

2008 MAINE POTATO VARIETY TRIALS
NE1031 REGIONAL TRIALS AND ADVANCED BREEDING LINES
EXETER, PRESQUE ISLE, AND ST. AGATHA, MAINE

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Mimeo 2008-01

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ACKNOWLEDGMENTS

This project represents the combined efforts of many people and we are appreciative of all those involved. Most of the funding comes from the University of Maine and a USDA-CSREES grant (Potato Variety Development and Evaluation in Maine and the Northeast). We greatly appreciate the field sites and management provided by our grower cooperators during 2008 (Crane Farms, Inc. for the Exeter site and Labrie Farms, Inc. for the St. Agatha site). Many thanks to the Maine Seed Potato Board, Maine Potato Breeding Program, Cornell University, Texas A&M University, University of Wisconsin, North Dakota State University, and USDA Potato Breeding Program (Beltsville, MD and Aberdeen, ID) for providing seed potatoes for these trials.

Maine

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Introduction: Potato variety trials were conducted at three locations in Maine as part of the NE1031 Regional Project (Development of New Potato Clones for Environmental and Economic Sustainability in the Northeast). Fifty-two varieties and clones were tested at Aroostook Research Farm, Presque Isle, Maine. Thirty-two NE1031 and advanced breeding clones were tested on a commercial farm in Exeter (central Maine), while eighty-two NE1031 and advanced breeding clones were tested on a commercial farm in St. Agatha (northern Maine). The primary objective of all of the Maine trials is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

Methods: Single-row plots, 25 feet long, were utilized for the NE1031 trials at Aroostook Research Farm. The plot length for the advanced selection, central Maine NE1031, and St. Agatha NE1031 trials was 20 feet. All trials were hand planted using randomized complete block designs and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Details of important management practices are presented in Maine Table 1. At the Presque Isle site the varieties were grouped so that separate tests could be vinekilled and harvested based on maturity classification. Remaining cultural practices were similar to those used on commercial farms in the area. Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Unless noted otherwise chip color evaluations were conducted during December following storage at 50°F. Chips were fried at 350°F for three minutes and evaluated using an Agtron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

Susceptibility to skinning and shatter bruise was measured soon after harvest. Approximately 10 lbs of tubers that exceeded 1 7/8" diameter were tumbled in a drum with three stones for 1 minute at 15 rpm. Each tuber was then rated for percentage of the tuber surface affected by skinning or shatter bruise and the percentage of tubers with air and/or thumbnail cracks. An additional abrasive peel test was conducted on separate samples to determine biochemical aspects of blackspot bruise susceptibility (see Pavek et al, APJ 62:511-517). Ten tubers per plot were warmed for 24 hours and then abrasively peeled for 30 seconds. Color was allowed to develop for 24 h and then individual tubers were rated for discoloration where 0=no discoloration and 5=severe discoloration. Shatter and blackspot bruise susceptibility were measured with the weight-drop method as noted in Table 18.

Results:

Rainfall, General Growth, and Plant Stands. Rainfall by month and location is listed in Maine Table 2. Rainfall was higher than normal for all three sites during 2008. June and July were particularly wet month. Heavy rains during June caused wash outs, stunting, and poor vigor at the Exeter site. Late blight was a problem during late July and early August at the Aroostook Research Farm trial site. We top killed the Aroostook Research Farm plots early in an attempt to minimize disease spread and rot problems. As noted above, early plant growth was poor at Exeter, but generally quite good at the other two sites. As usual, AF2199-6's emergence was slow compared to the other varieties at Presque Isle and St. Agatha. AF2291-10, AF2376-5, and NY138 were also less vigorous than most of the other clones. With the exception of late blight problems in Presque Isle and white mold problems in Exeter, pest control practices were effective at all sites. Plant stand equaled or exceeded 85% of targets for most clones at all three sites. The only NE1031 regional trial exception was NY141 (81%, Presque Isle). In the advanced selection trials at St. Agatha, only AF1426-1 (82%) had less than 85% stands. Yields were lower than normal at the Presque Isle and Exeter sites, but were very good at St. Agatha. Totals yields for Presque Isle, Exeter, and St. Agatha averaged 301, 270, and 392 cwt/A, respectively (mean of six standard varieties grown at all locations).

Aroostook Research Farm NE1031 Regional Potato Variety Trials. Yield and quality results for the 2008 NE1031 trials at Aroostook Research Farm are presented in Maine Tables 3 to 10. Yields were slightly lower than usual due, in part, to late blight defoliation and early chemical vine desiccation. Tuber size was much smaller than normal. External defects incidence, particularly off-shapes, was high for several clones and varieties (Mazama,

Modoc, Dakota Jewel, Dark Red Norland, Dakota Diamond, Katahdin, Kennebec, Yukon Gold, AF2574-1, NY141, Russet Burbank, Shepody, and AF2199-6). Hollow heart incidence was generally quite low. Atlantic (10%), Dakota Jewel (17%), Yukon Gold (30%), and B1992-106 (12.5%) were the only varieties with significant levels observed in large-sized tubers ($\geq 10\%$). On the whole, specific gravities were moderate and chip color scores were good.

Central Maine NE1031 Regional Potato Variety Trial. Yield and quality results for the 2008 NE1031 trial at Exeter are presented in Maine Tables 11 and 12. Yields were moderate in this trial due to wet conditions in June and August. White mold and stress caused early senescence for several varieties and clones (Dakota Jewel, Superior, Yukon Gold, and BNC41-13). Several varieties and clones had very high tuber greening and scab incidence at this site (especially Atlantic, Katahdin, Kennebec, and B2460-23). Kennebec, Superior, Yukon Gold, AF2291-10, and AF2376-5 had a high percentage of misshapen tubers. Hollow heart incidence was a problem for Beacon Chipper (12.5%), Yukon Gold (15%), B1992-106 (20%) and BNC48-1 (11%). Specific gravities and chip colors were generally moderate to good.

Northern Aroostook County NE1031 Regional Potato Variety Trials. Yield and quality results for the 2008 NE1031 trials at St. Agatha are presented in Maine Tables 13 to 16. Most varieties had good yields at the St. Agatha site during 2008, exceptions with low US#1 yields were Dakota Diamond, Kennebec, B2440-124, Dakota Jewel, Dark Red Norland, AF2393-7, B2327-2, and Shepody. External defects were prevalent with several clones exhibiting high levels of sunburn, second growth, growth cracks, and/or scab (especially Dakota Diamond, Kennebec, Shepody, Yukon Gold, B2440-124, NY139, and NYB38-37). Hollow heart incidence was low at this site during 2008, with the exception of B2460-23 (10%) and Russet Norkotah (10%). Specific gravities were moderate for most varieties and chip color scores were fair to good.

French Fry Processing from the 2007 Aroostook Research Farm Test. French fry color and texture evaluations were conducted on several 2007 NE1031 clones during winter of 2008 (Table 17). Graying was not a problem in these clones. All of the test clones were judged to be inferior to Russet Burbank due to poor length, fry color, and/or texture.

Aroostook Research Farm Small-scale Storage Evaluations. Limited data on storage and processing characteristics were collected from 41 NE1031 varieties and clones during the 2007-2008 storage season (Maine Tables 18 and 19). Very good chip colors were obtained from 50°F February storage for the following clones grown at Presque Isle: Beacon Chipper, Dakota Diamond, B1992-106, NY141, NYB38-37, and W2978-3. Most clones produced very light chips from 50°F March storage in the Central Maine test (Table 19). The clones with the lightest chip color were: Atlantic, Dakota Diamond, FL1879, and W2978-3). In the Presque Isle test, Atlantic, Beacon Chipper, AF2291-10, B1992-106, NY139, and W2978-3 had very light chip colors directly from 45°F storage. In the Central Maine test, Atlantic, Beacon Chipper, AF2291-10, B1992-106, FL1879, NY139, and W2978-3 produced particularly good chip colors directly from 45°F storage. None of the clones in the Presque Isle test lines produced good chips directly out of 38°F storage. In the Presque Isle test, Snowden, NY139, and W2978-3 reconditioned reasonably well from 38°F storage. French fry processing types with good reconditioning from 38°F storage were Blazer Russet, Shepody, W2683-2Rus, and W3666-2Rus. In the Central Maine test, seven clones reconditioned very nicely from 45°F storage (Atlantic, Beacon Chipper, Kennebec, B1992-106, FL1879, NY139, and W2978-3).

Skinning and bruise test scores for the 2007 field season are presented in Maine Table 18. The skinning and shatter bruise scores from the bruise barrel test were presented last year. Shatter bruise susceptibility scores were particularly poor for Atlantic, Dakota Jewel, Yukon Gold, AF2199-6, AF2916-1, B2152-17, B2327-2, NY137, W2978-3, and W3666-2Rus. Beacon Chipper, Katahdin, Kennebec, Snowden, Superior, Yukon Gold, AF2376-5, AF2393-7, B1816-5, B1992-106, B2152-17, W2564-2, W2683-2Rus, W2978-3, and W3666-2Rus had particularly poor blackspot bruise and/or blackspot bruise potential scores. Atlantic, Dakota Diamond, NY139, NY140, NY141, and W2253-3Rus had particularly good blackspot bruise and/or blackspot bruise potential scores.

Chieftain, Dakota Diamond, Russet Burbank, AF2199-6, AF2376-5, B1816-5, W2564-2, and W2978-3 required at least 190 days to reach the one-half-inch sprout stage. Blazer Russet, Katahdin, Shepody, Snowden, AF2393-7, AF2916-1, B1992-106, NY141, NYB38-37, and W3666-2Rus reached the one-half-inch sprout stage in 150 days or less. Selections with very low weight loss (<5%) from 38°F storage were: Chieftain, Dakota Diamond,

Rio Grande Russet, Russet Burbank, Russet Norkotah, Shepody, Snowden, Superior, Yukon Gold, AF2199-6, AF2291-10, B1816-5, B1992-106, NY137, and W3666-2Rus. Selections with very low weight loss (<15%) from 50°F storage were: Dakota Diamond, Dakota Jewel, Kennebec, Russet Burbank, Russet Norkotah, Shepody, Yukon Gold, AF2199-6, AF2291-10, AF2376-5, B1816-5, NY137, W2564-2, and W2978-3. Selections with high weight loss (25% or more) from 50°F storage were: Dark Red Norland, AF2393-7, B1992-106, B2327-2, and NYB38-37.

Central Maine Advanced Breeding Lines. Yield and quality results for the 2008 advanced breeding line trials at Exeter are presented in Maine Tables 20 and 21. Clones with good yields were Atlantic, B2467-21, and BNC49-1. Specific gravities were quite high for the standard chipping varieties and five of the test clones. Snowden, AF2497-2, and AF3014-1 had especially high levels of external defects (off shapes, scab and sunburn). AF4047-2, B0766-3, B2467-21, BNC49-1, and BNC49-2 had hollow heart problems (>12% hollow large tubers). Chip color scores were generally good and particularly good scores (≥ 69 Agron) were observed for AF2867-20, AF4047-2, B0766-3, and BNC49-2.

Northern Aroostook County Advanced Breeding Lines. Yield and quality results for the 2008 advanced breeding line trials at St. Agatha are presented in Maine Tables 22 to 25. Top performing clones for US#1 yields in the round-white trial were: Atlantic, Superior, AF2865-4, AF2866-3, AF4014-9, and B2501-14. Specific gravities were generally low to moderate except for Atlantic, AF4014-1, B2445-6, B2500-1, and B2500-3 which were 1.088 or above. Two clones had severe growth crack problems (AF2852-1, AF2867-10) and five clones had more than 10% scab incidence (Katahdin, AF2866-3, AF4014-1, B2445-6, and B2500-1). A few had other external defect problems. Only Superior had hollow heart problems (10% or more hollow large tubers) in the round-white trial. Chip color scores were fair to poor for all of the round-whites.

Of 32 russet-long clones, nine had total yields which exceeded 370 cwt/A (Russet Burbank, Shepody, AF2850-9, AF3001-6, AF3011-4, AF3011-34, AF3327-28, AF3329-16, and AF3362-1). US#1 yields were particularly good for Russet Burbank, AF2850-9, AF3001-6, AF3011-34, AF3327-28, and AF3362-1. Specific gravities were generally good to very good with only one clone less than 1.080 (AF2426-1). Nine clones had especially high external defects incidence: Shepody, AF2596-2, AF2677-10, AF3000-1, AF3004-9, AF3011-28, AF3051-2, AF3084-7, and AF3329-16. None of the clones had severe hollow heart problems (>12% hollow large tubers). Four clones had significantly better chip color scores than both Russet Burbank and Shepody: AF2426-1, AF2677-10, AF3001-6, AF3011-30, AF3012-4, AF3016-2, AF3051-2, and AF3362-1.

Presque Isle Advanced Red- and Purple-skinned Breeding Lines. Yield and quality results for the 2008 advanced breeding red- and purple-skinned line trials at Presque Isle are presented in Maine Tables 26 and 27. Yields were low with BCO01044-2 providing the best yields of the test clones. Only AF4013-5 had high specific gravity. Dark Red Norland, B2332-2, BCO1044-2, BCO01283-2, BCO01283-3, and BCO01357-3 had the best tuber appearance scores for the red and/or speciality markets. BCO01044-2 was an attractive purple-skinned, purple-fleshed clone. BCO01357-3 was an attractive red-skinned, pink-fleshed clone. External defects were especially problematic in BCO01357-4, BCO01357-5, and BCO01401-2. Dark Red Norland and AF4013-5 had hollow heart problems (>10% in large tubers).

Of the 2007 growing season lines tested, none of the test clones had washed tuber appearance ratings from storage which were dramatically better than those of Dark Red Norland (Maine Table 28).

