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B782: Performance Evaluations of Potato Clones and Varieties in the Northeastern States 1981

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**LIFE SCIENCES AND AGRICULTURE EXPERIMENT STATION
UNIVERSITY OF MAINE AT ORONO**

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IN THE NORTHEASTERN STATES

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TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Materials and Methods	2
Disease Resistance	7
Yields and Specific Gravity	8
Connecticut.	8
Delaware.	8
Maine.	12
Massachusetts	25
New Brunswick, Canada	25
New Jersey	25
New York (Up-State)	31
New York (Long Island)	38
Ohio	38
Pennsylvania	45
Rhode Island	45
Vermont	45
West Virginia	45
Tuber Size Distribution	52
Multigenic Late Blight Trials	93
Storage Characteristics	93
Preparation Losses	107
After Cooking Darkening	109
Appearance and Defects.	109
Fried Product Color and Texture.	112
Seedpiece Spacing and Nitrogen Rate Studies.	127
Varietal Herbicide Damage.	127
Observations for Varieties Grown in 1981.	132

PERFORMANCE EVALUATIONS OF POTATO CLONES AND VARIETIES

IN THE NORTHEASTERN STATES - 1981

Agriculture Canada	Massachusetts	Pennsylvania
Connecticut	New Hampshire	Rhode Island
Delaware	New Jersey	Vermont
Maine	New York	West Virginia
	Ohio	

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R.E. Cole¹¹, R.E. Wakefield¹², R.J. Young¹³

Cooperative variety trials were conducted at 33 locations to determine field, storage, and processing behavior of selected potato clones and varieties when grown under soil, climatic, and cultural conditions common to the potato growing areas of 12 cooperating States and the Province of New Brunswick, Canada. These trials are all contributions to Regional Project NE107 entitled, "Breeding and Evaluation of New Potato Clones in the Northeast Area."

Varieties grown in the cooperative variety trials were selected from the following categories:

1. Recently named and numbered seedling varieties from other potato growing areas of the United States and Canada.
2. Standard varieties whose quality, storage, and processing characteristics have been accepted for commercial production. These varieties serve as the standard or check varieties in the various trials.

¹University of Maine; Orono and Presque Isle, Maine.

²Agriculture Canada; Fredericton, New Brunswick, Canada.

³University of Connecticut; Storrs, Connecticut.

⁴University of Delaware; Georgetown, Delaware.

⁵University of Massachusetts; Amherst, Massachusetts.

⁶University of New Hampshire; Durham, New Hampshire.

⁷Vermont Department of Agriculture; Montpelier, Vermont.

⁸Cook College - Rutgers University; New Brunswick, New Jersey.

⁹Cornell University; Riverhead and Ithaca, New York.

¹⁰Ohio Agricultural Research and Development Center; Wooster, Ohio.

¹¹Pennsylvania State University; University Park, Pennsylvania.

¹²University of Rhode Island; Kingston, Rhode Island.

¹³West Virginia University; Morgantown, West Virginia.

3. Numbered clones from the National Potato Breeding Program, the Canadian National Potato Breeding Program, the terminated Campbell Institute for Agricultural Research Program, and various other breeding programs in Alaska, Colorado, Idaho, Michigan, Minnesota, Ontario Province, West Virginia, Washington, New York, and Wisconsin.

4. Special purpose varieties for unusual disease, production, processing, export situations, or alcohol production.

5. Some older varieties requiring new performance data or re-evaluation at one or more locations.

In 1982, the cooperative variety trials provided an opportunity to compare new clones and varieties with commercially grown varieties for growth habits, yield, field resistance to a broad spectrum of diseases, processing capabilities for french fries and chips, storage quality, and tuber appearance. The opportunity also existed for the potato breeders to observe the stability of their clones and varieties over a wide range of growing conditions. From these accumulated performance data, the selection of suitable varieties for commercial production will probably be made.

Seed source for all varieties in these tests was from the seedling increase and maintenance program conducted by the Maine Seed Potato Board at Sangerville, Maine.

Materials and Methods:

During 1981, 43 named and 39 numbered seedling varieties in Table 1 were grown in one or more of the 12 cooperating States and New Brunswick, Canada as indicated in separate tables of data by test location.

Varieties grown at all locations, except New York, were hand planted. New York trials were planted with an assisted feed planter. Plot size varied from single 30 foot rows to double rows with suitable alleyways between plots and buffer rows where needed. Some locations had red skinned varieties as markers to fill in the alleyways and one location used a russeted variety for markers. Replication varied from six replicates to a minimum of four replicates at most locations. Seedpiece spacing and fertilizer practices varied with location and varieties. Notation of seedpiece spacing, fertilization, planting dates, killing dates, and harvesting dates used at each location is made in each table of yield data.

Entries at Presque Isle, Maine, West Virginia, and New Jersey were divided into maturity groups and were tested in separate trials by maturity group. In addition, several cooperators conducted separate tests with the russeted and long tuber type varieties.

Table 1. Characteristics of potato varieties included in the 1981 Northeastern Regional (NE107) Potato Variety Trials.

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
Allagash Russet	Rus.-Netted	Oblong	Med.	S	Net necrosis.
Atlantic	Netted	Rd.-Oblong	Med.	S	Late blight, net necrosis, virus A and X, golden nematode.
Batoche	Red	Round	Med.	M.D.	Verticillium wilt.
Belchip	Cream	Round	Late	M.D.	Late blight, common scab, virus X and Y, net necrosis, golden nematode.
Belleisle	Netted	Oblong	Late	S	Common scab, fusarium, net necrosis, virus A and Y.
BelRus	Russet	Ob.-Long	Med. late	S	Verticillium wilt, net necrosis, leafroll, Virus A.
Bison	Red	Rd.-Oblong	Med.early	M.D.	Late blight.
Buckskin	White	Round	Late	S	Unknown.
Butte	Russet	Ob.-Long	Late	S	Net necrosis, virus X.
Campbell 11	Buff	Round	Med. late	M.D.	Verticillium wilt, late blight, virus A, golden nematode.
Campbell 12	Buff	Rd.-Oblong	Late	S	Late blight, virus A.
Campbell 13	White	Oblong	Med.	S	Late blight, verticillium wilt, net necrosis, virus A, golden nematode.
Cent. Russet	Russet	Ob.-Long	Late	S	Unknown.
Chipbelle	Buff	Oblong	Late	S	Verticillium wilt, net necrosis, virus A, X, golden nematode.
Chippewa	Cream	Rd.-Oblong	Med. late	S	Virus A and X.
Cobbler	White	Round	Early	D	Virus A.
Croatan	White	Round	Med.	M.S.	Unknown.
Delta Gold	White	Round	Med. late	S	Net necrosis, virus A, (yellow flesh).
Denali	Buff	Round	Med.	S	Frost resistance.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
Green Mountain	White	Oblong	Late	M.D.	None.
Hudson	White	Oblong	Late	M.S.	Golden nematode.
Jemseg	White	Round	Early	M	Virus S, X, and Y, blackwart.
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	Unknown.
Michibonne	Buff, netted	Round	Med. late	M.S.	Unknown.
Michimac	Tan	Round	Med.	M.D.	Unknown.
Monona	White	Round	Med.early	S	Verticillium wilt, virus A, X, and Y.
Norchip	White	Round	Med.early	S	Common scab.
Norland	Red	Oblong	Very early	S	Common scab.
Peconic	Cream	Round	Med.early	S	Golden nematode.
Penn 71	White	Round	Late	S	Late blight.
Pungo	Buff	Round	Med.early	M.D.	Late blight.
Rideau	Red	Round	Med.	S	Verticillium wilt, common scab, virus A, X, and Y.
Rosa	Buff	Round	Late	M.D.	Pink-eye, early blight, golden nematode.
Russet Burbank	Russet	Long	Very late	S	Common scab.
Sebago	Cream	Round	Late	S	Late blight, virus X.
Shepody	Buff	Long	Med. late	M	Verticillium wilt, fusarium.
Superior	White	Oblong	Med.early	S	Common scab.
Superior (L.)	White	Oblong	Late	S	Common scab.
Tobique	Red & White	Rd.-Oblong	Med.early	M.S.	Verticillium wilt, net necrosis, virus Y, fusarium.
Trent	Buff	Rd.-Oblong	Early	S	Common scab, rhizoctonia sclerotia.
Wauseon	White	Rd.-Oblong	Med. late	S	Common scab, late blight, virus A and X, golden nematode, net necrosis.
Yukon Gold	Yell.-white	Oblong	Med.early	S	Leafroll, virus A and X, (yellow flesh).

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
AF92-3	White	Rd.-Oblong	Med. late	S	Acid scab, net necrosis, stem-end browning, late blight.
AF186-2	White	Oblong	Med. late	S	Acid scab, golden nematode, net necrosis.
AF186-5	White-netted	Oblong	Med.	S	Common scab, golden nematode, net necrosis.
AF201-25	White	Ob.-Long	Med. late	S	Golden nematode, net necrosis, late blight.
AF205-9	White	Oblong	Med.	S	Virus X, net necrosis, golden nematode.
AF238-21	White	Ob.-Round	Med.	S	Net necrosis.
AF238-66	Buff	Rd.-Oblong	Med.	S	Net necrosis.
AF303-5	White	Round	Med. late	S	Verticillium wilt, net necrosis, hollow heart, early blight.
AF330-1	White-netted	Round	Med.early	S	Net necrosis, hollow heart.
B6043-WV6	Buff	Rd.-Oblong	Med. late	S	Late blight.
B8086-3	Netted	Round	Med. late	S	Net necrosis, virus A.
B8943-4	Russet	Oblong	Late	S	Common scab, net necrosis, virus A, golden nematode.
B8972-1	Russet	Ob.-Long	Med. late	S	Common scab, net necrosis.
BR5991-WV16	Buff	Round	Med. late	S	Late blight.
BR7088-18	Buff	Round	Med. late	M.D.	Verticillium wilt.
BR7093-23	White	Oblong	Late	S	Verticillium wilt, early blight, acid scab.
C7232-4	Buff	Rd.-Oblong	Med. early	S	None.
C72132-2	Buff	Round	Med.	S	Unknown.
C7358-14A	White-netted	Rd.-Oblong	Med.	M.S.	Golden nematode, early blight, acid scab, common scab, virus X, net necrosis.
C7358-26A	Russet	Oblong	Med.	S	Verticillium wilt, early blight, acid scab, common scab, virus X, net necrosis.
C7490-2	White	Oblong	Med.early	S	Unknown.
C74109-8	White	Oblong	Med. late	S	Virus X.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
CA02-7	White	Round	Late	S	Verticillium wilt, early blight, common scab, golden nematode, virus X.
CC26-1A	Cream	Rd.-Oblong	Med.early	M.S.	Net necrosis, stem-end browning, virus X.
CD106-16	Buff	Oblong	Late	S	Late blight, acid and common scab.
CF7353-1	Purple	Rd.-Oblong	Med. late	M.S.	Early blight, verticillium wilt, net necrosis.
CF7523-1	White	Round	Med.early	S	Golden nematode, net necrosis, early blight.
F67128	Buff	Rd.-Oblong	Med. late	M	Highly resistant to verticillium wilt, good resistance to leafroll and virus X.
F68036	Buff	Ob.-Long	Med. late	M	Fusarium, phoma, leafroll.
F69026	Purple	Round	V. early	M.D.	Common scab, phoma, virus Y.
F73008	Buff	Oblong	Med. late	M.S.	Unknown.
G6880-1	White	Round	Early	S	Unknown.
G712-1	White	Round	Med.	M	Unknown.
MN7973	Tan-netted	Oblong	Med.	D	Unknown.
MN8224	Buff	Round	Med.	S	Unknown.
MN8757	Purple	Round	Med.	D	Unknown.
MN9319	Tan-netted	Oblong	Med. late	M.S.	Unknown.
W564-3A	Russet	Ob.-Long	Med.	S	Late blight, virus X, acid and common scab.
W718	Netted	Round	Med.	S	Unknown.

¹Virus 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.

Cultural practices for each trial were supposed to be similar to those used by commercial growers near the test sites. Tubers of all varieties at each location were harvested by replication, placed in temporary storage and graded later, sized, and weighed by tuber size class. Tuber samples were obtained from each plot for specific gravity and chip color determinations. Additional samples obtained from each test plot for appearance ratings, peeling losses, french fry color and texture, storage and sprouting, and other quality tests were saved from several tests but mostly from the Presque Isle, Maine variety trials.

Specific gravities of replicated tuber samples from Maine, Connecticut, Massachusetts, Vermont-New Hampshire, Pennsylvania, Rhode Island, and West Virginia trials were determined at Presque Isle, Maine by the air and water method¹⁴ soon after arrival at Presque Isle. The air and water method was also used in New Jersey and the hydrometer method¹⁵ was used at some locations for specific gravity determinations. Samples tested for specific gravity at Presque Isle were stored at 50-55F. for later chip color determinations. Total solids, when reported in the various tables of data, were calculated by the use of Von Scheele's equations¹⁶

All chip color ratings reported, except for New York, New Jersey, Ohio, and Delaware, were determined at Aroostook Farm, Presque Isle, Maine.

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

Disease Resistance:

Data on disease resistance for the varieties tested in the 1981 cooperative variety trials are also presented in Table 1. The disease tolerances reported in Table 1 were determined in concurrent or previous disease tests conducted by USDA-ARS, Agriculture Canada, and the Life Sciences and Agriculture Experiment Station, University of Maine - Orono. The disease resistance data presented in Table 1 do not indicate the degree of resistance or tolerance and are incomplete for many varieties. More detailed information is available from the various agencies which conducted the disease tests.

¹⁴ 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.

¹⁵ Ibid, page 15.

¹⁶ Ibid, page 23.

In 1981, 17 varieties tested had resistance to late blight and seven had resistance to early blight. Seventeen varieties had resistance to common scab and another seven had resistance to acid scab. Fifteen varieties indicated some degree of tolerance to verticillium wilt. Only five varieties had resistance to leafroll, but 30 varieties had resistance to net necrosis. For other virus resistance, 18 had resistance to virus A, 17 to virus X, nine to virus Y, and one to virus S. Sixteen entries had resistance to golden nematode, two had resistance to stem-end browning, four had tolerance to fusarium tuber rot, and two had resistance to phoma rot. One variety, Jemseg, had resistance to blackwart and Trent had resistance to rhizoctonia sclerotia on tubers. Denali presumably has some degree of resistance to frost and two Maine varieties, AF303-5 and AF330-1, have shown a high degree of tolerance to hollow heart. Sixteen varieties in the various adaptation trials had no known disease resistance at this point in time and two varieties, Green Mountain and C7232-4, had no disease resistance.

These disease resistance notes in Table 1 suggest that excellent progress is being attained in the development of potato clones with good field tolerance to a broad spectrum of diseases. Of special note is the increase in clones with resistance to golden nematode and net necrosis. The reader should also note that the late blight resistance reported in Table 1 is for the common race of *Phytophthora infestans* (Mont.) deBary.

Yields and Specific Gravity:

Connecticut

Total yield, usable yield, specific gravity, percentage of defects, and percentages of yield in two market grade size classes for 23 potato varieties grown in Connecticut are presented in Table 2.

Numerically, the five varieties highest in total yield were: Kennebec, BR5991-WV16, W564-3A, Penn 71, and Russet Burbank. After grading, however, the five highest varieties in terms of usable yield were: Kennebec, BR5991-WV16, B8086-3, Penn 71, and W564-3A. Russet Burbank had an unusually high percentage of defects at 35.2 percent. Eleven of the 23 varieties grown in Connecticut exceeded the 12 percent acceptable level for defects. Butte, Atlantic, Green Mountain, Lemhi, and Russet Burbank varieties had the highest specific gravities. Thirteen of the 23 varieties had specific gravities higher than 1.080, and 19 of the 23 varieties were 1.075 or higher in specific gravity.

Delaware

Total yield and percentage of yield above 1-7/8 inches in diameter, and specific gravities for 15 round white potato varieties grown in Dover, Delaware are presented in Table 3. The five highest ranking varieties in total yield were: F69026, Atlantic, Jemseg,

Table 2. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 23 potato varieties grown in Connecticut - 1981.

