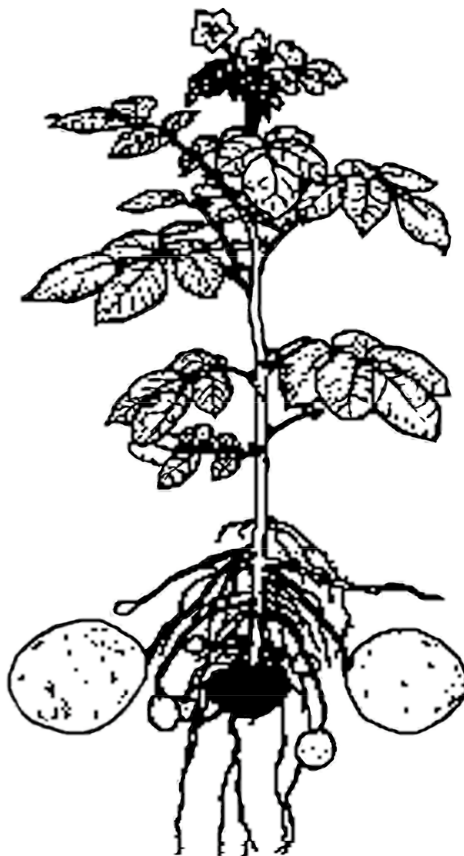


NC STATE UNIVERSITY

NORTH CAROLINA POTATO VARIETY TRIAL AND BREEDING REPORT

2007



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I. OBJECTIVES:

Our research is conducted in collaboration with the USDA Cooperative States Research Extension and Education Service (CSREES) NE1031 (former 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 two areas: the development of new potato germplasm and varieties through 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 in North Carolina 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 maintained in a 160 hill plots for seed increase. This year, 17,682 single-hills were planted and 509 clones were selected averaging a 2.9% selection rate. Out of the 178 clones in our 6-hill plots, 57 were selected for future evaluation. In the 20-hill plots, 69 clones were planted with 20 being selected for further evaluation. In our 60-hill plots, 7 clones were planted and 2 were selected.

During 2007, we also initiated a project to select and screen specific families with potential Colorado potato beetle resistance. We planted 1,548 2-hill plots for selection purposes and also planted a tandem set in our Colorado potato beetle nursery for resistance screening. The data collected in the nursery was used as a major but not exclusive selection criteria resulting in 97 clones which will be advanced for CPB screening as two replicated 3 hill plots and for parallel selection as 6 hill plots in 2008.

Yield Trials

In our 13 yield trials, we evaluated 193 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 1-13. 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>.

2007 Promising Lines: Chip-stock clones

Harley Blackwell.

Developed by: USDA-ARS

Released: 2003

trials evaluated: 44 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: 2.1 (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.

Ivory Crisp.

Developed by: USDA-ARS & Univ Idaho

Released: 2002

trials evaluated: 6 since(2003)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 89%

Specific Gravity: 1.077

Chip Score: 2.9 (fair)

Overall Appearance: 7 (good)

Other Attributes or Comments: The specific gravity of this clone has consistently been similar to Atlantic and it has not expressed IHN in our trials. Yield is marginal compared to Atlantic in NC.

Table-stock and specialty-type clones

Adirondack Blue.

Developed by: Cornell Univ.

Released: 2003

trials evaluated: 6 since(2005)

Skin Color: Purple

Flesh Color: Purple

Historical Data:

Maturity: medium

% Standard (Chieftain): MKTB YLD 72%

Specific Gravity: 1.065

Skin Texture: Moderately Smooth

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: This variety has a purple flesh color in NC that is very attractive. Unlike All Blue, that often has a white cortical ring, the flesh color of this clone is solid and dark.

B2152-17.

Developed by: USDA-ARS

Released: N/A

trials evaluated: 6 since(2003)

Skin Color: Red

Flesh Color: Light Yellow (YF1)

Historical Data:

Maturity: early to mid

% Standard (Chieftain): MKTB YLD 75%

Specific Gravity: 1.070

Skin Texture: Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: The size profile of this clone is small to medium and its skin color is a bright red. Its yellow flesh is light enough to almost be considered cream.'

NY136.

Developed by: Cornell Univ.

Released: N/A

trials evaluated: 10 since(2005)

Skin Color: Dark Red

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Chieftain): MKTB YLD 92%

Specific Gravity: 1.064

Skin Texture: Moderately Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: We have seen this clone for 3 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.

Peter Wilcox (B1816-5).

Developed by: USDA-ARS

Released: 2007

trials evaluated: 24 since(2000)

Skin Color: Purple

Flesh Color: Yellow (YF2)

Historical Data:

Maturity: early to mid

% Standard (Chieftain): MKTB YLD 85%

Specific Gravity: 1.068

Skin Texture: Moderately Smooth

Overall Appearance: 6 (better than fair)

Other Attributes or Comments: This clone has tended to be small to medium in size, and it is very tasty. Its dark purple skin and yellow-flesh make it a very attractive specialty-type potato. Seed is available for this variety in limited quantity.

Vivaldi.

Developed by: De ZPC (now HZPC)

Released: 1999

trials evaluated: 17 since(2001)

Skin Color: Buff

Flesh Color: Light Yellow (YF1)

Historical Data:

Maturity: mid to late

% Standard (Atlantic): MKTB YLD 96%

Specific Gravity: 1.062

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. Yield are good.

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.)

McCotter Farms, Bayboro, NC (Pamlico Co.)

Waters Produce, Chocowinity, NC (Beaufort Co.)

Silver Farms, Spruce Pine, NC (Mitchell Co.)

COOPERATING COUNTY EXTENSION AGENTS:

Tom Campbell, Elizabeth City, Pasquotank Co.

Carla Pugh, Columbia, Tyrrell Co.

Bill Ellers & Pete Anderson, Bayboro, Pamlico Co.

Rod Gurganus, Washington, Beaufort Co.

Jeff Vance & Jeremy DeLisle, Mitchell 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	Weeksville silt loam	Mar 13	Jun 26	105
Bateman's	Chapanoke silt loam	Mar 8	Jun 21	105
McCotter's	Stockade loamy fine sand	Mar 9	Jun 18	101
Waters'	Lynchburg fine sandy loam	Mar 7	Jun 20	105
Silver's	Dillsboro clay loam	Apr 9	Sept 27	171(157 vine kill)
TRS/VGJREC	Portsmouth fine sandy loam	Mar 19	Jun 28, Jul 2, 5	101,105,108

EXPERIMENTAL DESIGN: All yield trials were planted in a randomized complete block design with 4 replications except the Snack Food Association Trial that had 5 replications and the preliminary evaluation trial, which had only one plot per clone. Twenty-three clones in two trials were evaluated at Black Gold Farms, fourteen clones were evaluated at McCotter's, eighteen clones were evaluated at Bateman's, ten clones were evaluated at Waters' and twelve at Silver'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, 38 inches at McCotter's, 40 inches at Bateman's and Waters', 42 inches at Silver'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 in the East were dug using a single-row digger and hand harvested. Silver's trial in the western part of the state was harvested using a one row Carlotti digger. The TRS/VGJREC trials were harvested using a two-row harvester modified to dig one row at a time. Bateman's, McCotter's and Waters' trials were graded using a portable Lockwood Grader which sorts to two grades: A+B's $\geq 1 \frac{7}{8}$ "; and C's $< 1 \frac{7}{8}$ ". Silver's trial was graded using a modified apple grader that sorts into two size classes A's $\geq 2 \frac{1}{4}$ " and B's and C's $< 2 \frac{1}{4}$ ". Black Gold, Snack Food and the TRS/VGJREC trials were graded to five classes: 1's $< 1 \frac{7}{8}$ "; 2's $> 1 \frac{7}{8}$ to $2 \frac{1}{2}$ "; 3's $> 2 \frac{1}{2}$ to $3 \frac{1}{4}$ "; 4's $> 3 \frac{1}{4}$ to 4"; 5's > 4 ". Culls were removed and weighed separately in all trials. Each clone was evaluated for tuber quality and appearance during grading using standardized NE-1014 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, 50 tubers were sampled from the Snack Food Trial and 30 tubers were sampled from Waters' 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

The potato production season started on time, and was very dry overall. Rainfall was sparse throughout the growing season and a hard frost on April 9th damaged tops burning some plots to the ground. Overall, insect pressure was low to manageable. On-station the insects of primary concern were the potato leafhopper and Colorado Potato Beetle (CPB). Some CPB

damage occurred in plots off-station as well, but our cooperating growers did a good job of managing CPB populations.

A. Yield Trials

1. On-Farm Trials

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

Atlantic, our standard, had a marketable yield of 306 cwt/a. Four clones had greater marketable yields that were statistically significant: Harley Blackwell (382 cwt/a), Dakota Diamond (371 cwt/a), NY140 (353 cwt/a), and Marcy (353 cwt/a). Clones with greater but not significantly different yields than Atlantic were NC145-1 (314 cwt/a), Snowden (326 cwt/a) and W2438-34 (324 cwt/a). Atlantic had a gravity of 1.085, no other clone had a higher specific gravity. Seven clones had a chip score rating of 1 (exceptional) in the 24 to 48 hour chip test: Marcy, Mega Chip, MSN105-1, NC41-1, NY140, Snowden, W2310-3, and W2438-34. Four clones had chip scores of 1 in the 5 to 7 day chip test, Dakota Pearl, Mega Chip, NC41-1, and NY140. Five clones: Ivory Crisp, Marcy, MSN105-1, NC41-1, and Snowden had appearance scores of 7 (good), one clone Harley Blackwell had an appearance score of 8 (better than good). Three clones expressed symptoms of internal heat necrosis (IHN): W2438-34 (5% with an average internal heat necrosis severity rating (HNR) of 8.3), Atlantic (3% with an HNR of 8.8) and Dakota Diamond (3% with an HNR of 8.0). Hollow heart (HH) was noted in 10 clones and 2 had incidence at 10% or Greater: Dakota Pearl (25%), and NC145-1 (10%). Five clones expressed brown center (BC) at 10% or greater incidence: NC145-1 (20%), Atlantic (18%), Dakota Diamond (15%), NC41-1 (12%), and Dakota Pearl (10%) and Superior (13%). One clone had soft rot (SR) levels greater than 10%, Dakota Pearl (13%). No vascular ring discoloration (VR) was observed. Other external defects observed in the trial were sunscald, growth cracks, skin blemishes due to Rhizoctonia and misshapes.