Exeter and St. Agatha Bruise Test Results from the 2007 Growing Season. Blackspot bruise potential results from the 2006 central and northern Maine experiments are presented in Maine Table 29. Blackspot bruise potential scores indicating potential problems were noted for Beacon Chipper, Blazer Russet, Dark Red Norland, Katahdin, Kennebec, Russet Norkotah, Snowden, AF2291-10, AF2376-5, AF2393-7, B1992-106, B2152-17, B2327-2, NY139, W2564-3, and W2683-2Rus.

Sensory Quality Evaluation of Advanced Breeding Lines from the 2007 Growing Season. Baked and boiled sensory evaluation results from the 2007 growing season are presented in Maine Table 30. Beacon Chipper, Blazer Russet, Rio Grande Russet, AF2199-6, AF2291-10, AF2393-7, and B2152-17 had acceptable baked scores. Dakota Jewel, AF2376-5, NY137, and NY139 were rated poorer than the standard varieties.

Dakota Jewel, AF2376-5, and AF2393-7 had good boiled quality scores. Russet Norkotah, AF2291-10, and NY139 were poorer than desirable in the boiled quality test due to after-cooking darkening. Beacon Chipper, Blazer Russet, Rio Grande Russet, Russet Norkotah, Yukon Gold, AF2199-6, NY137, and NY139 had poor boiled quality scores due to sloughing.

Promising Selections in the 2008 NE1031 Regional Variety Trials and Advanced Selection Trials.

Selections that performed particularly well in the 2008 Maine regional and advanced trials were:

Chipping

Beacon Chipper slightly netted skin, round to oblong tubers, medium-late maturity, good yield, moderate specific gravity, moderate tuber size, fair appearance, moderate scab reaction, good chip color, **promising**

AF2291-10 smooth to slightly netted skin, round to oblong tubers, medium-late to late maturity, high specific gravity, moderate to good yields, medium to large tubers, generally good appearance but can be prone to off shapes, moderate scab reaction, good chip color, moderate resistance to shatter bruise, susceptibility to blackspot bruise is similar to Snowden, **promising**

AF2873-1 round to oblong, netted, medium early, good gravity and chip color, **needs further testing**

AF2973-2 oblong to round, netted, medium maturity, good gravity and chip color, **needs further testing**

B1992-106 netted skin, round to oblong tubers, medium to medium-late vine maturity, moderate yields, moderate to high specific gravity, fair appearance, good chip color, good scab resistance, hollow heart problems in 2008, does well in Florida, **needs further testing.**

B2485-2 round to oblong, slight net, small to medium tubers, moderate gravity, good appearance and chip, **needs further testing.**

NY138 round to oblong, smooth skin, fair appearance, medium to large tubers, moderate gravity, good chip color, **needs further testing.**

NY139 medium to medium-late, round to oblong, moderate scab resistance, slightly netted to smooth skin, appearance is good, moderate to large tubers, moderate to high yields, moderate to high specific gravity, good chip color, resistant to shatter and blackspot bruise, **promising.**

Fresh market whites

AF0338-17 widely adapted, medium late, round to oblong tubers, slight net, fair to good appearance, low external defects, moderate resistance to scab, **needs further testing (did not appear in 2008 ME trials due to seed shortage).**

AF0339-39 medium maturity, round to oblong tubers, smooth to slight net, good appearance, low external defects, resistance to golden nematode, **needs further testing.**

AF2376-5 moderate late blight resistance, pretty, smooth skin, pale yellow flesh, late maturity, moderate to high yields, moderate tuber size, high specific gravity, resistant to shatter bruise, very susceptible to internal heat necrosis. **Susceptibility to IHN may limit this clone's potential.**

AF2574-1 moderate late blight resistance, late, oblong to round, netted to slight net, moderate scab resistance, large tubers, fair to good appearance, very good yields, moderate specific gravity, **promising.**

AF2865-4 round to oblong, high yields, good tuber size, fair to good appearance, **needs further testing**

AF2866-3 round to oblong, high yields, good tuber size, fair to good appearance, **needs further testing**

AF4014-9 round to oblong, moderate to high yields, fair to good appearance, **needs further testing**

B2485-2 see above

B2501-14 round to oblong, slight net, decent appearance and yield, **needs further testing**

NY139 see above

NY140 medium-late maturity, oblong to round tubers, good tuber size, moderately smooth skin, some off shapes, high yields, moderate specific gravity, moderate scab resistance, **promising.**

Russets or Long Whites

AF2199-6 medium-late vine, long to oblong blocky russet, skin is not as nice as Russet Norkotah, but it can be pretty enough for fresh market, moderate gravity and yields, good fry color, good baked quality, sloughs when boiled, slow emergence resulting from long dormancy and susceptibility to bruise have been concerns, **needs commercial-scale testing.**

Blazer Russet long to oblong, russet, good yields, small to moderate tuber size, moderate gravity, fair to good appearance, some hollow heart, **promising**

AF2936-2	possible Russet Norkotah alternative with pink rot resistance, pretty, moderate to heavy russet, medium-early, long to oblong, low to moderate specific gravity, low external defects, yield and sizing are the current question marks, needs further testing.
AF3000-1	see below
AF3011-4	long, netted to light russet, high yields, good tuber size, moderate gravity, appearance better in Maine than further south, fry color is fair to poor, needs further testing.
AF3011-34	oblong to long tubers, light russeting, good yields, good appearance, needs further testing
AF3325-2	long tubers, dark russet with light eyes, medium maturity, pretty, moderate yields, good fry color, possible dual purpose, needs further testing
AF3327-28	long to oblong, russet, medium late to late, good yields, fair to good appearance and fry color, possible dual, needs further testing
AF3362-1	see below

French Fry Processing

AF2199-6	see above
AF2850-9	long to oblong, netted to light russet, moderate to high yield, good gravity and fry color, fair to poor appearance, needs further testing
AF3001-6	long, netted to light russet, high yields, good tuber size, medium to high gravity, good fry color, needs further testing
AF3011-4	see above
AF3325-2	see above
AF3327-28	see above
AF3362-1	medium-late, possible dual-purpose russet, decent appearance, long to oblong tubers, low external defects, good tuber size, generally good yields but did not yield well in 2007 SJV trial, moderate specific gravity, good fry color, needs further testing.

Specialty

AF2376-5	pale yellow flesh, late blight resistant, see above
B2152-17	nice red skin, smooth to slight net, medium maturity, yellow flesh, round to oblong, small tubers, few external defects, yields like Dark Red Norland, needs further testing.
BCO01044-2	purple skin, purple flesh, attractive, needs further testing
BCO01357-3	red skin, pink flesh, attractive, needs further testing
BP153-1	round to oblong white, netted, pink to red skin blush, unusual appearance, large tubers, needs further testing

Maine Table 1. Trials sites and management practices for the 2008 potato variety trials.

Site information and/or Mgt. Practices	Aroostook Research Farm	Central Maine	Northern Aroostook County
Location:	Presque Isle	Exeter	St. Agatha
Grower Cooperator:	n/a	Crane Farms	LaBrie Farms
Soil Test Results:			
pH	5.9	6.2	5.7
P (lbs/A)	13.7 MH	41.0 H	18.2 H
K “	184(3.9%, M)	495(9.8%, VH)	366(6.1%, H)
Mg “	210(14%, H)	133(8%, M)	281(14%, H)
Ca “	1458(54%, M)	2136(82%, VH)	1723(55%, M)
CEC meq/100g	6.2	6.4	7.8
OM %	4.0	3.0	5.0
Previous Crop:	timothy/clover	corn	oats
Fall Tillage:	moldboard plow	disk	moldboard plow
Spring Tillage:	disk & harrow	chisel plow	soil-conditioner
Planting Date:	May 15 and 19	May 22	June 5
At-planting Insectic.:	imidacloprid at labeled rate	imidacloprid at labeled rate	imidacloprid at labeled rate
At-plant Fertilization:	168-168-168	185-150-150	172-115-172
Other Fertilization:	none	none	none
Herbicide Program:	0.375 metrib,GCK plus 0.0234 rimsulfuron, GCK (Repeated EPOST)	1.75 pt/A Linex,PE plus Dual Magnum 1 qt/A, PE	1.5 pt/A Linex, PE plus Gramoxone Inteon 1.5 pt/A, PE
Irrigation:	No	Once (0.5" total)	No
Vine Desiccation: (initial applic.)	Aug. 22 (E, M, reds) Aug. 29 (L, R/L)	Sept 4	Sept. 12
Harvest:	Sept. 16 (E/ME) Sept. 11 (meds.) Sept. 17 (advanced reds) Sept. 25 (lates) Sept. 25 (russets)	Sept. 24	Oct. 8

Maine Table 2. 2008 Rainfall Summary.

Month	Rainfall by Location and Month (inches) ¹		
	Presque Isle	Exeter ²	St. Agatha
May	2.47	0.99	1.05
June	5.15	6.87	5.73
July	3.23	3.25(0.5)	4.25
August	4.69	4.62	5.00
Sept.	3.39	5.92	3.55
Total	18.93	15.24	19.58
Total (June 1 to August 31)	13.07	22.15	14.98

²All data for the Exeter site were from NOAA's weather data for Corinna, ME rather than from the actual field site. The May St. Agatha data were the Ft. Kent, ME NOAA weather data,

¹The Exeter site had supplemental irrigation available. One application was made during 2008 and the amount of supplemental irrigation applied appears in parentheses.

Maine Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 8 red- and purple-skinned varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 6-30	50% Emergence Date	Size Distribution by Class ³ (%)						Spec. Grav.				
	cwt/A	>1 ⁷ / ₈ "	% of >2 ¹ / ₄ " std.			1	2	3	4	5	6		1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"	2 ¹ / ₂ to 4"	
<u>Red- and Purple-skinned Test - 98 days</u>																
Chieftain (std)	324	278	100	186	100 (10)	June 13	10	31	40	19	0	0	90	59	19	1.072
Dakota Jewel	286	230	83	147	99 (8)	June 13	7	33	43	16	0	0	93	59	16	1.076
Mazama	224	139	50	26	89 (10)	June 14	27	59	14	0	0	0	73	14	0	1.067
Modoc	241	184	66	118	88 (10)	June 14	8	34	40	17	1	0	92	58	19	1.073
Norland, DR	305	248	89	173	97 (10)	June 11	6	28	47	18	1	0	94	66	19	1.072
AF2393-7	263	209	75	101	100 (10)	June 11	18	43	30	9	0	0	82	39	10	1.066
B2152-17	293	209	75	91	100 (10)	June 11	24	43	27	6	0	0	76	33	6	1.068
B2327-2	257	193	69	66	100 (10)	June 15	21	52	23	4	0	0	79	27	4	1.070
W. Duncan LSD	56	46		38									3	8	10	0.011

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 4. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for 8 red- and purple-skinned varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Skinning & Shatter Index ⁴ %Crck. ⁴	Flesh Color ⁵	Tuber Data ¹			Tuber Defects (%)						Hollow Heart Rating ²	Chip Color ³	
	Size 7-24	Maturity 8-21 @VK				Skin Tex- ture	Shape	Appear- ance	Total burn	Sun- shapen	Mis- cracks	Growth Scab	Rot				
Red- and Purple-skinned Test - 98 days																	
Chieftain (std)	7	6	6.3	2.67	22 MS	Wh	7	4	6 lmr	5.2	0.7	3.0	0.5	0.0	1.0	0	40
Dakota Jewel	7	5	5.8	1.94	66 S	OW	7 rz	4	7 mbr	12.8	1.0	9.0	0.6	0.0	2.2	7	44
Mazama	5	5	6.0	2.00	15 MR	OW	7 ss	4	7 mbr	14.5	3.4	10.7	0.2	0.0	0.2	0/20	61
Modoc	5	5	5.5	2.35	82 S	OW	6 ss	4	6 mr	17.2	3.9	11.6	0.6	0.0	1.2	0	46
Norland, DR	6	4	3.8	1.67	33 MS	OW	7 ss	4 pch	6 mr	13.6	0.8	11.0	1.0	0.0	0.7	0	56
AF2393-7	6	3	4.0	2.54	6 R	YF1	6 ss	3	6 mr	3.4	0.3	2.9	0.1	0.0	0.1	0	64
B2152-17	6	5	5.0	2.24	50 S	YF1½	7 ss	3	6 mbr	6.3	2.0	4.1	0.0	0.0	0.2	0	53
B2327-2	7	5	4.5	2.61	21 MS	OW	7 ss	2	6 mr	5.2	1.6	3.1	0.5	0.0	0.1	0/33	62

¹See standard NE1031 rating system for key to codes; mpur=medium purple skin; ppk=pale pink skin; pk=pink to pale red skin; lmr=light medium red skin; mr=medium-red skin; mdr=medium dark red skin; mbr=medium bright red skin; br=bright red skin; dr=dark red skin; pr=some pear-shaped tubers; pch=pink skin patches; rz=black scurf; ss=silver scurf; yl=yellow skin color; de=deep eyes; fl=flat tubers; rs=russet scab; nu=nonuniform skin; cs=pretty except for scab problem; le=enlarged lenticels; cr=skin cracks. # indicates very good early vigor while ** and *=severe or moderate early vigor problems;

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 8, 2008. Waller Duncan LSD (K=100) for chip color = 4.

⁴Index measures combined skinning and shatter bruise susceptibility measured on September 18, 2008 (2 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant).

⁵Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color.

