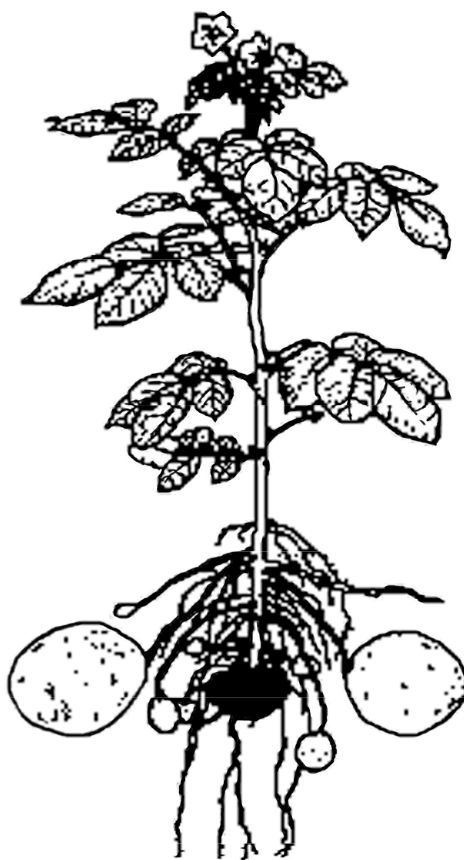


NC STATE UNIVERSITY

NORTH CAROLINA POTATO VARIETY TRIAL AND BREEDING REPORT

2008



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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 begins 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, which are also maintained in a 160-hill plots for seed increase. This year, 15,121 single-hills were planted and 512 clones were selected averaging a 3.4% selection rate. Out of the 606 clones in our 6-hill plots, 67 (11%) were selected for future evaluation. In the 20-hill plots, 57 clones were planted with 9 (16%) being selected for further evaluation. In our 60-hill plots, 20 clones were planted and 5 (25%) were selected.

During 2008, in our Colorado potato beetle nursery we continued our project to select and screen specific families with potential Colorado potato beetle resistance. We planted 1,605 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 112 clones which will be advanced for CPB screening as two replicated 3-hill plots, and for parallel horticultural adaptation selection as unreplicated 6-hill plots in 2009. In this year's replicated CPB screening trial 97 clones were evaluated for CPB resistance as two 3-hill plots and for adaptation in unreplicated 6-hill plots simultaneously. After making our selections in both of these trials, we decided to advance 16 clones.

Yield Trials

In our 14 yield trials, we evaluated 222 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 1-14. 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> .

2008 Promising Lines: Chip-stock clones

Harley Blackwell.

Developed by: USDA-ARS

Released: 2003

trials evaluated: 47 since(1995)

Skin Color: Tan to Light Brown

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 103%

Specific Gravity: 1.073

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.

NCB2497-17.

Developed by: NC State Univ.

Released: N/A

trials evaluated: 3 since(2007)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 111%

Specific Gravity: 1.075

Chip Score: 2.0 (good)

Overall Appearance: 7 (good)

Other Attributes or Comments: This is mid to late season clone with good chip scores. Though this is the second year of variety trial evaluations in NC we sent this clone to Florida for evaluation and their results were very similar to ours.

NY140.

Developed by: Cornell Univ.

Released: N/A

trials evaluated: 9 since(2005)

Skin Color: White

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Atlantic): MKTB YLD 113%

Specific Gravity: 1.073

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. It's 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: 14 since(2005)

Historical Data:

Maturity: medium

% Standard (Chieftain): MKTB YLD 80%

Skin Color: Dark Red

Flesh Color: White

Specific Gravity: 1.065

Skin Texture: Moderately Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: We have seen this clone for 4 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: 21 since(2001)

Historical Data:

Maturity: mid to late

% Standard (Atlantic): MKTB YLD 90%

% Standard (Yukon Gold): MKTB YLD 115%

Skin Color: Buff

Flesh Color: Light Yellow (YF1)

Specific Gravity: 1.064

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

Michigan Purple.

Developed by: Michigan State Univ.

Released: 1999

trials evaluated: 9 since(2001)

Historical Data:

Maturity: medium

% Standard (Chieftain): MKTB YLD 78%

% Standard (Dark Red Norland): MKTB YLD 98%

Skin Color: Purple

Flesh Color: White

Specific Gravity: 1.064

Skin Texture: Moderately Smooth

Overall Appearance: 7 (good)

Other Attributes or Comments: We have evaluated this clone for 8 years, and appreciate its size and its unique shade of almost metallic purple skin. In the eastern part of the state it tends to skin badly when harvested but in the mountain region where it can stay longer in the soil the skin tends to hold better if the vine is killed well in advance or the tops are allowed to die completely down. From time to time we have seen low levels of IHN but never enough to be of great concern.

Russet-type clones

Goldrush.

Developed by: North Dakota State Univ.

Released: 1992

trials evaluated: 10 since(1996)

Skin Color: Brown

Flesh Color: White

Historical Data:

Maturity: medium

% Standard (Russet Nokotah): MKTB YLD 120%

Specific Gravity: 1.063

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.)

McCotter Farms, Bayboro, NC (Pamlico Co.)

Waters Produce, Chocowinity, NC (Beaufort Co.)

Twin Oak Farms, Spruce Pine, NC (Mitchell Co.)

COOPERATING COUNTY EXTENSION AGENTS:

Tom Campbell, Elizabeth City, Pasquotank Co.

Daniel Simpson, Bill Eilers & Pete Anderson, Bayboro, Pamlico 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	Cape Fear loam	Mar 4	Jun 19	107
Bateman's	Gertie silt loam	Mar 13	Jun 25, Jul 21	104,130
McCotter's	Stockade loamy fine sand	Mar 19	Jun 30	103
Waters'	Lynchburg fine sandy loam	Mar 11	Jun 17	98
Twin Oaks	Dillsboro clay loam	Apr 17	Sept 21	126
TRS/VGJREC	Portsmouth fine sandy loam	Mar 19,20,24, 25	Jul1,7- 9,10,22,23,28	104,105,108,110, 111,120,121,126

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. Thirty-

two clones in two trials were evaluated at Black Gold Farms, sixteen clones were evaluated at McCotter's, twenty-one clones were evaluated at Bateman's, nine clones were evaluated at Waters' and eleven at Twin Oaks' 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 Twin Oaks', 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. Twin Oaks' 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 USPB/SFA 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. Early in the season Down East rainfall was adequate though not excessive with drying periods in between. Toward the end of May the crop looked like it was progressing well then the rains tapered off and it was dry for the remainder of the season. Late May is generally when the crop is beginning the bulking phase for the region consequently yield in most trials was significantly affected. Our earliest planted trials this year, Black Gold variety trial and USPB/SFA trial (Both in Gum Neck, Tyrrell county) had yields similar to most other years. The drought effected our other trials Down East as follows: in Batemans' trial (Weeksville, Pasquotank county) yields were down by over half. McCotters' trial (Bayboro, Pamlico county) had marketable yields off about one-third. For Waters' trial (Chocowinity, Beaufort county), which is typically a lower yielding location, marketable yields were down by as much as half or more. At the TRS (Plymouth, Washington county) our marketable yields were down significantly as well by one-third to one-half. At the TRS some of the later clones were able to take advantage of the sparse later season rains in July that gave them an edge primarily in terms of total yield and also pushed up marketable yields.

In the mountains they were even more adversely affected by the dry weather. Planting in April, the crop didn't have time to get very far along before the season dried up. Also some of the late July and August rains that the eastern part of the state received were missed in the mountains. With these extremely dry conditions the crop yields were dramatically reduced to about a quarter of what we expected to see.

A. Yield Trials

1. On-Farm Trials

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

Atlantic, our standard, had a marketable yield of 372 cwt/a and none of the clones in the trial had greater marketable yields. Clones with similar but slightly lower marketable yields than Atlantic were NCB2497-17 (367 cwt/a), Marcy (365 cwt/a), Harley Blackwell (347 cwt/a), NY140 (342 cwt/a) and BNC49-1 (337 cwt/a). Atlantic had a gravity of 1.094, one clone, NCB2489-5 (1.096) had a higher specific gravity. Three clones had a chip score rating of 1 (exceptional) in the 24 to 48 hour chip test: Atlantic, B1992-106, and Snowden. Six clones had chip scores of 1 in the 5 to 7 day chip test, Atlantic, BNC49-1, Marcy, NC41-1, and Snowden. Four clones: B2130-136, BNC48-1, Harley Blackwell, and Marcy had appearance scores of 7 (good), one clone NCB2497-17 had an appearance score of 8 (better than good). Four clones expressed symptoms of internal heat necrosis (IHN): Atlantic (25% with an average internal heat necrosis severity rating (HNR) of 7.3), B1992-106 (3% with an HNR of 8.8), B2130-136 (3% with an HNR of 8.8) and NC0349-8 (3% with an HNR of 8.8). Hollow heart (HH) was noted in 10 clones and 3 had incidence at 10% or Greater: NC0349-3 (28%), Atlantic (13%), and NC0349-8 (10%). One clone, Atlantic (25%), expressed brown center (BC) at 10% or greater incidence. Two clones had soft rot (SR) levels greater than 10%, NCB2489-5 (20%), and NCB2497-17 (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.

US Potato Board/Snack Food Association Trial at Black Gold Farms (Tables 2a and 2b)

Atlantic had a marketable yield of 324 cwt/a. Only one clone in this trial, W2324-1 (333 cwt/a), had a greater marketable yield than Atlantic though it was not statistically significant. Atlantic had a gravity of 1.097 and two other clones had greater gravities: ND7519-1 (1.103) and MSJ147-1 (1.098). Four clones received a chip score rating of 1 at the 24 to 48 hour chip test: Atlantic, CO95051-7W, ND7519-1, and W2717-5. Nine clones scored a 1 in the 5 to 7 day chip tests, Atlantic, Beacon Chipper, CO95051-7W, MSJ147-1, ND7519-1, NY138, NY139, Snowden, and W2324-1. Three clones received an appearance rating of a 7: CO97043-14W, CO97065-7W, and NY139. Six clones expressed IHN though only one clone, ND7519-1 (48% with an HNR of 8.0), had greater than 10% incidence. Only one clone, Atlantic (12%), had greater than 10% incidence of HH. Two clones had greater than 10% incidence of BC, Atlantic (36%) and ND7519-1 (32%). Incidence of SR was less than 10% for all clones and no VR was noted in this trial. 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)

In this trial three yield standards were chosen: Atlantic (round white standard), Chieftain (red standard), and Russet Norkotah (russet skin types). No clone had a marketable yield greater than Atlantic (163 cwt/a) and within the class of reds, Chieftain (126 cwt/a) had the highest

marketable yield. Russet Norkotah (78 cwt/a) had a lower marketable yield than all other russets and long whites in the trial: Defender (120 cwt/a), Goldrush (108 cwt/a), Silverton Russet (104 cwt/a), and Blazer (101 cwt/a). The specific gravity for Atlantic in this trial was 1.091, all other clones had lower specific gravities. Three clones had a chip score rating of 1 in both the 24 to 48 hour and the 5 to 7 day tests: Atlantic, Beacon Chipper, MSN105-1. Ivory Crisp also had a chip score of 1 in the 24 to 48 hr chip evaluation. Clones with an overall appearance score of 7 were: Atlantic, NY136, Vivaldi, and Silverton Russet. No significant incidence of IHN, HH, or VR were recorded in this trial. Red LaSoda had 13% incidence of BC. Culls were primarily due to sunscald, growth cracks, misshapes, common scab, soft rot, and skin blemishes due to Rhizoctonia.