Snack Food Association Trial at Black Gold Farms (Tables 2a and 2b)

Atlantic had a marketable yield of 314 cwt/a. Only one clone in this trial, W2324-1 (335 cwt/a), had a greater marketable yield than Atlantic though it was not statistically significant. Atlantic had a gravity of 1.081 and two other clones had equal or greater gravities: Snowden (1.082) and MSJ147-1 (1.081). Three clones received a chip score rating of 1 at the 24 to 48 hour chip test: Atlantic, CO96141-4W, and Snowden. One clone scored a 1 in the 5 to 7 day chip tests, MSJ147-1. Three clones received an appearance rating of a 7: Atlantic, Beacon Chipper, and CO95051-7W. The greatest incidence of IHN was seen in CO95051-7W (8% with an HNR of 8.0), Atlantic was the only other clone to express IHN (4% with an HNR of 8.6). One clone had greater than 10% incidence of BC, Atlantic (22%). Incidence of HH, VR, and SR was less than 10% for all clones. Other external defects observed were: sunscald, common scab, misshapes, growth cracks, and skin blemishes due to Rhizoctonia.

Bateman's Variety Trial (Tables 3a and 3b)

Because of the diversity of materials in this trial four yield standards were chosen: Atlantic (round white standard), Chieftain (red standard), Russet Norkotah (russet skin types), and Yukon Gold (yellow flesh standard). In this trial, no clone had a marketable yield significantly greater than the standards, Atlantic (200 cwt/a) and Chieftain (211 cwt/a), though two clones had greater marketable yields than Atlantic and one of these also had a greater marketable yield than Chieftain: Red LaSoda (229cwt/a) and Harley Blackwell (202 cwt/a). Yukon Gold produced a marketable yield of 169 cwt/a, two of the other four yellow flesh clones had a greater marketable yield, B2152-17 (187 cwt/a) and MSI005-20Y (172 cwt/a). Two of the other three russet types had greater marketable yield than Russet Norkotah (168 cwt/a): Blazer Russet (186 cwt/a) and Gold Rush (180 cwt/a). The specific gravity for Atlantic in this trial was 1.084, all other clones had lower specific gravities. One clone had a chip score rating of 1 in both the 24 to 48 hour and the 5 to 7 day tests, Harley Blackwell. In terms of overall appearance, one clone received an 8, B2152-17. Clones with an overall appearance score of 7 were: Peter Wilcox (B1816-5), Harley Blackwell, and NY136. No significant incidence of IHN,

HH, or VR were recorded in this trial. Blazer Russet had 10% incidence of BC. Culls were primarily due to sunscald, growth cracks, misshapes, and skin blemishes due to Rhizoctonia.

McCotter Farms Variety Trial (Tables 4a and 4b)

Similar to the James Brother's trial but smaller, this trial contains a wide breadth of materials so three standards were included Atlantic (161 cwt/A), Dark Red Norland (144 cwt/A), and Yukon Gold (142 cwt/A). Two clones, Chieftain (176 cwt/A) and Red LaSoda (165 cwt/A), had greater marketable yields than all the standards. All clones had greater marketable yields than Yukon Gold. Atlantic had a specific gravity of 1.084 and no other clone had a higher gravity. No clones had chip rating scores of 1 in either the 24 to 48 hour or the 5 to 7 day chip tests. Atlantic and B2152-17 received a 9 (excellent) for overall appearance, Harley Blackwell scored an 8 and three clones scored 7: Dakota Pearl, Dark Red Norland, and Vivaldi. Incidence of all internal defects was less than 10%. The primary external defects in this trial were growth cracks, sunscald, soft rot, common scab, and misshapes.

Waters Produce Variety Trial (Tables 5a and 5b)

This trial was affected especially severely by adverse environmental conditions (frost and drought). Chieftain the standard had a marketable yield of 70 cwt/A, two clones had greater yields that were statistically significant: All Red (88 cwt/a) and Peter Wilcox (B1816-5) (84 cwt/a). Part of the reason for their better performance can be attributed to delayed emergence for Peter Wilcox and apparent frost tolerance in All Red. Two clones had an overall appearance score of 7: Vivaldi and Yukon Gold. One clone had IHN at a level greater than 10%; Yukon Gold (53% at an HNR of 6.7). Clones with 10% or greater incidence of VR were: Peter Wilcox (17%) and Adirondack Blue (13%). Three clones had significant levels of BC: All Red (17%), Purple Majesty (20%), and Yukon Gold (13%). Adirondack Blue had 10% incidence of SR. External defects included misshapes, soft rot, growth cracks, silver scurf, and Fusarium dry rot.

Silver Farms Variety Trial (Tables 6a and 6b)

This trial, unlike all of our trials, is located in the mountains of NC where our growing conditions are significantly different. This year drought severely impacted this trial and harvest was at 171 days from planting, something we most assuredly could not due in the eastern part of the state. In this part of the state growers are primarily direct marketing potatoes or have small niches they fill. The standards used were Dark Red Norland, Kennebec (white standard, the primary potato grown and consumed in that region), and Yukon Gold. Kennebec had a marketable yield of 279 cwt/a yielding significantly more than all other clones in the trial. Dark Red Norland had a marketable yield of 78 cwt/a, the lowest in the trial. Yukon Gold had a marketable yield of 118 cwt/a and one of the other two yellow-fleshed clones Peter Wilcox (129 cwt/a) had a greater yield. Four clones received an overall appearance score of 7: Marcy, NY136, Russet Norkotah, and Yukon Gold. Internal defects were minimal and not significant for all clones. External defects included soft rot, growth cracks, secondary growth, common scab, misshapes, silver scurf, stem end browning, black scurf, and skin blemishes due to Rhizoctonia.

2. TRS/VGJREC Yield Trials

Specialty Crops Variety Trial (Tables 7a and 7b)

This trial, containing 12 entrees, 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 standards Chieftain (257 cwt/A) and Yukon Gold (158 cwt/A). None of the clones in the trial exceeded Chieftain's yield and only one yellow flesh clone, Vivaldi (187 cwt/A) had a greater yield than Yukon Gold. Michigan Purple was the only clone with an overall appearance score of 8. Two clones, All Red and Vivaldi had an overall appearance score of 7. Notes on internal defects were not taken. The most common external defects were sunscald, silver scurf, misshapes, and skin blemishes attributed to Rhizoctonia.

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

Fifteen clones were entered in this trial, which is designed to give us a first look at white skinned materials we are evaluating in a replicated trial. The other two round white trials are loosely divided between early and late maturing clones. Atlantic, the standard, had a marketable yield of 166 cwt/a. One clone Snowden (206 cwt/a) had a significantly greater marketable yield and two other clones also had greater marketable yields: ND7519-1 (172 cwt/a) and NCB2497-17 (167 cwt/a). Two clones had gravities greater than or equal to Atlantic (1.087): B2489-4 (1.088) and NCB2489-5 (1.087). Two clones, NC0349-3 and Snowden had chip rating scores of 1 in both the 24 to 48 hour and 5 to 7 day chip tests. ND5775-3, and ND7519-1 had chip score ratings of 1 in the 5 to 7 day test. Seven clones received an overall appearance rating score of 7: B2489-4, B2489-6, MSN084-3, MSN238-A, NCB2489-5, ND5775-3, and ND8459-2. One clone, Atlantic expressed IHN with 23% incidence and an HNR of 8.5. MSN191-2Y had 23% incidence HH. Three clones had 10% or greater incidence of VR: ND5775-3 (25%), MSN191-2Y (23%), and Superior (10%). Soft Rot was present in quantities 10% or greater in two clones: B2489-6 (10%) and NCB2489-5 (10%). Common external defects were misshapes, infected lenticels, soft rot, sunscald, skin blemishes attributed to Rhizoctonia, and growth cracks.

Round White Trial Two (Tables 9a and 9b)

Of the sixteen clones in this trial, none had marketable yields higher than Atlantic (235 cwt/A). Atlantic had a specific gravity of 1.093, one clone had an equal specific gravity, B2133-46. Four clones had chipping scores of 1 in both the 24 to 48 hour and the 5 to 7 day chip tests: B2489-3, B2489-7, B2497-17, and Snowden. Three clones received overall appearance scores of 7: B2130-136, B2489-3, and NC41-1. One clone had 10% or more incidence of IHN: B2497-17 (20% at an HNR of 7.3). Two clones had incidence of HH at 10% or greater: B2489-3 (15%), and BNC41-9 (10%). Common defects were misshapes, common scab, infected lenticels, soft rot, sunscald, growth cracks, and skin blemishes attributed to Rhizoctonia.

Round White Trial Three (Tables 10a and 10b)

Atlantic, our standard, had a marketable yield of 228 cwt/A, and one clone, Vivaldi (228 cwt/a) had an equal marketable yield, none exceeded Atlantic. Those clones with higher gravities than Atlantic (1.088) were: B2490-7 (1.091) and B2467-21 (1.089). Four clones had chip scores of 1 in the 24 to 48 hour test: Atlantic, B2467-21, BNC41-13, and Snowden. Two clones had a chip score of 1 in the 5 to 7 day chip test: B2133-81 and Snowden. Six clones received overall appearance scores of 7: B2494-10, B2494-2, BNC41-13, BNC49-2, Vivaldi, and Yukon Gold. One clone expressed IHN at greater than 10%, Atlantic (23% with an HNR of 7.0). One clone expressed incidence of HH and BC at 10%, B2494-10. Four clones expressed levels of SR at 10% or greater: B2491-19 (15%), B2491-22 (13%), B2494-10 (10%), and B2533-1 (10%). Common external defects were: misshapes, soft rot, growth cracks, air cracking, infected lenticels, sunscald, and skin blemishes due to Rhizoctonia.

NE-1014 Round White Trial. (Tables 11a and 11b)

One clone, Snowden (234 cwt/a) had a greater marketable yield than Atlantic (227 cwt/A). Two clones in this trial had gravities greater than or equal to Atlantic (1.088). These were (sorted high to low): AF2291-10 (1.089), and AF2211-9 (1.088). Five clones: AF2916-1, Atlantic, Beacon Chipper, NY139(NYY28-9), and Snowden, received a chip rating of 1 in the 24 to 48 hour chip test. Snowden also had a chip score of 1 in the 5 to 7 day chip test. Four clones: Atlantic, Beacon Chipper, NY139(NYY28-9), and NY140(NYY36-4) were rated a 7 for overall appearance. Clones with 10% or greater incidence of IHN were: Atlantic (15% with an HNR of 7.8), Dakota Diamond (13% with an HNR of 7.8), and AF2211-9 (10% at 6.8). One clone had 10% VR, NYB38-37. Two clones had incidence of BC at 10% or greater incidence: AF2211-9 (13%), and Atlantic (10%). The most common culls were misshapes, sunscald, soft rot, growth cracks, infected lenticels, and skin blemishes attributed to Rhizoctonia.

NE-1014 Red Trial. (Tables 12a and 12b)

The standard, Chieftain, had a marketable yield of 222 cwt/A. All other clones had lower marketable yields. Two clones, B2152-17 and ND7982-1R, received an overall appearance score of 7. No clones expressed significant levels of IHN, HH, VR, or BC. Two clones had SR at levels of 10%: Peter Wilcox, and Dark Red Norland. Culls were due mostly to soft rot, misshapes, silver scurf, sunscald, growth cracks, and skin blemishes attributed to *Rhizoctonia*.