Maine Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 13 medium-maturing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 7-2	50% Emergence Date	Size Distribution by Class ³ (%)						Spec. Grav.				
		>1 7/8" std.	% of >2 1/4"			1	2	3	4	5	6		1 7/8 to 4"	2 1/4 to 4"	2 1/2 to 4"	
<u>Medium Test- 98 days</u>																
Atlantic (std)	286	249	100	185	95 (10)	June 11	5	25	39	30	1	0	95	70	32	1.088
Beacon Chipper	274	243	98	184	87 (8)	June 14	5	23	42	28	2	0	95	72	29	1.080
Dakota Diamond	252	199	80	133	94 (8)	June 11	9	31	42	18	0	0	91	60	18	1.082
Kennebec	314	217	87	184	94 (8)	June 11	7	14	28	46	5	0	93	79	51	1.069
Snowden	294	261	105	140	100 (14)	June 11	9	42	37	12	0	0	91	49	12	1.085
Superior	297	269	108	227	97 (10)	June 7	3	15	46	35	1	0	97	82	36	1.078
AF2291-10	265	230	92	142	91 (8)	June 14	9	35	47	8	0	0	91	55	8	1.083
B1992-106	249	216	87	121	88 (8)	June 14	11	39	33	16	1	0	89	50	17	1.079
BNC41-13	273	227	91	78	98 (10)	June 7	16	55	26	3	0	0	84	29	3	1.082
BNC48-1	190	147	59	39	93 (10)	June 9	21	58	19	2	0	0	79	21	2	1.086
NY138	271	251	101	194	87 (8)	June 14	5	22	46	26	1	0	95	74	28	1.076
NY139	265	238	96	161	98 (10)	June 9	7	30	44	19	0	0	93	63	19	1.079
NYB38-37	240	216	87	151	98 (10)	June 9	6	28	39	25	3	0	94	66	27	1.067
W-D LSD (k=100)	51	43		38									3	9	10	0.004

¹U.S.#1 yield = yield 1 7/8" to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1 1/2" to 1 7/8"; 2=1 7/8" to 2 1/4"; 3=2 1/4" to 2 1/2"; 4=2 1/2" to 3 1/4"; 5=3 1/4" to 4"; 6=over 4".

Maine Table 6. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 13 medium-maturing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹						Tuber Defects (%)					Hollow Heart Rating ²	Chip Color ³	
	Size 7-24	Maturity 8-21 @VK		Skinning & Shatter Index ⁴	Flesh Color ⁵	Skin Texture	Shape	Appearance	Sun- Total burn	Mis- shapen	Growth cracks	Scab	Rot				
<u>Medium Test - 98 days</u>																	
Atlantic (std)	6	6	5.8	2.07	57 S	OW	5	3	5 le, rz	8.2	1.7	5.4	0.8	0.0 (0)	0.3	4	69
Beacon Chipper	6	7	7.3	1.81	42 S	Wh	6 rs	3	5 rz!	6.4	1.1	5.2	0.0	0.0 (0)	0.2	0	70
Dakota Diamond	8	8	6.8	2.76	32 MS	OW	8	3	6	13.5	10.6	2.0	0.4	0.3 (1)	0.2	0	66
Kennebec	8	7	7.3	4.68	29 MS	OW	7 rs	5	4 rz!	24.8	9.0	11.6	4.1	0.0 (0)	0.1	0	58
Snowden	7	6	6.0	1.46	40 S	OW	5	3	5 de	2.7	1.5	1.2	0.0	0.0 (0)	0.0	2	70
Superior	6	5	5.8	1.28	36 MS	OW	6	4	6	6.8	0.8	5.9	0.1	0.0 (0)	0.0	1	63
AF2291-10	7	8	7.0	2.38	28 MS	OW	7	3 fl	6 le	4.5	0.3	4.1	0.0	0.0 (0)	0.1	0	68
B1992-106	7	7	5.3	3.31	22 MS	OW	5 rs	4	5	2.5	1.0	1.4	0.0	0.0 (0)	0.1	5	68
BNC41-13	6	6	5.8	1.04	21 MS	OW	5 rs	2	6 le	1.2	0.3	0.9	0.0	0.0 (0)	0.0	0	69
BNC48-1	6	5	5.5	1.32	56 S	OW	5 rs	2	6 yl	2.6	0.5	1.9	0.0	0.0 (0)	0.2	0	70
NY138	5	7	6.3	2.31	4 R	OW	7 rs	3	6 le	2.8	2.0	0.3	0.6	0.0 (0)	0.0	0	71
NY139	6	6	6.3	3.48	2 R	OW	7 rs	3	7 le	3.4	2.0	1.1	0.1	0.0 (0)	0.2	0	71
NYB38-37	5	5	4.5	2.35	15 MR	OW	7 rs	2	7 le	4.9	2.4	2.0	0.6	0.0 (0)	0.0	2	72

¹See standard NE1031 rating system for key to codes; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes or dented apical or stem end; fl=flat tubers; rs=russet scab; rz=rhizoctonia; nu=nonuniform skin; cs=pretty except for scab problem; le=enlarged lenticels; cr=skin cracks.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 9, 2008. Waller Duncan LSD (K=100) for chip color = 2.

⁴Index measures combined skinning and shatter bruise susceptibility measured on September 15, 2008 (4 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

⁵Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color.

Maine Table 7. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 10 late maturing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 6-30	50% Emergence Date	Size Distribution by Class ³ (%)						Spec. Grav.				
		>1 ⁷ / ₈ "	% of std.			>2 ¹ / ₄ "	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"	2 ¹ / ₂ to 4"	1	2		3	4	5	6
<u>Late Test - 106 days</u>																
Katahdin (std)	292	219	100	155	100 (8)	June 13	8	27	37	27	1	0	92	65	28	1.078
Yukon Gold	325	215	98	186	89 (8)	June 15	3	13	28	47	9	0	97	84	56	1.088
AF2376-5	272	206	94	101	95 (8)	June 13	15	43	34	7	0	0	85	42	7	1.084
AF2574-1	345	260	119	204	88 (8)	June 13	6	20	36	35	3	0	94	74	38	1.079
B2440-124	250	182	83	72	89 (10)	June 11	15	51	28	6	0	0	85	34	6	1.077
B2452-3	223	168	77	117	99 (10)	June 13	10	29	28	30	3	0	90	61	33	1.069
B2460-23	283	216	99	155	88 (10)	June 13	11	25	32	30	2	0	89	65	32	1.096
B2485-2	312	242	110	124	96 (10)	June 10	12	43	35	10	0	0	88	45	10	1.081
NY140	350	270	123	175	97 (8)	June 11	9	32	33	24	2	0	91	59	26	1.080
NY141	362	278	127	223	85 (8)	June 12	3	19	38	38	1	0	97	78	39	1.077
W-D LSD (k=100)	50	36		42									5	12	14	0.005

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 8. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 10 late-maturing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹						Tuber Defects (%)					Hollow		
	Size	Maturity	Skinning & Shatter Index ⁴ %Crck. ⁴	Flesh	Skin	Shape	Appear- ance	Sun-	Mis-	Growth	Scab	Rot	Heart Rating ²	Chip Color ³			
	7-24	8-21 @VK		Color ⁵	Texture			Total burn	shapen	cracks							
<u>Late Test - 106 days</u>																	
Katahdin (std)	7	7	6.8	2.72	28 MS	Wh	8 rs	3 fl	7	18.4	9.9	7.1	0.8	0.0(0)	0.6	0	56
Yukon Gold	7	5	5.5	1.78	70 S	YF1½	7 yl, rz	4	6 peye	31.8	10.3	19.1	1.3	0.0(0)	1.1	12	57
AF2376-5	6	7	7.0	1.00	7 R	YF½	8 yl	3	7	10.3	2.3	7.6	0.3	0.0(0)	0.1	0	58
AF2574-1	8	7	7.0	1.56	69 S	OW	6 rs	3 fl	6	19.5	3.5	14.7	1.2	0.0(0)	0.0	0	50
B2440-124	5	6	5.0	0.88	99 S	YF1½	8 yl	3	7	15.0	3.7	10.1	0.7	0.0(0)	0.4	0/24	53
B2452-3	7	7	6.3	2.04	82 S	OW	6 rs	3	6	16.3	8.2	6.9	0.1	0.0(0)	1.1	0/13	63
B2460-23	7	8	7.8	1.74	14 MR	YF½	5	3	6 cl	15.0	6.5	6.1	1.4	0.0(0)	0.9	1	66
B2485-2	6#	5	5.5	1.10	32 MS	Wh	6 rs	2	6	11.3	2.8	7.1	0.8	0.1(1)	0.4	0	70
NY140	7#	7	7.3	2.52	34 MS	OW	7 rs	3	7 cl	15.1	4.9	8.3	0.3	0.1(1)	1.5	1	69
NY141	6#	6	5.8	2.17	27 MS	OW	7 rs	4 pr	6	20.8	3.6	16.3	0.7	0.0(0)	0.3	0	67

¹See standard NE1031 rating system for key to codes; ppk=pale pink skin; pk=pink to pale red skin; lmr=light medium red skin; mr=medium-red skin; br=bright red skin; dr=dark red skin; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes or dented apical and/or stem end; fl=flat tubers; rs=russet scab; nu=nonuniform skin or shape; peye=pink color at eyes; rz=blackscurf problems; cs=pretty except for scab problem; cl=tubers cling to stolons; le=enlarged lenticels; cr=skin cracks. # indicates very good early vigor while ** and *=severe or moderate early vigor problems.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 9, 2008. Waller Duncan LSD (K=100) for chip color = 3.

⁴Skinning and shatter bruise were measured on September 29, 2008 (4 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant).

⁵Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color.

Maine Table 9. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 8 russeted/processing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹			% Stand (spacing) ² 6-30	50% Emergence Date	Size Distribution by Class ³ (%)							Spec. Grav.		
		>1 ⁷ / ₈ "	% of std.	> 4 oz.			Size Class					> 8 oz	> 12 oz.		by length >3" >3 ¹ / ₂ "	
							1	2	3	4	5					
<u>Russet/Processing Test - 106 days</u>																
R. Burbank (std)	281	211	100	132	100 (16)	June 12	39	49	10	2	1	13	2	76	60	1.078
Blazer Russet	285	248	118	131	100 (12)	June 12	47	47	5	1	0	6	1	72	50	1.081
R. Norkotah	265	246	117	125	97 (12)	June 12	50	46	4	0	0	4	0	65	42	1.075
Rio Grande Russet	201	164	78	69	98 (12)	June 14	61	32	5	2	0	7	2	56	37	1.077
Shepody	266	195	92	117	95 (10)	June 10	41	40	13	5	0	19	5	77	58	1.079
AF2199-6	227	187	89	136	95 (16)	June 19	29	46	20	5	0	24	5	75	59	1.080
AF2413-4	252	226	107	112	96 (10)	June 10	51	47	2	0	0	3	0	50	27	1.065
AF2431-2	154	141	67	23	99 (12)	June 14	84	16	1	0	0	1	0	27	10	1.088
Waller-Duncan																
LSD (k=100)	111	76		74								15	6	16	16	0.004

¹U.S.#1 yield = yield >1⁷/₈ " excluding tubers with sunburn, severe misshapes, growth cracks, scab, and rot.

²Inches between seedpieces noted within parentheses.

³Size classes: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 10. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for 8 russeted/processing varieties grown at Presque Isle, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹						Tuber Defects (%)					Hollow		
	Size	Maturity		Skinning	Flesh	Skin	Appear-		Sun-	Mis-	Growth	Scab	Rot	Heart	Chip		
	7-24	8-21	@VK	& Shatter	Color ⁵	Tex- ture	ance		Total burn	shapen	cracks			Rating ²	Color ³		
				Index ⁴	%Crck. ⁴												
<u>Russet/Processing Test - 106 days</u>																	
R Burbank (std)	7#	7	7.0	0.91	46 S	OW	4 nu	7	4	24.3	0.7	23.1	0.3	0.0(0)	0.2	0	48
Blazer Russet	7#	7	6.8	1.48	78 S	OW	3 nu	7	6	13.0	0.6	12.1	0.0	0.0(0)	0.2	1	60
R. Norkotah	5#	5	4.8	0.67	17 MR	OW	3	6	7	7.0	2.0	4.1	0.0	0.0(0)	0.9	0	54
Rio Grande Russet	7	8	7.0	0.92	28 MS	OW	3	7	7 cl	14.3	1.9	10.6	1.0	0.0(0)	0.8	0	54
Shepody	6#	6	5.8	1.11	37 S	OW	7 rs	7	5	26.0	10.3	12.0	1.9	0.0(0)	1.7	1	55
AF2199-6	4*	7	6.5	1.85	77 S	OW	4 rs	7	6	17.5	4.5	9.7	2.5	0.0(0)	0.7	0	61
AF2413-4	5#	6	5.0	0.83	27 MS	OW	5	5	5	10.5	2.9	4.9	0.0	0.3(1)	2.4	0	57
AF2431-2	6	6	5.5	0.55	32 MS	OW	4	6	6	8.4	1.9	5.6	0.0	0.0(0)	0.9	0	51

¹See standard NE1031 rating system for key to codes; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes; fl=flat tubers; rs=russet scab; nu=nonuniform skin or shape; wh=white skin, not russeted; blk=blocky; cs=pretty except for scab problem; le=enlarged lenticels; cr=skin cracks; cl=tubers cling to stolons. # indicates very good early vigor while ** and *=severe or moderate early vigor problems.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined unless noted otherwise.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 10, 2008. Waller Duncan LSD (K=100) for chip color = 4.

⁴Skinning and shatter bruise were measured on September 30, 2008 (5 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant).

⁵Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color.