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

Our standards for this trial were Chieftain (246 cwt/a, marketable yield) for table-stock types, and Atlantic (200 cwt/a, marketable yield) for chipping types. None of the table types had a greater marketable yield than Chieftain. NY140 (268 cwt/a) had a significantly higher marketable yield than Atlantic. Atlantic had a specific gravity of 1.089 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. Six clones had an overall appearance score of 7 these were: Atlantic, B2152-17, Harley Blackwell, NC41-1, NY136, and Vivaldi. Atlantic (10%, HNR of 8) was the only clone expressing IHN symptoms in 10% or greater of tubers sampled. Other clones expressing IHN were: Chieftain (5%, HNR of 6.5), Dakota Pearl (3%, HNR 8), and Superior (5%, HNR of 8). Clones expressing 10% or greater incidence of vascular ring were: Dakota Pearl (13%), Chieftain (10%), and NY140 (10%). Other internal defects were HH and BC though no clones exhibited greater than 10% incidence of either. The primary external defects in this trial were growth cracks, sunscald, soft rot, misshapes, and skin blemishes due to Rhizoctonia.

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

Chieftain the standard had a marketable yield of 80 cwt/A, one clone had greater marketable yield, Superior (85 cwt/a). Four clones had an overall appearance score of 7: Dark Red Norland, NY136, Reba, and Vivaldi. Clones with 10% or greater incidence of VR were: Superior (28%) and Vivaldi (18%). One clone had significant levels of BC, Superior (63%). Dark Red Norland had 23% incidence of SR in tubers sampled for internal defects. External defects included misshapes, common scab, soft rot, growth cracks, silver scurf, and Fusarium dry rot.

Twin Oaks Farm Variety Trial (Tables 6a and 6b)

This trial, unlike all of our trials, is located in the mountains of NC where growers are primarily direct marketing potatoes or have small niches they fill. The standards used were Dark Red Norland, and Kennebec (white standard, the primary potato grown and consumed in that region). Kennebec had a marketable yield of 64 cwt/a yielding, approximately ¼ of last years marketable yield, but more than all other clones in the trial this year. Michigan Purple had a similar average marketable yield (63 cwt/a). Three clones received an overall appearance score of 7: B2152-17, Michigan Purple, and Vivaldi. Because of low yield internal defects were not evaluated in this trial. External defects included soft rot, growth cracks, common scab, misshapes, and skin blemishes due to Rhizoctonia.

2. TRS/VGJREC Yield Trials

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

This trial, containing 14 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 standard Chieftain (113 cwt/A). Four of the clones in the trial exceeded Chieftain's marketable yield: ATND99331-2 Pinto (143 cwt/a), All Red (142 cwt/a), Dark Red Norland (131 cwt/a), and Peter Wilcox (116cwt/a). Vivaldi was the only clone with an overall appearance score of 7. Three clones had incidence 10% or greater of IHN: Chieftain (18% and an HNR of 8.3), A00293-2Y (10% and an HNR of 7.5), and Vivaldi (10% and an HNR of 7.5). Other internal defects included SR and BC but incidence was less than 10% for all clones. The most common external defects were soft rot, silver scurf, misshapes, and skin blemishes attributed to Rhizoctonia.

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

Twenty-nine 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 102 cwt/a. Two clones Snowden (162 cwt/a) and AF3360-1 (145 cwt/a) had a significantly greater marketable yield and three other clones also had greater marketable yields: Superior (115 cwt/a), AF0339-39 (114 cwt/a) and AF0338-17 (110 cwt/a). Four clones had gravities greater than Atlantic (1.078): AF3318-6 (1.083) NYD40-106 (1.083), AF3360-1 (1.080) and NYD40-297 (1.079). Two clones, B2575-14 and B2575-19 had chip-rating scores of 1 in both the 24 to 48 hour and 5 to 7 day chip tests. Atlantic was the only clone to receive an overall appearance rating score of 7. Four clones expressed IHN at 10% or greater incidence: AF3360-1 (20% and an HNR of 8.0), AF0339-39 (15% and an HNR of 7.5), AF2497-2 (15% and an HNR of 7.3), and Atlantic (10% and an HNR of 7.8). One clone, NYD40-297 (15%), had 10% or greater incidence of VR. Common external defects were misshapes, soft rot, sunscald, and skin blemishes attributed to Rhizoctonia.

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

Of the twenty-four clones in this trial, two, ND5775-3 (205cwt/a) and Superior (145 cwt/a), had statistically significant marketable yields higher than Atlantic (106 cwt/A). Two others also had greater marketable yields than Atlantic: B2613-2 (134 cwt/a), B2614-4 (118 cwt/a), Atlantic had a specific gravity of 1.081, two clones had a higher specific gravity: NCB2489-5 (1.085) and B2461-12 (1.082). Seven clones had chipping scores of 1 in both the 24 to 48 hour and the 5 to 7 day chip tests: Atlantic, B2461-12, B2489-3, B2500-5, B2589-3, NC41-1, and NCB2489-5. One clone, NYB38-40, received an overall appearance rating of 8 and four clones received overall appearance scores of 7: B2461-15, B2500-5, B2614-5, and NYB38-37. None of the clones had 10% or more incidence of IHN, HH, VR, or BC. Two clones did have 10% or greater incidence of SR: Atlantic (13%) and B2461-12. Common defects were misshapes, common scab, 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 94 cwt/A, and one clone, Vivaldi (228 cwt/a) had a significantly greater marketable yield, Snowden (140 cwt/a). Four others also had higher marketable yields: NCB2497-17 (115 cwt/a), B2133-81 (111 cwt/a), BNC49-1 (108 cwt/a), and B1992-106 (95 cwt/a). One clone, B2463-16 (1.079), had a higher gravity than Atlantic (1.078). Two clones had chip scores of 1 in the 24 to 48 hour test and 5 to 7 day chip color

evaluation: Atlantic, and BNC48-1. One clone received overall appearance scores of 8: NCB2497-17 and one, B2463-16 had an overall appearance score of 7. Two clones expressed IHN at equal or greater than 10%, Atlantic (10% with an HNR of 7.3), and B2460-3 (10% with an HNR of 6.8). Common external defects were: misshapes, soft rot, growth cracks, sunscald, and skin blemishes due to Rhizoctonia.

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

One clone, Dakota Diamond (217 cwt/a) had a significantly greater marketable yield than Atlantic (172 cwt/A). One other clone, Snowden (191 cwt/a), also had a greater marketable yield than Atlantic. Four clones in this trial had gravities greater than or equal to Atlantic (1.074). These were (sorted high to low): BNC48-1 (1.081), B1992-106 (1.077), AF2291-10 (1.075), and B2485-2 (1.075). Three clones: B2485-2, Beacon Chipper, and BNC41-13, received a chip rating of 1 in both the 24 to 48 hour and 5 to 7 day chip tests. Five clones: B1992-106, Beacon Chipper, NY138, NY140 (NYY36-4), and NY141 (NYY41-67) were rated a 7 for overall appearance. One Clone, Atlantic (35% with an HNR of 7.0), expressed IHN with 10% or greater incidence.. The most common culls were misshapes, sunscald, soft rot, growth cracks, and skin blemishes attributed to Rhizoctonia.

NE-1031 Red Trial. (Tables 12a and 12b)

The standard, Chieftain, had a marketable yield of 188 cwt/A. All other clones had lower marketable yields. One clone, B2152-17, received an overall appearance score of 7. No clones expressed significant levels of IHN, HH, VR, BC, or SR. Culls were due mostly to soft rot, misshapes, silver scurf, sunscald, growth cracks, secondary growth, heat sprouts, and skin blemishes attributed to Rhizoctonia.

NE-1031 Russet Trial. (Tables 13a and 13b)

This is the first dedicated russet variety trial our program has conducted since 1999. Since that time several russet varieties have been released and because of modest industry interest we decided to conduct this trial with a limited number of clones. The standard, Russet Norkotah 3117, had a marketable yield of 69 cwt/A. Of the eleven clones in the trial one, Defender (161 cwt/a), had a marketable yield that was greater and statistically significant, five others also had greater marketable yields: Goldrush (111 cwt/a), Ranger Russet (107 cwt/a), Rio Grande Russet (97 cwt/a), Silverton Russet (85 cwt/a), and AF2431-2 (71 cwt/a). One clone, AF2431-2 (1.071), had a higher specific gravity than Russet Norkotah 3117 (1.067). One clone, Russet Norkotah 3117, received an overall appearance score of 7. The only clone to express IHN at 10% or greater incidence was Defender (13% with an HNR of 8.0). No clones expressed significant levels of HH, VR, BC, or SR. Culls were due mostly to soft rot, misshapes, sunscald, secondary growth, heat sprouts, and skin blemishes attributed to Rhizoctonia.

Unreplicated Trial. (Tables 14a and 14b)

Forty-five clones were evaluated in this trial including 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, Cornell University and our own crosses made at the TRS. Mini-tubers are generated in the TRS greenhouses. This year, 15,121 single-hills were planted and 512 clones were selected for a 3.4% selection rate. Out of the 606 clones in our 6-hill plots, 67 (11%) were selected for future evaluation. In the 20-hill plots, 57 clones were planted and 9 (16%) were selected for further evaluation. Our sixty-hill plots had 20 clones and 5 (25%) 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, 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 is the second year of 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*. Unlike our other variety development work the CPB resistance efforts requires two identical plots to be planted the first year materials go to the field, and 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 1605 hills to evaluate resistance and selected 57 clones for resistance and another 55 clones in the set for agronomic traits for a total of 112 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, 97 of the 606 clones came from this CPB resistance project. From the 97, 16 were selected for advancement to the 20 hill selection plots and the next cycle of CPB resistance screening. Eight of those selected in the 6 hill plots had significant resistance to CPB.

Early Generation Selection

Early generation selection is simply the selection of materials early on in the breeding/variety development process. The idea behind early generation selection is that by dispersing materials to other locations we might be able to identify materials that perform better or have potential in an environment other than the one where the actual breeding institution is located. These efforts are especially important when the success of a variety depends on its production as seed in one location and as chip or table stock in another 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 of Maine 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 491 clones and selected 24 clones. Because of limited seed we will not see these clones until 2010 when we will evaluate them as non-replicated 28 hill plots in a yield trial.

USDA-ARS Trial

This is the first year of this trial, and a number of institutions/states were involved: University of Florida (FL), Clemson University (SC), 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 346 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 78.8% agreement on clones overall to drop or keep. We also asked to keep back more clones overall than the other locations (68 clones). 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. Susie Thompson, North Dakota State University; Dr. Greg Porter, University of Maine; Dr. Rich Novy USDA-ARS, Aberdeen, ID; 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; Ralph Childs, Malone, NY; and 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.

