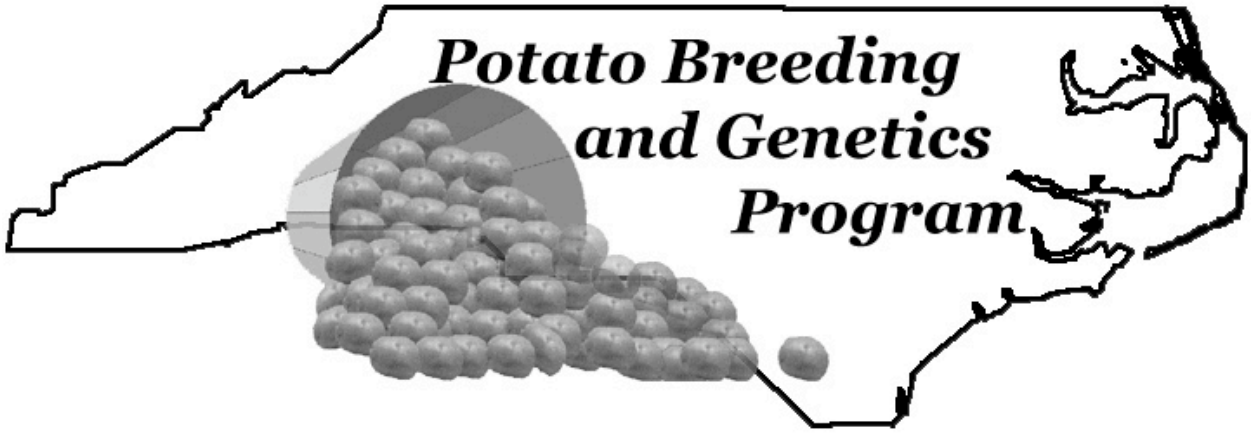
NC STATE UNIVERSITY

NORTH CAROLINA
POTATO VARIETY TRIAL AND BREEDING REPORT

2009



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I. OBJECTIVES:

Our research is conducted in collaboration with the USDA Cooperative States Research Extension and Education Service (CSREES) NE1031 (formerly NE1014) Regional Potato Variety Development and Evaluation Project. The overall objective of the NE1031 Project is to develop high yielding, disease and insect resistant, table- and chip-stock potato varieties for potato growers in the eastern US. The objective of the NC State University variety development and breeding program is to develop germplasm, and select and release new potato varieties that are suitable for use by North Carolina growers, and the southeastern US potato industry in general.

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. Subsequent planting, selection and advancement 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 then 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. This year, 20,106 single-hills were planted and 806 clones were selected averaging a 4.0% selection rate. This was the largest number of single-hills that we have ever planted in the program. Out of the 627 clones in our 6-hill plots, 69 (11%) were selected for future evaluation. In the 20-hill plots, 67 clones were planted with 15 (22%) being selected for further evaluation. In our 60-hill plots, 9 clones were planted and 2 (22%) were selected.

During 2009, in our Colorado potato beetle (CPB) nursery we continued our project to select and screen specific families with potential Colorado potato beetle 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 66 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 2010. In this year's 2by3 trial, 115 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 20 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 2010. In this years 3by5 trial we evaluated 15 clones for CPB resistance and for adaptation in our non-replicated 20-hill plots simultaneously. We selected 3 clones for advancement to next year's three replications by 10-hills and our non-replicated 60-hill trial.

Yield Trials

In our 12 yield trials, we evaluated 220 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 1-12. 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 .

2009 Promising Lines:
Chip-stock clones

Dakota Crisp

Developed by: North Dakota State Univ.
Released: 2005
 # trials evaluated: 7 since(1998)
Skin Color: Tan to Light Brown
Flesh Color: White

Historical Data;
Maturity: medium
% Standard (Atlantic): MKTB YLD 104%
Specific Gravity: 1.069
Chip score: 2.0 (good)
Overall Appearance: 5 (fair)

Other Attributes or Comments: *We recommend this variety only as a substitute for Atlantic when Harley Blackwell or Marcy are not available. It is acceptable but like Atlantic and Marcy it is susceptible to IHN and it SG has ranged 8 or 9 points lower than Atlantic.*

Harley Blackwell

Developed by: USDA-ARS
Released: 2003
 # trials evaluated: 50 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.*

Marcy

Developed by: Cornell Univ.
Released: 2002
 # trials evaluated: 25 since(1998)
Skin Color: White
Flesh Color: White

Historical Data:
Maturity: late
% Standard (Atlantic): MKTB YLD 119%
Specific Gravity: 1.069
Chip Score: 2.0 (good)
Overall Appearance: 7 (good)

Other Attributes or Comments: *This is late season clone with good chip scores. We recommend this variety with caution. Marcy is susceptible to IHN and the SG begins to fall off after it reaches maturity but its consistently high yields and it good appearance have attracted our attention to this variety over the years.*

NC0349-3

Developed by: NC State Univ.
Released: N/A
 # trials evaluated: 5 since(2007)
Skin Color: White
Flesh Color: White

Historical Data:
Maturity: slightly later than medium
% Standard (Atlantic): MKTB YLD 100%
Specific Gravity: 1.077
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 third year of testing and it has performed well. It appears to be IHN resistant and has slightly higher yields than Harley Blackwell. This variety will need more evaluation but to date has been promising.*

NC0349-8

Developed by: NC State Univ.
Released: N/A
 # trials evaluated: 5 since(2007)
Skin Color: White
Flesh Color: White

Historical Data:
Maturity: slightly later than medium
% Standard (Atlantic): MKTB YLD 102%
Specific Gravity: 1.079
Chip Score: 2.0 (good)
Overall Appearance: 6 (better than fair)

Other Attributes or Comments*: Similar to and a full sib of NC0349-3. In the five trials it appears slightly less consistent in performance. This is a mid to late season clone with good chip scores. This is the third year of testing and it has performed well. It appears to be IHN resistant and has slightly higher yields than Harley Blackwell. This variety will need more evaluation but to date has been promising.*

NCB2497-17

Developed by: NC State Univ.
Released: N/A
 # trials evaluated: 6 since(2007)
Skin Color: White
Flesh Color: White

Historical Data:
Maturity: slightly later than medium
% Standard (Atlantic): MKTB YLD 111%
Specific Gravity: 1.072
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. Last year we sent this clone to Florida for evaluation and their results were very similar to ours. It does appear this clone is highly susceptible to Rhizoctonia and this may be its downfall. This variety will need more evaluation but has shown promise.*

NY140

Developed by: Cornell Univ.
Released: N/A
 # trials evaluated: 12 since(2005)
Skin Color: White
Flesh Color: White

Historical Data:
Maturity: medium
% Standard (Atlantic): MKTB YLD 114%
Specific Gravity: 1.071
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 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).*

Table-stock clones

NY136

Developed by: Cornell Univ.
Released: N/A
 # trials evaluated: 17 since(2005)

Skin Color: Dark Red
Flesh Color: White

Historical Data;
Maturity: medium
% Standard (Chieftain): MKTB YLD 78%

Specific Gravity: 1.063
Skin Texture: Moderately Smooth
Overall Appearance: 7 (good)

Other Attributes or Comments: *We have seen this clone for 5 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 our reds to washout. We have not seen any IHN or hollow heart in any of our trials.*

Vivaldi

Developed by: De ZPC (now HZPC)
Released: 1999
 # trials evaluated: 25 since(2001)

Skin Color: Buff
Flesh Color: Light Yellow (YF1)

Historical Data;
Maturity: mid to late
% Standard (Atlantic): MKTB YLD 91%
% Standard (Yukon Gold): MKTB YLD 113%
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: 10 since(2005)

Skin Color: Red
Flesh Color: Yellow (YF1)

Historical Data;
Maturity: Early to Mid-season
% Standard (Chieftain): MKTB YLD 64%

Specific Gravity: 1.072
Skin Texture: Smooth
Overall Appearance: 7 (good)

Other Attributes or Comments: *We have seen this clone for 5 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: 11 since(1996)
Skin Color: Brown
Flesh Color: White

Historical Data;
Maturity: medium
% Standard (Russet Nokotah): MKTB YLD 117%
Specific Gravity: 1.060
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, to date we have not recorded any heat sprouting or secondary growth but growth cracks have been noted each year. While not perfect this is a reasonable choice for a grower interested in this type of market*

III. 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, Gumneck, NC (Tyrrell Co.)
Bateman Farms, Weeksville, NC (Pasquotank Co.)

COOPERATING COUNTY EXTENSION AGENTS:

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

IV. 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 10	Jun 22, 23	104,105
Bateman's	Gertie silt loam	Mar 9	Jun 25	108
TRS/VGJREC	Portsmouth fine sandy loam	Mar 23,25-27,31	Jul1,13,20,22,23	92,104,111,113, 114

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 clones in three trials were evaluated at Black Gold Farms, and twenty-four 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 ≥ 1 ⅞ "; and C's < 1 ⅞". Black Gold, Snack Food and the TRS/VGJREC trials were graded to five classes: 1's < 1 ⅞"; 2's > 1 ⅞ to 2 ½"; 3's > 2 ½ to 3 ¼"; 4's > 3 ¼ 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.

V. RESULTS:

Environmental Summary

Planting was delayed by irregular early season rains persisting throughout March. During the season rainfall was adequate allowing the plants to grow well and set a good crop. Our on-farm trials were harvested without any problems and yields were good. However, during July excessive rains caused delays and some yield loss occurred in most of the trials on the research station. Rainfall at the TRS from July 3 to August 2 totaled 14.91" (a one month record for the station) and as a result our program lost a quarter of one of our yield trials due to saturated soils in late July. Given the amount of rain that we had during July we were very pleased that this was the only trial severely compromised, but we anticipate losing some of our selections due to rot in storage.

A. Yield Trials

1. On-Farm Trials

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

This trial, with eleven clones, was designed to evaluate the performance of released and/or advanced table varieties on the soils in Gum Neck. For the purposes of evaluating yield all clones in this trial were compared to Chieftain (391 cwt/a marketable yields), which typically produces high yields for us. Two clones Vivaldi (422 cwt/a) and Superior (414 cwt/a) had higher marketable yields than Chieftain but not significantly greater. NY136, had an overall appearance score of 8 (better than good) and Vivaldi had a score of 7 (good). Three clones expressed 10% or greater symptoms of internal heat necrosis (IHN): Vivaldi (20% with an average internal heat necrosis severity rating (HNR) of 8.0), Chieftain (10% with an HNR of 8.0), and Dark Red Norland (10% with an HNR of 8.3). 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, silver scurf, common scab and misshapes.

