^SC |
| Katahdin | 5 | 9 | 7 | 7 | 8 | 8 | 6 | 7 | 3 | 8 | 5 | 8 | 5 | 0 | 9.0 | 0 | 0 | 3 | 0 | SR,SS,MS,RZ,IL |
| Kennebec | 9 | 9 | 8 | 9 | 9 | 8 | 6 | 7 | 5 | 7 | 7 | 8 | 3 | 5 | 8.5 | 3 | 0 | 3 | 0 | MS,SG,GC,SS,SR,2IHN(2-7) |
| NY138 | 7 | 9 | 8 | 7 | 6 | 7 | 5 | 6 | 4 | 8 | 7 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,SR,GC,SS,MS |
| NY139 | 9 | 9 | 7 | 8 | 6 | 6 | 6 | 7 | 3 | 8 | 7 | 8 | 6 | 13 | 7.5 | 0 | 0 | 0 | 0 | RZ,MS,SS,SR,5IHN(3-8,1-7,1-6) |
| NY145 | 9 | 9 | 8 | 6 | 6 | 7 | 6 | 7 | 2 | 7 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SS,RZ |
| NY147 | 8 | 9 | 8 | 6 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,MS,RZ,GC,SS |
| NYB38-40 | 6 | 8 | 8 | 5 | 7 | 8 | 6 | 7 | 4 | 8 | 8 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^GC,SR |
| Snowden | 9 | 9 | 8 | 7 | 5 | 5 | 7 | 6 | 2 | 6 | 7 | 8 | 6 | 0 | 9.0 | 0 | 0 | 3 | 0 | SS,SR,MS,DAE,STST,RZ |
| Superior | 5 | 9 | 7 | 4 | 6 | 7 | 7 | 7 | 3 | 6 | 5 | 6 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,SR,RZ,MS |
| Yukon Gem | 9 | 8 | 8 | 9 | 7 | 5 | 6 | 7 | 3 | 7 | 6 | 6 | 3 | 0 | 9.0 | 0 | 0 | 23 | 0 | ^GC,EL,SR,SG,RZ,MS,YF1 |
| Yukon Gold | 9 | 9 | 7 | 5 | 7 | 7 | 6 | 7 | 3 | 8 | 5 | 7 | 5 | 5 | 8.5 | 0 | 0 | 15 | 0 | SR,MS,SS,SG,GC,2IHN(1-8,1-6) |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 9a. NE-1031 Red Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield | | Size Dist. by Class (%) ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ |
|-------------------|----------------------|------------------|-------------|--|-----|-----|-----|-----|-------|----|----------------|----------------|----------------------------------|
| | | cwt/A | % Chieftain | 1's | 2's | 3's | 4's | 5's | Culls | | | | |
| Adirondack Blue | 271 | 207 | 141 | 6 | 39 | 37 | 1 | 0 | 18 | 76 | 37 | 1.061 | |
| Adirondack Red | 222 | 157 | 106 | 13 | 62 | 8 | 0 | 0 | 17 | 71 | 8 | 1.057 | |
| All Blue | 150 | 48 | 31 | 29 | 30 | 0 | 0 | 0 | 41 | 30 | 0 | 1.063 | |
| B2152-17 | 221 | 148 | 105 | 21 | 44 | 21 | 0 | 0 | 13 | 66 | 21 | 1.067 | |
| BCO01306-2 | 174 | 56 | 38 | 44 | 31 | 0 | 0 | 0 | 25 | 31 | 0 | 1.068 | |
| Chieftain | 290 | 150 | 100 | 12 | 37 | 14 | 0 | 0 | 37 | 51 | 14 | 1.055 | |
| Dark Red Norland | 185 | 148 | 102 | 7 | 33 | 47 | 1 | 0 | 12 | 80 | 48 | 1.050 | |
| Modoc | 212 | 126 | 86 | 30 | 50 | 8 | 0 | 0 | 12 | 58 | 8 | 1.055 | |
| NC293-7 | 257 | 204 | 140 | 18 | 57 | 21 | 0 | 0 | 4 | 78 | 21 | 1.067 | |
| NCB2607-3 | 137 | 77 | 56 | 32 | 49 | 7 | 0 | 0 | 12 | 56 | 7 | 1.070 | |
| NY129 | 231 | 167 | 114 | 11 | 44 | 28 | 0 | 0 | 17 | 72 | 28 | 1.055 | |
| NYF36-3 | 152 | 117 | 82 | 11 | 44 | 34 | 0 | 0 | 12 | 77 | 34 | 1.057 | |
| Peter Wilcox | 233 | 190 | 137 | 7 | 53 | 28 | 0 | 0 | 12 | 81 | 28 | 1.069 | |
| Grand Mean | 210 | 138 | | | | | | | | | | | |
| CV(%) | 18.1 | 26.2 | | | | | | | | | | | |
| LSD(K=100) | 53.3 | 49.9 | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