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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 107 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2008

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	416	372	100	7	33	53	4	0	4	89	57	1.094	1	1
B1992-106	318	272	73	8	37	47	2	0	7	85	49	1.083	1	2
B2130-136	343	284	76	13	63	20	0	0	4	83	20	1.075	2	2
B2133-46	286	227	61	14	42	36	1	0	7	79	37	1.076	2	2
BNC48-1	291	233	63	18	53	26	1	0	2	80	27	1.090	2	2
BNC49-1	363	337	91	6	26	63	4	0	1	93	67	1.083	2	1
Harley Blackwell	395	347	93	10	48	40	0	0	2	88	40	1.082	2	2
Marcy	399	365	98	6	30	58	4	0	3	91	61	1.082	2	1
NC0349-3	379	306	82	18	64	17	0	0	2	81	17	1.090	2	2
NC0349-8	379	318	86	13	51	32	0	0	3	84	32	1.087	2	2
NC41-1	356	290	78	16	54	28	0	0	3	81	28	1.082	2	1
NCB2489-5	327	219	59	24	60	7	0	0	9	67	7	1.096	2	1
NCB2497-17	443	367	99	17	64	18	0	0	1	82	18	1.082	2	2
NY140	365	342	92	5	34	57	3	0	2	93	60	1.082	2	2
Snowden	342	288	78	15	54	30	0	0	1	84	30	1.093	1	1
Sunrise	337	294	79	8	32	51	5	0	4	87	56	1.075	2	2
Grand Mean	362	303												
CV (%)	18.88	15.6												
LSD(K=100)	114.7	70.1												

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

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

³ Determined by weight in air / water method.

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

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

Table 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 107 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2008

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	6	7	7	2	5	8	8	6	25	7.3	13	0	25	8	10HN(2-6,1-7,7-8),MS,RZ,GC,SS
B1992-106	9	9	8	7	7	6	7	6	3	7	7	4	4	3	8.8	8	0	0	5	^RZ,SS,SR
B2130-136	6	9	8	5	9	7	7	7	4	8	6	8	7	3	8.8	3	0	3	3	SS,RZ,MS,1HN(1-8)
B2133-46	6	8	8	6	6	7	7	7	3	7	6	5	5	0	9.0	0	0	0	0	^RZ,MS,GC,SC,SS
BNC48-1	6	8	8	6	7	7	7	7	2	8	5	8	7	0	9.0	0	0	0	5	MS
BNC49-1	6	9	7	5	6	6	7	7	2	6	7	8	6	0	9.0	0	0	0	0	MS,RZ,GC,SS
Harley Blackwell	6	9	8	5	6	6	7	7	2	7	6	7	7	0	9.0	3	0	0	3	MS,RZ,SS
Marcy	9	9	8	7	7	6	7	6	4	7	7	8	7	0	9.0	5	0	0	8	SS,RZ,SR
NC0349-3	8	9	8	6	6	6	7	7	1	6	5	7	6	0	9.0	28	0	0	0	RZ,SS
NC0349-8	9	8	8	5	7	6	7	7	2	5	6	8	6	3	8.8	10	0	5	0	1HN(1-8),SS,SR
NC41-1	6	8	8	4	7	6	7	7	2	6	6	8	6	0	9.0	3	0	0	0	RZ,MS,GC
NCB2489-5	6	9	7	4	9	7	7	7	2	7	5	4	4	5	8.8	8	0	0	20	2HN(2-8),SR,RZ,MS
NCB2497-17	5	9	9	5	9	8	5	7	3	8	6	8	8	0	9.0	3	0	0	13	SS
NY140	9	9	9	6	9	7	4	7	4	7	8	8	5	0	9.0	0	0	0	0	GC,SS,MS
Snowden	9	9	7	7	6	6	7	7	2	4	6	8	5	0	9.0	0	0	0	0	RZ,SS
Sunrise	5	9	8	4	9	8	6	7	5	6	7	8	5	8	7.0	5	0	5	5	3HN(2-6,1-7),SS,MS,GC,BS

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. 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 107 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2008

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
AF2291-10	284	256	79	8	46	43	1	0	2	90	44	1.095	2	2	1
Atlantic	375	324	100	10	38	47	2	0	4	86	49	1.097	1	1	2
Beacon Chipper	320	263	82	11	53	29	0	0	7	82	29	1.093	2	1	1
CO95051-7W	288	232	72	16	61	19	1	0	4	80	20	1.082	1	1	1
CO96141-4W	364	315	98	11	55	31	0	0	3	87	32	1.080	2	2	1
CO97043-14W	347	284	88	16	57	24	0	0	2	82	25	1.085	2	2	1
CO97065-7W	304	265	82	10	55	32	0	0	2	87	32	1.096	2	2	1
MSJ036-A	355	306	95	12	65	21	0	0	2	86	21	1.086	2	2	2
MSJ147-1	205	83	26	60	40	0	0	0	0	40	0	1.098	2	1	2
ND7519-1	337	276	86	17	62	19	0	0	1	82	19	1.103	1	1	1
NY138	284	261	82	8	23	68	1	0	1	92	69	1.082	3	1	1
NY139	308	278	87	7	42	48	0	0	2	90	48	1.090	2	1	1
Snowden	315	261	81	17	64	19	0	0	0	83	19	1.094	2	1	1
W2310-3	293	256	79	11	47	40	0	0	1	87	40	1.094	2	2	1
W2324-1	376	333	104	10	45	43	1	0	1	89	44	1.090	2	1	1
W2717-5	264	229	71	9	51	36	0	0	4	87	36	1.095	1	2	1
Grand Mean	314	264													
CV(%)	6.9	8.5													
LSD(K=100)	25.2	25.5													

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. 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 107 DAP¹ at Black Gold Farms, Gum Neck, Tyrrell Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF2291-10	9	8	8	8	7	7	7	6	4	7	7	8	6	0	9.0	8	0	0	0	MS,RZ,GC,SS
Atlantic	6	7	8	5	7	6	7	6	2	5	7	7	6	8	8.4	12	0	36	0	4HN(1-5,3-8),SS,RZ,GC,MS
Beacon Chipper	6	7	8	6	9	7	7	7	3	5	6	9	4	0	9.0	0	0	0	0	^PTS,MS,GC
CO95051-7W	6	8	8	7	9	8	7	7	2	7	6	6	6	6	8.4	0	0	0	0	3HN(1-6,1-7,1-8),^RZ,SS,SC
CO96141-4W	6	8	8	7	9	8	5	7	5	7	7	8	6	2	8.4	8	0	0	0	1HN(1-6),MS,SS
CO97043-14W	6	8	8	6	9	9	7	7	2	8	5	8	7	0	9.0	2	0	6	8	SS,BS
CO97065-7W	6	7	8	5	6	7	7	7	1	8	6	8	7	0	9.0	0	0	2	6	SS,RZ
MSJ036-A	6	8	8	7	6	6	7	6	2	5	6	8	6	0	9.0	0	0	8	0	SS,RZ,MS
MSJ147-1	6	7	8	8	9	7	6	7	2	7	2	9	5	0	9.0	0	0	0	0	CS
ND7519-1	9	8	8	5	6	7	5	7	3	7	6	8	5	48	8.0	0	0	32	2	24HN(1-6,3-7,20-8),SS
NY138	9	9	8	6	7	7	7	7	3	7	7	8	8	2	8.8	0	0	0	8	1HN(1-8),SS,SR,MS
NY139	6	8	8	6	6	7	6	7	4	7	7	8	7	0	9.0	0	0	0	2	SS,MS,SR,PTS,RZ
Snowden	9	8	7	7	6	6	7	7	2	5	5	8	5	0	9.0	0	0	0	4	SS
W2310-3	6	7	8	5	6	6	4	7	5	6	7	8	5	0	9.0	0	0	0	0	CS,MS,SS
W2324-1	5	7	8	4	6	7	7	7	3	5	6	8	4	2	8.8	2	0	0	2	1HN(1-8),MS,CS,SS,SR
W2717-5	6	7	8	6	9	8	6	7	3	7	5	8	5	0	9.0	2	0	6	0	GC,MS,SS,RZ,SR

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 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 104 and 130 DAP¹ at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2008

Clone	Total Yield cwt/A	Marketable Yield				Size Distribution by Class ² (% of total yield)			Specific Gravity ³	Chip Color ⁴	
		cwt/A	% Atl.	%Chf.	%RusNor	A's + B's	C's	Culls		24 to 48 hrs	5 to 7 Days
Atlantic	185	163	100	140	139	87	13	0	1.091	1	1
B2152-17	128	75	48	63	66	57	42	0	1.076	.	.
B2327-2	98	40	27	32	34	38	61	1	1.073	.	.
Beacon Chipper	125	89	55	77	77	69	28	2	1.084	1	1
Chieftain	167	126	84	100	110	75	25	1	1.064	.	.
Dark Red Norland	138	99	63	85	85	71	29	0	1.066	.	.
GemChip	115	90	60	75	79	77	20	3	1.073	3	2
Ivory Crisp	130	87	56	72	76	67	31	2	1.079	1	2
MSN105-1	154	95	58	81	81	60	39	0	1.080	1	1
NY136	95	61	38	50	53	62	37	1	1.070	.	.
Peter Wilcox	111	70	43	65	61	60	39	1	1.072	.	.
Red LaSoda	145	120	80	98	103	80	18	2	1.070	.	.
Snowden	145	98	63	82	83	65	34	1	1.082	2	2
Superior	160	134	86	112	116	84	15	1	1.079	2	2
Vivaldi	128	74	49	62	64	57	39	4	1.069	.	.
Reba	138	108	67	92	92	78	22	0	1.073	2	2
Blazer Russet	128	101	61	88	127	79	19	2	1.072	3	3
Defender	182	120	78	100	157	66	30	4	1.081	2	2
Goldrush	129	108	71	90	141	84	16	1	1.072	3	2
Russet Norkotah	116	78	49	66	100	67	31	2	1.068	3	2
Silverton Russet	133	104	68	87	136	78	18	4	1.066	3	2
Grand Mean	136	97									
CV(%)	17.8	28.0									
LSD(K=100)	36.3	37.4									

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 104 and 130 DAP¹ at Bateman's Farm, Weeksville, Pasquotank Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	8	8	5	6	6	7	7	2	2	6	8	7	3	8.0	0	0	0	3	1HN(1-8),SS
B2152-17	6	9	8	4	2	7	7	7	1	6	3	8	6	0	9	0	0	0	0	SR,SS,YF1
B2327-2	5	8	6	4	2	8	7	7	1	6	4	8	6	0	9	0	0	0	0	SS,HS,SR,Dark Red
Beacon Chipper	7	8	8	5	6	7	7	7	3	6	6	8	5	0	9	0	0	0	0	SS,CS,SR,FS
Chieftain	6	8	8	6	3	7	6	6	3	7	5	8	5	3	7.0	0	0	0	0	1HN(1-7),MS
Dark Red Norland	6	9	8	5	2	7	7	7	3	7	3	2	6	0	9	0	0	0	0	MS
GemChip	5	8	7	3	6	7	6	5	4	8	6	8	5	0	9	0	0	0	0	SS,CS
Ivory Crisp	9	9	8	9	6	7	7	6	7	7	5	8	6	0	9	0	0	0	3	SS
MSN105-1	9	9	9	7	6	9	6	7	2	7	5	8	6	0	9	0	0	0	0	SR
NY136	6	6	8	6	2	8	6	7	3	7	6	8	7	0	9	0	0	0	0	SR,MS Dark Red
Peter Wilcox	6	9	8	7	1	7	6	7	4	7	4	9	6	0	9	0	0	0	0	GC,MS,SR,YF2
Red LaSoda	8	8	8	5	3	7	6	7	4	5	6	8	5	0	9	0	0	13	3	GC,MS,SS
Snowden	7	8	7	5	6	5	7	5	1	5	4	9	5	8	8.0	0	0	0	0	3HN(3-8),SS,MS
Superior	5	8	8	6	6	7	6	7	3	6	6	8	6	0	9	0	0	5	0	CS,SR
Vivaldi	6	8	8	6	7	8	7	7	5	8	6	8	7	0	9	0	0	3	0	MS,CS,SS,YF1
Reba	6	9	8	6	6	7	7	6	3	7	6	8	5	0	9	0	0	0	0	
Blazer	9	8	8	7	6	4	7	8	6	6	5	8	6	0	9	0	0	0	0	SR
Defender	9	8	8	8	5	4	7	6	7	7	4	8	5	3	8.0	0	0	0	0	1HN(1-8),HS,SR
Goldrush	6	8	8	5	5	3	6	7	5	5	5	8	6	0	9	0	0	0	0	
Russet Norkotah	8	9	8	5	5	3	7	7	6	7	4	3	6	0	9	0	0	0	0	MS
Silverton	6	8	8	6	6	4	5	8	6	6	6	8	7	0	9	0	0	3	0	SR,MS