Unreplicated Trial. (Tables 12a and 12b)

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

B. Breeding and Early Generation Selection Efforts**NCSU Potato Variety Development Efforts**

Our efforts to develop varieties in North Carolina begin with selection as single hill plots in year one, then subsequent advances to 6-hill and 20-hill plots 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 and our own crosses made at the TRS. Minitubers are generated in the TRS greenhouses. This year, 17,682 single hills were planted and 509 clones were selected for a 2.9% selection rate. Out of the 178 clones in our 6-hill plots, 57 were selected for future evaluation. In the 20-hill plots, 69 clones were planted and 20 were selected for further evaluation. Our sixty-hill plots had 7 clones and 2 were carried through for evaluation next year.

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 though, 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.

This year we also began a selection and screening program to develop CPB resistant materials. Parental material used in crosses to generate the families involved come from one or more of three species of potato: *Solanum tuberosum*, *S. chacoense*, and *S. berthaultii*. We planted roughly 800 hills to evaluate resistance and selected 25 clones for resistance and another 77 clones in the set for agronomic traits for a total of 97 clones these will be advanced next year in both our CPB nursery and as 6 hill plots for selection purposes.

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. Susie Thompson, North Dakota 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 Gary Pryputniewicz, Waterville, NY, for taking the time to send small amounts of seed. This project is funded in part by The North Carolina Potato Growers Association and the Snack Food Association. Their continuing support is very much appreciated.

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Table 1a. Black Gold Farms Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 105 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
Atlantic	340	306	100	6	45	44	0	0	4	90	44	1.085	2	3
BNC48-1	309	272	92	7	42	44	2	0	4	88	46	1.081	3	3
Dakota Diamond	449	371	123	9	57	25	0	0	8	82	25	1.083	3	3
Dakota Pearl	330	240	80	12	42	29	1	0	15	73	30	1.065	2	1
Harley Blackwell	431	382	128	8	47	42	0	0	3	89	42	1.075	3	2
Ivory Crisp	311	271	90	5	41	44	3	0	8	87	46	1.076	2	2
Marcy	382	353	118	2	28	60	5	0	5	92	65	1.074	1	2
Mega Chip	272	225	76	5	33	44	6	0	12	83	50	1.082	1	1
MSN105-1	331	289	98	11	60	27	0	0	2	87	27	1.078	1	2
NC145-1	377	314	105	12	55	26	2	0	5	83	28	1.077	4	4
NC41-1	303	252	86	15	57	25	1	0	2	83	26	1.074	1	1
NY140	392	353	119	5	37	47	6	0	4	90	53	1.074	1	1
Snowden	363	326	109	8	63	26	0	0	2	90	26	1.083	1	2
W2310-3	324	277	94	7	38	45	2	0	8	85	47	1.084	1	2
W2438-34	343	324	109	2	32	58	5	0	3	94	63	1.072	1	2
Grand Mean	349	303												
CV(%)	9.5	10.7												
LSD(K=100)	45.1	44.3												

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 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 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	7	8	5	7	5	7	6	2	5	7	7	6	3	8.8	5	0	18	3	GC,SS,SR,RZ,MS
BNC48-1	6	7	8	4	7	6	7	7	2	6	5	8	6	0	9	5	0	0	3	SS,SR,MS,RZ
Dakota Diamond	9	7	8	9	9	8	6	6	2	5	6	8	4	3	8.0	8	0	15	0	SS,MS
Dakota Pearl	6	9	8	6	9	9	6	6	2	7	6	7	5	0	9	25	0	10	13	^SS,~SR,GC,MS
Harley Blackwell	6	7	8	5	6	6	7	7	2	6	6	7	8	0	9	3	0	0	0	MS,SS,SC(6/40)
Ivory Crisp	6	8	8	6	9	7	7	6	2	6	6	8	7	0	9	0	0	0	3	SS,MS,AC,SR,GC
Marcy	9	9	8	7	7	5	5	6	4	7	8	7	7	0	9	8	0	0	8	SS,SR,MS,RZ
Mega Chip	8	9	8	7	6	7	7	5	3	5	8	7	4	0	9	8	0	3	5	MS,SR,SS,DSE,DAE
MSN105-1	6	9	8	5	8	9	4	7	3	7	5	8	7	0	9	0	0	0	8	SS,SR,MS
NC145-1	9	9	8	9	9	8	7	7	2	4	7	7	4	0	9	10	0	20	0	SS,SR,MS,GC,SG
NC41-1	6	8	8	5	7	5	7	6	2	7	6	8	7	0	9	0	0	13	0	SS
NY140	9	8	8	6	6	7	5	7	3	7	7	8	6	0	9	0	0	3	3	SS,SR,MS,CS
Snowden	9	8	8	7	6	5	7	6	2	4	6	8	7	0	9	0	0	0	0	SS,SR
W2310-3	6	7	8	5	5	6	6	7	3	6	7	7	5	0	9	3	0	0	0	SS,SR,MS
W2438-34	6	9	8	7	6	7	7	7	7	5	7	8	5	5	8.3	8	0	3	0	MS,SR,DSE

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

² See NE 1014 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. 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 105 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴		
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days	Utz Chip Score
Atlantic	339	314	100	4	39	50	3	0	4	92	53	1.081	1	2	1
Beacon Chipper	333	307	100	4	35	51	6	0	4	92	57	1.080	2	2	1
CO95051-7W	293	263	87	8	52	37	1	0	2	90	38	1.074	2	2	1
CO96141-4W	344	309	100	8	47	40	3	0	3	90	43	1.069	1	2	1
MSJ147-1	234	177	60	22	63	14	0	0	2	77	14	1.081	2	1	3
MSJ316-A	291	250	84	11	60	26	0	0	3	86	26	1.075	2	3	1
Snowden	342	309	100	8	61	29	0	0	1	90	29	1.082	1	2	1
W2133-1	328	279	94	13	56	28	1	0	2	85	29	1.077	2	2	2
W2324-1	383	335	111	10	51	35	2	0	3	87	37	1.080	3	3	2
Grand Mean	321	282													
CV(%)	13.7	15.6													
LSD(K=100)	65.0	63.0													

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 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 2b. 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 105 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	9	8	5	7	5	6	6	2	5	7	8	7	4	8.6	6	2	22	2	SS,MS,DSE,DAE,GC,SR,2HN(8,7)
Beacon Chipper	8	9	8	7	9	6	7	6	2	7	7	8	7	0	9	0	0	4	2	RZ,SS,SR
CO95051-7W	6	9	8	7	8	7	4	7	2	7	5	8	7	8	8.0	2	0	2	0	RZ,SS,MS,4HN(5,6,7,8)
CO96141-4W	6	9	8	4	8	8	4	7	4	8	6	8	5	0	9	0	0	2	0	SS,MS,~EL,GC,
MSJ147-1	6	7	8	5	9	7	7	7	2	7	3	6	5	0	9	0	0	2	0	CS,SS
MSJ316-A	9	8	8	8	9	7	4	5	5	7	5	6	6	0	9	0	0	0	2	CS,MS,SS,GC,RZ
Snowden	9	9	8	7	6	5	6	7	2	4	6	9	5	0	9	0	0	2	0	CS,SS,MS
W2133-1	9	8	8	6	6	6	5	6	2	6	7	8	4	0	9	0	0	8	0	SS,MS,STST
W2324-1	8	7	8	6	6	7	6	5	2	6	7	6	3	0	9	2	0	0	2	CS,SS,STST

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

² See NE1014 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 3a. 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 105 DAP¹ at James Brother's Farm, Weeksville, Pasquotank Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield					Size Distribution by Class ² (% of total yield)			Specific Gravity ³	Chip Color ⁴	
		cwt/A	% Atl.	%Chf.	%Yuk.	%RusNor	A's + B's	C's	Culls		24 to 48 hrs	5 to 7 Days
Atlantic	245	200	100	96	118	122	81	13	6	1.084	2	2
Peter Wilcox(B1816-5)	223	164	82	79	96	99	74	23	3	1.070	.	.
B2152-17	271	187	95	89	112	117	69	30	2	1.068	.	.
B2332-2	208	174	88	81	102	110	82	16	1	1.058	.	.
Blazer Russet	247	186	98	91	113	117	75	21	4	1.074	.	.
Chieftain	276	211	107	100	125	133	76	20	4	1.061	.	.
Dakota Pearl	220	153	80	74	92	97	70	9	21	1.068	2	2
Dark Red Norland	218	175	88	82	103	110	80	17	3	1.056	.	.
Defender	187	100	50	48	58	60	53	34	13	1.074	4	.
Gold Rush	232	180	96	87	109	116	77	15	8	1.072	3	.
Harley Blackwell	264	202	104	99	120	124	77	18	5	1.073	1	1
MSI005-20Y	227	172	86	82	101	105	75	9	16	1.063	.	.
NY136	199	159	80	74	94	101	78	20	2	1.066	.	.
Red LaSoda	279	229	120	111	137	145	82	13	5	1.060	.	.
Russet Norkotah	223	168	85	82	99	100	74	18	8	1.068	.	.
Snowden	242	201	103	96	121	127	82	15	3	1.078	2	2
Superior	257	193	100	93	116	122	75	9	16	1.059	2	2
Vivaldi	245	165	85	81	98	100	67	21	12	1.065	.	.
Yukon Gold	233	169	86	82	100	104	74	8	18	1.068	.	.
Grand Mean	237	178										
CV(%)	15.7	20.5										
LSD(K=100)	50.7	48.8										