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

Atlantic, our standard, had a marketable yield of 378 cwt/a and two of the clones in the trial had significantly greater marketable yields: Marcy (461 cwt/a) and NC0349-8 (454 cwt/a). Clones with higher but not statistically significant marketable yields greater than Atlantic were: Snowden (410 cwt/a), NC0349-3 (403 cwt/a), NY140 (396 cwt/a), and AF0338-17 (383 cwt/a). Atlantic had a gravity of 1.074. Two clones with equal gravities were: NC0349-3, and NC0349-8. Three clones had gravities higher than Atlantic: FL1867 (1.078), NCB2489-5 (1.077) and AF3318-6 (1.075). Two clones had a chip score rating of 1 (exceptional) in the 24 to 48 hour chip test and the 5 to 7 day test: NCB2489-5 and Snowden. Other clones with chip scores of 1 in only the 24 to 48 hour chip test were: AF0338-17, AF3318-6, Atlantic, B2614-4, and NY140. Five clones: Atlantic, Harley Blackwell, Marcy, NC0349-3, and NC0349-8 had appearance scores of 8 (better than good), AF0338-17 had an appearance score of 7 (good). Atlantic expressed symptoms of internal heat necrosis (IHN) at 10% or greater incidence (13% IHN with an HNR of 8.3). 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, and misshapes.

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

Atlantic had a marketable yield of 372 cwt/a. Only one clone in this trial, Snowden (380 cwt/a), had a greater marketable yield than Atlantic though it was not statistically significant. Atlantic had a gravity of 1.079 and two other clones had greater gravities: AF2291-10 (1.080) and W2717-5 (1.080). Three clones received a chip score rating of 1 at the 24 to 48 hour chip test: CO96141-4W, CO97043-14W, and CO97065-7W. Two clones scored a 1 in the 5 to 7 day chip tests, CO97065-7W, and W2717-5. Four clones received an appearance rating of a 7: Atlantic, CO96141-4W, NY138, and NY139. Four clones expressed IHN though only one clone, Atlantic (16% with an HNR of 7.9), had greater than 10% incidence. No other internal defects were expressed at levels greater than 10%. Other external defects observed were: sunscald, common scab, misshapes, growth cracks, soft rot, and skin blemishes due to Rhizoctonia.

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

In this trial three yield standards were chosen: Atlantic (round white standard), Chieftain (red standard), and Russet Norkotah (russet skin types). Four white skinned clones had marketable yields significantly greater than Atlantic (243 cwt/a) these were: Dakota Crisp (325 cwt/a), NY140 (321 cwt/a), Superior 316 (cwt/a) and Harley Blackwell (301 cwt/a). Within the class of reds, one clone, Dark Red Norland (284 cwt/a) had a higher marketable yield than Chieftain (267 cwt/a) though it was not significantly greater. Russet Norkotah (239 cwt/a) had a higher marketable yield than all other russets with the exception of Gold Rush (248 cwt/a) but statistically this was not a significantly greater yield. The specific gravity for Atlantic in this trial was 1.075, Defender's gravity was equal to Atlantic and all other clones had lower specific gravities. Four clones (Atlantic, Dakota Crisp, NC41-1, and NY140) had a chip score rating of 1 in the 24 to 48 hour fry test. One clone (Harley Blackwell) had an overall appearance score of 8, clones with an overall appearance score of 7 were: Atlantic, Dark Red Norland, Gold Rush, NY140, Peter Wilcox, Russet Norkotah, Vivaldi and Yukon Gold. Two clones, Atlantic (28 % IHN with a HNR of 7.8) and Chieftain (13% IHN with a HNR of 8.3) had incidence of heat necrosis greater than 10%. No significant incidence of HH, VR, BC, or SR were recorded in this trial. Culls were primarily due to sunscald, growth cracks, misshapes, common scab, soft rot, and skin blemishes due to Rhizoctonia.

2. TRS/VGJREC Yield Trials

Specialty Variety Trial (Tables 5a and 5b)

This trial, containing 11 entries, was specifically designed to focus on reds, purples, and other potatoes that we believe may fill various niche markets in our state. All marketable yields in this trial were compared to the standard Chieftain (175 cwt/A). None of the clones in the trial significantly exceeded Chieftain's marketable yield, but Dark Red Norland had a greater marketable yield at 184cwt/a. Two clones, BNC192-3 and Vivaldi had an overall appearance score of 7. One clone had an incidence 10% or greater of IHN: Chieftain (40% and an HNR of 6.3). Other internal defects included SR but IHN incidence was less than 10% for all clones. The most common external defects were silver scurf, misshapes, growth cracks, common scab and skin blemishes attributed to Rhizoctonia.

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

Harvest of this trial was delayed this year due to the rains in mid and late July. As a result we lost roughly a quarter of the trial. Most clones had between one and three of the four

replications harvested. Because of this statistical evaluation for significant differences was not done. This is the first time the breeding program has lost any part of a trial during the tenure of either of principle members of the program. Also in this trial there are two clones (NC182-5 and BNC182-5) that have similar clone names. Both of these clones came from the NCSU breeding program's materials, both are the fifth selection out of the NC family 182. They are however not the same clone. Part of our partnership with the USDA-ARS is the sharing of unselected mini-tubers. For our programs if we attached an "NC" to the front of all clones selected by our breeding program in NC and the USDA-ARS in Beltsville attaches a "B." So if a clone from NC is selected by the USDA-ARS breeder from Beltsville the clone name will read "BNC" ahead of the family number. If by contrast we select a Beltsville clone a, "B" clone, we will attach an "NC" to it to read "NCB" ahead of the family number.
This trial, which included 22 clones, is designed to give us a first look at white skinned materials we are evaluating for the first time 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 173 cwt/a. Six clones: Snowden (287 cwt/a), BNC182-5, NC182-5, Harley Blackwell, NC178-1, and MSQ086-3 had greater marketable yields. One clone, B2459-6 (1.079) had a higher gravity than Atlantic (1.077). One clone, NC182-5 had a chip score of 1 in both the 24 to 48 hour and the 5 to 7 day chip tests. Three other clones had chip scores of 1 in the 24 to 48 hour chip test these were: MSN170-A, NYD40-35, and Snowden. One other clone, B2638-10 had a chip score of 1 in the 5 to 7 day chip test. Six clones had overall appearance rating scores of 7 these were: B2459-6, BNC182-5, B2738-10, Harley Blackwell, NC182-5, and NCB2645-11. Two clones expressed IHN at 10% or greater incidence: Atlantic (40% and an HNR of 7.0) and NC172-11 (10% and an HNR of 6.0). One clone, B2638-10 (10%), had 10% or greater incidence of BC. Common external defects were misshapes, sunscald, and skin blemishes attributed to Rhizoctonia.

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

Of the twelve clones in this trial, one, NCB2497-17 (237cwt/a), had average marketable yields higher than Atlantic (221 cwt/A). Atlantic had a specific gravity of 1.078, two clones had equal or higher specific gravity: NCB2489-5 (1.084) and AF2867-20 (1.078). Two clones had chipping scores of 1 in both the 24 to 48 hour and the 5 to 7 day chip tests: B2634-3 and NCB2489-5. One other clone, NC41-1 had a chip score of 1 in the 24 to 48 hour chipping test was well. None of the clones in this trial had an appearance score of 7 but four had overall appearance scores of 6: B2492-7, NCB2489-5, NCB2497-17, and Yukon Gold. Atlantic expressed 28% IHN with an HNR of 5.3. Three clones expressed 10% or greater incidence of BC: Dakota Pearl (15%), Superior (13%), and Yukon Gold (10%). Common defects were misshapes, soft rot, sunscald, growth cracks, and skin blemishes attributed to Rhizoctonia.

Round White Trial Three (Tables 8a and 8b)

Atlantic had a marketable yield of 205 cwt/A, and four clones had significantly higher marketable yields: Snowden (305 cwt/a), Marcy (268 cwt/a), NC0349-3 (267 cwt/a), and AF4047-2 (263 cwt/a). One clone, Snowden (1.083), had a higher gravity than Atlantic (1.079). One clone, Atlantic had chip scores of 1 in both the 24 to 48 hour test and 5 to 7 day chip color evaluation. Other clones that scored 1 in the 24 to 48 hour chip test were: AF4014-1, B2634-13, Marcy, and Snowden. Two clones had overall appearance scores of 7: Marcy, and NC0349-8. Two clones expressed IHN at equal or greater than 10%, AF2497-2 (23% with an HNR of 7.0), and Atlantic (13% with an HNR of 7.3). Two clones had incidence of HH at levels 10% or greater: AF4047-2 (15%) and Atlantic (10%). Clone with 10% or greater

incidence of BC were: AF2497-2 (18%), AF4047-2 (10%), and Atlantic (10%). Common external defects were: misshapes, soft rot, growth cracks, sunscald, and skin blemishes due to Rhizoctonia.

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

None of 17 clones in this trial had a significantly greater marketable yield than Atlantic (226 cwt/A). However, four other clones did have a greater marketable yields: Snowden (266 cwt/a), AF2574-1 (251 cwt/a), Dakota Diamond (242 cwt/a), and NY139 (238 cwt/a). The specific gravity of B1992-106 (1.077) was equal to Atlantic (1.077), all others were lower. One clone, NYB38-40, received a chip rating of 1 in both the 24 to 48 hour and 5 to 7 day chip tests. Two clones: NY140, and NYB38-40 were rated a 7 for overall appearance. None of the clones in this trial expressed IHN with 10% or greater incidence. One clone, AF2574-1 (38%), expressed 10% or greater incidence of BC. The most common culls were misshapes, sunscald, soft rot, growth cracks, and skin blemishes attributed to Rhizoctonia.

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

The standard, Chieftain, had a marketable yield of 214 cwt/A. All other clones had lower marketable yields. Two clones received an overall appearance score of 8 these were: B2676-2 and NY136. Three clones received an overall appearance score of 7: B2152-17, NCB2607-3, and Super Red Norland. None of the clones in this trial expressed significant levels of IHN, HH, VR, or SR. Clones with 10% or greater incidence of BC were: Red LaSoda (35%), and Super Red Norland (25%). Culls were due mostly to misshapes, sunscald, growth cracks, and skin blemishes attributed to Rhizoctonia.

NE-1031 Russet Trial. (Tables 11a and 11b)

The standard, Russet Norkotah 3117, had a marketable yield of 135 cwt/A. Of the seven clones in the trial only one, Defender (136 cwt/a), had a marketable yield that was greater though not statistically. None of the clones had a higher specific gravity than Russet Norkotah 3117 (1.078). Russet Norkotah 3117, received the highest overall appearance score of 6. Two clones expressed IHN at 10% or greater incidence: Russet Burbank (53% with an HNR of 6.5) and Defender (13% with an HNR of 8.3). No clones expressed significant levels of HH, VR, or SR. The only clone to express BC at a level of 10% or greater was AF3326-7 (13%). Culls were due mostly to soft rot, misshapes, sunscald, and skin blemishes attributed to Rhizoctonia.

Unreplicated Trial. (Tables 12a and 12b)

Seventy-four clones were evaluated in this trial including the standards Atlantic, Chieftain, Dark Red Norland, Snowden, Superior and Yukon Gold. 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 come from the USDA-ARS, Cornell 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, 20,106 single-hills were planted and 806 clones were selected averaging a 4.0% selection rate. This is the most single-hills that the program has ever planted. In our single hill plots this year we had materials derived from Cornell 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, Cornell 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 627 clones planted in our 6-hill plots (Yr. 2), 69 (11%) were selected for future evaluation. While in the 20-hill plots (Yr. 3), 67 clones were planted with 15 (22%) being selected for further evaluation. In our 60-hill plots (Yr. 4), 9 clones were planted and 2 (22%) were selected.

