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B806: Performance Evaluations of Potato Clones and Varieties in the Northeastern States 1984

H. J. Murphy

R. Jenson

D. E. Halseth

L. S. Morrow

M. R. Henninger

See next page for additional authors

Authors
H. J. Murphy, R. Jenson, D. E. Halseth, L. S. Morrow, M. R. Henninger, F. L. Haynes, D. A. Young, Janet Fallon, R. H. Cole, Richard Tarn, J. B. Sieczka, W. M. Sullivan, E. Kee, R. Loria, Susan Sterrett, O. S. Wells, and R. J. Young

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MAINE AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF MAINE AT ORONO 04469
Bulletin 806 **March 1985**

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H.J. Murphy[1]	R. Jensen[5]	D.E. Halseth[9]
L.S. Morrow[1]	M.R. Henninger[6]	F.L. Haynes[10]
D.A. Young[2]	Janet Fallon[7]	R.H. Cole[11]
Richard Tarn[2]	J.B. Sieczka[8]	W.M. Sullivan[12]
E. Kee[3]	R. Loria[8]	Susan Sterrett[13]
O.S. Wells[4]		R.J. Young[14]

Cooperative potato clone and variety trials were conducted at 32 locations to determine field performance of selected clones and varieties grown under soil, climatic, and cultural management common to the potato growing areas of 12 cooperating states and the Province of New Brunswick, Canada. A few locations also evaluated storage and processing behavior of selected clones and varieties. These tests are contributions to Regional Project NE107 entitled, "Breeding and Evaluation of New Potato Clones for the Northeast." The primary objective of this project is to determine clone performance and stability over a wide range of soil, climate, and cultural conditions.

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[1]University of Maine; Orono and Presque Isle, Maine.
[2]Agriculture Canada; Fredericton, New Brunswick, Canada.
[3]University of Delaware; Georgetown, Delaware.
[4]University of New Hampshire; Durham, New Hampshire.
[5]Vermont Department of Agriculture; Montpelier, Vermont.
[6]Cook College-Rutgers University; New Brunswick, New Jersey.
[7]Agway Research Center; Tully, New York.
[8]Cornell University; Riverhead, Long Island, New York.
[9]Cornell University; Ithaca, New York.
[10]North Carolina State University; Raleigh, North Carolina.
[11]Pennsylvania State University; University Park, Pennsylvania.
[12]University of Rhode Island; Kingston, Rhode Island.
[13]Virginia Truck and Ornamentals Research Station; Painter, Virginia.
[14]West Virginia University; Morgantown, West Virginia.

Varieties and clones grown in these cooperative variety trials were selected from the following sources:

1. Recently named or numbered seedling clones from other potato producing areas of the United States and Canada.

2. Standard varieties whose yield, quality, storage, and processing characteristics have been accepted for commercial production. These varieties are the check varieties for comparative purposes in various variety trials.

3. Numbered clones from several potato breeding programs in the United States and Canada.

4. Special purpose varieties for unusual disease situations, special markets, processing, export situations, starch production, and urban and small garden production.

5. An occasional older variety that requires new performance data or re-eveluation for a particular market situation.

In 1984, the cooperative variety trials provided the opportunity to compare new clones and varieties with commercially grown and accepted varieties for horticultural characteristics, yield, field resistance to a broad spectrum of diseases, processing capabilities for frozen french fries and potato chips, storage ability at various temperatures and tuber appearance. The opportunity also existed for the potato breeders to observe stability of their clones and varieties over a range of growing conditions even though the accumulated performance data were inconsistent among varieties. Because of unfavorable weather and cultural conditions at several locations, many clones and varieties did not receive suitable performance tests so should be included in the 1985 field tests.

Seed sources for all clones and varieties reported in this bulletin were grown by the Maine State Seed Board in the Sangerville seedling increase and maintenance program.

MATERIALS AND METHODS

During 1984, 50 named and 36 numbered clones listed in Table 1 were grown in one or more of the 12 cooperating states and New Brunswick, Canada, as indicated in individual tables by test location. Varieties were hand-planted at most test locations except New York where assisted feed planters were used for seed placement. Plot size varied from 19 foot rows to double 12 foot rows per variety with suitable alleyways between plots and buffer rows where needed. Row spacing varied from 32 to 36 inches. At some locations marker varieties were used in the alleyways, but most cooperators did not use markers. Replication varied from six in Maine and West Virginia to three replications in a few New York locations. Most locations had four replicates per variety. Seedpiece spacing within rows and fertilizer rates varied among locations and varieties grown. Notation of seedpiece spacing, fertilization rates, planting dates, vine killing dates, and harvesting dates used at each location was made in each table of yield data.

Entries at Presque Isle, Maine and a few other locations were divided and tested by maturity groupings. Most locations did not, however, which enhances yields of early varieties and reduces yields of late maturing varieties. At several locations, russeted and long type clones and varieties were evaluated in tests separate from round tuber varieties. At two locations separate tests were conducted with all clones and varieties with colored skin entries.

Cultural practices for each trial were supposed to be similar to those used by commercial growers at or near the test sites. Tubers of all varieties at each location were harvested by replicate, placed in temporary storage, and graded and sized at some later date. Sizing and grading procedures varied by location and not always as specified in the project protocol; so some of the size distributions are not reported in this bulletin. Tuber samples were supposed to be retained from each test and replicate for specific gravity, and in most cases

for chip color determinations. Many locations saved composite samples only and others did not chip samples for color. At Presque Isle, additional samples were retained from each variety for appearance ratings, peeling and preparation losses, storage studies, and other quality tests.

Specific gravities of replicated samples from Maine, Pennsylvania, Vermont, and West Virginia; and composite samples from Rhode Island and Canada were determined at Presque Isle using the air and water method[15]. New Jersey also used the air and water method[15] to determine specific gravities. Most other locations determined specific gravities using the potato hydrometer method[16]. Total solids, when reported in the various tables of data, were calculated by the use of VonScheele's equations[17]. Samples tested for specific gravity at Presque Isle were stored at 50-55F. until early December when they were used for chip color determinations.

Data from all locations except New York and Virginia were analyzed by the Computing and Processing Services (CAPS), University of Maine; Orono, Maine.

DISEASE RESISTANCE

Incomplete information on disease resistance and/or tolerance for many of the varieties and clones in the 1984 variety trials is presented in Table 1. The disease tolerances reported in Table 1 were determined in concurrent or previous disease tests conducted by U.S.D.A.-ARS, Agriculture Canada, the Maine Agricultural Experiment Station, or by the various states where the clone or variety

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[15] Murphy, H.J. and M.J. Goven. 1959. Factors affecting the specific gravity of white potatoes in Maine. Maine Agricultural Experiment Station Bulletin 583, page 13.

[16] Ibid, page 15.

[17] Ibid, page 23.

Table 1. Characteristics of potato varieties included in the 1984 Northeastern Regional (NE-107) Potato Variety Trials.

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance[1]
Acadia Russet	Russet	Ob.-Long	M. late	M	Fusarium, phoma, leafroll.
Agassiz	Russet	Oval	Med.	M.D.	Common scab, late blight, verticillium wilt.
Alaska Russet	Rus.-Netted	Ob.-Long	Med.	M.S.	
Allagash Russet	Russet	Oblong	Med.	S	Net necrosis.
Atlantic	Netted	Rd.-Oblong	Med.	S	Late blight, net necrosis, virus A and X, golden nematode.
Belchip	Cream	Round	Late	M.D.	Late blight, common scab, virus X and Y, net necrosis, golden nematode.
BelRus	Russet	Ob.-Long	M. late	S	Verticillium wilt, net necrosis, leafroll, virus A.
Campbell 13	White	Oblong	Med.	S	Late blight, verticillium wilt, net necrosis, virus A, golden nematode.
Campbell 14	White	Oblong	Late	S	Verticillium wilt.
Caribe	Purple	Rd.-Oblong	V. early	M.D.	Common scab, phoma, virus Y.
Chipbelle	Buff	Oblong	Late	S	Verticillium wilt, net necrosis, virus A and X, golden nematode.
Chippewa	Cream	Rd.-Oblong	M. early	S	Virus A and X.
Conestoga	White	Round	Med.	M	Common scab, net necrosis, leafroll.
Crystal	White	Oblong	M. late	S	Common scab, verticillium wilt, virus X.
Delta Gold	White	Round	M. late	S	Net necrosis, virus A. (Yellow flesh).
Denali	Buff	Round	Med.	S	Common scab, virus S.
Erik	Red	Oblong	Late	D	Common scab, late blight, verticillium wilt.
Gold Rus	Russet	Oblong	Late	S	Common scab, net necrosis.
Green Mountain	White	Oblong	Late	M.D.	None.
Hampton	Buff	Round	Late	S	Verticillium wilt, golden nematode.
Hudson	White	Oblong	Late	M.S.	Golden nematode.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance[1]
Islander	White-Netted	Oblong	Med.	S	Common scab, net necrosis, golden nematode.
Jemseg	White	Round	Early	M	Blackwart, virus S, X, and Y.
Katahdin	Cream	Round	Late	S	Leafroll, net necrosis, virus A and Y.
Kennebec	White	Oblong	Med.	S	Late blight, net necrosis, virus A.
Lemhi	Russet	Oblong	Late	S	Common scab, net necrosis.
Monona	White	Round	M. early	S	Verticillium wilt, virus A, X, and Y.
Norchip	White	Round	M. early	S	Common scab.
Norland	Red	Oblong	V. early	S	Common scab.
Oceania	Buff	Round	M. early	S	Net necrosis, virus A and X.
Onaway	Cream	Oblong	Med.	M.D.	Common scab, late blight.
Penn 71	White	Round	Late	S	Late blight.
Pungo	Buff	Round	M. early	M.D.	Late blight.
Red Pontiac	Red	Rd.-Oblong	Late	M.D.	None.
Redsen	Red	Oblong	Early	S	Unknown.
Rhine Red	Red	Round	Med.	S	Unknown.
Rosa	Buff	Round	Late	M.D.	Early blight, pinkeye, golden nematode.
Russet Burbank	Russet	Long	V. late	S	Common scab.
Russette	Russet	Rd.-Oblong	Late	S	Verticillium wilt, net necrosis, virus A and Y.
Saco	Cream	Round	Late	M.D.	Net necrosis, late blight, virus A and X.
Sebago	Cream	Round	Late	S	Late blight, virus X.
Simcoe	White	Round	Early	S	Common scab, late blight, virus A and X, golden nematode.
Sunrise	Wh.-Netted	Rd.-Oblong	Med.	M.S.	Acid scab, common scab, virus X, net necrosis, golden nematode.
Superior	White	Oblong	M. early	S	Common scab.
Tolaas	Tan-Netted	Oblong	Med.	D	Common scab, hollow heart.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance[1]
Wauseon	White	Rd.-Oblong	M. late	S	Common scab, net necrosis, golden nematode, virus A and X.
Yankee Chipper	White	Oblong	Med.	S	Net necrosis, golden nematode, virus X.
Yankee Supreme	Cream	Rd.-Oblong	M. early	M.S.	Net necrosis, stem-end browning.
Yukon Gold	Yel-White	Oblong	M. early	S	Leafroll, virus A and X. (Yellow flesh).
AF92-3	White	Rd.-Oblong	M. late	S	Acid scab, common scab, net necrosis, stem-end browning, late blight, verticillium wilt, virus X.
AF236-1	White	Oblong	M. late	S	Net necrosis, early blight, late blight.
AF303-5	White	Round	M. late	S	Verticillium wilt, net necrosis, early blight, rhizoctonia, hollow heart.
AF307-5	White	Oblong	Med.	S	Net necrosis, late blight.
AF330-1	Wh.-Netted	Round	M. early	S	Net necrosis, hollow heart.
AF332-9	Buff	Round	Med.	S	Verticillium wilt, net necrosis, golden nematode.
AF9058-M	Buff	Rd.-Oblong	Med.	M.S.	Common scab, late blight.
B5662-WV13	White	Round	M. early	S	Late blight.
B6928-WV14	White	Round	M. late	S	None.
B6949-WV3	White	Round	M. late	S	Late blight.
B7019-WV1	Buff	Rd.-Oblong	M. late	S	Unknown.
BR7088-18	Buff	Round	M. late	M.D.	Unknown.
C7232-4	Buff	Rd.-Oblong	M. early	S	None.
CF7353-1	Purple	Rd.-Oblong	M. late	M.S.	Early blight, verticillium wilt, net necrosis.
CF7523-1	White	Round	M. early	S	Early blight, verticillium wilt, net necrosis, golden nematode.
CF7587-7	Buff	Oblong	M. late	S	Acid scab, common scab, net necrosis.
CF7622-6	White	Rd.-Oblong	Early	S	Net necrosis, virus X.
CF7679-15	Cream	Rd.-Oblong	M. early	M.S.	Net necrosis, verticillium wilt, virus X.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance[1]
CF7688-9	White	Round	Med.	S	Net necrosis.
CF7719-6	White	Oblong	Early	M.S.	Common scab, acid scab, late blight, net necrosis, golden nematode.
CF7722-19	White	Oblong	Early	S	Common scab, acid scab, net necrosis, virus X, hollow heart, golden nematode.
CF7750-1	Mod.Russet	Rd.-Oblong	M. early	S	Common scab, net necrosis, virus X.
CF7789-1	Lt. Russet	Rd.-Oblong	M. early	S	Common scab, acid scab, net necrosis, virus X, hollow heart.
CF72107-15	White	Round	M. late	S	Net necrosis, early blight, late blight, golden nematode.
CF72111-5	White	Oblong	Med.	S	Net necrosis.
CF74135-3	White	Round	M. early	M.S.	Acid scab, common scab, net necrosis.
CF76136-11	Wh.-Netted	Rd.-Oblong	M. early	M.S.	Net necrosis, common scab, rhizoctonia, golden nematode.
CF76183-2	Buff	Long	Early	M.S.	Common scab, net necrosis, late blight, virus Y.
CF77154-10	White	Rd.-Oblong	Early	S	Net necrosis, golden nematode.
F73008	Buff	Oblong	Late	M.S.	Late blight. (Yellow flesh).
MN9319	Tan-Netted	Oblong	M. late	M.S.	Common scab, late blight, hollow heart.
ND388-1	Russet	Oblong	M. late	S	Unknown.
ND534-4	Russet	Oblong	Late	S	Unknown.
NY59	Tan	Round	Late	M.S.	Late blight, early blight, verticillium wilt, golden nematode.
NY64	Tan	Round	Late	D	Common scab, golden nematode.
NY67	Buff	Round	Late	M.S.	Unknown.
WF564-3	Russet	Ob.-Long	Med.	M.S.	Late blight, net necrosis, acid scab, common scab, virus X.
W752	Tan-Netted	Ob.-Long	Med.	S	Unknown.

Table 1 - continued

[1]Virus X is the latent mosaic virus and in combination with virus A results in mild mosaic; and in combination with virus Y results in rugose mosaic.

Late blight resistance is to the common race of *Phytophthora infestans* (Mont.) deBary.

Net necrosis is a vascular ring discoloration in a tuber caused by current season infection with leafroll.

came from. The disease tolerance or resistance data in Table 1 do not indicate the degree of resistance or tolerance and are incomplete for many varieties and clones. More detailed information may be available from the various agencies which conducted the tests.

In 1984, 23 varieties had resistance to golden nematode. Another 34 varieties had tolerance to common scab and eight to acid scab. Twenty-five varieties had resistance to late blight and seven to early blight. Only five varieties had known resistance to leafroll but 40 varieties did not show current season infection as net necrosis. Sixteen varieties reportedly had resistance to verticillium wilt, two had tolerance to rhizoctonia, one to pink-eye tuber rot, two to stem-end browning, two to phoma tuber rot, and one each to fusarium and blackwart, respectively. In the virus area, 23 were resistant to virus X, 15 to virus A, two to virus S, and five to virus Y. Note in Table 1 that several varieties are listed as "unknown" for disease resistance which probably means that they have not been in disease tests as of this date, or possibly they have no disease resistance.

These disease resistance notes in Table 1 suggest that excellent progress is being attained in the development of potato clones with broad spectrum disease resistance. The reader should also note that late blight resistance reported in Table 1 is for the common race of *Phytophthora infestans* (Mont.) deBary. The West Virginia clones may have multi-gene resistance to late blight.

YIELDS AND SPECIFIC GRAVITY

Canada

Total yield, percentage of yield in two grade size classes, and specific gravities for nine early maturing potato varieties grown at Jemseg, New Brunswick are presented in Table 2. Yankee Supreme, a recent release from Maine, had the highest yield and specific gravity. Clone 7232-4, Sunrise, and Jemseg were also good yielding varieties. Redsen and AF330-1 had high percentages of small sized tubers.

Table 2. Yield, percentage of yield in two grade size classes, specific gravity, and percent total solids for 9 early and medium early maturing potato varieties grown at Jemseg, New Brunswick, Canada - 1984.

Variety[1]	Yield Cwt./A.	Percent of Superior yield	Percentage of yield 1½ to 1-7/8 inches	Percentage of yield 1-7/8 to 3½ inches	Specific gravity	Percent total solids
Jemseg	226	97	7.2	92.8	1.080	20.21
Redsen	210	91	32.6	67.4	1.076	19.37
Sunrise	223	96	14.3	85.7	1.081	20.43
Superior	232	100	18.7	81.3	1.080	20.21
Yankee Supreme	244	105	10.7	89.3	1.085	21.27
AF330-1	196	84	21.4	78.6	1.079	20.00
C7232-4	229	99	9.9	90.1	1.083	20.85
CF7523-1	212	91	24.2	75.8	1.077	19.58
CF77154-10	223	96	17.8	82.2	1.081	20.43
Waller Duncan L.S.D. (0.05)	37				0.006	

[1]Planted - April 30; harvested - July 24, 1984.

Seedpieces of all varieties spaced 10 inches apart. Fertilization: 165-220-165.

Yields, percentage of usable yield in two market grade sizes, percent defects, and specific gravities for 17 main crop (medium, late, and very late maturity) varieties grown at Florenceville, New Brunswick are presented in Table 3. NY59, F73008, Islander, AF303-5, and Crystal had the highest total yields, respectively; but after grading, the ranking for usable yield was: NY59, Islander, AF303-5, AF307-5, and Kennebec. Conestoga, Katahdin, B6949-WV3, and F73008 had excessive defects. All varieties in this test had specific gravities higher than 1.090; and nine varieties were higher than 1.100.

Delaware

Yields, percent defects, percentage of total yield in two market grade sizes, and specific gravities for seven early and medium early varieties grown at Dover, Delaware are presented in Table 4. Clone CF7523-1 ranked highest in total and usable yield. Clone AF330-1 ranked second highest in total yield but was lower in usable yield than Superior and Yankee Supreme. Tubers of all varieties tended to be toward the smaller sizes resulting in low percentages of size A tubers. Only three varieties, Jemseg, Yankee Supreme, and CF7523-1, had specific gravities above 1.075.

Yield, percent defects, tuber grade size, and specific gravity data for four medium late clones grown at Dover, Delaware are presented in Table 5. In this test F73008 and B6949-WV3 had the highest total and usable yields. Specific gravities of all varieties in this test were below 1.070.

In a nine entry russet test at Dover, Delaware, WF564-3, ND534-4, and Acadia Russet produced the highest total yields, as shown in Table 6. These same three varieties had the highest usable yields. Like the round white clones and varieties grown at Dover, Delaware, the russeted varieties had high percentages of tubers less than 4 ounces. BelRus had a specific gravity of 1.080 and four other varieties were higher than 1.070. All others were very low in specific gravity.

Table 3. Yield, usable yield, percentage of yield between 1-7/8 and 3¼ inches, percent defects, specific gravity, and percent total solids for 17 main crop potato varieties grown at Florenceville, New Brunswick, Canada - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 3¼ inches	Percentage of yield 2½ to 3¼ inches	Specific gravity	Percent total solids
Conestoga	151	114	74	14.9	76.0	17.8	1.099	24.22
Crystal	235	183	115	9.7	78.6	22.6	1.099	24.22
Gold Rus	177	119	86	5.8	68.3	9.5	1.099	24.22
Hampton	216	188	105	1.3	86.5	30.3	1.099	24.22
Islander	257	212	125	2.3	82.7	21.8	1.103	25.07
Katahdin	205	156	100	19.0	76.4	36.1	1.101	24.65
Kennebec	216	193	105	1.8	89.1	28.0	1.101	24.65
Russet Burbank	183	151	89	7.2	83.0	19.3	1.105	25.49
AF303-5	240	201	117	0.6	83.6	25.4	1.105	25.49
AF307-5	208	197	101	2.0	94.7	49.4	1.091	22.54
B6949-WV3	216	158	105	20.5	73.4	33.0	1.099	24.22
B7805-1	192	154	94	6.0	80.8	21.6	1.101	24.65
CF72107-15	185	137	90	16.9	74.3	27.9	1.099	24.22
F73008	258	154	126	38.5	57.8	23.4	1.106	25.70
ND388-1	188	154	92	3.9	82.5	14.4	1.105	25.49
NY59	271	230	132	7.0	84.7	30.9	1.100	24.04
NY64	198	155	97	7.4	77.9	10.5	1.097	23.80
Waller Duncan L.S.D. (0.05)	61	54					0.008	

[1]Planted - May 29; killed - September 10; harvested - October 2, 1984.
Seedpieces of Russet Burbank spaced 18 inches apart; seedpieces of all other varieties spaced 10 inches.
Fertilization: 135-180-135.

[2]Includes tubers with second growth, sunburn, and growth cracks.

Table 4. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 7 early maturing potato varieties grown at Dover, Delaware - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Superior yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Jemseg	193	162	78	0.2	82.3	62.9	1.079	20.00
Oceania	98	78	39	0.3	79.7	40.9	1.073	18.74
Superior	246	205	100	0.1	82.8	57.2	1.071	18.32
Yankee Supreme	257	216	104	0.1	84.1	70.8	1.081	20.43
AF330-1	280	196	114	2.8	70.1	38.2	1.071	18.32
CF7523-1	367	259	149	3.5	70.7	57.8	1.079	20.00
W718	230	198	93	0.1	85.5	74.3	1.071	18.32
Waller Duncan L.S.D. (0.05)	63	62					0.001	

[1]Planted - April 8; harvested - August 7, 1984.
Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-150-150.

[2]Includes tubers with second growth and growth cracks.

Table 5. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 4 medium late maturing potato varieties grown at Dover, Delaware - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
B6949-WV3	260	228	1.6	87.6	53.8	1.055	14.94
CF72107-15	208	178	3.3	84.9	48.8	1.066	17.26
F73008	401	295	10.3	73.6	46.8	1.062	16.42
NY63	234	190	0.7	83.2	43.0	1.063	16.63
Waller Duncan L.S.D. (0.05)	167	N.S.				0.002	

[1]Planted - April 8; harvested - August 15, 1984.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-150-150.

Table 6. Yield, usable yield, percent defects, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 9 russet potato varieties grown at Dover, Delaware - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of BelRus yield	Percent defects[2]	Percentage of yield 4 - 10 ounces	Specific gravity	Percent total solids
Acadia Russet	246	181	172	5.3	31.9	1.064	16.84
Alaska Russet	239	138	167	0.1	31.9	1.072	18.53
BelRus	143	93	100	0.2	40.8	1.080	20.21
Gold Rus	179	103	125	0.8	37.1	1.077	19.58
CF7789-1	196	131	137	0.3	31.4	1.057	15.38
CF76183-2	210	144	149	0.1	40.5	1.064	16.84
ND388-1	234	170	164	0.1	26.1	1.071	18.32
ND534-4	278	210	194	0.1	25.7	1.071	18.32
WF564-3	322	218	225	0.1	31.5	1.059	15.78
Waller Duncan L.S.D. (0.05)	117	91				[3]	

[1]Planted - April 8; harvested - August 15, 1984.
Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-150-150.

[2]Includes tubers with growth cracks and second growth.

[3]Insufficient data for analysis

Maine

Yields, percent defects, percentage of usable yields in two market grade sizes, and specific gravities for 11 early and medium early maturing varieties grown at Presque Isle are presented in Table 7. Clone CF7679-15, Superior, CF7722-19, Redsen, and CF77154-10 ranked highest in total and usable yields. All varieties except Superior and CF7679-15 had very high percentages of defects. Clone CF7679-15 had the highest specific gravity of 1.102 in this test but eight of the 11 entries had gravities higher than 1.080. Of these 11 clones CF7679-15 showed the greatest promise.

Yields, percent defects, two market grade sizes, and specific gravities for 11 medium maturing varieties are shown in Table 8. In the round white group Rhine Red, AF307-5, and CF7677-9 had the highest total yields. All varieties had high percentages of defects and tuber sizes were toward the smaller size. Four of the five varieties had specific gravities higher than 1.090. Ranking for the medium maturing russet varieties in this test for total yield was CF72111-5, AF9058-M, and ND534-4. All of the russet varieties except ND534-4 had unacceptable levels of tuber defects. Specific gravities were all higher than 1.085 with a new-comer, W752, having a gravity of 1.102.

Yields, percent defects, percentages of tubers in two grade sizes, and specific gravities for medium late maturing varieties grown at Presque Isle are presented in Table 9. In terms of total yield, the four highest varieties were Kennebec, B6928-WV14, CF7587-7, and B6949-WV3. After grading, the ranking for usable yield was B6928-WV14, CF7587-7, CF72107-15, and Crystal. All varieties except B6928-WV14 and CF7587-7 had very high percentages of defects. In this medium late test all nine varieties were higher than 1.085 in specific gravity; six were higher than 1.090; and two of the nine entries were 1.100 and 1.103.

Yields, percent defects, tubers in two market grade sizes, and specific gravities for seven late maturing varieties grown at

Table 7. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 11 early-medium early maturing potato varieties grown at Presque Isle, Maine - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Superior yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Redsen	266	200	84	12.9	75.0	33.8	1.081	20.43
Superior	309	282	100	7.1	91.6	74.5	1.087	21.69
B5662-WV13	248	198	80	15.9	79.9	64.9	1.088	21.90
CF7622-6	251	183	81	21.9	72.9	52.6	1.070	18.10
CF7679-15	339	305	110	6.7	90.1	77.8	1.102	24.86
CF7719-6	212	165	69	15.5	77.5	59.1	1.071	18.32
CF7722-19	303	257	98	10.1	84.9	64.4	1.082	20.64
CF74135-3	176	131	57	12.4	73.5	42.4	1.069	17.89
CF76136-11	221	170	72	10.2	76.8	39.7	1.091	22.54
CF76183-2	233	154	75	13.4	57.3% 4 - 10 ounces		1.082	20.64
CF77154-10	258	203	83	11.4	78.8	39.4	1.094	23.17
Waller Duncan L.S.D. (0.05)	29	27					0.004	

[1]Planted - May 21; killed - August 30; harvested - September 11, 1984.
Seedpieces of all varieties spaced 8 inches apart. Fertilization: 125-125-125.

[2]Includes misshapen and growth cracked tubers.

Table 8. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches or 4 to 10 ounces, specific gravity, and percent total solids for 11 medium maturing potato varieties grown at Presque Isle, Maine - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Kennebec yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Kennebec	314	159	100	46.8	50.8	27.0	1.092	22.75
Rhine Red	330	260	105	18.4	78.8	47.0	1.094	23.17
AF307-5	329	284	103	10.8	86.5	49.4	1.080	20.21
AF332-9	298	262	95	9.7	88.0	43.2	1.095	23.38
CF7688-9	318	270	101	11.9	84.9	37.2	1.108	26.12
					Percentage of yield 4 - 10 ounces			
Agassiz	219	109	70	13.7	46.2		1.088	21.90
AF9058M	293	177	93	22.7	48.4		1.093	22.96
CF72111-5	324	194	103	17.2	55.9		1.097	23.80
ND388-1	246	133	78	11.1	51.0		1.094	23.17
ND534-4	258	122	82	6.5	42.8		1.086	21.48
W752	245	124	78	21.6	45.8		1.102	24.86
Waller Duncan L.S.D. (0.05)	32	28					0.008	

[1]Planted - May 21; killed - September 6; harvested - September 17, 1984.