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
Allagash Russet	141	118	18.2	61.0	54.0	1.070	18.10
Atlantic	213	196	7.9	61.6	53.7	1.091	22.54
Butte	230	205	10.7	44.4	41.3	1.099	24.22
Centennial Russet	115	104	10.4	54.4	51.4	1.076	19.37
Green Mountain	228	186	19.1	50.3	46.3	1.091	22.54
Katahdin	224	184	17.5	57.5	53.9	1.078	19.79
Kennebec	308	235	23.1	45.2	40.8	1.082	20.64
Lemhi	219	159	26.9	25.3	22.9	1.089	22.11
Michibonne	246	222	10.0	51.6	48.0	1.078	19.79
Michimac	181	163	9.1	74.1	68.4	1.075	19.16
Penn 71	254	231	8.8	42.6	40.6	1.082	20.64
Russet Burbank	262	175	35.2	30.4	26.6	1.089	22.11
Shepody	157	135	17.1	37.9	35.9	1.079	20.00
Superior	201	185	7.7	77.9	70.9	1.082	20.64
AF92-3	152	133	16.3	66.5	61.4	1.074	18.95
AF238-66	213	179	15.8	47.2	44.7	1.084	21.06
B6043-WV6	194	176	9.6	62.5	57.4	1.081	20.43
B8086-3	243	231	4.9	63.0	59.0	1.082	20.64
BR5991-WV16	279	264	5.8	63.8	60.1	1.087	21.69
BR7093-23	184	152	17.4	65.2	59.6	1.082	20.64
C7358-26A	178	170	4.4	67.1	62.7	1.072	18.53
FF3025	168	154	8.8	62.0	58.0	1.075	19.16
FF34-3A	264	231	12.2	50.1	47.9	1.074	18.95
Weller Duncan L.S.D. (0.05)	61	61				0.005	

Table 3 - continued

¹Planted - May 4; harvested - September 1, 1981.

Fertilization: 210-160-160.

Seedpieces of all varieties spaced at 9 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 3. Yield, percentage of yield above 1-7/8 inches in diameter, and specific gravity for 15 round white potato varieties grown at Dover, Delaware - 1981.

Variety ¹	Total yield above 1½ inches Cwt./A.	Percentage of yield above 1-7/8 inches	Specific gravity ²
Atlantic	307	90.1	1.083
Jemseg	307	93.9	1.078
Katahdin	236	90.0	1.073
Kennebec	275	89.0	1.078
Michibonne	292	93.9	1.079
Michimac	233	86.8	1.070
Norchip	293	87.8	1.077
Shepody	231	83.9	1.082
AF92-3	265	88.5	1.073
AF238-66	275	88.3	1.081
B6043-WV6	270	88.4	1.076
B8086-3	274	87.5	1.082
BR5991-WV16	270	88.7	1.078
C7358-14A	291	88.7	1.078
F69026	337	92.2	1.074
Waller Duncan L.S.D. (0.05)	N.S.		0.002

¹Planted - March 31; harvested - July 22, 1981.

Seedpiece spacing: 10 inches.

Fertilization: 150-100-150.

²Measured with a potato hydrometer.

Norchip, and Michibonne. In terms of U.S. #1 size, F69026 ranked first followed by Michibonne, Jemseg, Atlantic, and Katahdin. Atlantic had the highest specific gravity of 1.083 followed by B8086-3, Shepody, AF238-66, and Michibonne. Only four of the 15 varieties in this test were below 1.075 in specific gravity and only four were higher than 1.080.

Total yield, percentage of yield in the 4 to 10-ounce size class, and specific gravity for seven russeted varieties grown in Georgetown, Delaware are presented in Table 4. Allagash Russet ranked first in total yield followed by B7358-26A, Lemhi, and the standard, Russet Burbank. Allagash Russet produced the highest percentage of 4 to 10-ounce tubers and Russet Burbank the lowest with only 36.8 percent of the tubers in the 4 to 10-ounce size class. Specific gravities of these russeted varieties grown at Dover were all very low with BelRus producing tubers with a specific gravity of 1.067.

At Dover, Delaware, another russeted variety test indicated that Allagash Russet had the highest total yield followed by W564-3A, C7358-26A, and Russet Burbank, as shown by the data presented in Table 5. Allagash Russet had 54.3 percent of yield in the 4 to 10-ounce size class; whereas, Russet Burbank was very low at only 41.0 percent. In this test, Lemhi had the highest specific gravity of 1.084 followed by BelRus, Russet Burbank, and W564-3A.

Maine

Total yield, usable yield, specific gravity, percent total solids, percent tuber defects, and percentages of yield in two market grade size classes for the varieties grown at Presque Isle and Newport, Maine are presented in Tables 6 through 11.

The highest yielding early and medium-early maturing varieties grown at Presque Isle, as shown in Table 6, were: CF7523-1, F69026, Superior, and CC26-1A. The ratings for the highest usable yield followed the same order. Seedlings AF330-1, C7490-2, and CC26-1A had high percentages of small-sized tubers. In this test, Trent produced the highest specific gravity of 1.081, followed by G6880-1, C7232-4, and CC26-1A. Five of the early and medium-early varieties had specific gravities of less than 1.075.

The highest yielding medium maturing varieties grown at Presque Isle were: MN8757, W718, AF238-21, AF238-66, and C72132-2, as shown in Table 7. After grading, however, the order in terms of usable yield was: MN8757, W718, AF238-21, C7358-26A, and Croatan. Kennebec and AF238-66 had unacceptable percentages of tuber defects. Seedling MN8224, Yukon Gold, G712-1, and C72132-2 had the highest specific gravities. Twelve of the medium maturing varieties grown at Presque Isle were less than 1.075 in specific gravity.

Table 4. Yield, percentage of yield between 4 and 10 ounces, and specific gravity for 7 russeted potato varieties grown at Georgetown, Delaware - 1981.

Variety ¹	Total Yield Cwt./A.	Percentage of yield 4 - 10 ounces	Specific gravity ²
Allagash Russet	262	70.4	1.061
BelRus	192	59.2	1.067
Centennial Russet	172	50.4	1.061
Lemhi	242	58.3	1.066
Russet Burbank	219	36.8	1.063
C7358-26A	258	62.2	1.058
W564-3A	213	58.2	1.059
Waller Duncan L.S.D. (0.05)	83		0.006

¹Planted - April 16; harvested - July 27, 1981.

Seedpiece spacing: 12 inches.

Fertilization: 200-200-200.

²Measured with a potato hydrometer.

Table 5. Yield, percentage of yield between 4 and 10 ounces, and specific gravity for 7 russeted potato varieties grown at Dover, Delaware - 1981.

Variety ¹	Total Yield Cwt./A.	Percentage of yield 4 - 10 ounces	Specific gravity ²
Allagash Russet	285	54.3	1.072
BelRus	176	47.0	1.081
Centennial Russet	135	39.4	1.072
Lemhi	230	52.0	1.084
Russet Burbank	193	41.0	1.078
C7358-26A	232	54.4	1.070
W564-3A	240	47.3	1.077
Waller Duncan L.S.D. (0.05)	60		0.009

¹Planted - March 31; harvested - July 22, 1981.

Seedpiece spacing: 12 inches.

Fertilization: 150-100-150.

²Measured with a potato hydrometer.

Table 6. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 9 early-medium early maturing varieties grown at Presque Isle, Maine - 1981.

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
Superior	345	319	7.4	98.2	58.5	1.073	18.74
Trent	220	209	4.8	96.7	55.3	1.081	20.43
AF330-1	285	271	5.1	95.9	41.6	1.073	18.74
C7232-4	302	290	4.0	96.6	54.2	1.075	19.16
C7490-2	299	287	4.1	97.9	32.5	1.068	17.68
CC26-1A	334	312	6.5	96.3	41.2	1.075	19.16
CF7523-1	347	332	4.6	95.0	43.3	1.069	17.89
F69026	347	320	7.8	97.0	52.6	1.067	17.47
G6880-1	252	241	4.2	97.8	54.3	1.076	19.37
Waller Duncan L.S.D. (0.05)	24	24				0.002	

¹Planted - May 12; killed - August 24; harvested - September 2, 1981.

Seedpieces of all varieties spaced at 8 inches apart. Fertilization: 130-130-130.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 7. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 16 medium maturing varieties grown at Presque Isle, Maine - 1981.

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
Croatan	375	364	3.1	97.1	63.3	1.064	16.84
Kennebec	382	314	17.9	94.4	72.8	1.068	17.68
Rideau	289	277	4.0	95.8	71.7	1.066	17.26
Yukon Gold	318	314	1.1	97.4	75.8	1.080	20.21
AF201-25	341	317	7.0	97.7	65.0	1.069	17.89
AF238-21	410	397	3.1	97.6	65.3	1.073	18.74
AF238-66	403	354	12.5	96.6	62.9	1.067	17.47
C7358-14A	366	354	3.3	97.2	66.0	1.074	18.95
C7358-26A	377	368	2.6	97.7	70.5	1.072	18.53
C72132-2	388	364	5.9	96.0	58.5	1.075	19.16
C74109-8	367	356	2.9	97.5	55.9	1.070	18.10
G712-1	303	292	3.7	98.0	53.3	1.078	19.79
MN7973	341	327	4.2	98.3	73.9	1.067	17.47
MN8224	347	342	1.8	95.4	52.2	1.084	21.06
MN8757	468	446	5.1	88.7	75.4	1.063	16.63
W718	436	408	6.6	96.9	66.9	1.064	16.84
Waller Duncan L.S.D. (0.05)	35	38				0.004	

¹Planted - May 12; killed - August 19-24; harvested - August 29, 1981.

Fertilization: 130-130-130. Seedpieces of all varieties spaced at 8 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Yields, percent defects, specific gravity, and percent of yield in two market grade size classes for 12 medium late maturing varieties grown at Presque Isle are presented in Table 8. The numerical ranking in terms of total yield was: Michibonne, Kennebec, Shepody, F68036 (Acadia Russet), and F73008. Note that ten of the 12 medium late maturing varieties had yields higher than 400 hundredweight per acre which was very good. After grading, however, the ranking in terms of usable yields was: Michibonne, B6043-WV6, F68036, Shepody, and BR5991-WV16. Kennebec, Shepody, AF92-3, and F73008 had very high percentages of tuber defects. Only three of the 12 medium late maturing varieties, BR7088-18, Shepody, and BR5991-WV16, had specific gravities higher than 1.075.

Yields, specific gravities, percent defects, and percentage of yield in two market grade size classes for five late maturing potato varieties grown at Presque Isle are presented in Table 9. All five varieties had very high yields in terms of total and usable yield. The ranking for both total and usable yield was: B8086-3, Rosa, BR7093-23, Chipbelle, and Katahdin, the standard. Specific gravities for the late maturing varieties were also high with the ranking from high to low as follows: Chipbelle, Rosa, BR7093-23, B8086-3, and Katahdin.

Yields, gravities, percent defects, and percentage of yield in the 4 to 10-ounce tuber size class for six russeted and long tuber type varieties grown at Presque Isle are presented in Table 10.

Lemhi had the highest total yield followed by Butte, Russet Burbank, and MN9319. After grading, Lemhi had the highest usable yield followed by MN9319, Butte, and B8943-4. Lemhi also had the highest specific gravity of 1.094, followed by Russet Burbank and Butte. All six russeted varieties in this test at Presque Isle had specific gravities of 1.080 or higher.

Yield, usable yield, percent defects, percentage of yield in two market grade size classes, and specific gravity for 30 potato varieties grown at Newport, Maine are presented in Table 11. All of these varieties included in the Newport variety trial were selected for testing on the basis of acceptable chip color from the 1980 Maine variety trials. Because of a severe late blight infection, this trial was killed about three weeks early which accounts for the low yield. Seedling MN8757 produced the highest total yield, followed by B8086-3, Michimac, AF303-5, and F69026 (Caribe). Usable yields of all varieties were very low because of the very high percentage of defects. Note that several varieties had very low yields and were very small in size. The recently named variety Chipbelle (B6969-2) had the highest specific gravity of 1.097, followed by Denali, Atlantic, Belchip, and BR7088-18. Eleven of the 30 varieties grown at Newport had specific gravities of 1.080 or higher and 21 of the 30 varieties had specific gravities of 1.075 or higher.

Table 12 is a summary table of total yield and specific gravity for all potato varieties grown at Presque Isle and Newport, Maine.

Table 8. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 12 medium late maturing varieties grown at Presque Isle, Maine - 1981.

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
Kennebec	489	348	30.3	92.5	75.5	1.069	17.89
Michibonne	491	457	7.2	96.9	77.7	1.071	18.32
Michimac	405	360	11.5	95.8	66.0	1.067	17.47
Shepody	457	403	12.3	42.7% 4 - 10 ounces		1.079	20.00
AF92-3	437	382	12.6	94.0	71.7	1.064	16.84
AF303-5	405	382	5.7	96.1	75.2	1.074	18.95
B6043-WV6	466	437	6.2	97.8	68.1	1.067	17.47
BR5991-WV16	423	399	5.6	96.5	53.7	1.079	20.00
BR7088-18	393	379	3.6	97.2	69.6	1.083	20.85
CF7353-1	391	361	7.8	97.6	71.3	1.071	18.32
F68036	452	430	4.8	34.1% 4 - 10 ounces		1.070	18.10
F73008	443	397	10.2	97.8	58.2	1.073	18.74
Waller Duncan L.S.D. (0.05)	39	45				0.003	

¹Planted - May 12; killed - September 4; harvested - September 18, 1981.

Seedpieces of all varieties spaced at 8 inches apart.

Fertilization: 125-125-125.

²Includes sunburned, growth cracked, and misshapen 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 5 late maturing varieties grown at Presque Isle, Maine - 1981.

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
Chipbelle	464	420	9.5	97.6	69.6	1.095	23.38
Katahdin	426	385	9.6	88.2	77.6	1.077	19.58
Rosa	520	487	6.6	96.2	58.0	1.083	20.85
B8086-3	542	502	7.3	91.8	69.2	1.079	20.00
BR7093-23	466	426	8.3	94.7	71.5	1.080	20.21
Waller Duncan L.S.D. (0.05)	48	41				0.003	

¹Planted - May 12; killed - September 15; harvested - September 30, 1981.

Fertilization: 130-130-130. Seedpieces of all varieties spaced at 8 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 10. Yield, usable yield, percent defects, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 6 russeted and long type potato varieties grown at Presque Isle, Maine - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects ²	Percentage of yield 4 - 10 ounces	Specific gravity	Percent total solids
Butte	449	342	23.7	33.5	1.084	21.06
Lemhi	484	422	12.8	28.1	1.094	23.17
Russet Burbank	421	305	27.9	24.4	1.085	21.27
B8943-4	373	315	15.1	15.5	1.080	20.21
B8972-1	368	301	18.2	14.5	1.080	20.21
MN9319	420	395	6.2	30.9	1.082	20.64
Waller Duncan L.S.D. (0.05)	65	62			0.003	

¹Planted - May 12; killed - September 21; harvested - October 1, 1981. Fertilization: 130-130-130.

Seedpiece spacing: MN9319 - 10 inches
 B8943-4 and B8972-1 - 12 inches
 Lemhi - 14 inches
 Russet Burbank and Butte - 16 inches

²Includes sunburned, growth cracked, misshapen, and knobby tubers.

Table 11. Yield, usable yield, percent defects, percentage of yield in two grade size classes, specific gravity, and percent total solids for 30 potato varieties grown at Newport, Maine - 1981.