Germplasm Enhancement for CPB Resistance

This is the third 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 tubersosum*, *S. chacoense*, and *S. berthaltii*. 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 1,432 hills to evaluate resistance and selected 57 clones for resistance and another 9 clones in the set for agronomic traits for a total of 66 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, 115 of the 627 clones came from this CPB resistance project. From the 115 CPB clones, 20 were selected for advancement to the 20 hill selection plots and the next cycle of CPB resistance screening. Of the 67 clones in our 20 hill plots 15 clones were part of the CPB resistance screen and 3 of those were selected for future evaluation.

Early Generation Selection Trials

Early generation selection involves selection and evaluation of materials early on in the breeding/variety development process. The idea behind early generation selection is that by selecting early generation materials in multiple environments we should be able to identify materials that have both broad and specific adaptation, because the materials are being evaluated in an environment other than the one where the actual breeding institution is located. 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

This project is an opportunity for North Carolina and Maine to evaluate materials that have gone through only one selection cycle in Maine. In this trial we evaluate clones in 4 hill plots and select them just like we would our own materials. The difference here is that we send a list of selected clones to the University Maine and they in turn use the information when they select their materials later in the year (we harvest in June/July in NC and ME begins harvest in September). This year we evaluated 963 clones and selected 67 clones. Because of limited seed we will not see these clones until 2011 when we will evaluate them as non-replicated 28 hill plots in a yield trial.

USDA-ARS Trial

This is the second 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), University of Maine (ME). Each state received 8 hills of the same 380 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 84.1% agreement on clones overall to drop or keep. Next year we will reevaluate these clones in our non-replicated 28-hill yield trial.

V. 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; 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-CSREES Potato Special Research Grants program. Their continuing support is very much appreciated.

Table 1a. Black Gold Farms Table Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 105 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Chf.	Size Distribution by Class[2] (% of total yield) 1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
Chieftain	487	391	100	5	27	52	1	0	14	81	53	1.058
Dark Red Norland	377	321	83	10	43	42	0	0	5	85	42	1.057
Goldrush	427	357	93	7	37	44	2	0	10	83	46	1.057
NY136	308	257	68	13	44	39	0	0	4	83	39	1.056
Peter Wilcox	396	321	84	11	48	33	0	0	8	81	33	1.063
Red LaSoda	479	377	99	5	19	48	10	0	17	78	59	1.055
Red Pontiac	461	363	95	7	26	48	5	0	14	79	53	1.053
Russet Norkotah	400	332	87	5	38	45	1	0	12	83	45	1.065
Superior	450	414	107	4	29	63	1	0	4	92	63	1.068
Vivaldi	498	422	110	6	39	44	1	0	9	85	45	1.059
Yukon Gold	396	347	91	4	26	58	4	0	9	87	62	1.081
Grand Mean	425	355										
CV (%)	19.99	16.63										
LSD(K=100)	92.6	100.7										

[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 1b. Black Gold Farms Table 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 105 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
Chieftain	9	9	7	6	3	7	5	4	4	5	8	3	5	10	8.0	0	0	0	0	^RZ,SG,SS,HS,4IHN(3-8,1-6)
Dark Red Norland	6	8	6	3	2	7	6	7	3	7	5	6	6	10	8.3	0	0	0	0	^SS,SISC,4IHN(4-8)
Goldrush	6	9	8	5	4	3	5	6	7	7	6	8	5	0	9.0	3	0	0	0	^MS,SS,GC,pts,knobs
NY136	9	8	8	7	2	7	7	4	3	7	6	7	8	0	9.0	0	0	0	0	SS,RZ,MS,vn clr!!,^skinning
Peter Wilcox	6	9	8	4	1	7	7	5	3	7	5	5	6	0	9.0	0	0	0	0	^SISC,MS,GC
Red LaSoda	6	9	7	4	2	7	4	4	4	2	9	7	3	0	9.0	3	0	0	0	^^MS,SS,^DAE,^DSE,RZ,CS
Red Pontiac	9	8	8	7	3	7	7	6	5	5	7	4	4	3	8.5	0	0	0	0	SS,MS,^^RZ,CS,1IHN(1-7)
Russet Norkotah	6	9	8	5	4	2	7	5	7	8	7	7	5	0	9.0	0	3	0	0	MS,^SS,RZ,GC,knobs
Superior	6	9	8	5	6	6	7	7	3	6	6	8	6	5	8.5	0	0	0	0	SS,GC,MS,2IHN(2-8)
Vivaldi	9	9	8	7	7	8	7	7	5	8	6	5	7	20	8.0	0	0	0	0	SS,^CS,MS,8IHN(8-8)
Yukon Gold	9	9	7	5	7	7	7	6	4	7	7	7	6	3	8.8	0	0	0	0	SS,CS,MS,GC

[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 105 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

				Size Distribution by Class[2] (% of total yield)									Chip Color[4]	
	Total Yield	Marketable Yield								1 7/8	2 1/2	Specific	24 to	5 to
Clone	cwt/A	cwt/A	% Atl.	1's	2's	3's	4's	5's	Culls	to 4"	to 4"	Gravity[3]	48 hrs	7 Days
AF0338-17	411	383	106	4	20	69	4	0	3	93	73	1.071	1	3
AF3318-6	381	305	84	17	54	26	0	0	3	80	26	1.075	1	3
Atlantic	405	378	100	6	38	53	2	0	1	93	55	1.074	1	2
B2575-14	374	313	86	7	27	52	6	0	9	84	58	1.064	2	2
B2614-4	275	240	66	4	30	56	1	0	9	87	57	1.065	1	2
Dakota Crisp	417	354	98	8	27	54	4	0	7	85	58	1.067	2	2
Harley Blackwell	408	352	97	10	41	44	1	0	3	86	45	1.071	2	2
Marcy	504	461	128	4	17	70	3	0	5	91	74	1.066	3	2
NC0349-3	445	403	110	8	37	51	2	0	2	90	53	1.074	2	2
NC0349-8	502	454	125	4	25	62	4	0	5	91	66	1.074	2	2
NC41-1	422	368	99	9	33	53	1	0	4	87	54	1.065	2	3
NCB2489-5	359	302	84	15	50	33	0	0	1	84	33	1.077	1	1
NCB2497-17	420	374	102	10	49	39	1	0	1	89	40	1.069	3	3
NY140	435	396	108	3	15	60	16	0	5	91	76	1.067	1	3
NY141	353	292	81	4	19	58	6	0	13	83	64	1.067	2	3
Snowden	446	410	114	6	35	56	2	0	2	92	57	1.072	1	1
Grand Mean	409	362												
CV (%)	13.65	14.64												
LSD(K=100)	84.3	76.6												

[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 105 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF0338-17	6	3	8	6	6	5	5	7	3	6	6	8	7	0	9.0	0	0	0	0	SS,MS
AF3318-6	6	8	6	6	6	6	7	7	2	7	5	8	6	0	9.0	0	0	0	0	SS, SG, MS, GC
Atlantic	6	8	8	5	5	5	7	7	2	6	7	8	8	13	8.3	0	0	0	0	SS,MS,5IHN(5-8)
B2575-14	6	7	8	5	9	8	6	6	5	8	7	8	6	0	9.0	3	0	0	3	^SS,GC,MS
B2614-4	6	9	8	5	8	9	7	7	3	8	7	8	6	0	9.0	0	0	0	0	^SS, GC, MS, SR
Dakota Crisp	9	8	8	8	6	7	6	7	3	6	6	7	4	5	8.8	0	0	0	0	^RZ,GC,SS,CS,SR,EL,2IHN(2-8)
Harley Blackwell	8	9	7	6	5	5	7	7	2	7	6	8	8	0	9.0	0	0	0	0	SS,SC
Marcy	9	9	8	8	5	5	7	6	3	6	8	8	8	8	8.5	0	3	0	0	SS,RZ,3IHN(3-8)
NC0349-3	9	8	8	6	5	5	7	7	2	6	6	8	8	0	9.0	3	0	0	0	SS,CS,STST,RZ
NC0349-8	9	9	8	5	5	5	7	7	2	7	6	8	8	0	9.0	0	0	0	0	SS,CS,RZ
NC41-1	6	8	7	4	5	5	6	7	2	6	6	8	6	0	9.0	3	0	0	0	^SS,RZ,GC,MS
NCB2489-5	6	8	8	4	5	6	5	7	2	8	4	8	6	0	9.0	0	0	8	0	SS,SR,RZ,CS
NCB2497-17	6	9	8	7	5	6	5	7	3	7	6	5	5	0	9.0	3	0	0	0	^RZ,^YLD
NY140	9	9	8	9	6	7	6	6	4	6	7	8	4	0	9.0	0	0	0	0	SS,MS,GC,CS
NY141	9	8	8	7	6	7	7	7	4	6	8	7	4	0	9.0	0	0	0	0	SS,GC,RZ,MS
Snowden	9	9	8	7	6	5	7	7	6	5	6	8	6	0	9.0	0	0	0	3	SS,RZ,SR,DAE,DSE

[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 104 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

				Size Distribution by Class[2] (% of total yield)									Chip Color[4]	
Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]	24 to 48 hrs	5 to 7 Days
AF2291-10	300	266	72	6	43	45	1	0	6	89	46	1.080	3	2
Atlantic	404	372	100	6	30	59	3	0	2	92	62	1.079	2	3
CO96141-4W	402	349	94	12	48	39	0	0	2	87	39	1.065	1	2
CO97043-14W	373	330	90	9	44	44	0	0	2	89	45	1.071	1	2
CO97065-7W	363	323	87	7	32	56	1	0	4	89	56	1.072	1	1
Kalkaska(MSJ036-A)	277	234	64	12	42	41	1	0	5	84	42	1.069	4	3
MSJ126-9Y	258	222	60	10	42	41	3	0	4	86	44	1.065	2	2
NY138	349	314	84	4	23	58	9	0	6	90	67	1.065	2	2
NY139	404	354	97	7	35	52	0	0	6	87	52	1.071	2	2
Snowden	412	380	103	7	44	47	1	0	1	92	48	1.074	2	3
W2324-1	433	364	99	7	36	47	1	0	10	84	48	1.075	2	2
W2717-5	226	192	52	8	44	41	1	0	7	85	41	1.080	2	1
Grand Mean	350	308												
CV(%)	12.68	14.42												
LSD(K=100)	52.7	53.2												