Seedpieces of all varieties spaced 8 inches apart. Fertilization: 125-125-125.

[2]Includes sunburned, misshapen, and growth cracked tubers.

Table 9. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 9 medium late maturing potato varieties grown at Presque Isle, Maine - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Kennebec yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Crystal	298	219	85	21.9	73.7	52.9	1.086	21.48
Kennebec	352	210	100	37.7	59.4	51.2	1.094	23.17
AF236-1	285	201	81	26.4	70.7	52.7	1.103	25.07
B6928-WV14	308	278	88	6.7	90.1	70.7	1.095	23.38
B6949-WV3	301	216	86	26.4	71.7	61.7	1.092	22.75
B7019-WV1	204	162	58	17.4	80.2	57.7	1.087	21.69
B7805-1	300	205	85	29.8	68.4	61.1	1.093	22.96
CF7587-7	302	269	86	6.3	89.4	63.2	1.100	24.44
CF72107-15	257	225	73	10.8	87.5	74.9	1.085	21.27
Waller Duncan L.S.D. (0.05)	26	30					0.008	

[1]Planted - May 21; killed - September 13; harvested - September 19, 1984.
Seedpieces of all varieties spaced 8 inches apart. Fertilization: 125-125-125.

[2]Includes sunburned, second growth, and growth cracked tubers.

Presque Isle are shown in Table 10. Red Pontiac, Erik, NY64, and NY59 ranked highest in total yield. After grading, however, the ranking was Red Pontiac, NY59, Hampton, and Erik. Erik, Katahdin, and NY64 had very high percentages of defects in this test. Specific gravities for all seven varieties were very high with five of the seven higher than 1.095.

Field performance data for seven russeted varieties grown at Presque Isle in 1984 are presented in Table 11. Lemhi ranked highest in total and usable yield followed by WF564-3. Other high yielding russets were Alaska Russet and Russet Burbank, even though the latter had a high percentage of tuber defects. Four of the seven russeted varieties had specific gravities higher than 1.090 and the other three russeted varieties were higher than 1.080.

New Jersey

Data in Table 12 show yields, percent defects, grade sizes for two market grade sizes, and specific gravities for 34 round white potato varieties grown at Deerfield, New Jersey. The five highest ranking varieties in total yield were: CF7523-1, Superior, AF307-5, Yankee Supreme, and NY64. After grading, the ranking for usable yield changed slightly with CF7523-1 highest followed by: AF307-5, Superior, Yankee Supreme, Islander, and NY64. Both Islander and F73008 had high percentages of defects. Only one variety had a specific gravity of 1.080. Thirteen were between 1.070 and 1.080; and 20 of the 34 varieties in this test had specific gravities less than 1.070.

Yields, percent defects, and specific gravities for nine russeted varieties grown at Freehold, New Jersey are presented in Table 13. The four highest ranking varieties in total and usable yield were WF564-3, Alaska Russet, ND388-1, and Gold Rus. All varieties had high percentages of small tubers. Specific gravities, however, were quite favorable with six of the nine varieties in this test 1.080 or higher.

Table 10. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 7 late maturing potato varieties grown at Presque Isle, Maine - 1984

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Erik	382	282	125	24.8	69.6	59.1	1.079	20.00
Hampton	342	304	112	8.7	82.0	67.9	1.097	23.80
Katahdin	306	262	100	11.5	79.8	68.0	1.097	23.80
Red Pontiac	382	350	125	5.5	82.6	71.7	1.084	21.06
NY59	353	317	115	7.0	74.5	64.6	1.101	24.65
NY64	357	233	117	32.1	63.1	48.1	1.096	23.59
NY67	291	257	95	6.9	78.2	58.4	1.100	24.44
Waller Duncan L.S.D. (0.05)	24	16					0.002	

[1]Planted - May 21; killed - September 27; harvested - October 9, 1984.
Seedpieces of all varieties spaced 8 inches apart. Fertilization: 125-125-125.

[2]Includes sunburned, growth cracked, and tubers with second growth.

Table 11. Yield, usable yield, percent defects, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 7 russeted potato varieties grown at Presque Isle, Maine - 1984.

Variety[1]	Yield above 1⅛ inches Cwt./A.	Usable yield above 1⅛ inches Cwt./A.	Percent of R. Burbank yield	Percent defects[2]	Percentage of yield 4 - 10 ounces	Specific gravity	Percent total solids
Alaska Russet	289	268	96	7.2	51.1	1.098	24.01
Gold Rus	249	233	83	6.4	58.3	1.094	23.17
Lemhi	351	319	117	8.5	49.0	1.104	25.28
Russet Burbank	300	245	100	16.2	52.4	1.101	24.65
CF7750-1	245	202	81	11.2	48.2	1.089	22.11
CF7789-1	242	216	81	7.6	47.8	1.084	21.06
WF564-3	345	293	115	11.6	50.5	1.088	21.90
Waller Duncan L.S.D. (0.05)	23	29				0.003	

[1]Planted - May 21; killed - September 27; harvested - October 11, 1984. Fertilization: 125-125-125.

Seedpiece spacing: Alaska Russet, CF7750-1, CF7789-1 - 9 inches
Gold Rus - 12 inches
Lemhi and W564-3 - 14 inches
Russet Burbank - 16 inches

[2]Includes mostly sunburned, growth cracked, and tubers with second growth.

Table 12. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 34 potato varieties grown at Deerfield, New Jersey - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Atlantic	426	419	104	1.5	93.5	49.5	1.078	19.79
Campbell 14	354	346	84	1.8	91.6	58.5	1.063	16.63
Conestoga	419	387	100	7.7	84.7	46.9	1.071	18.32
Denali	348	335	83	3.4	87.4	43.2	1.085	21.27
Hampton	403	391	96	2.5	91.3	57.8	1.063	16.63
Hudson	355	339	85	4.5	90.6	65.9	1.070	18.10
Islander	453	444	108	2.0	84.6	31.9	1.074	18.95
Jemseg	369	316	88	11.7	82.9	67.4	1.067	17.47
Katahdin	419	412	100	1.2	92.6	67.3	1.064	16.84
Norchip	395	377	94	4.5	85.0	35.3	1.075	19.16
Rosa	377	365	90	3.1	82.7	31.6	1.066	17.26
Simcoe	421	419	100	0.3	96.0	65.3	1.073	18.74
Sunrise	340	332	81	2.1	87.1	40.0	1.065	17.05
Superior	482	461	115	4.4	91.7	57.9	1.069	17.89
Yankee Chipper	401	392	96	2.1	82.1	22.0	1.076	19.37
Yankee Supreme	471	451	112	4.1	91.5	65.4	1.075	19.16
AF236-1	381	359	91	5.9	86.2	43.9	1.078	19.79
AF307-5	473	463	113	1.9	92.1	54.9	1.064	16.84
AF330-1	363	343	87	5.6	87.3	48.9	1.076	19.37
AF332-9	415	402	99	3.0	90.4	47.6	1.067	17.47
B6949-WV3	408	396	97	2.0	90.6	56.9	1.067	17.47
BR7088-18	420	398	100	5.1	89.3	53.1	1.080	20.21
CF7523-1	487	478	116	1.6	86.4	33.8	1.070	18.10
CF7622-6	333	328	79	1.6	85.6	43.8	1.058	15.57

Table 12 - continued

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
CF7679-15	409	387	98	5.3	89.4	58.5	1.074	18.95
CF7719-6	286	270	68	5.9	85.4	41.4	1.060	15.99
CF7722-19	324	314	77	3.2	84.0	27.2	1.058	15.57
CF7789-1	430	412	103	4.1	88.1	48.0	1.066	17.26
CF72107-15	277	265	66	4.6	86.1	41.2	1.058	15.57
CF72111-5	397	376	90	6.0	83.8	40.1	1.072	18.53
CF76136-11	355	334	85	5.9	70.2	11.3	1.069	17.89
CF77154-10	358	352	85	1.5	83.5	18.1	1.076	19.37
F73008	425	361	101	14.6	77.4	41.6	1.066	17.26
NY64	458	443	109	2.7	88.3	49.5	1.071	18.32
Waller Duncan L.S.D. (0.05)	88	80					0.004	

[1]Planted - April 28; killed - August 21; harvested - August 23, 1984.
Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-150-150.

[2]Includes sunburned, second growth, growth cracked, and scabby tubers.

Table 13. Total yield, usable yield, percent defects, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 9 russeted varieties grown at Freehold, New Jersey - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of R. Burbank yield	Percent defects[2]	Percentage of yield 4 - 10 ounces	Specific gravity	Percent total solids
Acadia Russet	139	113	105	17.7	32.5	1.071	18.32
Agassiz	110	91	83	23.8	33.1	1.075	19.16
Alaska Russet	205	195	155	5.3	32.7	1.084	21.06
BelRus	159	141	120	10.9	30.5	1.084	21.06
Gold Rus	171	165	130	3.4	9.0	1.084	21.06
Russet Burbank	132	123	100	6.7	29.4	1.079	20.00
ND388-1	185	174	140	5.9	37.5	1.084	21.06
ND534-4	91	86	69	6.3	29.4	1.082	20.64
WF564-3	304	276	230	9.0	23.6	1.080	20.21
Waller Duncan L.S.D. (0.05)	62	65				0.005	

[1]Planted - April 27; killed - August 30; harvested - September 27, 1984.
Seedpieces of all varieties spaced 9 inches apart. Fertilization: 200-150-150.

[2]Includes sunburned, growth cracked, and knobby tubers.

Long Island, New York

Total and usable yields, percent defects, percentage of U.S. No. 1 (Size A) tubers, and specific gravities for six early-medium early varieties grown at Riverhead are presented in Table 14. The three highest yielding varieties in total and usable yield were Onaway, Sunrise, and CF7719-6. Only one variety, Islander, reached a specific gravity of 1.070. All others were lower than 1.065 with two less than 1.060 in specific gravity.

Yields, percent defects, percentages of Size A tubers, and specific gravities for 12 main season varieties grown at Riverhead are presented in Table 15. The five highest varieties in total yield were: Hudson, NY64, Hampton, Wauseon, and Katahdin. After sizing and grading, the highest varieties in usable yield were: Hampton, Hudson, Katahdin, Wauseon, and NY64. Hudson, AF236-1, and NY64 had high percentages of defects. In this test, two varieties had gravities of 1.084; three more were higher than 1.075, and the remaining seven were 1.070 or a few points lower. Tuber sizes in this test were toward the smaller size classes.

Data for a five-entry red skinned variety test conducted at Riverhead, New York are presented in Table 16. Chieftain and Rhine Red were the two highest yielding varieties in both total and usable yield. Erik yielded quite well but had a very high percent of defects. Only one variety, Rhine Red, was higher than 1.070 in specific gravity.

Yields, percent defects, percentage of yield from 4 to 10 ounces, and specific gravities for 11 russeted varieties grown at Riverhead are presented in Table 17. Acadia Russet ranked highest in total and usable yield followed by WF564-3. Russet Burbank ranked third in total yield but had 33 percent defects which moved the ranking for usable yield to sixth place. BelRus in this test produced only 70 cwts. of usable tubers. Russet Burbank produced

Table 14. Total yield, usable yield, percent defects, percentage of yield between 2½ to 4 inches, specific gravity, and percent total solids for 6 early maturing potato varieties grown at Riverhead, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 2-4 inches Cwt./A.	Percent of Superior yield	Percent defects[2]	Percentage of yield 2½ to 4 inches	Specific gravity	Percent total solids
Islander	313	211	79	2	27	1.070	18.10
Onaway	412	319	119	9	51	1.062	16.42
Sunrise	375	313	117	2	53	1.064	16.84
Superior	330	268	100	4	41	1.064	16.84
CF7719-6	356	295	110	5	56	1.056	15.15
CF7722-19	277	196	73	8	30	1.059	15.78
Waller Duncan L.S.D. (0.05)	45	43					

[1]Planted - April 13; harvested - August 15, 1984.

Seedpieces of all varieties spaced 9.3 inches apart. Fertilization: 80-200-160 plus 80 lbs. N side-dressed.

[2]Includes misshapen, growth cracked, and sunburned tubers.

Table 15. Total yield, usable yield, percent defects, percentage of yield between 2½ and 4 inches, specific gravity, and percent total solids for 12 main season potato varieties grown at Riverhead, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 2-4 inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 2½ to 4 inches	Specific gravity	Percent total solids
Hampton	450	355	109	14	56	1.068	17.68
Hudson	498	338	104	26	53	1.075	19.16
Islander	350	272	84	3	28	1.076	19.37
Katahdin	395	326	100	6	58	1.072	18.53
Rosa	277	192	59	7	32	1.070	18.10
Superior	361	292	89	8	44	1.070	18.10
Yankee Chipper	329	216	66	12	20	1.084	21.06
Wauseon	404	324	99	9	53	1.068	17.68
AF236-1	375	261	80	18	34	1.084	21.06
AF330-1	346	246	75	11	31	1.076	19.37
CF76136-11	297	166	51	17	10	1.070	18.10
NY64	447	310	95	20	44	1.074	18.95
Waller Duncan L.S.D. (0.05)	38	45					

[1]Planted - April 13; killed - September 7; harvested - September 28, 1984.

Seedpieces of all varieties spaced 9.3 inches apart. Fertilization: 80-200-160 plus 80 lbs. N side-dressed.

[2]Includes sunburned, growth cracked, misshapen, and badly scabbed tubers.

Table 16. Total yield, usable yield, percent defects, percentage of yield between 2 and 4 inches, specific gravity, and percent total solids for 5 red skinned potato varieties grown at Riverhead, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 2-4 inches Cwt./A.	Percent of Norland yield	Percent defects[2]	Percentage of yield 2 to 4 inches	Specific gravity	Percent total solids
Chieftain	330	255	197	4	75	1.068	17.68
Erik	309	208	160	14	67	1.063	16.63
Norland	193	129	100	2	67	1.059	15.78
Redsen	208	136	105	1	55	1.063	16.63
Rhine Red	320	254	187	6	79	1.077	19.58
Waller Duncan L.S.D. (0.05)	35	55					

[1]Planted - May 2; killed - September 7; harvested - September 20, 1984.

Seedpieces of all varieties spaced 9.3 inches apart. Fertilization: 80-200-160 plus 80 lbs. N side-dressed.

[2]Includes growth cracked and misshapen tubers.

Table 17. Total yield, usable yield, percent defects, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 11 russeted potato varieties grown at Riverhead, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 4 to 16 oz. Cwt./A.	Percent of BelRus yield	Percent defects[2]	Percentage of yield 4 to 16 ounces	Specific gravity	Percent total solids
Acadia Russet	403	328	465	4	81	1.072	18.53
Agassiz	169	89	126	6	53	1.066	17.26
Alaska Russet	226	123	174	3	54	1.074	18.95
BelRus	99	70	100	4	71	1.073	18.74
Gold Rus	210	128	181	15	62	1.065	17.05
Russet Burbank	352	201	285	33	57	1.079	20.00
CF7789-1	270	207	294	11	71	1.064	16.84
MN9319	308	218	310	8	70	1.064	16.84
ND388-1	292	218	310	4	74	1.075	19.16
ND534-4	288	197	280	11	68	1.069	17.89
WF564-3	371	250	355	8	69	1.066	17.26
Waller Duncan L.S.D. (0.05)	62	60					

[1]Planted - April 13; killed - September 7; harvested - September 28, 1984.
Seedpieces of Russet Burbank spaced 12 inches apart; all other varieties spaced 9.3 inches apart.
Fertilization: 80-200-160 plus 80 lbs. N side-dressed.

[2]Includes misshapen, growth cracked, sunburned, and scabby tubers.

the highest specific gravity of 1.073 and only five of the 11 entries were higher than 1.070.

Table 18 shows the yield, percent defects, and hollow heart ratings for 11 white potato varieties grown at Sagaponack, New York. Clone NY64 ranked highest in total yield followed by CF7523-1, Hampton, and Hudson. After sizing and grading, the ranking for usable yield was NY64, Hampton, Hudson, and CF7523-1. Islander had quite a high hollow heart rating of 10 out of 30 tubers examined. No specific gravities were available for this test.

Four russeted varieties were tested at Sagaponack and the data are presented in Table 19. Acadia Russet and MN9319 had total yields of 281 and 216 cwt., respectively. Because of small tuber sizes and high defects, only Acadia Russet had an acceptable usable yield. Approximately half of the Gold Rus tubers examined for hollow heart were found with this defect.

Up-State New York

Yields, percent defects, percentages of yield in two market grade sizes, and specific gravities for 14 early-medium early varieties grown at Freeville, New York are shown in Table 20. The five highest ranking varieties in total yield were: CF7523-1, Caribe, CF74135-3, Norland, and Superior. The five highest ranking varieties in usable yield were the same as for total yield. In general, most varieties were toward the smaller tuber sizes. The highest specific gravity in this test was 1.089 for Simcoe. Eight varieties were higher than 1.080; and only one variety was below 1.070 in specific gravity.

Data for a 21-entry test conducted at Freeville are presented in Table 21. The six highest yielding varieties in total yield were: Erik, F73008, Hampton, AF303-5, NY59, and Atlantic. After grading, the usable yield ranking changed with Erik first followed by: AF303-5, NY59, F73008, B6949-WV3, and Hampton. The highest specific gravity of 1.099 was produced by Chipbelle. Sixteen of the 21

Table 18. Total yield, usable yield, percent defects, hollow heart ratings and percentage of yield greater than 2 inches for 11 potato varieties grown at Sagaponack, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield above 2 inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Hollow heart[3]	Percentage of yield above 2 inches
Hampton	382	316	144	2	4	83
Hudson	366	297	138	9	4	81
Islander	211	138	80	3	10	65
Katahdin	266	181	100	5	1	68
Rosa	194	108	73	8	2	56
Sunrise	317	237	119	4	1	75
Superior	304	213	114	5	2	70
Wauseon	171	98	64	8	4	58
Yankee Chipper	317	211	119	5	5	67
CF7523-1	418	288	157	5	1	69
NY64	541	389	204	10	1	72
Waller Duncan L.S.D. (0.05)	80	69				

[1]Planted - April 27; harvested - October 18, 1984.

Seedpieces of all varieties spaced 9.3 inches apart. Fertilization: 176-352-176.

[2]Includes misshapen, growth cracked, and sunburned tubers.

[3]Number found per 30 tubers cut and examined for hollow heart.

Table 19. Total yield, usable yield, percent defects, hollow heart ratings, and tuber grade size distribution for 4 russeted varieties grown at Sagaponack, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 4 - 16 oz. Cwt./A.	Percent of BelRus yield	Percent defects[2]	Hollow heart[3]	Per-cent 4 - 8 ounces	Per-cent 8 - 16 ounces	Percent over 16 ounces
Acadia Russet	281	140	158	5	2	29	21	5
BelRus	190	88	100	1	2	39	7	0
Gold Rus	102	31	35	12	15	30	0	0
MN9319	216	77	87	13	2	25	10	2
Waller Duncan L.S.D. (0.05)	63	63						

[1]Planted - April 27; harvested - October 18, 1984.
Seedpieces of all varieties spaced 9.3 inches apart. Fertilization: 176-352-176.

[2]Includes misshapen and growth cracked tubers.

[3]Number found per 30 tubers cut and examined for hollow heart.

Table 20. Total yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 14 early maturing potato varieties grown at Freeville, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 1-7/8 to 4 inches Cwt./A.	Percent of Superior yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2½ to 4 inches	Specific gravity	Percent total solids
Caribe	430	383	113	7	89	68	1.077	19.58
Norchip	355	266	78	17	75	50	1.087	21.69
Norland	392	339	100	8	87	63	1.071	18.32
Redsen	374	338	100	1	90	59	1.073	18.74
Simcoe	323	293	86	4	91	75	1.089	22.11
Sunrise	370	300	88	14	81	64	1.084	21.06
Superior	392	339	100	8	87	70	1.081	20.43
AF330-1	377	298	88	15	79	64	1.086	21.48
CF7523-1	490	453	134	2	93	71	1.083	20.85
CF7719-6	381	303	89	13	80	59	1.074	18.95
CF7722-19	342	301	89	6	89	63	1.074	18.95
CF74135-3	429	365	108	9	85	65	1.069	17.89
CF76136-11	342	258	76	13	76	51	1.086	21.48
CF77154-10	354	296	87	10	83	69	1.086	21.48
Waller Duncan L.S.D. (0.05)	40	44					0.002	

[1]Planted - April 30; harvested - August 20, 1984.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-150-150.

[2]Includes sunburned and growth cracked tubers.

Table 21. Total yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 21 potato varieties grown at Freeville, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 1-7/8 to 4 inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2½ to 4 inches	Specific gravity	Percent total solids
Atlantic	414	326	91	11	79	68	1.093	22.96
Belchip	401	328	92	11	81	70	1.087	21.69
Campbell 14	387	349	98	6	90	75	1.082	20.64
Chipbelle	371	343	96	5	92	75	1.099	24.22
Conestoga	342	279	78	13	82	66	1.085	21.27
Crystal	406	349	97	9	86	67	1.080	20.21
Erik	491	458	128	4	93	83	1.071	18.32
Hampton	442	368	103	11	83	75	1.078	19.79
Islander	394	356	99	3	89	65	1.086	21.48
Katahdin	402	358	100	8	88	76	1.078	19.79
Monona	385	344	96	5	89	76	1.074	18.95
Rhine Red	411	356	99	4	87	72	1.078	19.79
Rosa	406	344	96	7	85	61	1.080	20.21
Yankee Chipper	396	335	94	8	85	59	1.088	21.90
AF303-5	434	407	114	3	94	77	1.088	21.90
AF332-9	379	333	93	9	88	70	1.081	20.43
B6949-WV3	420	379	106	7	90	77	1.080	20.21
CF72107-15	332	276	77	10	83	68	1.077	19.58
F73008	470	393	110	13	83	71	1.083	20.85
NY59	432	403	113	1	94	79	1.083	20.85
NY64	409	334	93	13	81	65	1.081	20.43
Waller Duncan L.S.D. (0.05)	40	44					0.002	

. . . continued

Table 21 - continued

[1]Planted - April 30; killed - August 27; harvested - August 28, 1984.

Seedpieces of all varieties spaced 10 inches apart. Fertilization: 150-150-150.

[2]Includes sunburned, growth cracked, and misshapen tubers.

entries were 1.080 or higher in specific gravity and there were no varieties lower than 1.071.

A russeted variety trial was also conducted at Freeville and the data are shown in Table 22. Acadia Russet ranked highest in yield followed by WF564-3, Alaska Russet, and Lemhi. After grading, the usable yield ranking was Acadia Russet, ND534-4, Alaska Russet, and Lemhi. Gold Rus and ND388-1 had very high percentages of defects. Only one variety, WF564-3, had a low specific gravity of 1.077. All other varieties were between 1.080 and 1.090.

Yields, percent defects, hollow heart ratings, percentages of tubers in grade size 2 to 4 inches, and specific gravities for eight round varieties are presented in Table 23 for Elba, New York. Clone NY59 had the highest total and usable yields followed by Hampton. Rosa ranked third in total yield but fifth in usable yield. Only four of the eight round varieties in this test were 1.070 or higher in specific gravity. In this same test, two russeted varieties were compared. Acadia Russet out-yielded Lemhi but was somewhat lower in specific gravity. Note in Table 23 that no hollow heart was found in tubers from this test at Elba.

Data presented in Table 24 for nine round and two russeted varieties grown at Savannah, New York indicated that the four highest ranking varieties in total yield were Hampton, NY59, Katahdin, and Rosa. Ranking for usable yield was NY59, Katahdin, Hampton, and Islander. Acadia Russet out-yielded Lemhi in both total and usable yield. Only four of the 11 entries in this test were 1.070 or higher. One variety, Redsen, had a low specific gravity of 1.061.

Four potato varieties were tested at Cohocton, New York and another four-entry test was conducted at Hermitage, New York. Data from these two tests are presented in Table 25. At Cohocton, Acadia Russet and Lemhi out-yielded Katahdin and Monona. At this site, Lemhi had the highest specific gravity of 1.081. At

Table 22. Total yield, usable yield, percent defects, percentage of yield in two size classes, specific gravity, and percent total solids for 10 russeted potato varieties grown at Freeville, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 4 - 16 ounces Cwt./A.	Percent of R. Burbank yield	Percent defects[2]	Percentage of yield 2 - 16 ounces	Percentage of yield 4 - 16 ounces	Specific gravity	Percent total solids
Acadia Russet	378	252	170	6	79	67	1.081	20.43
Agassiz	242	142	96	7	84	69	1.082	20.64
Alaska Russet	351	211	143	12	76	60	1.083	20.85
BelRus	253	157	106	4	84	63	1.089	22.11
Gold Rus	271	145	98	16	74	62	1.083	20.85
Lemhi	340	204	138	9	80	60	1.089	22.11
Russet Burbank	305	148	100	10	74	49	1.087	21.69
ND388-1	310	187	127	19	71	55	1.081	20.43
ND534-4	323	218	148	3	86	68	1.081	20.43
WF564-3	370	195	132	12	85	75	1.077	19.58
Waller Duncan L.S.D. (0.05)	40	45					0.004	

[1]Planted - May 1; harvested - August 27, 1984.

Seedpieces of all varieties spaced 10 inches apart. Fertilization: 150-150-150.

[2]Includes sunburned, growth cracked, and misshapen tubers.

Table 23. Total yield, usable yield, percent defects, percentage of yield by grade size class, hollow heart ratings, specific gravity, and percent total solids for 10 potato varieties grown at Elba, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 2 - 4 inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 2 - 4 inches	Hollow heart[3]	Specific gravity	Percent total solids
Hampton	367	275	104	14	75	0	1.065	17.05
Islander	324	255	96	7	78	0	1.078	19.79
Katahdin	344	266	100	14	77	0	1.069	17.89
Redsen	265	153	58	10	58	0	1.062	16.42
Rosa	354	253	95	14	71	0	1.071	18.32
Yankee Chipper	298	185	70	19	62	0	1.078	19.79
NY59	411	324	122	13	79	0	1.070	18.10
NY64	350	255	96	17	73	0	1.069	17.89
		4 - 16 ounces			4 - 16 ounces			
Acadia Russet	310	209	78	9	67	0	1.071	18.32
Lemhi	261	137	51	9	52	0	1.079	20.00
Waller Duncan L.S.D. (0.05)	34	38					0.003	

[1]Planted - June 8; harvested - October 8, 1984.

Seedpieces of all varieties spaced 9 inches apart in 34-inch rows. Fertilization: Unknown.

[2]Includes mostly sunburned tubers.

[3]Number found per 40 tubers cut and examined for hollow heart.

Table 24. Total yield, usable yield, percent defects, percentage of yield by grade size class, hollow heart ratings, specific gravity, and percent total solids for 11 potato varieties grown at Savannah, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield 2 - 4 inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 2 - 4 inches	Hollow heart[3]	Specific gravity	Percent total solids
Hampton	474	349	98	18	73	15	1.066	17.26
Islander	376	297	83	10	79	10	1.073	18.74
Katahdin	445	357	100	13	80	9	1.066	17.26
Monona	373	285	80	14	76	2	1.062	16.42
Redsen	299	234	65	2	77	0	1.069	16.21
Rosa	417	295	83	11	71	2	1.069	17.89
Yankee Chipper	377	282	79	8	74	1	1.079	20.00
NY59	460	399	112	4	87	7	1.068	17.68
NY64	383	294	82	11	77	2	1.068	17.68
		4 - 16 ounces			4 - 16 ounces			
Acadia Russet	431	324	91	7	75	10	1.072	18.53
Lemhi	423	293	82	6	69	17	1.070	18.10
Waller Duncan L.S.D. (0.05)	91	82					0.004	

[1]Planted - June 7; harvested - October 5, 1984.