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 3b. 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 105 DAP¹ at Bateman's Farm, Weeksville, Pasquotank Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	7	8	5	7	6	7	7	2	5	6	8	6	3	8.8	0	0	0	0	SS,GC,MS,SR,DAE,DSE
Peter Wilcox(B1816-5)	6	8	8	4	1	8	5	7	5	7	6	8	7	0	9	0	0	0	0	GC,MS(PTS)
B2152-17	6	9	8	5	2	9	6	7	2	7	4	8	8	0	9	0	0	3	0	MS,CS,vn, YF?
B2332-2	7	8	8	6	3	8	7	5	2	6	6	8	6	0	9	0	0	3	0	AC,MS,SS,CG
Blazer Russet	9	9	8	8	6	4	5	7	6	7	6	8	6	0	9	0	0	10	0	MS,STST,GC,SG
Chieftain	9	9	8	6	3	6	7	4	2	6	7	7	5	0	9	0	0	3	0	GC,MS,SS,CS,HS
Dakota Pearl	6	7	8	6	8	9	9	6	2	7	5	8	6	3	8.8	3	0	0	0	^SS,STST, GC,MS,SR
Dark Red Norland	5	8	7	4	2	8	5	7	2	6	5	8	6	0	9	0	0	0	0	GC,SS,MS
Defender	9	9	8	8	6	6	5	6	6	7	6	5	3	0	9	0	0	0	0	^CS,^MS,IL,SG
Gold Rush	6	8	8	5	5	4	6	6	6	8	6	7	5	0	9	0	3	0	0	MS,RZ,GC,SR
Harley Blackwell	6	7	8	5	6	7	7	7	2	6	5	7	7	0	9	0	0	3	0	SC,SS,RZ
MSI005-20Y	6	9	7	6	7	8	6	7	3	6	7	8	5	0	9	0	0	0	0	MS,^GC,^SS,RZ
NY136	9	9	8	7	2	8	7	4	2	5	6	8	7	0	9	0	0	0	0	MS,STST,GC,SR
Red LaSoda	7	9	8	5	3	8	7	4	3	2	7	8	4	0	9	0	0	0	0	^MS,SS,GC
Russet Norkotah	9	8	8	8	5	3	5	6	7	8	7	8	4	0	9	0	0	0	0	MS,SS
Snowden	9	9	8	7	6	6	7	6	2	5	5	8	5	0	9	0	0	0	0	SS,STST,DAE,DSE,MS
Superior	6	9	8	5	7	7	6	7	3	6	7	7	5	5	8.8	0	0	0	0	^SS,CS,MS,2HN(8,8)
Vivaldi	9	8	8	7	7	8	6	7	5	7	5	8	5	0	9	0	0	0	0	^^SS,~MS
Yukon Gold	9	9	8	6	7	8	7	7	3	5	7	8	6	0	9	0	0	0	0	^^SS,~CS,~MS

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

² See NE1014 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 4a. McCotter's Farm Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 101 DAP¹ at McCotter's Farm, Bayboro, Pamlico Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield				Size Distribution by Class ² (% of total yield)			Specific Gravity ³	Chip Color ⁴	
		cwt/A	% Atl.	% DRN.	% Yuk.	A's + B's	C's	Culls		24 to 48 hrs	5 to 7 Days
Atlantic	185	161	100	114	116	87	8	5	1.084	3	3
Peter Wilcox(B1816-5)	167	146	92	99	103	87	7	6	1.069	.	.
B2152-17	180	106	65	76	78	58	42	0	1.074	.	.
Chieftain	212	176	111	121	124	83	12	5	1.062	.	.
Dakota Pearl	174	144	89	101	105	82	15	3	1.075	2	2
Dark Red Norland	176	148	94	100	104	84	14	1	1.063	.	.
Harley Blackwell	159	126	78	91	89	78	21	2	1.078	3	2
NY136	194	150	96	100	104	76	23	1	1.059	.	.
NY140	179	144	90	102	103	82	15	3	1.076	3	2
Red LaSoda	192	165	102	116	121	85	12	4	1.059	.	.
Snowden	187	160	99	114	116	86	13	1	1.082	2	2
Superior	124	108	67	75	79	86	11	4	1.076	2	3
Vivaldi	183	139	86	100	101	75	19	5	1.069	.	.
Yukon Gold	162	142	90	98	100	88	8	4	1.074	.	.
Grand Mean	177	144									
CV(%)	21.6	25.8									
LSD(K=100)	52.3	43.0									

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. McCotter'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 101 DAP¹ at McCotter's Farm, Bayboro, Pamlico Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	6	8	5	6	6	7	5	3	5	7	8	9	3	8.8	3	0	5	0	MS,GC,DSE,DAE,SS
Peter Wilcox(B1816-5)	5	8	8	4	1	7	6	6	5	7	6	4	5	0	9	0	0	0	0	MS,GC,^SISC,YF2
B2152-17	6	9	8	6	2	9	7	7	2	7	3	8	9	0	9	0	0	0	0	YF1
Chieftain	9	9	8	6	3	8	5	4	4	5	6	8	5	0	9	0	0	0	0	MS,^SG,RZ,GC
Dakota Pearl	6	8	8	5	9	8	7	6	2	6	5	8	7	3	8.8	0	0	0	0	SS,GC,MS,SR
Dark Red Norland	5	8	8	4	2	7	6	6	4	7	5	8	7	0	9	0	0	0	0	MS,GC,SS
Harley Blackwell	6	6	8	5	6	6	8	7	2	6	5	8	8	0	9	0	0	0	0	MS,SC,GC
NY136	9	8	8	7	2	7	7	4	3	7	5	8	6	0	9	0	0	0	0	SG,MS
NY140	9	8	8	7	9	8	5	7	3	7	6	8	5	0	9	0	0	0	0	^HS,MS,SS
Red LaSoda	6	7	8	7	3	7	7	3	2	5	6	8	4	3	8.8	0	0	3	0	MS,SS,CS,SR
Snowden	6	8	8	7	6	5	7	6	2	6	5	8	6	0	9	0	0	0	0	STST,MS,SS,DAE,DSE
Superior	5	8	8	4	6	6	7	6	3	5	5	8	6	0	9	0	0	3	0	MS,SS
Vivaldi	9	7	8	7	7	8	7	5	5	8	5	8	7	0	9	0	0	0	0	SS,HS,^MS
Yukon Gold	8	8	8	5	7	7	7	5	2	6	6	6	6	0	9	0	0	0	0	MS,SS,CS

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

² See NE1014 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. Waters' Produce Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 105 DAP¹ at Water's Produce, Chocowinity, Beaufort Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution by Class ² (% of total yield)			Specific Gravity ³
		cwt/A	% Chieftain.	A's + B's	C's	Culls	
Adirondack Blue	64	45	67	72	10	18	1.061
Adirondack Red	70	47	66	67	22	11	1.069
All Blue	51	16	23	31	55	13	1.073
All Red	110	88	128	80	16	3	1.061
Peter Wilcox(B1816-5)	101	84	122	84	5	11	1.068
Chieftain	83	70	100	85	6	9	1.065
NY136	86	68	100	80	14	6	1.067
Purple Majesty	82	40	58	49	47	4	1.072
Vivaldi	92	67	96	72	25	3	1.067
Yukon Gold	84	68	98	82	4	14	1.074
Grand Mean	82	60					
CV(%)	9.5	11.1					
LSD(K=100)	12.5	10.2					

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 5b. Waters' Produce 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 DAP¹ at Waters Produce, Chocowinity, Beaufort Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Adirondack Blue	5	7	8	3	1	8	6	7	5	5	7	5	4	0	9	0	13	0	10	SISC,SR,MS
Adirondack Red	6	6	9	5	2	6	8	7	5	7	4	5	6	0	9	0	0	0	0	GC,SR,SISC
All Blue	9	8	8	7	1	5	5	7	5	6	3	5	4	0	9	0	7	0	7	^SR,MS,SISC,SG
All Red	6	8	8	7	2	7	6	7	5	8	6	7	5	0	9	3	0	23	0	FS,MS,SR,RZ
Peter Wilcox(B1816-5)	5	8	8	4	1	6	6	7	5	7	6	7	6	0	9	0	17	0	0	SR,MS,GC,SISC
Chieftain	9	8	7	6	3	7	6	7	2	7	7	8	5	7	8.7	3	7	7	0	SR,SG,MS,2HN(8,8)
NY136	9	8	7	6	2	7	6	6	2	7	5	8	7	0	9	0	0	0	0	MS,RZ,SR,FS
Purple Majesty	6	8	7	5	1	5	4	7	5	7	4	7	5	0	9	0	0	20	3	MS,SR,FS
Vivaldi	9	8	8	7	7	7	7	7	6	8	5	8	7	7	8.7	0	0	0	3	SR,MS,SS,FS,SG,2HN(8,8)
Yukon Gold	8	8	8	5	7	7	6	7	2	8	7	6	7	53	6.7	3	0	13	3	SS,SR,MS, 16HN(6-8,4-7,3-6,2-5,1-4)

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

² See NE1014 Standard Potato Rating System for key to scores in Appendix 2.

³ Percentage determined from 10 randomly selected potatoes /rep (30 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. Silver's Farm Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 171 DAP¹ (157 DVK¹) at Silver's Farm, Spruce Pine, Mitchell Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield				Size Distribution by Class ² (% of total yield)			Specific Gravity ³
		cwt/A	% Ken.	% Yuk.	% DRN.	A's	B's + C's	Culls	
Adirondack Blue	155	109	41	89	138	69	16	15	1.064
Peter Wilcox(B1816-5)	175	129	46	117	191	72	20	8	1.067
Dark Red Norland	136	78	30	67	100	56	33	10	1.068
Goldrush	198	121	48	107	167	61	21	18	1.067
Kennebec	393	279	100	245	407	72	4	25	1.066
Marcy	269	210	81	187	296	78	7	15	1.065
NY136	245	169	67	155	241	67	13	20	1.062
Red Pontiac	293	190	72	161	260	64	10	26	1.053
Russet Norkotah	141	99	39	84	143	68	18	14	1.071
Shepody	228	148	56	128	207	65	12	23	1.076
Vivaldi	173	87	32	76	130	50	38	12	1.067
Yukon Gold	191	118	45	100	165	61	9	30	1.076
Grand Mean	217	145							
CV(%)	27.2	30.6							
LSD(K=100)	83.0	62.1							

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

² Size classes: A's > 2 1/4"; B's + C's ≤ 2 1/4"; Culls = all defective potatoes.

³ Determined by weight in air/water method.