[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 104 DAP[1] at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF2291-10	9	9	8	9	6	6	5	5	3	5	7	8	5	0	9.0	0	0	0	0	GC,MS,SS,DAE
Atlantic	6	9	8	5	5	5	7	6	3	6	8	8	7	16	7.9	4	0	0	4	SS,RZ,SR,CS,8IHN(4-8,1-7,2-6,1-5)
CO96141-4W	6	8	7	7	6	7	5	7	4	8	6	7	7	2	8.8	0	0	0	0	SS,SR,CS,1IHN(1-8)
CO97043-14W	6	8	7	5	6	6	5	7	2	8	6	7	6	2	8.8	2	6	0	0	CS,SR,TSWV,MS,SS,1IHN(1-8)
CO97065-7W	6	7	7	5	5	5	6	6	2	7	7	8	6	0	9.0	0	2	0	0	SS,MS,CS,SR
Kalkaska(MSJ036-A)	6	9	8	6	6	6	7	7	2	8	5	7	6	0	9.0	0	0	0	0	SS,^SR
MSJ126-9Y	6	8	8	6	5	5	5	8	3	5	7	8	5	0	9.0	0	0	0	0	^MS,DAE,DSE,SS,RZ,SS
NY138	9	9	8	6	6	7	6	5	4	7	9	8	7	0	9.0	0	2	0	0	SS,SR,GC,MS,RZ
NY139	9	9	8	7	6	5	5	6	2	8	5	8	7	0	9.0	0	0	0	0	^^SS,MS
Snowden	9	8	7	7	5	5	7	7	2	3	6	8	5	0	9.0	0	0	0	0	MS,SS,SR,DAE,DSE
W2324-1	8	8	8	6	5	5	7	6	2	3	6	6	3	2	8.8	0	0	0	0	^CS,SR,^MS,STST,1IHN(1-8)
W2717-5	6	8	7	7	9	8	6	6	3	8	7	8	6	0	9.0	6	8	2	0	MS,SR,SS,RZ,GC,AC

[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 108 DAP[1] at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2009

Clone	Total Yield	Marketable Yield					Size Distribution by Class[2] (% of total yield)			Specific	Chip Color[4]	
	cwt/A	cwt/A	% Atl.	%Chf.	%RusNor	%Yuk	A's + B's	C's	Culls	Gravity[3]	24 to 48 hrs	5 to 7 Days
Atlantic	262	243	100	92	101	87	92	7	1	1.075	1	2
ATX84706-2Ru	201	154	67	58	66	54	76	19	6	1.055	2	3
Blazer Russet	251	187	81	70	78	68	74	18	8	1.061	.	.
Chieftain	327	267	119	100	112	97	82	10	9	1.060	2	.
Dakota Crisp	354	325	149	122	138	117	92	5	4	1.067	1	2
Dakota Pearl	302	259	113	98	109	92	86	7	7	1.065	3	3
Dark Red Norland	328	284	127	107	120	102	87	9	5	1.056	.	.
Defender	280	230	101	86	96	84	82	13	5	1.075	3	3
GoldRush	292	248	115	93	106	89	85	10	5	1.035	2	3
Harley Blackwell	341	301	131	113	126	109	88	10	1	1.067	2	2
Innovator	156	91	37	33	37	34	55	18	27	1.056	2	.
MSN215-2P	220	162	71	61	69	57	73	10	17	1.055	.	.
NC41-1	312	262	116	99	111	94	84	13	3	1.060	1	2
NCB2497-17	313	267	121	102	114	95	85	11	4	1.065	3	3
NY136	262	183	80	70	77	66	71	27	2	1.052	.	.
NY140	360	321	144	121	136	115	89	7	4	1.058	1	2
NY141	331	292	131	111	124	104	88	6	7	1.071	2	2
NYB13-1	369	240	107	90	101	87	65	32	3	1.049	.	.
Peter Wilcox	267	225	96	85	95	80	84	14	2	1.064	.	.
Red LaSoda	312	256	118	96	109	93	82	6	12	1.052	.	.
Russet Norkotah	270	239	104	90	100	87	89	9	3	1.069	2	3
Superior	340	316	142	119	134	114	93	4	3	1.066	3	3
Vivaldi	295	242	114	93	105	85	82	15	4	1.058	.	.
Yukon Gold	321	282	126	107	120	100	88	5	7	1.073	.	.
Grand Mean	294	245										
CV(%)	14.56	15.84										
LSD(K=100)	59.3	51.8										

[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 108 DAP[1] at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
Atlantic	6	9	8	5	6	5	7	7	3	5	7	8	7	28	7.8	5	0	8	0	GC,MS,11IHN(2-8,8-7,3-8)
ATX84706-2Ru	6	5	8	5	5	3	6	5	7	8	6	8	5	0	9.0	0	0	0	3	RZ,GC,MS
Blazer Russet	6	9	8	7	5	3	6	7	7	7	6	8	5	0	9.0	0	0	0	0	GC,MS,SR,SG
Chieftain	9	9	8	6	2	7	7	5	3	5	7	8	4	13	8.3	0	0	0	0	^SG,MS,5IHN(5-8)
Dakota Crisp	8	8	8	6	6	7	6	6	4	6	6	8	6	0	9.0	0	0	0	0	GC,SS,RZ,MS,EL
Dakota Pearl	6	9	8	5	9	7	5	7	3	6	7	8	4	5	8.5	0	0	5	0	^MS,SS,GC,RZ
Dark Red Norland	5	8	6	3	2	7	7	7	4	6	6	8	7	0	9.0	0	0	0	0	GC,SS,SG,MS
Defender	9	9	8	9	9	7	7	7	8	8	7	8	5	0	9.0	0	0	0	0	RZ,GC,MS,SR
GoldRush	6	6	8	5	4	2	7	7	6	8	6	8	7	0	9.0	0	0	0	0	^MS,EL
Harley Blackwell	8	8	7	6	6	5	7	7	2	7	6	8	8	0	9.0	0	0	0	0	SC,SS
Innovator	8	8	8	5	6	6	7	7	6	7	5	7	3	0	9.0	0	0	0	0	^SG,^MS,RZ,YF1
MSN215-2P	5	8	7	6	1	8	4	6	4	6	5	7	4	0	9.0	0	0	0	0	^MS,SG,GC
NC41-1	5	8	7	3	6	5	7	7	2	7	5	6	6	0	9.0	0	0	0	0	MS,RZ,SR
NCB2497-17	6	8	8	5	6	7	5	7	3	7	5	6	5	0	9.0	0	0	0	0	^RZ,MS
NY136	7	7	8	5	2	7	6	6	4	7	4	8	5	0	9.0	0	0	0	0	MS
NY140	9	9	8	7	6	7	6	6	5	7	7	7	7	0	9.0	0	0	0	0	MS,RZ,SG,^CS
NY141	9	9	8	5	6	7	5	7	4	7	6	6	6	0	9.0	0	0	0	0	SG,SS,MS,RZ
NYB13-1	9	9	8	6	2	8	5	7	5	7	3	7	6	0	9.0	0	0	0	0	SG,MS,GC,SR
Peter Wilcox	5	9	8	4	1	7	7	5	5	7	4	7	7	0	9.0	0	0	0	0	MS,GC
Red LaSoda	6	8	6	5	3	7	7	7	5	3	7	6	3	0	9.0	0	0	0	0	^EL,^MS,RZ,GC,CS,DAE
Russet Norkotah	8	9	8	6	5	2	6	7	8	8	6	7	7	0	9.0	0	0	0	0	MS,GC,SS,SR,AC
Superior	6	9	8	5	6	6	6	7	4	5	7	7	6	0	9.0	0	0	0	0	MS,SS,SR,RZ
Vivaldi	9	9	8	6	7	7	7	7	5	7	6	8	7	0	9.0	0	0	0	0	SS,MS,RZ
Yukon Gold	9	9	8	5	7	7	5	7	3	6	6	7	7	0	9.0	0	0	0	0	MS,SS,SG,GC,RZ,CS

[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. Specialty Variety Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity of potato clones harvested 92 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

				Size Dist. by Class (%)[2] (% of total yield)								
	Total Yield	Marketable Yield								1 7/8	2 1/2	Specific
Clone	cwt/A	cwt/A	% Chf.	1's	2's	3's	4's	5's	Cull's	to 4"	to 4"	Gravity[3]
All Blue	167	62	39	21	37	0	0	0	42	37	0	1.068
B2538-5	144	120	79	7	54	29	0	0	10	83	29	1.069
BCO01044-2	156	126	83	16	61	20	0	0	3	81	20	1.065
BCO01357-4	204	171	111	12	70	14	0	0	4	84	14	1.070
Blue Mac	112	53	36	23	43	2	0	0	32	45	2	1.066
BNC192-3	213	170	117	18	71	9	0	0	2	80	9	1.072
Chieftain	196	175	100	10	58	30	0	0	2	88	30	1.065
Dark Red Norland	219	184	115	6	42	41	0	0	11	83	41	1.058
Peter Wilcox	197	161	104	12	61	20	0	0	6	81	20	1.076
Vivaldi	180	150	91	14	73	10	0	0	3	83	10	1.064
Yukon Gold	162	137	93	7	44	40	2	0	8	85	41	1.074
Grand Mean	177	137										
CV(%)	17.55	21.70										
LSD(K=100)	46.6	40.9										

[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 5b. Specialty 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 92 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
All Blue	6	9	7	7	1	6	5	5	5	6	2	4	1	0	9.0	0	0	0	0	^^CS,^RZ,^SISC,PF2
B2538-5	5	7	8	5	1	7	6	6	4	7	5	7	5	0	9.0	0	0	0	3	RZ,SISC,GC,MS
BCO01044-2	9	6	8	6	1	6	6	7	3	7	5	7	4	0	9.0	0	0	0	0.0	RZ,MS,PF2
BCO01357-4	9	7	8	6	2	7	7	7	2	7	3	8	6	0	9.0	0	0	0	0.0	MS,RZ,SR,GC,RF1
Blue Mac	9	7	9	9	1	7	5	4	3	7	2	8	2	40	6.3	0	0	0	0.0	^MS,^SG,STST,CT,16IHN(4-8,3-7,6-6,3-5)
BNC192-3	6	7	7	4	1	8	7	5	3	7	5	8	7	3	8.3	0	0	0	3	RZ,MS,1IHN(1-6)
Chieftain	9	8	8	6	3	7	7	5	3	6	6	8	4	0	9.0	0	0	0	0.0	MS,SR,RZ
Dark Red Norland	5	7	6	3	2	7	7	6	3	6	6	7	5	0	9.0	0	0	0	3	MS, SS, RZ, GC, SISC
Peter Wilcox	6	9	8	4	1	6	7	5	4	8	5	6	5	0	9.0	0	0	0	0	GC, SISC, RZ, SS YF2
Vivaldi	9	8	7	7	7	6	7	6	5	8	6	8	7	0	9.0	0	0	0	0	MS,CS
Yukon Gold	9	8	7	5	2	7	7	6	4	7	7	6	6	0	9.0	0	0	0	0	MS,RZ,GC,^CS,SR,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 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 6a. 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 111,113 and 114 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