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
Allagash Russet	120	98	20.0	85.6	16.0	1.070	18.10
Atlantic	136	113	16.1	91.9	37.4	1.087	21.69
Belchip	108	86	19.6	89.0	24.5	1.085	21.27
Buckskin	128	113	11.4	90.1	23.8	1.083	20.85
Chipbelle	97	89	8.7	84.4	13.8	1.097	23.80
Denali	140	110	23.8	88.9	19.3	1.088	21.90
Katahdin	152	138	9.0	93.2	40.8	1.076	19.37
Kennebec	153	95	36.7	91.7	39.2	1.076	19.37
Michibonne	165	149	9.7	92.9	38.3	1.077	19.58
Michimac	172	144	16.6	91.0	36.4	1.072	18.53
Monona	154	140	9.3	93.3	29.7	1.076	19.37
Norchip	122	109	11.6	86.4	10.7	1.082	20.64
Superior	121	107	12.1	90.7	23.6	1.075	19.16
AF186-5	133	123	7.2	89.1	19.4	1.081	20.43
AF238-21	118	96	20.4	84.2	14.2	1.076	19.37
AF238-66	116	102	11.6	81.0	6.4	1.076	19.37
AF303-5	166	157	5.7	91.2	28.3	1.083	20.85
AF330-1	86	63	26.4	81.1	15.0	1.058	15.57
B8086-3	179	152	15.4	93.3	46.3	1.072	18.53
BR7088-18	134	109	18.6	93.2	31.8	1.084	21.06
BR7093-23	111	90	18.4	87.7	27.3	1.074	18.95
C7232-4	94	85	11.2	86.0	15.0	1.075	19.16
CC26-1A	143	125	12.8	90.9	25.9	1.082	20.64
CF7353-1	139	122	11.9	94.4	37.7	1.078	19.79

Table 11 - continued

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
CF7523-1	146	128	13.4	90.9	18.1	1.071	18.32
F69026	165	129	23.0	91.4	31.6	1.071	18.32
F73008	140	96	31.8	89.4	20.1	1.082	20.64
G712-1	109	92	14.5	84.0	14.5	1.075	19.16
MN8757	185	162	13.1	95.1	67.9	1.070	18.10
W564-3A	115	73	38.5	84.0	12.7	1.070	18.10
Waller Duncan L.S.D. (0.05)	46	44				0.005	

¹Planted - May 28; killed - August 28; harvested - September 29, 1981.

Fertilization: 140-140-140.

Seedpieces of all varieties spaced at 8 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 12. Yield by hundredweight per acre and specific gravity for varieties grown at two locations in Maine - 1981.

Variety	Presque Isle		Newport	
	Yield	Specific gravity	Yield	Specific gravity
Allagash Russet			120	1.070
Atlantic			136	1.087
Belchip			108	1.085
Buckskin			128	1.083
Butte	449	1.084		
Chipbelle	464	1.095	97	1.097
Croatian	375	1.064		
Denali			140	1.088
Katahdin	426	1.077	152	1.076
Kennebec (med.)	382	1.068	153	1.076
Kennebec (med. late)	489	1.069		
Lemhi	484	1.094		
Michibonne	491	1.071	165	1.077
Michimac	405	1.067	172	1.072
Monona			154	1.076
Norchip			122	1.082
Rideau	289	1.066		
Rosa	520	1.083		
Russet Burbank	421	1.085		
Shepody	457	1.079		
Superior	345	1.073	121	1.075
Trent	220	1.081		
Yukon Gold	318	1.080		
AF92-3	437	1.064		
AF186-5			133	1.081
AF201-25	341	1.069		
AF238-21	410	1.073	118	1.076
AF238-66	403	1.067	116	1.076
AF303-5	405	1.074	166	1.083
AF330-1	285	1.073	86	1.058
B6043-WV6	466	1.067		
B8086-3	542	1.079	179	1.072
B8943-4	373	1.080		
B8972-1	368	1.080		
BR5991-WV16	423	1.079		
BR7088-18	393	1.083	134	1.084
BR7093-23	466	1.080	111	1.074
C7232-4	302	1.075	94	1.075
C72132-2	388	1.075		
C7358-14A	366	1.074		
C7358-26A	377	1.072		
C7490-2	299	1.068		
C74109-8	367	1.070		
CC26-1A	334	1.075	143	1.082

Table 12 - continued

Variety	Presque Isle		Newport	
	Yield	Specific gravity	Yield	Specific gravity
CF7353-1	391	1.071	139	1.078
CF7523-1	347	1.069	146	1.071
F68036	452	1.070		
F69026	347	1.067	165	1.071
F73008	443	1.073	140	1.082
G6880-1	252	1.076		
G712-1	303	1.078	109	1.075
MN7973	341	1.067		
MN8224	347	1.084		
MN8757	468	1.063	185	1.070
MN9319	420	1.082		
W564-3A			115	1.070
W718	436	1.064		
Waller Duncan L.S.D. (0.05)	42	0.003	46	0.005

Massachusetts

Yields, percent defects, percentage of yield in two market grade size classes, and specific gravity for 14 potato varieties grown at Deerfield, Massachusetts are presented in Table 13. Seedling BR7093-23 ranked first in total yield followed by B8086-3, Atlantic, Katahdin, and Hudson. After grading, however, the ranking for usable yield was: BR7093-23, Atlantic, B8086-3, Katahdin, and Superior. Hudson, Campbell 12, and B8086-3 had very high percentages of defects. The BelRus variety had very small tubers with only 19.9 percent in the 2½ to 4-inch size class. Specific gravities at Deerfield were low. Atlantic had the highest specific gravity followed by: CD106-16, BR7093-23, Centennial Russet, and BelRus. Only three of the 14 varieties in this trial had specific gravities of 1.075 or higher.

New Brunswick, Canada

Yields, percent defects, and specific gravities for 18 potato varieties grown by Agriculture Canada at Florenceville are presented in Table 14. The five highest ranking varieties in total yield were: BR5991-WV16, Rosa, W564-3A, B6043-WV6, and Lemhi. After grading, the five highest ranking varieties in usable yield were: Rosa, BR5991-WV16, B6043-WV6, AF205-9, and W564-3A. Russet Burbank produced many knobby and misshapen tubers in this test, as indicated by the 18.8 percent defects. Specific gravities at Florenceville were all very high. Chipbelle had a specific gravity of 1.098, followed by Lemhi at 1.096, BR5991-WV16 at 1.093, and Rosa at 1.092. Seven of the 18 varieties in trial were above 1.090, 15 of the 18 were above 1.080 in specific gravity, and none were less than 1.075.

New Jersey

Yields, percentages of yield in two market grade size classes, and specific gravities for 23 potato varieties grown at Deerfield, New Jersey are presented in Table 15. The five highest yielding varieties were: CF7523-1, BR5991-WV16, AF92-3, W718, and AF238-21. Tuber sizes in the test were toward the smaller size, as indicated by the low percentages of yield in the 2½ to 4-inch size class. Denali, Atlantic, BR5991-WV16, CF7523-1, and AF303-5 ranked highest in specific gravity but only seven of the 23 varieties were 1.075 or higher.

In a russet variety test conducted at Freehold, New Jersey, W564-3A produced the highest yield followed by Allagash Russet and Lemhi, as shown in Table 16. Lemhi produced tubers with a specific gravity of 1.077, but the other four varieties were less than 1.075.

Table 13. Yield, usable yield, percent defects, percentage of yield in two size classes, specific gravity, and percent total solids for 14 potato varieties grown at Deerfield, Massachusetts - 1981.

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
Allagash Russet	200	171	13.7	87.5	42.5	1.060	15.99
Atlantic	342	285	15.8	94.0	68.8	1.081	20.43
BelRus	213	200	5.8	79.4	19.9	1.074	18.95
Campbell 12	247	179	27.8	93.0	49.4	1.070	18.10
Centennial Russet	204	182	9.7	91.9	53.5	1.069	17.89
Green Mountain	244	178	27.2	90.1	54.1	1.074	18.95
Hudson	299	184	38.0	94.3	69.4	1.065	17.05
Katahdin	300	263	11.9	93.7	67.2	1.065	17.05
Superior	260	222	14.4	91.0	46.1	1.069	17.89
AF238-21	213	184	12.9	90.9	44.2	1.070	18.10
B8086-3	356	274	22.6	94.0	70.0	1.067	17.47
BR7093-23	360	295	17.0	95.3	70.0	1.075	19.16
CD106-16	238	191	19.5	95.8	60.3	1.077	19.58
W564-3A	257	215	16.2	87.3	39.1	1.061	16.21
Waller Duncan L.S.D. (0.05)	99	68				0.007	

¹Planted - May 1; killed - August 22; harvested - August 31, 1981.

Fertilization: 150-150-150.

Seedpiece spacing: Centennial Russet - 12 inches; Allagash Russet - 10 inches;
All other varieties spaced at 9 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 14. Yield, usable yield, percent defects, percentage of yield greater than 1-7/8 inches, specific gravity, and percent total solids for 18 potato varieties grown at Florenceville, New Brunswick, Canada - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Usable yield above 1½ inches Cwt./A.	Percent defects ²	Percentage of yield >1-7/8 inches	Specific gravity ³	Percent total solids
Chipbelle	258	248	4.0	98.3	1.098	24.01
Kennebec	323	298	8.0	98.6	1.085	21.27
Lemhi	371	338	8.8	98.1	1.096	23.59
Rosa	422	405	4.0	96.8	1.092	22.75
Russet Burbank	319	261	18.8	97.2	1.090	22.33
AF92-3	350	322	7.9	98.0	1.078	19.79
AF186-5	324	315	2.6	94.1	1.090	22.33
AF205-9	366	347	5.3	96.9	1.087	21.69
AF238-66	349	314	11.1	96.0	1.076	19.37
AF330-1	275	243	11.9	93.6	1.083	20.85
B6043-WV6	373	351	6.4	98.1	1.081	20.43
BR5991-WV16	439	390	11.1	97.7	1.093	22.96
BR7093-23	323	307	5.8	97.5	1.086	21.48
C7232-4	279	270	3.7	97.5	1.081	20.43
C7358-14A	352	334	5.0	96.7	1.083	20.85
CC26-1A	329	307	7.9	97.7	1.090	22.33
CF7353-1	328	317	3.4	96.2	1.083	20.85
W564-3A	384	340	11.7	97.7	1.077	19.58
Waller Duncan L.S.D. (0.05)	80	103			0.004	

¹Planted - May 20; killed - September 9; harvested - September 22, 1981.

Fertilization: 135-180-135. Seedpieces of all varieties spaced at 10 inches apart.

²Includes sunburned, knobby, and growth cracked tubers. ³Measured with a potato hydrometer.

Table 15. Yield, percentage of yield in two grade size classes, specific gravity, and percent total solids for 23 potato varieties grown at Deerfield, New Jersey - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Atlantic	368	91.8	58.0	1.082	20.64
Denali	322	89.8	44.9	1.088	21.90
Jemseg	358	93.1	57.0	1.068	17.68
Katahdin	365	90.5	66.8	1.056	15.15
Michibonne	338	95.5	74.5	1.067	17.47
Michimac	354	93.2	60.8	1.058	15.57
Norchip	325	87.8	31.7	1.073	18.74
Rosa	372	88.1	43.8	1.071	18.32
Shepody	257	89.1	37.8	1.073	18.74
Superior	308	91.6	59.9	1.071	18.32
AF92-3	413	95.3	53.1	1.070	18.10
AF238-21	397	93.4	62.0	1.072	18.53
AF238-66	273	86.3	26.8	1.075	19.16
AF303-5	270	90.8	46.3	1.076	19.37
AF330-1	368	91.8	52.4	1.075	19.16
B6043-WV6	277	84.9	32.9	1.067	17.47
BR5991-WV16	427	90.7	55.0	1.080	20.21
CF7353-1	357	91.9	65.0	1.076	19.37
CF7523-1	444	87.9	44.7	1.070	18.10
F69026	370	91.8	48.8	1.066	17.26
F73008	389	90.1	56.9	1.064	16.84
G712-1	349	89.9	45.6	1.072	18.53
W718	411	93.7	69.0	1.069	17.89
Waller Duncan L.S.D. (0.05)	114			0.007	

Table 15 - continued

Planted - April 17; killed - August 20; harvested - August 20, 1981.

Fertilization: 150-150-150.

Seedpieces of all varieties spaced at 9 inches apart.

Table 16. Yield, percentage of yield between 4 and 10 ounces, specific gravity, and percent total solids for 5 russeted potato varieties grown at Freehold, New Jersey - 1981.

Variety ¹	Total yield above 1½ inches Cwt./A.	Percentage of yield 4 - 10 ounces	Specific gravity	Percent total solids
Allagash Russet	342	43.5	1.063	16.63
BelRus	175	57.6	1.068	17.68
Lemhi	273	48.2	1.077	19.58
Russet Burbank	178	65.4	1.072	18.53
W564-3A	391	48.4	1.070	18.10
Waller Duncan L.S.D. (0.05)	28		0.004	

¹Planted - April 4; killed - August 17; harvested - September 8, 1981.

Fertilization: 170-170-170.

Seedpieces of all varieties spaced 9 inches apart.

Up-State New York

Yields, percent defects, and percentage of yield in the 1-7/8 to 4-inch size class for 12 potato varieties grown at Cohocton, New York are presented in Table 17. The five highest ranking varieties in total yield were: Norchip, Belchip, C7232-4, Monona, and BR7093-23. After grading, the ranking for usable yield changed with Belchip ranking first followed by: BR7093-23, Chipbelle, F69026, and Norchip. No specific gravity data were available for this trial.

Yields, percent defects, percentage of yield in two market grade size classes, and specific gravities for seven early maturing varieties grown at Freeville, New York are presented in Table 18. The four highest yielding varieties in total yield were: CF7523-1, CC26-1A, Jemseg, and C7358-14A. In terms of usable yields, CF7523-1 ranked first followed by CC26-1A, C7358-14A, and Superior. Trent had the highest specific gravity of 1.093 followed by CC26-1A, CF7523-1, and C7232-4.

Yield, percent defects, percentage of yield in two market grade size classes, and specific gravities for ten potato varieties grown at Freeville, New York are presented in Table 19. The ranking for the five highest yielding varieties in terms of total yield were: BR7093-23, Rosa, Atlantic, Katahdin, and Belchip. After grading, the ranking for the five highest varieties in usable yield was: BR7093-23, Rosa, Atlantic, Katahdin, and AF186-5. Chipbelle produced the highest specific gravity of 1.100 followed by Atlantic, Norchip, and Belchip. Nine of the ten varieties in test were higher than 1.080 in specific gravity and the tenth variety had a specific gravity of 1.075.

Table 20 presents yields, percent defects, percentage of yield in two market grade sizes, and specific gravity for 12 potato varieties grown at Freeville, New York. In total yield, Kennebec ranked highest followed by B6043-WV6, Katahdin, BR5991-WV16, and Michibonne. After grading, however, the ranking was: BR5991-WV16, B6043-WV6, Michibonne, Michimac, and B8086-3. In this test both Katahdin and Kennebec had very high percentages of defects. Denali had the highest specific gravity followed by Shepody, Kennebec, BR5991-WV16, and B8086-3.

Three russeted varieties were also tested at Freeville, New York and the yield, percent defects, and specific gravity data are presented in Table 21. The ranking in total yield was Lemhi, Russet Burbank, and BelRus. In terms of usable yield the ranking was Lemhi, BelRus, and Russet Burbank. Lemhi also had the highest specific gravity followed by Russet Burbank and BelRus.

Yields, percent defects, percentage of yield in size class 1-7/8 to 4 inches, and specific gravities for 13 round white varieties grown at Savannah, New York are presented in Table 22. In total yield, Katahdin ranked first followed by Belchip, Wauseon,

Table 17. Yield, usable yield, percent defects, and percentage of yield between 1-7/8 and 4 inches for 12 potato varieties grown at Cohocton, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 1-7/8 to 4 inches
Atlantic	366	318	2	87
Belchip	394	340	5	86
Chipbelle	379	338	1	89
Denali	352	296	5	84
Kennebec	360	281	14	79
Monona	382	326	0	85
Norchip	411	332	2	81
Rosa	378	298	0	79
AF186-5	371	327	1	88
BR6093-23	382	340	1	89
C7232-4	293	261	2	89
F69026	380	335	3	89
Waller Duncan L.S.D. (0.05)	N.S.	N.S.		

¹Planted - May 19; harvested - November 2, 1981.

Fertilization - unknown.

Seedpieces of all varieties spaced 9 inches apart.

Table 18. 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 varieties grown at Freeville, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity ²	Percent total solids
Jemseg	372	309	13	83	77	1.073	18.74
Superior	333	318	2	95	78	1.077	19.58
Trent	275	259	3	95	77	1.093	22.96
C7232-4	321	303	3	95	82	1.078	19.79
C7358-14A	371	330	6	89	75	1.076	19.37
CC26-1A	407	372	5	92	77	1.086	21.48
CF7523-1	485	459	3	95	80	1.079	20.00
Waller Duncan L.S.D. (0.05)	62	61				0.004	

¹Planted - May 7; harvested - August 26, 1981.

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

²Measured with a potato hydrometer.