Table 9b. NE-1031 Red Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|-----------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| Adirondack Blue | 6 | 9 | 8 | 5 | 1 | 8 | 5 | 7 | 6 | 9 | 8 | 6 | 4 | 0 | 9.0 | 0 | 0 | 0 | 3 | MS,SISC,SS,RZ,GC,PF2 |
| Adirondack Red | 8 | 9 | 8 | 6 | 2 | 8 | 7 | 7 | 6 | 8 | 5 | 5 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,^^SISC,SR,SS,GC,STST,SG,RZ,RF1 |
| All Blue | 8 | 9 | 8 | 7 | 1 | 7 | 7 | 7 | 7 | 7 | 4 | 5 | 1 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SG,CS,SISC,RZ,PF1 |
| B2152-17 | 6 | 9 | 8 | 5 | 2 | 8 | 5 | 6 | 1 | 8 | 5 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,SR,GC,RZ,MS,YF1 |
| BCO01306-2 | 6 | 9 | 8 | 7 | 1 | 6 | 7 | 7 | 1 | 8 | 2 | 8 | 4 | 0 | 9.0 | 0 | 0 | 3 | 0 | SR,RZ,^SG,SISC,STST,RF1 |
| Chieftain | 9 | 9 | 8 | 6 | 3 | 7 | 7 | 5 | 2 | 8 | 6 | 7 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | SG,GC,RZ,SISC,HS,STST,SR,SS,MS |
| Dark Red Norland | 5 | 9 | 7 | 4 | 3 | 7 | 6 | 6 | 5 | 7 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,GC,SR,RZ,SS,VARIABLE SKN CLR |
| Modoc | 6 | 9 | 8 | 5 | 2 | 7 | 7 | 7 | 1 | 7 | 3 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | GC,SR,SS,RZ,SISC,STST |
| NC293-7 | 6 | 9 | 9 | 8 | 1 | 8 | 7 | 6 | 5 | 8 | 5 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 3 | SG,MS,RZ,SR |
| NCB2607-3 | 6 | 6 | 7 | 4 | 2 | 8 | 8 | 7 | 1 | 8 | 3 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,SISC,RZ,GC,SS,YF2 |
| NY129 | 9 | 9 | 8 | 6 | 2 | 6 | 8 | 6 | 1 | 7 | 5 | 6 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,GC,SISC,EL,SS,SR |
| NYF36-3 | 5 | 9 | 8 | 4 | 3 | 8 | 6 | 7 | 2 | 8 | 5 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,GC,SS,SISC |
| Peter Wilcox | 6 | 9 | 8 | 4 | 1 | 7 | 6 | 6 | 5 | 8 | 6 | 8 | 7 | 3 | 8.5 | 0 | 0 | 0 | 3 | RZ,SISC,MS,SR,GC,YF2 |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 10a. NE-1031 Russet Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield | | Size Distribution by Class ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ |
|-----------------------|----------------------|------------------|---------|---|-----|-----|-----|-----|-------|----|----------------|----------------|----------------------------------|
| | | cwt/A | % R.Nor | 1's | 2's | 3's | 4's | 5's | Culls | | | | |
| AF3011-34 | 114 | 80 | 106 | 18 | 66 | 5 | 0 | 0 | 12 | 71 | 5 | 1.055 | |
| AF3325-2 | 97 | 76 | 108 | 11 | 67 | 8 | 0 | 0 | 14 | 75 | 8 | 1.059 | |
| AF3326-7 | 55 | 28 | 36 | 25 | 49 | 0 | 0 | 0 | 27 | 49 | 0 | 1.052 | |
| AF3327-28 | 141 | 106 | 143 | 13 | 61 | 12 | 0 | 0 | 14 | 73 | 12 | 1.058 | |
| AF3362-1 | 198 | 139 | 191 | 8 | 56 | 13 | 0 | 0 | 22 | 69 | 13 | 1.054 | |
| AF4067-1 | 92 | 63 | 74 | 10 | 59 | 3 | 0 | 0 | 28 | 62 | 3 | 1.060 | |
| Alpine Russet | 89 | 34 | 42 | 35 | 36 | 0 | 0 | 0 | 28 | 37 | 0 | 1.051 | |
| Classic Russet | 87 | 60 | 80 | 11 | 61 | 6 | 2 | 0 | 20 | 69 | 8 | 1.050 | |
| Goldrush | 185 | 119 | 161 | 22 | 61 | 2 | 0 | 0 | 15 | 63 | 2 | 1.055 | |
| Premier Russet | 41 | 24 | 35 | 30 | 56 | 0 | 0 | 0 | 15 | 56 | 0 | 1.060 | |
| Rio Grande Russet | 146 | 60 | 79 | 41 | 51 | 1 | 0 | 0 | 7 | 52 | 1 | 1.055 | |
| Russet Burbank (#400) | 127 | 14 | 19 | 21 | 12 | 0 | 0 | 0 | 67 | 12 | 0 | 1.055 | |
| Russet Norkotah #3117 | 121 | 79 | 100 | 18 | 63 | 2 | 0 | 0 | 17 | 65 | 2 | 1.059 | |
| Shepody | 78 | 27 | 36 | 28 | 33 | 1 | 0 | 0 | 39 | 33 | 1 | 1.057 | |
| Grand Mean | 112 | 65 | | | | | | | | | | | |
| CV(%) | 38.4 | 41.7 | | | | | | | | | | | |
| LSD(K=100) | 63.9 | 37.4 | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