Maine Table 11. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 19 varieties and clones grown at Exeter, Maine - 2008. (NE1031 Regional Potato Variety Trial)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 6-27	Size Distribution by Class ³ (%)									Spec. Grav.	
		>1 ⁷ / ₈ "	% of std.		>2 ¹ / ₄ "	1	2	3	4	5	6	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"		2 ¹ / ₂ to 4"
Central ME Regional Test- 103 days															
Atlantic (std)	265	179	100	145	99 (10)	4	19	32	40	6	0	96	78	45	1.095
Beacon Chipper	292	257	144	206	98 (8)	3	19	34	42	3	0	97	78	45	1.082
Dakota Jewel	297	237	132	174	100 (8)	5	26	36	33	0	0	95	69	34	1.075
Katahdin	304	188	105	160	99 (8)	4	15	31	43	7	0	96	81	50	1.074
Kennebec	295	153	85	126	96 (8)	4	16	32	43	5	0	96	80	48	1.078
Snowden	247	190	106	142	88 (14)	4	25	40	30	1	0	96	71	31	1.094
Superior	240	191	107	154	96 (10)	2	19	47	31	1	0	98	79	32	1.078
Yukon Gold	271	187	104	167	94 (8)	2	10	26	48	14	0	98	88	62	1.085
AF2291-10	214	161	90	118	89 (8)	5	26	42	27	0	0	95	69	27	1.088
AF2376-5	248	190	106	122	99 (8)	8	33	37	22	0	0	92	60	22	1.089
AF2574-1	287	226	126	194	90 (8)	2	14	30	47	6	0	98	84	54	1.084
B1992-106	313	272	152	198	98 (8)	5	27	40	27	1	0	95	68	28	1.092
B2460-23	248	147	82	114	90 (10)	6	20	30	40	5	0	94	74	44	1.092
B2485-2	242	175	98	106	94 (10)	10	37	36	17	0	0	90	53	18	1.086
BNC41-13	208	169	94	67	97 (10)	17	51	29	4	0	0	83	33	4	1.091
BNC48-1	192	139	78	45	97 (10)	19	55	21	5	0	0	81	26	5	1.094
FL1879	264	204	114	165	89 (8)	6	18	39	34	3	0	94	76	36	1.080
NY138	246	199	111	164	93 (8)	3	17	32	44	3	0	97	80	47	1.086
NY139	260	222	124	169	93 (10)	4	23	48	25	0	0	96	73	25	1.090
Waller Duncan															
LSD (k=100)	69	57		46								3	8	11	0.006

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 12. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 19 varieties and clones grown at Exeter, Maine - 2008. (NE1031 Regional Potato Variety Trial)

Variety	Plant Data ¹			Tuber Data ¹					Tuber Defects (%)					Hollow Heart Rating ²	Chip Color ³	
	Size	Maturity	@VK	Skinnering & Shatter Index ⁴	%Crck ⁴	Skin Texture	Shape	Appearance	Sun- Total burn	Mis- shapen	Growth cracks	Scab	Rot			
Central ME Regional Test- 103 days																
Atlantic (std)	7#	5	4.8	1.52	43 S	5	4 de	4 cs, le	29.5	12.6	3.1	2.1	8.9(3)	2.9	2/30	64
Beacon Chipper	6	6	5.8	1.79	21 MS	6	3	5 le	9.5	4.4	4.9	0.1	0.1(0)	0.0	5	67
Dakota Jewel	7#	2	2.5	1.82	68 S	7	4	6 mbr	15.8	2.8	7.3	4.3	1.2(1)	0.2	1/30	52
Katahdin	7	6	6.0	2.22	6 R	8	4 fl	6	35.4	23.8	8.3	0.0	2.9(1)	0.4	1	60
Kennebec	7	6	5.3	2.54	44 S	7	6	4	46.7	25.4	12.0	4.5	2.3(3)	2.4	1	62
Snowden	7	7	5.3	1.44	28 MS	5 rs	3 de	4	19.4	8.2	1.9	0.2	8.3(2)	0.8	0	64
Superior	6#	3	3.3	1.21	69 S	6	5	5 le	18.6	7.0	10.4	1.0	0.1(0)	0.1	1	60
Yukon Gold	7	4	4.0	1.77	27 MS	6 yl	5	5 le	29.4	10.1	12.5	2.5	3.6(2)	0.8	5/33	54
AF2291-10	6*	7	6.5	1.88	25 MS	7 rs	4	5	21.2	4.4	15.2	0.4	0.7(1)	0.4	0	64
AF2376-5	6*	7	6.5	2.88	0 R	7 yl	4	6	16.6	5.3	10.2	0.4	0.8(1)	0.0	0	61
AF2574-1	8	6	6.3	1.32	36 S	5 rs	4	5 cs, le	19.2	5.8	6.0	1.5	5.9(2)	0.0	0/35	54
B1992-106	7#	6	5.3	1.73	29 MS	5 rs	4	5	8.6	3.9	3.0	1.3	0.2(0)	0.1	8	65
B2460-23	7	7	6.5	1.60	27 MS	5 rs	3	5 cl	37.9	22.3	2.5	2.7	10.1(3)	0.3	3/20	63
B2485-2	6	5	4.3	1.68	32 S	6	3	6 le	22.0	6.7	3.4	6.5	5.3(1)	0.0	0/30	68
BNC41-13	6#	3	3.2	1.00	11 MR	5	2	4 le	2.5	0.1	0.8	0.1	0.9(1)	0.6	0/30	64
BNC48-1	8#	5	5.5	1.05	36 S	5	2	5 le	10.7	3.3	3.8	0.4	3.1(1)	0.0	4/35	64
FL1879	5	6	6.3	1.36	46 S	6 yl, rs	3	6	18.3	10.4	2.7	2.2	3.1(1)	0.1	2/20	62
NY138	4*	5	4.5	2.10	14 MR	7 rs	4	5 le	15.9	11.3	3.8	0.3	0.6(1)	0.0	0	68
NY139	7#	6	5.8	2.44	6 R	7	4	6 le	11.7	6.2	4.5	0.2	0.8(1)	0.0	0	67

¹See standard NE1031 rating system for key to codes; mbr=medium bright red skin; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes; fl=flat tubers; rs=russet scab; nu=nonuniform skin or shape; cs=pitted scab present; le=enlarged lenticels; de=deep eyes or deeply indented apical or stem end; cl=tubers cling to stolons . Scab severity rating (1 rep only): 0=none; 3=moderate; 5=severe. # indicates very good early vigor while ** and *=severe or moderate early vigor problems;

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined unless otherwise noted.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 8, 2008. Waller Duncan LSD (K=100) for chip color = 4.

⁴Skinnering and shatter bruise were measured on September 29, 2008 (5 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

Maine Table 13. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 26 round-white and red-skinned varieties and NE1031 regional trial clones grown at St. Agatha, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 7-10	Size Distribution by Class ³ (%)								Spec. Grav.		
	cwt/A	>1 ⁷ / ₈ "	% of >2 ¹ / ₄ " std.		1	2	3	4	5	6	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"		2 ¹ / ₂ to 4"	
St. Agatha NE1031 Round-whites and Reds - 99 days															
<i>Round-whites:</i>															
Atlantic (std)	410	329	100	297	100 (10)	2	10	29	51	8	0	98	88	59	1.083
Beacon Chipper	430	338	103	279	98 (8)	3	17	36	42	2	0	97	80	44	1.084
Dakota Diamond	411	205	62	173	94 (8)	3	15	31	44	7	0	97	82	51	1.081
Katahdin	374	298	91	269	95 (8)	3	9	25	57	5	0	97	87	62	1.079
Kennebec	397	95	29	87	88 (8)	2	9	20	47	19	2	95	87	66	1.082
Snowden	378	339	103	295	100 (14)	2	13	36	44	5	0	98	85	49	1.093
Superior	379	310	94	288	98 (10)	1	7	29	57	6	0	99	92	63	1.076
Yukon Gold	411	309	94	288	91 (8)	1	7	21	59	11	0	99	92	70	1.081
AF2291-10	353	288	88	231	92 (8)	4	19	40	33	3	0	96	76	36	1.092
AF2376-5	399	319	97	255	97 (8)	4	20	42	33	2	0	96	77	35	1.092
AF2574-1	411	343	104	302	88 (8)	3	12	24	49	12	0	97	86	62	1.081
B1992-106	404	355	108	284	91 (8)	4	19	32	42	3	0	96	77	45	1.089
B2440-124	301	187	57	119	100 (10)	8	33	37	20	0	1	91	58	21	1.081
B2452-3	401	317	96	288	99 (10)	3	9	20	47	20	1	96	87	67	1.085
B2460-23	345	286	87	256	95 (10)	4	10	18	52	15	1	95	85	67	1.080
NY138	377	311	94	274	89 (8)	3	12	28	47	10	0	97	86	58	1.081
NY139	382	297	90	263	99 (10)	2	12	32	49	4	0	98	86	53	1.087
NY140	456	368	112	324	95 (8)	3	12	27	48	10	0	97	85	58	1.075
NY141	400	306	93	289	81 (8)	2	6	14	48	28	3	95	90	76	1.080
NYB38-37	393	291	88	262	99 (10)	3	10	25	51	10	1	96	86	61	1.070
<i>Reds:</i>															
Chieftain (std)	426	375	100	317	98 (10)	3	15	31	45	5	0	97	82	50	1.067
Dakota Jewel	324	238	64	176	97 (8)	5	26	43	26	0	0	95	69	27	1.075
Norland, DR	327	243	65	206	97 (10)	3	15	34	44	4	0	97	82	48	1.073
AF2393-7	320	236	62	111	100 (10)	17	45	26	11	0	0	83	38	12	1.075
B2152-17	356	306	82	217	100 (10)	7	27	40	24	2	0	93	66	26	1.072
B2327-2	277	210	56	138	100 (10)	10	31	38	20	0	0	90	59	21	1.082
Waller Duncan															
LSD (k=100)	48	60		57								3	6	10	0.008

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 14. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 26 round-whites and red-skinned varieties and NE1031 regional trial clones grown at St. Agatha, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹					Tuber Defects (%)					Hollow Heart Rating ²	Chip Color ³	
	Size	Maturity		Skinning & Shatter Index ⁴	Skin Texture	Shape	Appearance	Sun- Total burn	Mis- shapen	Growth cracks	Scab	Rot				
	8-13	8-27	@VK													
<i>St. Agatha NE1031 Round-whites and Reds - 99 days</i>																
<i>Round-whites:</i>																
Atlantic (std)	7	7	6.8	1.74	61 S	5 rs	3	5 le	18.7	4.1	3.1	1.7	8.9(1)	0.8	3	59
Beacon Chipper	8	7	6.8	1.69	62 S	5 rs	3 ptd	4	18.8	1.4	11.5	0.4	5.5(1)	0.0	2	63
Dakota Diamond	8	7	6.3	1.74	71 S	8	3	6 cs	47.5	11.6	3.5	5.1	26.8(4)	0.5	3	56
Katahdin	7	7	6.8	2.00	59 S	7	4 fl	7	17.6	8.9	6.1	0.8	1.6(1)	0.3	0	
Kennebec	8	7	7.3	3.29	81 S	7 rs	5 nu	4	76.1	7.5	13.2	6.1	48.4(3)	0.9	0	54
Snowden	7	6	6.3	1.17	76 S	5	2 de	5	8.4	3.9	3.5	0.2	0.1(0)	0.6	0	62
Superior	6	5	5.5	1.31	90 S	6 rs	3	6 le	17.1	2.2	13.5	0.0	1.1(1)	0.2	3	
Yukon Gold	8	7	6.3	1.61	91 S	7 yl, rs	5	6	23.7	6.2	7.9	0.2	9.3(2)	0.0	1	
AF2291-10	7	8	6.5	1.86	83 S	6 rs	3	6	14.7	1.5	13.0	0.0	0.0(0)	0.2	0	62
AF2376-5	8	7	7.0	1.79	17 MR	7 yl	3	7	16.8	0.8	9.3	0.0	6.4(1)	0.3	1	
AF2574-1	8	7	6.0	2.35	75 S	5 rs	3	6	14.1	3.4	8.5	1.9	0.0(0)	0.3	0	
B1992-106	7	6	6.3	1.86	69 S	5 rs, cr	4	4	8.7	1.6	5.5	1.2	0.1(0)	0.3	1	54
B2440-124	6	5	6.0	1.16	97 S	7 yl	3	6 cs	32.2	1.1	1.2	0.0	29.4(4)	0.5	0	38
B2452-3	7	7	7.0	2.10	90 S	6 rs	3	6	17.4	10.7	3.8	1.7	0.0(0)	1.3	0	52
B2460-23	8	8	7.3	2.05	45 S	5 nu, rs	3	5	12.6	4.8	3.5	3.1	0.7(2)	0.5	4	52
NY138	7	7	6.8	1.22	44 S	7 rs	3	5	15.2	2.4	5.8	6.2	0.4(1)	0.4	0	68
NY139	8	6	5.8	2.32	26 MS	6 rs	3	6 cs	21.3	3.8	4.4	0.8	11.6(2)	0.8	0	65
NY140	7	7	7.0	2.40	48 S	7 rs	4	6	16.6	5.4	9.2	0.5	0.9(1)	0.5	0	64
NY141	7	7	6.5	2.23	54 S	7 rs	4 nu	5 le	19.6	3.3	13.6	2.5	0.2(0)	0.0	0	56
NYB38-37	7	6	5.8	1.96	37 MS	7	2	5 cs	23.4	5.3	3.7	0.6	13.1(4)	0.7	0	
<i>Reds:</i>																
Chieftain (std)	7	5	6.0	1.52	58 S	7	4	5 pmr	8.9	0.7	2.8	3.6	1.5(1)	0.4	0	
Dakota Jewel	6	5	6.0	1.41	73 S	7	3	7 bmr	23.7	0.1	5.5	0.8	16.3(1)	1.1	2	
Norland, DR	4	4	5.0	1.27	87 S	7	4 pch	6 mr	25.3	0.6	2.4	1.6	20.4(2)	0.2	1	
AF2393-7	5	4	4.5	1.54	81 S	7	4	7 mr	12.9	0.1	3.1	0.8	8.8(1)	0.1	0	
B2152-17	6	4	5.5	2.24	88 S	7	3	7 bmr	7.4	0.9	4.6	0.4	0.0(0)	1.5	0	
B2327-2	5	5	6.0	2.56	56 S	7	2	7 mr	15.6	0.3	3.6	0.8	10.0(1)	0.8	0	

¹See standard NE1031 rating system for key to codes; ppk=pale pink skin; pk=pink to pale red skin; pr=pale red; lmr=light medium red skin; mr=medium-red skin; br=bright red skin; dr=dark red skin; ptd=pointed tuber shape; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes or dented apical and/or stem end; fl=flat tubers; rs=russet scab; nu=nonuniform skin or shape; cr=skin cracking or checking; cs=pretty except for scab problem; le=enlarged lenticels; mpur=medium purple skin. # indicates very good early vigor while ** and *=severe or moderate early vigor problems;

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined unless otherwise noted.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 10, 2008. Waller Duncan LSD (K=100) for chip color = 4.