Table 19. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 10 potato varieties grown at Freeville, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	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	467	419	8	89	72	1.087	21.69
Belchip	437	400	6	92	80	1.084	21.06
Chipbelle	370	342	6	92	69	1.100	24.44
Katahdin	451	410	6	91	77	1.082	20.64
Norchip	403	351	9	88	69	1.085	21.27
Peconic	411	369	7	89	71	1.082	20.64
Rosa	471	426	6	90	71	1.083	20.85
AF186-5	432	405	5	94	78	1.081	20.43
AF238-66	411	364	6	88	60	1.075	19.16
BR7093-23	498	453	6	91	81	1.083	20.85
Waller Duncan L.S.D. (0.05)	81	79				0.007	

¹Planted - May 8; killed - September 10; harvested - September 16, 1981.

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

²Measured with a potato hydrometer.

Table 20. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 12 potato varieties grown at Freeville, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity ²	Percent total solids
Denali	470	429	7	91	76	1.091	22.54
Katahdin	526	414	24	78	71	1.075	19.16
Kennebec	562	428	22	77	69	1.079	20.00
Michibonne	523	463	9	89	81	1.074	18.95
Michimac	490	447	8	92	79	1.071	18.32
Monona	434	414	3	95	81	1.068	17.68
Shepody	464	380	16	82	67	1.081	20.43
Wauseon	463	396	13	85	72	1.072	18.53
AF92-3	453	404	9	89	73	1.070	18.10
B6043-WV6	557	489	11	88	76	1.074	18.95
B8086-3	486	442	7	92	77	1.077	19.58
BR5991-WV16	525	497	4	95	82	1.079	20.00
Waller Duncan							
L.S.D. (0.05)	88	N.S.				0.004	

¹Planted - May 14; killed - September 15; harvested - September 30, 1981.

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

²Measured with a potato hydrometer.

Table 21. Yield, usable yield, percent defects, percentage of yield between 4 and 16 ounces, specific gravity, and percent total solids for 3 potato varieties grown at Freeville, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 4 - 16 ounces	Specific gravity ²	Percent total solids
BelRus	296	219	2	74	1.081	20.43
Lemhi	362	282	7	78	1.093	22.96
Russet Burbank	348	205	17	59	1.087	21.69
Waller Duncan L.S.D. (0.05)	51	46			0.003	

¹Planted - May 7; harvested - September 14, 1981.

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

²Measured with a potato hydrometer.

Table 22. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 13 round white potato varieties grown at Savannah, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 1-7/8 to 4 inches	Specific gravity ³	Percent total solids
Atlantic	382	341	3	89	1.079	20.00
Hudson	374	315	10	83	1.064	16.84
Jemseg	347	294	7	85	1.064	16.84
Katahdin	498	389	11	79	1.066	17.26
Monona	427	386	2	90	1.064	16.84
C7232-4	310	274	1	88	1.068	17.68
Waller Duncan L.S.D. (0.05)	102	N.S.			0.002	
<u>Other²</u>						
Belchip	492	425	7	86	1.078	19.79
Chipbelle	399	330	9	83	1.086	21.48
Denali	407	359	6	88	1.088	21.90
Norchip	438	369	4	84	1.074	18.95
Peconic	457	373	7	81	1.082	20.64
Rosa	429	366	3	85	1.074	18.95
Wauseon	466	391	5	83	1.067	17.47

¹Planted - May 4; killed - early September; harvested - September 25, 1981.

Fertilization: 180-180-180. Seedpiece spacing - unknown.

²Three replications only, therefore not included in analysis of variance.

³Measured with a potato hydrometer.

Peconic, and Norchip. The ranking for usable yields was Belchip first followed by Wauseon, Katahdin, Monona, and Peconic. Denali had the highest specific gravity of 1.088 followed by Chipbelle, Peconic, Atlantic, and Belchip.

In a russet trial grown at Savannah, New York, Russet Burbank had the highest total yield but was second in usable yield, as shown in Table 23. BelRus had the lowest total and usable yield. In this test, Lemhi had the highest specific gravity and BelRus the lowest.

Total yields, percentage of yield in the 1-7/8 to 3¼-inch size class, and specific gravities for 24 potato varieties grown at Tully, New York by Agway, Inc. are presented in Table 24. The five highest yielding varieties were: Rosa, Belchip, Katahdin, Hudson, and BR5991-WV16. Belchip had the highest specific gravity of 1.085 followed by BR5991-WV16, Atlantic, Rosa, and Lemhi. Eight of the 24 varieties in test had specific gravities of 1.080 or higher; and 18 of the 24 varieties had specific gravities of 1.075 or higher.

Long Island, New York

Yields, percent defects, percentage of U.S. #1 size tubers, and specific gravity for seven early maturing varieties grown at Riverhead, New York are presented in Table 25. In total yield Superior ranked first followed by CC26-1A, CF7523-1, and Campbell 13. After grading, the ranking of the four highest varieties for usable yield was Superior, CC26-1A, C7358-14A, and Campbell 13. Seedling CF7523-1 had the highest specific gravity followed by CC26-1A at 1.079 and Campbell 13 at 1.076. The other four varieties had specific gravities of less than 1.075.

Another trial at Riverhead, New York compared nine main season varieties, as shown in Table 26. The four highest ranking varieties in total yield were AF186-5, Katahdin, Wauseon, and Chipbelle. In terms of usable yield, Wauseon ranked first followed by Belchip, AF186-5, and Katahdin. The five varieties showing 1.075 or higher in specific gravity were: Campbell 11, Chipbelle, AF186-5, AF205-9, and Belchip.

Yields, percent defects, and specific gravities for ten main season varieties grown at Riverhead, New York are presented in Table 27. The five highest ranking varieties in total and usable yield were: BR5991-WV16, AF92-3, CF7353-1, Michibonne, and Katahdin. In this trial, Shepody had a high percentage of misshapen tubers. All varieties in this trial had low specific gravities with the high of 1.075 for seedling BR5991-WV16.

Ohio

Yields, percent defects, percentage of yield in two market grade size classes, and specific gravities for 19 potato varieties

Table 23. Yield, usable yield, percent defects, percentage of yield between 4 and 16 ounces, specific gravity, and percent total solids for 3 russeted potato varieties grown at Savannah, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects	Percentage of yield 4 - 16 ounces	Specific gravity ²	Percent total solids
BelRus	286	214	2	75	1.068	17.68
Lemhi	353	282	3	80	1.076	19.37
Russet Burbank	379	246	10	65	1.073	18.74
Waller Duncan L.S.D. (0.05)	72	N.S.			N.S.	

¹Planted - May 4; harvested - September 25, 1981.

Fertilization: 180-180-180. Seedpieces of all varieties spaced 9 inches apart.

²Measured with a potato hydrometer.

Table 24. Yield, percentage of yield between 1-7/8 and 3-1/4 inches, specific gravity, and percent total solids for 24 potato varieties grown at Tully, New York - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 3¼ inches	Specific gravity ²	Percent total solids
Allagash Russet	283	84.9	1.065	17.05
Atlantic	372	82.2	1.085	21.27
Belchip	512	76.7	1.086	21.48
BelRus	253	82.6	1.079	20.00
Cobbler	313	88.5	1.072	18.53
Hudson	472	77.1	1.076	19.37
Katahdin	477	75.1	1.075	19.16
Kennebec	402	87.1	1.075	19.16
Lemhi	403	82.3	1.083	20.85
Norchip	287	83.2	1.078	19.79
Penn 71	470	78.0	1.080	20.21
Rosa	516	82.9	1.085	21.27
Russet Burbank	440	84.5	1.081	20.43
Shepody	310	82.8	1.078	19.79
Superior	320	89.3	1.076	19.37
AF92-3	396	86.1	1.071	18.32
AF186-5	372	85.3	1.080	20.21
AF238-66	360	82.4	1.073	18.74
B6043-WV6	404	84.5	1.077	19.58
B8086-3	401	80.1	1.071	18.32
BR5991-WV16	456	86.4	1.086	21.48
CC26-1A	274	88.7	1.078	19.79
F68036	402	82.5	1.077	19.58
F69026	266	83.2	1.071	18.32
Waller Duncan L.S.D. (0.05)	62			

Table 24 - continued

¹Planted - May 9; harvested - October 9-11, 1981.

Fertilization: 150-150-150.

Seedpiece spacing: Russet Burbank - 16 inches

Lemhi - 12 inches.

All other varieties spaced at 9 inches apart.

²Measured with a potato hydrometer.

Table 25. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 7 varieties grown in an early maturity variety trial at Riverhead, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity ³	Percent total solids
Campbell 13	270	230	2.0	85	1.076	19.37
Chippewa	223	176	7.0	79	1.065	17.05
Superior	282	253	0.0	90	1.073	18.74
CC26-1A	279	244	2.0	87	1.079	20.00
C7358-14A	261	236	0.0	90	1.072	18.53
CF7523-1	276	221	1.0	80	1.081	20.43
F69026	183	149	1.0	82	1.073	18.74
Waller Duncan L.S.D. (0.05)	68	67			0.002	

¹Planted - April 16; killed - August 4; harvested - August 17, 1981.

Fertilization: 160-200-100. Seedpieces of all varieties spaced at 9.3 inches apart.

²Total of all defects.

³Measured with a potato hydrometer.

Table 26. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 9 main season varieties grown at Riverhead, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity ³	Percent total solids
Belchip	241	221	1.0	91	1.075	19.16
Campbell 11	209	156	17.0	75	1.082	20.64
Chipbelle	243	189	5.0	78	1.082	20.64
Hudson	157	129	3.0	82	1.066	17.26
Katahdin	260	211	11.0	81	1.063	16.63
Rosa	222	139	13.0	62	1.068	17.68
Wauseon	256	223	1.0	87	1.072	18.53
AF186-5	261	214	4.0	82	1.077	19.58
AF205-9	213	122	17.0	57	1.076	19.37
Waller Duncan L.S.D. (0.05)	64	76			0.005	

¹Planted - April 16; killed - September 4; harvested - October 7, 1981.

Fertilization: 160-200-100. Seedpieces of all varieties spaced at 9.3 inches apart.

²Total of all defects. All varieties except Belchip and Hudson had considerable scab as major defect.

³Measured with a potato hydrometer.

Table 27. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 10 main season varieties grown at Riverhead, New York - 1981.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity ³	Percent total solids
Katahdin	301	264	1.0	88	1.061	16.21
Michibonne	314	287	0.0	92	1.069	17.89
Michimac	281	244	1.0	87	1.064	16.84
Shepody	221	165	14.0	75	1.068	17.68
AF92-3	362	318	1.0	88	1.066	17.26
AF238-66	298	253	1.0	85	1.070	18.10
B6043-WV6	193	137	1.0	71	1.066	17.26
B8086-3	292	264	1.0	90	1.066	17.26
BR5991-WV16	379	338	1.0	89	1.075	19.16
CF7353-1	322	288	2.0	89	1.073	18.74
Waller Duncan L.S.D. (0.05)	33	31			0.003	

¹Planted - April 10; killed - September 4; harvested - October 7, 1981.
Fertilization: 160-200-100. Seedpieces of all varieties spaced at 9.3 inches apart.

²Total of all defects. Shepody had a high percentage of misshapen tubers.

³Measured with a potato hydrometer.

grown at Wooster, Ohio are presented in Table 28. The five highest ranking varieties in total yield were: CC26-1A, BR5991-WV16, Superior, Norchip, and Katahdin. After grading, the ranking for usable yield was: CC26-1A, Superior, Katahdin, C7358-26A, and B6043-WV6. Tuber defects were high for most varieties grown in this Ohio test and the percentages of tubers in the larger size classes ($>3\frac{1}{2}$ inches) were very low. The five highest ranking varieties in specific gravity were: Norchip at 1.087, followed by AF238-4, CC26-1A, C7358-14A, and AF330-1. Only two of the 19 varieties in the Ohio trial were below 1.075, but 14 of the 19 varieties had specific gravities of 1.080 or higher.

Pennsylvania

Total yield, percentage of yield in two market grade size classes, and specific gravity for 18 potato varieties grown in Pennsylvania at University Park are presented in Table 29. Usable yields are not available for this test. The five highest ranking varieties in yield per acre were: B6043-WV6, BR5991-WV16, Katahdin, AF92-3, and F69026. Specific gravities for the varieties in this test were very high. The five highest were: Denali at 1.107, Butte at 1.105, Chipbelle at 1.101, Green Mountain at 1.098, and Lemhi at 1.096. Nine of the 18 varieties were higher than 1.090 and all varieties were 1.080 or higher in this test. Pennsylvania had the highest specific gravities among all locations in the Northeast.

Rhode Island

Total yields and percentage of yield in the U.S. #1 size class for 31 potato varieties grown in Rhode Island are shown in Table 30. The six highest yielding varieties were: Superior, Chippewa, BR5991-WV16, Atlantic, and Kennebec. No specific gravities, grading data, or chip color will be available for this trial.

Vermont

Total yield, percentages of yield in two market grade size classes, and specific gravity for 20 potato varieties grown at Guildhall, Vermont are presented in Table 31. No grading data are available for this test. The five highest yielding varieties were: AF238-66, B8086-3, Chippewa, BR5991-WV16, and Belchip. Denali with a specific gravity of 1.073 was the highest at Guildhall. All other varieties were lower than 1.070 in specific gravity.

West Virginia

Yields, percent tuber defects, percentage of yield in two market grade size classes, and specific gravity for 10 early maturing potato varieties grown in West Virginia are shown in Table 32.

Table 28. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 19 potato varieties grown at Wooster, Ohio - 1981.

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 ³	Percent total solids
Cobbler	282	200	29.4	89.9	30.9	1.080	20.21
Denali	344	299	14.3	89.8	31.0	1.082	20.64
Katahdin	366	321	12.6	94.8	45.9	1.073	18.74
Norchip	287	246	15.7	89.6	10.0	1.087	21.69
Shepody	370	293	20.8	93.5	32.2	1.082	20.64
Superior	379	329	13.6	93.6	34.7	1.081	20.43
AF92-3	330	276	16.4	92.7	23.1	1.079	20.00
AF238-4	248	192	22.6	88.4	30.4	1.087	21.69
AF238-66	325	284	12.5	89.9	22.6	1.083	20.85
AF330-1	308	280	9.5	89.8	26.8	1.084	21.06
B6043-WV6	352	306	13.1	91.1	26.9	1.076	19.37
B8086-3	336	293	13.2	92.4	39.8	1.083	20.85
BR5991-WV16	410	293	28.0	90.5	26.9	1.081	20.43
BR7093-23	350	292	16.2	92.9	45.8	1.080	20.21
CC26-1A	439	420	4.3	92.3	28.6	1.086	21.48
C7358-14A	334	261	23.0	92.0	41.5	1.085	21.27
C7358-26A	341	317	6.8	93.9	50.1	1.078	19.79
F68036	352	284	19.1	91.5	33.5	1.073	18.74
F69026	335	304	9.2	91.9	27.8	1.083	20.85
Waller Duncan L.S.D. (0.05)	85	88				0.006	