Table 10b. NE-1031 Russet Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|----------------------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|---------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| AF3011-34 | 8 | 9 | 9 | 8 | 6 | 4 | 5 | 7 | 6 | 8 | 5 | 7 | 4 | 0 | 9.0 | 0 | 0 | 3 | 0 | SR,MS,RZ,SR,SS,SG |
| AF3325-2 | 8 | 9 | 9 | 6 | 5 | 3 | 6 | 7 | 7 | 8 | 4 | 8 | 4 | 3 | 8.8 | 0 | 0 | 5 | 0 | SR,GC,SS,SG,MS,1IHN(1-8) |
| AF3326-7 | 9 | 9 | 8 | 6 | 6 | 4 | 7 | 7 | 7 | 8 | 4 | 8 | 3 | 0 | 9.0 | 0 | 0 | 0 | 5 | MS,SG,SR,SS,RZ |
| AF3327-28 | 9 | 9 | 8 | 8 | 6 | 4 | 6 | 7 | 6 | 8 | 6 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR,RZ,SS,CS |
| AF3362-1 | 9 | 9 | 8 | 8 | 5 | 3 | 5 | 6 | 7 | 8 | 7 | 6 | 4 | 15 | 7.8 | 0 | 0 | 5 | 0 | SR,MS,GC,RZ,SG,SS,6IHN(3-7,3-6) |
| AF4067-1 | 9 | 9 | 8 | 9 | 6 | 3 | 5 | 5 | 6 | 8 | 5 | 8 | 2 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,^SG,SR |
| Alpine Russet | 9 | 9 | 8 | 8 | 6 | 4 | 6 | 7 | 6 | 8 | 4 | 8 | 1 | 0 | 9.0 | 0 | 0 | 5 | 0 | MS,SR,SG,SS,RZ |
| Classic Russet | 9 | 9 | 9 | 8 | 6 | 4 | 7 | 5 | 5 | 8 | 5 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,SG,SR,MS |
| Goldrush | 6 | 9 | 8 | 5 | 4 | 2 | 6 | 7 | 6 | 7 | 6 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SG,MS,RZ,SR,SS |
| Premier Russet | 9 | 9 | 8 | 9 | 6 | 6 | 6 | 7 | 5 | 8 | 3 | 7 | 2 | 0 | 9.0 | 0 | 0 | 3 | 0 | EL,RZ,MS,SG |
| Rio Grande Russet | 9 | 9 | 8 | 9 | 5 | 3 | 7 | 7 | 5 | 7 | 3 | 8 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,MS,RZ |
| Russet Burbank#400 | 9 | 9 | 8 | 9 | 6 | 1 | 7 | 7 | 4 | 8 | 3 | 8 | 1 | 0 | 9.0 | 0 | 0 | 10 | 0 | ^^^SG,MS,SR,GC |
| Russet Norkotah#3117 | 8 | 9 | 8 | 5 | 5 | 3 | 6 | 6 | 6 | 8 | 5 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SG,MS,RZ |
| Shepody | 9 | 9 | 8 | 8 | 9 | 7 | 5 | 7 | 5 | 8 | 4 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SG,MS,SR,SS |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Table 11a. Unreplicated Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 103 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Total Yield cwt/A | Marketable Yield cwt/A % Std | | Size Dist. by Class (%) ² (% of total yield) | | | | | | | 1 7/8 to 4" | 2 1/2 to 4" | Specific Gravity ³ |
|-------------------|----------------------|---------------------------------|-----|--|-----|-----|-----|-----|--------|----|----------------|----------------|----------------------------------|
| | | | | 1's | 2's | 3's | 4's | 5's | Cull's | | | | |
| | | | | | | | | | | | | | |