Seedpieces of all varieties spaced 9 inches apart in 32-inch rows. Fertilization: Unknown.

[2]Includes sunburned and growth cracked tubers.

[3]Number found per 40 tubers cut and examined for hollow heart.

Table 25. Total yield, usable yield, percent defects, percentage of tubers U.S. No. 1 size, hollow heart ratings, specific gravity, and percent total solids for potato varieties grown at Cohocton and Hermitage, New York - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield U.S. #1 Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield U. S. #1 size	Hollow heart[3]	Specific gravity	Percent total solids
				Cohocton, New York				
Acadia Russet	349	262	126	8	75	0	1.075	19.16
Katahdin	253	207	100	7	82	1	1.075	19.16
Lemhi	336	247	119	9	73	3	1.081	20.43
Monona	262	188	91	13	71	0	1.073	18.74
Waller Duncan L.S.D. (0.05)	58	57					0.006	
				Hermitage, New York				
Acadia Russet	483	309	126	7	63	1	1.080	20.21
Campbell 14	371	296	121	16	80	0	1.081	20.43
Katahdin	323	245	100	12	76	4	1.077	19.58
Lemhi	436	310	127	12	71	6	1.089	22.11
Waller Duncan L.S.D. (0.05)	52	61					0.004	

[1]Cohocton: Planted - June 2; harvested - October 4, 1984. Fertilization: 115-115-138.
Hermitage: Planted - June 11; harvested - October 9, 1984. Fertilization: Unknown.

Seedpieces of all varieties spaced 9 inches apart at both locations.

[2]Includes sunburned, growth cracked, and misshapen tubers.

[3]Number found per 30 tubers cut and examined for hollow heart.

Hermitage, New York, Acadia Russet and Lemhi outyielded Katahdin and Campbell 14. Lemhi had the highest specific gravity of 1.089 and Katahdin the lowest at 1.077.

Tully, New York

Yields, percent defects, and percentages of total yield from 1-7/8 to 4 inches (U.S. No. 1 size) for 20 potato varieties grown at Tully, New York by Agway, Inc. are presented in Table 26. The five highest ranking varieties in total yield were: F73008, Kennebec, CF7523-1, Hampton, and Campbell 14. After grading, the five highest ranking varieties in usable yield were: Kennebec, CF7523-1, Hampton, F73008, and Campbell 14. Many of the varieties in this test had high percentages of defects. No specific gravities are available at this time.

North Carolina

Total yields, percentages of yield in two market size classes, and specific gravities for 30 potato varieties grown at Tidewater, North Carolina are presented in Table 27. The seven highest yielding varieties were: CF7688-9, CF74135-3, WF564-3, Sunrise, CF7722-19, Pungo, and Yankee Chipper. The tubers of all varieties were small, as indicated by the low percentages of yield in the 2½ to 4 inch class. Atlantic had the highest specific gravity of 1.102. Eleven of the 30 entries in this test had specific gravities higher than 1.080 and 14 varieties were between 1.070 and 1.079 in specific gravity.

Pennsylvania

Yields, percent defects, percentages of yield in two market size classes, and specific gravities for 37 potato varieties grown at University Park, Pennsylvania are presented in Table 28. The ranking for the eight highest varieties in total and usable yield was: Erik, CF7523-1, NY64, Jemseg, Kennebec, NY59, Green Mountain, and Superior. Clone F73008 was the only variety with any appreciable tuber defects.

Table 26. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 20 potato varieties grown at Tully, New York - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches
BelRus	172	162	61	5.6	88.7
Campbell 14	345	304	121	11.9	86.6
Gold Rus	208	168	73	19.4	72.5
Hampton	369	333	130	9.7	89.5
Katahdin	284	245	100	13.6	84.6
Kennebec	456	360	161	21.4	77.5
Sunrise	277	264	98	4.7	93.3
Superior	299	271	105	9.3	87.7
AF303-5	303	274	107	9.6	88.6
AF330-1	273	246	96	10.0	86.8
B6949-WV3	240	204	85	14.9	82.7
BR7088-18	284	254	100	10.5	86.5
CF7523-1	428	346	151	19.1	78.0
CF7722-19	300	254	106	15.2	83.2
CF72107-15	195	174	69	10.8	85.9
CF74135-3	254	233	89	8.2	83.8
F73008	510	325	180	36.2	62.0
Waller Duncan L.S.D. (0.05)	53	62			

[1]Planted - June 5; harvested - October 15, 1984.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 150-225-225.

[2]Includes sunburned, growth cracked, and second growth tubers.

Table 27. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 30 potato varieties grown at Tidewater, North Carolina - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Percent of Pungo yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity[2]	Percent total solids
Atlantic	275	95	84.0	8.0	1.102	24.86
Caribe	273	94	89.7	14.9	1.074	18.95
Gold Rus	198	69	69.2	9.9	1.074	18.95
Hampton	277	96	88.3	10.9	1.078	19.79
Katahdin	222	77	83.1	7.1	1.084	21.06
Monona	259	90	83.6	5.7	1.075	19.16
Oceania	228	79	89.5	4.8	1.067	17.47
Pungo	289	100	90.3	6.6	1.079	20.00
Redsen	259	90	69.6	3.3	1.071	18.32
Simcoe	213	74	90.7	6.3	1.084	21.06
Sunrise	294	102	90.3	11.9	1.075	19.16
Superior	275	95	91.2	13.3	1.077	19.58
Yankee Chipper	286	99	83.9	5.8	1.079	20.00
Yankee Supreme	266	92	80.0	7.1	1.082	20.64
Yukon Gold	261	90	90.1	9.8	1.089	22.11
AF330-1	262	91	89.5	6.9	1.088	21.70
B5662-WV13	184	64	87.2	6.2	1.087	21.69
C7232-4	272	94	86.4	5.5	1.070	18.10
CF7523-1	280	97	82.1	3.8	1.082	20.64
CF7622-6	270	93	84.9	6.9	1.062	16.42
CF7679-15	265	92	92.0	13.2	1.083	20.85
CF7688-9	322	111	91.6	11.9	1.088	21.90
CF7719-6	268	93	85.2	6.4	1.070	18.10
CF7722-19	290	100	83.8	3.9	1.073	18.74
CF7789-1	270	93	82.9	6.1	1.063	16.63

Table 27 - continued

Variety[1]	Yield above 1½ inches Cwt./A.	Percent of Pungo yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity[2]	Percent total solids
CF74135-3	320	111	79.8	0.0	1.063	16.63
CF76136-11	248	86	74.3	3.2	1.072	18.53
CF76183-2	285	99	83.8	9.5	1.080	20.21
CF77154-10	256	89	78.9	3.5	1.082	20.64
WF564-3	305	105	78.7	5.0	1.068	17.68
Waller Duncan L.S.D. (0.05)	50					

[1]Planted - March 27; harvested - June 21, 1984.

[2]Composite sample from 4 replications.

Table 28. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 37 potato varieties grown at University Park, Pennsylvania - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Atlantic	404	402	125	0.5	93.0	69.2	1.087	21.69
Belchip	401	398	125	0.7	95.0	69.3	1.086	21.48
Campbell 14	425	425	132	0.0	93.3	50.6	1.075	19.16
Caribe	380	379	118	0.4	91.4	53.8	1.068	17.68
Chipbelle	357	357	111	0.0	94.2	56.5	1.092	22.75
Erik	461	461	143	0.0	95.6	70.7	1.068	17.68
Green Mountain	434	412	135	5.3	89.2	57.6	1.085	21.27
Hampton	382	382	119	0.0	97.5	67.2	1.069	17.89
Islander	371	371	115	0.0	90.2	36.6	1.080	20.21
Jemseg	444	434	138	2.4	95.2	77.8	1.071	18.32
Katahdin	322	319	100	1.2	93.2	61.6	1.070	18.10
Kennebec	444	432	138	2.8	90.3	62.7	1.075	19.16
Norchip	370	366	115	1.2	88.0	47.1	1.078	19.79
Norland	338	331	105	2.0	89.0	45.0	1.064	16.84
Redsen	289	289	90	0.0	86.6	40.5	1.064	16.84
Rhine Red	414	414	129	0.0	93.6	64.4	1.075	19.16
Rosa	395	395	123	0.0	90.3	44.4	1.077	19.58
Sebago	390	390	121	0.0	92.5	57.4	1.072	18.53
Sunrise	390	390	121	0.5	93.8	62.9	1.073	18.74
Superior	428	428	133	0.0	95.2	62.6	1.076	19.37
Yankee Chipper	346	346	107	0.0	85.3	27.1	1.085	21.27
AF236-1	371	366	115	1.3	90.7	51.1	1.081	20.43
AF303-5	412	412	129	0.0	94.6	64.2	1.083	20.85
AF330-1	343	343	107	0.0	93.6	57.9	1.079	20.00
AF332-9	386	382	114	1.0	91.6	62.5	1.072	18.53

Table 28 - continued

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percent defects[2]	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
B5662-WV13	281	281	87	0.0	93.4	54.9	1.076	19.37
B6949-WV3	387	387	120	0.0	94.1	67.5	1.070	18.10
BR7088-18	386	386	120	0.0	94.9	66.3	1.086	21.48
C7232-4	346	346	107	0.0	94.3	61.5	1.076	19.37
CF7523-1	460	460	143	0.0	89.9	50.7	1.077	19.58
CF72107-15	301	301	93	0.0	95.8	68.0	1.071	18.32
CF72111-5	401	401	125	0.0	92.1	57.6	1.077	19.58
CF76136-11	329	327	102	0.5	85.4	31.7	1.080	20.21
CF77154-10	351	351	109	0.0	90.0	44.2	1.079	20.00
F73008	422	380	131	10.3	82.3	44.3	1.079	20.00
NY59	439	437	136	0.5	94.1	63.8	1.077	19.58
NY64	450	447	140	0.6	92.8	59.6	1.072	18.53
Waller Duncan L.S.D. (0.05)	50	51					0.005	

[1]Planted - May 16; killed - August 27 and September 5; harvested - September 25, 1984. Seedpieces of all varieties spaced 8 inches apart. Fertilization: 80-80-80.

[2]Includes misshapen, growth cracked, and knobby tubers.

Islander and Yankee Chipper tubers were toward the smaller sizes at this location. Specific gravities in this Pennsylvania test were lower than in previous tests but ten varieties were 1.080 or higher. Another 22 varieties were between 1.070 and 1.079.

Pennsylvania also conducted a russet and long tuber type variety test at University Park, and the data are presented in Table 29. Kennebec had the highest total yield followed by F73008, WF564-3, Acadia Russet, and ND534-4. After sizing and grading, however, the ranking for usable yield was: Kennebec, WF564-3, Acadia Russet, ND534-4, and F73008. Russet Burbank and F73008 had high defects percentages. Lemhi had the highest specific gravity of 1.085 followed by BelRus at 1.082 and Russet Burbank with a gravity of 1.081. Only one variety, Allagash Russet, was below 1.070 in specific gravity.

Rhode Island

Total yields, percent U.S. No. 1 tuber sizes, and specific gravities for 31 potato varieties grown at Kingston, Rhode Island are presented in Table 30. The seven highest yielding varieties were: CF7523-1, Islander, NY59, AF303-5, Yankee Supreme, CF74135-3, and WF564-3. Specific gravities at Kingston were very low as compared to other locations in the Northeast. Only two varieties, Yankee Supreme and Denali, were 1.075 or higher. All other varieties were lower with 16 varieties below 1.060.

Vermont

Total yields, percentages of yield in two market grade classes, and specific gravities for a 20-variety test grown at Guildhall, Vermont are shown in Table 31. Clone CF7523-1 produced the highest yield of 493 cwt. followed by Hampton, Rosa, F73008, Acacia Russet, and Kennebec. Clone F73008 had the highest specific gravity of 1.083. Seven of the 20 entries had specific gravities of 1.075 or higher, while ten were below 1.070.

Table 29. Yield, usable yield, percent defects, percentage of yield of U.S. No. 1 size, specific gravity, and percent total solids for 13 long tuber type varieties grown at University Park, Pennsylvania - 1984.

Variety[1]	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of R.Burbank yield	Percent defects[2]	Percentage of yield U.S. #1 size	Specific gravity	Percent total solids
Acadia Russet	400	399	123	0.2	73.9	1.075	19.16
Agassiz	250	250	77	0.0	78.6	1.070	18.10
Allagash Russet	272	254	84	6.7	82.4	1.064	16.84
Alaska Russet	369	368	114	0.4	86.9	1.075	19.16
BelRus	241	241	74	0.0	87.5	1.082	20.64
Gold Rus	247	246	76	0.4	76.6	1.079	20.00
Kennebec	457	456	141	0.3	92.8	1.075	19.16
Lemhi	357	357	110	0.0	89.6	1.085	21.27
Russet Burbank	324	291	100	10.2	69.4	1.081	20.46
F73008	452	393	140	13.0	80.5	1.076	19.37
ND388-1	311	311	96	0.0	88.6	1.076	19.37
ND534-4	397	397	123	0.0	89.9	1.074	18.95
WF564-3	430	413	133	4.1	87.7	1.070	18.10
Waller Duncan L.S.D. (0.05)	43	44				0.002	

[1]Planted - May 16; killed - August 27 and September 5; harvested - September 26, 1984. Seedpieces of all varieties spaced 8 inches apart. Fertilization: 80-80-80.

[2]Includes misshapen, growth cracked, and knobby tubers.

Table 30. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 31 potato varieties grown at Kingston, Rhode Island - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percentage of yield 1-7/8 to 4 inches	Specific gravity[2]	Percent total solids
Acadia Russet	317	147	85.1	1.052	14.31
BelRus	149	69	71.9	1.067	17.47
Caribe	336	156	88.9	1.059	15.78
Delta Gold	194	90	83.5	1.057	15.38
Denali	312	145	88.4	1.076	19.37
Gold Rus	222	103	70.7	1.054	14.73
Hampton	262	122	88.3	1.055	14.94
Islander	408	190	87.1	1.062	16.42
Katahdin	215	100	87.7	1.048	13.46
Kennebec	296	138	83.4	1.063	16.63
Norchip	256	119	84.5	1.057	15.38
Norland	214	100	80.8	1.048	13.46
Oceania	212	98	76.0	1.057	15.38
Redsen	220	102	70.3	1.054	14.73
Rosa	210	98	83.0	n.a.	---
Superior	298	139	92.6	1.057	15.38
Yankee Chipper	228	106	67.6	1.072	18.53
Yankee Supreme	362	168	87.4	1.075	19.16
Yukon Gold	179	83	84.5	1.058	15.57
AF303-5	363	169	90.6	1.062	16.42
AF330-1	247	115	84.7	1.063	16.63
B6949-WV3	286	133	88.3	1.050	13.88
C7232-4	336	156	90.1	1.070	18.10

Table 30 - continued

Variety[1]	Yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percentage of yield 1-7/8 to 4 inches	Specific gravity[2]	Percent total solids
CF7523-1	479	219	85.1	1.065	17.05
CF7679-15	333	155	91.4	1.062	16.42
CF74135-3	350	163	87.8	1.052	14.31
CF76136-11	285	132	80.3	1.055	14.94
CF77154-10	282	102	82.7	1.070	18.10
F73008	337	157	87.1	1.060	15.99
NY59	364	169	88.6	1.057	15.38
WF564-3	351	163	83.2	1.064	16.84
Waller Duncan L.S.D. (0.05)	109		11.9		

[1]Planted - May 9; killed - September 7; harvested - September 13, 1984.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 80-168-224 at planting; 30 lbs. N at blossom.

[2]Composite sample from four replicates.

Table 31. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 20 potato varieties grown at Guildhall, Vermont - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Acadia Russet	361	102	85.5	41.7	1.079	20.00
Campbell 14	330	93	95.7	59.2	1.078	19.79
Crystal	298	84	92.2	51.1	1.064	16.84
Gold Rus	257	73	71.1	15.6	1.069	17.89
Hampton	426	121	97.2	71.8	1.069	17.89
Katahdin	353	100	94.3	61.7	1.075	19.16
Kennebec	359	102	92.6	62.7	1.074	18.95
Redsen	283	80	88.7	35.3	1.056	15.15
Rosa	387	110	92.5	55.9	1.068	17.68
Simcoe	308	87	96.3	62.5	1.079	20.00
Superior	331	94	96.3	61.3	1.063	16.63
AF330-1	311	88	94.6	56.3	1.080	20.21
B6949-WV3	342	97	95.4	65.6	1.069	17.89
BR7088-18	322	91	95.8	61.0	1.076	19.37
CF7523-1	493	140	94.5	58.0	1.072	18.53
CF7622-6	305	86	92.9	48.8	1.055	14.94
CF74135-3	324	92	90.1	50.8	1.054	14.73
CF77154-10	352	100	93.0	48.8	1.073	18.74
F73008	367	104	96.2	71.7	1.083	20.85
WF564-3	306	87	88.7	31.1	1.064	16.84
Waller Duncan L.S.D. (0.05)	61				0.006	

[1]Planted - May 22; killed - September 8; harvested - September 25, 1984.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 160-240-240-80.

Virginia

Yields, percentage of yield in two tuber size classes, and specific gravities for 20 early and mid-season varieties grown at Painter, Virginia are presented in Table 32. The standard variety, Superior, produced the highest yield in this test followed by CF7523-1, Sunrise, CF7688-9, and Yankee Supreme. Atlantic had the highest specific gravity of 1.080, but only seven of the 20 entries were 1.075 or higher.

Another test of seven medium late to late season varieties was conducted at Painter, Virginia, and the data are presented in Table 33. Hampton was the highest yielding variety followed by CF72107-15, Campbell 14, and Hudson. Specific gravities were low with Hudson the highest at 1.070. All other varieties were lower than 1.070 in specific gravity.

Yield, percentages of yields in two size classes, and specific gravities for six varieties in a colored skin variety test conducted at Painter, Virginia are presented in Table 34. Erik was the highest yielding variety, Red Pontiac was the second highest, and Caribe was third. Caribe with a specific gravity of 1.072 was the highest. Three other varieties were below 1.060; and specific gravities for Redsen and Rhine Red were not available.

Virginia also conducted a russet variety trial at Painter and the data are presented in Table 35. Clone WF564-3 ranked highest in yield followed by ND534-4, Acadia Russet, and MN7973. Clone AF330-1, not a russet, had the highest specific gravity of 1.071. All of the russet varieties in this test were less than 1.070 in specific gravity.

West Virginia

Yields, percentages of yield in two market grade tuber sizes, and specific gravities for ten medium early-medium varieties grown at Morgantown, West Virginia are presented in Table 36. Ranking

Table 32. Yield, usable yield, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 20 early to mid-season maturing varieties grown at Painter, Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Yield above 1-7/8 in. Cwt./A.	Percent of Superior yield	Percentage of yield above 1-7/8 inches	Percentage of yield above 2-1/2 inches	Specific gravity[2]	Percent total solids
Atlantic	219	174	72	78.8	58.4	1.080	20.21
Chippewa	227	184	76	80.7	66.9	1.064	16.84
Islander	227	164	68	72.5	45.5	1.068	17.68
Jemseg	212	179	73	84.1	66.6	1.076	19.37
Kennebec	216	174	72	79.8	38.9	1.062	16.42
Pungo	239	187	77	78.1	52.9	1.070	18.10
Simcoe	197	172	71	87.1	66.1	1.070	18.10
Sunrise	251	203	84	80.9	62.6	1.077	19.58
Superior	280	243	100	86.6	67.2	1.071	18.32
Yankee Chipper	239	188	77	78.4	53.0	1.067	17.47
Yankee Supreme	238	202	83	84.7	63.3	1.079	20.00
Yukon Gold	205	167	69	80.0	60.7	1.075	19.16
CF7523-1	283	218	90	77.0	54.9	1.072	18.53
CF7622-6	213	164	67	76.2	53.7	1.059	15.78
CF7679-15	219	188	77	85.0	68.3	1.066	17.26
CF7688-9	245	204	84	82.9	60.3	1.079	20.00
CF7722-19	227	186	77	81.7	58.2	1.066	17.26
CF72111-5	210	157	65	74.5	49.8	1.067	17.47
CF76183-2	180	146	60	81.1	54.1	1.067	17.47
CF77154-10	191	118	49	61.4	29.9	1.076	19.37
Waller Duncan L.S.D. (0.05)	45	43					

[1]Planted - March 23; harvested - July 11, 1984.

Seedpieces of all varieties spaced 12 inches apart in 36-inch rows. Fertilization: 100-100-100.

[2]Composite samples.

Table 33. Yield, usable yield, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 7 medium late to late season maturing potato varieties grown at Painter, Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Yield above 1-7/8 in. Cwt./A.	Percent of Katahdin yield	Percentage of yield above 1-7/8 inches	Percentage of yield above 2-1/2 inches	Specific gravity[2]	Percent total solids
Campbell 14	174	137	124	78.9	62.2	1.066	17.26
Hampton	205	179	161	87.0	70.5	1.063	16.63
Hudson	160	124	111	76.8	58.7	1.070	18.10
Katahdin	144	111	100	77.6	60.1	1.051	14.09
B6949-WV3	140	99	89	77.7	54.5	1.055	14.94
CF72107-15	190	153	138	80.1	60.9	1.064	16.84
F73008	152	115	104	75.3	54.8	1.062	16.42
Waller Duncan L.S.D. (0.05)	42	37					

[1]Planted - March 23; harvested - July 11, 1984.

Seedpieces of all varieties spaced 12 inches apart in 36-inch rows. Fertilization: 100-100-100.

[2]Composite samples.

Table 34. Yield, usable yield, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 6 colored skin varieties grown at Painter, Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Yield above 1-7/8 in. Cwt./A.	Percent of Red Pontiac yield	Percentage of yield above 1-7/8 inches	Percentage of yield above 2-1/2 inches	Specific gravity[2]	Percent total solids
Caribe	268	229	93	85.2	67.5	1.072	17.53
Erik	291	251	102	86.0	68.0	1.059	15.78
Norland	250	206	84	82.3	59.6	1.059	15.78
Red Pontiac	297	245	100	82.4	65.5	1.054	14.73
Redsen	210	148	61	70.6	40.2	n.a.	---
Rhine Red	177	110	45	62.1	41.2	n.a.	---
Waller Duncan L.S.D. (0.05)	39	36					

[1]Planted - March 23; harvested - June 11, 1984.

Seedpieces of all varieties spaced 12 inches apart in 36 inch rows. Fertilization: 100-100-100.

[2]Composite samples.

Table 35. Yield, usable yield, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 9 russeted potato varieties grown at Painter, Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Yield above 1-7/8 in. Cwt./A.	Percent of BelRus yield	Percentage of yield above 1-7/8 inches	Percentage of yield above 2-1/2 inches	Specific gravity[2]	Percent total solids
Acadia Russet	219	169	208	77.1	54.4	1.066	17.26
Alaska Russet	216	153	189	71.0	37.3	1.049	13.67
Allagash Russet	192	147	181	76.4	50.0	1.067	17.47
BelRus	133	81	100	81.0	32.5	1.068	17.68
Gold Rus	152	98	120	64.6	32.9	1.067	17.47
AF330-1	209	166	204	79.6	55.7	1.071	18.32
MN7973	217	172	212	79.4	55.6	1.066	17.26
ND534-4	257	184	227	71.7	36.9	1.066	17.26
WF564-3	314	244	300	77.7	49.9	1.062	16.42
Waller Duncan L.S.D. (0.05)	64	69					

[1]Planted - March 23; harvested - June 11, 1984.

Seedpieces of all varieties spaced 12 inches apart in 36-inch rows. Fertilization: 100-100-100.

[2]Composite samples.

Table 36. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 10 medium early-medium potato varieties grown at Morgantown, West Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Kennebec yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Caribe	181	143	58	79.3	68.2	1.070	18.10
Denali	293	232	95	79.3	62.8	1.094	23.17
Islander	303	274	98	90.2	76.0	1.081	20.43
Kennebec	310	273	100	88.3	75.4	1.073	18.74
Redsen	245	213	79	87.2	71.7	1.065	17.05
Rhine Red	304	271	98	89.1	72.3	1.071	18.32
Yankee Chipper	300	255	97	85.0	70.1	1.084	21.06
Yankee Supreme	271	251	87	92.5	77.7	1.085	21.27
CF7523-1	343	294	111	86.0	71.1	1.075	19.16
CF7688-9	279	226	90	81.0	70.0	1.087	21.69
Waller Duncan L.S.D. (0.05)	30	22				0.003	

[1]Planted - May 17; killed - August 31; harvested - September 11, 1984.

Seedpieces of all varieties spaced 9 inches apart in 36-inch rows.

Fertilization: 100-200-200.

for the 5 highest in total yield was: CF7523-1, Kennebec, Rhine Red, Islander, and Yankee Chipper. After sizing and grading for usable yield, the ranking was: CF7523-1, Islander, Kennebec, Rhine Red, and Yankee Chipper. Denali in this test had a high specific gravity of 1.085; and nine of the ten entries were above 1.070 in specific gravity.

Yields, percentages of yields in two grade size classes, and specific gravities for ten medium late-late varieties grown at Morgantown are shown in Table 37. Denali ranked highest in total yield followed by Katahdin, Hampton, F73008, and Campbell 14. After sizing and grading for usable yield, the ranking was: Katahdin, Denali, Campbell 14, Hampton, AF303-5, and BR7088-18. Denali had a high specific gravity of 1.093 in this test. Only four of the ten entries, however, were 1.075 or higher in specific gravity.

A russeted variety test of nine entries was also conducted at Morgantown, West Virginia and the data are presented in Table 38. Ranking for the highest four in total yield was WF564-3, Acadia Russet, Erik, and Lemhi. For usable yield, the ranking changed so that Acadia Russet ranked first followed by ND534-4, ND388-1, and Lemhi. BelRus and Lemhi had specific gravities of 1.085. Five of the nine entries in this test had specific gravities above 1.075.

TUBER SIZE DISTRIBUTION AND TUBER DEFECTS

Size of potato tubers is a very important consideration for all areas of the potato industry. Fresh market grade regulations specify maximum and minimum tuber size limits with some 40 plus grades of potatoes sold in the Northeast based on size limitations and percent defects. In practice, seed growers prefer the smaller tuber sizes; french fry processors prefer the larger sizes; and potato chippers prefer the small to medium sized tubers particularly for the small package trade. Fresh market packs have many local, state, and federal grades based on culinary uses such as the restaurant trade, quick food chain potato bar promotions, for soups, and for

Table 37. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 10 medium late-late potato varieties grown at Morgantown, West Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of Katahdin yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Campbell 14	305	271	87	88.9	74.2	1.073	18.74
Crystal	261	208	75	80.1	64.6	1.066	17.26
Denali	354	273	101	77.3	63.7	1.093	22.96
Hampton	342	267	98	78.2	68.4	1.071	18.32
Katahdin	350	308	100	87.6	74.7	1.075	19.16
AF303-5	302	265	86	87.5	74.3	1.080	20.21
AF330-1	245	161	70	66.1	56.6	1.073	18.74
BR7088-18	292	265	83	90.8	78.1	1.083	20.85
CF72107-15	289	243	83	84.0	70.3	1.069	17.89
F73008	338	263	97	77.7	63.8	1.074	18.95
Waller Duncan L.S.D. (0.05)	31	25				0.005	

[1]Planted - May 17; killed - September 14; harvested - October 9, 1984.

Seedpieces of all varieties spaced 9 inches apart in 36-inch rows. Fertilization: 100-200-200.

Table 38. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 9 russet potato varieties grown at Morgantown, West Virginia - 1984.