Table 28 - continued

Variety	Planting date	Killing date	Harvesting date	Fertilization	Yield (t/ha)	Specific gravity
Golden Wonder	May 8	September 1	September 10	120-240-240	15.2	1.085
Golden Wonder	May 8	September 1	September 10	120-240-240	14.8	1.082
Golden Wonder	May 8	September 1	September 10	120-240-240	14.5	1.080
Golden Wonder	May 8	September 1	September 10	120-240-240	14.2	1.078
Golden Wonder	May 8	September 1	September 10	120-240-240	13.9	1.075
Golden Wonder	May 8	September 1	September 10	120-240-240	13.6	1.072
Golden Wonder	May 8	September 1	September 10	120-240-240	13.3	1.069
Golden Wonder	May 8	September 1	September 10	120-240-240	13.0	1.066
Golden Wonder	May 8	September 1	September 10	120-240-240	12.7	1.063
Golden Wonder	May 8	September 1	September 10	120-240-240	12.4	1.060
Golden Wonder	May 8	September 1	September 10	120-240-240	12.1	1.057
Golden Wonder	May 8	September 1	September 10	120-240-240	11.8	1.054
Golden Wonder	May 8	September 1	September 10	120-240-240	11.5	1.051
Golden Wonder	May 8	September 1	September 10	120-240-240	11.2	1.048
Golden Wonder	May 8	September 1	September 10	120-240-240	10.9	1.045
Golden Wonder	May 8	September 1	September 10	120-240-240	10.6	1.042
Golden Wonder	May 8	September 1	September 10	120-240-240	10.3	1.039
Golden Wonder	May 8	September 1	September 10	120-240-240	10.0	1.036
Golden Wonder	May 8	September 1	September 10	120-240-240	9.7	1.033
Golden Wonder	May 8	September 1	September 10	120-240-240	9.4	1.030
Golden Wonder	May 8	September 1	September 10	120-240-240	9.1	1.027
Golden Wonder	May 8	September 1	September 10	120-240-240	8.8	1.024
Golden Wonder	May 8	September 1	September 10	120-240-240	8.5	1.021
Golden Wonder	May 8	September 1	September 10	120-240-240	8.2	1.018
Golden Wonder	May 8	September 1	September 10	120-240-240	7.9	1.015
Golden Wonder	May 8	September 1	September 10	120-240-240	7.6	1.012
Golden Wonder	May 8	September 1	September 10	120-240-240	7.3	1.009
Golden Wonder	May 8	September 1	September 10	120-240-240	7.0	1.006
Golden Wonder	May 8	September 1	September 10	120-240-240	6.7	1.003
Golden Wonder	May 8	September 1	September 10	120-240-240	6.4	1.000
Golden Wonder	May 8	September 1	September 10	120-240-240	6.1	0.997
Golden Wonder	May 8	September 1	September 10	120-240-240	5.8	0.994
Golden Wonder	May 8	September 1	September 10	120-240-240	5.5	0.991
Golden Wonder	May 8	September 1	September 10	120-240-240	5.2	0.988
Golden Wonder	May 8	September 1	September 10	120-240-240	4.9	0.985
Golden Wonder	May 8	September 1	September 10	120-240-240	4.6	0.982
Golden Wonder	May 8	September 1	September 10	120-240-240	4.3	0.979
Golden Wonder	May 8	September 1	September 10	120-240-240	4.0	0.976
Golden Wonder	May 8	September 1	September 10	120-240-240	3.7	0.973
Golden Wonder	May 8	September 1	September 10	120-240-240	3.4	0.970
Golden Wonder	May 8	September 1	September 10	120-240-240	3.1	0.967
Golden Wonder	May 8	September 1	September 10	120-240-240	2.8	0.964
Golden Wonder	May 8	September 1	September 10	120-240-240	2.5	0.961
Golden Wonder	May 8	September 1	September 10	120-240-240	2.2	0.958
Golden Wonder	May 8	September 1	September 10	120-240-240	1.9	0.955
Golden Wonder	May 8	September 1	September 10	120-240-240	1.6	0.952
Golden Wonder	May 8	September 1	September 10	120-240-240	1.3	0.949
Golden Wonder	May 8	September 1	September 10	120-240-240	1.0	0.946
Golden Wonder	May 8	September 1	September 10	120-240-240	0.7	0.943
Golden Wonder	May 8	September 1	September 10	120-240-240	0.4	0.940
Golden Wonder	May 8	September 1	September 10	120-240-240	0.1	0.937

Table 28 - continued

¹Planted - May 8; killed - September 1; harvested - September 10, 1981.
 Fertilization: 120-240-240. Seedpieces of all varieties spaced at 10 inches apart.

²Includes growth cracked, misshapen, and sunburned tubers.

³Measured with a potato hydrometer.

Table 29. Yield, percentage of yield in two grade size classes, specific gravity, and percent total solids for 18 potato varieties grown at University Park, Pennsylvania - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Belchip	392	93.6	68.3	1.094	23.17
BelRus	209	45.3%	4 to 10 ounces	1.090	22.33
Butte	326	53.4%	4 to 10 ounces	1.105	25.49
Chippelle	350	91.0	48.2	1.101	24.65
Denali	339	87.3	37.0	1.107	25.91
Green Mountain	390	91.8	53.5	1.098	24.01
Katahdin	399	94.1	68.5	1.086	21.48
Lemhi	314	49.5%	4 to 10 ounces	1.096	23.59
Norchip	340	90.3	49.1	1.084	21.06
Penn 71	351	93.3	62.0	1.087	21.69
Rosa	329	86.0	41.7	1.087	21.69
Shepody	311	29.2%	4 to 10 ounces	1.091	22.54
AF92-3	394	92.4	62.0	1.073	18.74
AF238-66	337	87.4	45.5	1.084	21.06
B6043-WV6	463	94.2	72.7	1.083	20.85
B8086-3	376	93.3	65.7	1.080	20.21
BR5991-WV16	431	91.3	65.7	1.091	22.54
F69026	385	93.4	60.5	1.084	21.06
Waller Duncan L.S.D. (0.05)	65			0.012	

¹Planted - May 5; killed - September 11; harvested - September 28, 1981. Fertilization: 120-120-120.

Seedpiece spacing: BelRus, Butte, Lemhi, and Shepody spaced at 12 inches apart;
All other varieties spaced at 8 inches apart.

Table 30. Yield and percentage of yield between 1-7/8 and 4 inches for 31 potato varieties grown in Rhode Island - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches
Allagash Russet	314	84.6
Atlantic	398	85.4
Batoche	318	87.2
Belchip	325	83.2
BelRus	284	83.9
Buckskin	208	88.5
Campbell 13	349	89.5
Centennial Russet	211	79.9
Chipbelle	303	88.1
Chippewa	407	84.7
Hudson	316	87.3
Jemseg	354	83.0
Katahdin	292	83.3
Kennebec	338	78.0
Monona	368	86.3
Norchip	362	86.5
Norland	336	85.4
Pungo	327	88.3
Russet Burbank	184	59.6
Shepody	222	75.8
Superior	419	88.2
Tobique	306	83.1
AF92-3	348	85.1
AF186-5	333	87.1
AF205-9	360	81.0

Table 30 - continued

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches
AF238-66	365	79.8
B6043-WV6	260	80.9
B8086-3	362	83.9
BR5991-WV16	385	86.7
C7232-4	271	88.2
F69026	364	75.8
Waller Duncan L.S.D. (0.05)	74	

¹Planted - April 22; killed - August 24; harvested - September 9-10, 1981.

Fertilization: 150-300-300.

Seedpiece spacing: Russet Burbank - 16 inches

Centennial Russet - 12 inches

Allagash Russet - 10 inches

All other varieties spaced at 9 inches apart.

Table 31. Yield, percentage of yield in two grade size classes, specific gravity, and percent total solids for 20 potato varieties grown at Guildhall, Vermont - 1981.

Variety ¹	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Allagash Russet	369	94.9	76.7	1.057	15.38
Belchip	405	93.1	82.3	1.066	17.26
BelRus	286	52.1%	4 to 10 ounces	1.064	16.84
Buckskin	364	93.9	78.5	1.064	16.84
Campbell 13	358	94.1	78.0	1.064	16.84
Chippewa	418	92.6	79.3	1.055	14.94
Cobbler	351	92.9	70.6	1.061	16.21
Denali	369	93.4	77.6	1.073	18.74
Katahdin	330	92.1	80.1	1.061	16.21
Kennebec	399	89.8	78.1	1.059	15.78
Pungo	383	89.8	73.2	1.065	17.05
Russet Burbank	294	58.4%	4 to 10 ounces	1.064	16.84
Shepody	327	93.1	77.9	1.061	16.21
AF92-3	389	93.0	77.4	1.061	16.21
AF238-66	427	93.7	77.2	1.061	16.21
B6043-WV6	336	95.5	79.7	1.053	14.52
B8086-3	420	90.7	76.0	1.060	15.99
BR5991-WV16	412	96.9	87.3	1.063	16.63
CA02-7	374	96.4	79.8	1.063	16.63
F69026	270	93.6	55.8	1.059	15.78
Waller Duncan L.S.D. (0.05)	37			0.005	

¹Planted - May 19; killed - August 25; harvested - September 21, 1981. Fertilization: 160-240-240.

Seedpiece spacing: Russet Burbank - 16 inches; Allagash Russet - 10 inches;
All other varieties spaced 9 inches apart.

The five highest ranking varieties in total yield were: W718, Kennebec, AF238-66, AF330-1, and C7358-26A. After grading for defects, the ranking for usable yield was: W718, AF238-66, AF330-1, F69026, and C7358-26A. Seedling W564-3A in this test had an exceptionally high percentage of misshapen and growth cracked tubers. Kennebec had the highest specific gravity followed by AF330-1, AF238-66, C7232-4, and F69026. Only two out of the ten varieties in this test had specific gravities higher than 1.075.

Yields, percent defects, percentages of yield in two market grade size classes, and specific gravities for ten medium early maturing varieties grown in West Virginia are presented in Table 33. The five highest ranking varieties in total yield were: AF205-9, CF7523-1, AF186-5, Croatan, and Monona. After grading, Croatan and Monona traded places in usable yield ranking. Denali in this test had a very high percentage of tubers with growth cracks. Denali had the highest specific gravity in this medium-early variety trial followed by Atlantic, AF205-9, AF186-5, and Tobique. Only six of the ten varieties in this test were higher than 1.075 in specific gravity.

A test with ten late maturing potato varieties was conducted in West Virginia and the data are presented in Table 34. The five highest ranking varieties in total yield were: F68036, Rosa, Michibonne, Shepody, and AF303-5. Seedling F68036, Rosa, and Michibonne were also the highest in usable yield after grading for defects. Seedling AF303-5 had the highest specific gravity of 1.094 followed by Shepody at 1.084, CF7353-1, and F67128. Eight of the ten late maturing varieties in this test had specific gravities higher than 1.075.

West Virginia also conducted a five entry russeted variety trial and the data are presented in Table 35. Butte produced the highest total and usable yield. Russet Burbank produced the second highest total yield, but after grading ranked fourth in usable yield. Butte also had the highest specific gravity of 1.096 followed by Lemhi, Russet Burbank, BelRus, and Centennial Russet.

Tuber Size Distribution and Tuber Defects:

Size of potato tubers is an important consideration for all facets of the potato industry. Most market grade regulations specify maximum and minimum size limits. In practice, seed growers prefer the small tuber sizes, french fry processors prefer the larger sizes, chippers a medium to small size, and for fresh packs there are several federal, state, and local grades which are based, in part, on tuber size. Depending on market grade requirements, some varieties might not be acceptable in one or more market areas because of tuber size distribution patterns; yet the same varieties in another marketing situation might be very acceptable. To an individual grower, however, the uniformity of tuber size in a variety is of importance because this characteristic has a high

Table 32. Yield, usable yield, percent defects, percentage of yield in two grade size classes, specific gravity, and percent total solids for 10 early maturing potato varieties grown in West Virginia - 1981.

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
Allagash Russet	185	165	10.9	75.2	57.6	1.064	16.84
Kennebec	239	183	23.4	89.3	71.4	1.083	20.85
AF238-66	235	222	7.6	75.5	51.3	1.074	18.95
AF330-1	235	209	11.7	79.2	55.9	1.078	19.79
C7232-4	139	134	2.5	78.9	45.2	1.074	18.95
C7358-14A	192	173	11.5	81.1	59.3	1.066	17.26
C7358-26A	210	188	10.4	81.7	60.8	1.067	17.47
F69026	205	193	5.7	80.9	58.4	1.069	17.89
W564-3A	181	89	57.4	75.6	50.0	1.068	17.68
W718	278	273	1.4	84.7	67.7	1.068	17.68
Waller-Duncan L.S.D. (0.05)	60	59					

¹Planted - May 9; killed - August 22; harvested - September 11, 1981.

Fertilization: 140-100-100. Seedpieces of all varieties spaced at 9 inches apart.

²Includes misshapen and growth cracked tubers.

Table 33. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 10 medium early maturing varieties grown in West Virginia - 1981.

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
Atlantic	297	280	5.6	87.8	70.2	1.091	22.54
Croatan	301	284	5.9	89.1	71.8	1.065	17.05
Denali	289	220	24.9	89.1	73.5	1.097	23.80
Monona	300	290	3.4	86.7	71.9	1.069	17.89
Tobique	261	228	12.8	88.8	71.6	1.078	19.79
AF186-5	308	301	2.3	87.5	64.0	1.083	20.85
AF205-9	319	310	2.8	85.2	63.7	1.086	21.48
AF238-21	272	259	4.9	88.9	72.3	1.071	18.32
CF7523-1	311	304	2.2	85.2	64.8	1.070	18.10
G712-1	283	268	5.5	82.9	66.3	1.076	19.37
Waller Duncan L.S.D. (0.05)	30	37				0.003	

¹Planted - May 9; killed - August 22; harvested - September 11, 1981.

Fertilization: 140-100-100. Seedpieces of all varieties spaced at 9 inches apart.

²Growth cracked tubers only.

Table 34. Yield, usable yield, percent defects, percentage of yield in two grade size classes, specific gravity, and percent total solids for 10 late maturing potato varieties grown in West Virginia - 1981.

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
Michibonne	390	383	1.7	87.3	78.1	1.070	18.10
Michimac	362	359	0.9	90.2	75.2	1.073	18.74
Rosa	391	389	0.6	86.3	65.3	1.078	19.79
Shepody	387	348	10.3	85.4	69.5	1.084	21.06
AF92-3	314	266	15.5	86.0	70.7	1.068	17.68
AF303-5	381	362	5.0	82.1	69.8	1.094	23.17
CF7353-1	362	350	2.9	84.2	73.8	1.079	20.00
F67128	368	358	2.9	86.0	72.6	1.079	20.00
F68036	436	413	5.1	73.2	62.6	1.078	19.79
F73008	342	277	19.4	83.4	72.8	1.078	19.79
Waller Duncan L.S.D. (0.05)	48	47				0.003	

¹Planted - May 14; killed - September 14; harvested - September 22, 1981.

Fertilization: 140-100-100. Seedpieces of all varieties spaced at 9 inches apart.

²Misshapen tubers only.

Table 35. Yield, usable yield, percent defects, percentage of yield in two grade size classes, specific gravity, and percent total solids for 5 russeted potato varieties grown in West Virginia - 1981.

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
BelRus	281	271	3.7	81.7	57.1	1.085	21.27
Butte	417	387	7.3	78.2	57.9	1.096	23.59
Centennial Russet	329	322	2.2	83.4	68.6	1.076	19.37
Lemhi	340	340	0.0	80.6	67.4	1.088	21.90
Russet Burbank	368	301	18.9	81.4	63.9	1.087	21.69
Waller Duncan L.S.D. (0.05)	73	81				0.003	

¹Planted - May 26; killed - September 26; harvested - October 1, 1981.

Fertilization: 140-100-100. Seedpieces of all varieties spaced at 11 inches apart.

²Misshapen tubers only.

priority in appearance of a fresh pack. It would be very desirable to have a variety which produces a high percentage of its usable tubers in a very few tuber size classes.

In 1981, no special management practices, other than seed-piece spacing, were used in the various variety trials to influence tuber size. In 1981, we requested that all cooperators collect tuber size data in at least two market grade sizes of 1-7/8 to 4 inches (U.S. #1) and 2½ to 4 inches (U.S. #1, size A) for round white varieties and to hand-size the long tuber type varieties on a weight basis. The response was good with only a few cooperators not adhering to the collection of uniform tuber size data, not hand-sizing, or sizing for local grade situations only. Most of the cooperators provided grading tuber defects data so marketable or usable yields could be calculated.

Data presented in Table 36 show the complete size distribution by grade size classes and defects for the 1981 potato variety trial conducted in Connecticut. All varieties had very high percentages of yield over four inches in diameter. Green Mountain, Lemhi, Russet Burbank, and Shepody had high percentages of misshapen tubers; and AF92-3 and Allagash Russet produced a high percentage of tubers with growth cracks. Surprisingly, very little hollow heart was found in this test even though high percentages of oversized tubers were produced.

Size distribution data for a round white variety trial conducted at Dover, Delaware are presented in Table 37. Very low percentages of the total yield of most varieties were larger than 3¼ inches, but a few varieties had high percentages of yield less than 1-7/8 inches which would have been left on the ground, if they had been mechanically harvested.

Data presented in Table 38 show tuber size distribution for several russeted varieties grown at Georgetown, Delaware in 1981. Only C7358-26A had many large tubers but several varieties had high percentages of below 4-ounce tubers which would not be very attractive in a fresh pack.