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 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 103 DAP¹ at McCotter's Farm, Bayboro, Pamlico Co., NC - 2008

Clone	Total Yield cwt/A	Marketable Yield			Size Distribution by Class ²			Specific Gravity ³	Chip Color ⁴	
					(% of total yield)				24 to	5 to
		cwt/A	% Atl.	% Chf.	A's + B's	C's	Culls		48 hrs	7 Days
Atlantic	215	200	100	82	93	7	0	1.089	2	2
B2152-17	189	141	73	58	73	25	2	1.074	.	.
Chieftain	271	246	124	100	91	6	4	1.063	.	.
Dakota Pearl	185	146	75	60	79	18	3	1.072	2	3
Dark Red Norland	219	195	99	79	89	9	3	1.066	.	.
Eramosa	176	159	79	65	90	8	2	1.076	2	3
Harley Blackwell	187	159	80	65	85	15	0	1.078	2	3
NC41-1	208	165	85	67	79	21	1	1.079	3	2
NY136	210	182	93	75	87	11	3	1.066	.	.
NY140	285	268	136	111	94	5	1	1.068	2	3
Peter Wilcox	173	145	73	60	84	15	1	1.073	.	.
Red LaSoda	194	178	89	72	91	5	4	1.063	.	.
Snowden	222	188	96	77	84	16	0	1.076	2	3
Superior	215	188	95	78	87	11	1	1.081	3	4
Vivaldi	228	182	92	75	80	18	2	1.067	.	.
Reba	145	127	65	52	87	10	3	1.069	3	3
Grand Mean	208	179								
CV(%)	12.7	15.9								
LSD(K=100)	36.2	39.1								

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 103 DAP¹ at McCotter's Farm, Bayboro, Pamlico Co., NC - 2008

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	7	2	5	7	9	7	10	8	0	0	0	0	4HN(4-8),SR
B2152-17	6	9	8	4	2	8	7	7	2	8	4	7	7	0	0	0	8	0	0	SR
Chieftain	6	9	9	6	3	8	5	7	3	5	6	6	5	5	6.5	0	10	0	0	2HN(1-5,1-8),GC,RZ,SR,FS
Dakota Pearl	6	9	9	4	8	8	6	7	2	7	5	7	6	3	8	3	13	0	0	1HN(1-8),GC,MS,SS,SR
Dark Red Norland	5	9	7	3	2	8	7	7	3	6	7	5	6	0	0	0	0	0	0	GC,SR
Eramosa	5	9	8	2	7	6	5	3	3	6	6	7	6	0	0	0	0	0	0	SR,SS,GC,MS,RZ
Harley Blackwell	9	8	8	5	6	5	7	7	2	6	6	9	7	0	0	0	0	0	0	.
NC41-1	6	6	8	4	6	7	7	7	2	6	5	8	7	0	0	0	0	0	0	GC,SR,FS
NY136	9	9	8	6	2	7	7	7	3	6	7	7	7	0	0	0	5	0	0	SR, SS, MS
NY140	8	9	9	7	7	7	4	7	4	7	8	8	6	0	0	0	10	0	0	MS,SS,HS
Peter Wilcox	6	8	8	4	1	6	7	7	3	7	5	7	5	0	0	0	0	0	0	SR,RZ,GC,SISC
Red LaSoda	5	9	8	5	3	7	7	7	3	3	7	7	4	0	0	5	5	5	0	GC,MS,SR,SS
Snowden	9	8	8	7	5	5	7	7	2	5	5	8	5	0	0	0	0	0	0	FS,DAE,DSE
Superior	6	8	8	4	6	6	7	7	3	5	6	7	6	5	2	0	0	5	0	2HN(2-8),SR,CS,GC
Vivaldi	9	8	7	7	7	8	6	7	5	7	6	7	7	0	0	0	0	0	0	SR,FS
Reba	5	8	7	5	8	8	5	7	3	7	6	7	6	0	0	0	3	0	0	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 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 98 DAP¹ at Water's Produce, Chocowinity, Beaufort Co., NC - 2008

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	
Chieftain	121	80	100	66	20	14	1.084
Dark Red Norland	94	68	88	72	14	13	1.072
Eramosa	83	61	76	73	13	14	1.080
NY136	60	38	47	63	30	8	1.077
Peter Wilcox	79	64	81	80	13	6	1.077
Red Pontiac	66	43	52	63	25	11	1.066
Superior	116	85	107	73	13	13	1.086
Vivaldi	105	48	61	46	47	7	1.078
Reba	87	66	83	75	17	7	1.079
Grand Mean	90	61					
CV(%)	10.6	19.4					
LSD(K=100)	13.0	17.1					

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 98 DAP¹ at Water's Produce, Chocowinity, Beaufort Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Chieftain	9	8	8	7	3	8	5	7	3	7	5	4	6	0	9	0	0	0	25	^SR,RZ,IL
Dark Red Norland	5	5	7	3	2	8	5	7	4	7	5	5	7	0	9	0	0	0	23	SR,GC,IL,RZ
Eramosa	5	4	8	2	6	7	3	8	4	8	6	6	6	0	9	0	0	0	0	IL,SR,FS,MS
NY136	9	8	8	7	2	8	7	7	1	7	5	7	7	0	9	0	0	0	0	GC,SR,MS,IL
Peter Wilcox	6	8	8	5	1	7	6	7	5	8	5	7	6	0	9	0	0	0	3	GC,CS,SR,SISC
Red Pontiac	5	4	8	4	3	7	7	7	3	6	5	6	5	0	9	0	0	0	5	GC,SR,MS,CS,IL
Superior	5	5	6	4	6	7	5	7	3	8	6	6	6	0	9	0	28	63	0	CS,SR,ID
Vivaldi	8	5	8	6	7	8	6	7	6	7	5	6	7	0	9	0	18	0	0	SR,SS,CS,IL
Reba	5	8	8	6	6	7	5	7	5	7	5	7	7	0	9	0	0	0	3	SS,SR,CS,ID

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 (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. Twin Oaks Farm Variety Trial. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 126 DAP¹ at Twin Oaks Farm, Spruce Pine, Mitchell Co., NC - 2008

Clone	Total Yield	Marketable Yield			Size Distribution by Class ² (% of total yield)			Specific Gravity ³
	cwt/A	cwt/A	% Ken.	% DRN.	A's	B's +C's	Culls	
B2152-17	57	10	18	46	17	69	14	1.073
Dark Red Norland	45	21	34	100	48	28	24	1.054
Eramosa	65	31	55	145	47	31	22	1.072
Kennebec	103	64	100	304	61	16	23	1.065
Michigan Purple	100	63	99	297	62	20	18	1.072
NY136	82	45	76	214	54	24	23	1.062
Peter Wilcox	81	31	54	145	38	42	20	1.077
Red Pontiac	75	35	63	165	45	25	29	1.054
Superior	39	21	36	100	55	35	10	1.068
Vivaldi	42	16	25	75	33	50	17	1.061
Reba	50	39	69	183	77	13	11	1.061
Grand Mean	67	34						
CV(%)	29.9	37.1						
LSD(K=100)	29.7	17.7						

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. Twin Oaks 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 126 DAP¹ at Twin Oaks Farm, Spruce Pine, Mitchell Co., NC - 2008

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	
B2152-17	5	8	8	3	2	8	7	6	1	7	3	8	7	.	.	.	.	.	.	MS,ID,Too Small
Dark Red Norland	5	8	8	2	2	8	6	7	5	7	5	8	6	.	.	.	.	.	.	ID,MS,RZ,GC
Eramosa	5	8	8	2	6	6	5	7	4	7	5	8	5	.	.	.	.	.	.	ID,MS,RZ
Kennebec	9	9	9	8	6	7	6	6	6	7	8	8	5	.	.	.	.	.	.	MS,CS,GC
Michigan Purple	5	8	8	3	1	8	5	4	2	7	7	7	7	.	.	.	.	.	.	SR,ID,MS,CS,RZ
NY136	8	8	8	5	2	7	6	4	3	7	6	7	5	.	.	.	.	.	.	RZ,MS,CS
Peter Wilcox	5	8	8	3	1	7	6	7	5	8	4	8	6	.	.	.	.	.	.	CS,SR
Red Pontiac	8	8	8	4	3	6	7	5	3	6	6	8	4	.	.	.	.	.	.	MS,RZ,SR,GC
Superior	5	8	8	2	6	6	6	7	3	6	6	8	6	.	.	.	.	.	.	SR
Vivaldi	8	8	8	4	6	8	7	7	5	8	3	8	7	.	.	.	.	.	.	.
Reba	5	8	8	6	6	7	7	6	3	7	6	8	6	.	.	.	.	.	.	MS,SS,GC

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

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

³ Percentage determined from 10 randomly selected potatoes /rep (40 total) in 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 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

CLONE	Total Yield cwt/A	Marketable Yield		Size Dist. by Class (%) ²							1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				(% of total yield)									
		cwt/A	% Chf.	1's	2's	3's	4's	5's	Cull's				
A00293-2Y	206	101	93	8	28	22	0	0	41	50	22	1.056	
Adirondack Blue	73	44	41	12	52	8	0	0	29	59	8	1.061	
Adirondack Red	90	55	50	30	58	2	0	0	11	60	2	1.058	
All Blue	116	37	33	16	31	0	0	0	53	31	0	1.063	
All Red	172	142	133	9	52	28	0	0	11	80	28	1.056	
ATND 99331-2 Pinto	178	143	133	21	60	17	0	0	3	77	17	1.044	
B2538-5	79	67	63	11	52	31	0	0	6	83	31	1.063	
BCO01162-3	64	9	8	20	15	0	0	0	65	15	0	1.056	
BCO01357-3	84	57	53	29	57	9	0	0	5	66	9	1.061	
BCO01401-2	74	31	29	47	41	1	0	0	12	41	1	1.065	
Chieftain	203	113	100	5	29	28	1	0	38	57	28	1.053	
Dark Red Norland	151	131	119	8	46	39	0	0	7	86	39	1.055	
Peter Wilcox	150	116	107	7	40	34	1	0	18	75	34	1.059	
Vivaldi	133	105	97	18	70	9	0	0	4	79	9	1.062	
Grand Mean	127	82											
CV(%)	25.9	35.9											
LSD(K=100)	44.0	39.6											

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.