Table 6b. Silver'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 171 DAP¹ (157 DVK¹) at Silver's Farm, Spruce Pine, Mitchell Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Adirondack Blue	5	8	8	4	1	7	5	7	5	6	6	8	5	0	9	0	0	0	0	SR,GC,MS,CS
PeterWilcox(B1816-5)	6	8	8	4	1	6	6	7	5	8	6	8	6	0	9	0	0	0	0	GC,MS,SG,SISC,BS,RZ,SS
Dark Red Norland	5	7	7	3	1	7	5	7	5	8	4	8	5	0	9	0	0	0	0	SG,RZ,BS,MS,GC,SISC,SR
Goldrush	6	8	8	6	5	3	5	8	8	7	6	7	6	0	9	0	0	0	0	MS,GC,SS,SG,FS
Kennebec	6	8	8	8	6	7	6	6	7	8	9	8	5	0	9	0	0	0	0	^MS,GC,CS,SS,SR
Marcy	9	8	8	6	5	5	6	7	2	7	8	8	7	8	7.5	0	0	0	0	SR,SEB,SS,MS
NY136	8	8	8	6	2	6	7	5	2	7	5	8	7	0	9	0	0	0	0	SR,SS,MS,SG,SEB
Red Pontiac	6	8	7	6	3	6	5	7	3	6	7	8	4	5	8.3	0	0	0	0	SG,SS,MS,SR,SEB
Russet Norkotah	6	8	8	6	5	3	5	8	8	8	7	8	7	0	9	0	0	0	0	SEB,SR,MS,FS
Shepody	6	8	8	6	6	7	5	7	8	7	7	8	4	0	9	0	0	0	0	SR,SG,MS,IL,SS,CS,SEB
Vivaldi	9	8	8	6	7	7	7	7	5	7	5	8	6	0	9	0	0	0	0	CS,MS,SEB
Yukon Gold	8	8	8	4	7	7	6	7	2	7	7	8	7	0	9	0	0	0	0	GC,MS,SS,SR,SEB,SG

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

² See NE1014 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 7a. Specialty Crops Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity of potato clones harvested 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

CLONE	Total Yield cwt/A	Marketable Yield		Size Dist. by Class (%) ² (% of total yield)							1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
		cwt/A	% Chf.	%Yuk.	1's	2's	3's	4's	5's	Cull's			
Adirondack Blue	85	59	111	108	21	49	12	1	0	16	63	13	1.068
Adirondack Red	120	74	148	123	28	53	6	0	0	13	59	6	1.071
All Blue	100	53	119	82	51	48	0	0	0	0	48	0	1.071
All Red	125	96	194	146	18	57	18	1	0	6	75	19	1.063
Peter Wilcox(B1816-5)	72	62	134	101	11	49	37	0	0	3	86	37	1.074
BCO01401-2	54	36	96	48	34	57	8	0	0	2	65	8	1.077
Chieftain	142	114	257	159	17	49	31	0	0	4	79	31	1.066
Dark Red Norland	84	51	100	79	27	54	6	0	0	12	60	6	1.065
Michigan Purple	113	93	187	143	12	47	35	0	0	6	82	35	1.073
Purple Majesty	46	14	32	20	66	33	0	0	0	1	33	0	1.076
Vivaldi	115	86	187	121	23	68	5	0	0	3	74	5	1.072
Yukon Gold	91	72	158	100	14	42	33	2	0	8	78	36	1.075
Grand Mean	96	67											
CV(%)	34.9	46.3											
LSD(K=100)	54.2	50.3											

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. Specialty Crops 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 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Adirondack Blue	5	8	8	5	1	8	6	7	5	5	6	6	4	.	.	.	.	.	.	SR,SS,SISC
Adirondack Red	6	9	8	5	2	7	6	7	5	8	5	4	6	.	.	.	.	.	.	^SISC,SR,SS,CS
All Blue	9	9	8	7	1	6	6	7	5	6	4	7	4	.	.	.	.	.	.	SR,SISC,MS
All Red	6	9	8	7	2	8	7	7	5	7	5	7	7	.	.	.	.	.	.	SS,SR,MS,GC
Peter Wilcox (B1816-5)	5	8	8	4	1	7	6	6	5	7	5	8	5	.	.	.	.	.	.	RZ,SS,SR
BCO01401-2	5	8	8	5	1	7	5	7	3	8	4	8	6	.	.	.	.	.	.	EL,SR,SISC
Chieftain	9	9	8	6	3	7	7	6	2	7	5	8	5	.	.	.	.	.	.	SR,SS,MS,GC
Dark Red Norland	5	9	8	3	2	8	6	7	3	7	4	4	5	.	.	.	.	.	.	^SR
Michigan Purple	6	9	8	5	1	9	6	7	2	8	6	7	8	.	.	.	.	.	.	HS,SR,GC,CS
Purple Majesty	6	8	8	5	1	7	6	7	5	5	2	8	5	.	.	.	.	.	.	SISC,SR,EL,STST
Vivaldi	9	8	8	7	7	8	7	7	5	8	3	8	7	.	.	.	.	.	.	SS,SR,MS
Yukon Gold	8	9	8	5	7	7	7	7	2	8	6	7	6	.	.	.	.	.	.	SR,SS

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

² See NE184 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 8a. 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 105DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
Atlantic	194	166	100	9	41	39	5	0	5	86	44	1.087	2	2
B2489-4	145	110	67	12	39	35	2	0	12	76	37	1.088	2	2
B2489-6	191	154	93	13	46	33	2	0	7	81	35	1.081	2	3
MSN084-3	96	70	42	15	46	26	1	0	12	73	27	1.068	3	2
MSN191-2Y	125	89	54	18	53	19	0	0	10	72	19	1.085	.	.
MSN238-A	120	93	57	18	54	23	0	0	5	77	23	1.084	2	3
NC0349-3	183	154	93	14	48	36	0	0	2	84	36	1.079	1	1
NC0349-8	189	158	97	10	50	33	0	0	6	83	34	1.085	2	2
NCB2489-5	159	113	70	19	47	23	0	0	11	70	23	1.087	2	2
NCB2497-17	205	167	102	15	53	29	0	0	3	82	29	1.079	2	2
ND5775-3	146	81	49	42	48	7	0	0	3	55	7	1.079	2	1
ND7519-1	204	172	105	9	36	45	4	0	6	85	49	1.086	2	1
ND8459-2	188	130	79	23	54	16	0	0	7	69	16	1.076	2	3
Snowden	232	206	125	9	42	46	1	0	2	89	47	1.083	1	1
Superior	163	129	80	11	44	34	0	0	10	78	34	1.076	3	2
Grand Mean	169	133												
CV(%)	13.3	16.3												
LSD(K=100)	30.1	28.7												

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

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

³ Determined by weight in air/water method.

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

Table 8b. 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 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	7	8	5	6	5	7	6	2	7	7	7	6	23	7.5	3	0	5	3	MS,BS,SS,IL,9HN(4-8,2-7,1-6,2-5)
B2489-4	6	8	8	5	9	7	7	7	2	8	6	7	7	0	9	0	0	0	8	SS,SR,CS,IL,RZ
B2489-6	6	8	9	5	6	5	7	7	3	7	6	7	7	0	9	0	0	0	10	SS,SR,RZ,HS
MSN084-3	5	8	8	4	9	8	7	7	2	8	5	6	7	0	9	0	0	0	0	^SR,IL,SS
MSN191-2Y	9	9	7	6	7	5	7	6	2	7	6	7	6	0	9	23	23	5	3	SR,SS,CS,BS,GC
MSN238-A	6	9	8	4	7	6	7	6	7	7	6	7	7	0	9	3	0	8	0	SS,MS,IL,RZ
NC0349-3	6	9	8	6	6	5	7	7	2	7	6	7	6	0	9	8	0	0	0	SS,GC,SR,RZ
NC0349-8	6	9	8	6	6	5	6	7	2	5	6	7	5	0	9	0	0	3	0	SR,SS,STST,MS,RZ,~DSE
NCB2489-5	6	7	8	5	6	7	7	7	2	8	6	7	7	0	9	5	0	0	10	GC,MS,SS,IL,SR
NCB2497-17	6	7	8	6	6	6	7	7	3	8	6	7	6	0	9	0	0	0	0	^IL,SS,MS
ND5775-3	6	9	8	4	8	9	7	7	1	6	3	7	7	0	9	0	25	3	0	IL,SR,SS,MS(pts)
ND7519-1	9	8	8	7	6	6	5	4	3	6	7	8	4	0	9	8	0	8	0	SS,MS,GC,STST
ND8459-2	8	8	8	6	9	9	6	7	2	8	5	7	7	0	9	0	5	0	5	SS,SR,IL,MS
Snowden	9	8	8	7	5	5	7	6	3	5	7	8	6	0	9	0	0	0	3	SS,CS,FS,MS,STST,DAE,DSE
Superior	5	9	8	4	6	6	6	7	3	6	7	7	5	0	9	0	10	5	0	SR,SS,MS,BS

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

² See NE1014 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. Round White Trial Two. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
Atlantic	250	235	100	3	40	49	5	0	3	94	54	1.093	2	3
B2130-136	214	197	85	6	78	14	0	0	2	92	14	1.081	3	3
B2133-46	197	186	79	2	34	59	1	0	4	94	60	1.093	2	2
B2452-3	239	220	94	3	25	62	6	0	5	92	67	1.086	2	2
B2489-3	219	200	86	4	37	50	5	0	5	92	54	1.087	1	1
B2489-7	204	174	75	5	48	35	2	0	9	86	37	1.090	1	1
B2497-17	171	153	65	3	35	48	6	0	8	90	55	1.080	1	1
B2527-6	226	150	65	32	62	4	0	0	2	66	4	1.088	3	3
BNC41-9	197	177	77	8	66	24	0	0	2	90	24	1.092	2	2
BNC48-3	158	136	59	10	66	20	0	0	4	86	20	1.092	3	3
Harley Blackwell	245	223	96	5	49	42	0	0	4	91	42	1.086	2	2
MSL211-3	168	148	64	6	54	33	1	0	6	88	34	1.063	2	2
NC41-1	173	151	66	10	55	31	1	0	3	87	32	1.080	2	2
Snowden	236	216	92	7	53	39	0	0	1	92	39	1.092	1	1
Superior	198	184	78	3	38	53	1	0	5	93	54	1.078	2	3
Yukon Gold	166	154	62	2	37	55	2	0	5	93	56	1.087	2	3
Grand Mean	204	182												
CV(%)	12.8	14.0												
LSD(K=100)	37.0	36.2												

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

Table 9b. 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 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	6	8	5	6	5	6	5	2	7	6	8	6	0	9	5	0	8	3	CS,MS,RZ,GC,SS,FS
B2130-136	6	9	7	5	9	7	7	6	3	8	5	8	7	3	8.8	8	0	0	3	SS,IL,SR,FS,1HN(8)
B2133-46	6	7	8	6	6	5	7	5	3	8	6	8	6	0	9	0	0	0	0	SR,FS,SS,RZ
B2452-3	6	7	5	4	9	6	6	6	3	6	7	7	5	0	9	0	0	0	8	RZ,SS,SR,FS
B2489-3	6	8	8	4	6	5	7	6	2	8	6	8	7	0	9	15	0	5	8	MS,SS,SR
B2489-7	6	8	8	5	9	7	7	7	2	8	5	8	5	0	9	3	0	0	0	SR,FS,^SS,IL,MS,GC,RZ
B2497-17	5	9	8	5	9	8	6	7	3	7	6	8	5	20	7.3	0	0	8	0	^SS,RZ,MS,8HN(4-8,4-7)
B2527-6	6	8	8	4	7	8	7	7	3	7	2	8	5	0	9	0	0	0	3	IL,BS,SS,RZ,SR,FS,MS
BNC41-9	7	7	8	5	6	5	6	5	3	6	5	8	6	0	9	10	0	3	5	FS,SR,RZ,SS,MS
BNC48-3	8	6	8	5	6	5	6	6	3	6	5	7	4	3	8.8	0	0	3	5	FS,SR,MS,^IL,RZ,SS,1HN(8)
Harley Blackwell	6	7	8	5	6	6	7	7	2	7	6	7	6	0	9	0	0	0	0	MS,SS,BS,SC,IL,FS,RZ,DAE
MSL211-3	5	9	8	4	6	8	3	6	4	8	5	8	4	0	9	0	0	0	3	^IL,MS,flats
NC41-1	6	7	8	4	6	7	7	7	2	6	6	7	7	0	9	3	0	0	5	SR,MS,SS
Snowden	9	9	8	7	6	5	6	6	2	4	6	8	5	0	9	0	0	0	0	SS,MS,DAE,STST
Superior	5	9	8	4	9	6	5	8	3	5	6	8	5	0	9	0	0	8	3	SR,IL,SS,CS,MS,DSE
Yukon Gold	9	9	7	5	7	8	6	7	3	8	6	8	6	0	9	0	0	0	0	SR,GC,SS,YF1