Variety[1]	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent of BelRus yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Acadia Russet	252	212	127	84.4	75.4	1.074	18.95
Agassiz	187	165	94	88.2	74.6	1.071	18.32
BelRus	199	182	100	91.5	75.4	1.085	21.27
Erik	251	185	126	74.2	66.4	1.061	16.21
Gold Rus	223	187	112	84.0	70.6	1.077	19.58
Lemhi	269	202	135	75.4	62.7	1.085	21.27
ND388-1	237	205	119	86.6	74.5	1.077	19.58
ND534-4	229	206	115	89.7	76.5	1.075	19.16
WF564-3	255	148	128	58.3	44.5	1.067	17.47
Waller Duncan L.S.D. (0.05)	24	19				0.005	

[1]Planted - May 17; killed - September 14; harvested - October 5, 1984.
Seedpieces of all varieties spaced 12 inches apart in 36-inch rows.
Fertilization: 100-200-200.

various processed frozen products. Depending on the market requirements, some varieties might be very satisfactory in one or more markets because of the tuber size distribution pattern; yet, in other market areas those same varieties might not be acceptable. To any individual grower, however, the uniformity of tuber size is very important because the uniform size characteristics have a high priority in the establishment of good general appearance of a fresh pack. It would be ideal to have varieties that produce a high percentage of usable yield in a very few size classes.

In 1984, no special management practices, other than seed-piece spacing, were used in the various variety trials to influence tuber size. It would appear from the data presented that moisture and length of growing season had a great influence on tuber size of all varieties in 1984. All cooperators in 1984 were requested to collect at least two market grade sizes of U.S. #1 (1-7/8 to 4 inches) and U.S. #1, Size A (2½ to 4 inches) for round white varieties and to hand-size the longer tuber types and russeted varieties on a weight basis. Not all cooperators heeded this request which makes variety comparisons among locations an impossibility.

The suggestion was also made that grading for defects would provide valuable information, but many cooperators ignored the suggestion or graded for total defects only. Defects must be known for each variety before its usable yield can be determined.

Data presented in Table 39 show the tuber size distribution and defects for 17 main crop varieties grown at Florenceville, New Brunswick, Canada. Note that none of the varieties produced any tubers over 3¼ inches in diameter. In general, the average tuber sizes were toward the smaller sizes. Conestoga, B6949-WV3, and F73008 had very high percentages of growth cracks. Katahdin and CF72107-15 had high percentages of sunburned tubers.

Tuber size distribution data and percent defects for seven early maturing varieties and four medium late maturing varieties

Table 39. Percent of total yield by distribution into grade size classes and percent defects for 17 main crop potato varieties grown at Florenceville, New Brunswick, Canada - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	% Sun-burn	% Second growth	% Growth cracks
Conestoga	9.0	58.2	17.8	0.7	0.1	14.2
Crystal	11.7	56.0	22.6	5.7	0.9	3.1
Gold Rus	25.8	58.9	9.5	2.6	0.4	2.8
Hampton	12.1	56.2	30.3	0.1	0.0	1.3
Islander	13.6	60.9	21.8	1.3	0.1	2.3
Katahdin	4.6	40.3	36.1	10.3	2.1	6.6
Kennebec	9.0	61.2	28.0	1.0	0.0	0.8
Russet Burbank	9.8	63.7	19.3	0.0	4.6	2.6
AF303-5	15.8	58.3	25.4	0.5	0.0	0.0
AF307-5	3.4	45.3	49.4	1.7	0.0	0.2
B6949-WV3	6.2	40.3	33.0	2.4	0.0	18.1
B7805-1	13.3	58.8	22.0	0.8	0.0	5.1
CF72107-15	8.8	46.4	27.9	10.2	0.2	6.5
F73008	3.7	34.4	23.4	4.9	0.3	33.3
ND388-1	13.6	68.1	14.4	0.0	1.9	2.0
NY59	8.4	53.7	30.9	3.4	0.0	3.6
NY64	14.7	67.4	10.5	1.2	0.0	6.2

grown at Dover, Delaware are presented in Tables 40 and 41, respectively. Most varieties except Oceania had acceptable percentages of tubers above 2½ inches with only Superior and NY63 producing many oversized tubers. Clone CF7523-1 and CF72107-15 had quite a lot of second growth and F73008 had a high percentage of tubers with growth cracks. Yankee Supreme, AF330-1, W718, and NY63 also had a lot of tubers with hollow heart.

Tuber size distribution and defects data for the russeted variety trial conducted at Dover, Delaware are presented in Table 42. In general, the tubers did not size up well at this location but ND388-1 and ND534-4 approached acceptable levels for over 10-ounce size tubers. Hollow hearted tubers at this location were few.

Data in Tables 43 through 47 represent the tuber size distributions and defects for the four variety maturity groups and the russeted varieties grown at Presque Isle, Maine. Tuber sizes for the early and medium early varieties were toward the smaller size classes as shown in Table 43. Redsen and CF7622-6 had high percentages of growth cracks and CF7679-15 had a high hollow heart rating. Data for the medium maturing varieties, as shown in Table 44, indicate that only AF307-5 sized up well. Defects for all round varieties in this test were very high. Even the standard, Kennebec, had a very high 25.2 percent of yield with second growth. For the russets grown in this medium maturity trial, only AF9058-M had many tubers over 10 ounces. Defects were also high for Agassiz, AF9058-M, and W752. Clone ND388-1 had quite a high hollow heart rating.

Varieties in the medium late maturing variety test did produce large tubers, as shown in Table 45; although B6949-WV3 had ten percent of its yield near 3¼ inches in diameter. Crystal, Kennebec, B6949-WV3, and B7805-1 had high percentages of growth cracked and misshapen tubers. Clone AF236-1 and Kennebec also had high hollow heart ratings.

The late maturing varieties grown at Presque Isle had slightly higher percentages of tubers in the larger size classes than varieties

Table 40. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 7 early maturing varieties grown at Dover, Delaware - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4 inches	Over 4 inches	% Second growth	% Growth cracks	Hollow heart[1]
Jemseg	17.4	19.4	62.9	0.2	0.0	0.1	9
Oceania	19.9	38.8	40.9	0.1	0.2	0.1	0
Superior	12.3	25.6	57.2	4.9	0.0	0.0	1
Yankee Supreme	15.9	13.3	70.8	0.0	0.0	0.0	12
AF330-1	27.1	31.9	38.2	0.0	2.2	0.6	14
CF7523-1	25.0	12.9	57.8	0.8	3.1	0.4	1
W718	12.6	11.2	74.3	1.9	0.0	0.0	13

[1]Number found per 40 large tubers cut and examined for hollow heart.

Table 41. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 4 medium late maturing varieties grown at Dover, Delaware - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4 inches	Over 4 inches	% Second growth	% Growth cracks	Hollow heart[1]
B6949-WV3	10.6	33.8	53.8	0.1	1.6	0.1	1
CF72107-15	11.7	36.1	48.8	0.1	3.2	0.1	1
F73008	13.2	26.8	46.8	2.8	0.4	9.9	2
NY63	10.9	40.2	43.0	5.1	0.6	0.1	7

[1]Number found per 40 large tubers cut and examined for hollow heart.

Table 42. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 9 russet varieties grown at Dover, Delaware - 1984.

Variety	Below 4 ounces	4 - 10 ounces	10- 16 ounces	% Second growth	% Growth cracks	Hollow heart[1]
Acadia Russet	25.7	31.9	37.3	5.1	0.0	3
Alaska Russet	41.7	32.0	26.2	0.1	0.0	1
BelRus	37.2	40.9	21.9	0.0	0.0	0
Gold Rus	44.8	37.1	17.4	0.0	0.7	0
CF7789-1	36.9	31.4	31.4	0.1	0.2	0
CF76183-2	31.7	40.5	27.7	0.1	0.0	0
ND388-1	27.5	26.1	46.3	0.1	0.0	1
ND534-4	24.5	25.7	49.7	0.1	0.0	5
WF564-3	32.6	31.5	35.8	0.1	0.0	3

[1]Number found per 40 large tubers cut and examined for hollow heart.

Table 43. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 11 early-medium early varieties grown at Presque Isle, Maine - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	% Sun-burn	% Mis-shapen	% Growth cracks	Hollow heart[1]
Redsen	12.1	41.2	22.1	11.4	0.3	0.1	1.5	11.3	0
Superior	1.4	17.1	31.4	40.0	3.1	2.4	0.8	3.8	2
B5662-WV13	4.2	15.0	24.6	37.4	2.9	9.2	2.3	4.4	1
CF7622-6	5.3	20.3	21.2	28.9	2.5	4.5	1.6	15.7	0
CF7679-15	3.2	12.3	24.4	44.7	8.7	3.5	0.5	2.7	10
CF7719-6	6.9	18.4	21.6	31.7	5.8	6.9	2.1	6.6	0
CF7722-19	5.0	20.5	31.5	30.0	2.9	5.5	2.4	2.2	0
CF74135-3	14.1	31.1	22.7	18.4	1.3	2.6	2.8	7.0	0
CF76136-11	13.0	37.1	24.1	14.4	1.2	3.5	2.2	4.5	0
CF76183-2	20.6% 0-4 oz.	57.3% 4-10 oz.		8.7% 10-16 oz.		3.2	6.8	3.4	0
CF77154-10	9.9	39.4	28.8	10.6	0.0	5.2	2.0	4.1	0

[1]Number found per 60 large tubers cut and examined for hollow heart.

Table 44. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 11 medium maturing varieties grown at Presque Isle, Maine - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Sun-burn	% Growth cracks	% Second growth	Hollow heart[1]
Kennebec	2.5	9.0	14.8	24.6	2.4	0.0	13.6	7.9	25.2	1
Rhine Red	2.3	13.1	18.7	39.8	7.2	0.5	0.4	9.6	8.4	1
AF307-5	2.7	11.4	25.7	39.3	10.1	0.0	3.1	5.5	2.2	0
AF332-9	2.2	16.6	28.2	41.4	1.8	0.1	0.7	3.2	5.8	0
CF7688-9	3.1	20.2	27.5	34.4	2.8	0.0	3.9	4.6	3.5	2
	Below to 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces						
Agassiz	36.5	46.2	3.1	0.6			0.4	10.0	3.2	[2]
AF9058M	15.6	48.4	11.6	1.7			6.6	12.6	3.5	0
CF72111-5	23.1	55.9	3.8	0.0			5.2	3.6	8.4	0
ND388-1	34.7	51.0	3.0	0.2			0.2	5.9	5.0	9
ND534-4	47.4	42.8	3.2	0.1			0.2	4.5	1.8	1
W752	26.5	45.8	4.8	1.3			4.7	6.6	10.3	0

[1]Number found per 60 large tubers cut and examined for hollow heart.

[2]Not enough large tubers to examine.

Table 45. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 9 medium late maturing varieties grown at Presque Isle, Maine - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Sun-burn	% Growth cracks	% Other defects[1]	Hollow heart[2]
Crystal	4.4	20.8	25.7	24.8	2.4	0.0	7.0	6.0	8.9	0
Kennebec	2.0	8.2	15.4	30.5	5.3	1.0	12.2	10.8	14.6	9
AF236-1	2.9	18.0	23.7	26.5	2.5	0.0	23.4	1.6	1.4	20
B6928-WV14	3.2	19.4	25.0	40.1	5.6	0.0	3.1	1.2	2.4	4
B6949-WV3	1.9	10.0	15.9	35.8	10.0	0.0	14.3	4.4	7.7	0
B7019-WV1	2.4	22.5	34.4	23.1	0.2	0.0	13.6	0.8	3.0	0
B7805-1	1.3	7.3	14.8	38.2	8.1	0.6	5.3	2.4	22.0	3
CF7587-7	4.2	26.2	34.8	28.1	0.3	0.0	3.9	1.4	1.1	0
CF72107-15	1.7	12.6	25.1	40.4	9.4	0.0	3.7	1.1	6.0	5

[1]Mostly second growth.

[2]Number found per 60 large tubers cut and examined for hollow heart.

in the other maturity groups but not by very much, as shown in Table 46. Erik and NY64 produced high percentages of growth cracked tubers and Katahdin and Red Pontiac had high hollow heart ratings.

Size distribution data and defects for the russet varieties grown at Presque Isle are presented in Table 47. Lemhi and CF7750-1 made an attempt to produce a lot of over 10-ounce tubers but all the varieties had small tuber sizes. Defects were not bad for russets with only Russet Burbank and WF564-3 having many defects. All varieties had some hollow heart.

In a 34-entry test conducted at Deerfield, New Jersey, several varieties sized up quite well but only a few varieties had any oversized tubers, as shown in Table 48. Jemseg and F73008 had high percentages of total defects. Hollow heart ratings for Atlantic and Yankee Chipper were also quite high. In a russeted variety trial at Freehold, New Jersey all varieties had high percentages of tubers less than market size of 4 ounces, as shown in Table 49. Acadia Russet, Agassiz, BelRus, and WF564-3 also had high percentages of defects.

Tuber size distribution data, percent total defects, and hollow heart ratings for four variety tests conducted at Riverhead, New York are presented in Tables 50 through 53. In the early maturing variety trial, the tubers for all varieties were on the small side, as shown in Table 50. Onaway and CF7722-9 had quite a few defects and Islander had an unacceptable hollow heart rating. In the main season (medium late-late) variety trial, tubers of all varieties were small and with the exception of Islander had high percentages of defects, as shown in Table 51. Hollow heart ratings were also high for all varieties except Superior, AF236-1, CF76136-11, and NY64. In a small red skinned variety trial at Riverhead, tubers of all varieties were small, as shown in Table 52. Erik had 14 percent defects but none of the varieties had any hollow heart. Data presented in Table 53 represent the size data, percent defects, and hollow heart ratings for russeted varieties grown at Riverhead, New York. Only

Table 46. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 7 late maturing potato varieties grown at Presque Isle, Maine - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Sun-burn	% Growth cracks	% Second growth	Hollow heart[1]
Erik	1.6	10.6	22.5	36.6	3.9	0.0	0.1	22.4	2.3	0
Hampton	2.3	14.1	23.5	44.4	7.0	0.0	4.2	3.6	0.9	1
Katahdin	2.7	11.8	23.1	44.8	6.1	0.0	7.2	4.1	0.2	10
Red Pontiac	2.3	11.0	21.6	50.1	8.8	0.7	0.8	1.9	2.8	12
NY59	1.9	9.9	16.1	48.5	15.3	1.4	3.1	3.3	0.5	1
NY64	3.0	15.0	22.1	26.0	1.8	0.0	6.4	23.7	2.0	0
NY67	4.5	19.8	24.4	34.1	10.3	0.0	1.9	5.0	0.0	0

[1]Number found per 60 large tubers cut and examined for hollow heart.

Table 47. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 7 russeted potatoes grown at Presque Isle, Maine - 1984.

Variety	Below 4 ounces	4 - 10 ounces	10- 16 ounces	Over 16 ounces	% Sun-burn	% Growth cracks	% Second growth	Hollow heart[1]
Alaska Russet	33.9	51.1	7.7	0.1	1.4	0.5	5.3	4
Gold Rus	26.2	58.3	8.6	0.5	0.7	1.6	4.1	3
Lemhi	24.2	49.0	17.7	0.7	1.2	3.0	4.2	4
Russet Burbank	18.9	52.4	10.3	2.2	0.0	3.3	12.9	4
CF7750-1	13.9	48.2	20.5	6.3	1.4	2.0	7.7	5
CF7789-1	35.9	47.8	5.4	0.4	1.6	7.6	1.3	6
W564-3	25.9	50.5	8.6	0.7	0.3	11.6	2.4	4

[1]Number found per 60 large tubers cut and examined for hollow heart.

Table 48. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 34 potato varieties grown at Deerfield, New Jersey - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects[1]	Hollow heart[2]
Atlantic	5.0	44.0	42.2	7.3	0.0	1.5	7
Campbell 14	6.1	33.1	44.1	14.4	0.5	1.8	4
Conestoga	7.6	37.8	34.7	12.2	0.0	7.7	4
Denali	9.2	44.2	34.2	9.0	0.0	3.4	7
Hampton	5.7	33.5	43.0	14.8	0.5	2.5	3
Hudson	4.9	24.7	41.5	24.4	0.0	4.5	0
Islander	13.4	52.7	29.3	2.6	0.0	2.0	4
Jemseg	2.7	15.5	33.1	34.3	2.7	11.7	4
Katahdin	5.7	25.3	46.5	20.8	0.5	1.2	1
Norchip	10.5	49.7	30.4	4.9	0.0	4.5	1
Rosa	14.2	51.1	28.6	3.0	0.0	3.1	2
Simcoe	3.7	30.7	47.8	17.5	0.0	0.3	1
Sunrise	10.8	47.1	33.1	6.9	0.0	2.1	2
Superior	3.9	33.8	46.0	11.9	0.0	4.4	0
Yankee Chipper	15.8	60.1	19.6	2.4	0.0	2.1	1
Yankee Supreme	4.4	26.1	41.0	24.4	0.0	4.1	8
AF236-1	7.9	42.3	37.2	6.7	0.0	5.9	2
AF307-5	6.0	37.2	42.5	12.4	0.0	1.9	2
AF330-1	7.1	38.4	40.8	8.1	0.0	5.6	2
AF332-9	6.6	42.8	39.6	8.0	0.0	3.0	0
B6949-WV3	6.6	33.7	43.3	13.6	0.8	2.0	0
BR7088-18	5.6	36.2	43.2	9.9	0.0	5.1	5
CF7523-1	12.0	52.6	30.8	3.0	0.0	1.6	0
CF7622-6	12.8	41.8	34.1	9.7	0.0	1.6	0
CF7679-15	5.3	30.9	43.2	15.3	0.0	5.3	4
CF7719-6	8.7	44.0	30.6	10.8	0.0	5.9	2

Table 48 - continued

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects[1]	Hollow heart[2]
CF7722-19	12.8	56.8	25.6	1.6	0.0	3.2	0
CF7789-1	7.8	40.1	37.3	10.7	0.0	4.1	3
CF72107-15	9.3	44.9	34.9	6.3	0.0	4.6	2
CF72111-5	10.2	43.7	30.4	9.7	0.0	6.0	4
CF76136-11	23.9	58.9	10.3	1.0	0.0	5.9	0
CF77154-10	15.0	65.4	16.0	2.1	0.0	1.5	2
F73008	8.0	35.8	32.4	9.2	0.0	14.6	0
NY64	8.5	38.8	35.2	14.3	0.5	2.7	0

[1]Includes sunburned, growth cracked, scabby, and tubers with second growth.

[2]Number found per 10 large tubers cut and examined for hollow heart.

Table 49. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 9 russeted potato varieties grown at Freehold, New Jersey - 1984.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Percent defects[1]	Hollow heart[2]
Acadia Russet	43.1	30.5	8.7	17.7	0
Agassiz	61.9	9.0	5.3	23.8	1
Alaska Russet	63.4	29.4	1.9	5.3	2
BelRus	42.8	37.5	8.8	10.9	0
Gold Rus	66.0	29.4	1.2	3.4	4
Russet Burbank	69.8	23.6	0.0	6.6	2
ND388-1	52.6	32.5	9.0	5.9	3
ND534-4	59.8	33.1	0.8	6.3	0
WF564-3	52.9	32.8	5.3	9.0	4

[1]Includes sunburned, growth cracked, knobby, and misshapen tubers.

[2]Number found per 40 large tubers cut and examined for hollow heart.

Table 50. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 6 early maturing potato varieties grown at Riverhead, New York - 1984.

Variety	2 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Percent defects[1]	Hollow heart[2]
Islander	41	27	0	2	18
Onaway	27	47	4	9	2
Sunrise	30	52	1	2	0
Superior	39	41	0	4	2
CF7719-6	27	48	8	5	0
CF7722-19	41	28	2	8	0

[1]Includes sunburned, growth cracked, and misshapen tubers.

[2]Number found per 40 tubers cut and examined for hollow heart.

Table 51. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 12 main season potato varieties grown at Riverhead, New York-1984.

Variety	2 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects[1]	Hollow heart[2]
Hampton	22	54	4	0	14	5
Hudson	14	44	9	1	26	7
Islander	49	28	0	0	3	19
Katahdin	24	54	4	1	6	10
Rosa	38	32	0	0	7	17
Superior	37	44	0	0	8	1
Yankee Chipper	46	20	0	0	12	4
Wauseon	27	52	1	0	9	9
AF236-1	36	33	1	0	18	0
AF330-1	40	31	0	0	11	8
CF76136-11	46	10	0	0	17	0
NY64	26	42	2	0	20	0

[1]Includes sunburned, growth cracked, misshapen, and scabby tubers.

[2]Number found per 40 tubers cut and examined for hollow heart.

Table 52. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 5 red skinned potato varieties grown at Riverhead, New York - 1984.

Variety	2 to 2½ inches	2½ to 3¼ inches	Over 3¼ inches	Percent defects[1]	Hollow heart[2]
Chieftain	41	34	0	4	0
Erik	39	28	0	14	0
Norland	52	15	0	2	0
Redsen	35	20	0	1	0
Rhine Red	34	45	0	6	0

[1]Includes growth cracked and misshapen tubers.

[2]Number found per 30 tubers cut and examined for hollow heart.

Table 53. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 11 russeted potato varieties grown at Riverhead, New York - 1984.

Variety	4 to 8 ounces	8 to 12 ounces	12 to 16 ounces	Over 16 ounces	Percent defects[1]	Hollow heart[2]
Acadia Russet	42	28	11	3	4	4
Agassiz	50	3	0	0	6	2
Alaska Russet	48	6	0	0	3	11
BelRus	62	9	0	0	4	3
Gold Rus	51	10	1	0	15	28
Russet Burbank	42	15	0	0	33	15
CF7789-1	50	16	5	0	11	3
MN9319	50	17	3	0	8	0
ND388-1	62	12	0	0	4	15
ND534-4	52	12	4	0	11	10
WF564-3	57	11	1	0	8	17

[1]Includes misshapen, growth cracked, sunburned, and scabby tubers.

[2]Number found per 40 large tubers cut and examined for hollow heart.

Acadia Russet had any reasonable percentage of large tubers. Because the tuber size classes used in this test do not conform to accepted standards, the tuber size data cannot be compared with other locations. Gold Rus, Russet Burbank, CF7789-1, and ND534-4 had very high percentages of defects. All varieties except MN9319 had some hollow heart.

Tuber size distribution data, percent defects, and hollow heart ratings for potato varieties grown at Freeville, New York are shown in Tables 54 through 56. In general, tubers at Freeville were toward the larger sizes, as compared to other locations in New York and the northeast. For the early maturing varieties, as presented in Table 54, percentages of tubers above 2½ inches in diameter were good. Norchip, Sunrise, AF330-1, CF76136-11, CF7719-6, and CF77154-10 had high percentages of defects. Only CF77154-10 had a small amount of hollow heart.

In another test of 21 entries at Freeville, the percentages of tubers above 2½ inches for all varieties were very favorable with a few oversized tubers for some varieties, as shown in Table 55. Chipbelle, Erik, F73008, CF72107-15, and NY64 had many defects. In this test, several varieties had tubers with hollow heart, but Belchip had the only high rating.

In a russeted variety test at Freeville, Acadia Russet produced a high percentage of tubers above 10 ounces in weight, as shown in Table 56. All varieties had some defects, but Alaska Russet, Gold Rus, Russet Burbank, and WF564-3 had high percentages of defects. Lemhi, Russet Burbank, and ND388-1 had high hollow heart ratings.

At Tully, New York, in a 20-entry test all varieties sized up quite well except Gold Rus, Sunrise, and CF74135-3, as shown in Table 57. Percent defects were high for all varieties except BelRus. Campbell 14, AF303-5, and BR7088-18 had high hollow heart ratings.

Size distribution data for 30 potato varieties grown at Tidewater, North Carolina are shown in Table 58. All varieties

Table 54. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 14 early maturing potato varieties grown at Freeville, New York - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects[1]	Hollow heart[2]
Caribe	4	21	54	14	0	7	0
Norchip	8	25	44	6	0	17	0
Norland	5	24	54	9	0	8	0
Redsen	9	31	53	6	0	1	0
Simcoe	4	16	62	13	1	4	0
Sunrise	5	17	44	20	0	14	0
Superior	4	17	50	20	1	8	0
AF330-1	5	15	45	19	1	15	0
CF7523-1	5	22	55	16	0	2	0
CF7719-6	7	21	43	16	0	13	0
CF7722-19	5	26	49	14	0	6	0
CF74135-3	5	20	48	17	1	9	0
CF76136-11	11	25	45	6	0	13	0
CF77154-10	7	14	48	21	0	10	2

[1]Includes sunburned, growth cracked, and misshapen tubers.

[2]Number found per 40 tubers cut and examined for hollow heart.

Table 55. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 21 potato varieties grown at Freeville, New York - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects[1]	Hollow heart[2]
Atlantic	3	11	41	27	7	11	0
Belchip	5	11	46	24	3	11	5
Campbell 14	4	15	54	21	0	6	1
Chipbelle	3	17	52	23	0	5	2
Conestoga	4	16	43	23	1	13	0
Crystal	5	19	52	15	0	9	0
Erik	2	10	55	28	1	4	0
Hampton	4	8	41	34	2	11	2
Islander	6	24	54	12	1	3	1
Katahdin	4	12	52	24	0	8	0
Monona	5	13	51	25	1	5	0
Rhine Red	4	15	45	27	5	4	0
Rosa	8	24	51	10	0	7	1
Yankee Chipper	7	26	51	8	0	8	0
AF303-5	3	17	52	25	0	3	1
AF332-9	3	18	60	10	0	9	0
B6949-WV3	3	13	49	28	0	7	0
CF72107-15	5	15	46	22	2	10	1
F73008	3	12	44	27	1	13	0
NY59	4	15	49	30	1	1	0
NY64	6	16	50	15	0	13	1

[1]Includes sunburned, growth cracked, and misshapen tubers.

[2]Number found per 40 tubers cut and examined for hollow heart.

Table 56. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 10 russeted potato varieties grown at Freeville, New York - 1984.

Variety	0 to 2 ounces	2 to 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	Percent defects[1]	Hollow heart[2]
Acadia Russet	4	12	44	23	11	6	3
Agassiz	16	19	50	8	0	7	1
Alaska Russet	9	16	43	17	3	12	3
BelRus	10	21	52	11	2	4	0
Gold Rus	13	18	44	9	0	16	2
Lemhi	10	20	48	12	1	9	8
Russet Burbank	15	25	38	11	1	10	6
ND388-1	10	21	52	8	0	9	4
ND534-4	9	18	53	15	2	3	2
WF564-3	10	25	50	3	0	12	3

[1]Includes sunburned, growth cracked, and misshapen tubers.

[2]Number found per 40 tubers cut and examined for hollow heart.

Table 57. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 20 potato varieties grown at Tully, New York - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 3¼ inches	Over 3¼ inches	% Sun-burn	% Second growth	% Growth cracks	Hollow heart[1]
BelRus	5.7	77.8	10.9	0.0	5.6	0.0	2
Campbell 14	1.6	73.0	13.6	8.7	1.5	1.6	9
Gold Rus	8.1	66.4	6.1	6.4	6.4	6.6	1
Hampton	0.8	48.0	41.4	5.0	1.1	3.7	3
Katahdin	1.8	64.4	20.1	11.2	0.9	1.6	3
Kennebec	1.3	40.4	37.1	10.5	5.9	4.8	2
Sunrise	1.9	83.6	9.8	2.7	1.0	1.0	0
Superior	3.1	70.6	17.1	4.3	3.7	1.2	0
AF303-5	1.7	57.6	31.0	4.8	2.1	2.8	6
AF330-1	3.1	66.4	20.4	3.7	2.1	4.3	4
B6949-WV3	2.4	60.6	22.1	11.1	2.2	1.6	1
BR7088-18	3.0	68.3	18.1	3.9	1.5	5.2	7
CF7523-1	2.8	63.9	14.2	12.5	4.4	2.2	0
CF7722-19	1.6	67.8	15.4	2.4	6.2	6.6	0
CF72107-15	3.3	79.0	6.9	4.9	1.6	4.3	2
CF74135-3	8.0	82.9	0.9	5.3	2.5	0.4	1
F73008	1.8	45.8	16.1	10.8	15.2	10.3	1

[1]Number found per 40 tubers cut and examined for hollow heart.