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 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	
A00293-2Y	9	8	9	9	7	8	7	4	4	6	7	7	3	10	7.5	0	0	3	0	4HN(1-5,1-7,2-8)^HS,^SG,MS,RZ
Adirondack Blue	5	9	8	5	1	7	7	7	4	6	5	4	4	0	9	0	0	0	5	^MS,^SISC,RZ
Adirondack Red	6	8	8	5	2	7	7	7	4	8	3	4	5	0	9	0	0	0	3	^SISC,RZ,SR,MS
All Blue	9	9	8	7	1	6	5	7	4	6	4	5	3	0	9	0	0	0	0	^SISC,^RZ,^CS
All Red	8	9	8	6	2	7	7	7	5	5	7	7	5	3	8	0	0	0	0	1HN(1-8),MS,GC,SR,RZ
ATND 99331-2 Pinto	8	9	8	8	7,1	7	7	6	2	5	7	6	6	0	9	0	0	0	0	SG,SS,MS,GC,YF1
B2538-5	5	8	8	4	1	8	7	7	5	5	6	6	5	0	9	0	0	0	3	SR,MS,SISC
BCO01162-3	7	7	8	9	1	7	7	7	5	6	3	7	3	0	9	0	0	0	0	MS,^SG,PF1,Almost Black Skin
BCO01357-3	6	8	8	5	2	8	6	7	3	7	3	7	6	0	9	0	0	0	0	^SR,MS,RF1
BCO01401-2	5	8	8	4	1	7	7	7	2	7	3	6	5	0	9	0	0	0	0	IL,RZ,YF2
Chieftain	9	8	8	6	3	6	5	7	4	5	8	7	4	18	8.3	0	0	0	0	5HN(5-8),^SG
Dark Red Norland	5	8	7	4	2	7	7	7	3	6	6	7	5	0	9	0	0	0	0	SR,SS
Peter Wilcox	6	9	8	5	1	7	7	7	4	7	5	5	4	0	9	0	0	0	0	SG,MS,RZ,SISC
Vivaldi	9	8	8	6	7	8	6	7	4	8	6	7	7	10	8.3	0	0	0	0	4HN(1-6,1-7,2-8),SS,RZ,MS,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 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 120 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
AF0338-17	123	110	126	10	42	35	1	0	12	78	36	1.075	3	2
AF0339-39	126	114	124	10	73	6	0	0	10	79	6	1.064	2	3
AF2497-2	98	94	98	19	63	14	0	0	4	78	14	1.071	2	3
AF2668-8	93	85	95	27	62	2	0	0	9	64	2	1.075	2	3
AF2685-1	28	25	28	70	23	0	0	0	7	23	0	1.077	3	2
AF3310-13	71	66	78	22	48	23	0	0	8	70	23	1.072	1	2
AF3310-5	52	48	56	44	48	0	0	0	8	48	0	1.071	2	2
AF3318-6	106	89	96	33	50	1	0	0	16	51	1	1.083	3	3
AF3360-1	197	145	183	17	40	14	0	0	29	54	14	1.080	3	3
Atlantic	105	102	100	17	59	20	0	0	4	79	20	1.078	2	1
B2575-14	82	74	90	27	51	13	0	0	9	65	13	1.077	1	1
B2575-19	94	89	99	24	61	9	1	0	6	71	10	1.071	1	1
B2582-13	67	62	64	56	35	0	0	0	9	35	0	1.078	2	2
B2611-2	79	72	79	32	57	3	0	0	8	60	3	1.063	2	1
MSM171-A	70	63	73	13	35	42	0	0	10	77	42	1.059	2	3
MSM182-1	108	98	99	22	57	12	0	0	9	69	12	1.065	3	3
NYD40-106	69	65	73	35	54	6	0	0	5	59	6	1.083	2	3
NYD40-108	74	68	76	31	51	12	0	0	7	63	12	1.076	1	2
NYD40-11	58	56	60	39	49	8	0	0	4	57	8	1.079	1	3
NYD40-161	81	80	96	24	66	8	0	0	2	75	8	1.073	2	3
NYD40-239	56	55	62	28	58	13	0	0	1	71	13	1.069	3	3
NYD40-249	63	59	72	26	58	9	0	0	7	67	9	1.075	1	3
NYD40-297	36	31	38	44	41	3	0	0	13	43	3	1.079	1	2
NYD40-35	92	89	99	53	44	1	0	0	3	45	1	1.074	1	2
NYD40-44	53	48	54	36	53	3	0	0	8	55	3	1.076	1	2
NYD40-50	66	57	63	16	43	25	0	0	15	68	25	1.064	2	2
Snowden	169	162	179	13	61	21	1	0	4	83	22	1.065	1	2
Sunrise	43	39	41	16	40	34	0	0	11	74	34	1.067	2	2
Superior	127	115	129	12	51	29	0	0	9	79	29	1.072	3	3
Grand Mean	86	78												
CV(%)	26.1	30.8												
LSD(K=100)	30.4	32.5												

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 120 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF0338-17	9	9	8	7	6	5	5	6	3	6	5	6	5	0	9	0	0	0	0	SR,SC,MS,SG
AF0339-3	9	9	9	9	5	3	7	6	6	7	5	8	5	15	7.5	0	0	0	0	6HN(2-6,2-7,2-8),MS,SS,RZ
AF2497-2	8	9	9	8	9	7	7	7	5	7	4	8	4	15	7.3	0	0	0	0	6HN(1-6,1-7,4-8),SR,RZ,MS
AF2668-8	6	9	8	7	7	6	6	7	5	8	3	8	5	0	9	0	0	0	3	SS,SR,MS,SG,SC
AF2685-1	7	3	8	3	7	8	7	7	3	6	1	7	3	0	9	0	0	0	0	SR,MS
AF3310-13	5	7	9	6	7	6	7	7	3	7	6	7	5	0	9	0	0	0	0	MS,SR,BS,SS
AF3310-5	6	8	9	6	7	8	6	7	2	7	2	7	4	0	9	0	0	0	0	SS,MS,SR,RZ
AF3318-6	6	8	8	6	7	6	6	7	2	7	5	8	3	0	9	0	0	0	3	^HS,SR
AF3360-1	9	9	9	9	4	5	7	7	3	7	6	3	3	20	8.0	0	0	0	0	8HN(1-7,7-8),^RZ,SG,SR,SS
Atlantic	6	8	8	5	6	5	7	6	3	6	6	7	7	10	7.8	0	0	0	0	4HN(1-6,1-7,2-8),RZ,SR
B2575-14	9	9	8	7	9	8	6	7	3	7	7	7	5	0	9	0	0	0	3	MS,SS,SR
B2575-19	6	7	8	6	9	6	7	7	4	7	6	7	6	0	9	0	3	0	0	SR,RZ,SS,MS
B2582-13	5	8	8	5	7	7	7	7	2	8	1	7	4	0	9	0	0	0	3	RZ,SS
B2611-2	7	7	8	4	7	8	7	7	3	8	4	7	5	3	8.8	0	0	0	3	1HN(1-8),RZ,SR,MS,SS
MSM171-A	8	8	8	7	6	7	7	7	3	6	7	7	5	0	9	0	0	0	0	RZ,CS,MS,SR
MSM182-1	8	9	8	6	6	8	6	7	2	7	5	7	5	0	9	0	0	0	0	MS,RZ,SR
NYD40-106	8	8	8	5	6	7	7	7	1	7	3	7	6	0	9	0	0	0	0	SR,RZ,SS
NYD40-108	9	9	9	8	9	7	7	7	2	7	5	7	5	0	9	0	0	0	0	MS,RZ,SR,SS
NYD40-11	6	8	8	4	9	8	7	7	7	6	3	7	6	0	9	0	0	0	0	MS
NYD40-161	5	8	8	5	7	8	6	7	2	6	5	7	4	0	9	0	0	0	0	RZ
NYD40-239	8	8	8	5	9	8	7	7	2	5	5	8	5	0	9	0	0	0	0	MS,DAE
NYD40-249	5	8	8	5	6	6	7	7	2	7	5	8	6	0	9	0	0	0	0	MS,SS
NYD40-297	5	8	8	5	6	6	7	7	3	6	3	8	4	0	9	0	15	0	3	MS,SG
NYD40-35	7	8	8	6	9	7	7	7	2	6	2	7	4	0	9	0	0	0	0	MS
NYD40-44	5	8	8	4	9	7	7	7	2	6	4	8	5	0	9	0	0	0	0	MS,SR,SS
NYD40-50	8	9	8	6	6	7	6	7	3	7	6	7	3	0	9	0	0	0	0	MS,SR,SS
Snowden	9	9	8	7	5	5	7	7	3	5	6	7	6	3	8.8	0	0	0	0	1HN(1-8),MS,SR,DAE,DSE
Sunrise	4	8	8	3	6	6	7	7	3	7	2	7	3	0	9	0	0	0	0	SS,CS,RZ
Superior	6	9	8	4	6	5	6	7	4	6	6	6	5	0	9	0	0	5	0	MS,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 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 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	122	106	100	8	58	29	0	0	5	87	29	1.081	1	1
B2445-6	110	89	85	20	66	13	0	0	1	79	13	1.074	2	2
B2452-3	77	60	63	14	44	31	2	0	10	77	32	1.071	1	2
B2461-12	85	42	49	50	46	1	0	0	3	47	1	1.082	1	1
B2461-15	78	68	73	9	49	38	0	0	4	87	38	1.066	2	1
B2489-3	69	49	49	24	59	12	0	0	5	71	12	1.076	1	1
B2500-5	78	45	46	39	56	2	0	0	3	58	2	1.080	1	1
B2501-8	115	68	74	38	52	6	0	0	4	58	6	1.062	1	2
B2527-6	76	20	20	68	26	1	0	0	6	27	1	1.074	2	2
B2589-3	97	57	62	40	56	1	0	0	3	57	1	1.072	1	1
B2613-2	167	134	147	11	47	32	0	0	11	79	32	1.076	1	2
B2614-4	142	118	116	13	59	23	1	0	4	83	24	1.071	2	2
B2614-5	114	82	81	28	69	3	0	0	1	72	3	1.068	2	2
BNC41-13	128	65	64	47	48	3	0	0	3	51	3	1.078	1	2
Dakota Pearl	89	57	57	37	57	4	0	0	2	61	4	1.069	2	2
Eramosa	85	70	62	15	54	25	0	0	5	80	25	1.070	2	1
Harley Blackwell	104	79	78	20	68	8	0	0	4	76	8	1.081	2	1
NC41-1	85	67	66	19	64	13	1	0	3	78	14	1.077	1	1
NCB2489-5	89	44	45	44	48	1	0	0	6	50	1	1.085	1	1
ND 5775-3	228	205	211	7	35	53	2	0	3	90	55	1.069	2	2
NYB38-37	114	101	99	9	56	32	0	0	3	88	32	1.070	2	3
NYB38-40	86	75	77	10	61	26	0	0	3	88	26	1.063	2	2
Superior	160	145	147	6	46	44	1	0	4	90	44	1.068	2	3
Reba	113	94	90	10	52	31	0	0	7	82	31	1.060	2	3
Grand Mean	109	81												
CV(%)	23.4	31.1												
LSD(K=100)	34.1	33.2												