| AF4202-2 | 111 | 70 | 100 | 17 | 31 | 31 | 0 | 0 | 20 | 63 | 31 | 1.057 | |
| AF4203-4 | 212 | 184 | 264 | 2 | 18 | 58 | 10 | 0 | 11 | 87 | 69 | 1.068 | |
| AF4217-1 | 123 | 93 | 134 | 2 | 30 | 45 | 0 | 0 | 22 | 76 | 45 | 1.064 | |
| AF4217-2 | 65 | 40 | 57 | 12 | 41 | 19 | 0 | 0 | 27 | 61 | 19 | 1.059 | |
| AF4220-4 | 299 | 244 | 351 | 6 | 15 | 53 | 14 | 0 | 13 | 82 | 66 | 1.071 | |
| AF4222-4 | 179 | 156 | 225 | 3 | 19 | 56 | 12 | 0 | 10 | 87 | 68 | 1.071 | |
| AF4227-4 | 201 | 172 | 247 | 5 | 23 | 58 | 3 | 0 | 9 | 85 | 62 | 1.069 | |
| AF4232-5 | 144 | 100 | 144 | 5 | 37 | 33 | 0 | 0 | 26 | 70 | 33 | 1.065 | |
| AF4240-3 | 200 | 167 | 240 | 4 | 19 | 61 | 3 | 0 | 13 | 84 | 64 | 1.068 | |
| AF4240-6 | 187 | 177 | 254 | 5 | 31 | 60 | 3 | 0 | 1 | 95 | 63 | 1.065 | |
| AF4245-2 | 197 | 142 | 204 | 12 | 28 | 42 | 2 | 0 | 16 | 72 | 44 | 1.076 | |
| AF4252-1 | 195 | 146 | 210 | 2 | 13 | 57 | 6 | 0 | 23 | 75 | 62 | 1.065 | |
| AF4252-3 | 62 | 19 | 27 | 13 | 26 | 4 | 0 | 0 | 57 | 30 | 4 | 1.062 | |
| AF4252-5 | 150 | 118 | 170 | 6 | 27 | 45 | 7 | 0 | 15 | 79 | 52 | 1.076 | |
| AF4254-2 | 222 | 176 | 252 | 6 | 35 | 41 | 4 | 0 | 15 | 79 | 45 | 1.077 | |
| AF4272-4 | 170 | 114 | 163 | 7 | 27 | 40 | 0 | 0 | 26 | 67 | 40 | 1.062 | |
| AF4320-7 | 195 | 32 | 46 | 61 | 9 | 7 | 0 | 0 | 23 | 16 | 7 | 1.056 | |
| AF4322-5 | 112 | 104 | 149 | 3 | 68 | 25 | 0 | 0 | 4 | 92 | 25 | 1.060 | |
| AF4357-2 | 83 | 59 | 85 | 15 | 69 | 2 | 0 | 0 | 14 | 71 | 2 | 1.077 | |
| Atlantic | 208 | 170 | 244 | 7 | 29 | 53 | 0 | 0 | 12 | 82 | 53 | 1.077 | |
| Chip1 | 184 | 130 | 187 | 18 | 43 | 27 | 0 | 0 | 12 | 70 | 27 | 1.086 | |
| Chip2 | 180 | 127 | 183 | 17 | 43 | 28 | 0 | 0 | 12 | 71 | 28 | 1.091 | |
| Chip3 | 1 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.088 | |
| Idit | 35 | 2 | 4 | 78 | 7 | 0 | 0 | 0 | 15 | 7 | 0 | 1.062 | |
| Joshua | 10 | 2 | 3 | 81 | 19 | 0 | 0 | 0 | 0 | 19 | 0 | 1.082 | |
| Longo | 99 | 51 | 74 | 38 | 47 | 4 | 0 | 0 | 10 | 52 | 4 | 1.065 | |
| Rose | 121 | 63 | 91 | 28 | 49 | 3 | 0 | 0 | 20 | 52 | 3 | 1.069 | |
| Snowden | 244 | 200 | 287 | 10 | 31 | 47 | 4 | 0 | 8 | 82 | 51 | 1.076 | |
| Superior | 126 | 110 | 159 | 6 | 50 | 37 | 0 | 0 | 6 | 87 | 37 | 1.065 | |
| Zahov | 112 | 68 | 98 | 34 | 49 | 12 | 0 | 0 | 5 | 61 | 12 | 1.066 | |
| Zohar | 70 | 52 | 74 | 10 | 51 | 22 | 0 | 0 | 16 | 74 | 22 | 1.067 | |
| Grand Mean | 145 | 106 | | | | | | | | | | | |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² Size classes: 1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