⁴Skinning and shatter bruise were measured on October 14, 2006 (6 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

Maine Table 15. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 8 russet/processing (long-tuber-type) varieties and NE1031 regional trial clones grown at St. Agatha, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹			% Stand (spacing) ² 7-10	Size Distribution by Class ³ (%)								Spec. Grav.	
		>1 ⁷ / ₈ "	% of	>		Size Class					>	>	by length		
		std.	4 oz.			1	2	3	4	5	8 oz	12 oz.	>3"	>3 ¹ / ₂ "	
<u>St. Agatha NE1031 Russet/processing Test- 99 days</u>															
R. Burbank (std)	340	308	100	171	100 (16)	45	47	7	1	0	8	1	63	43	1.088
Blazer Russet	325	279	91	188	94 (12)	32	52	14	2	0	15	2	69	43	1.085
R. Norkotah	312	285	92	219	100 (12)	24	44	26	5	1	33	7	78	57	1.082
Rio Grande Russet	351	320	104	189	100 (12)	41	52	7	0	0	7	0	61	36	1.084
Shepody	330	109	35	90	95 (10)	20	50	24	4	3	30	6	83	66	1.088
AF2199-6	292	261	85	211	98 (16)	19	47	30	3	0	34	3	79	59	1.089
AF2413-4	354	332	108	250	86 (10)	25	48	25	1	1	27	2	67	43	1.080
AF2431-2	277	262	85	91	100 (12)	65	34	0	0	0	0	0	35	11	1.098
Waller Duncan LSD (k=100)	70	63		56							7	4	5	7	0.004

¹U.S.#1 yield = yield >1⁷/₈ " excluding tubers with sunburn, severe misshapes, growth cracks, scab, and rot.

²Inches between seedpieces noted within parentheses.

³Size classes: 1= <4 oz.; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 16. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 8 russet/processing (long-tuber-type) varieties and NE1031 regional trial clones grown at St. Agatha, Maine - 2008. (NE1031 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹			Tuber Defects (%)					Hollow Heart Rating ²	Chip Color ³			
	Size	Maturity		Skinning & Shatter Index ⁴	%Crcks ⁴	Skin Texture	Shape	Appearance	Sun- Total burn	Mis- shapen	Growth cracks			Scab	Rot	
8-13	8-27	@VK														
<u>St. Agatha NE1031 Russet/processing Test - 99 days</u>																
R. Burbank (std)	7	7	7.0	0.64	18 MR	3	7	4	9.0	1.4	5.0	1.6	0.0(0)	1.0	0	43
Blazer Russet	7	6	6.0	1.67	33 MS	3 rs	6 ptd	6	14.1	0.5	8.7	2.4	0.3(0)	2.3	1	50
R. Norkotah	5	5	4.5	1.04	38 S	3	6	7	8.6	1.9	4.4	1.2	0.0(0)	1.0	4	43
Rio Grande Russet	8	8	7.8	1.68	32 MS	3	6	6 le	8.8	0.5	0.9	7.4	0.0(0)	0.0	0	42
Shepody	7	6	5.3	0.96	11 MR	7	7	4	70.0	11.0	5.8	0.0	49.6(4)	3.7	0	47
AF2199-6	7	7	6.8	2.05	68 S	3	7	6 le	10.8	1.5	5.0	2.6	0.0(0)	1.7	0	52
AF2413-4	6	5	5.0	0.11	21 MS	5	5 pr	5	6.1	1.5	3.5	0.0	0.2(0)	0.8	1	49
AF2431-2	7	5	5.0	0.43	29 MS	4	5 ptd	6	5.6	1.0	1.9	0.4	0.0(0)	2.4	0	40

¹See standard NE1031 rating system for key to codes; nr=nonuniform russeting; ptd=pointed tuber shape; pr=pear-shaped tubers; le=enlarged lenticels; stl=stolons cling to tops; wh=white-skinned; cr=skin cracks; pe=pink at eye; and rs=russet scab.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined unless otherwise noted.

³Chip color from 50F -- Agron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 10, 2008. Waller Duncan LSD (K=100) for chip color = 6.

⁴Skinning and shatter bruise were measured on October 9, 2008 (1 day after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

Maine Table 17. French fry color and texture of selected potato clones and varieties under simulated processing conditions¹. All varieties were grown at Presque Isle, Maine during 2007.

Variety	Color Grade ²			Grayness ³ Index	Mealiness ⁴ Index	Comments ⁵	Overall Rating ⁶
	Rating	Index	%Dark %Unif				
Russet Burbank (std)	000-0	0.12	0 76	3.99	3.98	Be	o
Blazer Russet	000-00	0.11	0 95	3.91	3.69	Sh	-
Rio Grande Russet	000-0	0.21	0 68	4.00	3.60	Be	-
Russet Norkotah	000-00	0.10	0 50	3.90	3.11	Texture, Sh, Be	-
Shepody	000-00	0.12	0 56	3.98	4.16	Be	-
AF2199-6	000	0.10	0 90	3.96	3.23	Texture, Be	-
W2253-3Rus	000-00	0.11	0 65	3.95	2.90	Texture, Be	-
W2683-2Rus	000-00	0.11	0 91	3.91	2.50	Texture	-
W3666-2Rus	000-00	0.12	0 86	3.91	3.45	Texture, Be	-
Waller Duncan LSD (k=100)		0.07	ns 15	ns	0.43		

¹Two center raw tuber slices were cut from each of ten tubers. The slices were rinsed in cool water, blanched for 8 minutes at 170°F, par-fried at 375°F for 80 seconds, and quick frozen at -30°C in plastic bags. Four such replications were processed in January 2008 and held at -15°F until evaluation. Prior to evaluation, samples were finish-fried at 375°F for 1-3/4 minutes on March 25, 2008, blotted dry with a paper towel, and cooled for 6 minutes. Processing was done at the Department of Food Science and Human Nutrition, University of Maine, Orono, ME (We appreciate the help of Dr. Al Bushway and his staff). All tuber samples were stored at 50°F, 85% R.H. from harvest until processing. Percent dark = the percentage of fries that were rated in the 2 category or darker after processing (out of 80 slices representing 40 tubers).

²Color Grades are from USDA color standards chart #64-1, third edition. Lower indices indicate lighter color.

³Grayness indices represent weighted means derived from the following evaluation scale: 4 = no graying; 3 = slight graying; 2 = moderate graying; 1 = intense graying.

⁴Mealiness indices represent weighted means using the following scale: 6=very dry and mealy; 5 = dry, mealy; 4 = mod. mealy, sl. moist; 3 = sl. mealy, mod. moist; 2 = soggy, not mealy; 1 = very soggy, not mealy.

⁵Comments: Irr = french fries were irregular in color; dark blotches detracted from appearance of product; Be = Dark blotches on ends of many fries; Bc = Dark blotches in centers of many fries; Bl = general blotchy appearance of fries; Sh = Short fries from small and/or round tubers; Gr=gray.

⁶Overall rating: quality rated better (+), not different (o), or poorer (-) than Russet Burbank.

Maine Table 18. Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, bruise test scores, days to sprout formation, and storage weight losses at 38°F and 50°F for 35 potato varieties and clones grown at Presque Isle, Maine, during 2007 and stored during the 2007-2008 storage season.

Variety	Chip Color from Storage				Bruise Barrel ³		Bruise Tests ⁴			Days to Indic.		Storage Wt.	
	50°F ¹	45°F ¹	38°F ¹	Recond. ²	Skinning & Shatter Index	% Cracks	Shat-ter	Blackspot test	poten.	1/8"	1/2"	Loss % ⁶ 38°F	50°F
<u>Red- and Purple-skinned Trial:</u>													
Chieftain (std)	43	--	--	--	1.82	29MS	1.52	2.62	2.65	161	203	3.8	16.4
Dakota Jewell	52	--	--	--	1.93	36S	2.65	2.28	2.95	147	168	5.3	14.6
Norland, Dk. Red	59	--	--	--	1.61	54S	1.92	2.80	3.98	119	154	6.0	38.9 s
AF2393-7	62	--	--	--	2.27	24MS	1.87	3.40	4.52	112	140	6.2	30.2 s
B1816-5	65	--	--	--	2.11	67S	1.55	3.36	4.50	161	196	4.8	13.7
B2152-17	63	--	--	--	1.80	54S	3.18	3.22	4.45	119	154	5.0	24.4
B2327-2	63	--	--	--	2.27	38S	2.62	3.22	3.86	126	154	5.3	27.9 s
Waller Duncan LSD	3						0.91	0.40	0.47				
<u>Medium Chipping Trial:</u>													
Atlantic (std)	68	66	27	61	2.09	15MS	2.25	2.00	3.10	110	152	5.5	16.6
Beacon Chipper	71	69	33	58	1.71	9R	1.64	2.57	4.20	131	152	5.1	16.4
Dakota Diamond	69	64	21	43	2.10	8MR	1.23	1.75	3.03	159	194	4.3	10.7
Kennebec	66	60	20	46	1.91	12MS	1.75	2.15	4.23	152	187	6.7	13.2
Snowden	67	65	33	66	1.61	4R	1.68	2.75	4.05	124	145	4.4	19.3
Superior	66	60	20	56	1.03	3R	1.55	3.00	4.41	124	152	3.9	15.6
AF2291-10	68	66	27	56	2.10	0R	1.77	2.88	3.42	124	173	4.0	14.8
B1992-106	69	67	27	62	2.33	11MS	1.40	2.41	4.49	103	124	4.9	25.6 s
NY139	68	69	32	65	3.26	0R	1.20	1.74	3.12	152	187	5.9	19.2
W2564-2	66	62	24	47	2.38	8MR	1.20	2.10	4.10	189	222	5.0	7.6
W2978-3	72	71	44	65	1.69	26S	2.02	2.41	3.88	152	194	5.5	12.3
Waller Duncan LSD	4	3	4	7			0.39	0.38	0.69				

Maine Table 18 cont.

Variety	Chip Color from Storage				Bruise Barrel ³		Bruise Tests ⁴			Days to Indic.		Storage Wt.	
	50°F ¹	45°F ¹	38°F ¹	Recond. ²	Skinning & Shatter Index	% Cracks	Shat-ter	Blackspot test	poten.	<u>Sprout Length</u> ⁵ 1/8"	1/2"	<u>Loss %</u> ⁶ 38°F	50°F
<u>Late Trial:</u>													
Katahdin (std)	61	51	16	47	1.44	9MR	1.52	3.25	4.80	113	141	6.0	18.0
Yukon Gold	61	--	--	--	1.18	7MR	1.98	2.98	4.50	148	184	3.7	8.5
AF2376-5	64	50	17	39	1.00	0R	1.10	3.32	2.98	**	**	5.7	12.0
AF2916-1	67	--	--	--	1.09	12MR	1.92	2.38	3.18	106	141	6.7	22.9
NY137	67	--	--	--	1.03	6MR	2.02	2.40	3.00	134	177	4.5	14.0
NY140	68	60	35	52	1.00	5MR	1.50	1.95	2.38	148	177	8.6	17.2
NY141	69	61	29	43	1.09	27S	1.58	1.42	1.92	106	148	5.5	15.7
NYB38-37	69	61	32	52	1.00	15MS	1.10	2.15	3.15	99	120	5.7	27.3
Waller Duncan LSD	5	10	6	12			0.24	0.38	0.55				
<u>Russet/Processing Trial:</u>													
Russet Burbank (std)	48	47	20	38	2.64	6R	1.35	2.82	3.32	170	191	3.7	9.0
Blazer Russet	59	61	24	45	1.22	0R	1.65	1.98	3.52	113	148	5.6	19.6
Rio Grande Russet	47	43	23	39	1.71	4R	1.32	2.57	3.65	120	177	4.9	17.8
R. Norkotah	54	52	21	41	1.00	0R	1.18	2.42	3.50	141	177	3.8	13.9
Shepody	58	47	17	47	1.12	0R	1.32	2.55	3.50	113	148	3.3	12.8
AF2199-6	61	59	20	34	1.48	12S	2.72	2.82	3.28	141	205	4.7	9.1
W2253-3Rus	61	55	23	38	2.00	3R	1.25	1.32	2.52	120	177	7.5	18.3
W2683-2Rus	60	58	31	53	2.03	3R	1.85	2.80	4.18	134	156	5.7	18.8
W3666-2Rus	62	58	23	57	1.81	15S	2.18	2.80	4.30	120	148	4.9	19.3
Waller Duncan LSD	3	4	4	7			0.36	0.44	0.71				

Maine Table 18 cont.

¹Stored at 38°F, 45°F, or 50°F, 85% R.H. from harvest until February 7 to 12, 2008. Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.

²Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on February 4, 2008. See Agtron description under footnote #1.

³Skinning and shatter bruise were measured using a bruise barrel on September 25 (reds), September 25 (mediums), and October 2 (lates, russets), 2007. Approximately 10 lbs of tubers that exceeded 1⁷/₈" diameter were tumbled in a drum with three stones for 1 minute at 15 rpm. Tubers were then rated for combined skinning and shatter bruise. Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (VS= very susceptible; S=susceptible, MS=moderately susceptible, MR=moderately resistant; R=resistant).