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

² See NE1014 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. Round White Trial Three. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
Atlantic	250	228	100	7	34	51	6	0	2	91	57	1.088	1	2
B2133-81	203	182	83	7	42	48	0	0	4	89	48	1.079	2	1
B2467-21	224	188	86	8	29	52	2	0	9	83	54	1.089	1	2
B2486-4	182	147	68	9	36	38	8	0	10	81	46	1.074	2	2
B2490-7	201	158	71	10	42	36	0	0	11	79	37	1.091	2	2
B2491-19	157	101	45	10	44	20	0	0	25	65	20	1.075	2	3
B2491-22	216	180	80	9	43	40	1	0	8	83	40	1.077	2	3
B2494-10	226	201	91	3	23	61	5	0	8	89	66	1.080	2	2
B2494-2	251	219	98	5	31	55	1	0	8	87	56	1.080	2	3
B2494-21	231	194	86	6	34	46	4	0	11	83	49	1.074	2	3
B2533-1	152	103	46	23	64	4	0	0	9	67	4	1.101	2	3
BNC145-1	263	225	102	8	52	33	1	0	6	86	34	1.078	3	2
BNC41-13	211	163	73	21	56	20	0	0	3	76	20	1.084	1	2
BNC49-2	219	194	88	3	20	60	8	0	8	88	69	1.079	2	3
Goldrush	231	199	91	5	50	34	2	0	9	86	36	1.074	3	4
Kennebec	220	170	77	4	30	45	2	0	19	77	47	1.069	3	3
NC145-1	236	176	82	9	38	31	3	0	19	72	34	1.082	3	3
Russet Norkotah	176	150	67	6	42	43	0	0	8	86	43	1.074	3	3
Snowden	245	225	100	6	38	52	2	0	3	91	53	1.086	1	1
Superior	150	130	58	5	29	56	1	0	9	86	57	1.072	2	3
Vivaldi	259	228	100	5	47	39	2	0	7	88	40	1.069	.	.
Yukon Gold	129	103	46	6	35	43	1	0	15	79	44	1.077	.	.
Grand Mean	211	176												
CV(%)	15.11	19.3												
LSD(K=100)	44.2	47.0												

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 10b. 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 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHF	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	7	8	5	7	5	7	7	2	6	7	8	6	23	7	5	0	8	5	SR,RZ,MS,10HN(4-8,4-7,1-6,1-5)
B2133-81	9	8	8	7	6	5	6	7	4	8	6	8	6	0	9	0	3	0	3	SS,RZ
B2467-21	6	9	9	7	7	7	6	7	3	8	7	5	5	0	9	0	0	0	3	IL,SS,SC,RZ,FS
B2486-4	6	7	8	6	5	6	5	7	3	8	7	6	5	0	9	0	3	0	8	RZ,SS,HS,IL
B2490-7	9	6	9	9	6	5	7	6	2	7	6	7	5	8	8.3	0	0	0	3	SG,SR,SS,GC,MS,RZ, 3HN(2-8,1-7)
B2491-19	6	9	7	5	7	6	6	7	4	8	6	5	4	0	9	0	0	0	15	^IL,SR,SS,HS,RZ
B2491-22	7	9	8	6	9	7	5	7	3	7	5	7	6	0	9	0	0	0	13	MS,SR,IL,SS,RZ,SG,HS
B2494-10	6	8	8	6	7	5	6	6	3	7	7	7	7	8	8.5	10	0	10	10	SS,RZ,GC,3HN(3-8)
B2494-2	6	7	9	7	9	6	6	5	2	7	7	8	7	0	9	0	0	0	3	AC,SS,RZ,SG
B2494-21	6	8	8	6	6	7	5	7	2	7	7	7	6	0	9	0	0	0	0	SS,MS,GC,AC,SR,RZ
B2533-1	6	9	8	5	7	7	7	7	5	8	3	8	6	0	9	0	0	0	10	MS,SR,IL,SS,FS,YF2
BNC145-1	6	9	8	7	7	6	6	7	2	6	5	8	6	0	9	0	3	0	3	RZ,SS,MS,IL
BNC41-13	6	7	8	6	5	6	7	7	2	7	4	7	7	0	9	0	0	0	8	SS,RZ,IL,SR
BNC49-2	9	7	5	6	6	6	7	7	2	4	7	7	7	0	9	0	0	0	3	SS,RZ,MS
Goldrush	6	8	9	7	5	2	6	6	7	8	7	7	5	0	9	0	0	0	0	SR,MS,GC,SS
Kennebec	8	9	7	8	9	8	5	6	6	5	8	7	3	0	9	0	0	0	3	^MS,SS,BS,RZ,GC
NC145-1	9	8	9	9	6	7	6	8	2	6	6	6	5	3	8.8	0	0	3	0	IL,SS,MS,SR,1HN(8)
Russet Norkotah	6	9	8	8	5	2	5	7	7	7	7	7	6	0	9	0	0	0	3	SS,MS,SR,BS,RZ
Snowden	9	8	7	7	6	5	7	7	2	4	7	7	6	3	8.8	0	0	0	5	SS,MS,SR,BS,DAE,DSE,1HN(8)
Superior	5	9	8	4	6	6	6	7	3	5	6	7	6	0	9	0	3	5	3	CS,BS,IL,SS,MS
Vivaldi	9	8	8	8	7	8	7	7	5	8	6	7	7	3	8.8	0	0	0	0	SS,IL,CS,HS,SR,MS,1HN(8)
Yukon Gold	8	8	7	5	7	8	7	7	3	7	6	6	7	3	8.8	0	0	3	3	^SR,SS,IL,YF2,1HN(8)

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

² See NE1014 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- 1014 Round White Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
AF2211-9	194	164	78	3	32	45	7	0	13	84	52	1.088	2	2
AF2291-10	187	142	65	13	42	33	0	0	12	75	33	1.089	2	3
AF2314-1	126	77	38	17	54	6	0	0	24	60	6	1.071	4	4
AF2916-1	223	179	83	12	51	29	0	0	8	80	29	1.077	1	3
Atlantic	249	227	100	3	24	59	8	0	6	90	67	1.088	1	2
Beacon Chipper	177	159	75	6	36	51	3	0	4	90	54	1.082	1	2
Dakota Diamond	247	218	100	10	48	37	3	0	2	88	40	1.085	2	3
Katahdin	193	165	76	5	41	42	2	0	10	86	44	1.069	2	3
Kennebec	221	192	90	3	31	52	4	0	11	87	56	1.072	3	3
NY139(NYY28-9)	213	192	88	6	37	52	1	0	4	90	53	1.081	1	3
NY140(NYY36-4)	218	194	89	4	29	50	10	0	7	89	60	1.077	2	2
NY141(NYY41-67)	185	151	73	3	21	58	1	0	16	81	59	1.077	2	2
NYB38-37	220	182	86	7	40	40	3	0	11	82	43	1.073	2	2
Russet Norkota3117	183	161	73	5	48	40	0	0	7	88	40	1.076	3	4
Shepody	212	152	71	10	55	17	0	0	19	71	17	1.081	2	2
Snowden	262	234	110	8	43	46	0	0	3	89	47	1.085	1	1
Superior	184	166	78	5	34	53	2	0	6	90	56	1.077	2	4
Yukon Gold	171	157	76	4	32	59	1	0	4	92	59	1.080	.	.
Grand Mean	204	173												
CV(%)	14.3	19.6												
LSD(K=100)	41.6	49.6												

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

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

³ Determined by weight in air/water method.

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

Table 11b. NE-1014 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 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF2211-9	7	9	8	6	6	6	7	7	7	6	7	7	6	10	6.8	8	3	13	3	^SS, GC,^SR,4HN(1-8,1-7,2-6)
AF2291-10	9	9	8	7	6	6	6	6	3	6	5	7	4	0	9	0	0	0	0	^^MS, ~IL,SS,RZ
AF2314-1	7	9	8	5	4	2	7	7	6	8	4	7	3	0	9	0	0	0	5	^^MS, ^PTS,SR,SS
AF2916-1	6	9	8	5	9	7	7	7	4	8	5	7	7	0	9	0	0	0	8	SR,GC,MS,SS,^IL
Atlantic	6	7	8	5	7	5	7	6	2	6	7	7	5	15	7.8	0	0	10	3	^SS,SR,MS,6HN(3-8,2-7,1-6)
Beacon Chipper	7	9	8	7	9	6	7	7	3	7	6	7	7	0	9	0	0	0	3	SS,IL,HS,~TSWV
Dakota Diamond	9	7	8	7	9	6	7	6	2	7	6	7	5	13	7.8	3	0	8	3	SS,SR,GC,MS,5HN(1-8,1-7,3-6)
Katahdin	6	9	8	5	9	7	5	7	4	7	7	7	6	0	9	0	3	0	8	^SS,MS,SR,IL
Kennebec	9	9	8	8	6	7	5	5	5	6	7	8	4	0	9	0	0	0	0	SS,^MS,SR,SG,HS
NY139(NYY28-9)	8	9	9	6	9	6	5	6	4	7	6	8	7	0	9	0	0	0	5	MS,SR,SS
NY140(NYY36-4)	7	9	8	7	9	7	6	7	5	7	7	8	7	0	9	0	0	0	0	SS,SR,IL,GC
NY141(NYY41-67)	8	8	8	6	7	7	6	7	4	7	7	6	6	0	9	0	0	0	0	SS, ^^IL SR MS
NYB38-37	6	9	8	5	6	7	7	7	2	7	6	6	5	0	9	0	10	0	0	SR,SS,STST,MS
Russet Norkota3117	6	8	8	7	4	2	7	7	7	7	5	7	5	0	9	0	0	0	5	SR,MS,SS,GC
Shepody	6	9	8	6	9	6	6	6	6	7	6	7	3	0	9	0	0	0	0	^^MS,HS,SR,SS
Snowden	9	9	8	7	6	5	7	6	2	5	6	8	5	3	8.8	0	0	0	5	^SS,DAE,DSE,STST,SR,1HN(8)
Superior	6	9	8	4	6	6	6	7	4	6	6	7	6	0	9	0	5	8	5	IL,MS,SR,SS
Yukon Gold	8	9	8	5	7	7	7	7	6	7	7	7	6	5	8.5	0	0	3	3	SS,CS,SR,IL,GC,MS,2HN(8,7),YF2