Table 11b. Unreplicated Trial. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes of potato clones harvested 91 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2010

| Clone | Plant Data ² | | | | Tuber Data ² | | | | | | | | | % Internal Defects ³ | | | | | Comments ⁴ | |
|----------|-------------------------|-----|------|-----|-------------------------|-----|-----|-----|-----|-----|------|-----|-----|---------------------------------|-----|----|----|----|-----------------------|-------------------------------------|
| | TYPE | DIS | POLL | MAT | CLR | TXT | TCX | TSS | SHP | EYE | SIZE | DIS | APP | HN | HNR | HH | VR | BC | | SR |
| AF4202-2 | 6 | 7 | 6 | 6 | 6 | 7 | 7 | 7 | 2 | 7 | 5 | 5 | 3 | 0 | 9.0 | 0 | 0 | 0 | 0 | ^^SR |
| AF4203-4 | 9 | 9 | 7 | 7 | 6 | 6 | 6 | 6 | 5 | 7 | 7 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR |
| AF4217-1 | 9 | 5 | 6 | 4 | 6 | 6 | 7 | 7 | 2 | 7 | 7 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SS,SR |
| AF4217-2 | 8 | 2 | 8 | 4 | 6 | 7 | 7 | 7 | 2 | 7 | 5 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,GC |
| AF4220-4 | 9 | 9 | 9 | 6 | 6 | 7 | 6 | 7 | 5 | 8 | 7 | 8 | 6 | 20 | 7.5 | 0 | 0 | 0 | 0 | SS,HS,RZ,GC,2IHN(1-8,1-7) |
| AF4222-4 | 9 | 8 | 6 | 5 | 9 | 8 | 7 | 7 | 4 | 7 | 7 | 6 | 6 | 70 | 6.0 | 0 | 0 | 0 | 10 | SR,7IHN(1-8,4-6,2-5) |
| AF4227-4 | 6 | 9 | 8 | 8 | 6 | 6 | 6 | 6 | 3 | 8 | 7 | 8 | 5 | 0 | 9.0 | 10 | 0 | 0 | 0 | SR,SS |
| AF4232-5 | 5 | 6 | 7 | 5 | 6 | 6 | 7 | 7 | 6 | 8 | 6 | 7 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ,SR,MS |
| AF4240-3 | 6 | 8 | 7 | 5 | 6 | 6 | 6 | 6 | 2 | 8 | 8 | 8 | 6 | 10 | 8.0 | 0 | 10 | 0 | 0 | SC,MS,RZ,SR,1IHN(1-8) |
| AF4240-6 | 8 | 8 | 7 | 4 | 5 | 6 | 6 | 7 | 2 | 8 | 6 | 7 | 5 | 100 | 3.2 | 0 | 0 | 0 | 0 | MS,SR,RZ,10IHN(2-5,3-4,2-3,1-2,2-1) |
| AF4245-2 | 9 | 7 | 8 | 6 | 6 | 7 | 7 | 7 | 2 | 8 | 6 | 8 | 4 | 60 | 7.5 | 0 | 0 | 0 | 0 | GC,RZ,SR,6IHN(3-8,3-7) |
| AF4252-1 | 9 | 9 | 8 | 6 | 5 | 4 | 7 | 7 | 4 | 8 | 7 | 7 | 5 | 50 | 7.4 | 0 | 0 | 0 | 10 | RZ,CS,MS,SR,5IHN(2-8,3-7) |
| AF4252-3 | 9 | 4 | 7 | 8 | 6 | 7 | 7 | 7 | 2 | 8 | 2 | 6 | 3 | 20 | 7.5 | 10 | 0 | 20 | 0 | ^GC,^RZ,SS,2IHN(1-8,1-7) |