Table 58. Percentage of total yield by distribution into grade size classes for 30 potato varieties grown at Tidewater, North Carolina - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches
Atlantic	16.0	76.0	8.0	0.0
Caribe	10.3	74.8	9.7	5.2
Gold Rus	30.8	59.3	6.7	3.2
Hampton	11.7	77.4	10.9	0.0
Katahdin	16.9	76.0	7.1	0.0
Monona	16.4	77.9	5.7	0.0
Oceania	10.5	84.7	4.8	0.0
Pungo	9.7	83.7	6.6	0.0
Redsen	30.4	66.3	3.3	0.0
Simcoe	9.3	84.4	6.3	0.0
Sunrise	9.7	78.4	11.9	0.0
Superior	8.8	77.9	13.3	0.0
Yankee Chipper	16.1	78.1	5.8	0.0
Yankee Supreme	20.0	72.9	7.1	0.0
Yukon Gold	9.9	80.3	9.8	0.0
AF330-1	10.5	82.6	6.9	0.0
B5662-WV13	12.8	81.0	6.2	0.0
C7232-4	13.6	80.9	5.5	0.0
CF7523-1	17.9	78.3	3.8	0.0
CF7622-6	15.1	78.0	6.9	0.0
CF7679-15	8.0	78.8	13.2	0.0
CF7688-9	8.4	79.7	11.9	0.0
CF7719-6	14.8	78.8	6.4	0.0
CF7722-19	16.2	79.9	3.9	0.0
CF7789-1	17.1	76.8	6.1	0.0
CF74135-3	20.2	79.8	0.0	0.0

Table 58 - continued

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches
CF76136-11	25.7	71.1	3.2	0.0
CF76183-2	16.2	74.3	9.5	0.0
CF77154-10	21.1	75.4	3.5	0.0
WF564-3	21.3	73.7	5.0	0.0

produced very high percentages of tubers less than 2½ inches in diameter. Only two varieties, Caribe and Gold Rus, had any tubers larger than 3¼ inches.

Tuber size distribution data and total percent defects data for 37 round potato varieties grown at University Park, Pennsylvania are presented in Table 59. Tubers of 14 of the 37 varieties sized up well. Six varieties had tubers on the very small size and the remainder were toward the smaller size classes. Green Mountain and F73008 were the only varieties with a few defects.

In a mostly russeted variety test conducted at University Park, Acadia Russet tubers sized up very well, as shown in Table 60. Russet Burbank and Gold Rus produced tubers toward the smaller size classes. Russet Burbank and F73008 produced a high percentage of defective tubers.

Tuber size distribution data for 31 potato varieties grown at Kingston, Rhode Island are presented in Table 61. About 20 of the varieties had high percentages of small sized tubers but a few varieties, such as Acadia Russet, Kennebec, and B6949-WV3, had quite a few oversized tubers.

Data presented in Table 62 represent the tuber size distribution data for 20 potato varieties grown at Guildhall, Vermont. With a few exceptions, such as Gold Rus, Redsen, and WF564-3, the percentages of tubers above 2½ inches were very good. A few varieties had some oversized tubers.

Tuber size distribution data and hollow heart ratings for 20 early to mid-season maturing varieties grown at Painter, Virginia are shown in Table 63. With very few exceptions, most varieties had tuber sizes better than those found for the same varieties at other locations. Clone CF77154-10, Islander, and CF72111-5 did not size up well at Painter. Note that only one hollow hearted tuber was found in this test.

Table 59. Percentage of total yield by distribution into grade size classes and percent defects for 37 potato varieties grown at University Park, Pennsylvania - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Percent defects[1]
Atlantic	6.5	23.8	45.0	24.2	0.5
Belchip	4.3	25.7	48.0	21.3	0.7
Campbell 14	6.7	42.7	46.1	4.5	0.0
Caribe	8.2	37.6	46.6	7.2	0.4
Chipbelle	5.8	37.7	51.6	4.9	0.0
Erik	4.4	24.9	57.2	13.5	0.0
Green Mountain	5.6	31.6	46.9	10.7	5.2
Hampton	5.5	27.3	55.5	11.7	0.0
Islander	9.8	53.6	35.8	0.8	0.0
Jemseg	2.4	17.4	45.3	32.5	2.4
Katahdin	5.6	31.6	54.9	6.7	1.2
Kennebec	6.9	27.6	55.9	6.8	2.8
Norchip	10.8	40.9	45.1	2.0	1.2
Norland	9.0	44.0	45.0	0.0	2.0
Redsen	13.4	46.1	39.5	1.0	0.0
Rhine Red	6.4	29.2	51.8	12.6	0.0
Rosa	9.7	45.9	40.6	3.8	0.0
Sebago	7.5	35.1	49.9	7.5	0.0
Sunrise	5.7	30.9	50.7	12.2	0.5
Superior	4.8	32.6	54.3	8.3	0.0
Yankee Chipper	14.7	58.2	25.8	1.3	0.0
AF236-1	8.0	39.6	47.1	4.0	1.3
AF303-5	5.4	30.4	57.9	6.3	0.0
AF330-1	6.4	35.7	49.8	8.1	0.0
AF332-9	7.4	29.1	52.5	10.0	1.0

Table 59 - continued

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Percent defects[1]
B5662-WV13	6.6	38.5	52.8	2.1	0.0
B6949-WV3	5.9	26.6	49.2	18.3	0.0
BR7088-18	5.1	28.6	56.6	9.7	0.0
C7232-4	5.7	32.8	54.2	7.3	0.0
CF7523-1	10.1	39.2	45.9	4.8	0.0
CF72107-15	4.2	27.8	56.9	11.1	0.0
CF72111-5	7.9	34.5	50.1	7.5	0.0
CF76136-11	14.1	53.7	29.9	1.8	0.5
CF77154-10	10.0	45.8	42.0	2.2	0.0
F73008	7.4	38.0	43.7	0.6	10.3
NY59	5.4	30.3	51.9	11.9	0.5
NY64	7.4	32.4	48.0	11.6	0.6

[1]Includes mostly misshapen, growth cracked, sunburned, and knobby tubers.

Table 60. Percentage of total yield by distribution into grade size classes and percent defects for 13 long type varieties grown at University Park, Pennsylvania - 1984.

Variety	0 to 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	Percent defects[1]
Acadia Russet	7.6	32.7	41.2	18.3	0.2
Agassiz	21.4	58.3	20.3	0.0	0.0
Allagash Russet	10.9	47.0	35.4	0.0	6.7
Alaska Russet	11.8	47.6	39.3	0.9	0.4
BelRus	12.5	47.2	40.3	0.0	0.0
Gold Rus	21.6	62.2	14.4	1.4	0.4
Kennebec	6.9% less than 1-7/8 inches		92.8% 1-7/8 to 4 inches		0.3
Lemhi	10.4	52.6	37.0	0.0	0.0
Russet Burbank	20.4	60.0	9.4	0.0	10.2
F73008	6.5% less than 1-7/8 inches		80.5% 1-7/8 to 4 inches		13.0
ND388-1	9.4	48.6	40.0	2.0	0.0
ND534-4	8.5	41.8	48.1	1.6	0.0
WF564-3	7.9	47.3	40.4	0.3	4.1

[1]Includes mostly misshapen, growth cracked, and knobby tubers.

Table 61. Percentage of total yield by distribution into grade size classes for 31 potato varieties grown at Kingston, Rhode Island - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches
Acadia Russet	9.6	85.1	5.3
BelRus	27.6	71.9	0.5
Caribe	9.7	88.9	1.4
Delta Gold	15.6	83.5	0.9
Denali	8.4	88.4	3.2
Gold Rus	27.9	70.7	1.4
Hampton	9.6	88.3	2.1
Islander	11.2	87.1	1.7
Katahdin	11.6	87.7	0.7
Kennebec	9.2	83.4	7.4
Norchip	14.9	84.5	0.6
Norland	19.2	80.8	0.0
Oceania	24.0	76.0	0.0
Redsen	29.3	70.3	0.4
Rosa	17.0	83.0	0.0
Superior	6.5	92.6	0.9
Yankee Chipper	32.4	67.6	0.0
Yankee Supreme	11.5	87.4	1.1
Yukon Gold	14.1	84.5	1.4
AF303-5	8.4	90.6	1.0
AF330-1	14.7	84.7	0.6
B6949-WV3	7.4	88.3	4.3
C7232-4	8.5	90.1	1.4
CF7523-1	12.8	85.1	2.1
CF7679-15	7.6	91.4	1.0

Table 61 - continued

Variety	1½ to 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches
CF74135-3	12.0	87.8	0.2
CF76136-11	18.7	80.3	1.0
CF77154-10	17.3	82.7	0.0
F73008	11.8	87.1	1.1
NY59	8.3	88.6	3.1
WF564-3	15.5	83.2	1.3

Table 62. Percentage of yield by distribution into grade size classes for 20 potato varieties grown at Guildhall, Vermont - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches
Acadia Russet	12.3	43.8	0.0	41.7	2.2
Campbell 14	3.9	36.5	51.8	7.4	0.4
Crystal	7.3	41.2	45.9	5.2	0.4
Gold Rus	28.9	55.5	0.0	15.6	0.0
Hampton	1.8	25.4	47.3	24.5	1.0
Katahdin	3.4	32.5	51.5	10.3	2.3
Kennebec	5.2	29.9	50.8	11.9	2.2
Redsen	11.3	53.4	33.0	2.3	0.0
Rosa	7.5	36.6	47.3	8.6	0.0
Simcoe	3.3	33.8	55.3	7.3	0.3
Superior	3.6	35.0	57.8	3.6	0.0
AF330-1	5.4	38.3	49.8	6.5	0.0
B6949-WV3	4.3	29.7	52.6	13.1	0.3
BR7088-18	4.2	34.7	52.8	8.3	0.0
CF7523-1	5.4	36.5	51.6	6.5	0.0
CF7622-6	7.1	44.1	43.9	4.9	0.0
CF74135-3	9.9	39.3	43.9	6.9	0.0
CF77154-10	7.0	44.1	45.0	3.9	0.0
F73008	3.3	24.5	63.3	8.5	0.4
WF564-3	11.3	57.6	30.6	0.5	0.0

Table 63. Percentage of total yield by distribution into grade size classes and hollow heart ratings for 20 early to mid-season maturing varieties grown at Painter, Virginia-1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	Over 4 inches	Hollow heart[1]
Atlantic	21.2	20.4	44.3	14.1	0
Chippewa	19.3	13.7	48.3	18.7	0
Islander	27.5	26.9	44.3	1.3	0
Jemseg	15.9	17.6	55.0	11.5	0
Kennebec	20.3	22.7	38.9	18.1	0
Pungo	21.9	25.2	43.2	9.7	0
Simcoe	12.9	21.0	51.5	14.6	0
Sunrise	19.1	18.3	48.7	13.9	0
Superior	13.4	19.5	51.5	15.6	0
Yankee Chipper	21.7	25.3	48.1	4.9	1
Yankee Supreme	15.2	21.5	53.3	10.0	0
Yukon Gold	20.0	19.3	49.3	11.4	0
CF7523-1	23.0	22.1	50.1	4.8	0
CF7622-6	22.3	23.0	45.1	8.6	0
CF7679-15	15.0	16.8	51.8	16.4	0
CF7688-9	17.1	22.5	50.1	10.3	0
CF7722-19	18.3	23.5	51.4	6.8	0
CF72111-5	25.5	24.7	43.3	6.5	0
CF76183-2	18.9	27.0	52.4	1.7	0
CF77154-10	38.6	31.5	29.9	0.0	0

[1]Number found per 10 large tubers cut and examined for hollow heart.

In a seven entry medium late to late season variety test conducted at Painter, Virginia, no hollow heart was found and all varieties had a near normal tuber size distribution, as shown in Table 64.

Size distribution data for six colored skin varieties grown in a test at Painter are presented in Table 65. Rhine Red, Redsen, and Norland produced high percentages of tubers less than 1-7/8 inches in diameter and small percentages of tubers over 3¼ inches.

Data presented in Table 66 represent tuber size distribution percentages for eight russet varieties grown at Painter. Sizing was by mean diameter and not by weight, so no comparisons can be made.

Tuber size distribution data, hollow heart ratings, and percent growth cracks for an early-medium variety test at Morgantown, West Virginia are shown in Table 67. With the exception of Redsen, most varieties produced tubers toward the larger size classes. Caribe and Denali had a high level of growth cracks; and Denali had quite a few hollow hearted tubers.

In a 10-entry medium late-late maturing variety trial conducted at Morgantown, the tuber size distribution for all varieties was toward the larger size classes, as shown in Table 68. Note that Hampton had 14.5 percent of total yield over 4 inches in diameter. Denali, AF330-1, and F73008 had high percentages of growth cracks.

Tuber size distribution percentages, percent growth cracks, and hollow heart ratings for nine russeted varieties grown at Morgantown, West Virginia are presented in Table 69. Tuber sizing was by mean diameter rather than by weight so no comparisons can be made. Erik, Lemhi, and WF564-3 had high percentages of growth cracks. Clone WF564-3 had a high hollow heart rating.

Table 64. Percentage of total yield by distribution into grade size classes and hollow heart ratings for 7 medium late to late season maturing varieties grown at Painter, Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	Over 3¼ inches	Hollow heart[1]
Campbell 14	21.1	16.7	46.9	15.3	0
Hampton	13.0	16.5	49.6	20.9	0
Hudson	23.2	18.1	43.5	15.2	0
Katahdin	23.2	16.8	43.9	16.1	0
B6949-WV3	29.9	15.6	37.2	17.3	0
CF72107-15	19.9	19.2	49.6	11.3	0
F73008	24.7	20.6	45.7	9.0	0

[1]Number found per 10 large tubers cut and examined for hollow heart.

Table 65. Percentage of total yield by distribution into grade size classes and hollow heart ratings for 6 colored skin varieties grown at Painter, Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	Over 3¼ inches	Hollow heart[1]
Caribe	14.8	17.7	56.1	11.4	0
Erik	14.3	17.7	53.0	15.0	0
Norland	17.5	22.9	53.9	5.7	0
Red Pontiac	17.7	16.8	50.2	15.3	0
Redsen	29.4	30.4	39.5	0.7	0
Rhine Red	38.1	20.7	34.0	7.2	0

[1]Number found per 10 large tubers cut and examined for hollow heart.

Table 66. Percentage of total yield by distribution into grade size classes and hollow heart ratings for 9 russeted varieties grown at Painter, Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	Over 3¼ inches	Hollow heart[1]
Acadia Russet	23.3	22.3	42.8	11.6	0
Alaska Russet	29.2	26.6	38.2	6.0	0
Allagash Russet	23.9	26.1	45.1	4.9	0
BelRus	41.6	25.9	28.4	4.1	0
Gold Rus	37.7	29.4	29.9	3.0	0
AF330-1	20.7	23.6	45.1	10.6	0
MN7973	21.0	23.4	47.8	7.8	0
ND534-4	29.3	33.8	33.1	3.8	0
WF564-3	22.4	27.7	45.6	4.3	0

[1]Number found per 10 large tubers cut and examined for hollow heart.

Table 67. Percentage of total yield by distribution into grade size classes, percent growth cracks, and hollow heart ratings for 10 medium, early-medium potato varieties grown at Morgantown, West Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Growth cracks	Hollow heart[1]
Caribe	7.9	11.1	18.1	50.1	3.0	9.8	0
Denali	6.9	16.5	15.5	47.3	1.2	12.6	5
Islander	6.7	14.2	16.3	59.7	2.6	0.5	1
Kennebec	4.4	12.9	15.6	59.8	3.3	4.0	0
Redsen	11.2	15.5	18.6	53.1	0.7	0.9	0
Rhine Red	9.9	16.8	15.8	56.5	0.7	0.3	0
Yankee Chipper	9.0	14.9	12.3	57.8	1.7	4.3	0
Yankee Supreme	4.9	14.9	13.9	63.8	0.6	1.9	0
CF7523-1	8.0	14.9	15.5	55.6	4.8	1.2	0
CF7688-9	5.6	11.0	11.9	58.1	9.0	4.4	2

[1]Number found per 30 tubers cut and examined for hollow heart.

Table 68. Percentage of total yield by distribution into grade size classes, percent growth cracks, and hollow heart ratings for 10 medium late-late potato varieties grown at Morgantown, West Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Growth cracks	Hollow heart[1]
Campbell 14	6.2	14.6	15.1	59.2	2.6	2.3	0
Crystal	5.6	15.6	12.2	52.4	5.0	9.2	1
Denali	6.2	13.6	15.8	47.9	4.2	12.3	4
Hampton	4.3	9.8	14.0	54.4	14.5	3.0	0
Katahdin	3.9	12.9	14.5	60.2	7.6	0.9	0
AF303-5	5.1	13.2	18.1	56.1	6.1	1.4	0
AF330-1	4.2	9.5	11.4	45.1	1.3	28.5	0
BR7088-18	6.8	12.7	16.0	62.1	1.3	1.1	3
CF72107-15	8.5	13.7	13.0	57.3	2.1	5.4	0
F73008	8.0	13.9	15.2	48.6	0.0	14.3	0

[1]Number found per 30 tubers cut and examined for hollow heart.

Table 69. Percentage of total yield by distribution into grade size classes, percent growth cracks, and hollow heart ratings for 9 russet potato varieties grown at Morgantown, West Virginia - 1984.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Growth cracks	Hollow heart[1]
Acadia Russet	4.9	9.1	13.5	61.8	9.1	1.6	1
Agassiz	11.4	13.6	18.1	56.4	0.0	0.5	1
BelRus	6.2	16.1	18.5	57.0	0.4	1.8	0
Erik	5.4	7.8	10.3	56.1	9.2	11.2	0
Gold Rus	11.4	13.4	38.1	32.5	0.7	3.9	2
Lemhi	11.7	12.7	17.3	45.4	1.0	11.9	2
ND388-1	7.2	12.1	19.5	55.0	0.9	5.3	0
ND534-4	7.5	13.3	17.2	59.3	2.5	0.2	0
WF564-3	15.4	13.9	12.1	32.3	0.4	25.9	5

[1]Number found per 30 tubers cut and examined for hollow heart.

STORAGE CHARACTERISTICS

Potatoes grown in many of the northeastern areas of United States and Canada are stored and marketed for many months after harvest. It is, therefore, very important to determine how new clones and varieties maintain their quality when stored at both high and low temperatures prior to naming and release for commercial production. The storage studies reported in this bulletin provide an indication as to which varieties or clones should be treated with sprout inhibitors, treated for storage rots, or should be moved to market early in the season.

Desirable storage characteristics vary among production areas and the intended use of the potatoes. In general, however, for most varieties grown in the late season production areas, the storage characteristics are: minimal weight loss, minimum losses from sprouting and tuber rots, a long rest period, and freedom from defects that might be enhanced by storage conditions.

Data presented in Tables 70 through 74 indicate the percentage of weight loss for early, medium early, medium, medium late, late, and russeted varieties grown at Presque Isle, Maine in 1983, and stored at three different temperatures for about six months. As a guide for interpretation of the weight loss data, total weight losses of about 5, 10, and 14 percent at 38F., 45F., and 50F., respectively, may be considered borderline to excessive. Varieties or clones which exceed these guidelines may be difficult to store for extended periods of time even when treated with sprout suppressants or inhibitors.

Tubers that shrink, wrinkle, become soft, and discolor in storage are unattractive when marketed fresh or fracture excessively if used for french fries or chips; and very often will have internal discoloration problems. Note that quite a number of varieties grown in the 1983 variety trial at Presque Isle were within acceptable limits for storage losses. A few varieties, however, such as AF222-1, CF74135-3, CF7688-9, CF72111-5, Red Pontiac, and MN9319,

Table 70. Effect of storage temperatures upon sprout loss and total weight loss of 10 early and medium early maturing potato varieties during storage from September 21, 1983 until March 19, 1984 at 50F. and until March 23, 1984 at 38F. and 45F.

Variety	38F.[1]		45F.[1]		50F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Redsen	0.0	4.0	2.8	7.2	4.8	10.6
Superior	0.0	4.4	1.3	6.8	2.6	7.4
AF222-1	0.0	4.0	6.0	11.8	10.4	17.2
AF330-1	0.0	6.1	1.0	7.8	2.2	8.7
AS201-10	0.0	2.8	2.0	6.2	3.9	9.0
B5662-WV13	0.0	6.5	0.6	7.4	1.0	7.1
CF7523-1	0.0	5.4	3.4	9.8	5.3	12.4
CF74135-3	0.0	5.0	9.6	17.1	10.0	17.7
CF76183-2	0.0	3.8	1.3	5.2	3.0	7.0
CF77154-10	0.0	4.8	2.0	8.3	4.2	10.7

[1]Relative humidity maintained at 85%.

Table 71. Effect of storage temperatures upon sprout loss and total weight loss for 8 medium maturing potato varieties during storage from September 22, 1983 until March 19, 1984 at 50F. and until March 23, 1984 at 38F. and 45F.

Variety	38F.[1]		45F.[1]		50F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Kennebec	0.0	7.6	0.7	8.3	1.0	8.0
Rhine Red	0.0	7.2	1.0	8.7	1.6	8.6
AF307-5	0.0	6.8	2.2	8.2	3.9	11.7
AF332-9	0.0	6.0	1.0	7.8	1.0	7.4
CF7688-9	0.0	8.0	2.7	12.7	3.6	12.0
CF72111-5	0.0	8.4	4.4	13.4	4.8	13.8
MN7973	0.0	6.0	0.4	7.2	0.8	7.4
MN8224	0.0	6.6	2.2	9.8	2.6	10.0

[1]Relative humidity maintained at 85%.

Table 72. Effect of storage temperatures upon sprout loss and total weight loss for 15 medium late maturing potato varieties during storage from September 22, 1983 until March 19, 1984 at 50F. and until March 23, 1984 at 38F. and 45F.

Variety	38F.[1]		45F.[1]		50F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Crystal	0.0	5.0	1.4	6.6	2.0	7.6
Kennebec	0.0	5.2	0.6	5.8	1.4	6.4
Michibonne	0.0	5.6	0.6	7.1	1.4	6.7
Michimac	0.0	5.4	1.2	7.0	1.6	7.0
AF201-25	0.0	4.0	2.6	7.6	3.0	8.2
AF236-1	0.0	5.4	0.6	6.9	0.6	6.0
AF303-5	0.0	5.0	3.2	9.4	3.8	10.0
B6928-WV14	0.0	4.8	1.7	7.3	2.8	8.2
B6949-WV3	0.0	4.6	0.6	5.7	0.8	5.1
B7019-WV1	0.0	5.6	0.0	5.2	0.2	5.2
BR7088-18	0.0	6.6	1.1	7.4	2.0	8.0
C74109-8	0.0	7.2	1.4	9.0	2.2	9.2
CF7353-1	0.0	5.3	1.2	6.1	1.5	6.6
CF7587-7	0.0	5.6	1.3	7.3	2.6	9.0
CF72107-15	0.0	4.2	3.1	8.6	4.8	10.0

[1]Relative humidity maintained at 85%.

Table 73. Effect of storage temperatures upon sprout loss and total weight loss for 8 late maturing potato varieties during storage from October 7, 1983 until March 19, 1984 at 50F. and until March 23, 1984 at 38F. and 45F.

Variety	38F.[1]		45F.[1]		50F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Campbell 14	0.0	6.7	0.4	7.2	0.8	6.8
Hampton	0.0	5.8	1.2	7.0	2.0	6.8
Katahdin	0.0	6.4	1.4	7.0	1.7	7.5
Red Pontiac	0.0	6.2	4.4	11.2	5.4	12.2
Rosa	0.0	9.0	0.9	8.9	1.3	8.2
F73008	0.0	4.8	0.4	5.7	0.6	5.6
NY59	0.0	6.4	0.8	6.8	0.8	6.2
NY64	0.0	4.8	0.6	5.0	0.8	5.2

[1]Relative humidity maintained at 85%.

Table 74. Effect of storage temperatures upon sprout loss and total weight loss for 4 russeted and long type potato varieties during storage from October 12, 1983 until March 19, 1984 at 50F. and until March 23, 1984 at 38F. and 45F.

Variety	38F.[1]		45F.[1]		50F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Alaska Russet	0.0	5.4	1.2	6.4	4.5	10.2
Nobless Russet	0.0	5.3	0.0	5.0	0.4	5.0
Russet Burbank	0.0	5.4	0.0	5.2	0.2	5.2
MN9319	0.0	7.0	2.3	9.3	4.4	11.2

[1]Relative humidity maintained at 85%.

were not good storage varieties.

In late March 1984, when the sprout and weight losses were determined, the samples were also closely examined for storage disorders. The tuber samples from 38F. storage were weighed and moved to 45F. where they remained until May 18, 1984. Results of this extended storage period are shown in Tables 75 through 79. A total weight loss of up to 20 percent for this long storage period is a reasonable guideline for all except the early and medium early varieties. Note that there are a number of clones and varieties that could, with the aid of a sprout inhibitor or perhaps refrigeration, extend the Maine marketing season to 12 months or until new early crop potatoes could be available.

In part, storage ability of any potato variety and its value for seed in the southern United States and South American markets is related to the length of rest period genetically inherent in a variety and how rapidly sprout development takes place after dormancy is broken. In 1983, ten tuber samples of each variety grown at Presque Isle were selected at random and stored at 45F. and 85% relative humidity shortly after harvest. Weekly observations of sprout lengths were made for each variety starting as the first visual signs of sprouting occurred. Measurement of apical sprout length was continued until sprouts reached one-half inch in length. Later, these measurements were converted into days from harvest to the sprout lengths indicated in Table 80.

Rest periods for the varieties grown at Presque Isle in 1983 and observed during the 1983-84 storage season varied from a low of 69 days for CF74135-3 to a high of 178 days for Russet Burbank. Even though the rest period duration for any individual variety varies between years, the ranking would remain about the same. The varieties with the longest sprout development period were: B7019-WV1, Russet Burbank, MN7973, Rhine Red, and B5662-WV13.

Table 75. Effect of storage temperatures upon sprout loss and total weight loss for 10 early and medium early maturing potato varieties during storage at 38F. from September 21, 1983 until March 23, 1984, and then at 45F. until May 18, 1984.

Variety	38F.[1]		45F.[1]		38 and 45F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Redsen	0.0	4.0	2.6	4.0	2.6	8.0
Superior	0.0	4.4	6.0	8.8	6.0	13.2
AF222-1	0.0	4.0	5.0	7.2	5.0	11.2
AF330-1	0.0	6.1	4.4	6.4	4.4	12.5
AS201-10	0.0	2.8	4.4	6.1	4.4	8.9
B5662-WV13	0.0	6.5	1.0	2.4	1.0	8.9
CF7523-1	0.0	5.4	2.4	8.1	2.4	13.5
CF74135-3	0.0	5.0	9.9	14.5	9.9	19.5
CF76183-2	0.0	3.8	5.0	10.9	5.0	14.7
CF77154-10	0.0	4.8	5.8	8.4	5.8	13.2

[1]Relative humidity maintained at 85%.

Table 76. Effect of storage temperatures upon sprout loss and total weight loss for 8 medium maturing potato varieties during storage at 38F. from September 22, 1983 to March 23, 1984, and then at 45F. until May 18, 1984.