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

² See NE1014 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. NE-1014 Red Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Chieftain	Size Dist. by Class (%) ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				1's	2's	3's	4's	5's	Cull's			
AF2393-7	169	136	61	19	54	26	0	0	1	80	26	1.069
Peter Wilcox(B1816-5)	176	157	71	7	37	52	0	0	4	89	52	1.076
B2152-17	214	154	69	26	52	18	0	0	3	71	18	1.075
B2327-2	170	104	46	32	54	5	0	0	9	59	5	1.066
Chieftain	246	222	100	7	43	46	1	0	2	90	47	1.073
Dakota Jewell	173	155	72	6	32	56	2	0	4	90	58	1.072
Dark Red Norland	237	208	93	7	32	55	1	0	6	88	56	1.067
ND4659-5R	134	97	44	24	51	21	0	0	3	72	21	1.071
ND5002-3R	152	100	44	34	59	6	0	0	1	65	6	1.071
ND7982-1R	88	41	19	52	44	1	0	0	2	46	1	1.071
NY136	208	175	79s	11	49	35	0	0	5	84	35	1.071
Red LaSoda	213	190	84	5	30	50	9	0	6	89	59	1.068
Red Pontiac	237	212	96	6	35	45	10	0	5	89	55	1.064
Grand Mean	186	150										
CV(%)	18.3	21.4										
LSD(K=100)	47.5	43.2										

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 12b. NE-1014 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 101 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF2393-7	5	7	8	4	2	7	7	6	3	7	5	8	5	0	9	0	0	0	5	SS,MS,SISC,STST
Peter Wilcox(B1816-5)	5	9	8	4	1	7	6	5	5	7	6	8	6	3	8.5	0	0	0	10	SS,SISC,MS,GC,1HN(7)
B2152-17	6	9	8	5	2	8	5	7	1	8	4	8	7	0	9	0	0	0	3	SR,SS
B2327-2	5	8	7	4	2	8	7	6	1	7	4	6	6	0	9	0	0	0	0	MS,GC,SS,SR
Chieftain	9	9	8	7	3	7	6	3	3	7	6	8	3	3	8.8	0	0	3	3	MS,RZ,SR,SS,1HN(8)
Dakota Jewell	8	8	8	6	2	7	6	6	3	6	7	8	5	5	8.5	0	0	5	5	MS,SS,RZ,SR,GC,2HN(6,8)
Dark Red Norland	5	9	8	4	2	8	5	7	5	8	7	8	5	0	9	0	0	0	10	SS,SR,MS,FS,GC
ND4659-5R	6	9	8	5	2	8	7	6	1	7	5	8	6	0	9	0	0	0	5	SR,IL,MS,FS,SS
ND5002-3R	6	9	9	7	2	7	6	5	3	6	4	8	5	0	9	0	0	0	5	FS,MS,SS,SISC
ND7982-1R	5	8	7	3	2	9	7	6	2	8	2	8	7	0	9	0	0	0	0	SR,BS,MS,SS
NY136	9	9	8	6	2	7	7	5	3	6	6	8	5	0	9	0	0	0	5	AC,SS,MS,SR
Red LaSoda	6	9	8	6	3	7	6	5	3	4	8	8	4	0	9	0	0	0	3	SS,MS,GC,SS
Red Pontiac	6	9	8	6	3	7	6	4	3	5	7	7	4	0	9	0	0	0	3	MS,GC,RZ

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

² See NE1014 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 13a. Unreplicated Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atlantic	Size Dist. by Class (%) ² (% of total yield)							1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				1's	2's	3's	4's	5's	Cull's				
AF2865-4	253	203	90	3	27	46	7	0	16	80	53	1.063	
AF2866-2	257	142	60	6	26	27	2	0	39	55	29	1.051	
AF2866-3	252	235	113	5	36	48	10	0	1	93	58	1.073	
AF2866-30	289	253	147	5	50	37	0	0	7	88	37	1.075	
AF2866-7	321	280	124	8	40	48	0	0	4	87	48	1.065	
AF2867-10	239	222	93	2	17	57	19	0	5	93	76	1.069	
AF2867-20	207	173	83	16	65	19	0	0	1	83	19	1.086	
AF2867-27	232	208	92	7	53	37	0	0	3	90	37	1.075	
AF2873-1	233	204	97	12	51	34	2	0	1	87	36	1.079	
AF2873-2	226	195	86	8	48	38	0	0	6	86	38	1.084	
AF3001-6	294	268	156	4	57	34	0	0	5	91	34	1.088	
AF3004-14	224	186	78	9	58	25	0	0	8	83	25	1.066	
AF3004-9	196	167	80	8	39	46	0	0	7	85	46	1.080	
AF3008-3	193	165	96	10	51	34	0	0	5	85	34	1.095	
AF3011-28	244	210	88	5	51	36	0	0	8	86	36	1.079	
AF3011-29	269	227	132	6	64	20	0	0	10	84	20	1.081	
AF3011-34	261	237	105	5	71	20	0	0	4	91	20	1.083	
AF3011-4	285	229	101	6	67	13	0	0	14	80	13	1.072	
AF3012-4	231	193	81	11	72	12	0	0	5	83	12	1.082	
AF3014-1	282	277	116	1	22	70	6	0	1	98	76	1.082	
AF3021-4	187	138	80	5	54	17	3	0	21	74	20	1.069	
AF3051-2	237	213	102	7	54	36	0	0	3	90	36	1.078	

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 13b. 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 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC – 2007

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF2865-4	9	9	8	9	6	5	6	7	3	6	7	7	5	0	9	0	0	0	0	^HS,CS,SS,SR
AF2866-2	6	6	8	7	9	8	6	7	5	8	7	5	3	0	9	0	0	0	0	GS,MS,^^RZ,SR,SC
AF2866-3	9	9	8	7	9	7	7	7	3	5	6	7	7	0	9	0	0	0	0	SR
AF2866-30	6	9	8	6	9	8	5	7	5	7	6	8	6	0	9	0	0	0	0	PTS,MS,IL,SS
AF2866-7	9	7	8	8	9	6	5	7	3	7	6	7	6	0	9	0	0	0	0	SS,MS,RZ,GC
AF2867-10	9	9	9	9	9	6	7	5	3	7	7	8	6	0	9	0	0	50	0	SS,MS
AF2867-20	6	7	8	5	9	7	5	7	4	8	5	8	6	0	9	0	0	0	0	SS
AF2867-27	6	8	8	6	9	7	5	6	3	8	6	7	6	10	8	0	0	0	0	SS,SR
AF2873-1	6	7	8	5	9	6	7	7	2	7	6	8	7	0	9	0	0	30	0	SS
AF2873-2	6	8	6	6	9	6	7	6	4	8	7	8	6	0	9	10	0	10	0	SS,SR
AF3001-6	9	8	8	7	5	6	5	5	6	8	9	8	6	0	9	0	0	0	0	MS
AF3004-14	5	7	7	4	9	7	7	6	6	8	7	7	6	100	4	0	0	0	0	10HN(1-8,1-7,1-6,1-5,1-4,2-3,3-2)
AF3004-9	8	9	8	6	6	7	5	7	5	8	7	8	7	0	9	0	0	0	0	GC,SS,HS
AF3008-3	6	9	8	6	6	6	7	6	5	8	6	8	7	0	9	0	0	0	0	SS,MS
AF3011-28	9	9	8	5	6	7	5	6	7	8	7	7	4	0	9	0	0	0	0	^MS,SS
AF3011-29	9	9	8	8	5	3	6	6	7	8	7	8	7	0	9	0	0	0	0	MS
AF3011-34	9	7	8	8	5	4	6	6	7	7	7	8	6	0	9	0	0	0	0	SS,MS
AF3011-4	9	7	6	7	6	7	4	7	7	8	7	7	3	0	9	0	0	0	0	^MS,SR
AF3012-4	9	9	7	8	6	6	6	7	7	8	6	8	5	0	9	0	0	0	0	SS,GC,MS
AF3014-1	9	8	8	8	6	5	7	6	4	7	7	8	7	0	9	10	0	0	0	
AF3021-4	9	8	9	6	6	7	5	5	6	7	7	6	4	70	5	0	0	0	0	^SR,7HN(2-7,1-6,1-5,1-4,1-3,1-2)
AF3051-2	6	8	8	6	6	7	6	6	6	8	7	7	5	0	9	0	0	0	0	SS,RZ

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

² See NE1014 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 13a. Continued.

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atlantic	Size Dist. by Class (%) ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				1's	2's	3's	4's	5's	Cull's			
Atlantic	233	211	100	5	25	60	5	0	5	90	66	1.086
B2500-5	213	182	81	11	64	22	0	0	3	86	22	1.083
B2538-5	162	121	113	4	38	38	0	0	21	75	38	1.070
B2583-13	245	216	95	4	32	49	7	0	8	88	56	1.075
B2588-5	117	55	32	53	47	0	0	0	1	47	0	1.076
B2589-3	214	184	88	13	66	20	0	0	1	86	20	1.081
B2613-2	221	186	82	10	38	46	0	0	6	84	46	1.086
B2614-4	206	156	66	7	37	39	0	0	17	76	39	1.079
B2614-5	201	193	92	3	47	49	0	0	1	96	49	1.074
BCO01162-2	141	112	81	14	45	34	0	0	7	79	34	1.067
BCO01162-3	73	9	6	36	12	0	0	0	52	12	0	1.065
BCO01283-2	121	75	49	32	47	15	0	0	6	62	15	1.069
BCO01283-3	145	97	195	25	55	12	0	0	9	66	12	1.061
BCO01306-3	36	5	11	67	15	0	0	0	18	15	0	1.061
BCO01357-3	136	97	71	21	55	16	0	0	8	71	16	1.069
BCO01357-4	98	55	36	35	54	2	0	0	9	56	2	1.062
BCO01357-5	92	59	119	34	55	9	0	0	2	64	9	1.062
BCO01357-6	125	96	90	20	50	26	0	0	3	77	26	1.059
BCO01371-2	147	107	100	26	68	5	0	0	1	73	5	1.064
BCO01377-2	246	193	181	5	31	46	2	0	16	79	48	1.069
Chieftain	210	172	166	11	39	42	1	0	8	81	42	1.065
Dark Red Norland	146	111	100	18	41	33	1	0	7	74	34	1.061

¹ DAP = Days After Planting; DVK = Days to Vine Kill² 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 13b. Continued.