				Size Distribution by Class[2] (% of total yield)									Chip Color[4]	
	Total Yield	Marketable Yield								1 7/8	2 1/2	Specific	24 to	5 to
Clone	cwt/A	cwt/A	% Atl.	1's	2's	3's	4's	5's	Culls	to 4"	to 4"	Gravity[3]	48 hrs	7 Days
Atlantic	192	173	100	9	35	50	5	0	2	89	55	1.077	2	2
B2459-6	147	139	76	5	43	51	1	0	0	95	51	1.079	2	2
B2628-4	212	161	96	5	37	36	2	0	21	74	37	1.062	2	2
B2638-10	136	121	90	9	52	37	0	0	2	89	37	1.075	2	1
B2647-3	893	155	97	38	27	31	1	0	3	59	32	1.071	2	3
B2704-2	152	136	74	4	49	40	0	0	7	89	40	1.059	2	3
BNC182-5	261	237	139	7	38	53	0	0	2	91	53	1.069	2	2
Harley Blackwell	228	204	148	5	39	48	2	0	5	90	51	1.073	3	3
MSL292-A	131	74	45	13	61	20	0	0	6	81	20	1.075	2	3
MSN170-A	142	114	67	9	43	39	1	0	9	82	39	1.075	1	2
MSQ086-3	263	187	116	17	46	24	0	0	12	71	25	1.060	2	3
MSQ176-5	188	159	94	9	31	47	7	0	7	85	54	1.056	2	3
MSQ279-1	165	149	98	7	28	55	6	0	4	89	61	1.058	2	2
NC172-11	210	157	91	19	42	32	0	0	7	75	32	1.071	3	3
NC177-5	118	78	54	26	51	16	0	0	7	67	16	1.064	2	2
NC178-1	217	188	117	8	40	43	2	0	7	85	45	1.072	2	3
NC182-5	254	226	154	9	49	40	0	0	3	89	40	1.070	1	1
NCB2645-11	128	108	65	14	54	29	1	0	2	84	30	1.073	2	2
NYD40-35	186	141	95	23	67	9	0	0	2	76	9	1.076	1	2
Snowden	299	287	116	2	30	64	2	0	2	96	66	1.069	1	2
Superior	140	111	74	14	35	41	1	0	10	77	42	1.072	3	3
Yukon Gold	133	112	79	10	37	46	0	0	7	83	46	1.072	.	.
Grand Mean	216	149												
CV(%)	N/A	N/A												
LSD(K=100)	N/A	N/A												

[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 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 111,113 and 114 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
Atlantic	6	8	8	5	6	5	7	5	3	7	7	8	6	40	7.0	7	0	7	0	SR,MS,TSWV,8IHN(1-8,4-7,1-5,1-4)
B2459-6	6	6	8	5	5	5	5	7	5	7	7	8	7	0	9.0	3	0	3	0	.
B2628-4	7	9	8	9	9	7	7	7	6	8	7	8	5	0	9.0	0	0	0	3	^SG,pts,^MS,^CS,SR
B2638-10	5	8	8	4	5	4	7	7	5	8	5	8	7	0	9.0	0	0	10	0	RZ
B2647-3	6	6	8	5	8	7	7	7	4	7	5	8	6	0	9.0	0	0	3	0	MS,GC,RZ,SS,SG
B2704-2	9	8	8	9	6	6	6	7	6	8	7	8	5	7	8.3	0	0	0	0	MS,SS,IL,STST,EL,2IHN(2-7)
BNC182-5	6	9	8	7	5	5	7	7	2	7	6	8	7	0	9.0	0	0	0	0	MS,STST
Harley Blackwell	5	6	8	6	5	5	7	7	2	7	5	7	7	0	9.0	0	0	0	0	RZ, MS
MSL292-A	6	8	8	6	6	5	5	6	2	6	4	7	4	0	9.0	0	0	0	0	MS,SS,CS,DAE,DSE
MSN170-A	5	8	8	6	7	5	5	7	3	8	5	7	5	3	8.8	0	0	3	0	SR, MS, SG, RZ IHN(1-8)
MSQ086-3	9	8	8	8	6	6	7	7	1	8	4	8	4	0	9.0	0	3	0	0	SS,SG,GC,RZ,SR,MS
MSQ176-5	9	9	8	8	8	5	7	7	3	7	7	7	6	0	9.0	0	0	0	0	RZ,CS,MS,IL
MSQ279-1	9	8	8	8	6	6	7	7	2	6	7	7	6	0	9.0	0	0	0	0	^^DAE,SS,MS
NC172-11	9	8	8	9	5	5	7	7	2	7	3	7	5	10	6.0	0	0	3	0	SS,STST,^^SG,MS,3IHN(1-5,2-4)
NC177-5	7	5	8	8	8	5	7	7	3	7	3	7	4	0	9.0	0	0	0	0	^MS,SG,CS
NC178-1	9	8	8	8	7	6	5	7	3	7	5	8	4	0	9.0	0	0	0	0	SR,STST,MS,DAE,DSE
NC182-5	6	9	8	7	6	5	7	7	1	7	6	8	7	3	8.7	0	0	0	0	SS,MS,SG,1IHN(1-8)
NCB2645-11	5	8	8	5	7	6	7	7	2	8	5	7	7	0	9.0	0	0	0	0	SR,MS
NYD40-35	7	9	8	6	6	7	5	7	2	8	3	8	5	0	9.0	0	0	0	0	RZ,SS,GC,CS
Snowden	9	8	8	7	5	5	7	7	2	5	6	7	5	0	9.0	0	0	0	0	DAE, DSE, SS, MS
Superior	5	9	8	4	6	6	6	7	3	7	5	7	4	0	9.0	0	0	3	5	MS,SR
Yukon Gold	8	9	7	5	7	7	7	7	3	7	6	8	6	0	9.0	0	0	0	0	SR,MS,CS,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 Two. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 104 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class[2] (% of total yield) 1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]	Chip Color[4] 24 to 48 hrs	5 to 7 Days
AF2867-20	197	138	63	25	64	6	0	0	4	70	6	1.078	2	2
AF4013-3	229	176	82	17	65	12	0	0	6	77	12	1.076	2	3
Atlantic	245	221	100	6	42	48	1	0	3	91	49	1.078	2	2
B2492-7	173	137	62	12	50	29	0	0	9	79	29	1.055	2	3
B2634-3	238	182	86	15	61	15	0	0	9	76	15	1.067	1	1
BNC41-13	210	131	60	27	56	7	0	0	10	63	7	1.073	2	2
Dakota Pearl	202	155	69	18	57	18	1	0	7	76	19	1.072	2	2
NC41-1	186	148	66	18	56	23	0	0	3	79	23	1.075	1	2
NCB2489-5	197	161	73	16	58	23	0	0	3	81	23	1.084	1	1
NCB2497-17	286	237	109	7	40	43	0	0	10	83	43	1.071	2	2
Superior	195	159	73	7	36	44	2	0	11	81	45	1.068	3	3
Yukon Gold	176	141	64	5	29	50	0	0	15	79	50	1.070	.	.
Grand Mean	211	165												
CV(%)	13.34	17.84												
LSD(K=100)	40.7	42.9												

[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 7b. 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 104 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF2867-20	6	8	8	5	8	8	5	7	4	8	4	8	5	0	9.0	0	0	0	8	MS,SS,RZ,SR
AF4013-3	8	9	8	6	9	6	5	7	4	8	5	8	5	0	9.0	0	0	3	5	SS,MS,RZ,SR,YF2
Atlantic	6	7	8	5	6	5	6	5	3	7	7	8	5	28	5.3	5	0	3	3	MS,GC,SR,SS,11IHN(2-8,7-7,1-6,1-5)
B2492-7	9	7	7	5	8	8	7	7	1	7	4	7	6	0	9.0	0	0	0	3	SR,SS,TSWV
B2634-3	5	8	8	5	8	7	7	7	5	8	6	5	4	0	9.0	0	0	0	0	GC,RZ,^SR,MS
BNC41-13	6	7	8	5	5	5	7	6	2	7	4	6	4	0	9.0	0	0	0	3	SR,^RZ,SS
Dakota Pearl	6	8	8	5	8	8	7	7	2	7	5	8	5	0	9.0	0	0	15	3	MS,SR,SS,RZ
NC41-1	6	7	8	4	5	5	7	6	2	7	6	8	5	0	9.0	0	0	0	0	SR,MS,SS
NCB2489-5	6	9	8	4	6	6	6	6	3	8	5	8	6	0	9.0	0	0	0	5	SS,MS,EL,SR,RZ,GC
NCB2497-17	6	7	8	6	6	6	6	6	4	8	6	6	6	0	9.0	0	0	0	0	SR,MS
Superior	6	9	8	4	6	6	5	7	4	7	7	8	5	0	9.0	0	0	13	0	SR,MS,SS,CS
Yukon Gold	9	8	7	5	7	7	6	7	3	8	6	8	6	5	8.5	0	0	10	0	CS,RZ,SS,MS,SR,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. Round White Trial Three. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 111 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class[2] (% of total yield) 1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]	Chip Color[4] 24 to 48 hrs	5 to 7 Days
AF0339-39	187	156	78	14	50	33	1	0	2	84	34	1.058	2	3
AF2497-2	218	188	95	11	47	39	0	0	3	86	39	1.063	2	3
AF4014-1	240	215	108	9	37	51	1	0	2	90	52	1.058	1	2
AF4047-2	289	262	130	7	33	53	4	0	3	91	57	1.063	2	2
Atlantic	225	205	100	5	35	50	5	0	4	91	56	1.079	1	1
B1992-106	199	179	91	8	26	57	6	0	2	90	63	1.073	2	3
B2459-13	228	174	86	20	57	19	0	0	3	76	19	1.071	2	2
B2575-19	229	202	104	9	36	50	2	0	4	88	52	1.075	2	2
B2634-13	218	149	71	32	55	11	0	0	1	67	11	1.069	1	2
BNC49-1	200	146	72	22	42	31	0	0	6	73	31	1.066	2	2
Dakota Crisp	286	248	124	6	36	48	3	0	8	87	51	1.069	2	2
Marcy	283	268	140	3	20	66	8	0	2	95	75	1.070	1	2
NC0349-3	293	267	136	6	28	60	3	0	3	91	63	1.073	2	2
NC0349-8	216	187	94	10	49	37	1	0	4	86	38	1.075	2	2
Snowden	330	305	151	5	28	64	1	0	3	93	65	1.083	1	2
Vivaldi	244	200	101	15	70	11	0	0	3	82	12	1.062	.	.
Yukon Gold	176	142	71	13	45	35	0	0	7	80	35	1.075	.	.
Grand Mean	239	206												
CV(%)	13.44	15.85												
LSD(K=100)	44.2	44.0												

[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. 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 111 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF0339-39	6	8	8	4	8	7	7	7	2	7	5	8	6	0	9.0	0	0	3	0	MS,SS,SR,GC
AF2497-2	7	8	9	8	8	6	6	7	2	7	4	8	4	23	7.0	5	0	18	0	SS,RZ,MS,SR,SG,9IHN(1-8,5-7,1-6,1-5,1-4)
AF4014-1	8	8	8	8	6	5	6	6	2	8	6	8	6	8	7.5	0	0	0	0	RZ,SR,SS,MS,3IHN(1-8,1-7,1-6)
AF4047-2	7	9	8	6	6	5	6	7	2	7	7	8	6	0	9.0	15	0	10	0	MS,RZ,SR
Atlantic	6	7	8	5	6	5	7	6	2	7	7	8	5	13	7.3	10	0	10	0	SR,MS,SS,RZ,GC,5IHN(1-8,1-6,3-5)
B1992-106	6	6	7	7	5	5	6	5	3	8	5	8	5	0	9.0	0	0	3	0	RZ,MS,SS
B2459-13	6	8	8	6	6	5	7	6	1	8	4	8	5	0	9.0	0	0	0	0	SS,RZ,MS,RZ
B2575-19	6	6	8	6	8	6	6	6	4	8	7	8	5	0	9.0	3	0	3	5	SR,SS,GC,MS
B2634-13	6	8	8	6	6	6	6	7	2	8	2	8	6	0	9.0	0	0	0	0	SS,MS,RZ
BNC49-1	6	7	8	6	6	6	7	6	2	8	7	8	4	0	9.0	0	0	0	0	SS,SG,RZ,GC,SR,MS
Dakota Crisp	6	8	8	7	6	6	5	6	2	7	6	8	5	3	8.8	0	0	0	0	SS,MS,GC,RZ,SR,1IHN(1-8)
Marcy	9	8	8	22	5	5	5	5	5	8	7	8	7	5	8.5	0	0	3	0	MS,SS,RZ,2IHN(1-7,1-8)
NC0349-3	9	8	8	7	6	5	6	5	2	7	7	8	7	0	9.0	0	0	0	0	MS,SS,SR
NC0349-8	9	8	8	6	6	5	6	5	3	7	6	8	6	0	9.0	0	0	0	0	SS,RZ,SR
Snowden	9	8	8	7	5	5	5	7	2	6	7	8	5	0	9.0	0	0	3	0	SS,RZ,SR,MS
Vivaldi	8	8	7	7	9	7	7	7	5	8	5	8	6	0	9.0	0	0	0	0	SR,RZ,SS,CS,TSWV,EL,SG
Yukon Gold	8	8	7	5	7	8	6	7	2	8	6	7	6	3	8.5	0	0	5	0	SS,MS,CS,RZ,SR,YF2,1IHN(1-7)