| AF4252-5 | 6 | 9 | 8 | 6 | 5 | 6 | 7 | 7 | 2 | 7 | 7 | 8 | 7 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ |
| AF4254-2 | 9 | 9 | 9 | 6 | 6 | 6 | 6 | 7 | 4 | 7 | 5 | 8 | 5 | 0 | 9.0 | 40 | 0 | 0 | 0 | ^SR,SS |
| AF4272-4 | 8 | 8 | 6 | 4 | 6 | 6 | 5 | 7 | 5 | 8 | 5 | 7 | 4 | 0 | 9.0 | 10 | 0 | 10 | 0 | SS,RZ,MS,GC |
| AF4320-7 | 9 | 9 | 8 | 8 | 5 | 4 | 7 | 6 | 6 | 8 | 5 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,SR,RZ |
| AF4322-5 | 9 | 9 | 8 | 5 | 5 | 4 | 7 | 7 | 6 | 8 | 5 | 8 | 6 | 0 | 9.0 | 0 | 0 | 0 | 0 | RZ |
| AF4357-2 | 8 | 8 | 6 | 6 | 7 | 7 | 6 | 7 | 5 | 8 | 3 | 6 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,MS,SS,YF1 |
| Atlantic | 6 | 9 | 8 | 5 | 6 | 5 | 5 | 7 | 3 | 7 | 7 | 8 | 5 | 80 | 7.4 | 20 | 0 | 0 | 0 | SR,RZ,MS,8IHN(4-8,3-7,1-6) |
| Chip1 | 9 | 9 | 8 | 9 | 8 | 6 | 6 | 7 | 2 | 5 | 4 | 8 | 4 | 100 | 4.8 | 0 | 0 | 20 | 0 | SR,DAE,10(3-7,3-5,4-3) |
| Chip2 | 9 | 9 | 7 | 9 | 6 | 7 | 6 | 7 | 2 | 5 | 3 | 8 | 3 | 60 | 4.8 | 0 | 0 | 0 | 0 | SS,MS,SR,DAE,6IHN(1-7,1-6,2-5,2-3) |
| Chip3 | 9 | 7 | 7 | 9 | 6 | 7 | 7 | 7 | 2 | 6 | 1 | 8 | 1 | 0 | 9.0 | 0 | 0 | 0 | 0 | MS,HS |
| Idit | 9 | 5 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 8 | 2 | 8 | 5 | 40 | 6.3 | 0 | 0 | 0 | 0 | SR,YF1,4IHN(1-8,1-7,1-6,1-4) |
| Joshua | 9 | 9 | 9 | 9 | 6 | 6 | 7 | 7 | 2 | 6 | 1 | 8 | 1 | 0 | 9.0 | 0 | 0 | 30 | 0 | SR,HS |
| Longo | 9 | 8 | 8 | 8 | 8 | 7 | 6 | 7 | 7 | 8 | 4 | 8 | 2 | 10 | 6.0 | 0 | 0 | 0 | 0 | MS,1IHN(1-6) |
| Rose | 9 | 9 | 8 | 9 | 3 | 7 | 6 | 7 | 5 | 8 | 4 | 8 | 1 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,HS,YF1 |
| Snowden | 9 | 9 | 8 | 7 | 6 | 6 | 5 | 6 | 2 | 7 | 5 | 8 | 5 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR |
| Superior | 5 | 8 | 8 | 4 | 6 | 7 | 5 | 7 | 4 | 7 | 5 | 8 | 6 | 10 | 8.0 | 0 | 0 | 10 | 0 | SR,MS1IHN(1-8) |
| Zahov | 9 | 8 | 7 | 8 | 6 | 7 | 7 | 7 | 3 | 7 | 3 | 8 | 3 | 60 | 6.2 | 0 | 0 | 0 | 0 | SR,RZ,YF1,6IHN(1-82-7,1-6,1-5,1-4) |
| Zohar | 9 | 8 | 9 | 9 | 7 | 7 | 5 | 7 | 5 | 8 | 5 | 8 | 4 | 0 | 9.0 | 0 | 0 | 0 | 0 | SR,HS,SS,YF2 |