⁴Shatter/skinning and blackspot tests were conducted using the weight-drop method (12" for shatter and 6" for blackspot). The index presented indicates the severity of discoloration where: 1=no tubers show discoloration and 4=all tubers have severe discoloration. The respective tests were conducted on January 28 and January 30-31 (reds, mediums) or February 14 (lates, russets), 2008. Poten.=abrasive peel test for biochemical aspects of blackspot bruise potential (see Pavek et al, APJ 62:511-517). The test was conducted on January 30 to February 1, 2008. The index presented indicates the severity of discoloration where: 0=no tubers show discoloration and 5=all tubers have severe discoloration.

⁵Tubers were stored at 45°F, 85% R.H. (**no sprouting observed)

⁶Percentage sprout and weight loss following storage from harvest until March 27, 2008 at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or samples with more than two spoiled tubers, respectively.

Maine Table 19. March chip color scores for NE1014 clones grown in central Maine (Exeter) during 2007 and chipped during the 2007-2008 storage season.

Variety or Breeding Line	<u>Agtron M35 Score by Chipping Date, and Storage Temperature¹</u>					
	March 18 45F	March 26 45F recond.	March 18 50F	May 7 45F	May 8 45F recond.	May 7 50F
Atlantic	65.9	65.2	67.3	62.2	63.4	64.6
Beacon Chipper	65.8	66.9	65.5	62.6	63.1	63.2
Dakota Diamond	62.3	64.3	67.2	62.5	62.1	62.6
Katahdin	47.3	54.2	64.2	48.8	49.4	60.0
Kennebec	61.0	64.7	65.4	62.4	62.6	61.3
Snowden	62.0	61.4	62.8	60.7	60.2	57.0
Superior	49.0	55.1	59.9	47.2	47.1	53.0
Yukon Gold	46.1	52.9	62.4	43.7	49.1	59.4
AF2291-10	63.8	62.1	63.7	60.4	61.8	60.8
AF2376-5	57.7	59.0	63.9	52.5	54.0	60.2
AF2916-1	63.5	63.4	65.4	61.9	60.9	56.8
B1992-106	63.7	64.8	63.8	60.9	61.5	56.9
FL1879	65.2	65.7	67.2	64.7	64.0	61.4
NY139	65.9	64.6	65.1	63.5	62.0	63.2
W2564-2	56.3	59.5	66.2	54.1	60.0	59.4
W2978-3	67.8	68.2	70.5	67.0	65.0	65.4
W-Duncan LSD (k=100)	4.0	3.8	3.5	3.9	3.5	4.6

¹Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors. Reconditioned samples were warmed to room temperature (65 to 70F) and held at room temperature for two weeks.

Maine Table 20. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 13 chipping varieties and advanced breeding clones grown at Exeter, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 6-27	Size Distribution by Class ³ (%)									Spec. Grav.	
		>1 ⁷ / ₈ "	% of std.		>2 ¹ / ₄ "	1	2	3	4	5	6	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"		2 ¹ / ₂ to 4"
<u>Central ME Advanced Test- 103 days</u>															
Atlantic (std)	346	274	100	218	99 (10)	3	21	37	33	5	1	96	75	38	1.103
Snowden	229	157	57	106	94 (14)	5	32	39	25	0	0	95	63	25	1.099
AF2497-2	248	183	67	159	94 (8)	3	13	32	51	2	0	97	85	53	1.081
AF2867-20	186	123	45	48	98 (10)	17	51	29	4	0	0	83	32	4	1.099
AF2873-1	273	208	76	80	99 (8)	14	53	30	3	0	0	86	33	3	1.089
AF2873-2	240	186	68	117	93 (10)	8	34	39	18	0	0	92	57	18	1.095
AF3014-1	201	137	50	109	95 (10)	4	20	42	34	1	0	96	77	34	1.089
AF4047-2	268	218	80	176	95 (10)	4	19	35	39	4	0	96	77	43	1.080
B0766-3	261	230	84	163	100 (8)	6	27	40	26	0	0	94	67	26	1.096
B2467-21	323	252	92	187	98 (10)	6	24	36	33	1	0	94	70	34	1.105
BNC41-9	243	188	69	127	98 (10)	8	29	34	28	0	0	92	63	28	1.095
BNC49-1	305	237	86	190	97 (10)	4	19	38	35	5	0	96	77	39	1.088
BNC49-2	246	193	70	167	94 (10)	3	13	34	44	6	0	97	84	50	1.091
<u>Waller Duncan</u>															
LSD (k=100)	52	58		46								3	7	10	0.004

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 21. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 13 chipping varieties and advanced breeding clones grown at Exeter, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Plant Data ¹			Tuber Data ¹			Tuber Defects (%)					Hollow					
	Size 7-22	Maturity 8-28	@VK	Skinning & Shatter Index ⁴	%Crcks ⁴	Flesh Color ⁵	Skin Tex- ture	Shape	Appear- ance	Sun- Total	Mis- burn	Growth shapen cracks	Scab Rot	Heart Rating ²	Chip Color ³		
<u>Central ME Advanced Test- 103 days</u>																	
Atlantic (std)	7#	5	5.0	1.74	33 MS	OW	5 rs, le	3	5 cs, bs	17.5	7.4	4.5	0.5	4.4(1)	0.7	3	67
Snowden	7	6	5.0	1.62	32 MS	OW	5 le	3 de	5 cs	29.3	5.8	2.2	0.0	21.4(3)	0.0	2	66
AF2497-2	5**	6	6.3	3.19	31 MS	OW	8	4	6 bs	24.3	5.8	17.3	0.5	0.7(1)	0.0	1	67
AF2867-20	7	4	4.0	2.38	27 MS	OW	7	5	5 bs	20.2	4.9	10.3	0.2	4.8(1)	0.0	0/10	70
AF2873-1	6#	3	3.3	1.21	63 S	OW	5 rs	3	5 bs	11.2	2.3	2.3	0.1	5.8(1)	0.8	0	67
AF2873-2	5*	4	4.0	1.73	62 S	OW	6 rs	4	6	15.2	8.4	3.1	0.6	3.0(1)	0.0	0	67
AF3014-1	4	4	4.8	2.15	34 MS	OW	5 rs	3	5 cs	29.2	18.0	2.5	0.4	8.3(1)	0.0	2	68
AF4047-2	5	4	4.3	1.77	48 S	Wh	6 rs, le	3 de	5 bs	14.8	3.2	9.6	0.0	1.9(1)	0.0	5/35	69
B0766-3	6#	5	5.0	1.42	31 MS	OW	6 rs, le	4	4 bs	6.9	3.2	2.7	0.8	0.2(1)	0.0	7/30	70
B2467-21	8#	5	4.0	2.18	35 MS	YF1	6 rs, le	3	6	17.4	7.9	1.7	0.8	6.6(3)	0.3	8/30	66
BNC41-9	6#	5	4.3	1.68	15 MR	Wh	5 rs, le	3	4 cs	15.5	3.5	1.2	1.6	9.1(1)	0.1	1	67
BNC49-1	6	5	5.0	2.14	21 MR	Wh	5 rs	4	5	19.5	5.2	2.9	6.4	3.9(3)	1.0	7/35	67
BNC49-2	4*	6	5.8	2.42	32 MS	OW	5	3	4 bs	18.7	6.5	4.0	1.6	3.8(1)	2.8	7	69

¹See standard NE1031 rating system for key to codes; # indicates very good early vigor while ** and *=severe or moderate early vigor problems; cl=stolons cling; bs=black scurf; pr=some pear-shaped tubers; pue=trace purple around eyes; yl=yellow skin color; de=deep eyes or dented apical or stem end; fl=flat tubers; rs=russet scab; nu=nonuniform skin or shape; cs=pitted scab problem; le=enlarged lenticels. Scab severity rating (1 rep only): 0=none; 3=moderate; 5=severe.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined (unless noted otherwise). # indicates very good early vigor while ** and *=severe or moderate early vigor problems;

³Chip color from 45 and 50F -- Agron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 1, 2008. Waller Duncan LSD (K=100) for chip color = 2.

⁴Skinning and shatter bruise were measured on September 29, 2008 (5 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

⁵Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color.

Maine Table 22. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 16 round-white varieties and advanced breeding clones grown at St. Agatha, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 7-10	Size Distribution by Class ³ (%)						Spec. Grav.				
		>1 $\frac{7}{8}$ "	% of std.		>2 $\frac{1}{4}$ "	1	2	3	4	5		6	1 $\frac{7}{8}$ to 4"	2 $\frac{1}{4}$ to 4"	2 $\frac{1}{2}$ to 4"
St. Agatha Advanced Round-white Test - 99 days															
Atlantic (std)	436	333	100	302	100 (10)	2	9	21	52	14	1	97	87	66	1.096
Katahdin	383	159	48	145	90 (8)	3	8	20	59	9	1	96	88	69	1.081
Superior	408	309	93	284	100 (10)	1	8	30	54	7	0	99	91	61	1.081
AF0339-39	364	244	73	178	100 (10)	7	25	35	32	1	0	93	68	33	1.084
AF2852-1	277	184	55	133	94 (10)	9	25	33	26	6	0	91	65	32	1.068
AF2865-4	472	334	100	299	93 (8)	3	10	20	54	12	0	96	86	66	1.073
AF2866-3	455	322	97	287	91 (8)	4	11	22	51	12	0	96	85	63	1.077
AF2866-30	449	266	80	182	100 (8)	8	29	36	26	2	0	92	63	28	1.075
AF2867-10	403	216	65	195	93 (8)	2	10	19	45	23	1	97	87	68	1.073
AF4014-1	417	285	86	240	99 (10)	3	15	29	45	7	1	96	81	52	1.090
AF4014-9	384	298	90	222	100 (10)	8	24	35	31	2	0	92	69	33	1.081
B2445-6	357	212	64	168	100 (10)	5	19	36	35	4	0	95	75	39	1.088
B2500-1	337	227	68	125	99 (10)	14	39	34	13	0	0	86	47	13	1.088
B2500-3	289	233	70	148	96 (10)	11	33	34	22	0	0	89	56	22	1.092
B2501-14	386	315	95	241	97 (10)	6	23	34	35	2	0	94	71	37	1.084
BP153-1	381	273	82	263	99 (10)	1	4	8	40	43	5	94	91	83	1.075
W-D LSD (k=100)	60	87		75								2	6	11	0.006

¹U.S.#1 yield = yield 1 $\frac{7}{8}$ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1 $\frac{1}{2}$ to 1 $\frac{7}{8}$ "; 2=1 $\frac{7}{8}$ to 2 $\frac{1}{4}$ "; 3=2 $\frac{1}{4}$ to 2 $\frac{1}{2}$ "; 4=2 $\frac{1}{2}$ to 3 $\frac{1}{4}$ "; 5=3 $\frac{1}{4}$ to 4"; 6=over 4".

Maine Table 23. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 16 round-white varieties and advanced breeding clones grown at St. Agatha, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Plant Data ¹				Tuber Data ¹				Tuber Defects (%)					Hollow			
	Size	Maturity		Skinning & Shatter Index ⁴ %Crcks ⁴	Flesh Color ⁵	Skin Tex- ture	Shape	Appear- ance	Sun- Total burn	Mis- shapen	Growth cracks	Scab Rot	Heart Rating ²	Chip Color ³			
	8-13	8-27	@VK														
St. Agatha Advanced Round-white Test - 99 days																	
Atlantic (std)	7	7	6.8	1.55	45 S	OW	5 rs, sc	3	5 bs	21.3	6.3	6.3	2.7	4.6(1)	1.3	0	52
Katahdin	7	7	6.5	3.50	58 S	OW	7 rs	3 fl	6 bs	56.8	10.6	4.0	2.4	38.5(2)	1.3	1	41
Superior	7	5	4.3	1.72	88 S	OW	6 rs	4 fl	5 bs	23.2	4.7	11.3	0.6	5.8(1)	0.7	4	48
AF0339-39	6	4	4.5	2.06	26 MS	OW	6 rs, sc	2	5 le	27.6	8.8	1.6	8.6	8.2(3)	0.3	0	55
AF2852-1	6	7	5.8	1.31	52 S	YF1	5 rs	3	4 bs	27.2	2.9	3.6	16.3	3.9(1)	0.5	0	32
AF2865-4	8	6	6.5	2.64	60 S	OW	6 rs	3 fl	5 bs	26.5	8.7	3.4	3.9	9.0(4)	1.4	0	31
AF2866-3	8	7	6.5	1.79	46 S	Wh	6 rs	3	6 bs	27.4	2.5	4.2	4.5	13.3(1)	2.8	1	40
AF2866-30	6	6	6.3	0.97	72 S	Wh	6 rs, sc	6	5 bs	35.3	4.3	18.5	8.0	3.8(1)	0.7	0	26
AF2867-10	8	8	8.0	3.10	67 S	Wh	6 rs	4 de	5 bs	44.7	3.1	13.3	18.0	9.7(1)	0.6	0	55
AF4014-1	8	7	7.0	2.10	48 S	OW	6 rs	3	5 cs	29.1	4.3	4.4	1.8	17.8(3)	0.8	1	38
AF4014-9	6	5	5.8	0.89	43 S	OW	6 rs	3	6 cs, bs	16.2	5.3	3.2	0.6	6.3(3)	0.8	0	46
B2445-6	6	6	5.8	1.02	46 S	OW	5 sc	4 pureye	5 bs	35.7	6.5	2.8	4.3	21.6(4)	0.5	1	50
B2500-1	6	7	6.5	1.63	20 MR	OW	6	4	6 cs, bs	21.8	8.0	0.8	1.8	11.0(2)	0.2	0	51
B2500-3	7	7	6.3	2.78	25 MS	OW	5 rs	3	5 bs, le	9.3	2.9	1.1	1.3	3.3(1)	0.7	0	58
B2501-14	8	6	6.3	0.88	78 S	OW	6	3	6	14.0	4.0	3.1	3.4	3.1(1)	0.3	0	41
BP153-1	8	7	6.8	1.94	61 S	OW	5	3 bs	6 pkptc	23.0	6.6	1.1	7.1	7.7(1)	0.5	1	50

¹See standard NE1031 rating system for key to codes: pr=some pear-shaped tubers; pkptc=pink skin patches on apical end; pureye=purple at eye; yl=yellow skin color; purpch=purple skin patch around apical end; de=deep eyes or dented apical and/or stem end; nu=nonuniform skin or shape; sc=skin cracking and/or checking; fl=flat tubers; rs=russet scab; st=stolons adhere to tubers; cs=pretty except for scab problem; le=enlarged lenticels; and bs=black scurf..