[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 Round White Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 104 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class[2] (% of total yield) 1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]	Chip Color[4] 24 to 48 hrs	5 to 7 Days
AF2291-10	242	223	100	5	42	48	2	0	2	92	50	1.078	2	2
AF2574-1	315	251	111	7	39	40	0	0	13	79	40	1.061	2	3
Atlantic	253	226	100	8	37	51	2	0	2	89	53	1.077	2	2
B1992-106	214	182	81	8	39	46	1	0	7	85	47	1.077	2	2
B2452-3	201	178	80	8	33	55	1	0	4	88	56	1.067	2	1
Beacon Chipper	222	205	91	4	30	60	2	0	4	92	62	1.073	2	1
Dakota Diamond	282	242	107	11	48	37	0	0	4	86	37	1.075	2	3
Katahdin	188	158	71	15	60	22	0	0	2	83	22	1.061	2	3
Kennebec	242	216	96	6	38	49	3	0	5	89	52	1.062	2	2
NY138	191	166	74	11	42	44	0	0	2	87	45	1.070	2	2
NY139 (NYY28-9)	256	238	106	6	48	45	0	0	1	93	45	1.074	2	2
NY140 (NYY36-4)	237	223	100	3	34	60	0	0	3	94	60	1.068	3	2
NY141 (NYY41-67)	219	181	80	11	36	46	1	0	7	83	47	1.069	2	1
NYB38-40	228	194	87	12	47	38	0	0	4	85	38	1.062	1	1
Snowden	294	266	119	7	39	51	0	0	2	91	51	1.075	2	2
Superior	212	176	78	11	38	45	0	0	6	83	45	1.069	3	2
Yukon Gold	159	138	61	9	46	41	0	0	5	86	41	1.072	.	.
Grand Mean	233	204												
CV(%)	12.99	14.63												
LSD(K=100)	41.6	42.1												

[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 9b. 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 104 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF2291-10	9	8	8	9	6	5	6	5	5	7	7	8	5	5	8.0	0	0	3	3	MS,SS,GC,RZ,2IHN(2-7)
AF2574-1	9	9	8	7	6	5	5	6	5	7	6	7	3	3	8.8	0	0	38	0	RZ,MS,GC,SG,SS,1IHN(1-8)
Atlantic	6	8	8	5	6	5	6	5	2	7	6	8	5	3	8.5	8	0	5	8	SR,MS,RZ,SS,GC,1IHN(1-7)
B1992-106	6	8	6	7	5	5	7	6	3	8	6	7	5	0	9.0	0	0	0	0	^RZ,SS,SR
B2452-3	6	8	7	6	6	5	6	6	3	8	6	8	6	0	9.0	0	0	0	0	MS,RZ,SS,SR
Beacon Chipper	6	9	8	6	6	5	6	5	2	7	6	8	5	0	9.0	0	0	3	0	RZ,SR,SS
Dakota Diamond	9	7	8	9	8	6	7	5	2	8	6	8	3	8	8.5	0	0	5	0	^MS,RZ,GC,RZ,SR 3IHN(3-7)
Katahdin	5	9	7	6	9	8	6	7	5	7	4	8	5	0	9.0	0	0	0	0	SR,MS,SS
Kennebec	8	9	8	8	8	7	5	5	5	7	6	8	5	0	9.0	0	0	0	0	SS,RZ,MS,GC,SG
NY138	9	8	8	6	6	6	6	7	3	8	5	8	6	0	9.0	0	0	0	0	RZ,SS,SR
NY139 (NYY28-9)	9	8	6	7	6	6	6	6	4	8	5	8	6	0	9.0	0	0	0	3	SS,SR,IL
NY140 (NYY36-4)	9	9	8	7	6	7	5	7	5	8	7	8	7	0	9.0	0	0	0	0	RZ,SS,MS,SR
NY141 (NYY41-67)	9	7	6	6	6	7	7	7	2	8	7	7	4	0	9.0	0	0	5	0	^MS,CS,SS,RZ
NYB38-40	6	8	6	5	6	6	6	7	5	8	5	8	7	0	9.0	0	0	0	0	SS,MS,RZ,GC
Snowden	9	9	7	7	5	5	7	5	2	6	6	8	4	0	9.0	0	0	0	0	MS,STST,RZ,SS
Superior	5	9	8	4	6	6	5	7	3	7	5	7	4	0	9.0	0	0	8	0	MS,RZ,SS,CS,GC
Yukon Gold	8	9	7	5	7	7	7	7	3	8	5	7	6	0	9.0	0	0	3	5	SR,SS,RZ

[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 Red Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 92 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Chieftain	Size Dist. by Class (%)[2] (% of total yield) 1's	2's	3's	4's	5's	Cull's	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
B2152-17	245	169	79	31	68	1	0	0	0	69	1	1.077
B2676-2	168	115	54	30	67	1	0	0	2	69	1	1.083
BCO01306-2	200	140	67	26	70	0	0	0	4	70	0	1.081
Chieftain	247	214	100	12	68	19	0	0	2	86	19	1.062
Dakota Jewel	191	174	82	8	57	34	0	0	1	91	34	1.067
Dark Red Norland	240	196	92	7	39	42	1	0	12	81	42	1.062
MSQ425-4PY	179	126	59	28	62	8	0	0	3	70	8	1.075
NCB2607-3	194	117	55	35	59	1	0	0	5	60	1	1.082
NY136	195	154	73	19	63	17	0	0	2	79	17	1.064
NYB13-1	236	161	76	29	66	2	0	0	3	68	2	1.062
Red LaSoda	204	176	83	8	38	46	3	0	6	86	48	1.067
Red Pontiac	254	196	92	6	34	42	1	0	16	77	43	1.060
Super Red Norland	224	198	93	7	34	53	2	0	5	88	55	1.056
Grand Mean	214	164										
CV(%)	11.55	13.72										
LSD(K=100)	34.0	29.2										

[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 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 92 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
B2152-17	6	9	8	4	2	7	6	5	2	8	4	8	7	0	9.0	0	0	0	0	RZ,MS,YF1
B2676-2	5	6	7	4	3	7	7	7	2	8	5	8	8	0	9.0	0	0	0	5	RZ,GC,SS
BCO01306-2	8	8	8	7	2	6	7	6	2	6	5	8	6	0	9.0	0	0	0	3	RZ,SISC,GC,RF1
Chieftain	9	9	8	6	3	6	7	4	3	5	6	7	4	3	8.8	0	0	0	0	RZ,MS,DAE
Dakota Jewel	6	7	8	6	2	8	6	5	3	6	5	8	6	0	9.0	0	0	5	0	RZ,SR,MS
Dark Red Norland	5	7	7	3	2	7	7	6	3	5	6	6	4	0	9.0	0	0	0	0	RZ, GC, MS, SS
MSQ425-4PY	6	9	8	5	7,1	6	7	7	2	5	4	7	6	0	9.0	0	0	0	0	MS,CS,YF2
NCB2607-3	6	8	8	4	2	8	7	7	2	8	2	7	7	0	9.0	0	0	0	0	RZ,GC,MS,YF2
NY136	9	7	8	6	2	7	6	6	3	6	6	8	8	0	9.0	0	0	0	3	RZ,CS,SC
NYB13-1	9	9	8	6	2	6	7	6	5	8	3	8	4	0	9.0	0	0	0	0	MS,RZ
Red LaSoda	5	8	7	5	3	7	7	4	4	5	5	6	4	0	9.0	5	0	35	0	MS,CS
Red Pontiac	9	6	8	7	3	7	7	4	3	4	3	6	3	0	9.0	0	0	0	0	MS, RZ, SS,CS
Super Red Norland	6	7	8	4	2	7	7	5	2	7	5	8	7	3	6.3	0	0	25	0	MS, RZ, 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. NE-1031 Russet Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 113 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% R.Nor	Size Distribution by Class[2] (% of total yield) 1's	2's	3's	4's	5's	Culls	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
AF3326-7	119	90	69	7	52	25	0	0	17	76	25	1.065
Blazer Russet (A8893-1)	182	56	41	5	24	8	0	0	63	31	8	1.060
Defender	194	136	100	9	53	16	0	0	22	69	16	1.069
Innovator	157	82	63	9	48	5	0	0	39	53	5	1.067
Rio Grande Russet	168	115	88	18	65	2	0	0	14	68	2	1.070
Russet Burbank	173	32	23	10	17	1	0	0	71	18	1	1.069
Russet Norkotah #3117	168	135	100	9	74	6	0	0	11	80	6	1.078
Grand Mean	166	92										
CV(%)	16.50	25.21										
LSD(K=100)	46.0	32.7										

[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.