Variety	38F.[1]		45F.[1]		38 and 45F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Kennebec	0.0	7.6	3.0	4.8	3.0	12.4
Rhine Red	0.0	7.2	2.9	4.6	2.9	11.8
AF307-5	0.0	6.8	2.8	6.3	2.8	13.1
AF332-9	0.0	6.0	4.7	6.6	4.7	12.6
CF7688-9	0.0	8.0	6.6	9.2	6.6	17.2
CF72111-5	0.0	8.4	5.2	8.2	5.2	16.6
MN7973	0.0	6.0	2.3	4.0	2.3	10.0
MN8224	0.0	6.6	4.6	6.9	4.6	13.5

[1]Relative humidity maintained at 85%.

Table 77. Effect of storage temperatures upon sprout loss and total weight loss for 15 medium late maturing potato varieties during storage at 38F. from October 3, 1983 to March 23, 1984, and then at 45F. until May 18, 1984.

Variety	38F.[1]		45F.[1]		38 and 45F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Crystal	0.0	5.0	3.4	7.1	3.4	12.1
Kennebec	0.0	5.2	3.6	5.6	3.6	10.8
Michibonne	0.0	5.6	2.6	4.4	2.6	10.0
Michimac	0.0	5.4	2.0	3.4	2.0	8.8
AF201-25	0.0	4.0	4.2	6.2	4.2	10.2
AF236-1	0.0	5.4	2.4	4.4	2.4	9.8
AF303-5	0.0	5.0	5.1	7.6	5.1	12.6
B6928-WV14	0.0	4.8	3.4	5.0	3.4	9.8
B6949-WV3	0.0	4.6	3.0	4.5	3.0	9.1
B7019-WV1	0.0	5.6	1.2	2.6	1.2	8.2
BR7088-18	0.0	6.6	5.4	7.8	5.4	14.4
C74109-8	0.0	7.2	3.2	5.3	3.2	12.5
CF7353-1	0.0	5.3	5.1	7.3	5.1	12.6
CF7587-7	0.0	5.6	3.0	4.8	3.0	10.4
CF72107-15	0.0	4.2	5.9	8.4	5.9	12.6

[1]Relative humidity maintained at 85%.

Table 78. Effect of storage temperatures upon sprout loss and total weight loss for 8 late maturing potato varieties during storage at 38F. from October 3, 1983 to March 23, 1984, and then at 45F. until May 18, 1984.

Variety	38F.[1]		45F.[1]		38 and 45F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Campbell 14	0.0	6.7	2.9	5.0	2.9	11.7
Hampton	0.0	5.8	2.6	4.0	2.6	9.8
Katahdin	0.0	6.4	2.0	3.4	2.0	9.8
Red Pontiac	0.0	6.2	9.6	11.9	9.6	18.1
Rosa	0.0	9.0	2.3	4.6	2.3	13.6
F73008	0.0	4.8	1.7	3.1	1.7	7.9
NY59	0.0	6.4	2.1	3.5	2.1	9.9
NY64	0.0	4.8	3.8	5.6	3.8	10.4

[1]Relative humidity maintained at 85%.

Table 79. Effect of storage temperatures upon sprout loss and total weight loss for 4 russeted and long type potato varieties during storage at 38F. from October 12, 1983 to March 23, 1984 and then at 45F. until May 18, 1984.

Variety	38F.[1]		45F.[1]		38 and 45F.[1]	
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss
Alaska Russet	0.0	5.4	5.2	7.1	5.2	12.5
Nobless Russet	0.0	5.3	3.9	5.6	3.9	10.9
Russet Burbank	0.0	5.4	3.7	5.2	3.7	10.6
MN9319	0.0	7.0	3.5	5.4	3.5	12.4

[1]Relative humidity maintained at 85%.

Table 80. Sprouting characteristics of potato varieties stored at Presque Isle, Maine - 1983.

Variety[1]	Days to Indicated Sprout Length				
	First pip	1/8 inch	1/4 inch	3/8 inch	1/2 inch
Early and Medium Early Varieties. Harvested - September 13, 1983.					
Redsen	111	132	146	160	167
Superior	104	118	125	139	146
AF222-1	90	104	125	139	153
AF330-1	132	153	160	167	174
AS201-10	104	118	125	139	146
B5662-WV13	104	146	167	181	188
CF7523-1	97	118	132	146	153
CF74135-3	69	90	111	125	146
CF76183-2	90	111	118	132	146
CF77154-10	118	132	146	153	160
Medium Maturing Varieties. Harvested - September 15, 1983.					
Kennebec	123	144	151	151	158
Rhine Red	137	158	165	172	193
AF307-5	123	137	158	165	172
AF332-9	116	144	158	172	186
CF7688-9	102	123	137	137	144
CF72111-5	95	109	116	123	137
MN7973	137	158	186	193	200
MN8224	95	109	123	137	144
Medium Late Maturing Varieties. Harvested - September 23, 1983.					
Crystal	101	115	122	129	136
Kennebec	129	150	157	164	171
Michibonne	136	150	164	178	185
Michimac	101	129	136	150	157
AF201-25	94	108	122	129	136
AF236-1	122	136	150	157	171
AF303-5	87	101	115	122	129
B6928-WV14	115	136	143	143	150
B6949-WV3	136	150	164	178	185
B7019-WV1	150	164	199	213	220
BR7088-18	94	129	136	150	157
C74109-8	108	129	136	136	150
CF7353-1	129	150	157	164	178
CF7587-7	101	129	136	150	157
CF72107-15	80	101	122	136	150

. . . continued

Table 80 - continued

Variety[1]	Days to Indicated Sprout Length				
	First pip	1/8 inch	1/4 inch	3/8 inch	1/2 inch
Late Maturing Varieties. Harvested - September 29, 1983.					
Campbell 14	123	137	144	172	179
Hampton	109	137	144	165	172
Katahdin	88	123	137	144	151
Red Pontiac	109	123	137	144	151
Rosa	88	102	123	137	144
F73008	109	137	144	158	179
NY59	123	151	158	172	179
NY64	109	144	151	158	165
Russet and Long Varieties. Harvested - October 7, 1983.					
Alaska Russet	101	122	136	143	150
Nobless Russet	136	171	185	192	206
Russet Burbank	136	178	192	199	206
MN9319	73	94	115	122	136

[1] Planted - May 23, 1983. Stored at 45F., 85% R.H.

Very few storage disorders were observed during the 1983-84 storage season; however, those few will be reported in the varietal observations section of this bulletin starting on page 154.

PREPARATION LOSSES

Peeling, trimming, or paring losses vary by variety when hand peeled, steam lye, steam peeled, or by use of abrasive peeling methods. The latter method is probably the most severe and, therefore, the method used in these tests. In 1983, duplicate 10-pound random samples of tubers from each variety grown at Presque Isle were saved and stored at 38F., and 85% relative humidity until February 7, 1984. The samples were warmed for 24 hours at 65F. before being abrasively peeled on February 8, 1984.

Abrasive peeling losses and total preparation losses for 45 potato varieties and clones grown in 1983 at Presque Isle, Maine are presented in Table 81. Deep-eyed varieties, pigmented skinned varieties, varieties with irregular surfaces, indented stem ends, misshapen tubers, growth cracked tubers, and varieties that produced irregularly shaped tubers had the highest preparation losses. Of the 45 varieties peeled and trimmed, only 11 varieties had total preparation losses of less than 15% which is a guideline suggested by processors as the borderline for acceptability. Processors have indicated that peeling and trimming losses exceeding 20% are too high for their use.

AFTER COOKING DARKENING

After cooking darkening or graying causes some varieties in some years to be undesirable for boiling or processing into by-products such as mashed, diced, patties, flakes, granules, and other products that are not fried but retain the original flesh color of the tuber. Varieties and clones vary between years, among locations, and where grown under various cultural conditions in the tendency to show after cooking darkening.

Table 81. Preparation losses for 45 potato varieties grown at Presque Isle, Maine - 1983.

Variety[1]	% Abrasive peeling[2] losses	% Paring losses	% Total Preparation losses
Alaska Russet	21.7	4.3	26.0
Campbell 14	10.4	4.1	14.5
Crystal	16.4	2.9	19.3
Hampton	11.2	3.6	14.8
Katahdin	10.6	4.3	14.9
Kennebec (med.)	12.5	4.1	16.6
Kennebec (med. late)	12.4	4.2	16.6
Michibonne	16.2	3.2	19.4
Michimac	10.2	5.6	15.8
Nobless Russet	11.2	6.6	17.8
Red Pontiac	12.4	5.8	18.2
Redsen	11.1	3.9	15.0
Rhine Red	10.2	5.3	15.5
Rosa	7.7	5.4	13.1
Russet Burbank	13.6	6.2	19.8
Superior	11.9	6.7	18.6
AF201-25	21.2	2.0	23.2
AF222-1	23.5	3.3	26.8
AF236-1	13.2	2.4	15.6
AF303-5	8.0	5.8	13.8
AF307-5	15.3	3.2	18.5
AF330-1	16.2	4.5	20.7
AF332-9	17.4	4.0	21.4
AS201-10	12.7	4.2	16.9
B5662-WV13	8.2	4.9	13.1
B6928-WV14	6.9	5.2	12.1
B6949-WV3	14.0	3.5	17.5
B7019-WV1	11.2	3.6	14.8
BR7088-18	13.6	3.8	17.4

Table 81 - continued

Variety[1]	% Abrasive peeling[2] losses	% Paring losses	% Total Preparation losses
C74109-8	11.2	3.3	14.5
CF7353-1	14.0	4.0	18.0
CF7523-1	10.8	5.2	16.0
CF7587-7	12.2	3.2	15.4
CF7688-9	17.8	4.1	21.9
CF72107-15	10.5	3.8	14.3
CF72111-5	11.8	5.0	16.8
CF74135-3	15.6	4.6	20.2
CF76183-2	20.4	4.3	24.7
CF77154-10	13.4	4.3	17.7
F73008	11.5	3.9	15.4
MN7973	15.8	4.8	20.6
MN8224	13.2	5.4	18.6
MN9319	13.9	2.6	16.5
NY59	7.2	5.2	12.4
NY64	15.8	3.5	19.3

[1]Samples were stored at 45F., 85% R.H. from harvest until February 7, 1984, then warmed for 24 hours at 65F. before peeling.

[2]Average of two 9-pound samples peeled for two minutes in a Univex H-200 abrasive type peeler.

Data presented in Table 82 show the after cooking darkening indices for 45 potato varieties grown at Presque Isle, Maine in 1983, and stored for approximately five months at 45F. and 85% relative humidity. Even though there are no accepted standards for after cooking darkening indices, an apparent acceptable rating used by three Maine processors was 7.0 or higher for frozen mashed, diced, and pre-peeled products. If the 7.0 rating is used as a standard, only two varieties listed in Table 82 were unacceptable for 1983-84 for by-product use.

APPEARANCE AND DEFECTS

Appearance of tubers and visible defects, particularly when washed and packed in vent view, clear poly bags, or count boxes is of great importance since many consumers buy a product on cosmetic appearance (eye appeal) rather than on the basis of internal quality or nutritional values. A detailed subjective classification of varieties grown at Presque Isle in 1983 was made for appearance and external defects. Tuber maturity, skin color, brightness, tuber shape, uniformity of size, smoothness of skin, and several external defects such as enlarged lenticels, sclerotial bodies, silver scurf, scab lesions, and any other surface disorders were all considered in making these ratings.

Appearance and external defects indices, as presented in Table 83, show the relative comparison among new clones and standard varieties grown under the same soil, cultural, and climatic conditions. In Table 83, the higher the final index number the better the appearance; and thus fewer tuber defects. In the final index, some of the defects were subtracted from the appearance index, since some of the defects could be reduced or eliminated by improved cultural and/or handling practices. Note that many varieties had better appearance ratings than the standard varieties that they are compared to in their respective maturity grouping.

Table 82. After cooking graying indices for 45 potato varieties grown at Presque Isle, Maine - 1983.

Variety[1]	Color index[2]	Variety[1]	Color index[2]
Alaska Russet	6.8	AS201-10	7.8
Campbell 14	6.5	B5662-WV13	8.0
Crystal	8.0	B6928-WV14	7.4
Hampton	7.6	B6949-WV3	7.8
Katahdin	7.6	B7019-WV1	7.4
Kennebec (med.)	7.8	BR7088-18	8.0
Kennebec (med. late)	7.8	C74109-8	8.3
Michibonne	7.8	CF7353-1	8.2
Michimac	7.8	CF7523-1	7.8
Nobless Russet	7.1	CF7587-7	8.0
Red Pontiac	7.4	CF7688-9	7.7
Redsen	7.6	CF72107-15	8.0
Rhine Red	7.5	CF72111-5	7.3
Rosa	7.6	CF74135-3	7.9
Russet Burbank	7.2	CF76183-2	7.8
Superior	7.6	CF77154-10	7.8
AF201-25	8.0	F73008	Yel. flesh
AF222-1	7.7	MN7973	8.0
AF236-1	7.4	MN8224	7.3
AF303-5	7.8	MN9319	7.1
AF307-5	7.0	NY59	7.8
AF330-1	8.4	NY64	7.0
AF332-9	8.2		

[1]All tuber samples were stored at 45F., 85% R.H. from harvest until February 10, 1984, then warmed at 65F. for 48 hours.

[2]Tubers diced, blanched for 5 minutes in boiling water, and cooled to 120F. in tap water. Color readings made after one-half hour by comparison with Munsel 18-step Neutral Color Scale, 1952 edition. High color indices indicate lighter color.

Table 83. Appearance and defects indices for 45 potato varieties grown at Aroostook Farm, Presque Isle, Maine - 1983.

Variety[1]	Appearance index	Defects index	Final index[2]
Alaska Russet	63.9	13.5	50.4
Campbell 14	79.0	3.2	75.8
Crystal	91.9	0.6	91.3
Hampton	86.9	2.7	84.2
Katahdin	80.3	2.9	77.4
Kennebec (med.)	80.3	0.7	79.6
Kennebec (med. late)	81.1	1.6	79.5
Michibonne	77.8	0.8	77.0
Michimac	81.8	1.2	80.6
Nobless Russet	67.0	0.4	66.6
Red Pontiac	72.7	3.1	69.6
Redsen	76.2	0.4	75.8
Rhine Red	71.7	1.9	69.8
Rosa	76.4	1.2	75.2
Russet Burbank	63.0	0.0	63.0
Superior	71.5	0.2	71.3
AF201-25	84.7	1.6	83.1
AF222-1	81.2	4.5	76.7
AF236-1	85.9	1.8	84.1
AF303-5	84.2	0.1	84.1
AF307-5	87.0	0.8	86.2
AF330-1	88.0	4.0	84.0
AF332-9	72.4	5.4	67.0
AS201-10	77.0	8.4	68.6
B5662-WV13	87.7	0.8	86.9
B6928-WV14	89.3	1.3	88.0
B6949-WV3	85.2	0.5	84.7
B7019-WV1	82.3	3.4	78.9
BR7088-18	84.6	1.7	82.9
C74109-8	87.9	2.1	85.8

Table 83 - continued

Variety[1]	Appearance index	Defects index	Final index[2]
CF7353-1	76.3	0.3	76.0
CF7523-1	78.4	5.3	73.1
CF7587-7	91.7	0.3	91.4
CF7688-9	78.0	7.0	71.0
CF72107-15	90.8	3.3	87.5
CF72111-5	85.3	4.4	80.9
CF74135-3	80.0	6.3	73.7
CF76183-2	71.2	3.6	67.6
CF77154-10	79.3	7.7	71.6
F73008	89.3	1.5	87.8
MN7973	82.9	1.2	81.7
MN8224	71.6	4.0	67.6
MN9319	83.8	2.4	81.4
NY59	83.2	1.8	81.4
NY64	75.7	4.7	71.0

[1]Samples were stored at 38F., 85% R.H. from harvest until examined in January 1984.

[2]Rating code: > 80 = excellent
60 - 79 = satisfactory
< 60 = unsatisfactory

As a point of reference, the average final index of 80 probably represents a near ideal tuber appearance in terms of eye appeal or cosmetic appearance. Using the reference point of 80, the data presented in Table 83 indicate that 20 of the 45 varieties evaluated had excellent appearance with only one variety, Alaska Russet, showing a very unsatisfactory appearance.

FRIED PRODUCT COLOR AND TEXTURE

Tubers were saved from all specific gravity tests conducted at Presque Isle, Maine, and were stored at 50-55F. until frying tests were made in late November and early December 1984. In addition, several other locations sent tuber samples to Maine for specific gravity determinations and these samples were saved for chip color ratings. By option voted at the 1979 Annual NE107 Meeting cooperators were not required to provide samples for specific gravity and chip color ratings in Maine. Some locations have discontinued chip color ratings; and if done, are sometimes done on composite tuber samples rather than by replicate.

From stored tuber samples which were available, potato chips were made by cutting each tuber in half and taking a slice 1/16-inch thick from the center of each tuber by use of a rotary food slicer. Tuber slices were rinsed in lukewarm water, placed on paper toweling to remove excess water, and then fried at 375F. in liquid shortening until bubbling stopped.

Each chip was classified immediately after frying and draining into one of ten color classes varying from "1 - very light" to "10 - very dark". Weighted averages of indices were calculated by multiplying the number of chips in each color class by the class color number, totaling, and dividing by the total number of chips in each sample. Color ratings were made subjectively using PCII Color Chart 1206-U.

Chip colors for unreplicated samples from Jemseg and Florenceville, New Brunswick, Canada are presented in Tables 84 and

Table 84. Chip color indices for 9 early maturing potato varieties grown at Jemseg, New Brunswick, Canada - 1984.

Variety	Chip color[1]
Jemseg	10.0
Redsen	9.4
Sunrise	7.8
Superior	10.0
Yankee Supreme	10.0
AF330-1	8.2
C7232-4	7.2
CF7523-1	10.0
CF77154-10	8.0

[1]Chips with lower indices are lighter in color.

Table 85. Chip color indices for 17 main crop potato varieties grown at Florenceville, New Brunswick, Canada - 1984.

Variety	Chip color[1]
Conestoga	8.2
Crystal	8.8
Gold Rus	8.0
Hampton	9.0
Islander	9.0
Katahdin	9.0
Kennebec	8.0
Russet Burbank	8.0
AF303-5	7.8
AF307-5	9.0
B6949-WV3	9.0
B7805-1	9.8
CF72107-15	8.0
F73008	7.6
ND388-1	9.0
NY59	10.0
NY64	10.0

[1]Chips with lower indices are lighter in color.

85, respectively. None of the varieties and clones grown at these two sites had satisfactory chip colors (7.0 or less).

Chip color indices for 14 potato varieties and clones grown at Dover, Delaware are presented in Table 86. Chip colors in this test were read on a new chart prepared for the Potato Chip/Snack Food Association with an index of less than 3.0 as acceptable in color. Using 3.0 or less as satisfactory chip color, 12 of the 14 varieties in Table 86 had acceptable color.

Chip colors for the 45 varieties and clones grown at Presque Isle, Maine in 1984 are presented in Table 87. Only one variety, AF236-1, had acceptable chip color. Many varieties were higher than 8.0 which is much too dark for chips.

Chip color indices for 34 potato varieties grown at Deerfield, New Jersey are presented in Table 88. Note that when chipped two days after harvest, 30 of the 34 varieties had acceptable color; but when chipped 13 days after harvest, only 14 of the 34 varieties still had an acceptable chip color.

Chip colors in Table 89 are for the 30 potato varieties and clones grown at Tidewater, North Carolina using a little different rating scale with 5.0 or less being a satisfactory color. At Tidewater, 20 of the 30 entries had acceptable chip colors.

Data in Table 90 are the chip colors for potato varieties and clones grown at University Park, Pennsylvania during 1984. Only five of the 48 entries had satisfactory chip color with four of the five coming from the Maine Breeding Program. Several other clones were in the 7.0 to 8.0 color range which suggests that the harvest date in Pennsylvania might have been a little too late.

Chip colors for 30 potato clones and varieties grown at Kingston, Rhode Island are presented in Table 91. Ten of 30 entries had satisfactory chip color with some of the newer clones having very good color.

Table 86. Chip color indices for 14 potato varieties grown at Dover, Delaware - 1984.

Variety	Chip Color[1]
Acadia Russet	4.4
BelRus	1.0
Hampton	1.2
Jemseg	1.4
Oceania	1.3
Superior	2.2
Yankee Supreme	1.4
AF330-1	1.7
B6949-WV3	3.4
CF7523-1	2.4
CF72107-15	1.1
F73008	2.0
ND534-4	2.1
WF564-3	2.7
L.S.D. (0.05)	0.3

[1]Chip colors based on The Potato Chip/Snack Food Association Charts.

1 = light color

5 = dark color

Table 87. Chip color indices for 45 potato varieties grown at Presque Isle, Maine - 1984.

Variety	Chip color[1]	Variety	Chip color[1]
Agassiz	7.7	CF7587-7	8.5
Alaska Russet	9.4	CF7622-6	10.0
Crystal	8.1	CF7679-15	9.7
Erik	10.0	CF7688-9	9.4
Gold Rus	8.6	CF7719-6	9.0
Hampton	10.0	CF7722-19	9.5
Katahdin	9.8	CF7750-1	9.8
Kennebec (med.)	8.9	CF7789-1	9.7
Kennebec (med. late)	8.9	CF72107-15	7.7
Lemhi	9.2	CF72111-5	9.3
Red Pontiac	10.0	CF74135-3	8.7
Redsen	8.0	CF76136-11	9.2
Rhine Red	9.9	CF76183-2	7.3
Russet Burbank	8.9	CF77154-10	6.5
Superior	8.0	ND388-1	8.6
AF236-1	6.9	ND534-4	9.8
AF307-5	8.4	NY59	10.0
AF332-9	9.6	NY64	9.9
AF9058M	9.9	NY67	10.0
B5662-WV13	8.1	W752	8.0
B6928-WV14	9.9	WF564-3	10.0
B6949-WV3	9.1		
B7019-WV1	8.0	Waller Duncan L.S.D.	
B7805-1	8.5	(0.05)	0.4

[1]Chips with lower indices are lighter in color.

Table 88. Chip color indices for 34 potato varieties grown at Deerfield, New Jersey - 1984.

Variety	Chip colors and days after harvest[1]			
	2 days	6 days	9 days	13 days
Atlantic	2	2	5	3
Campbell 14	2	2	5	3
Conestoga	3	3	3	3
Denali	4	3	4	5
Hampton	4	6	5	6
Hudson	5	6	5	6
Islander	2	2	4	2
Jemseg	3	5	4	5
Katahdin	4	5	5	6
Norchip	3	4	4	3
Rosa	2	4	3	5
Simcoe	2	3	3	3
Sunrise	3	4	4	5
Superior	4	5	4	4
Yankee Chipper	2	5	4	3
Yankee Supreme	4	3	3	5
AF236-1	2	2	3	2
AF307-5	4	5	4	6
AF330-1	2	2	3	3
AF332-9	5	4	4	6
B6949-WV3	5	4	5	3
BR7088-18	3	2	3	4
CF7523-1	4	6	5	7
CF7622-6	4	6	5	7
CF7679-15	2	6	5	6
CF7719-6	4	3	4	4
CF7722-19	4	5	4	6
CF7789-1	5	7	5	8
CF72107-15	4	6	5	7
CF72111-5	3	6	5	6
CF76136-11	3	5	4	5
CF77154-10	1	2	4	2
F73008	3	6	4	5
NY64	4	6	6	7

[1]Chip color code: 1 - 4 = acceptable colors.
5 = borderline.
6 - 8 = unacceptable color.

Table 89. Chip color indices for 30 potato varieties grown at Tidewater, North Carolina - 1984.

Variety	Chip color[1]
Atlantic	5.0
Caribe	4.0
Gold Rus	4.3
Hampton	5.8
Katahdin	5.8
Monona	5.8
Oceania	5.3
Pungo	4.5
Redsen	3.5
Simcoe	4.0
Sunrise	3.0
Superior	4.5
Yankee Chipper	3.8
Yankee Supreme	3.3
Yukon Gold	6.3
AF330-1	3.0
B5662-WV13	4.3
C7232-4	2.5
CF7523-1	5.3
CF7622-6	4.3
CF7679-15	5.0
CF7688-9	3.5
CF7719-6	4.0
CF7722-19	5.3
CF7789-1	6.5
CF74135-3	3.5
CF76136-11	4.8
CF76183-2	3.5
CF77154-10	3.5
WF564-3	7.0

[1]Chip colors are an average of four readings. Rating system is that used by Borden's, Inc.

1 = very light
2 = light
3 = light brown
4 = brown
5 = dark brown

(Colors of 5 and above are unsatisfactory).

Table 90. Chip color indices for 48 potato varieties grown at University Park, Pennsylvania - 1984.

Variety	Chip Color[1]	Variety	Chip Color[1]
Acadia Russet	9.9	Sebago	8.1
Agassiz	7.5	Sunrise	8.1
Allagash Russet	6.7	Superior	7.6
Alaska Russet	7.5	Yankee Chipper	6.7
Atlantic	8.0	AF236-1	7.6
Belchip	6.3	AF303-5	7.6
BelRus	8.3	AF330-1	6.3
Campbell 14	7.5	AF332-9	8.8
Caribe	7.7	B5662-WV13	7.8
Chipbelle	7.7	B6949-WV3	8.3
Erik	9.5	BR7088-18	7.3
Gold Rus	8.5	C7232-4	7.1
Green Mountain	9.6	CF7523-1	8.9
Hampton	8.8	CF72107-15	7.7
Islander	7.1	CF72111-5	8.5
Jemseg	9.3	CF76136-11	7.9
Katahdin	8.1	CF77154-10	6.5
Kennebec	7.8	F73008	8.0
Lemhi	7.8	ND388-1	7.9
Norchip	7.3	ND534-4	8.7
Norland	8.9	NY59	9.7
Redsen	7.5	NY64	9.5
Rhine Red	9.0	WF564-3	9.0
Rosa	8.3		
Russet Burbank	8.5	Waller Duncan L.S.D. (0.05)	1.0

[1]Chips with lower indices are lighter in color.

Table 91. Chip color indices for 30 potato varieties grown at Kingston, Rhode Island - 1984.

Variety	Chip color[1]
Acadia Russet	9.6
BelRus	7.0
Caribe	7.8
Delta Gold	7.2
Denali	8.0
Gold Rus	6.6
Hampton	9.4
Islander	7.0
Katahdin	8.2
Kennebec	6.2
Norchip	8.0
Norland	8.4
Oceania	8.0
Redsen	7.6
Superior	8.0
Yankee Chipper	6.6
Yankee Supreme	8.0
Yukon Gold	9.6
AF303-5	8.0
AF330-1	7.0
B6949-WV3	8.0
C7232-4	5.6
CF7523-1	8.6
CF7679-15	9.6
CF74135-3	10.0
CF76136-10	8.8
CF77154-10	5.4
F73008	6.2
NY59	9.6
WF564-3	9.6

[1]Chips with lower indices are lighter in color.

Table 92 shows the chip color indices for 20 potato varieties grown at Guildhall, Vermont during 1984. Only four varieties, Campbell 14, Simcoe, AF330-1, and CF77154-10, had acceptable chip colors.

Chip colors for 28 potato varieties and clones grown at Painter, Virginia are shown in Table 93. Using their standard for satisfactory chip color (5.0 or less) only one variety, Hudson, did not have acceptable color.

Varieties grown at Morgantown, West Virginia did not produce acceptable chip color, as shown in Table 94. Part of the problem was post-harvest storage temperatures before shipment to Maine for chipping determinations.

Tuber samples from the 1983 variety trials at Presque Isle were stored at 38F., removed on January 24 and 31, 1984, and warmed at 70F. for two and three-week periods. On February 1, tubers reconditioned for two weeks were chipped and the results are shown in Table 95. On the same date, samples from 38F. were also chipped and rated for color and the results are shown in Table 95. None of the varieties chipped from 38F. had acceptable chip color (7.0 or less) but a few were within the 10-point color range, as shown in Table 95. When the samples were reconditioned for three weeks, many varieties showed some improvement in chip color as compared to the chip colors from samples reconditioned for two weeks. About eight varieties, however, showed no response to reconditioning regardless of the time period at 70F.