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 45 and 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping date was December 1, 2008. Waller Duncan LSD (K=100) for chip color = 4.

⁴Skinning and shatter bruise were measured on October 9, 2008 (1 day after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

Maine Table 24. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 32 russet/processing (long-tuber-type) varieties and advanced breeding clones grown at St. Agatha, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹			% Stand (spacing) ² 7-10	Size Distribution by Class ³ (%)								Spec. Grav.	
		>1 ⁷ / ₈ "	% of std.	> 4 oz.		Size Class					by length				
						1	2	3	4	5	> 8 oz	> 12 oz.	>3" >3 ¹ / ₂ "		
<u>St. Agatha Advanced Russet/processing Test- 99 days</u>															
R. Burbank (std)	400	358	100	258	100 (16)	28	49	16	4	2	22	6	75	58	1.090
R. Norkotah	300	268	75	206	100 (12)	25	49	23	3	1	27	3	76	53	1.084
Shepody	389	147	41	125	99 (10)	15	36	37	10	2	50	13	87	72	1.087
AF2426-1	364	279	78	198	82 (10)	28	50	16	2	3	22	6	77	54	1.072
AF2596-2	324	231	64	144	97 (10)	38	51	9	0	1	10	1	69	44	1.097
AF2677-10	308	165	46	122	95 (10)	28	52	17	3	1	20	3	55	23	1.086
AF2850-9	395	359	100	207	98 (12)	43	49	8	1	0	9	1	67	42	1.092
AF2850-11	345	289	81	205	96 (12)	29	51	19	1	0	20	1	79	60	1.092
AF2850-12	325	261	73	213	93 (12)	18	46	26	8	2	36	10	88	76	1.083
AF2936-2	321	281	79	178	99 (12)	37	51	12	0	1	12	1	65	38	1.082
AF2936-3	293	272	76	202	99 (12)	26	60	14	0	0	14	0	48	14	1.080
AF3000-1	300	196	55	147	99 (12)	26	44	24	3	2	30	6	85	68	1.100
AF3001-6	458	415	116	316	95 (10)	24	48	22	6	0	28	6	76	54	1.092
AF3004-9	323	145	40	102	96 (12)	29	57	11	3	0	13	3	66	40	1.088
AF3008-1	360	297	83	205	99 (12)	31	55	13	0	0	13	0	78	58	1.108
AF3008-3	336	265	74	175	100 (12)	34	53	12	0	0	13	0	69	42	1.097
AF3011-4	390	312	87	264	91 (10)	15	42	30	8	5	43	13	90	82	1.084
AF3011-28	369	255	71	194	85 (10)	24	42	26	6	2	34	8	78	62	1.088
AF3011-29	305	260	73	170	94 (10)	35	47	15	3	0	18	3	71	53	1.090
AF3011-30	294	267	75	202	94 (10)	26	59	14	2	0	16	2	84	67	1.087
AF3011-34	381	346	97	251	97 (10)	28	54	14	3	1	18	4	74	50	1.092
AF3012-4	346	277	77	180	100 (16)	35	48	17	1	0	18	1	74	55	1.094
AF3016-2	347	260	73	193	99 (12)	26	54	18	1	0	20	1	76	52	1.093
AF3051-2	365	187	52	133	100 (12)	29	54	16	1	0	17	1	68	43	1.089
AF3076-1	313	263	74	211	97 (10)	20	48	27	4	2	32	5	80	67	1.087
AF3084-7	348	192	54	155	95 (10)	20	49	25	6	1	31	6	85	72	1.084
AF3325-2	306	268	75	207	99 (12)	23	51	24	2	1	26	2	85	74	1.088
AF3326-7	311	292	82	172	98 (12)	41	50	8	0	0	9	0	54	29	1.089
AF3327-27	265	246	69	140	93 (12)	44	45	10	1	0	11	1	64	34	1.089
AF3327-28	382	341	95	232	95 (12)	32	52	14	2	0	16	2	62	38	1.084
AF3329-16	406	259	72	227	98 (12)	13	45	33	8	2	42	9	88	78	1.088
AF3362-1	373	353	99	271	100 (12)	23	53	21	2	0	23	2	83	62	1.093
Waller Duncan															
LSD (k=100)	47	56		56							11	5	9	11	0.006

¹U.S.#1 yield = yield >1⁷/₈ " excluding tubers with sunburn, severe misshapes, growth cracks, scab, and rot.

²Inches between seedpieces noted within parentheses.

³Size classes: 1= <4 oz.; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 25. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 32 russet/processing (long-tuber-type) varieties and advanced breeding clones grown at St. Agatha, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Plant Data ¹				Tuber Data ¹				Tuber Defects (%)					Hollow			
	Size	Maturity		Skinning & Shatter Index ⁴ %Crcks ⁴	Flesh Color ⁵	Skin Tex- ture	Shape	Appear- ance	Sun- Total burn	Mis- shapen	Growth cracks	Scab Rot	Heart Rating ²	Chip Color ³			
	8-13	8-27	@VK														
St. Agatha Advanced Russet/processing Test- 99 days																	
R. Burbank (std)	7	7	7.0	1.86	52 S	Wh	4 nu	7 nu	4 le	10.7	0.1	9.9	0.7	0.0(0)	0.0	0	45
R. Norkotah	5	5	4.8	0.96	13 MR	OW	3	6	7	10.4	3.0	5.5	1.1	0.0(0)	0.9	0	45
Shepody	7	5	5.8	1.84	42 S	OW	7	7 nu	3	61.7	12.3	10.1	0.0	37.7(4)	1.6	2	52
AF2426-1	7	6	5.8	0.65	19 MR	OW	5 rs	7 blk	4	22.6	5.7	15.5	1.4	0.0(0)	0.0	0	57
AF2596-2	7	5	6.3	1.50	67 S	OW	5 rs	7 nu, pr	4 pe	29.1	9.1	19.5	0.4	0.2(1)	0.0	3	54
AF2677-10	6	4	4.5	1.56	19 MR	OW	6 rs	5	3 bs	47.3	12.9	4.5	2.7	26.1(4)	1.0	0	61
AF2850-9	8	7	7.0	1.82	21 MS	OW	5	7 pr	4	8.7	1.5	6.5	0.6	0.0(0)	0.1	0	48
AF2850-11	8	6	7.8	2.67	99 S	OW	5 rs	7	5 le	16.0	3.6	9.1	1.4	1.4(1)	0.5	0	49
AF2850-12	7	6	7.0	1.65	94 S	Wh	6	7 pr	4 pe	19.7	10.6	8.1	0.3	0.0(0)	0.7	0	46
AF2936-2	5	5	5.0	0.41	52 S	OW	2 bs	6	7 le	12.5	1.8	10.2	0.5	0.0(0)	0.0	1	48
AF2936-3	6	7	6.0	0.18	86 S	OW	2 bs	7 le	7 pureye	7.2	0.1	1.1	5.9	0.0(0)	0.1	0	43
AF3000-1	7	5	5.8	1.90	75 S	OW	6 rs, ch	7 nu	4 bs	34.5	4.7	21.3	5.1	3.1(1)	0.3	0	53
AF3001-6	8	7	7.0	2.28	41 S	Wh	5 rs	6 blk	6	9.5	1.6	6.6	0.6	0.3(1)	0.4	0	65
AF3004-9	7	6	6.8	2.07	76 S	OW	6 rs	7	3 le	55.6	6.8	1.8	7.8	38.7(5)	0.4	0	37
AF3008-1	6	5	5.3	1.00	67 S	OW	4 rs	6 nu	4	17.5	3.9	13.2	0.0	0.0(0)	0.5	0	53
AF3008-3	5	5	6.0	1.54	77 S	OW	4 rs, ch	6 pr	5	21.2	7.4	13.2	0.6	0.0(0)	0.0	0	56
AF3011-4	6	5	6.0	3.56	80 S	Wh	4	7 blk	6 le	19.9	7.1	11.4	0.2	1.2(1)	0.0	0	28
AF3011-28	6	5	5.8	0.97	38 S	Wh	3	6 nu	5 bs	30.6	4.3	8.6	13.0	4.0(1)	0.7	0	46
AF3011-29	7	7	6.5	1.62	42 S	Wh	3 rs	7 pr	7 bs	14.7	3.9	4.8	5.6	0.0(0)	0.4	0	39
AF3011-30	5	5	6.3	1.00	99 S	Wh	4 rs	7	7 bs	9.5	3.9	4.4	1.0	0.0(0)	0.2	0	57
AF3011-34	7	6	6.0	1.67	67 S	Wh	4	6	6 bs	9.2	2.4	2.4	1.5	2.8(1)	0.1	0	40
AF3012-4	8	8	7.8	1.69	92 S	OW	6 rs, nu	7	6	19.6	6.7	5.0	2.6	4.7(1)	0.6	0	61
AF3016-2	5	5	5.3	0.96	85 S	OW	7 bs	6 blk	5 pe	25.2	7.1	7.2	0.0	10.9(1)	0.0	0	59
AF3051-2	9	6	6.5	2.17	35 S	OW	6 rs	6 blk	4 bs	47.9	10.1	4.4	0.2	32.4(4)	0.8	0	58
AF3076-1	7	7	7.0	2.08	92 S	OW	6	7 blk	5 bs	15.7	6.5	8.3	0.5	0.1(1)	0.3	0	45
AF3084-7	7	6	6.3	1.47	79 S	Wh	4	7	5	45.7	2.4	12.5	4.7	24.2(2)	1.9	0	52
AF3325-2	6	5	5.8	1.11	83 S	Wh	2	7	6 le, we	12.2	0.3	10.8	0.8	0.1(1)	0.1	0	55
AF3326-7	7	6	6.3	0.33	67 S	OW	3 bs	7	7 le	6.3	2.3	3.9	0.1	0.0(0)	0.0	0	53
AF3327-27	5	6	5.5	0.64	18 MR	OW	3 bs	6	7 le, pe	7.3	1.4	5.7	0.0	0.2(1)	0.0	1	39
AF3327-28	7	7	7.0	3.32	48 S	OW	3	6	7 bs	10.8	7.1	2.5	0.8	0.2(1)	0.2	1	41
AF3329-16	6	6	6.3	2.38	81 S	Wh	7 rs, nu	7	5 bs	36.1	16.5	7.5	3.0	8.6(1)	0.6	0	51
AF3362-1	7	6	6.8	1.29	11 MR	OW	3 rs, ch	7	6 le	5.3	1.1	3.8	0.0	0.0(0)	0.4	0	58

¹See standard NE1031 rating system for key to codes; nr=nonuniform russeting; le=enlarged lenticels; cr=skin cracks; pr=many pear-shaped tubers; wh=white-skinned; pe=trace of pink at eye; pureye=trace of purple at eye; we=dark russet w/white eyes; bs=black scurf; blkky=blocky; ch=skin checking; and rs=russet scab.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined (unless otherwise noted).

³Chip color from 50F -- Agtron M35 (higher values indicate lighter color): >62 acceptable. The chipping dates were December 2 and 5, 2008. Waller Duncan LSD (K=100) for chip color = 5.

⁴Skinning and shatter bruise were measured on October 15, 2008 (7 days after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

Maine Table 26. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 13 red- and purple-skinned varieties and advanced breeding clones grown at Aroostook Research Farm, Presque Isle, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹		% Stand (spacing) ² 7-2	50% Emergence Date	Size Distribution by Class ³ (%)						Spec. Grav.				
		>1 ⁷ / ₈ "	% of std. >2 ¹ / ₄ "			1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"	2 ¹ / ₂ to 4"	1	2	3		4	5	6	
<u>Advanced Red Test- 93 days</u>																
Dark Red Norland (std)	292	246	100	204	99 (10)	June 11	3	17	42	38	1	0	97	80	38	1.063
AF4013-5	216	170	69	113	81 (10)	June 21	10	31	38	21	0	0	90	59	21	1.084
AF4042-2	138	53	22	8	99 (10)	June 19	58	36	6	0	0	0	42	6	0	1.079
B2332-2	196	163	66	122	97 (10)	June 17	8	24	38	29	1	0	92	69	30	1.063
BCO01044-2	221	196	80	126	98 (10)	June 19	7	33	44	16	0	0	93	60	16	1.062
BCO01162-3	113	26	11	3	97 (10)	June 16	74	23	2	0	0	0	26	2	0	1.075
BCO01283-2	149	95	39	20	83 (10)	June 19	29	55	14	2	0	0	71	16	2	1.076
BCO01283-3	181	121	49	34	99 (10)	June 19	25	55	18	3	0	0	75	20	3	1.067
BCO01306-2	172	121	49	39	100 (10)	June 17	22	53	24	1	0	0	78	25	1	1.078
BCO01357-3	212	171	70	94	99 (10)	June 19	10	40	41	9	0	0	90	50	9	1.077
BCO01357-4	249	157	64	97	99 (10)	June 19	8	35	46	11	0	0	92	57	11	1.075
BCO01357-5	186	124	50	35	98 (10)	June 19	19	58	21	2	0	0	81	23	2	1.065
BCO01401-2	140	60	24	13	93 (10)	June 19	40	47	12	0	0	0	60	12	0	1.061
Waller Duncan LSD (k=100)	52	44		32									7	10	7	0.004

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4" .