¹ DAP = Days After Planting; DVK = Days to Vine Kill

² See NE1031 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (10 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

⁴ See Appendix 3 for Comment Codes

Appendix 1: LAND MANAGEMENT CONDITIONS

Location: Black Gold Farms, Gum Neck, Tyrrell Co., NC
Trial Title: Black Gold Farms Variety Chip Trial
Trial Design: Randomized complete block, four replications
Plot Dimensions: Seventeen 21' rows at 34' row spacing, 28 hills per row
Seed piece Treatment: None
Weed Control: Metribuzin 1.25 lbs/A
Volunteer 8 fl oz/A
Fertilizer: 210 N, 143 P, 92 K
Insect Control: Actara 3 oz/A
Disease Control: Manzate Pro-stick 7.0 lb/A
Curzate 60 DF 3.2 oz/A
Revus Top 6.2 fl oz/A
Vine Kill: None

Location: Black Gold Farms, Gum Neck, Tyrrell Co., NC
Trial Title: Black Gold Farms Variety Table Trial
Trial Design: Randomized complete block, four replications
Plot Dimensions: Thirteen 21' rows at 34' row spacing, 28 hills per row
Seed piece Treatment: None
Weed Control: Metribuzin 1.25 lbs/A
Volunteer 8 fl oz/A
Fertilizer: 210 N, 143 P, 92 K
Insect Control: Actara 3 oz/A
Disease Control: Manzate Pro-stick 7.0 lb/A
Curzate 60 DF 3.2 oz/A
Revus Top 6.2 fl oz/A
Vine Kill: None

Location: Black Gold Farms, Gum Neck, Tyrrell Co., NC
Trial Title: Snack Food Association Trial
Trial Design: Randomized complete block, five replications
Plot Dimensions: Fifteen 21' rows at 34' row spacing, 28 hills per row
Seed piece Treatment: None
Weed Control: Metribuzin 1.25 lbs/A
Volunteer 8 fl oz/A
Fertilizer: 210 N, 143 P, 92 K
Insect Control: Actara 3 oz/A
Disease Control: Manzate Pro-stick 7.0 lb/A
Curzate 60 DF 3.2 oz/A
Revus Top 6.2 fl oz/A
Vine Kill: None

Appendix 1: LAND MANAGEMENT CONDITIONS (Cont'd.)

Location: Bateman Farms, Weeksville, Pasquotank Co., NC

Trial Design: Randomized complete block, four replications

Plot Dimensions: Twenty-eight 21' rows at 40' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Trichlor 0.5 lb/A

Brawl 1 pt/A

Fertilizer: 70 Units N (post-emergence)

Insect Control: Leverage 2.7 SE 3.75 oz/A

Disease Control: None

Vine Kill: None

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: Round White Variety Trial One

Trial Design: Randomized complete block, four replications

Plot Dimensions: Thirty 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant

Dual Magnum 1.5 pt/A pre-emergence

Sencor DF 1 lb/A pre-emergence

Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast

30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A

Vydate 3 pt/A

Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: Round White Variety Trial Two

Trial Design: Randomized complete block, four replications

Plot Dimensions: Ten 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant

Dual Magnum 1.5 pt/A pre-emergence

Sencor DF 1 lb/A pre-emergence

Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast

30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A

Vydate 3 pt/A

Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Appendix 1: LAND MANAGEMENT CONDITIONS (Cont'd.)

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: Round White Variety Trial Three

Trial Design: Randomized complete block, four replications

Plot Dimensions: Thirteen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant
Dual Magnum 1.5 pt/A pre-emergence
Sencor DF 1 lb/A pre-emergence
Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast
30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A
Vydate 3 pt/A
Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: NE 10-14 White Variety Trial

Trial Design: Randomized complete block, four replications

Plot Dimensions: Sixteen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant
Dual Magnum 1.5 pt/A pre-emergence
Sencor DF 1 lb/A pre-emergence
Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast
30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A
Vydate 3 pt/A
Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: NE 10-14 Red Variety Trial

Trial Design: Randomized complete block, four replications

Plot Dimensions: Thirteen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant
Dual Magnum 1.5 pt/A pre-emergence
Sencor DF 1 lb/A pre-emergence
Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast
30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A
Vydate 3 pt/A
Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Appendix 1: LAND MANAGEMENT CONDITIONS (Cont'd.)

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: NE 10-14 Russet Variety Trial

Trial Design: Randomized complete block, four replications

Plot Dimensions: Fifteen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant
Dual Magnum 1.5 pt/A pre-emergence
Sencor DF 1 lb/A pre-emergence
Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast
30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A
Vydate 3 pt/A
Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Location: Tidewater Research Station, Plymouth, Washington Co., NC

Trial Title: Observational Variety Trial

Trial Design: Randomized complete block

Plot Dimensions: Eight 21' rows (Thirty-two clones) at 38" row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Quadris 12oz/A pre-plant
Dual Magnum 1.5 pt/A pre-emergence
Sencor DF 1 lb/A pre-emergence
Select 2E 10 oz/A, Crop Oil 1 pt/A