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 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	8	8	5	6	5	6	5	6	7	5	7	6	0	9	0	0	0	13	MS,SR,FS,GC,SS
B2445-6	8	8	8	6	6	6	7	7	5	8	5	8	6	0	9	0	0	0	3	RZ,SR
B2452-3	5	9	8	5	6	6	6	6	2	8	5	7	6	0	9	0	0	0	5	MS,RZ,SR,HS,SS
B2461-12	6	8	8	4	6	6	6	7	5	8	2	8	5	0	9	0	0	0	10	SR,MS,RZ,SS
B2461-15	5	8	8	5	6	7	7	7	2	7	7	8	7	8	8.3	0	0	0	3	SR,RZ,SS
B2489-3	6	8	8	5	6	6	7	7	1	7	4	8	6	0	9	0	0	0	5	SR
B2500-5	5	7	8	4	9	8	6	8	2	9	3	8	7	0	9	0	0	0	0	SR,SS,RZ,MS
B2501-8	5	8	8	4	6	6	5	7	1	8	5	7	6	0	9	0	0	0	0	SR,GC,SR,RZ
B2527-6	5	8	7	2	7	8	8	8	1	7	2	7	5	0	9	0	0	0	5	MS,RZ,SR,YF1
B2589-3	6	5	8	4	6	5	6	6	4	7	4	8	5	0	9	0	0	0	0	SR,RZ,CS,GC,SS,HS
B2613-2	9	7	8	8	6	5	5	6	5	8	6	5	5	0	9	0	0	0	0	^SR,^SS,RZ,HS,MS
B2614-4	6	8	8	4	8	8	5	8	4	8	7	8	6	0	9	0	0	0	3	GC,SR,SS,RZ,MS
B2614-5	5	8	7	4	6	6	6	7	5	7	5	8	7	0	9	0	0	0	0	MS,SG,SR
BNC41-13	6	8	8	5	5	5	7	7	2	7	4	7	5	0	9	0	0	0	5	SR,RZ
Dakota Pearl	6	8	8	4	9	8	5	8	2	7	4	8	6	0	9	0	0	0	0	SR,SS,MS
Eramosa	5	8	8	2	6	6	4	7	3	7	5	7	5	3	8.5	0	0	0	5	SR,MS
Harley Blackwell	8	8	8	5	6	6	7	6	1	7	5	8	6	0	9	0	0	0	3	RZ,GC,SR,SC
NC41-1	5	5	8	4	5	5	6	7	1	7	4	8	5	0	9	0	0	0	0	SR,RZ
NCB2489-5	6	9	8	5	9	7	7	7	3	8	3	8	5	0	9	0	0	0	0	IL,SR,SS,RZ
ND 5775-3	6	8	9	7	8	6	5	4	2	7	7	8	5	0	9	0	0	0	0	SR,MS
NYB38-37	6	8	8	4	9	8	7	7	2	7	6	8	7	0	9	0	0	0	5	SR,RZ,CS,MS,SS
NYB38-40	7	7	8	4	9	8	7	8	5	8	5	8	8	0	9	0	0	0	0	SR,MS,RZ
Superior	6	8	8	4	6	6	5	7	3	7	6	8	5	0	9	0	0	3	0	SR,MS,RZ,CS
Reba	5	9	8	6	9	8	5	8	3	8	7	7	6	0	9	0	0	0	0	MS,CS,SR

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. Round White Trial Three. Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores of potato clones harvested 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	114	94	100	17	63	17	0	0	3	81	17	1.078	1	1
B1992-106	123	95	111	14	55	22	0	0	9	77	22	1.075	2	2
B2130-136	77	35	36	53	41	2	0	0	4	43	2	1.066	2	2
B2133-46	68	52	59	20	68	8	0	0	5	76	8	1.072	2	1
B2133-81	127	111	127	6	54	32	1	0	7	87	33	1.065	2	2
B2459-13	117	88	108	21	64	10	0	0	4	75	10	1.072	2	2
B2460-3	100	71	74	28	55	13	0	0	4	68	13	1.076	2	3
B2463-16	92	55	66	36	58	2	0	0	4	60	2	1.079	2	4
B2485-2	81	55	65	24	60	8	0	0	9	67	8	1.073	2	1
B2494-10	89	64	73	20	63	9	0	0	8	72	9	1.069	2	2
B2494-21	105	84	93	19	55	24	0	0	2	79	24	1.068	2	1
BNC48-1	81	52	60	30	62	1	0	0	6	64	1	1.078	1	1
BNC49-1	129	108	128	8	50	34	0	0	8	84	34	1.067	2	2
Kennebec	112	93	115	3	33	49	2	0	12	85	51	1.060	2	3
NC0349-3	95	61	80	34	58	5	0	0	3	63	5	1.068	2	2
NC0349-8	115	90	106	20	63	14	0	0	3	77	14	1.072	2	2
NCB2497-17	140	115	132	16	72	10	0	0	2	82	10	1.065	2	1
Snowden	169	140	168	15	60	20	3	0	3	83	23	1.068	1	3
Vivaldi	104	61	71	40	57	0	0	0	3	58	0	1.069	4	4
Grand Mean	107	80												
CV(%)	19.5	26.8												
LSD(K=100)	29.7	29.6												

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 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 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
Atlantic	6	8	8	5	6	5	6	7	2	7	6	8	6	10	7.3	0	0	0	0	4HN(1-6,2-7,1-8),SR,RZ,SS
B1992-106	9	8	7	7	5	5	6	6	4	8	6	8	4	0	9	0	0	0	3	RZ,MS,SS,SR
B2130-136	5	8	8	4	9	7	7	7	3	8	4	8	5	0	9	0	5	0	0	SR,SS,RZ
B2133-46	6	6	8	5	6	5	7	7	3	7	3	8	5	0	9	3	0	0	0	SR,SS,RZ,HS
B2133-81	9	8	8	7	9	6	5	5	5	8	7	7	6	0	9	0	0	0	0	MS,SS,RZ,SR
B2459-13	6	9	7	6	6	6	5	7	2	7	5	8	5	0	9	0	0	0	0	SR,MS
B2460-3	6	7	8	5	7	6	7	6	2	8	3	8	4	10	6.8	0	0	0	0	4HN(1-4,3-7),SS,SR,MS
B2463-16	6	8	8	5	9	8	7	7	1	7	3	8	7	0	9	0	0	0	0	SS,MS,SR,RZ
B2485-2	8	7	8	5	6	7	7	7	2	7	4	6	4	0	9	0	0	0	0	^SR,RZ
B2494-10	5	9	8	5	7	7	6	7	3	8	5	6	5	0	9	0	0	0	3	^RZ
B2494-21	8	9	8	6	6	8	6	6	4	7	6	8	6	0	9	0	0	0	0	SR,RZ,GC
BNC48-1	5	7	7	5	6	6	7	6	2	7	3	7	4	0	9	0	0	0	0	SR,RZ,MS,CS
BNC49-1	7	7	8	7	5	5	7	5	2	8	7	8	6	0	9	0	0	0	0	SR,MS
Kennebec	9	9	8	9	9	7	6	7	5	7	8	8	4	0	9	0	0	0	0	SS,SR,MS
NC0349-3	5	8	8	5	6	6	7	7	1	7	3	8	5	0	9	0	5	0	0	SS,SR,MS
NC0349-8	5	8	8	6	6	6	7	5	1	7	5	8	5	0	9	0	3	0	0	SS,SR,MS
NCB2497-17	6	9	8	6	6	6	6	7	5	7	6	8	8	0	9	0	8	0	0	SS,MS
Snowden	9	9	8	7	6	5	6	6	2	5	7	8	5	0	9	0	0	0	0	RZ,MS,SS,SR
Vivaldi	8	8	8	4	7	8	6	7	6	8	5	8	6	0	9	0	8	0	3	SR,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 Round White 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 - 2008

Clone	Total Yield cwt/A	Marketable Yield cwt/A	% Atl.	Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
				1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
AF2291-10	123	115	70	13	41	36	2	0	8	80	39	1.075	1	2
AF2574-1	173	115	72	6	26	35	0	0	34	61	35	1.058	3	4
AF2916-1	95	92	55	29	64	4	0	0	4	68	4	1.069	2	2
Atlantic	176	172	100	7	36	54	1	0	3	91	55	1.074	2	1
B1992-106	128	123	77	10	59	27	0	0	4	86	27	1.077	2	1
B2452-3	113	104	58	13	42	32	4	0	10	78	36	1.070	2	2
B2485-2	78	75	45	15	63	17	0	0	5	81	17	1.075	1	1
Beacon Chipper	143	138	83	9	40	46	0	0	4	87	46	1.071	1	1
BNC41-13	139	138	84	46	51	1	0	0	1	53	1	1.071	1	1
BNC48-1	97	93	59	30	61	5	0	0	4	66	5	1.081	2	1
Dakota Diamond	227	217	135	4	28	60	5	0	4	92	64	1.067	1	2
Katahdin	114	110	63	6	56	34	0	0	4	90	34	1.060	3	2
Kennebec	137	121	67	4	40	41	2	0	13	83	43	1.062	3	2
NY138	120	114	69	9	57	29	0	0	5	86	29	1.064	2	1
NY139 (NYY28-9)	124	113	70	6	47	38	0	0	9	85	38	1.067	3	1
NY140 (NYY36-4)	142	136	76	7	46	40	2	0	5	88	42	1.065	3	2
NY141 (NYY41-67)	155	143	89	5	32	55	1	0	7	88	57	1.063	2	2
NYB38-37	106	104	65	16	58	25	0	0	2	82	25	1.066	2	3
Snowden	193	191	116	15	64	20	0	0	1	84	20	1.071	2	2
Superior	132	128	77	8	56	33	1	0	3	89	34	1.066	3	3
Yukon Gold	98	86	51	9	46	33	0	0	12	79	33	1.067	3	3
Grand Mean	134	125												
CV(%)	18.6	20.5												
LSD(K=100)	33.7	35.0												

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 11b. 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 108 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Plant Data ²				Tuber Data ²									% Internal Defects ³						Comments ⁴
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR	
AF2291-10	9	8	8	8	6	7	7	7	3	7	6	6	5	0	9	0	0	0	0	MS,SR,SS,HS,SG,RZ
AF2574-1	9	9	8	7	6	6	7	6	3	8	7	8	2	0	9	0	0	0	0	GC,MS,SS,RZ,SG
AF2916-1	5	8	7	4	9	7	7	7	2	8	3	7	5	0	9	0	0	0	0	RZ,SR,GC,MS
Atlantic	6	9	8	5	6	5	7	6	2	6	7	7	6	35	7	0	0	0	0	14HN(1-5,3-6,4-7,6-8),SR,FS
B1992-106	6	8	7	6	6	5	6	5	3	8	5	8	7	0	9	0	0	0	0	SR,SG,CS,SS
B2452-3	5	9	8	4	6	6	6	7	3	8	7	8	5	0	9	0	0	0	0	CS,FS,SR,MS
B2485-2	6	8	8	4	6	7	6	6	2	8	4	8	5	0	9	0	0	0	0	MS,SC,SR,FS
Beacon Chipper	6	9	8	6	6	5	7	6	4	7	6	7	7	0	9	0	0	0	0	SR,FS,SS
BNC41-13	6	8	8	4	5	5	8	7	2	8	2	8	4	0	9	0	0	0	0	SR,SZ,STST,RZ
BNC48-1	5	8	8	4	6	5	6	7	1	7	5	8	5	0	9	0	0	0	0	SR,FS,MS
Dakota Diamond	6	8	8	8	8	7	6	5	2	6	7	8	5	2.5	7	0	0	0	0	1HN(1-7),SR,FS,HS,SS,SG,RZ
Katahdin	5	9	8	5	6	7	5	7	4	7	6	8	5	0	9	0	0	0	0	SR,SS
Kennebec	9	9	8	9	6	7	5	7	5	8	8	8	4	0	9	0	0	0	0	MS,SR,SS,SG
NY138	8	9	8	6	6	7	7	7	3	7	5	8	7	0	9	0	0	0	0	SR,SS,MS,FS
NY139 (NYY28-9)	8	9	8	7	6	6	7	6	2	8	6	7	6	0	9	0	0	0	0	SR,FS,SS
NY140 (NYY36-4)	8	9	8	7	6	8	6	7	5	8	6	8	7	0	9	0	0	0	0	SR,MS,SS
NY141 (NYY41-67)	9	8	8	5	6	7	6	5	5	8	7	8	7	0	9	0	0	0	0	SS,SR,MS,SG,RZ
NYB38-37	5	8	8	4	6	7	7	7	1	6	5	8	6	0	9	0	0	0	0	SR,SS,STST
Snowden	9	9	8	7	6	5	7	6	2	5	4	8	5	0	9	0	0	0	0	SS,SR
Superior	6	9	8	4	6	6	5	7	3	7	5	7	5	0	9	0	0	0	0	CS,SR,MS,RZ
Yukon Gold	9	9	8	5	7	7	7	7	4	8	5	6	6	0	9	0	0	0	0	GC,FS,SR