During December of 1984, samples from all varieties grown at Presque Isle in 1984 were tested for french fry color and texture. One french fry plug, one-half inch in diameter was cut from each of five tubers (stem to seed end). Plugs were trimmed to uniform length (approximately 2½ inches), rinsed in lukewarm water, dried on paper toweling to remove excess water, and then fried at 375F. for four minutes in liquid vegetable shortening. Each french fry plug

Table 92. Chip color indices for 20 potato varieties grown at Guildhall, Vermont - 1984.

Variety	Chip color[1]
Acadia Russet	9.6
Campbell 14	7.0
Crystal	7.8
Gold Rus	7.7
Hampton	8.6
Katahdin	8.1
Kennebec	7.5
Redsen	7.6
Rosa	7.5
Simcoe	7.0
Superior	7.7
AF330-1	5.6
B6949-WV3	8.2
BR7088-18	7.7
CF7523-1	8.2
CF7622-6	8.8
CF74135-3	8.1
CF77154-10	6.1
F73008	8.0
WF564-3	8.9
Waller Duncan L.S.D. (0.05)	0.6

[1]Chips with lower indices are lighter in color.

Table 93. Chip color indices for 28 potato varieties grown at Painter, Virginia - 1984.

Variety	Chip color[1]
Atlantic	3
Chippewa	3
Erik	4
Hampton	4
Hudson	6
Islander	3
Jemseg	4
Katahdin	4
Kennebec	4
Pungo	5
Redsen	3
Simcoe	4
Sunrise	2
Superior	4
Yankee Chipper	3
Yankee Supreme	4
Yukon Gold	4
B6949-WV3	3
CF7523-1	4
CF7622-6	4
CF7679-15	4
CF7688-9	4
CF7722-19	4
CF72111-5	5
CF72107-15	4
CF76183-2	3
CF77154-10	4
F73008	4

[1]Chip colors with lower numbers are lighter in color. Color ratings of 4 or lower are acceptable. A rating of 5 is marginal, while a rating of 6 or above is unacceptable.

Readings from unreplicated samples chipped 20 days after harvest

Table 94. Chip color indices for 28 potato varieties grown at Morgantown, West Virginia - 1984.

Variety	Chip color[1]
Acadia Russet	10.0
Agassiz	9.1
BelRus	10.0
Campbell 14	9.8
Caribe	8.9
Crystal	10.0
Denali	8.8
Erik	10.0
Gold Rus	10.0
Hampton	10.0
Islander	9.5
Katahdin	10.0
Kennebec	9.8
Lemhi	9.8
Redsen	9.3
Rhine Red	10.0
Yankee Chipper	10.0
Yankee Supreme	8.0
AF303-5	9.6
AF330-1	8.7
BR7088-18	9.1
CF7523-1	10.0
CF7688-9	9.6
CF72107-15	9.9
F73008	10.0
ND388-1	10.0
ND534-4	10.0
WF564-3	10.0
Waller Duncan L.S.D. (0.05)	0.5

[1]Chips with lower numbers are lighter in color.

Table 95. Potato chip indices for 45 potato varieties grown at Presque Isle, Maine - 1983.

Variety[1]	50F. 12-8-83	38F. 2-7-84	2 wks. 70F. 2-7-84	3 wks. 70F. 2-7-84
Alaska Russet	8.4	10.0	10.0	9.9
Campbell 14	6.5	9.1	9.5	9.2
Crystal	8.2	6.4	6.2	6.1
Hampton	9.0	10.0	10.0	10.0
Katahdin	8.9	10.0	10.0	9.7
Kennebec (med.)	8.9	10.0	9.6	8.7
Kennebec (med. late)	8.9	10.0	9.8	10.0
Michibonne	8.9	10.0	10.0	10.0
Michimac	9.0	10.0	10.0	10.0
Nobless Russet	8.4	10.0	9.7	9.7
Red Pontiac	10.0	10.0	10.0	10.0
Redsen	6.8	9.8	9.4	7.8
Rhine Red	9.7	10.0	10.0	9.9
Rosa	6.4	9.7	9.8	9.5
Russet Burbank	8.8	10.0	9.9	9.6
Superior	6.2	10.0	8.7	7.5
AF201-25	8.5	10.0	9.9	9.6
AF222-1	7.1	8.8	8.2	7.4
AF236-1	4.6	9.8	9.2	8.1
AF303-5	8.3	10.0	9.5	9.5
AF307-5	8.6	10.0	9.6	8.7
AF330-1	4.2	9.7	8.2	7.1
AF332-9	9.6	10.0	10.0	9.9
AS201-10	7.2	9.5	9.2	8.2
B5662-WV13	7.4	10.0	10.0	9.5
B6928-WV14	10.0	10.0	10.0	10.0
B6949-WV3	8.9	10.0	10.0	10.0
B7019-WV1	8.1	10.0	10.0	9.7
BR7088-18	6.2	9.8	9.9	9.3
C74109-8	8.6	10.0	10.0	9.9
CF7353-1	6.8	10.0	9.9	9.1

Table 95 - continued

Variety[1]	50F. 12-8-83	38F. 2-7-84	2 wks. 70F. 2-7-84	3 wks. 70F. 2-7-84
CF7523-1	8.5	10.0	10.0	9.6
CF7587-7	8.0	10.0	9.7	9.4
CF7688-9	7.9	10.0	9.3	8.5
CF72107-15	7.9	10.0	9.9	10.0
CF72111-5	9.9	10.0	9.4	9.5
CF74135-3	7.4	10.0	9.7	8.7
CF76183-2	5.2	9.0	8.4	7.7
CF77154-10	4.8	8.2	8.2	6.8
F73008	8.4	10.0	9.8	9.1
MN7973	8.0	8.3	8.3	8.3
MN8224	6.5	9.4	8.2	7.0
MN9319	6.9	10.0	9.8	9.7
NY59	10.0	10.0	10.0	10.0
NY64	9.9	9.8	10.0	10.0
Waller Duncan L.S.D. (0.05)	0.5	0.1	0.1	0.1

[1]Chips with lower indices are lighter in color.

Reconditioned samples were stored at 38F., 85% R.H. from harvest until reconditioning.

Two week samples were placed at 70F. on January 31, 1984.

Three week samples were placed at 70F., on January 24, 1984.

was classified into one of five color classes ranging from "1 - very light" to "5 - very dark" using the U.S.D.A. Color Standards for Frozen French Fried Potatoes (1978 edition).

Color indices for french fries were calculated by multiplying the number of fries in each color class by the color class number, then totaling and dividing by the number of fries in each sample. After color classification, each plug was broken open and the internal texture rated as "1 - mealy", "2 - intermediate", or "3 - salvey" and a weighted texture index calculated.

French fry color and texture indices for the potato varieties grown at Presque Isle in 1984 are shown in Table 96. Thirty-three of the 45 varieties had satisfactory french fry color (less than 3.0) but only one variety had acceptable texture (less than 1.4).

COMMON SCAB TOLERANCE

Common scab damage to potato tubers varies between years and among varieties and locations due to a number of reasons. Common scab appears to be a problem in most potato production areas of the Northeast and at times causes very high economic losses.

A pathologist at Riverhead, New York conducts potato scab tests for the NE107 Regional Project to determine the resistance of potato varieties and clones to common scab, *Streptomyces scabies*.

In 1984, Ms. Rosemary Loria, Plant Pathologist, conducted a 38-entry test for common scab resistance and the results are presented in Table 97. Scab severity, lesion type, and percent of tubers having scab lesions are reported. Note that one variety, ND388-1 (a russeted variety) and CF7719-6 had complete resistance to common scab. Several other varieties also had very good resistance to common scab. A number of varieties, however, had very little tolerance and showed a high degree of susceptibility to common scab. Scab tolerance and susceptibility data are very important factors to consider before naming and releasing a clone for commercial use.

Table 96. French fry color and texture indices for 45 potato varieties grown at Presque Isle, Maine - 1984.

Variety	French fry color[1]	French fry texture[2]	Variety	French fry color[1]	French fry texture[2]
Agassiz	1.2	2.9	CF7587-7	2.8	2.1
Alaska Russet	3.5	2.3	CF7622-6	4.9	2.7
Crystal	2.5	2.8	CF7679-15	3.5	2.3
Erik	5.0	2.9	CF7688-9	2.7	2.2
Gold Rus	2.8	2.2	CF7719-6	2.6	2.7
Hampton	4.0	2.3	CF7722-19	3.1	2.4
Katahdin	3.5	2.7	CF7750-1	4.4	2.9
Kennebec (med.)	2.8	2.4	CF7789-1	4.4	2.5
Kennebec (med. late)	2.4	1.7	CF72107-15	2.2	2.3
Lemhi	3.5	2.3	CF72111-5	3.0	2.5
Red Pontiac	4.9	2.6	CF74135-3	3.0	2.2
Redsen	2.2	2.7	CF76136-11	1.9	2.8
Rhine Red	3.6	2.3	CF76183-2	1.5	2.5
Russet Burbank	3.2	1.7	CF77154-10	1.1	2.1
Superior	1.9	2.6	ND388-1	2.5	2.5
AF236-1	1.5	2.6	ND534-4	3.5	2.9
AF307-5	3.0	2.5	NY59	4.8	2.3
AF332-9	3.6	2.3	NY64	4.7	2.1
AF9058M	3.5	2.8	NY67	3.7	1.8
B5662-WV13	2.5	2.3	W752	1.9	1.7
B6928-WV14	3.5	2.5	WF564-3	4.7	1.8
B6949-WV3	3.0	1.9			
B7019-WV1	1.8	2.6	Waller Duncan L.S.D.		
B7805-1	3.1	2.7	(0.05)	0.4	0.4

[1]French fries with lower indices are lighter in color.

[2]Lower texture indices indicate a mealier texture.

Table 97. Lesion surface area rating, lesion type rating, scab severity index, and percent tubers with common scab for 38 potato varieties grown in plots naturally infested with *Streptomyces scabies* at Riverhead, New York - 1984.

Variety	Lesion surface area rating[1]	Lesion type rating[2]	Scab severity index[3]	% Tubers with scab
Acadia Russet	0.9	1.9	8.7	73
Agassiz	0.0	0.1	0.2	4
Alaska Russet	0.1	0.3	0.9	12
BelRus	0.9	1.5	3.7	75
Campbell 14	0.3	0.8	2.5	31
Chippewa	1.0	2.2	11.7	74
Erik	0.8	1.5	4.5	65
Gold Rus	0.9	1.7	7.4	67
Hampton	0.8	1.4	5.7	59
Hudson	0.9	1.6	5.1	72
Islander	0.3	0.7	2.9	25
Katahdin	0.6	1.4	4.8	59
Norland	0.3	0.5	1.0	24
Onaway	0.2	0.2	0.7	12
Redsen	0.2	0.3	0.6	14
Rhine Red	0.1	0.1	0.3	5
Rosa	0.7	1.2	3.5	56
Sunrise	0.4	0.8	2.3	34
Superior	0.1	0.2	0.6	6
Wauseon	0.1	0.2	0.6	9
Yankee Chipper	0.6	1.2	3.7	53
AF236-1	0.2	0.3	0.8	16
AF330-1	0.9	2.1	12.2	75
AF637-1	0.1	0.2	0.5	6
B6949-WV3	0.2	0.4	0.8	20
BR7088-18	0.4	1.1	3.5	41
CF7523-1	1.1	2.0	7.8	83
CF7719-6	0.0	0.0	0.0	0

Table 97 - continued

Variety	Lesion surface area rating[1]	Lesion type rating[2]	Scab severity index[3]	% Tubers with scab
CF7722-19	0.2	0.5	2.3	15
CF7789-1	0.1	0.1	0.3	7
CF76136-11	0.3	0.8	2.7	34
F73008	0.2	0.3	0.8	19
MN9319	0.0	0.0	0.1	1
ND388-1	0.0	0.0	0.0	0
ND534-4	0.1	0.3	0.6	10
WF564-3	0.0	0.0	0.0	1
NY59	0.5	1.3	5.3	46
NY73	0.6	1.5	6.0	55
Waller Duncan L.S.D. (0.05)			2.4	17

[1]Rating: 0 = no lesions
4 = greater than 61% of tuber surface scabbed.

[2]Rating: 0 = no lesions
4 = deep pitted lesions.

[3]Severity index is calculated from surface area and lesion type ratings:

0 = no scab
140 = 61% or more of tuber surface with deep pitted scab.

VARIETAL HERBICIDE DAMAGE

Metribuzin herbicide damage to potatoes varies among varieties. During 1984, another replicated metribuzin susceptibility study was conducted with three named varieties and two promising clones varying the rates of metribuzin at layby. Data presented in Table 98 show that numerical yields of Hampton and NY64 were reduced by layby applications of metribuzin. Unfortunately, no foliar evidence of crop damage was present but damage was reflected in reduced yields.

These metribuzin damage tests have been conducted for several years and a summary Table 99 shows which varieties are apparently not harmed by metribuzin, those which are questionable or borderline, and those which are damaged by metribuzin, as indicated by foliar damage and/or yield decreases.

SEEDPIECE SPACING AND NITROGEN RATE STUDIES

Seedpiece spacing and nitrogen rate studies were conducted with two clones, AF330-1 and CF7750-1, and a newly named variety, Sunrise.

Yields, specific gravities, complete tuber size distribution percentages, and percent defects for clone AF330-1 are presented in Tables 100 and 101. Highest yields were obtained when fertilized with 160 lbs. of N per acre and when seedpieces were spaced 8 inches apart. The influence of nitrogen rates decreased specific gravity but increased hollow heart significantly. At this time and from the data shown in Tables 100 and 101, the suggestion for seedpiece spacing for AF330-1 should be 8 inches with 160 lbs. of nitrogen per acre.

Data for yields, specific gravities, tuber sizes, and percent defects for clone CF7750-1 are presented in Tables 102 and 103. Highest yields were obtained with 160 lbs. of N per acre and when seedpiece spacing was 10 inches apart. Tuber sizes with the 10-inch spacing were also toward the larger size classes. Nitrogen

Table 98. Effect of three rates of metribuzin applied at layby on yield, specific gravity, and foliage injury to five potato varieties. Presque Isle, Maine - 1984.

Variety and Treatments[1] Lbs. Metribuzin A.I. per Acre	Yield Cwt./A.	Specific gravity	Crop Injury Rating[2]
Erik			
0.10 lb.	373	1.080	8.2
0.25 "	346	1.081	7.8
0.50 "	408	1.081	8.5
Hampton			
0.10 lb.	353	1.095	8.2
0.25 "	326	1.093	8.2
0.50 "	338	1.096	8.3
Redsen			
0.10 lb.	245	1.081	8.1
0.25 "	237	1.080	7.1
0.50 "	250	1.078	6.0
NY64			
0.10 lb.	372	1.100	8.1
0.25 "	350	1.100	8.0
0.50 "	340	1.100	7.2
W564-3			
0.10 lb.	368	1.089	6.0
0.25 "	354	1.083	5.5
0.50 "	364	1.086	5.7
Waller Duncan L.S.D. (0.05)	46	0.003	

[1]Planted - May 25; killed - September 13; harvested - September 20.

Preemergence overall treatment of 0.5 lb. metribuzin per acre applied June 7. Temperature - 69F., cloudy; soil - moist.

Layby treatments applied July 27. Temperature - 56F., overcast; soil - moist.

[2]Rating code: 9 = no crop damage

1 = all crop plants killed.

Table 99. Designated varieties which have shown tolerance, borderline damage, or yield and foliar damage to layby applications of metribuzin herbicide. Maine - 1978 to 1984.

Year	Variety		
	Tolerant	Borderline	Susceptible
1978	Kennebec	Atlantic	Batoche
		BelRus	Belchip
			Campbell 12
			Campbell 13
			Cobbler
			Norchip
			Russet Burbank
1979	Chippewa	Campbell 11	Monona
	Green Mountain	Superior	Ontario
	Katahdin		Sebago
	Pungo		
	Wauseon		
1981	Chipbelle	Yankee Supreme	Jemseg
	Islander		
	Yankee Chipper		
1982	AF238-66	Simcoe	Gold Rus
			Shepody
			MN7973
1983	Campbell 14	Onaway	Acadia Russet
		Sunrise	Caribe
1984	Erik		Hampton
	Redsen		NY64
	WF564-3		

Table 100. Effect of seedpiece spacing and nitrogen fertilization on total yield, usable yield, percentage of yield in two market size classes, specific gravity, and percent total solids of clone AF330-1 grown at Presque Isle, Maine - 1984.

Seedpiece spacing[1] and nitrogen fertilization rate	Yield Cwt./A.	Usable[2] Yield Cwt./A.	Percentage of yield 2½ to 3¼ inches	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids
100 lbs. N per Acre						
8 inches	301	273	29.1	90.4	1.091	22.54
10 "	309	288	35.6	64.4	1.093	22.96
12 "	282	264	32.5	67.5	1.091	22.54
14 "	302	286	39.5	60.5	1.090	22.33
130 lbs. N per Acre						
8 inches	310	290	27.4	72.6	1.089	22.11
10 "	311	290	33.0	67.0	1.089	22.11
12 "	314	299	41.3	58.7	1.089	22.11
14 "	311	293	39.8	60.2	1.090	22.33
160 lbs. N per Acre						
8 inches	357	331	35.3	64.7	1.086	21.46
10 "	333	315	34.7	65.3	1.087	21.69
12 "	306	290	37.4	62.6	1.087	21.69
14 "	325	310	42.1	57.9	1.090	22.33
Waller Duncan L.S.D. (0.05)	49	53			0.008	

[1]Planted - May 23; killed - September 6; harvested - September 19, 1984.

[2]Usable yield equals total yield minus defects. P_2O_5 and K_2O held constant at 160 lbs. per acre.

Table 101. Effect of seedpiece spacing and nitrogen fertilization on tuber size distribution, tuber defects, and hollow heart on clone AF330-1 grown at Presque Isle, Maine - 1984

Seedpiece spacing[1] and nitrogen fertilization rate	Percent size distribution					Percent defects			Hollow heart[2]
	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	% Sun-burn	% Mis-shapen	% Growth cracks	
100 lbs. N per Acre									
8 inches	9.6	33.2	26.0	29.1	2.1	6.4	2.6	4.8	8
10 "	6.8	26.3	28.4	35.6	2.9	11.0	2.0	3.8	22
12 "	6.8	26.8	30.4	32.5	3.5	8.6	1.9	3.7	11
14 "	5.3	19.1	29.2	39.5	6.9	17.2	1.8	4.5	15
130 lbs. N per Acre									
8 inches	6.6	30.1	31.4	27.4	4.5	10.0	2.7	5.2	15
10 "	6.7	28.3	29.7	33.0	2.3	16.9	2.5	3.7	11
12 "	4.7	23.1	25.9	41.3	5.0	15.4	0.8	4.1	11
14 "	5.5	21.0	27.4	39.8	6.3	13.3	3.4	4.4	16
160 lbs. N per Acre									
8 inches	7.5	23.6	30.6	35.3	3.0	11.5	2.1	3.3	13
10 "	5.4	26.4	29.6	34.7	3.9	10.5	1.3	4.8	15
12 "	5.2	21.9	30.5	37.4	5.0	16.2	3.6	3.5	14
14 "	4.7	19.8	26.5	42.1	6.9	16.4	1.6	3.1	17

[1]See notes on Table 100.

[2]Number found per 60 large tubers cut and examined for hollow heart.

Table 102. Effect of seedpiece spacing and nitrogen fertilization on total yield, usable yield, percentage of yield in two market size classes, specific gravity, and percent total solids of clone CF7750-1 grown at Presque Isle, Maine - 1984.

Seedpiece spacing[1] and nitrogen fertilization rate	Yield Cwt./A.	Usable[2] Yield Cwt./A.	Percentage of yield 2½ to 3¼ inches	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids
100 lbs. N per Acre						
8 inches	150	141	40.3	93.4	1.096	23.59
10 "	206	197	44.8	95.2	1.095	23.38
12 "	186	177	50.0	95.0	1.098	24.01
14 "	170	163	52.5	95.8	1.094	23.17
130 lbs. N per Acre						
8 inches	172	166	44.8	96.5	1.095	23.38
10 "	218	191	45.9	95.4	1.094	23.17
12 "	226	217	46.5	96.0	1.099	24.22
14 "	161	154	55.3	95.8	1.098	24.01
160 lbs. N per Acre						
8 inches	178	168	40.8	94.4	1.095	23.38
10 "	252	242	50.3	95.7	1.095	23.38
12 "	231	222	47.1	95.8	1.095	23.38
14 "	180	176	52.5	97.0	1.095	23.38
Waller Duncan L.S.D. (0.05)	68	66			0.007	

[1]Planted - May 23; killed - September 13; harvested - September 19, 1984.

[2]Usable yield equals total yield minus defects. P_2O_5 and K_2O held constant at 160 lbs. per acre.

Table 103. Effect of seedpiece spacing and nitrogen fertilization on tuber size distribution, tuber defects, and hollow heart on clone CF7750-1 grown at Presque Isle, Maine - 1984.

Seedpiece spacing[1] and nitrogen fertilization rate	Percent size distribution					Percent defects			Hollow heart[2]
	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	% Sun-burn	% Mis-shapen	% Growth cracks	
100 lbs. N per Acre									
8 inches	6.6	19.4	30.7	40.3	3.0	3.8	2.8	0.0	1
10 "	4.8	19.3	29.0	44.8	2.1	7.8	6.9	1.6	1
12 "	5.0	17.8	22.0	50.0	5.2	7.1	6.6	2.0	0
14 "	4.2	13.1	23.6	52.5	6.6	8.7	3.0	0.3	1
130 lbs. N per Acre									
8 inches	3.5	15.2	22.9	44.8	13.6	6.2	4.2	0.6	1
10 "	4.6	18.6	22.9	45.9	8.0	3.5	5.9	1.5	2
12 "	4.0	17.0	24.3	46.5	8.1	4.2	4.5	0.5	0
14 "	4.2	13.9	19.0	55.3	7.6	7.9	5.0	0.5	0
160 lbs. N per Acre									
8 inches	5.6	20.2	25.7	40.8	7.7	5.5	8.1	1.2	0
10 "	4.3	14.5	23.7	50.3	7.2	4.6	5.5	2.2	0
12 "	4.2	14.6	23.9	47.1	10.2	4.7	6.2	0.9	0
14 "	3.0	10.7	18.5	52.5	15.3	8.2	7.7	2.6	0

[1]See notes on Table 102.

[2]Number found per 60 large tubers cut and examined for hollow heart.

rate did not affect specific gravity of this variety significantly. Clone CF7750-1 had only a few tubers showing hollow heart. At this time it would appear from the data shown in Tables 102 and 103 that the suggestion for seedpiece spacing for CF7750-1 should be 10 inches with 130 to 160 lbs. of N per acre.

Yields, specific gravities, and tuber size distribution for the spacing and fertilizer nitrogen rate test conducted with the newly named variety, Sunrise, are shown in Tables 104 and 105. Yields for the 160 lbs. of N per acre rate were not significantly higher than for the 100 or 130 lb. N rate per acre. Seedpiece spacing at 10 inches produced the highest numerical yield at each level of N fertilization. Rate of N or seedpiece spacing did not significantly increase the percentages of tubers above 2½ inches in diameter in this study.

From the data shown in Tables 104 and 105, the suggestion for seedpiece spacing for Sunrise should be 10 inches with 100 to 130 lbs. of N per acre.

Table 104. Effect of seedpiece spacing and nitrogen fertilization on total yield, usable yield, percentage of yield in two market size classes, specific gravity, and percent total solids of the Sunrise variety grown at Presque Isle, Maine - 1984.

Seedpiece spacing[1] and nitrogen fertilization rate	Yield Cwt./A.	Usable[2] yield Cwt./A.	Percentage of yield 2½ to 3¼ inches	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids
100 lbs. N per Acre						
8 inches	367	357	46.3	97.0	1.089	22.11
10 "	363	349	51.6	96.1	1.087	21.69
12 "	353	341	51.2	96.8	1.087	21.69
14 "	319	311	47.7	97.3	1.087	21.69
130 lbs. N per Acre						
8 inches	359	348	50.5	96.8	1.088	21.90
10 "	375	366	51.5	97.8	1.086	21.48
12 "	363	357	55.6	98.3	1.084	21.06
14 "	347	337	48.7	97.3	1.086	21.48
160 lbs. N per Acre						
8 inches	384	373	50.0	97.0	1.088	21.90
10 "	396	389	49.1	98.2	1.087	21.69
12 "	388	379	49.4	97.9	1.090	22.33
14 "	375	369	52.8	98.2	1.084	21.06
Waller Duncan L.S.D. (0.05)	46	43			0.006	

[1]Planted - May 23; killed - September 13; harvested - September 19, 1984.

[2]Usable yield equals total yield minus defects. P_2O_5 and K_2O held constant at 160 lbs. per acre.

Table 105. Effect of seedpiece spacing and nitrogen fertilization on tuber size distribution, tuber defects, and hollow heart on the Sunrise potato variety grown at Presque Isle, Maine - 1984.

Seedpiece spacing[1] and nitrogen fertilization rate	Percent Tuber Size Distribution						Percent Defects			Hollow heart[2]
	1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	% Sun-burn	% Mis-shapen	% Growth cracks	
100 lbs. N per Acre										
8 inches	2.0	13.8	27.8	46.3	9.2	0.9	7.9	1.3	4.9	0
10 "	2.9	12.1	22.9	51.6	9.5	1.0	8.5	2.0	4.7	1
12 "	1.8	11.4	21.8	51.2	12.4	1.4	12.2	1.1	6.0	1
14 "	2.7	10.7	19.9	47.7	19.0	0.0	12.8	3.7	9.4	6
130 lbs. N per Acre										
8 inches	2.5	10.9	26.3	50.5	9.1	0.7	9.2	2.5	3.2	0
10 "	1.7	13.1	22.1	51.5	11.1	0.5	10.5	1.2	5.2	2
12 "	1.2	8.3	19.4	55.6	15.0	0.5	11.5	1.5	4.9	1
14 "	2.1	9.9	19.9	48.7	18.8	0.6	10.8	2.3	6.0	0
160 lbs. N per Acre										
8 inches	2.1	13.3	21.1	50.0	12.6	0.9	8.6	2.8	2.8	2
10 "	1.3	11.4	21.1	49.1	16.6	0.5	11.0	3.3	3.4	1
12 "	2.1	10.5	18.2	49.4	19.8	0.0	14.0	1.7	4.2	0
14 "	1.4	8.2	14.2	52.8	23.0	0.4	9.9	2.1	4.0	3

[1]See notes on Table 104.

[2]Number found per 60 large tubers cut and examined for hollow heart

OBSERVATIONS FOR VARIETIES GROWN IN THE 1984 NORTHEAST COOPERATIVE VARIETY TRIALS

The following notes, observations, and opinions represent a compilation of information from the various cooperators, data presented in the previous pages, and various persons involved in conducting the Northeast Cooperative Potato Variety Trials. Many of the cooperatives provided observations on the data collection forms and/or by written and oral communications. The senior author condensed the observations for inclusion in this section of the variety trial report.

ACADIA RUSSET - Released by Canada in 1981. This variety has medium late maturity with russeted skin and tubers that vary from round to long depending on size and location where grown. Acadia Russet has disease tolerance to leafroll, fusarium, and phoma tuber rot. This variety has had good yields, gravities, and culinary qualities. In 1984 where grown, defects in terms of growth cracks, hollow heart, and knobby tubers were high. It does, however, show promise for fresh pack and count boxes.