Table 11b. 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 113 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
AF3326-7	9	9	8	5	4	2	5	7	6	8	3	5	4	0	9.0	0	3	13	3	^SR,MS,RZ,SS
Blazer Russet (A8893-1)	7	9	8	8	5	3	5	7	7	8	4	5	1	0	9.0	0	0	3	5	^^MS(PTS),^SR,RZ,GC
Defender	9	9	8	9	6	5	5	7	6	8	7	4	3	13	8.3	0	0	0	5	^MS,^SR,SS,RZ,IL 5IHN(3-8,2-7)
Innovator	6	8	8	7	6	5	5	7	6	8	7	5	2	0	9.0	0	0	0	0	^MS,^SR,^RZ,SS,CS,YF1
Rio Grande Russet	9	8	9	9	4	3	4	7	6	8	3	7	4	0	9.0	0	0	0	3	^MS,^SR,SS,GC,HS
Russet Burbank	9	9	8	8	4	3	4	6	6	8	4	6	1	53	6.5	0	0	0	0	^MS,SR,21IHN(7-8,7-7,3-6,3-5,1-4)
Russet Norkotah #3117	6	9	8	6	3	2	5	7	6	8	6	7	6	0	9.0	0	0	0	3	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 12a. Unreplicated Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 113 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Std	Std	Size Dist. by Class (%)[2] (% of total yield) 1's	2's	3's	4's	5's	Cull's	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
Atlantic	245	215	100	Atlantic	6	30	56	1	0	7	87	56	1.078
B2656-8	112	24	15	Chieftain	26	22	0	0	0	52	22	0	1.075
B2724-1	139	112	48	Atlantic	17	62	19	0	0	2	81	19	1.074
B2724-15	190	130	56	Atlantic	27	51	18	0	0	4	69	18	1.073
B2724-18	162	136	59	Atlantic	12	52	32	0	0	4	84	32	1.072
B2725-2	183	138	60	Atlantic	13	57	18	0	0	11	76	18	1.076
B2725-7	146	90	39	Atlantic	34	58	4	0	0	4	62	4	1.081
B2726-1	150	110	47	Atlantic	8	47	27	0	0	18	74	27	1.077
B2727-2	114	90	39	Atlantic	7	51	29	0	0	13	80	29	1.077
B2728-7	91	74	32	Atlantic	11	57	24	0	0	8	81	24	1.064
B2729-1	148	108	47	Atlantic	20	64	9	0	0	7	73	9	1.078
B2729-2	152	109	47	Atlantic	15	57	15	0	0	14	72	15	1.070
B2731-10	162	142	57	Atlantic	8	31	54	3	0	4	88	57	1.071
B2731-11	179	148	60	Atlantic	9	45	37	0	0	9	83	37	1.074
B2731-13	171	129	52	Atlantic	5	19	47	10	0	19	75	56	1.069
B2731-18	154	82	33	Atlantic	6	13	40	0	0	41	54	40	1.077
B2731-2	200	177	71	Atlantic	8	47	42	0	0	4	88	42	1.082
B2731-3	248	229	93	Atlantic	4	23	61	9	0	4	92	69	1.071
B2731-4	171	128	52	Atlantic	9	34	38	2	0	16	75	41	1.076
B2731-6	289	182	74	Atlantic	5	21	40	2	0	33	63	42	1.064
B2731-7	195	180	73	Atlantic	4	15	74	2	0	4	92	77	1.065
B2731-8	204	159	64	Atlantic	18	57	21	0	0	4	78	21	1.071
B2733-1	187	149	60	Atlantic	11	52	28	0	0	9	80	28	1.074
B2735-13	167	113	46	Atlantic	23	52	16	0	0	9	68	16	1.073
B2735-6	142	94	38	Atlantic	18	43	23	0	0	16	66	23	1.065

[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 12b. 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 113 DAP[1] at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2009

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
Atlantic	6	8	8	5	5	5	7	6	2	5	6	7	6	15	8.5	0	0	8	0	DAE,DSE,SS,RZ,SR,MS,6IHN(5-8,1-7)
B2656-8	8	8	8	2	1	7	7	7	2	6	2	3	3	0	9.0	0	0	0	0	^^^SISC, SS, RZ
B2724-1	6	7	5	4	9	6	7	7	2	5	6	7	5	0	9.0	0	0	0	0	MS,
B2724-15	5	9	8	5	5	5	7	7	2	8	5	8	7	0	9.0	40	0	10	0	SR, RZ
B2724-18	5	8	8	4	6	6	7	7	2	6	5	8	5	0	9.0	0	0	0	0	DAE, DSE, SR
B2725-2	5	8	8	5	5	6	5	7	2	8	5	7	5	0	9.0	0	0	0	0	RZ, SR
B2725-7	5	8	8	5	5	5	5	7	3	8	3	8	4	0	9.0	0	0	0	0	GC, SR,
B2726-1	9	9	8	7	5	5	7	7	2	7	6	6	6	0	9.0	0	0	0	0	^^SR, RZ
B2727-2	5	7	8	4	9	6	6	7	4	8	5	8	6	0	9.0	0	0	0	0	SR, SS, TSWV
B2728-7	4	7	8	6	9	7	7	7	2	7	5	7	5	0	9.0	0	0	0	0	SR, SS
B2729-1	6	9	8	4	6	6	6	7	3	8	3	8	4	0	9.0	0	0	0	0	GC, SS, RZ
B2729-2	9	8	8	7	6	5	7	7	2	7	3	7	4	0	9.0	0	10	0	0	SR, TSWV, SS
B2731-10	6	7	8	5	5	5	7	7	2	7	7	8	8	0	9.0	0	0	0	0	SR, RZ
B2731-11	6	9	7	6	5	5	7	7	2	7	5	6	6	0	9.0	0	0	0	0	RZ, SS,
B2731-13	9	9	8	6	5	5	7	6	2	8	8	7	7	0	9.0	0	0	0	0	RZ, GC, SR, BIG NICE
B2731-18	6	9	8	8	5	5	6	7	3	7	7	6	5	0	9.0	0	0	0	0	^RZ, GC, SR
B2731-2	6	9	8	5	6	5	5	7	4	7	6	8	6	0	9.0	0	0	0	0	SS, SG
B2731-3	6	9	8	6	5	5	5	7	3	6	7	8	6	0	9.0	0	20	0	10	CS, SR, SS
B2731-4	6	8	8	4	5	5	7	7	2	7	5	6	4	0	9.0	0	0	0	0	^^RZ, ^SS, GC, SR
B2731-6	9	7	8	8	6	5	7	7	3	7	7	8	3	0	9.0	0	0	10	0	^^SG, MS,
B2731-7	6	6	5	6	5	5	7	7	2	7	7	8	8	0	9.0	0	0	0	0	SR, RZ
B2731-8	6	9	7	6	6	5	7	7	2	8	6	8	7	0	9.0	0	0	0	0	IL, RZ, SR
B2733-1	6	7	8	4	6	6	6	7	5	7	5	7	6	0	9.0	0	0	0	0	MS, SR,
B2735-13	6	9	8	7	5	5	7	7	2	8	4	8	6	0	9.0	0	20	0	0	MS, RZ, SR
B2735-6	6	7	8	7	9	6	7	7	2	7	6	6	5	0	9.0	0	0	0	0	^^IL, SR, RZ

[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

Table 12a. Continued.

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Std	Std	Size Dist. by Class (%)[2] (% of total yield) 1's	2's	3's	4's	5's	Cull's	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
B2735-7	121	95	39	Atlantic	10	54	25	0	0	11	79	25	1.076
B2735-9	175	115	46	Atlantic	17	52	13	0	0	17	66	13	1.076
B2736-1	265	234	98	Atlantic	6	18	63	7	0	6	89	70	1.066
B2738-3	240	219	91	Atlantic	6	25	61	5	0	3	91	66	1.060
B2739-3	244	182	76	Atlantic	11	31	44	0	0	14	75	44	1.063
B2740-1	268	235	98	Atlantic	8	26	56	5	0	4	88	62	1.063
B2747-14	256	162	67	Atlantic	33	55	8	0	0	4	63	8	1.085
B2747-16	225	125	52	Atlantic	38	42	13	0	0	6	56	13	1.088
B2747-21	171	123	51	Atlantic	23	65	7	0	0	5	72	7	1.086
B2747-7	327	223	93	Atlantic	29	55	13	0	0	3	68	13	1.069
B2747-8	186	124	52	Atlantic	27	50	16	0	0	6	67	16	1.073
B2749-13	174	93	39	Atlantic	28	47	7	0	0	18	54	7	1.072
B2749-4	213	128	53	Atlantic	19	55	5	0	0	21	60	5	1.066
B2750-2	164	102	42	Atlantic	15	33	29	0	0	23	62	29	1.066
B2756-2	198	135	82	Chieftain	23	49	19	0	0	9	68	19	1.059
B2756-7	218	174	72	Chieftain	15	42	37	0	0	6	80	37	1.068
B2765-2	70	39	16	Atlantic	12	41	16	0	0	31	57	16	1.066
B2766-1	86	32	14	Chieftain	45	37	0	0	0	19	37	0	1.062
B2769-1	136	73	34	Chieftain	31	50	3	0	0	15	54	3	1.062
B2769-4	208	171	71	Chieftain	8	46	36	0	0	9	82	36	1.062
B2772-5	145	64	30	Chieftain	45	43	1	0	0	11	44	1	1.058
B2775-1	177	31	13	Atlantic	28	18	0	0	0	54	18	0	1.071
B2777-2	270	195	139	Atlantic	23	65	7	0	0	4	72	7	1.093
B2777-3	275	225	160	Atlantic	6	34	48	0	0	12	82	48	1.077

[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 12b. Continued.

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
B2735-7	5	9	8	5	4	5	7	6	3	7	6	8	7	0	9.0	0	0	0	0	SS, SR
B2735-9	6	6	8	4	6	5	6	7	3	6	4	8	4	0	9.0	0	0	0	0	SS. MS,
B2736-1	6	9	8	4	9	6	7	7	2	7	8	8	8	0	9.0	0	0	0	0	SS, GC
B2738-3	8	8	5	4	6	5	7	7	2	6	7	8	7	0	9.0	0	0	0	0	CS, SS
B2739-3	6	7	8	9	5	5	7	6	2	7	6	8	5	0	9.0	0	0	0	0	^^GC,^RZ,SR
B2740-1	6	6	8	8	5	5	7	7	2	7	7	8	7	40	6.0	0	0	0	0	SR,RZ,SS,4IHN(2-5,1-6,1-7)
B2747-14	5	7	8	6	7	7	7	7	2	7	3	8	5	40	8.0	0	0	10	0	SR,GC,SS,4IHN(1-7,3-8)
B2747-16	6	8	8	6	6	6	6	7	3	7	5	8	6	0	9.0	0	0	0	0	SS,IL,SR
B2747-21	5	8	8	4	7	6	6	7	2	8	3	8	6	0	9.0	0	0	0	0	SR, SS
B2747-7	6	7	8	8	6	5	7	7	2	7	3	8	6	0	9.0	0	10	0	0	SR,STST,RZ,SS
B2747-8	5	6	7	2	7	6	7	7	2	7	2	8	6	0	9.0	0	0	0	0	^SS, SR, RZ
B2749-13	6	8	8	5	6	7	7	7	2	7	3	7	5	0	9.0	0	0	0	0	RZ, SR
B2749-4	6	7	8	5	6	6	7	7	2	7	5	6	5	0	9.0	0	10	0	10	^SR, ^SG, RZ
B2750-2	6	9	8	5	5	6	6	7	3	8	4	7	4	10	8.0	0	0	0	0	^SG, ^SR, RZ, SS 1IHN(1-8)
B2756-2	5	9	7	4	3	6	7	7	2	7	4	7	6	0	9.0	0	0	0	0	SISC, SR, SS, GC
B2756-7	6	9	7	6	2	7	6	7	2	7	5	7	7	0	9.0	0	0	0	0	^GC, SS, SISC
B2765-2	9	6	8	7	9	7	6	7	2	8	3	6	4	30	7.0	0	0	0	0	IL,^SR,MS,3IHN(1-6,1-7,1-8)
B2766-1	4	7	8	3	1	6	6	7	5	8	2	5	4	0	9.0	0	0	0	10	^^SISC, ^RZ, GC, SR
B2769-1	8	8	8	4	3	7	6	7	5	7	4	7	6	0	9.0	0	0	0	20	SISC, SS
B2769-4	5	8	8	4	2	6	5	7	3	7	6	8	6	0	9.0	0	0	0	0	GC, SISC, SS
B2772-5	5	8	8	3	2	7	7	7	4	7	2	8	5	0	9.0	0	0	0	0	SG,MS
B2775-1	9	7	8	9	6	5	6	7	2	8	2	8	2	100	5.0	0	0	0	0	^SG,RZ,GC,SS,SR,10IHN(1-2,3-5,2-6,4-7)
B2777-2	9	8	8	5	6	6	6	7	2	7	3	8	5	0	9.0	0	0	0	10	CS, SS
B2777-3	9	8	8	7	6	5	5	7	5	7	6	8	4	0	9.0	0	0	10	0	^STST, SR, TSWV,^SG, 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 (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

Table 12a. Continued.