In another russeted variety trial conducted at Dover, Delaware, the tuber size distribution was also toward the smaller sizes, as shown in Table 39.

Table 40 presents the tuber size distribution and tuber defects data for a variety trial conducted at Deerfield, Massachusetts. Atlantic, Hudson, Katahdin, B8086-3, and BR7093-23 had high percentages of tubers larger than 3¼ inches; and BelRus, Allagash Russet, and W564-3A had quite high percentages of their yield below 1-7/8 inches. Hudson also had a high percentage of growth cracks. Several varieties, such as Allagash Russet, Atlantic, Green Mountain, BR7093-23, and W564-3A, had high amounts of hollow hearted tubers.

Table 36. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 23 potato varieties grown in Connecticut - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3½ inches	3½ to 4 inches	Over 4 inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Allagash Russet	6.3	7.0	28.4	25.6	32.7	6.4	1.9	9.9	0
Atlantic	6.4	7.9	27.7	26.0	32.0	2.7	1.8	3.4	3
Butte	8.4	3.1	21.4	19.9	47.2	1.5	5.6	3.7	0
Centennial Russet	11.4	3.0	29.8	21.6	34.2	4.8	1.1	4.5	1
Green Mountain	5.3	4.0	23.2	23.1	44.4	3.0	12.5	3.5	0
Katahdin	3.4	3.7	26.5	27.3	39.1	11.9	1.6	4.1	0
Kennebec	4.0	4.4	20.3	20.5	50.8	8.5	8.1	6.6	1
Lemhi	5.6	2.3	8.4	14.5	69.2	1.7	19.9	5.4	0
Michibonne	3.3	3.6	24.3	23.8	45.0	6.1	1.1	2.8	0
Michimac	5.3	5.6	39.0	29.4	20.7	6.7	0.8	1.5	0
Penn 71	2.3	2.0	19.2	21.4	55.1	3.0	2.8	3.0	3
Russet Burbank	10.0	3.9	11.5	15.1	59.5	1.5	24.7	9.0	0
Shepody	6.0	2.0	15.4	20.5	56.1	4.1	10.5	2.5	0
Superior	4.2	7.1	38.7	32.2	17.8	1.2	3.2	3.3	0
AF92-3	4.6	5.1	33.0	28.4	28.9	4.6	1.3	10.4	0
AF238-66	6.4	2.5	20.2	24.6	46.3	4.2	7.7	3.9	0
B6043-WV6	6.4	5.1	29.8	27.6	31.1	5.1	1.6	2.8	0
B8086-3	3.8	3.9	32.6	26.4	33.3	1.7	1.9	1.2	1
BR5991-WV16	3.6	3.6	30.1	30.1	32.6	2.6	0.9	2.2	0
BR7093-23	4.2	5.6	29.6	30.0	30.6	13.0	1.1	3.3	0
C7358-26A	3.8	4.4	34.6	28.1	29.1	1.0	0.0	3.4	0
F69026	6.1	4.0	32.1	25.9	31.9	0.1	3.2	5.5	0
W564-3A	4.7	2.2	22.5	25.4	45.2	1.2	3.9	7.1	1

¹Number found per 50 large tubers cut and examined for hollow heart.

Table 37. Percentage of yield by distribution into grade size classes and hollow heart ratings for 15 round white potato varieties grown at Dover, Delaware - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 3¼ inches	Over 3¼ inches	Hollow heart ¹
Atlantic	10.0	89.0	1.0	3
Jemseg	6.1	91.1	2.8	0
Katahdin	10.0	90.0	0.0	0
Kennebec	10.9	86.4	2.7	0
Michibonne	6.1	93.4	0.5	0
Michimac	13.2	86.8	0.0	0
Norchip	12.2	87.8	0.0	0
Shepody	17.1	80.9	2.0	0
AF92-3	11.5	88.5	0.0	0
AF238-66	16.7	83.3	0.0	0
B6043-WV6	11.6	88.4	0.0	2
B8086-3	12.4	86.0	1.6	0
BR5991-WV16	11.3	87.1	1.6	0
C7358-14A	11.3	85.8	2.9	0
F69026	7.8	91.7	0.5	0

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

Table 38. Percentage of yield by distribution into grade size classes and hollow heart ratings for 7 russeted potato varieties grown at Georgetown, Delaware - 1981.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	Hollow heart ¹
Allagash Russet	25.4	70.4	3.6	0.6	0
BelRus	40.8	59.2	0.0	0.0	0
Centennial Russet	48.2	50.4	1.4	0.0	0
Lemhi	38.8	58.3	2.9	0.0	0
Russet Burbank	63.2	36.8	0.0	0.0	0
C7358-26A	20.0	62.2	14.8	3.0	0
W564-3A	38.4	58.2	3.4	0.0	0

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

Table 39. Percentage of yield by distribution into grade size classes and hollow heart ratings for 7 russeted potato varieties grown at Dover, Delaware - 1981.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	Hollow heart ¹
Allagash Russet	30.7	54.3	13.9	1.1	0
BelRus	50.3	47.0	2.7	0.0	0
Centennial Russet	48.8	39.4	11.8	0.0	0
Lemhi	42.0	52.0	5.2	0.8	0
Russet Burbank	55.9	41.0	3.1	0.0	0
C7358-26A	25.2	54.4	19.2	1.2	1
W564-3A	43.6	47.3	6.9	2.2	0

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

Table 40. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 14 potato varieties grown at Deerfield, Massachusetts - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	% Sun- burn	% Growth cracks	% Other defects ¹	Hollow heart ²
Allagash Russet	12.5	45.0	37.9	4.6	1.9	5.6	6.2	10
Atlantic	5.9	25.3	47.2	21.6	2.5	6.0	7.3	16
BelRus	20.7	59.5	17.2	2.6	0.5	0.2	5.1	3
Campbell 12	7.0	43.6	41.9	7.5	3.9	5.2	18.7	4
Centennial Russet	8.1	38.4	43.8	9.7	0.0	8.9	0.8	3
Green Mountain	10.0	35.9	47.2	6.9	2.9	3.8	20.5	14
Hudson	5.7	24.8	48.0	21.5	4.2	31.8	2.0	5
Katahdin	6.4	26.5	45.0	22.1	5.6	2.4	3.8	10
Superior	9.0	44.9	40.6	5.5	4.4	2.0	8.0	0
AF238-21	9.1	46.6	39.3	5.0	5.2	6.8	0.8	3
B8086-3	6.0	24.1	42.3	27.6	7.2	1.6	13.7	10
BR7093-23	4.7	25.3	42.6	27.4	11.9	2.8	2.3	13
CD106-16	4.2	35.5	53.5	6.8	2.9	4.0	12.5	1
W564-3A	12.7	48.2	32.1	7.0	0.1	9.0	7.1	18

¹Includes mostly misshapen and knobby tubers.

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

Size distribution data for a variety trial conducted at Florenceville, New Brunswick, Canada are presented in Table 41. It would appear that most varieties, except Russet Burbank, AF186-5, and AF205-9, had normal size distribution patterns.

Tuber size distribution and grading data for five tests conducted at Presque Isle, Maine are presented in Tables 42 through 46. Kennebec, Katahdin, MN8757, and B8086-3 had quite high percentages of yield in the oversize class. Kennebec, C72132-2, MN8757, BR7088-18, Katahdin, BR7093-23, Lemhi, Butte, Russet Burbank, and B8972-1 all had high numbers of hollow hearted tubers.

Table 47 presents the tuber size and defects data for 30 potato varieties grown at Newport, Maine. Considering that these plots had to be killed early because of late blight, the tuber size distribution was not too bad even though most of the varieties had tubers toward the smaller sizes. All varieties grown at Newport had growth cracks. Allagash Russet, Denali, Kennebec, AF238-21, AF330-1, and BR7093-23 all had excessive percentages of yields showing growth cracks; and Kennebec had a high of 17.8 percent of yield having badly misshapen tubers.

Size distribution and air pollution ratings for 23 potato varieties grown at Deerfield, New Jersey are presented in Table 48. Several varieties, such as Denali, Norchip, Rosa, Shepody, AF238-66, B6043-WV6, and CF7523-1, did not size up well, as indicated by the percentages of yield in the smaller size classes. Sixteen of the 23 varieties were rated borderline for air pollution effect on vine growth in New Jersey.

In a russeted variety test conducted at Freehold, New Jersey, Russet Burbank produced a high percentage of yield below 4 ounces in size, as shown in Table 49. BelRus in this test had an air pollution rating of 4 which suggests that yields of this variety could be reduced in New Jersey in most years.

Table 50 presents the size distribution data for 24 potato varieties grown at Tully, New York. Several of the varieties had quite high percentages of total yield in the small tuber size class of 1½ to 1-7/8 inches. The percentage of yield in the oversize tuber size class was not determined in this study.

Tuber size distribution data, percent defects, and hollow heart data for eight variety trials conducted in Up-State New York are presented in Tables 51 through 56. At Cohocton, New York, Monona, Norchip, and Rosa had quite high percentages of yield below 1-7/8 inches in tuber size, as shown in Table 51. Kennebec also had a high percentage of tuber defects. Atlantic, Belchip, Denali, Monona, and Rosa also had a lot of tubers with hollow heart.

Table 52 presents size distribution, percent defects, and hollow heart data for two russeted variety tests grown in Up-State

Table 41. Percentage of total yield by distribution into grade size classes for 18 potato varieties grown at Florenceville, New Brunswick, Canada - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	Over 2½ inches
Chipbelle	1.7	17.8	80.5
Kennebec	1.4	6.4	92.2
Lemhi	1.9	15.1	83.0
Rosa	3.2	14.6	82.2
Russet Burbank	2.8	25.4	71.8
AF92-3	2.0	12.7	85.3
AF186-5	5.9	21.5	72.6
AF205-9	3.1	24.1	72.8
AF238-66	4.1	9.5	86.4
AF330-1	6.4	24.7	68.9
B6043-WV6	1.9	15.5	82.6
BR5991-WV16	2.3	14.5	83.2
BR7093-23	2.5	9.7	87.8
C7232-4	2.5	18.9	78.6
C7358-14A	3.3	14.8	81.9
CC26-1A	2.3	10.3	87.4
CF7353-1	3.8	13.5	82.7
W564-3A	2.3	13.8	83.9

Table 42. Percentage of total yield by distribution into grade size classes and percent defects for 9 early-medium early maturing potato varieties grown at Presque Isle, Maine - 1981.

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
Superior	1.8	12.0	27.7	52.4	6.1	0.0	1.3	1.9	4.2	0
Trent	3.3	13.8	27.7	48.2	7.0	0.0	0.6	0.0	4.2	2
AF330-1	4.1	23.4	30.9	37.6	4.0	0.0	1.6	1.7	1.8	0
C7232-4	2.9	17.0	25.4	47.7	6.5	0.5	0.6	0.0	3.4	0
C7490-2	2.1	25.8	39.7	32.1	0.3	0.0	0.9	0.6	2.6	0
CC26-1A	3.7	19.8	35.3	37.9	3.3	0.0	1.2	0.1	5.2	0
CF7523-1	5.1	20.4	31.3	38.5	4.7	0.0	0.6	0.4	3.6	0
F69026	2.7	16.6	27.9	43.4	9.1	0.3	0.7	0.1	7.0	0
G6880-1	2.3	12.3	31.2	49.0	5.2	0.0	1.0	1.0	2.2	0

¹Mostly misshapen tubers.

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

Table 43. Percentage of total yield by distribution into grade size classes and percent defects for 16 medium maturing potato varieties grown at Presque Isle, Maine - 1981.

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
Croatan	2.8	10.8	23.0	56.8	6.6	0.0	1.0	0.6	1.5	0
Kennebec	2.5	8.8	12.8	38.3	34.5	3.1	10.0	2.8	5.1	11
Rideau	2.5	8.8	15.3	48.7	23.0	1.7	0.0	0.6	3.4	1
Yukon Gold	1.2	8.4	13.2	51.5	24.4	1.3	0.0	0.2	0.9	4
AF201-25	2.0	10.1	22.6	51.6	13.4	0.3	1.1	2.7	3.2	3
AF238-21	1.9	10.9	21.4	53.1	12.2	0.5	2.1	0.1	0.9	0
AF238-66	3.5	13.1	20.5	48.3	14.6	0.0	6.9	0.1	5.6	6
C7358-14A	2.3	10.8	20.4	49.1	17.0	0.4	2.1	0.6	0.6	1
C7358-26A	1.5	9.5	17.8	54.9	15.5	0.8	0.7	1.2	0.7	0
C72132-2	2.1	15.0	22.6	42.2	16.3	1.8	2.3	2.3	1.3	11
C74109-8	2.5	14.9	26.7	46.1	9.8	0.0	1.9	0.5	0.4	2
G712-1	2.0	16.9	27.8	47.9	5.4	0.0	1.0	0.9	1.8	1
MN7973	1.2	5.7	18.7	63.5	10.4	0.5	1.4	0.4	2.4	0
MN8224	4.5	19.3	24.0	41.2	11.0	0.0	0.2	0.3	1.3	1
MN8757	1.9	5.2	8.1	35.9	39.5	9.4	0.1	1.5	3.4	13
W718	2.5	10.6	19.4	48.7	18.1	0.7	3.7	0.6	2.3	5

¹Mostly misshapen tubers.

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

Table 44. Percentage of total yield by distribution into grade size classes and percent defects for 12 medium late maturing potato varieties grown at Presque Isle, Maine - 1981.

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
Kennebec	1.5	7.1	9.9	40.4	35.1	6.0	18.7	3.4	8.2	16
Michibonne	1.1	5.9	13.2	53.9	23.8	2.1	3.7	0.2	3.3	0
Michimac	1.9	10.9	18.9	50.5	15.5	2.3	8.3	0.3	2.9	8
AF92-3	2.2	9.4	12.9	45.1	26.6	3.8	4.5	4.3	3.8	4
AF303-5	1.6	7.0	13.9	51.3	23.9	2.3	2.4	0.8	2.5	3
B6043-WV6	1.4	9.5	20.2	56.5	11.7	0.7	3.7	0.8	1.7	9
BR5991-WV16	3.5	15.4	27.4	47.5	6.2	0.0	1.7	2.8	1.1	1
BR7088-18	1.2	9.6	18.1	54.4	15.2	1.5	2.1	1.0	0.5	15
CF7353-1	1.7	10.0	16.3	52.9	18.4	0.7	1.0	0.3	6.5	9
F73008	1.6	11.9	27.7	52.1	6.1	0.4	2.6	2.3	5.3	1

		Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces					
Shepody		9.5	42.7	39.5	8.3		1.7	0.4	10.2	10
F68036		7.0	34.1	41.9	17.0		0.5	0.7	3.6	3

¹Mostly misshapen and knobby tubers.

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

Table 45. Percentage of total yield by distribution into grade size classes and percent defects for 5 late maturing varieties grown at Presque Isle, Maine - 1981.

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
Chipbelle	1.7	9.4	18.7	54.8	14.7	0.7	2.5	0.0	7.0	1
Katahdin	1.3	3.5	7.2	40.1	37.5	10.4	7.1	0.2	2.4	19
Rosa	3.2	13.3	24.9	46.5	11.5	0.6	1.8	0.2	4.6	6
B8086-3	2.3	8.3	14.3	40.6	28.5	6.0	3.0	0.1	4.3	6
BR7093-23	2.5	8.8	14.4	47.4	24.1	2.8	4.2	0.9	3.3	10

¹Mostly misshapen and knobby tubers.

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

Table 46. Percentage of total yield by distribution into grade size classes and percent defects for 6 russeted and long type potato varieties grown at Presque Isle, Maine - 1981.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	% Sun- burn	% Growth cracks	% Other defects ¹	Hollow heart ²
Butte	8.7	46.6	33.5	11.2	0.3	1.1	22.3	18
Lemhi	9.5	49.2	28.1	13.2	1.1	0.9	10.8	42
Russet Burbank	9.4	49.1	24.4	17.1	0.9	1.1	25.9	11
B8943-4	18.6	63.4	15.5	2.5	1.5	1.9	11.7	8
B8972-1	14.5	64.6	14.5	6.4	2.3	2.6	13.3	17
MN9319	7.3	53.0	30.9	8.8	0.8	0.6	4.8	1

¹Includes misshapen and knobby tubers.