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. NE-1031 Red Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	120	70	48	41	54	2	0	0	3	56	2	1.061
B1816-5 (Peter Wilcox)	128	107	74	9	58	25	0	0	8	84	25	1.064
B2152-17	113	72	51	35	56	6	0	0	3	62	6	1.070
B2327-2	84	41	29	42	44	5	0	0	8	49	5	1.068
B2332-2	118	94	64	16	38	35	4	0	7	77	39	1.057
BCO01283-3	78	50	31	34	48	10	0	0	8	58	10	1.060
BCO1371-2	63	26	18	54	39	1	0	0	6	40	1	1.059
Chieftain	184	143	100	7	36	42	0	0	15	78	42	1.060
Dakota Jewell	115	90	68	11	48	26	0	0	15	74	26	1.064
Dark Red Norland	109	93	69	14	68	15	0	0	3	83	15	1.060
Ida Rose	115	37	24	14	25	6	0	0	55	31	6	1.053
MSN215-2P	122	85	66	16	57	13	0	0	14	69	13	1.073
NCB2607-3	76	25	17	63	32	0	0	0	4	33	0	1.072
ND 4659-5R	137	102	66	10	43	29	1	0	17	73	30	1.060
ND 5002-3R	149	97	65	21	48	13	0	0	18	61	13	1.062
NY136	123	91	59	10	37	30	2	0	22	69	32	1.057
NYB13-1	144	117	79	13	50	28	2	0	8	79	30	1.053
NYD32-3	133	100	73	16	50	25	0	0	8	75	25	1.061
NYD32-4	96	55	37	35	48	6	0	0	11	54	6	1.056
NYD32-5	76	49	36	28	57	6	0	0	8	63	6	1.055
Grand Mean	114	77										
CV(%)	31.0	41.7										
LSD(K=100)	57.7	48.2										

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-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 105 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	6	8	8	4	2	6	7	6	2	7	5	6	5	0	9	0	0	0	0	SR,STST
B1816-5 (Peter Wilcox)	5	9	8	5	1	7	7	7	4	7	6	5	4	0	9	0	0	0	0	^SISC,MS,RZ
B2152-17	6	8	8	4	2	8	5	7	2	7	5	7	7	0	9	0	0	0	0	SR,YF1
B2327-2	6	8	8	5	3	8	2	7	2	7	5	6	5	0	9	3	0	0	0	SR,GC,MS
B2332-2	5	8	8	4	3	7	7	4	3	7	8	7	5	0	9	0	8	0	0	SR,GC
BCO01283-3	6	8	8	5	3	6	6	7	4	7	6	7	4	0	9	3	5	0	0	SS,GC,SR
BCO1371-2	5	7	8	4	2	7	7	7	2	7	3	7	5	0	9	0	8	3	3	RZ,GC,MS,HS
Chieftain	9	9	8	7	3	7	7	4	3	5	7	6	4	0	9	0	3	5	3	HS,SR,^SG,RZ,MS,~DAE,SS
Dakota Jewell	6	8	8	6	2	8	7	7	2	5	6	7	5	0	9	0	0	0	5	MS,SR,~DAE,RZ
Dark Red Norland	5	8	7	4	3	7	6	7	3	6	6	7	6	0	9	0	3	0	0	MS,SR,RZ
Ida Rose	9	7	8	8	2	7	7	7	2	7	4	3	2	0	9	0	3	0	0	^^SG,^^IL,^^RZ
MSN215-2P	6	8	8	5	1	8	7	7	3	7	6	6	5	0	9	0	0	0	0	~SG,SISC,RZ,MS
NCB2607-3	5	8	8	3	2	8	7	7	2	7	2	7	6	0	9	0	0	0	0	SS,SR,MS
ND 4659-5R	6	8	8	6	3	7	7	6	3	6	4	6	4	0	9	0	0	0	0	MS,SR,SS,RZ
ND 5002-3R	6	9	8	6	2	6	7	7	2	7	5	6	4	0	9	0	0	0	0	^SISC,MS,SS
NY136	8	9	8	6	2	7	7	7	3	6	6	5	5	0	9	0	0	0	0	MS,SR,IL,SR,CS
NYB13-1	9	8	8	6	2	7	7	7	2	7	5	7	5	0	9	0	0	0	0	MS,SR,STST,RZ,CS
NYD32-3	6	8	7	5	2	8	7	7	2	6	6	8	6	0	9	0	0	0	0	MS,SR,CS,~SG
NYD32-4	6	8	8	5	2	7	7	7	2	6	3	6	5	0	9	0	0	0	0	SS,SR,MS,HS
NYD32-5	6	8	8	5	3	7	6	7	3	7	3	6	5	0	9	0	0	0	3	MS,HS,SR,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 (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. NE-1031 Russet Trial. Total and marketable yield, percentage of total yield by size class, and specific gravity, of potato clones harvested 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution by Class ² (% of total yield)						1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³	Chip Color ⁴	
		cwt/A	% R.Nor	1's	2's	3's	4's	5's	Culls				24 to 48 hrs	5 to 7 Days
AF2431-2	116	71	121	28	60	1	0	0	6	60	1	1.071	2	3
B2232-3	69	49	80	19	69	2	0	0	5	71	2	1.075	2	2
Blazer Russet	225	56	94	4	22	2	0	0	36	25	2	1.056	3	4
Defender	226	161	242	13	65	6	0	0	8	71	6	1.060	4	4
Goldrush	136	111	174	12	63	16	1	0	4	80	17	1.065	3	3
Ranger Russet	154	107	171	8	61	9	0	0	11	70	9	1.054	3	2
RioGrande Russet	160	97	158	15	54	6	0	0	13	59	6	1.057	3	4
Russet Burbank	189	35	57	13	18	1	0	0	34	19	1	1.058	2	5
Russet Norkotah 3117	90	69	100	17	70	5	0	0	4	75	5	1.067	2	2
Shepody	121	62	107	11	42	8	0	0	19	50	8	1.066	4	4
Silverton Russet	110	85	133	8	64	14	0	0	7	77	14	1.056	2	3
Grand Mean	145	82												
CV(%)	18.6	29.8												
LSD(K=100)	37.8	34.2												

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 13b. 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 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	
AF2431-2	7	8	9	6	9	7	7	7	6	7	5	8	4	0	9	0	0	0	3	^MS,RZ,SR,SS
B2232-3	6	8	8	5	5	3	5	7	7	7	6	8	6	0	9	0	0	0	0	SR,^MS
Blazer Russet	9	9	9	8	6	4	6	7	7	7	6	8	1	0	9	0	0	0	0	MS,SG,SR
Defender	9	9	9	9	6	5	6	6	7	8	7	8	5	13	8.0	0	0	0	0	5HN(1-7,4-8),MS,SS,RZ
Goldrush	6	8	8	5	5	3	5	7	7	7	7	8	5	0	9	0	0	0	0	SR,MS
Ranger Russet	9	9	9	8	6	4	6	6	6	7	6	8	2	0	9	0	0	0	0	RZ,^HS,^SG,SR,SS
RioGrande Russet	9	8	9	8	5	3	6	7	6	7	6	8	4	0	9	0	3	0	3	SS,^MS,
Russet Burbank	9	9	8	8	6	4	1	7	6	6	5	8	1	0	9	0	3	0	0	SG,SS,^MS
Russet Norkotah 3117	6	8	8	5	5	3	6	7	6	7	8	8	7	0	9	0	0	0	3	MS,SS,SG
Shepody	6	8	8	7	9	7	4	7	7	7	6	8	3	0	9	0	0	0	3	MS,SS,HS,SG
Silverton Russet	8	8	9	6	6	4	6	6	6	7	7	8	6	0	9	0	0	0	3	GC,CS,RZ,SR,MS

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 14a. Unreplicated Trial. Total and marketable yield, percentage of total yield by size class, specific gravity, and chip scores of potato clones harvested 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

Clone	Total Yield cwt/A	Marketable Yield cwt/A % Atlantic		Size Dist. by Class (%) ²							1 7/8 to 4"	2 1/2 to 4"	Specific Gravity ³
				(% of total yield)									
				1's	2's	3's	4's	5's	Cull's				
A99326-1PY	100	51	112	22	48	3	0	0	27	51	3	1.047	
AF4002-1	81	56	122	15	68	3	0	0	15	70	3	1.072	
AF4004-1	40	21	46	41	53	0	0	0	5	53	0	1.076	
AF4005-1	81	64	139	16	79	0	0	0	5	79	0	1.073	
AF4006-3	85	66	84	15	47	30	0	0	8	77	30	1.065	
AF4013-1	79	58	74	24	66	8	0	0	3	74	8	1.080	
AF4013-3	56	19	41	60	34	0	0	0	6	34	0	1.065	
AF4014-1	123	101	128	11	53	29	0	0	7	82	29	1.057	
AF4023-1	138	104	132	6	28	43	4	0	19	75	47	1.064	
AF4031-1	111	58	74	45	52	0	0	0	3	52	0	1.076	
AF4042-2	63	16	35	54	24	2	0	0	19	26	2	.	
AF4047-2	147	138	176	5	31	60	3	0	1	94	63	1.060	
AF4047-3	168	139	177	4	29	53	0	0	14	83	53	1.073	
AF4057-2	104	73	94	27	66	5	0	0	2	70	5	1.076	
AF4058-1	77	53	115	29	66	3	0	0	2	69	3	1.073	
AF4071-1	124	73	158	37	59	0	0	0	5	59	0	1.073	
AF4096-2	124	71	154	41	55	2	0	0	2	57	2	1.046	
AF4104-2	65	40	34	37	62	0	0	0	1	62	0	1.074	
Atlantic	99	81	100	16	60	19	1	0	3	81	20	1.074	
B2633-3	62	43	37	15	52	18	0	0	15	70	18	1.063	
B2634-10	156	136	115	7	29	55	3	0	6	87	58	1.050	
B2634-11	78	26	22	62	23	10	0	0	4	34	10	1.066	
B2634-13	59	9	11	81	16	0	0	0	4	16	0	1.073	

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 14b. 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 121 DAP¹ at the NCSU VGJREC/NCDA TRS, Plymouth, Washington Co., NC - 2008