Maine Table 27. Plant size, maturity at vinekill, tuber shape, tuber defects, and hollow heart ratings for 13 red- and purple-skinned varieties and advanced breeding clones grown at Aroostook Research Farm, Presque Isle, Maine - 2008. (Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Plant Data ¹					Tuber Data ¹				Tuber Defects (%)					Hollow Heart Rating ²	
	Size	Maturity		Skinning Index ³	%Crcks. ³	Flesh Color ⁴	Skin Texture	Shape	Appearance	Total burn	Sun-shapen	Mis-cracks	Growth Scab	Rot		
	7-24	8-22	@VK													
<u>Advanced Red Test- 93 days</u>																
Dark Red Norland (std)	6#	5	4.5	1.43	49 S	OW	7 pch	4	6 mr	13.1	2.4	5.0	5.4	0.0	0.3	5
AF4013-5	7	7	7.0	1.90	17 MR	OW	6	4	4 pk	12.7	1.6	5.5	1.4	0.0	4.2	7
AF4042-2	6	6	5.5	2.91	9 R	PKM	7 ss	5	5 dmr	9.2	1.8	5.5	0.4	0.5	1.0	0/0
B2332-2	6	6	5.3	5.56	24 MS	OW	7 ss	3	6 mr	9.9	6.3	0.9	2.3	0.0	0.5	2
BCO01044-2	7	6	6.0	1.21	29 MS	PurM	6	5	6 dpur	5.0	0.0	3.4	0.5	0.6	0.5	0
BCO01162-3	7	7	7.3	1.91	9 R	PurM	7 le	6	5 dpur	12.2	0.0	11.8	0.3	0.0	0.1	0/0
BCO01283-2	5	6	5.3	1.52	32 MS	Wh	7 ss	3	6 mr	9.4	1.4	4.4	2.3	0.9	0.5	0/3
BCO01283-3	7	7	5.8	1.48	65 S	Wh	7 ss	5	6 bmr	13.0	1.6	4.3	6.8	0.0	0.3	0/20
BCO01306-2	7	6	5.5	1.18	8 R	PK	6 ss!	3	4 dpur	10.0	4.0	3.6	0.7	0.0	1.7	0
BCO01357-3	6	7	6.1	3.27	37 S	PK	7	3	6 dmr	10.7	2.1	7.3	0.8	0.0	0.5	3/70
BCO01357-4	7	7	6.5	3.61	39 S	PK	7 pch	5 ss	5 dmr	31.3	7.5	21.9	0.2	0.0	1.7	1/34
BCO01357-5	4	6	6.0	2.10	21 MS	PK	7	5 pr	5 mdpur	18.3	1.7	14.2	0.5	0.0	1.8	1/20
BCO01401-2	6*	6	5.0	1.38	8 R	OW	7 ss	3	5 bmr	32.7	3.2	5.2	24.0	0.0	0.4	0/10

¹See standard NE1031 rating system for key to codes; ppk=pale pink skin; pk=pink to pale red skin; prd=pale red skin; lmr=light medium red skin; mr=medium-red skin; mbr=medium to bright red skin; br=bright red skin; dr=dark red skin; mpur=medium purple skin; dpur=dark purple skin; vdpur=very dark purple skin, dull; pr=some pear-shaped tubers; pch=pink skin patches; yl=yellow skin color; de=deep eyes; rs=russet scab; nu=nonuniform skin; cs=pretty except for scab problem; le=enlarged lenticels; cr=skin cracks; st=stolons cling; ss=silver scurf and/or other similar discoloration. # indicates very good early vigor while ** and *=severe or moderate early vigor problems.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined unless otherwise noted.

³Skinning and shatter bruise were measured on September 18, 2008 (1 day after harvest). Data presented represent indices where: 1=all tubers have 0% of surface affected and 9=all tubers have 100% of surface affected. Percentage of tubers with air and/or thumbnail cracks is reported (S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant).

⁴Flesh color: Wh=white; OW=off-white; YF=yellow-fleshed where higher number indicates brighter yellow color; PurM=purple with white; RedM=red with white; PK=pink; PKM=pink with white.

Maine Table 28. Washed skin color evaluations from storage for red- and purple-skinned varieties and advanced breeding clones grown at Aroostook Research Farm, Presque Isle, Maine - 2007 and stored during the 2007/2008 storage season. (NE1031 Regional Trial and Advanced Breeding Line Variety Trial, Pre-NE1031)

Variety	Skin Color	Washed Skin Color ¹			Flesh Color
		Index	Percent		
			>Fair	≥Good	
<u>NE1031 Regional Red- and Purple-skinned Test (2007)</u>					
Chieftain	Light Medium Red	2.88	89	0	White
Dakota Jewel	Bright Red	2.79	79	3	Off-white
Dark Red Norland	Medium Bright Red	2.85	85	0	Off-white
AF2393-7	Medium Dark Red	2.86	88	1	Pale Yellow (YF1)
B1816-5 (Peter Wilcox)	Medium Purple	2.86	89	1	Pale/Medium Yellow (YF2)
B2152-17	Medium Bright Red	2.75	74	2	Pale/Medium Yellow (YF2)
B2327-2	Medium Red	2.83	84	0	White
Waller Duncan LSD (k=100)		ns	ns	ns	
<u>Advanced Red- and Purple-skinned Test (2007)</u>					
Dark Red Norland (std)	Medium Red	2.66	68	5	Off-white
AF3331-1	Pale Red	2.94	90	4	White
B0984-1	Medium Dark Red	2.89	86	3	Off-white
B2327-2	Bright Red	2.94	88	9	White
B2332-2	Pale Medium Red	3.00	91	10	Very Pale Yellow (YF½)
BCO01044-2	Dark Purple	2.89	85	6	Purple Mottled
BCO01162-3	Very Dark Purple	3.01	99	2	Purple Mottled
BCO01283-2	Bright Red	2.93	84	11	White
BCO01306-3	Medium Purple	2.81	81	1	Red Mottled
BCO01357-4	Medium Dark Red	2.51	63	0	Pink
BCO01357-5	Medium Dark Red	2.88	89	1	Pink
BCO01357-6	Medium Purple	2.81	79	4	Purple
Waller Duncan LSD (k=100)		0.30	19	ns	

¹Washed appearance ratings were conducted on January 22-23, 2008. Tubers were rated for skin appearance using the following scale: 1=very poor; 2=poor; 3=fair; 4=good; 5=excellent. Higher indices indicate more attractive color.

Maine Table 29. Blackspot bruise potential for NE1031 varieties grown at Central Maine (Exeter) and Northern Maine (St. Agatha) sites - 2007

Variety	Blackspot Bruise Potential ¹
<u>2007 Exeter NE1031</u>	
<u>Round-whites:</u>	
Atlantic (std)	2.15
Beacon Chipper	3.20
Dakota Diamond	2.88
Katahdin	2.68
Kennebec	2.95
Snowden	3.27
Superior	2.85
Yukon Gold	2.26
AF2291-10	2.88
AF2376-5	2.80
AF2916-1	2.78
B1992-106	3.43
FL1879	2.90
NY139	2.52
W2564-2	3.60
W2978-3	1.80
Waller Duncan LSD (k=100)	0.48
<u>2007 St. Agatha NE1031</u>	
<u>Round-whites:</u>	
Atlantic (std)	2.65
Beacon Chipper	3.75
Katahdin	3.40
Kennebec	3.58
Snowden	3.38
Superior	3.00
Yukon Gold	2.88
AF2291-10	3.78
AF2376-5	3.50
AF2916-1	2.92
NY137	2.28
NY139	3.85
NY140	2.70
NY141	2.18
NYB38-37	2.38
Waller Duncan LSD (k=100)	0.41
<u>Reds and Purples:</u>	
Chieftain (std)	2.75
Dakota Jewel	3.12
Norland, DR	3.63
AF2393-7	3.32
B2152-17	3.82
B2327-2	4.30
Waller Duncan LSD (k=100)	0.41

Maine Table 29 Continued. Blackspot bruise potential for NE1031 varieties grown at Central Maine (Exeter) and Northern Maine (St. Agatha) sites - 2007

Variety	Blackspot Bruise Potential ¹
<u>2007 St. Agatha NE1031</u>	
<u>Russets and Longs:</u>	
Russet Burbank (std)	3.13
Blazer Russet	3.32
Rio Grande Russet	3.00
Russet Norkotah	3.40
Shepody	2.75
AF2199-6	3.10
W2253-3Rus	2.40
W2683-2Rus	4.20
W3666-2Rus	2.85
Waller Duncan LSD (k=100)	0.61

¹Abrasive peel test for biochemical aspects of blackspot bruise potential (see Pavek et al, APJ 62:511-517). St. Agatha russets and Exeter samples were peeled on February 1, 2008. St. Agatha round-whites and reds were peeled on February 6, 2008. The index presented indicates the severity of discoloration where: 0=no tubers show discoloration and 5=all tubers have severe discoloration.

Maine Table 30. Sensory evaluation results for NE-1031 and advanced breeding clones grown at Aroostook Research Farm, Presque Isle, ME - 2007.

Variety	Baked Test Results ¹				Boiled Test Results ²		
	Color	Flavor	Texture	Overall	Sloughing	Graying	Overall
<u>Early/Medium Maturity Test:</u>							
Superior (std)	6.87a	6.26	6.13a	6.15ab	4.8 b	5.8 b	
Beacon Chipper	7.02a	6.32	6.53a	6.45a =	13.2 a	3.8 c	-
AF2291-10	7.03a	6.39	6.27a	6.27a =	6.0 b	10.4 a	-
NY139	6.29b	5.87	5.40b	5.66b -	13.5 a	10.7 a	-
AOV Results (Pr > F)	* _____	ns	*	*	**	**	
<u>Red- or Purple-skinned Varieties:</u>							
Dark Red Norland (std)	6.66	6.38	6.49	6.46a	4.2 c	13.0 a	
Dakota Jewel	6.47	5.81	5.93	5.90b -	5.0 bc	10.0 b	+
AF2393-7	6.75	6.49	6.56	6.46a =	6.9 a	5.6 c	-/+ YF
B2152-17	6.24	6.15	6.41	6.10ab =	6.2 ab	6.5 c	-/+ YF
AOV Results (Pr > F)	ns _____	ns	ns	*	**	**	
<u>Late Maturity Test:</u>							
Katahdin (std)	6.87	6.60a	6.71a	6.61a	3.9 b	6.4 a	
Yukon Gold (std)	6.68	6.61a	6.87a	6.60a =	8.7 a	2.2 b	-/+ YF
AF2376-5	6.56	6.40a	5.63b	6.10a -	2.2 e	2.2 b	+ YF
NY137	6.74	5.68b	5.73b	5.56b -	8.9 a	3.2 b	-/+
AOV Results (Pr > F)	ns	**	**	** _____	** _____	**	
<u>Russet/long-white Test:</u>							
Russet Burbank (std)	6.29cd	6.21	6.13	6.10	5.0 d	3.1 c	
Russet Norkotah	6.11d	6.52	6.87	6.39 =	9.7 c	9.4 a	-
Blazer Russet	6.87ab	6.23	6.40	6.29 +	8.5 c	2.9 c	-
Rio Grande Russet	6.60bc	6.19	6.50	6.26 =	12.2 b	6.6 b	-
AF2199-6	7.13a	6.69	6.71	6.58 +	14.2 a	2.2 c	-
AOV Results (Pr > F)	**	ns	ns	ns _____	** _____	**	

¹Similar-sized potatoes were baked for 60 minutes at 425F and were turned once after 30 minutes. Panelists were provided with 1/4 sections of baked test and standard variety potatoes. They were asked to rate the color, flavor, texture, and overall quality of each using a 9-point hedonic scale where 1=disliked very much and 9=liked very much. Water was provided and panelists were asked to rinse palate before and after each sample. Evaluations conducted courtesy of Drs. Al Bushway and Mary Ellen Camire, Dept. of Food Science and Human Nutrition, University of Maine, Orono, ME.

²Similar-sized potatoes were peeled and boiled at 180F for approximately 20 minutes or until cooked. Approximately six potatoes per sample were used. Panelists were provided with a plate of boiled test and standard variety potatoes. They were asked to visually rate sloughing and graying using a 0 to 15 scale where: sloughing 0 = no sloughing and 15 highly sloughed; graying 0=no graying and 15 extremely gray. Evaluations conducted courtesy of Drs. Al Bushway and Mary Ellen Camire, Dept. of Food Science and Human Nutrition, University of Maine, Orono, ME.

AOV Results: ns, *, and ** indicate not statistically significant and significant at p<.05 and .01, respectively.

Overall ratings: - is poorer, = is equal, + = better than the standard variety.

Maine Table 31. Standard NE1014 Rating codes for Plant and Tuber Characteristics.

Plant Characteristics				
Rating Code	Plant Size	Air Pollution	Vine Maturity	PlantMaturity Appearance at Vinekill
1	Very Small	Dead	Very Early	Very Poor Completely Dead
2	+	--	Early	Poor--
3	Small	Mod. Defol.	+	+Yellow and Dying
4	+	--	Medium Early	----
5	Medium	Mod. Injury	Medium	FairModerately Mature
6	+	--	Medium Late	+--
7	Large	Mild Injury	+	--Vines Starting to Mature
8	+	--	Late	Good--
9	Very Large	No Symptoms	Very Late	ExcellentVines Green and Vigorous

Tuber Characteristics				
Rating Code	Skin Color	Skin Texture	Tuber Shape	EyeOverall DepthAppearance
1	Purple	Part. Russet	Round	Very DeepVery Poor
2	Red	Heavy Russet	Mostly Round	----
3	Pink	Mod. Russet	Round to Oblong	DeepPoor
4	Dark Brown	Light Russet	Mostly Oblong	----
5	Brown	Netted	Oblong	IntermediateFair
6	Tan	Slight Net	Oblong to Long	----
7	Buff	Mod. Smooth	Mostly Long	ShallowGood
8	White	Smooth	Long	----
9	Cream	Very Smooth	Cylindrical	Very ShallowExcellent