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

Table 47. Percentage of total yield by distribution into grade size classes and percent defects for 30 potato varieties grown at Newport, Maine - 1981.

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 ¹ defects
Allagash Russet	14.4	41.2	28.4	16.0	0.0	0.0	0.0	13.3	6.6
Atlantic	8.1	28.1	26.4	30.1	7.3	0.0	2.6	3.1	10.4
Belchip	8.9	32.5	32.0	22.1	2.3	2.2	0.6	6.0	13.1
Buckskin	9.9	35.0	31.3	21.0	2.8	0.0	2.9	2.0	6.5
Chipbelle	15.5	41.5	29.1	12.2	1.7	0.0	1.5	2.0	5.3
Denali	11.1	41.0	28.6	18.9	0.4	0.0	1.3	19.9	2.6
Katahdin	6.7	22.8	29.7	36.1	4.7	0.0	3.9	2.4	2.7
Kennebec	8.2	24.9	27.6	33.8	5.5	0.0	5.2	13.7	17.8
Michibonne	7.0	22.0	32.6	36.4	2.0	0.0	1.9	3.5	4.3
Michimac	8.9	25.3	29.4	32.0	4.4	0.0	8.4	3.6	4.6
Monona	6.6	27.8	35.9	29.1	0.6	0.0	2.8	1.8	4.7
Norchip	13.6	48.3	27.4	10.1	0.6	0.0	0.1	3.9	7.6
Superior	9.3	40.3	26.8	22.8	0.8	0.0	0.9	2.5	8.6
AF186-5	10.8	42.1	27.7	19.0	0.4	0.0	0.4	4.8	2.0
AF238-21	15.8	46.4	23.6	14.2	0.0	0.0	1.4	16.1	2.9
AF238-66	18.9	51.7	23.0	6.1	0.3	0.0	0.2	3.2	8.2
AF303-5	8.9	30.5	32.3	26.5	1.8	0.0	0.3	1.3	4.1
AF330-1	19.0	38.1	28.0	14.4	0.5	0.0	0.5	17.1	8.8
B8086-3	6.7	21.2	25.8	39.6	6.7	0.0	2.0	6.1	7.2
BR7088-18	6.7	27.6	33.9	30.1	1.7	0.0	1.1	11.1	6.4
BR7093-23	12.3	32.0	28.4	24.3	3.0	0.0	7.8	5.6	5.0
C7232-4	14.1	37.1	33.8	13.4	1.6	0.0	2.4	2.4	6.3
CC26-1A	9.0	33.3	31.8	25.2	0.7	0.0	2.3	2.8	7.7
CF7353-1	5.7	26.4	30.3	35.9	3.7	0.0	0.2	5.0	6.7

Table 47 - continued

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 ¹ defects
CF7523-1	9.0	39.1	33.7	17.9	0.3	0.0	0.9	2.2	10.3
F69026	8.5	28.4	31.5	29.1	2.5	0.0	0.1	9.1	13.7
F73008	10.6	33.2	36.1	18.0	2.1	0.0	3.7	17.4	10.8
G712-1	16.0	46.2	23.4	13.8	0.6	0.0	2.1	6.3	6.1
MN8757	3.2	8.3	18.8	38.9	29.0	1.8	0.5	7.9	4.6
W564-3A	16.0	53.3	18.0	12.4	0.3	0.0	0.0	33.8	4.7

¹Includes misshapen and knobby tubers.

Table 48. Percentage of total yield by distribution into grade size classes, air pollution ratings, and hollow heart ratings for 23 potato varieties grown at Deerfield, New Jersey - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Air Pollution Rating ¹	Hollow heart Rating ²
Atlantic	8.2	33.8	38.7	19.3	0.0	6	3
Denali	10.3	44.9	34.6	10.2	0.0	6	1
Jemseg	6.9	36.1	43.0	14.0	0.0	5	1
Katahdin	5.4	23.7	37.7	29.2	4.0	7	0
Michibonne	4.5	21.0	52.1	22.4	0.0	6	0
Michimac	6.8	32.4	40.9	19.9	0.0	6	0
Norchip	12.2	56.1	28.0	3.7	0.0	5	0
Rosa	11.8	44.4	37.6	6.2	0.0	6	0
Shepody	11.0	51.2	35.3	2.5	0.0	5	1
Superior	8.4	31.7	42.2	17.7	0.0	6	0
AF92-3	4.7	42.2	39.8	13.3	0.0	6	0
AF238-21	5.5	31.4	37.6	24.4	1.1	5	0
AF238-66	13.7	59.5	25.3	1.5	0.0	6	0
AF303-5	9.2	44.5	35.5	10.8	0.0	7	1
AF330-1	8.2	39.5	41.3	11.0	0.0	6	0
B6043-WV6	15.0	52.0	30.3	2.7	0.0	7	2
BR5991-WV16	9.2	35.7	39.0	16.1	0.0	7	2
CF7353-1	7.0	26.9	43.9	21.1	1.1	6	3
CF7523-1	12.0	43.3	39.2	5.5	0.0	7	1
F69026	8.1	43.1	36.9	11.9	0.0	5	1
F73008	9.9	33.2	39.2	17.7	0.0	7	0
G712-1	10.1	44.3	30.2	15.4	0.0	6	2
W718	5.7	24.7	35.1	33.9	0.6	7	0

¹Effect of air pollution on vine growth: 9-7 = good; 6-4 = borderline; 3-1 = yield may be reduced.

²Number found per 20 large tubers cut and examined for hollow heart.

Table 49. Percentage of total yield by distribution into grade size classes, air pollution ratings, and hollow heart ratings for 5 russeted potato varieties grown at Freehold, New Jersey - 1981.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Air Pollution Ratings ¹	Hollow heart ²
Allagash Russet	2.3	43.6	54.1	5	4
BelRus	2.5	57.6	39.9	4	0
Lemhi	2.1	48.2	49.7	7	0
Russet Burbank	11.1	65.4	23.5	7	0
W564-3A	1.6	48.4	50.0	6	0

¹Effect of air pollution on vine growth: 9 - 7 = good
6 - 4 = borderline
3 - 1 = yield may be reduced

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

Table 50. Percentage of yield by distribution into grade size classes for 24 potato varieties grown at Tully, New York - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 3¼ inches	Over 3¼ inches
Allagash Russet	13.0	84.9	2.1
Atlantic	10.1	82.2	7.7
Belchip	6.7	76.7	16.6
BelRus	16.8	82.6	0.6
Cobbler	9.5	88.5	2.0
Hudson	5.5	77.1	17.4
Katahdin	5.5	75.1	19.4
Kennebec	6.6	87.1	6.3
Lemhi	7.5	82.3	10.2
Norchip	13.4	83.2	3.4
Penn 71	4.5	78.0	17.5
Rosa	11.1	82.9	6.0
Russet Burbank	10.5	84.5	5.0
Shepody	11.7	82.8	5.5
Superior	9.6	89.3	1.1
AF92-3	11.9	86.1	2.0
AF186-5	11.8	85.3	2.9
AF238-66	15.5	82.4	2.1
B6043-WV6	10.7	84.5	4.8
B8086-3	12.5	80.1	7.4
BR5991-WV16	8.9	86.4	4.7
CC26-1A	6.6	88.7	4.7
F68036	5.6	82.5	11.9
F69026	15.3	83.2	1.5

Table 51. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 12 potato varieties grown at Cohocton, New York - 1981.

Variety	Under 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches	Percent defects	Hollow heart ¹
Atlantic	11	87	0	2	11
Belchip	7	86	2	5	13
Chipbelle	10	89	0	1	9
Denali	10	84	1	5	11
Kennebec	5	79	2	14	3
Monona	15	85	0	0	13
Norchip	17	81	0	2	8
Rosa	17	79	4	0	10
AF186-5	10	88	1	1	6
BR7093-23	9	89	1	1	8
C7232-4	9	89	0	2	0
F69026	8	89	0	3	2

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

New York. At Freeville, all three varieties grown were toward the smaller 4-ounce tuber size but only Russet Burbank had a high percentage of misshapen tubers. At Savannah, BelRus produced a high percentage of small tubers and Russet Burbank had a lot of misshapen tubers. Hollow heart in Lemhi and Russet Burbank varieties was very prevalent in the Savannah russet test.

In a round white variety test conducted at Savannah, New York, C7232-4, Norchip, Peconic, and Rosa had quite high percentages of total yield in the 1½ to 1-7/8 inch tuber size class, as indicated in Table 53. Hudson, Katahdin, and Chipbelle grown at Savannah had high percentages of defects but only Chipbelle had any quantity of hollow heart tubers.

Size distribution, percent defects, and hollow heart readings for 12 potato varieties grown at Freeville, New York are presented in Table 54. From the tuber sizing system used, one cannot determine if there were many under-sized tubers in this trial. Katahdin, Kennebec, Shepody, Wauseon, and B6043-WV6 had quite high percentages of tuber defects; and Shepody had quite a high rating for hollow heart.

In another test conducted at Freeville, AF238-66, Chipbelle, Norchip, Peconic, and Rosa had quite high percentages of total yield under 2½ inches in size, as shown in Table 55. All varieties had some defects and some hollow heart. Atlantic and Norchip had quite a few defects; and AF186-5 had quite a high hollow heart rating.

Table 56 presents size distribution, percent defects data, and hollow heart ratings for an early maturing variety test conducted at Freeville, New York. There was a trend for tubers of Superior and Trent to be toward the smaller sizes. Jemseg had a high percentage of tuber defects; and Trent produced quite a number of hollow heart tubers.

Percent size distribution, percent defects, and hollow heart ratings for seven early maturing varieties grown at Riverhead, New York are presented in Table 57. Seedling CF7523-1 and F69026 had quite a high percentage of yield under 1-7/8 inches. Chippewa in this test had seven percent defects; and CC26-1A was the only variety with hollow heart.

Data presented in Table 58 are the tuber size distribution, percent defects, and hollow heart ratings for two variety trials conducted at Riverhead, Long Island, New York. Rosa and AF205-9 in main season I trial had high percentages of tubers under 1-7/8 inches. Campbell 11 and AF205-9 also had high percentages of tuber defects. In main season III trial, B6043-WV6 had a high percentage of total yield less than 1-7/8 inches; and Shepody had 14 percent tuber defects. Only BR5991-WV16 had any quantity of tubers with hollow heart. Many varieties in main season I trial reportedly were very scabby.

Percentages size distribution, percent defects, and hollow heart ratings for 19 potato varieties grown at Wooster, Ohio are

Table 52. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 3 russeted varieties grown at Freeville and Savannah, New York - 1981.

Variety	0 to 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	Percent defects	Hollow heart ¹
<u>Freeville</u>						
BelRus	23	65	9	1	2	0
Lemhi	13	64	14	2	7	9
Russet Burbank	23	47	12	1	17	4

Variety	0 to 4 ounces	4 to 16 ounces		Over 16 ounces	Percent defects	Hollow heart
<u>Savannah</u>						
BelRus	15	75		8	2	0
Lemhi	9	80		8	3	23
Russet Burbank	8	65		17	10	14

¹Number found per 40 large 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 13 potato varieties grown at Savannah, New York - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches	Percent defects	Hollow heart ²
Atlantic	7	89	1	3	1
Hudson	5	83	2	10	0
Jemseg	5	85	3	7	0
Katahdin	3	79	7	11	5
Monona	6	90	2	2	1
C7232-4	10	88	1	1	0
<u>Other</u> ¹					<u>Other</u> ³
Belchip	6	86	1	7	5
Chipbelle	8	83	0	9	13
Denali	4	88	2	6	7
Norchip	12	84	0	4	1
Peconic	11	81	1	7	0
Rosa	12	85	0	3	4
Wauseon	9	83	3	5	1

¹Only three replications so data were not subjected to analysis of variance.

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

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

Table 54. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 12 potato varieties grown at Freeville, New York - 1981.

Variety	Under 2½ inches	2½ to 3½ inches	3½ to 4 inches	Over 4 inches	Percent defects	Hollow heart ¹
Denali	15	57	19	2	7	2
Katahdin	2	43	28	3	24	0
Kennebec	8	45	24	1	22	1
Michibonne	8	45	36	2	9	3
Michimac	13	58	21	0	8	0
Monona	15	63	18	1	3	0
Shepody	16	52	15	1	16	9
Wauseon	14	49	23	1	13	0
AF92-3	18	62	11	0	9	1
B6043-WV6	12	57	19	1	11	2
B8086-3	15	53	24	1	7	2
BR5991-WV16	14	49	33	0	4	4

¹Number found per 40 large 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 10 potato varieties grown at Freeville, New York - 1981.

Variety	Under 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects	Hollow heart ¹
Atlantic	20	50	22	0	8	5
Belchip	13	54	26	1	6	3
Chipbelle	25	58	11	0	6	3
Katahdin	16	50	27	1	6	2
Norchip	21	53	16	1	9	1
Peconic	21	51	20	1	7	4
Rosa	21	56	15	2	6	3
AF186-5	17	59	19	0	5	9
AF238-66	32	51	9	0	6	3
BR7093-23	11	49	32	2	6	3

¹Number found per 40 large 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 7 early maturing varieties grown at Freeville, New York - 1981.

Variety	Under 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches	Percent defects	Hollow heart ¹
Jemseg	7	42	35	3	13	7
Superior	20	66	12	0	2	0
Trent	20	65	12	0	3	13
C7232-4	15	58	24	0	3	1
C7358-14A	17	54	21	2	6	0
CC26-1A	16	57	20	2	5	3
CF7523-1	17	52	28	0	3	0

¹Number found per 40 large 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 7 early maturing varieties grown at Riverhead, New York - 1981.

Variety	Under 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches	Percent defects	Hollow heart ¹
Campbell 13	12	85	1	2	0
Chippewa	13	79	1	7	0
Superior	10	90	0	0	0
CC26-1A	11	87	0	2	3
C7358-14A	10	90	0	0	0
CF7523-1	20	80	0	1	0
F69026	17	82	0	1	0

¹Number found per 40 large tubers cut and examined for hollow heart or internal necrosis.

Table 58. Percentage of total yield by distribution into grade size classes and hollow heart ratings for two main season variety trials at Riverhead, New York - 1981.

Variety	Under 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches	Percent defects ¹	Hollow heart ²
<u>Main Season I Trial</u>					
Belchip	8	91	0	1	0
Campbell 11	8	75	0	17	0
Chipbelle	15	78	2	5	1
Hudson	15	82	0	3	1
Katahdin	8	81	0	11	0
Rosa	25	62	0	13	0
Wauseon	12	87	0	1	0
AF186-5	14	82	0	4	0
AF205-9	26	57	0	17	1
<u>Main Season III Trial</u>					
Katahdin	10	88	1	1	0
Michibonne	8	92	0	0	0
Michimac	12	87	0	1	0
Shepody	11	75	0	14	0
AF92-3	11	88	0	1	0
AF238-66	14	85	0	1	0
B6043-WV6	28	71	0	1	0
B8086-3	9	90	0	1	0
BR5991-WV16	9	89	1	1	9
CF7353-1	9	89	0	2	1

¹Includes total defects. Many varieties in the main season I variety trial had considerable scab.

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

presented in Table 59. The size distribution for all varieties in this Ohio trial were about normal with low percentages of small tubers and no oversized tubers. No hollow heart was found in the varieties in this test. Seedling AF238-4 had 17.3 percent sunburned tubers. Cobbler, Superior, AF92-3, B6043-WV6, BR5991-WV16, C7358-14A, and F68036 had quite high percentages of misshapen tubers.

Total yield size distribution for 18 potato varieties grown at University Park, Pennsylvania is presented in Table 50. Denali, Rosa, and AF238-66 had quite high percentages of yield in the $1\frac{1}{2}$ to 1-7/8-inch size class. For the russeted varieties, BelRus and Butte had quite high percentages of yield below 4 ounces in weight and Shepody was at 14.6 percent in the over-16-ounce size class.

In Rhode Island, all varieties had oversized tubers, as shown in Table 61, but only a few varieties, such as BelRus, Centennial Russet, Russet Burbank, and AF205-9 had high percentages of total yield in the $1\frac{1}{2}$ to 1-7/8-inch size class. These varieties should have been hand-sized by weight which would probably have made the size distribution more nearly normal for those varieties.