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³							Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR		
Atlantic	6	7	8	5	6	6	7	7	2	5	7	8	6	40	7.8	3	0	5	3	SS,SR,MS,16HN(14-8,1-7,1-6)	
B2500-5	6	7	8	4	9	8	7	7	2	8	6	8	7	0	9	0	0	0	10	SS	
B2538-5	5	9	8	6	1	9	7	7	4	6	5	8	5	0	9	0	0	0	10	HS,SS,GC,SISC	
B2583-13	9	6	8	5	6	6	6	7	5	8	6	7	6	40	7	0	0	0	10	MS,RZ,SS,4HN(2-8,2-7)	
B2588-5	6	4	8	3	9	8	7	7	1	7	2	8	5	0	9	0	0	0	0	SR	
B2589-3	6	8	7	4	6	5	7	7	2	7	5	8	6	0	9	0	0	0	10	SS	
B2613-2	6	6	8	5	6	7	5	7	3	7	6	7	6	20	8	0	0	0	0	SR,SS,MS,2HN(2-8)	
B2614-4	6	8	8	4	9	8	5	7	4	7	6	8	5	0	9	0	0	0	0	^^SS,HS,MS	
B2614-5	6	9	8	5	6	6	6	7	4	8	6	8	7	0	9	0	0	0	20	SS	
BCO01162-2	9	9	8	8	1	5	6	6	3	7	5	6	4	0	9	0	0	0	0	^SISC,HS,MS	
BCO01162-3	9	6	8	8	1	6	5	7	5	8	2	8	2	0	9	0	0	0	0	^^^HS,MS,^SG,^SISC	
BCO01283-2	6	7	8	4	2	8	7	7	3	7	4	7	6	0	9	0	0	0	0	SR,SS	
BCO01283-3	6	9	8	4	3	8	6	7	2	8	3	7	4	0	9	0	0	0	0	SR,RZ,SS	
BCO01306-3	9	7	8	4	2	8	7	7	6	7	2	7	3	0	9	0	0	0	20	FINGERLING,SR,IL,CS,RF1	
BCO01357-3	6	8	8	5	3	8	7	6	4	7	4	6	6	0	9	0	0	0	0	^SR,RF1	
BCO01357-4	9	7	8	6	2	7	7	7	2	7	3	7	6	0	9	0	0	0	0	SR,MS,RF1	
BCO01357-5	8	8	8	4	2	8	5	7	4	7	3	7	5	0	9	0	0	0	0	SR,RF1	
BCO01357-6	5	8	8	5	2	7	7	7	2	6	4	7	5	0	9	10	0	0	0	^RZ,,STST,RF1	
BCO01371-2	6	9	9	5	2	8	7	7	2	7	3	7	7	0	9	0	0	0	0	SR	
BCO01377-2	6	9	9	6	2	7	6	6	5	7	7	7	6	0	9	0	0	0	0	^GC,RZ,HS,RF1	
Chieftain	9	9	8	7	3	7	6	5	3	6	6	7	5	0	9	0	0	0	0	HS,SR,SS,MS,RZ	
Dark Red Norland	5	9	8	4	2	8	6	7	4	6	5	7	5	0	9	0	0	0	3	SR,SISC,MS,GC,SS	

¹ DAP = Days After Planting; DVK = Days to Vine Kill² See NE1014 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 rot⁴ See Appendix 3 for Comment Codes

Table 13a. Continued.

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atlantic	Size Dist. by Class (%) ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				1's	2's	3's	4's	5's	Cull's			
NYB13-1	281	236	172	9	60	25	0	0	7	84	25	1.055
NYB38-37	215	190	80	8	35	51	2	0	4	88	53	1.071
NYB38-40	161	130	75	12	52	28	0	0	8	80	28	1.071
NYC100-2	105	49	100	49	47	0	0	0	4	47	0	1.067
NYC100-4	123	85	79	28	52	17	0	0	3	69	17	1.075
NYC100-5	117	83	60	17	59	12	0	0	12	71	12	1.062
NYC15-2	125	78	51	27	56	7	0	0	10	63	7	1.055
NYC38-18	214	197	94	7	51	41	0	0	2	92	41	1.072
NYC38-19	255	225	94	11	31	52	4	0	1	88	57	1.081
NYC81-1	158	102	60	15	43	22	0	0	20	65	22	1.076
Snowden	278	256	122	5	35	55	2	0	3	92	58	1.082
Superior	203	182	87	6	36	52	1	0	5	90	53	1.068

¹ DAP = Days After Planting; DVK = Days to Vine Kill² 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 13b. Continued.

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
NYB13-1	9	9	8	6	2	7	7	6	5	7	6	7	6	0	9	0	0	0	0	MS,SR,RZ
NYB38-37	6	9	8	5	9	7	7	7	2	6	6	7	7	0	9	0	0	0	0	SS,IL
NYB38-40	6	9	7	5	9	8	7	7	4	8	6	8	8	0	9	0	0	0	10	SS,SR,IL
NYC100-2	8	9	8	5	2	8	7	7	2	7	2	7	5	0	9	0	0	0	0	SR
NYC100-4	6	9	8	5	3	8	7	6	2	7	4	7	6	0	9	0	0	0	0	SR
NYC100-5	9	9	8	7	2	7	7	6	2	7	5	7	6	0	9	0	0	0	0	SR,SS,MS
NYC15-2	6	8	7	4	2	8	7	7	2	6	3	7	6	0	9	0	0	0	0	SR,MS,YF2
NYC38-18	8	8	8	5	9	7	6	7	2	8	6	8	7	0	9	0	0	0	0	SR
NYC38-19	6	7	8	6	9	7	6	7	2	7	7	7	7	0	9	0	0	0	0	SS
NYC81-1	6	6	8	4	7	6	7	7	2	7	6	7	7	0	9	90	0	0	10	SS,SR,IL
Snowden	9	9	8	8	5	6	7	7	2	5	7	7	6	3	8.8	0	0	0	0	SS,CS,RZ,MS
Superior	5	9	8	4	6	6	7	7	3	6	7	8	6	5	8.8	0	0	3	0	SS,SR,2HN(2-8)

¹ DAP = Days After Planting; DVK = Days to Vine Kill² See NE1014 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 rot⁴ 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 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: Diametric 1.28lbs/A

Fertilizer: 152.2 lbs N, 177.3 lbs P, 101.2 lbs K, 1 qt/A lb Zn
14.98 gal/A N (side dress), 1 pt/A Zn (with Fungicide)

Insect Control: Actara 1.5 oz/A

Disease Control: Quadris 6.2oz/A
Dithane 2.0 lbs/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: Ten 21' rows at 34' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Diametric 1.28lbs/A

Fertilizer: 152.2 lbs N, 177.3 lbs P, 101.2 lbs K, 1 qt/A lb Zn
14.98 gal/A N (side dress), 1 pt/A Zn (with Fungicide)

Insect Control: Actara 1.5 oz/A

Disease Control: Quadris 6.2oz/A
Dithane 2.0 lbs/A

Irrigation: None

Vine Kill: None

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

Trial Design: Randomized complete block, four replications

Plot Dimensions: Nineteen 21' rows at 40' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Sencor 1/2 lbs/A
Dual 1pt/A
Matrix 1 oz/A

Fertilizer: 180 units N: 16-8-8 broadcast

Insect Control: Leverage 3.75 oz/A

Disease Control: Dithane 0.5 lbs/A

Irrigation: None

Vine Kill: None

Location: McCotter Farms, Mesic, Pamlico Co., NC

Trial Design: Randomized complete block, four replications

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

Seed piece Treatment: None

Weed Control: Sencor 1.3lbs/A
Select 8 oz/A

Fertilizer: 185 lbs N, 80 lbs P, 160 lbs K (pre-plant)

Insect Control: Asana XL 0.03 lbs/A
Baythroid 1.6 oz/A

Disease Control: Ridomil 2 lbs/A
Quadris 11 fl oz/A
Dithane 2 lbs/A

Irrigation: None

Vine Kill: None

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

Location: Waters Produce, Chocowinity, Beaufort Co., NC

Trial Design: Strip plot design

Plot Dimensions: Ten 100' rows at 40' row spacing, Three Random 10' samples

Seed piece Treatment: TopsMZ

Weed Control: Outlook 18 oz/A

Prowl 2 pt/A

Fertilizer: 500 lbs 10-10-10 (pre-plant)

300 lbs 34-0-0 (side-dress)

Insect Control: Provado 3.75 oz/A

Endosulfan 1.3 qt/A

Disease Control: None

Irrigation: None

Vine Kill: None

Location: Silver Farms, Spruce Pine, Mitchell Co., NC

Trial Design: Randomized complete block design, four replications

Plot Dimensions: Twelve 21' rows at 42' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Prowl 2 qts/A

Sencor DF 1 lb/A

Fertilizer: 750 lbs 17-17-17

100 lbs 0-0-60

Insect Control: Mocap 15% 40 lbs/A

Platinum 0.8 fl oz/A

Disease Control: None

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

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1 lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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: Twenty-two 21' rows at 38' row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

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: Fifty-six 21' rows at 38" row spacing, 28 hills per row

Seed piece Treatment: None

Weed Control: Dual Magnum 1.5pt/A pre-emergence

Sencor DF 1lb/A pre-emergence

Fertilizer: 667lbs, 18-18-18 broadcast

30-0-0 20 gal

30-0-0 7 gal (post-emergence)

Insect Control: Spintor 2SC 6 oz/A

Sevin XLR 1Pt/A

Disease Control: None

Irrigation: None

Vine Kill: None

Appendix 2: STANDARDIZED NE1014 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
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
RF=red flesh (RF scale: 1=light red to 3=dark red)
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 stolens
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 to 3 = dark red)

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

I. OBJECTIVES:

Our research is conducted in collaboration with the USDA Cooperative States Research Extension and Education Service (CSREES) NE1031 (former 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 two areas: the development of new potato germplasm and varieties through 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 in North Carolina 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 maintained in a 160 hill plots for seed increase. This year, 17,682 single-hills were planted and 509 clones were selected averaging a 2.9% selection rate. Out of the 178 clones in our 6-hill plots, 57 were selected for future evaluation. In the 20-hill plots, 69 clones were planted with 20 being selected for further evaluation. In our 60-hill plots, 7 clones were planted and 2 were selected.

During 2007, we also initiated a project to select and screen specific families with potential Colorado potato beetle resistance. We planted 1,548 2-hill plots for selection purposes and also planted a tandem set in our Colorado potato beetle nursery for resistance screening. The data collected in the nursery was used as a major but not exclusive selection criteria resulting in 97 clones which will be advanced for CPB screening as two replicated 3 hill plots and for parallel selection as 6 hill plots in 2008.

Yield Trials

In our 13 yield trials, we evaluated 193 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 1-13. 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>.