AGASSIZ - From Minnesota and tested under clone number MN8224. This variety has medium maturity and resistance to common scab, late blight, and verticillium wilt. Tubers are round-oval in type, lightly russeted, and not particularly attractive. Yields are not as good as Kennebec with tubers toward the smaller sizes and prone to growth cracks. Storage ability is unsatisfactory, processing characteristics are poor, and it does not have satisfactory chip or french fry color and texture. It will be eliminated from further trials in the Northeast.

ALASKA RUSSET - A medium maturing, light-russeted variety from Alaska. Tubers are oblong to medium long with a low appearance rating. Yields and gravities have been lower than Russet Burbank but defects such as growth cracks and secondary growth have been less. It does not chip, recondition, or have good culinary characteristics.

ALLAGASH RUSSET - Released from Maine in 1980. Tubers are lightly russeted, attractive in appearance, and oblong in type. Maturity is medium and this variety is resistant to net necrosis but susceptible to scab and hollow heart. Yields have been variable. It does not appear to have much of a future.

ATLANTIC - A medium maturing variety that produces oblong tubers that are slightly netted and scurfy but quite attractive. Atlantic has resistance to late blight, golden nematode, net necrosis, and viruses A and X. Atlantic is a very high yielding variety, usually has high gravities, and is a consistently good chipper. In the mid-Atlantic areas, internal necrosis and hollow heart are frequently reported but overall, acreage of Atlantic is increasing in the Northeast.

BELCHIP - A late maturing chipping variety released by U.S.D.A. Tubers are round, rough, and very unattractive in general appearance. Belchip has resistance to late blight, common scab, net necrosis, golden nematode, and viruses A and X. Yields have been slightly lower than Katahdin, but gravities have been higher. It chips from the field, from storage, and reconditions well. In some areas, internal discoloration has been reported. Very few areas are showing any interest in Belchip beyond the testing stage.

BELRUS - A medium late maturing russet variety that produces oblong tubers. BelRus has resistance to verticillium wilt, net necrosis, leafroll, and virus A. Yields of BelRus are erratic but there are some growers who get good to fair yields. Specific gravities have always been high. Packers have been paying a premium price for BelRus for count boxes and specialty packs. Plants of BelRus are shallow rooted, small, and very subject to moisture stress which suggests that this variety must be grown on silt and clay loam textured soils.

CAMPBELL 13 - From the Campbell Institute for Agricultural Research Breeding Program in 1978. Campbell 13 is a medium maturity variety

that produces smooth, oblong, and quite attractive tubers. Campbell 13 has resistance to golden nematode, net necrosis, late blight and verticillium wilt. It is no longer being tested in the cooperative variety trials but there is a seed source at the Maine State Seed Board in Masardis.

CARIBE - A very early maturing, purple skinned variety from Agriculture Canada. Tubers of Caribe are round to flat oblong, and are fair in appearance. Yields are excellent for the early maturing varieties but gravities lower than Superior. Storage ability is fair to good; fried colors are good, and flesh color does not darken with extended storage periods. This is an excellent early market and home garden variety.

CHIPBELLE - A late maturing chipping variety that produces short-oblong, buff colored, rough, and very poor "eye appeal" tubers. Chipbelle has resistance to verticillium wilt, net necrosis, and golden nematode. Specific gravity of tubers has been high but yields erratic. Chipbelle is susceptible to hollow heart, growth cracks, and misshapen tubers. Based on seed demand, this variety will soon disappear from commercial production.

CHIPPEWA - An old medium late maturing variety that produces very bright, oblong shaped tubers. Internal flesh color is unusually white. Chippewa yields very well but does not process, although it has good boiling and baking scores. Virginia, a newcomer to NE107, tried Chippewa in 1984.

CONESTOGA - A recent release by Agriculture Canada. This is a medium maturing variety with resistance to leafroll, net necrosis, and common scab. Tubers are round, white, and not particularly good in appearance. Yields have been very good under adverse growing conditions. Specific gravities have been very good. In the 1984 trials at four locations, it was a real winner. In 1982 and 1983, cooperators were not interested in Conestoga but in 1984 and 1985, a number of cooperators have requested Conestoga.

CRYSTAL - A medium late maturing variety from North Dakota. Tubers are oblong, white, and toward the small sizes. Crystal has resistance to common scab and verticillium wilt. Specific gravities are equal to Kennebec; but in 1984, yields were much lower. It does have satisfactory chip color but storage,french fry texture, and preparation losses were quite high.

DELTA GOLD - A yellow fleshed, medium late maturing baking variety that has round, white, and very attractive tubers. This variety has resistance to net necrosis and virus A. Specific gravities are higher than Kennebec but yields are much lower. It may have a place for small farm and garden production and perhaps a specialty market.

DENALI - A medium maturing chipping variety from Alaska. Tubers are round, buff colored, and quite attractive, although somewhat rough under dry growing conditions. Specific gravities are high and yields very erratic. Chip colors have also been variable, storage characteristics poor, and culinary qualities not very good.

ERIK - A late maturing red variety released by Minnesota in 1983. Erik has resistance to common scab, late blight, and verticillium wilt. Tubers are oblong and very attractive, but lose red color rapidly. Yields have been better than Kennebec but specific gravities somewhat lower. It does not have acceptable chip or french fry color and has very poor french fry texture. Storage, preparation losses, and culinary characteristics are not available at this time.

GOLD RUS - A heavily russeted, late maturing variety released by U.S.D.A. in 1982. Tubers are oblong in type, have smooth areas around the eyes, and are attractive in appearance. Yields have been less than Russet Burbank but more than BelRus. Specific gravities have been lower than Burbank. Storage characteristics, chip colors, and culinary qualities are very good. It has a small size and hollow heart problem but to the writer is a better russet possibility than BelRus.

GREEN MOUNTAIN - A very old, high yielding, high dry matter variety with exceptional baking qualities. In the few trials where grown, it yields higher than any other clone or variety. It does not chip or process well and its greatest weakness is susceptibility to common scab and net necrosis. This variety could be grown as a specialty for count boxes or other elite marketing situations.

HAMPTON - A variety tested under the clone number NY63 and will be officially released by New York relatively soon. Hampton is a late maturing, high yielding variety that produces round, buff colored, and very attractive tubers. This is also a variety with resistance to verticillium wilt and golden nematode. Culinary qualities are satisfactory but fried colors unsatisfactory. Among all locations in 1984, it is indicated that this variety can withstand dry growing conditions.

HUDSON - A golden nematode resistant variety from New York. Hudson has late maturity and produces large, oblong tubers with excellent culinary characteristics. Seed demand has been hot and cold since the variety was released in 1972, but because of its erratic yielding ability, its future is questionable.

ISLANDER - Released by Maine in 1983. This is a medium maturing variety with resistance to net necrosis, common scab, and golden nematode, hence the high interest by Long Island growers. Tubers are short oblong, and when not irrigated, tend to be quite rough and unattractive. Yields are equal to Kennebec, specific gravities lower, and chip colors usually acceptable. In 1984, yields were low and tubers had high percentages of hollow heart and growth cracks.

JEMSEG - A very early maturing, good yielding, and high specific gravity variety from Agriculture Canada. Jemseg sizes up early, has fair culinary qualities, does not process well, and does not store well for very long. It has a place for early market and home garden use.

KATAHDIN - The old faithful standard for late maturing and most round white potato varieties grown in the Northeast. Katahdin has very good field resistance to leafroll, net necrosis, mosaics, and drought. Tubers are round, white, and susceptible to scab, silver scurf, fusarium, and rhizoctonia. However, if grown in a good rotation, it can be attractive, yield well, and produce acceptable fried colors. Katahdin has exceptional production versatility particularly when other clones do not do well. It still presents a big challenge for new clones and varieties being developed today.

KENNEBEC - A medium maturing standard variety and is a good "old" dependable variety for fresh market and processing, and for foreign export. Tubers are short-oblong, thin skinned, and attractive when grown in a good rotation. Kennebec, since it does not show rhizoctonia, silver scurf, etc., makes a good "universal" garden variety. Yields and specific gravities of Kennebec are usually very good; but when grown under moisture stress, growth cracks, misshapen tubers, and other tuber defects are usually high. Kennebec, if harvested immature, develops "pink-eye" tuber rot and literally melts in storage.

LEMHI - A late maturing russet variety released by Idaho et al. in 1980, tested in Maine, rejected, and returned to trial for further evaluation. Lemhi has resistance to common scab and net necrosis, but is very susceptible to everything else. Tubers are oblong-long in type with medium russeted skins, and attractive if not grown under moisture stress. Yields, gravities, and marketable yields have been better than Russet Burbank. Processing ability is fair and tubers are very susceptible to hollow heart and internal heat necrosis. Seed sources in Maine have completely disappeared.

MONONA - A medium maturing chipping variety with some resistance to verticillium wilt and mosaics. Tubers are round, white, uniform in size, and very attractive. Monona is a good old "stand-by" for chipping but acreage has decreased due to low yields. If it does not chip, however, it makes a beautiful fresh market pack with a high usable percentage.

NORCHIP - A medium early chipping variety with resistance to common scab and having some drought resistance. Tubers are round, white, small, rough, and very unattractive. Yields have been erratic and this variety has a reputation for internal discolorations after storage. It is a variety about to be eliminated from commercial production.

NORLAND - An early maturing red variety with resistance to common scab. Tubers are oblong, very attractive, have good culinary qualities, and hold the red color well after washing. Norland has been popular for fresh market, home gardens, and early chipping. It will be replaced by Caribe, Jemseg, and possibly Yukon Gold.

OCEANIA - A medium maturing variety with resistance to net necrosis and some mosaics. Tubers are round, buff colored, and small in size. Yields and gravities are about the same as Superior. Chip colors are variable, storage quality is very poor, and hollow heart and other tuber defects are high. This clone should have never been named and released.

ONAWAY - An old-timer from Michigan with early maturity and common scab resistance. Tubers are round-oblong, cream colored, and rough when over two inches in diameter. Onaway has high yields, low specific gravity, poor appearance, and many tuber defects plus excessive hollow heart. Onaway has poor storage, high preparation losses, and no processing abilities.

PENN 71 - A late maturing, good chipping variety from Pennsylvania that produces round, white, and very rough tubers. It yields well, has good specific gravity, good chip color, poor culinary characteristics, and very poor storage ability. It has been dropped from further testing, but the Maine State Seed Board has a small increase plot at Masardis.

PUNGO - A medium early maturing variety from North Carolina that produces round, buff colored, and very rough tubers. Pungo is the standard variety in the southern states. Pungo yields fairly well,

stores poorly, and has excessive hollow heart. It does not process, makes a very unattractive fresh market pack, but usually hits the market when any "new potato" will sell.

RED PONTIAC - An old variety, a mutation from Pontiac, and brought back for re-evaluation in NE107. It has not been very popular for domestic markets but there has been some demand for use as export to Africa, South America, and other warm climate areas. Tubers are round-oblong, red skinned, and very attractive. Yields are high, specific gravities low, and storage characteristics poor. It does not process and has no fresh market potential in the Northeast.

REDSEN - A medium early, red, chipping variety from North Dakota. Tubers are oblong, lose color rapidly after harvest, and have scab resistance. Yields and specific gravities have been less than Superior. Appearance is better than Superior but tuber defects such as misshapen tubers were excessive. In 1984, tubers were small, rough, and unattractive. Culinary, storage, and preparation losses were high in 1983-84.

RHINE RED - A medium maturing, red variety from Wisconsin. Tubers are round, rough, and unattractive. Yields in Maine have been higher than Kennebec, gravities about the same, and chip colors much darker. Storage ability is good, preparation losses very high, and culinary qualities not good.

ROSA - A late maturing, golden nematode resistant variety from New York. Tubers are round, buff colored, pink-eyed, and fairly attractive. Rosa also has resistance to early blight and pink-eye tuber rot. Rosa has good yield, some drought resistance, good storage ability, good culinary characteristics, but poor chip colors.

RUSSET BURBANK - The most popular variety on the North American continent for fresh market and french fry processing. It is too late in maturity for Maine, but it does have exceptional storage ability, exceptional reconditioning ability, and good fried colors. It also provides competition in eastern markets for Idaho Russets.

Total yields are usually good, but usable yields are low because of tuber size distribution, knobby, misshapen, and growth cracked tubers. It will be hard to replace, but the Northeast needs an early maturing, good quality, russet variety to replace the Russet Burbank.

RUSSETTE - A U.S.D.A. good looking russet variety released in 1981. This was the official variety served baked at the 68th Annual Banquet of The Potato Association of America at Presque Isle, Maine in 1984. Tubers are medium long, cylindrical, and attractively russeted. Even though Russette has a problem of producing a high percentage of tubers over six ounces, yields have been good with fewer defects than Russet Burbank. Russette has storage ability equal to or better than Russet Burbank. Processing qualities are very good. If average tuber size can be increased, this variety will be a good replacement for Russet Burbank.

SACO - A late maturing variety developed for starch production and released in 1955 by U.S.D.A. Tubers are round, rough, white, thin skinned, and very unattractive. We have re-evaluated Saco as a potential for potato flake production which it would be well suited for. Processing ability for french fries or chips has been very poor. It does not store well and has a high after cooking darkening index.

SEBAGO - A late maturing, round, cream colored variety with late blight and virus X resistance. Sebago is an old multi-purpose variety that has wide adaptation to soil, climatic, and cultural conditions. Yields are usually good, specific gravities low, processing ability poor, and is an excellent storage keeper.

SIMCOE - An early maturing round, white variety from Agriculture Canada (Guelph). Simcoe has resistance to common scab, late blight, golden nematode, and viruses A and X. It is a good all purpose variety in terms of yield, gravity, storage ability, processing ability, and fresh market appearance. It could be a replacement for Superior.

SUNRISE - A medium maturing variety released by Maine in 1984 with resistance to scab, net necrosis, golden nematode, and virus X. Clone number for testing was CF7358-14. Tubers are round-oblong, white, and slightly netted, fairly attractive, and with some resistance to soil-borne diseases. Chip colors, yields, specific gravities, and preparation losses have been satisfactory. Tuber defects such as growth cracks and hollow heart have been quite high.

SUPERIOR - From Wisconsin and the accepted standard for early and medium early maturing varieties. Tubers are short-oblong with a scurfy skin but attractive if grown in a good rotation. Yields have been good to poor in recent years, and the acreage in the Northeast appears to be decreasing due to erratic and poor yields. Superior does, however, have a market for early chipping, processing, and fresh market uses.

TOLAAS - A medium maturing variety from Minnesota which was tested under clone number MN7973. Tubers are oblong, tan colored, slightly netted, and fair to good in appearance. Tolaas reportedly has resistance to common scab and tolerance to hollow heart. Yields, gravities, and storage ability have not been good. Tubers tend to be toward the small sizes. It will probably be discarded from further NE107 tests.

WAUSEON - A medium late maturing variety with resistance to late blight, net necrosis, common scab, and golden nematode. Tubers are round-oblong, and very attractive. Yields of Wauseon have been slightly lower than Kennebec but gravities have been very good. Wauseon had good culinary characteristics and fair to good storage qualities.

YANKEE CHIPPER - A 1983 release from Maine and tested under clone number AF205-9. Yankee Chipper is a medium maturing variety that has resistance to virus X, golden nematode, and net necrosis. Tubers are oblong, white skinned, and fairly attractive. Yields and gravities have been about the same as Kennebec but better chip

colors. Storage, culinary and processing characteristics are above average.

YANKEE SUPREME - Another 1983 release from Maine that was tested under clone number CC26-1A. This medium early variety has resistance to net necrosis and stem-end browning. Tubers are round to oblong, cream colored, and have good general appearance. Yields and gravities have been better than Superior. Storage, processing, and culinary characteristics are very good. It will not replace Superior because it does not have scab resistance and does not chip well.

YUKON GOLD - An early maturing, yellow fleshed variety from Agriculture Canada (Guelph). Tubers are oblong with a yellow to greenish white skin that gives the tubers a very distinctive appearance. Yields have been high, gravities very high, but it does not chip or store well. It is a specialty variety that could find a limited market in Canada and the United States.

AF92-3 - A medium late maturity clone from Maine that has resistance to common scab, acid scab, net necrosis, verticillium wilt, late blight, and virus X. Tubers are round-oblong, white, and tend to be quite rough in general appearance. Yields have been fair to good in NE107 trials but gravities erratic. A decision to name or discard will be made soon, since it has been in test for some time.

AF236-1 - A medium late maturing clone with resistance to net necrosis, early blight, and late blight. Tubers are short-oblong, white, and with good general appearance. Yields have been less than Kennebec but gravities somewhat higher. Chip colors have been variable, but it does have good storage, processing, and culinary characteristics.

AF303-5 - A medium late maturing clone with resistance to verticillium wilt, net necrosis, early blight, rhizoctonia, and hollow heart. Tubers are round, white, and fair to good in general appearance. Yields have been equal to Kennebec and gravities

slightly higher. Culinary characteristics have been good, chip colors poor, and tuber sizes toward the smaller size groups.

AF307-5 - A medium maturing clone with resistance to net necrosis and late blight. Tubers are oblong, white, and have a very attractive appearance. Yields have been about equal to Kennebec with specific gravities a little lower. Storage ability, chip colors, and processing characteristics are marginal.

AF330-1 - A medium early Maine clone that produces round, white-netted tubers with some tolerance to hollow heart. General appearance, culinary qualities, chip colors, and tuber size distribution have been good. Yields and specific gravities have been slightly lower than Superior.

AF332-9 - A medium maturing Maine clone with resistance to net necrosis, verticillium wilt, and golden nematode. Tubers are round, buff colored, and not very attractive. Chip colors have been dark and tuber size distribution toward the smaller sizes. Yields and gravities are about the same as Kennebec but storage and culinary characteristics have been better.

AF9058-M - A round to oblong tuber type variety, buff colored, and medium maturity. It has some tolerance to common scab and late blight. In the first year of trial, yields were less than Kennebec and specific gravity higher. It did not have good chip colors. Storage and culinary characteristics are not available at this time.

B5662-WV13 - A medium early maturing clone from West Virginia. Tubers are round, white, and only fair in appearance. This clone has late blight resistance. Yields have been less than Superior but gravities slightly higher. This clone has been around and tested extensively; however, disposition is unknown at this time.

B6928-WV14 - A medium late clone from West Virginia with unknown disease resistance. Tubers are round, white, and more attractive

in general appearance than Kennebec, although under dry growing conditions the tubers can be quite rough. Yields have been less than Kennebec but gravities a little higher. It does not have good chip color. It has small sized tubers and good storage and culinary characteristics.

B6949-WV3 - Another medium late clone that has late blight resistance and produces round, white, and attractive tubers of good size. Chip colors have been too dark and tuber defects quite high. It does have excellent storage ability. It has been widely tested in the Northeast and should be named and released.

B7019-WV1 - A medium late maturing clone with round-oblong, buff colored tubers. Yields, gravities, tuber size distribution, and chip colors have been poor. It does have excellent storage ability with a 150-day dormancy period.

BR7088-18 - A medium late maturing variety with high dry matter. This clone produces only moderate yields of round, buff colored tubers. Chip colors have been erratic, tuber defects quite high, and storage ability somewhat less than Kennebec. It is doubtful that this variety will make commercial production.

C7232-4 - A medium early maturing clone with exceptional chip colors and reconditioning ability but with no disease resistance and low yields. It has good processing, culinary, and storage ability. Its future is questionable.

CF7353-1 - A medium late maturing clone with purple colored round-oblong tubers. This clone has resistance to net necrosis, verticillium wilt, and early blight. Tubers are attractive with a good size distribution and acceptable chip color, but excessive growth cracks and some hollow heart. Processing characteristics are poor and storage quality acceptable if tubers are well matured at harvest. This clone will probably not make it to commercial production.

CF7523-1 - A medium early Maine clone with resistance to early blight, verticillium wilt, net necrosis, and golden nematode. Tubers are round, white, and fairly attractive. Yields are slightly higher than Superior and gravities somewhat lower. Chip colors have not been good, it does not recondition, and storage quality is questionable.

CF7587-7 - A medium late maturing clone, resistant to net necrosis, acid scab, and common scab. Tubers are oblong, buff colored, and only fair in appearance. In two years of trial, yields were lower than Kennebec but gravities much higher. Chip colors have been dark, tuber size distribution toward the smaller sizes, processing characteristics poor, and storage quality fairly good for a high dry matter variety. It has been dropped, however, from Sangerville and further testing.

CF7622-6 - An early maturing clone that has resistance to net necrosis and virus X. Tubers are round-oblong, white, and badly misshapen in first year of trial at Presque Isle. Yields and gravities were much lower than Superior, chip colors dark, and size distribution very poor. Processing, storage, and appearance data are not available at this time.

CF7679-15 - A medium early maturing clone with round-oblong, cream colored, and fairly attractive tubers. This clone has resistance to net necrosis, verticillium wilt, and virus X. In first year of trial at Presque Isle, yields and gravities were much higher than Superior. Chip colors were acceptable and tuber defects very low. Storage, processing, and other post-harvest data are not available at this time.

CF7688-9 - A medium maturing clone that produces round, white tubers resistant to net necrosis. Tubers are quite attractive, do not have good chip color, and have a short storage period. In three years of trial at Presque Isle, yields were about the same as Kennebec but gravities averaged 1.096. It does have a small tuber size problem but satisfactory processing and culinary characteristics.

CF72111-5 - A medium maturing clone that produces oblong, white tubers with resistance to net necrosis. Yields have been slightly higher than Kennebec and specific gravities about the same as Kennebec. In 1984, it had high percentages of growth cracks and tubers toward the smaller size groups. Chip colors have been too dark, storage dormancy very short, and preparation losses quite high. This clone will be discarded from further testing.

CF74135-3 - A medium early, round, white clone with resistance to acid scab, common scab, and net necrosis. Yields and specific gravities have been much lower than Superior. Tubers have been toward the smaller size groups. Chip colors have been acceptable, storage quality poor, and culinary qualities less than satisfactory. This clone will be discarded from Sangerville and further testing.

CF76136-11 - A medium early clone with resistance to common scab, net necrosis, rhizoctonia, and golden nematode. Tubers are round to oblong, white, and lightly netted. Their size distribution has been toward the smaller size groups. In the first year of variety trials, yields were much lower than Superior and specific gravities slightly higher. No post harvest data are available at this time.

CF76183-2 - An early maturing clone that produces long and buff colored tubers which are quite attractive but tend to be toward the smaller sizes. This clone has resistance to common scab, net necrosis, late blight, and virus Y. Chip colors have been good, storage period short, and preparation and culinary characteristics good. It also reconditions from cold storage. With good management this variety might be satisfactory for processing.

CF77154-10 - An early maturing clone with round-oblong, white tubers which run toward the smaller sizes but still as attractive as Superior tubers. Yields have been less than Superior but specific gravities have been much higher. Chip colors, processing, culinary, and storage characteristics are very good. This clone is resistant to net necrosis and golden nematode.

CF7719-6 - An early maturing clone with resistance to common scab, acid scab, net necrosis, late blight, and golden nematode. Tubers are oblong, white, and toward the smaller sizes. Yields in first year of NE107 trials were low and specific gravities were very low. Chip colors were too dark and french fry texture very poor. Storage, processing, and culinary data are not available at this time.

CF7722-19 - An early maturing clone that produces oblong, white tubers that are very small. This clone has resistance to common scab, acid scab, net necrosis, hollow heart, virus X, and golden nematode. In the first year of trial, yields were equal to Superior, specific gravities lower, and chip colors too dark. Post harvest data are not available at this time.

CF7750-1 - A medium early maturing clone that produces mostly oblong tubers that are moderately russeted. This clone has resistance to common scab, net necrosis, and virus X. In a single location test at Presque Isle, yield and specific gravity were lower than Russet Burbank, even though it was grown the same number of days as Burbank. Tuber sizes were very small and chip color was very poor. Post harvest data are not available at this time.

CF7789-1 - A medium early maturing clone with resistance to common scab, acid scab, net necrosis, and virus X. Tubers are round-oblong, small, slightly russeted, and unattractive. In the first year of testing in the cooperative variety trials, the yields and specific gravities were lower than Russet Burbank. No post harvest data are available at this time.

CF72107-15 - A medium late maturing clone with resistance to net necrosis, early blight, late blight, and golden nematode. Tubers are round, white, and have good general appearance. Yields and specific gravities have been less than Kennebec with tubers toward the smaller sizes and chip colors too dark. Storage characteristics are poor and culinary qualities not acceptable. This variety will be discarded from Sangerville and further testing.

F73008 - A late maturing clone from Agriculture Canada (Fredericton) that produces buff colored oblong tubers. This clone has resistance to late blight and has yellow flesh. This clone yields a little higher than Katahdin and is higher in specific gravity. Clone F73008 has good storage, processing, and culinary characteristics. In 1984, total yields were very high but because of tuber defects (misshapen tubers and growth cracks), usable yields were very low.

MN9319 - A medium late maturing clone that produces oblong and tan-netted tubers. It has resistance to common scab, late blight, and hollow heart. It is a high dry matter clone but is only moderate in yielding ability. Storage ability, processing, and culinary characteristics have been poor. It has been dropped from Sangerville and further testing.

ND388-1 - A new russet clone from North Dakota. This medium late maturing clone produces oblong tubers which run small in size and have a large amount of hollow heart. In the first year of trial, yields were less than Kennebec and specific gravities about the same. Post harvest data are not available at this time.

ND534-4 - Another russet clone from North Dakota that produces oblong and small tubers. This clone is late maturing. In the first year of trial, yields and specific gravities were lower than Kennebec. Chip colors were dark. Post harvest data are not available at this time.

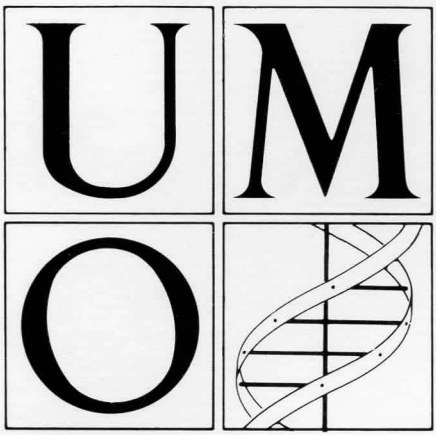
NY59 - A late maturing clone from New York with resistance to late blight, early blight, and verticillium wilt, and golden nematode. Tubers are round, tan colored, and have very good general appearance. Yields of this clone are much higher than Katahdin in 1984 and specific gravities about the same. Chip colors were too dark. It does not recondition, but tubers are toward the medium to larger sizes. Storage characteristics are very good. This clone stands a good chance for commercial production.

NY64 - Another late maturing New York clone with resistance to common scab and golden nematode. Tubers are round, tan colored, and with very deep eyes and indented stem ends. In 1984, tuber size distribution was toward the smaller sizes and it had a high percentage of growth cracks. Yields have been better than Katahdin and specific gravities about the same. Chip colors have been too dark but culinary, storage, and processing characteristics have been very good.

NY67 - A late maturing clone from New York which produces round, buff colored tubers. In the first year of trial at Presque Isle, yield was less than Katahdin but specific gravity much higher. Tuber sizes were small, chip colors dark, but general appearance quite good. Post harvest data are not available at this time. New York has discontinued testing this clone.

WF564-3 - A medium maturing clone from Wisconsin but being developed by Maine. Tubers are mostly oblong to long, very lightly russeted, and very good to poor in general appearance. This clone has resistance to late blight, net necrosis, acid scab, common scab, and virus X. Yields have been very high and specific gravities very low, but both have been erratic. Where tested in 1984, tuber defects were very high. Culinary and processing characteristics have been unsatisfactory. To the senior author this is another Ontario scenario and should not be named.

W752 - A medium maturing clone from Wisconsin that has oblong-long, tan-netted tubers. Tuber sizes were very small, yields low, and specific gravities very high. It does not have good chip colors. Post harvest data are not available at this time.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