Fertilizer: 850 lbs, 15-15-15 broadcast
30-0-0 20 gal

Insect Control: Admire Pro 8 oz/A
Vydate 3 pt/A
Thionex 1.3 qt/A

Disease Control: None

Vine Kill: None

Appendix 2: STANDARDIZED NE1031 RATING CODES FOR PLANT AND TUBER CHARACTERISTICS

Tuber Color

1. purple
2. red
3. pink
4. dark brown
5. brown
6. tan/light brown
7. buff
8. white
9. cream

Tuber Texture

1. partial russet
2. heavy russet
3. moderate russet
4. light russet
5. netted
6. slight net
7. moderately smooth
8. smooth
9. very smooth

Tuber Cross-section

1. very flat
2. --
3. flat
4. --
5. intermediate/oval
6. --
7. mostly round
8. --
9. very round

Tuber Skin Set

1. very poor
2. --
3. poor
4. --
5. fair
6. --
7. good
8. --
9. excellent

Tuber Shape

1. very round
2. mostly round
3. round to oblong
4. mostly oblong
5. oblong
6. oblong to long
7. mostly long
8. long
9. cylindrical

Tuber Eye Depth

1. -
2. deep
3. +
4. -
5. medium
6. +
7. -
8. shallow
9. +

Tuber Size (GCY Scale)

1. small
2. --
3. small-medium
4. --
5. medium
6. --
7. medium-large
8. --
9. large

Tuber Appearance

1. very poor
2. --
3. poor
4. --
5. fair
6. --
7. good
8. --
9. excellent

Tuber Disease Rating

1. very severe
2. --
3. severe
4. --
5. moderate
6. borderline
7. slight
8. very slight
9. none

Plant Type

1. decumbent-poor canopy
2. decumbent-fair canopy
3. decumbent-good canopy
4. spreading-poor canopy
5. spreading-fair canopy
6. spreading-good canopy
7. upright-poor canopy
8. upright-fair canopy
9. upright-good canopy

Plant Disease and Pollution Reaction

1. Dead
2. -
3. severe
4. +
5. moderate
6. -
7. +
8. slight
9. none

Maturity

1. -
2. early
3. +
4. -
5. medium
6. +
7. -
8. late
9. +

Appendix 3: COMMENT CODES FOR TABLE B

| | |
|--------------------------------------|--|
| AC=air cracks | RZ=Rhizoctonia |
| BR=bruise | SEB=stem end browning |
| CPB=Colorado potato beetle | SC = star cracking |
| CS=common scab | SG=secondary growth |
| CT=chain tubers | SIS=silver scurf |
| DAE=deep apical eyes | SKN=skins |
| DSE=deep stolen end | SS=sun scald |
| EB=early blight | SR=soft rot |
| ECB= European corn borer | STST=sticky stolons, tight stolon attachment |
| EL= enlarged lenticels | TSWV=Tomato Spotted Wilt Virus |
| FS=fusarium wilt | VW=Verticillium wilt |
| GC=growth cracks | WSTD=weak stand |
| HI= herbicide injury | WW=wire worm |
| HN = Heat Necrosis (see below) | YF=yellow flesh (YF scale: 1=light yellow to 3=dark yellow) |
| HS=heat sprouts | RF=red flesh (RF scale: 1=light red or pink to 3 = dark red) |
| IL=infected lenticels | |
| LB=late blight | |
| LHD=leaf hopper damage | |
| MS=misshaped tubers | |
| PE=pink eye | |
| PR=pink rot | |
| PLRV=potato leaf roll virus | |
| PTS=very pointed tubers | |
| PS=powdery scab | |
| PVA, PVX, PVY=potato viruses A, X, Y | |

Note: ^ before code = high levels; ^^ = very high; ~ = moderate or some

Heat Necrosis

10 tubers/replication are sampled, typically there are 4 replications in each trial (40 tubers total), USPB/SFA trial has 5 reps (50 tubers) and the observational and unreplicated trials have 1 rep (10 tubers), rating is on a 1 to 9 scale, a rating of 9 indicates no incidence a rating of 1 indicates severe incidence

Reading the HN notation: e.g. 12IHN(2-6,5-7,5-8) - The '12' in this case, is the total number of tubers expressing incidence. The number after the dashes (6,7,and 8) are severity ratings. The sum of the numbers before each dash equals the number before the 'IHN', these are the number of tubers with a particular severity rating. So there were 2 tubers with a severity of 6, 5 with a severity of 7, and 5 with a severity of 8.