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	
A99326-1PY	9	9	8	6	1	7	7	7	2	7	5	5	5	0	9	0	20	0	0	^SISC,YF2
AF4002-1	8	8	8	7	6	6	7	7	8	7	6	8	5	0	9	0	0	0	0	SS,MS
AF4004-1	4	8	8	4	9	8	6	7	5	7	4	8	5	0	9	0	0	0	0	SR
AF4005-1	8	8	8	6	6	7	4	7	7	7	6	8	5	0	9	0	0	0	0	MS,SR
AF4006-3	8	7	8	7	6	6	6	7	3	7	5	8	5	20	7	0	0	0	10	2HN(1-7,1-8),SR
AF4013-1	9	8	8	8	9	7	5	7	3	7	5	8	4	0	9	0	0	0	0	SR,YF1
AF4013-3	5	8	6	4	7	7	7	7	1	7	3	8	6	0	9	0	0	0	0	HS,Pink Eyes,YF2
AF4014-1	9	8	8	9	6	6	7	6	2	7	7	8	6	0	9	0	20	0	0	SR
AF4023-1	6	9	8	8	6	6	6	6	5	7	9	8	8	0	9	0	0	0	0	.
AF4031-1	6	9	7	5	6	7	6	7	4	8	4	8	5	0	9	0	0	0	0	SR,YF1
AF4042-2	6	9	8	4	2	7	6	7	5	8	3	8	3	0	9	0	0	0	0	HS,SS,RF1
AF4047-2	8	8	7	6	6	5	7	6	2	7	8	8	7	0	9	0	0	0	0	SR
AF4047-3	6	8	7	6	6	5	7	6	2	7	8	8	6	0	9	0	0	0	10	^SR
AF4057-2	9	9	8	7	6	6	7	7	2	7	5	8	6	0	9	0	0	0	0	SR,YF2
AF4058-1	6	8	8	4	7	8	6	7	5	7	5	8	6	0	9	0	0	0	0	SR,YF2
AF4071-1	8	8	8	7	6	6	7	6	3	8	4	8	5	0	9	0	0	0	0	SR
AF4096-2	6	8	8	5	5	4	7	7	8	6	4	8	4	0	9	0	0	0	0	MS
AF4104-2	4	8	8	3	5	6	7	7	6	8	5	8	5	0	9	0	0	0	0	.
Atlantic	6	8	8	5	6	5	6	6	2	7	6	8	6	18	7	0	0	8	0	7HN(1-3,1-4,2-6,3-7),SR,RZ,SS
B2633-3	5	9	8	5	6	7	6	7	4	8	5	8	7	0	9	0	0	0	0	.
B2634-10	8	9	8	6	6	5	7	5	4	8	7	8	7	20	8	0	0	0	10	2HN(2-8),SR,SS
B2634-11	4	7	7	4	9	8	7	7	1	8	5	8	6	0	9	0	0	0	0	SR
B2634-13	5	8	8	6	6	6	7	7	2	8	1	8	3	0	9	0	0	0	0	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 14a. 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				
B2634-3	99	34	29	64	35	0	0	0	1	35	0	1.067	
B2634-4	62	14	12	75	22	0	0	0	2	22	0	1.066	
B2634-6	131	110	94	14	77	8	0	0	2	84	8	1.062	
B2634-7	104	66	56	33	60	2	2	0	4	64	4	1.065	
B2667-15	104	86	105	17	72	12	0	0	0	83	12	1.065	
B2671-7	101	81	98	17	65	15	0	0	3	80	15	1.072	
B2678-4	41	5	9	84	13	0	0	0	3	13	0	1.079	
B2682-1	24	5	11	70	20	0	0	0	10	20	0	1.067	
B2691-3	133	75	74	39	47	9	0	0	4	57	9	1.058	
BNC174-7	49	5	6	50	10	0	0	0	40	10	0	1.083	
BNC177-5	198	125	153	26	56	8	0	0	11	63	8	1.057	
BNC179-2	95	32	39	66	33	0	0	0	1	33	0	1.067	
BNC182-1	162	64	78	10	22	18	0	0	51	39	18	1.054	
BNC182-5	212	179	218	14	58	26	0	0	2	84	26	1.063	
BNC192-1	154	136	169	11	65	23	0	0	1	88	23	1.066	
BNC192-3	72	47	47	32	66	0	0	0	2	66	0	1.073	
BNC193-1	129	91	114	27	69	2	0	0	2	71	2	1.066	
BNC193-2	92	62	99	23	50	17	0	0	10	67	17	1.069	
Chieftain	117	94	144	11	53	27	0	0	9	80	27	1.052	
Dark Red Norland	97	73	100	21	61	12	0	0	6	74	12	1.061	
Snowden	184	143	193	18	61	17	0	0	4	78	17	1.067	
Superior	118	87	105	14	50	22	0	0	14	71	22	1.067	
Grand Mean	109	76											

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 14b. 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	
B2634-3	5	8	8	4	6	7	7	7	1	7	2	8	5	0	9	0	0	0	0	SR
B2634-4	4	8	7	3	6	7	7	7	2	7	3	8	5	0	9	0	0	0	10	SR
B2634-6	6	9	8	6	6	6	5	7	5	7	6	8	7	0	9	0	0	0	0	.
B2634-7	5	8	8	5	6	8	7	7	1	8	5	8	6	0	9	0	0	0	0	SR,HS
B2667-15	5	4	8	6	6	5	7	5	3	7	6	8	7	0	9	0	0	0	0	.
B2671-7	5	8	9	4	6	6	5	7	5	7	6	8	6	0	9	0	0	0	0	.
B2678-4	4	8	7	3	3	8	7	7	1	6	1	8	4	0	9	0	10	0	0	SR,white spectacles
B2682-1	7	6	6	2	2	8	7	7	3	8	2	8	4	0	9	0	0	0	0	MS,SR,SS
B2691-3	5	9	8	4	2	7	5	7	3	6	5	8	6	0	9	0	0	0	0	SS,SR
BNC174-7	5	8	7	4	6	5	6	7	1	8	1	8	1	0	9	0	10	0	0	^^HS
BNC177-5	9	9	8	7	6	5	7	6	3	7	5	8	3	0	9	0	0	0	0	MS,RZ
BNC179-2	5	8	6	4	5	7	6	7	3	8	4	8	5	0	9	0	10	0	0	.
BNC182-1	9	9	9	8	8	5	6	6	5	8	7	8	1	0	9	0	0	0	0	^HS,SS
BNC182-5	6	8	8	7	6	5	7	7	1	8	5	8	7	0	9	0	0	0	0	.
BNC192-1	6	9	8	5	3	7	5	7	5	6	7	8	5	0	9	0	0	10	0	MS
BNC192-3	5	8	8	4	1	8	5	7	2	6	4	8	6	0	9	0	10	0	0	SS,SR
BNC193-1	6	8	8	6	1	7	6	7	2	6	5	8	4	0	9	0	0	0	0	SS
BNC193-2	6	8	8	5	2	7	7	7	4	7	6	8	5	0	9	0	0	0	0	SR,YF1
Chieftain	8	8	8	6	3	7	6	7	4	6	6	8	4	0	9	0	0	0	0	MS,SS,SR
Dark Red Norland	5	8	7	3	2	7	6	7	4	7	5	8	5	0	9	0	0	0	0	MS,SS,SR,SISC
Snowden	8	9	8	7	5	5	7	4	3	6	7	8	5	8	8	0	0	0	0	3HN(2-7,1-8),SR,BS,RZ,MS
Superior	5	9	8	4	6	7	6	7	3	6	6	5	5	0	9	0	0	10	0	^CS,SR

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

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: Sencor DF 1.0 lbs/A

Fertilizer: 151 lbs N, 121 lbs P, 76 lbs K (preplant)
21 lbs N, 57 lbs P, 5lbs S, 0.5 lbs Zn (at planting)
48 lbs N (side dress), 1 pt/A 10% Zn (2 times in season)

Insect Control: Actara 1.5 oz/A

Disease Control: Quadris 6.2oz/A
Manzate Pro-stick 1.0 lb/A
Manzate Pro-stick 2.0 lbs/A (2 times)

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

Seed piece Treatment: None

Weed Control: Sencor DF 1.0 lbs/A

Fertilizer: 151 lbs N, 121 lbs P, 76 lbs K (preplant)
21 lbs N, 57 lbs P, 5lbs S, 0.5 lbs Zn (at planting)
48 lbs N (side dress), 1 pt/A 10% Zn (2 times in season)

Insect Control: Actara 1.5 oz/A

Disease Control: Quadris 6.2oz/A
Manzate Pro-stick 1.0 lb/A
Manzate Pro-stick 2.0 lbs/A (2 times)

Irrigation: None

Vine Kill: None

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

Trial Design: Randomized complete block, four replications

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

Seed piece Treatment: None

Weed Control: Sencor 1/2 lbs/A

Dual 1 1/3pt/A

Select 10 oz/A

Fertilizer: 600 lbs 14-7-14 (at planting)
35 gal 30% N (post-emergence)

Insect Control: Mocap 1 gal/A

Leverage 3.75 oz/A

Baythroid 1.5 oz/A, 1qt/A crop oil

Disease Control: Headline 6 oz/A, 1 qt/A boron

Irrigation: None

Vine Kill: None

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

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 6 oz/A (pre-emergence)
Sencor 6 oz/A + Matrix 1 oz/A (post-emergence)
Select 8 oz/A

Fertilizer: 200 lbs N, 80 lbs P, 160 lbs K (pre-plant)

Insect Control: Baythroid 2.8 oz/A + PBO 8 oz/A (2 times)

Disease Control: Quadris 6 oz/A
Manzate 1 qt/A

Irrigation: None

Vine Kill: None

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

Trial Design: Randomized complete block design, four replications

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

Seed piece Treatment: TopsMZ

Weed Control: Outlook 14 oz/A
Prowl 2 pt/A

Fertilizer: 500 lbs 10-14-27 (pre-plant)

Insect Control: Provado 3.8 oz/A
Asana XL 6 oz/A

Disease Control: None

Irrigation: None

Vine Kill: None

Location: Twin Oaks Farm, Spruce Pine, Mitchell Co., NC

Trial Design: Randomized complete block design, four replications

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

Seed piece Treatment: None

Weed Control: None

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

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

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

Trial Title: Specialty Crops 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 1 lb/A pre-emergence

Fertilizer: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/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: Twenty-nine 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: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/A

Disease Control: None

Irrigation: None

Vine Kill: None

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

Trial Title: Round White Variety Trial Two

Trial Design: Randomized complete block, four replications

Plot Dimensions: Twenty-four 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: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/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 Three

Trial Design: Randomized complete block, four replications

Plot Dimensions: Twenty 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: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/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: Twenty-one 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: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/A

Disease Control: None

Irrigation: None

Vine Kill: None

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

Trial Title: NE 10-14 Red Variety Trial

Trial Design: Randomized complete block, four replications

Plot Dimensions: Twenty 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: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/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 Russet 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 Magnum 1.5pt/A pre-emergence

Sencor DF 1 lb/A pre-emergence

Fertilizer: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/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 1 lb/A pre-emergence

Fertilizer: 700 lbs, 18-18-18 broadcast

30-0-0 20 gal

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

Insect Control: Spintor 2SC 3 oz/A

Leverage 2.7 3 oz/A

Disease Control: None

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

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

Heat Necrosis

10 tubers/replication are sampled, typically there are 4 replications in each trial (40 tubers total), USB/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. 12HN(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 'HN', 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.