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Std	Std	Size Dist. by Class (%)[2] (% of total yield) 1's	2's	3's	4's	5's	Cull's	1 7/8 to 4"	2 1/2 to 4"	Specific Gravity[3]
B2777-3	275	225	160	Atlantic	6	34	48	0	0	12	82	48	1.077
B2780-4	184	134	95	Atlantic	16	49	24	0	0	11	73	24	1.070
B2781-3	283	238	170	Atlantic	10	43	41	0	0	6	84	41	1.071
B2783-10	210	118	84	Atlantic	22	48	8	0	0	22	56	8	1.062
B2783-16	202	115	82	Atlantic	37	52	5	0	0	6	57	5	1.073
B2784-1	171	108	77	Atlantic	30	53	11	0	0	7	63	11	1.077
B2792-2	176	120	85	Atlantic	16	49	19	0	0	16	68	19	1.082
B2793-2	159	125	89	Atlantic	13	67	12	0	0	8	79	12	1.075
B2796-3	151	118	84	Atlantic	13	50	28	0	0	10	78	28	1.066
B2796-4	168	103	73	Atlantic	14	34	27	0	0	25	61	27	1.071
B2805-3	123	85	61	Atlantic	10	40	27	3	0	21	69	30	1.056
B2805-8	58	30	22	Atlantic	26	53	0	0	0	21	53	0	1.066
B2811-2	114	55	34	Chieftain	43	46	2	0	0	9	48	2	1.056
B2811-5	133	74	33	Chieftain	41	53	3	0	0	3	56	3	1.059
BNC199-1	183	107	76	Atlantic	11	37	21	0	0	31	58	21	1.072
BNC201-1	191	146	69	Chieftain	21	58	18	0	0	3	76	18	1.079
BNC202-3	351	303	131	Atlantic	4	27	59	0	0	10	86	59	1.078
BNC202-7	259	202	87	Atlantic	19	44	32	2	0	3	78	34	1.078
BNC203-1	161	146	63	Atlantic	6	49	42	0	0	3	91	42	1.071
BNC212-3	177	86	37	Atlantic	47	49	0	0	0	4	49	0	1.076
Chieftain	265	211	100	Chieftain	10	43	36	0	0	11	79	36	1.062
Dark Red Norland	222	155	75	Chieftain	7	38	32	0	0	23	70	32	1.058
Snowden	288	264	134	Atlantic	5	26	61	4	0	4	91	65	1.067
Superior	186	155	72	Atlantic	10	36	45	3	0	8	83	47	1.068
Yukon Gold	153	124	59	Atlantic	10	32	48	0	0	11	79	48	1.070
Grand Mean	195	145											

[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 12b. Continued.

	Plant Data[2]				Tuber Data[2]									% Internal Defects[3]						
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	Comments[4]
B2780-4	5	9	6	6	9	7	5	7	4	7	4	8	5	0	9.0	0	0	0	0	^^SG, SS, SR
B2781-3	6	9	8	8	7	6	5	7	4	6	5	7	4	0	9.0	0	0	0	0	SR, SG, SS, STST
B2783-10	5	8	7	3	6	5	7	7	3	7	3	8	3	0	9.0	0	0	0	0	^^SG, ^SR, SS
B2783-16	9	7	8	8	6	7	7	7	2	7	3	7	6	0	9.0	0	10	0	0	SR, SG
B2784-1	8	9	8	7	6	6	7	7	2	7	2	6	5	0	9.0	0	10	0	0	^^SR, SG, RZ
B2792-2	6	7	8	6	8	8	5	7	5	7	6	8	4	0	9.0	0	0	0	0	^SR, MS
B2793-2	5	8	8	4	9	7	5	7	4	8	3	8	6	0	9.0	0	0	0	0	SR, RZ
B2796-3	6	9	7	7	9	7	5	7	3	8	5	7	6	0	9.0	0	10	0	20	SR, RZ, SS
B2796-4	6	5	8	8	5	5	7	7	2	7	7	7	4	10	6.0	0	0	0	0	^^SG, ^RZ, SR, 1IHN(1-6)
B2805-3	8	5	8	8	6	6	6	7	3	7	5	8	5	0	9.0	0	0	0	0	MS, SS, SR
B2805-8	6	8	7	5	6	6	7	7	3	8	2	8	4	0	9.0	10	0	10	0	^SR, SS, MS, RZ
B2811-2	7	8	7	1	2	8	3	7	2	7	3	7	4	0	9.0	0	0	0	30	^GC
B2811-5	5	7	8	4	3	7	2	7	2	7	2	7	4	0	9.0	0	0	0	20	MS
BNC199-1	6	9	8	7	5	5	6	7	2	8	5	8	3	10	6.0	0	0	0	0	^^SG, SS, PTS, SR 1IHN(1-6)
BNC201-1	6	8	8	7	2	7	7	7	2	6	5	8	7	0	9.0	0	0	0	0	SISC, SS, MS
BNC202-3	9	9	8	9	5	5	7	7	2	7	7	8	5	0	9.0	0	0	0	0	^MS, SR, RZ
BNC202-7	6	8	8	4	5	5	7	7	2	8	6	7	7	0	9.0	0	0	0	0	RZ, SS
BNC203-1	5	8	7	3	7	6	6	7	2	7	5	8	5	0	9.0	0	0	0	10	SS, SR, RZ
BNC212-3	6	9	8	6	6	6	7	7	2	7	2	8	6	0	9.0	10	0	0	0	SS, RZ, SG
Chieftain	9	8	8	6	3	6	5	7	3	7	5	8	5	0	9.0	0	3	0	0	GC,^SISC,^RZ,MS
Dark Red Norland	5	7	7	4	3	6	5	7	3	7	5	6	5	0	9.0	0	0	0	10	SISC,GC,SR,RZ
Snowden	9	8	8	7	5	5	7	7	2	5	7	8	5	3	8.8	0	0	0	0	DAE,DSE,RZ,GC,1IHN(1-8)
Superior	6	9	8	4	6	5	7	7	4	5	6	7	5	0	9.0	0	5	0	0	MS,SS,RZ
Yukon Gold	8	8	7	5	7	6	7	7	3	7	6	7	6	0	9.0	0	0	5	0	CS,^SR,RZ,SISC,SG

[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: Sixteen 21' rows at 34' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Metribuzin 1.1 lbs/A
	Intensity One 16 fl oz/A
Fertilizer:	216 lbs N, 74 lbs P, 61 lbs K, 1 lb Zn
Insect Control:	Spintor 2SC 5 fl oz/A
	Actara 2 oz/A
Disease Control:	Quadris 6.3oz/A
	Manzate Pro-stick 7.0 lb/A
	Curzate 60 DF 3.2 oz/A
	Revus Top 6 fl oz/A
Irrigation:	None
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: Eleven 21' rows at 34' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Metribuzin 1.1 lbs/A
	Intensity One 16 fl oz/A
Fertilizer:	216 lbs N, 74 lbs P, 61 lbs K, 1 lb Zn
Insect Control:	Spintor 2SC 5 fl oz/A
	Actara 2 oz/A
Disease Control:	Quadris 6.3oz/A
	Manzate Pro-stick 7.0 lb/A
	Curzate 60 DF 3.2 oz/A
	Revus Top 6 fl oz/A
Irrigation:	None
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: Twelve 21' rows at 34' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Metribuzin 1.1 lbs/A
	Intensity One 16 fl oz/A
Fertilizer:	216 lbs N, 74 lbs P, 61 lbs K, 1 lb Zn
Insect Control:	Spintor 2SC 5 fl oz/A
	Actara 2 oz/A
Disease Control:	Quadris 6.3oz/A
	Manzate Pro-stick 7.0 lb/A
	Curzate 60 DF 3.2 oz/A
	Revus Top 6 fl oz/A
Irrigation:	None
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-four 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:	5 gal 11-37-0 (at planting)
	150 Units N & 24-0-0-3 sultion (post-emergence)
Insect Control:	Baythroid 2 oz/A
Disease Control:	Headline 6 oz/A
Irrigation:	None
Vine Kill:	None

Location: Tidewater Research Station, Plymouth, Washington Co., NC
Trial Title: Specialty Crops Variety Trial
Trial Design: Randomized complete block, four replications
Plot Dimensions: Eleven 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Trichlor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	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: Twenty-two 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	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 Two
Trial Design: Randomized complete block, four replications
Plot Dimensions: Twelve 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	None
Vine Kill:	None

Location: Tidewater Research Station, Plymouth, Washington Co., NC
Trial Title: Round White Variety Trial Three
Trial Design: Randomized complete block, four replications
Plot Dimensions: Seventeen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	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: Severnteen 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	None
Vine Kill:	None

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

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:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	None
Vine Kill:	None

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: Seven 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	None
Vine Kill:	None

Location: Tidewater Research Station, Plymouth, Washington Co., NC
Trial Title: Unreplicated Variety Trial
Trial Design: Randomized complete block
Plot Dimensions: Twenty-three 21' rows (Seventy-three clones) at 38" row spacing, 28 hills per row

Seed piece Treatment:	None
Weed Control:	Dual Magnum1.5 pt/A pre-emergence
	Tricor DF 1 lb/A pre-emergence
	Arrow 16 oz/A, Crop Oil 1 pt/A (2X)
Fertilizer:	700 lbs, 18-18-18 broadcast
	30-0-0 20 gal
Insect Control:	Admire Pro 7 oz/A
Disease Control:	Bravo WS 1.5 pt/A (2X)
Irrigation:	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
BR=bruise
CPB=Colorado potato beetle
CS=common scab
CT=chain tubers
DAE=deep apical eyes
DSE=deep stolen end
EB=early blight
ECB= European corn borer
EL= enlarged lenticels
FS=fusarium wilt
GC=growth cracks
HI= herbicide injury
HN = Heat Necrosis (see below)
HS=heat sprouts
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
RZ=Rhizoctonia
SEB=stem end browning
SC = star cracking
SG=secondary growth
SIS=silver scurf
SKN=skins
SS=sun scald
SR=soft rot
STST=sticky stolons, tight stolon attachment
TSWV=Tomato Spotted Wilt Virus
VW=Verticillium wilt
WSTD=weak stand
WW=wire worm
YF=yellow flesh (YF scale: 1=light yellow to 3=dark yellow)
RF=red flesh (RF scale: 1=light red or pink to 3 = dark red)

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 Unreplicated has 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.