Percentage of yield into grade size classes for 20 potato varieties grown at Guildhall, Vermont are presented in Table 62. Only Russet Burbank had a high percentage of yield below 4 ounces in weight, but several of the round white varieties had quite a lot of yield over 4 inches in diameter.

Tables 63 through 66 present the tuber size distribution, grading defects, and hollow heart ratings for four variety trials conducted in West Virginia.

For the ten early maturing varieties, as shown in Table 63, all except Kennebec and W718 had quite high percentages of total yield in the $1\frac{1}{2}$ to 1-7/8-inch size category. Seedling W564-3A had some hollow heart and Kennebec and W564-3A had very high percentages of defective tubers.

Table 64 presents the size distribution, percent defects, and hollow heart ratings for ten medium early varieties grown in West Virginia. Monona, AF205-9, CF7523-1, and G712-1 had above normal percentages of $1\frac{1}{2}$ to 1-7/8 inch tubers but no oversized tubers. All varieties in this test had some growth cracked tubers but Denali and Tobique had very high percentages showing this defect.

In a late maturing variety trial conducted in West Virginia, Rosa and AF303-5 had quite high percentages of undersized tubers and F68036 had 20.7 percent of total yield in the over $4\frac{1}{2}$ -inch size class, as shown in Table 65. Shepody, AF92-3, and F63008 produced high percentages of misshapen tubers.

Percentages of yield by size classes, and percent misshapen tubers for five russeted potato varieties grown in West Virginia

Table 59. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 19 potato varieties grown at Wooster, Ohio - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Cobbler	10.1	59.0	26.2	4.7	7.4	18.9	3.1	0
Denali	10.1	58.9	29.3	1.7	2.1	7.7	4.4	0
Katahdin	5.2	48.9	39.9	6.0	6.7	5.2	0.7	0
Norchip	10.5	71.5	18.0	0.0	9.6	5.7	0.4	0
Shepody	6.5	61.3	26.4	5.8	3.8	15.1	1.9	0
Superior	6.4	58.9	33.8	0.9	3.1	9.8	0.7	0
AF92-3	7.3	69.6	23.1	0.0	1.8	13.7	0.9	0
AF238-4	11.5	58.0	28.5	2.0	17.3	4.6	0.7	0
AF238-66	10.1	67.3	21.2	1.4	5.7	6.6	0.2	0
AF330-1	10.2	63.0	26.8	0.0	4.8	2.7	2.0	0
B6043-WV6	8.9	64.3	24.9	1.9	1.1	11.9	0.0	0
B8086-3	7.5	52.6	33.2	6.7	2.8	10.0	0.4	0
BR5991-WV16	9.4	63.7	26.9	0.0	0.6	26.4	1.0	0
BR7093-23	7.1	47.1	40.9	4.9	12.4	2.7	1.1	0
CC26-1A	7.6	63.8	28.6	0.0	0.8	3.5	0.0	0
C7358-14A	8.1	50.4	40.3	1.2	10.3	11.7	0.9	0
C7358-26A	6.1	43.8	47.9	2.2	1.5	3.4	1.9	0
F68036	8.5	58.0	31.9	1.6	0.5	18.2	0.4	0
F69026	8.1	64.1	27.0	0.8	2.5	6.7	0.0	0

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

Table 60. Percentage of yield by distribution into grade size classes for 18 potato varieties grown at University Park, Pennsylvania - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches
Belchip	6.4	25.3	52.9	15.4	0.0
Chippelle	9.0	42.7	44.3	4.0	0.0
Denali	12.7	50.3	33.1	3.9	0.0
Green Mountain	8.2	38.3	46.5	7.0	0.0
Katahdin	5.9	25.6	47.1	21.4	0.0
Norchip	9.7	41.2	43.7	5.4	0.0
Penn 71	6.6	31.3	49.9	12.2	0.0
Rosa	13.9	44.4	40.0	1.7	0.0
AF92-3	7.7	30.3	51.0	11.0	0.0
AF238-66	12.7	45.8	35.6	5.9	0.0
B6043-WV6	5.8	21.4	48.3	24.5	0.0
B8086-3	6.6	27.6	47.2	18.6	0.0
BR5991-WV16	8.8	25.5	48.5	17.2	0.0
F69026	6.6	32.9	45.1	15.4	0.0
	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	
BelRus	19.8	45.3	34.9	0.0	
Butte	26.0	53.4	20.6	0.0	
Lemhi	10.3	49.5	37.8	2.4	
Shepody	6.3	29.2	49.9	14.6	

Table 61. Percentage of yield by distribution into grade size classes for 31 potato varieties grown in Rhode Island - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches
Allagash Russet	7.5	84.6	7.9
Atlantic	9.5	85.4	5.1
Batoche	7.6	87.2	5.2
Belchip	8.9	83.2	7.9
BelRus	14.2	83.9	1.9
Buckskin	10.4	88.5	1.1
Campbell 13	7.2	89.5	3.3
Centennial Russet	16.8	79.9	3.3
Chipbelle	10.4	88.1	1.5
Chippewa	6.7	84.7	8.6
Hudson	5.9	87.3	6.8
Jemseg	5.3	83.0	11.7
Katahdin	6.4	83.3	10.3
Kennebec	9.3	78.0	12.7
Monona	7.3	86.3	6.4
Norchip	9.9	86.5	3.6
Norland	11.4	85.4	3.2
Pungo	7.0	88.3	4.7
Russet Burbank	20.9	59.6	19.5
Shepody	9.5	75.8	14.7
Superior	6.2	88.2	5.6
Tobique	10.0	83.1	6.9
AF92-3	8.3	85.1	6.6
AF186-5	8.7	87.1	4.2
AF205-9	16.8	81.0	2.2

Table 61 - continued

Variety	1½ to 1-7/8 inches	1-7/8 to 4 inches	Over 4 inches
AF238-66	14.5	79.8	5.7
B6043-WV6	14.3	80.9	4.8
B8086-3	7.3	83.9	8.8
BR5991-WV16	9.7	86.7	3.6
C7232-4	8.5	88.2	3.3
F69026	9.9	75.8	14.3

Table 62. Percentage of yield by distribution into grade size classes for 20 potato varieties grown at Guildhall, Vermont - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches	Over 4 inches
Allagash Russet	4.5	18.3	68.4	8.2	0.6
Belchip	3.3	10.8	60.1	22.1	3.7
Buckskin	3.6	15.4	65.6	12.9	2.5
Campbell 13	4.9	16.1	63.2	14.7	1.1
Chippewa	4.1	13.3	60.7	18.6	3.3
Cobbler	6.3	22.3	63.9	6.7	0.8
Denali	3.5	15.7	64.9	12.7	3.2
Katahdin	3.2	12.0	59.7	20.4	4.7
Kennebec	3.0	11.7	62.3	15.8	7.2
Pungo	4.6	16.5	57.2	16.1	5.6
Shepody	4.3	15.3	66.9	11.0	2.5
AF92-3	4.5	15.6	59.4	18.0	2.5
AF238-66	4.1	16.5	67.2	10.0	2.2
B6043-WV6	3.4	15.8	70.3	9.4	1.1
B8086-3	4.2	14.6	56.8	19.2	5.2
BR5991-WV16	2.2	9.5	67.4	19.9	1.0
CA02-7	2.7	16.6	57.6	22.1	1.0
F69026	5.7	27.8	60.8	5.0	0.7
	Below 4 ounces	4 to 10 ounces	10 to 16 ounces	Over 16 ounces	
BelRus	15.8	52.1	32.1	0.0	
Russet Burbank	25.1	58.4	16.5	0.0	

Table 63. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 10 early maturing potato varieties grown in West Virginia - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4½ inches	Over 4½ inches	% Misshapen and Growth Cracked	Hollow heart ¹
Allagash Russet	24.8	17.6	57.6	0.0	10.9	2
Kennebec	10.8	17.8	71.4	0.0	23.4	0
AF238-66	22.7	24.1	51.3	1.9	7.6	0
AF330-1	19.7	23.2	55.9	1.2	11.7	2
C7232-4	21.2	33.6	45.2	0.0	2.6	0
C7358-14A	17.5	21.8	59.3	1.4	11.5	0
C7358-26A	15.0	20.9	60.8	3.3	10.4	0
F69026	18.0	22.5	58.4	1.1	5.7	0
W564-3A	24.4	25.6	50.0	0.0	57.4	5
W718	11.1	17.0	67.7	4.2	1.4	0

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

Table 64. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 10 medium early maturing potato varieties grown in West Virginia - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4½ inches	Over 4½ inches	% Growth cracks	Hollow heart ¹
Atlantic	12.1	17.7	69.4	0.8	5.6	2
Croatan	11.0	17.2	71.8	0.0	5.9	0
Denali	10.9	15.6	73.5	0.0	24.9	1
Monona	13.3	14.8	71.9	0.0	3.4	0
Tobique	11.2	17.2	70.6	1.0	12.8	0
AF186-5	12.6	23.4	64.0	0.0	2.3	2
AF205-9	14.8	21.5	63.7	0.0	2.8	0
AF238-21	11.1	16.6	70.8	1.5	4.9	0
CF7523-1	14.8	20.4	64.8	0.0	2.2	0
G712-1	17.1	16.6	66.3	0.0	5.5	1

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

Table 65. Percentage of yield by distribution into grade size classes, percent misshapen tubers, and hollow heart ratings for 10 late maturing potato varieties grown in West Virginia - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4½ inches	Over 4½ inches	% Mis- shapen	Hollow heart ¹
Michibonne	6.2	9.2	78.1	6.5	1.7	0
Michimac	7.3	14.9	75.2	2.6	0.9	1
Rosa	13.6	21.1	65.3	0.0	0.6	2
Shepody	5.6	15.9	69.5	9.0	10.3	1
AF92-3	9.7	15.2	70.7	4.4	15.5	0
AF303-5	10.7	12.3	69.8	7.2	5.0	3
CF7353-1	7.1	10.5	73.8	8.6	2.9	1
F67128	7.5	13.3	72.6	6.6	2.9	0
F68036	6.2	10.5	62.6	20.7	5.1	0
F73008	8.9	10.7	72.8	7.8	19.4	0

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

are presented in Table 66. Russet Burbank produced a high percentage of misshapen tubers but Lemhi produced no misshapen tubers. Since these long type tuber varieties were not sized by weight, the sizing data by mean diameter of tubers cannot be used for comparison with the same varieties grown in other NE107 tests.

Multigenic Late Blight Trials:

Multigenic late blight ratings for early, medium, late, and russeted varieties grown in West Virginia during 1981 are not available. Climatic, soil, and weed conditions in these plot areas apparently were very unfavorable for good data collection.

Storage Characteristics:

Most potatoes grown in the northeastern United States and Canada are stored and marketed for many months after harvest. Therefore, it is very important to determine how new clones and varieties keep when stored at low and high temperatures before they are released for commercial production. These storage studies also provide a clue as to which varieties must be treated for sprout inhibition, treated for storage rots, or be sold very early in the marketing season.

Desirable storage characteristics for varieties grown in late season production area are: minimal weight loss, minimum sprouting, a long rest period, low storage loss from tuber rots, and freedom from tuber defects enhanced by storage conditions.

Data presented in Tables 67 through 71 show percentage of weight loss for seven early and medium early, ten medium, six medium late, four late maturing varieties, and four russeted varieties grown in the 1980 variety trials at Presque Isle, Maine, and stored at three different temperatures for about five months. As a guideline for interpretation of the weight loss data, total weight losses of 5, 10, and 14 percent at 38F., 45F., and 50F., respectively, are considered borderline to excessive. Varieties which exceed these reasonable guidelines are very difficult to store for extended periods of time even when treated with sprout inhibitors. Tubers that shrink and become soft and discolor in storage are unattractive when marketed for fresh pack and sliver excessively if used for chips or french fries. Note that most varieties grown in the 1980 trial at Presque Isle exceeded the desirable guideline limits probably because of the advanced maturity at harvest time, as indicated by the high specific gravities.

In early March 1981, when the sprout and weight losses were determined, the samples were also examined for storage disorders. The tuber samples from 38F. storage were moved to 45F. storage where they remained until June 2, 1981. Results of this extended storage period are presented in Tables 72 through 76. A total weight loss of up to 20 percent for this long storage period is a reasonable

Table 66. Percentage of yield by distribution into grade size classes and percent misshapen tubers for 5 russeted potato varieties grown in West Virginia - 1981.

Variety	1½ to 1-7/8 inches	1-7/8 to 2½ inches	2½ to 4½ inches	Over 4½ inches	% Mis- shapen
BelRus	18.3	24.6	57.1	0.0	3.7
Butte	19.1	20.3	57.9	2.7	7.3
Centennial Russet	16.1	14.8	68.6	0.5	2.2
Lemhi	8.8	13.2	67.4	10.6	0.0
Russet Burbank	16.3	17.5	63.9	2.3	18.9

Table 67. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 7 early and medium early maturing potato varieties during storage from September 12, 1980 to March 6, 1981 at 38, 45, and 50F.

Variety	38F. ¹		45F. ¹		50F. ¹		Tuber Rot
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures ²
Cobbler	0.8	5.9	7.0	12.4	10.7	17.9	5.7
Superior	1.8	7.9	2.6	8.6	3.2	10.8	1.0
Trent	0.0	7.8	2.4	10.0	3.8	12.1	0.0
C7232-4	0.5	9.3	9.6	18.6	4.8	13.4	2.7
F69026	2.0	8.8	2.6	10.7	9.9	16.1	3.7
G6880-1	8.3	15.9	4.8	13.8	4.8	12.0	5.0
G712	4.8	10.6	3.4	10.4	6.3	14.1	2.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 68. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 10 medium maturing potato varieties during storage from September 16, 1980 to March 6, 1981 at 38, 45, and 50F.

Variety	38F. ¹		45F. ¹		50F. ¹		Tuber Rot ²
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures
Kennebec	0.0	8.8	1.2	10.4	1.6	11.2	0.3
Croatan	0.0	8.6	6.3	18.3	9.0	19.2	4.0
Rideau	0.8	9.8	2.4	10.0	3.2	13.9	1.3
Yukon Gold	0.0	18.2	0.4	5.5	0.8	7.4	0.3
AF238-21	15.2	22.9	27.4	39.0	6.4	16.0	12.7
AF238-66	36.6	46.0	30.0	41.1	12.5	23.1	16.3
AK24-3	0.0	8.0	0.5	7.2	0.7	7.9	0.0
C7358-14A	0.0	7.4	2.8	10.6	6.2	18.0	0.7
C7358-26A	0.1	6.4	5.0	12.8	6.6	17.4	0.0
W718	0.0	8.5	8.7	16.7	2.0	10.8	3.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 69. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 6 medium late maturing potato varieties during storage from October 16, 1980 to March 6, 1981 at 38, 45, and 50F.

Variety	38F. ¹		45F. ¹		50F. ¹		Tuber Rot ²
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures
Kennebec	10.4	20.5	15.7	27.2	9.8	20.4	9.7
Shepody	14.7	21.3	9.2	15.1	13.2	21.8	10.0
AF92-3	9.2	18.9	5.0	12.9	15.4	28.2	8.3
B6043-WV6	8.3	18.5	7.0	18.8	5.4	19.2	10.7
BR5991-WV16	5.8	14.6	8.4	18.6	7.1	17.7	7.0
F67036	2.5	9.8	14.6	28.3	2.6	12.2	5.3

¹Relative humidity maintained at 85%

²Based on a 300-tuber sample.

Table 70. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 4 late maturing potato varieties during storage from October 21, 1980 to March 6, 1981 at 38, 45, and 50 F.

Variety	38F. ¹		45F. ¹		50F. ¹		Tuber Rot
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures ²
Buckskin	1.9	7.2	3.6	9.6	4.9	11.7	4.3
Katahdin	8.2	13.8	11.6	18.6	5.8	14.6	8.3
B8086-3	3.6	7.6	9.0	14.7	6.4	12.4	4.3
CD106-16	3.6	8.6	7.9	14.3	11.8	22.2	5.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 71. Effect of storage temperature upon sprout loss, total weight loss, and percent tuber rot for 4 russet and long type potato varieties during storage from October 21, 1980 to March 6, 1981 at 38, 45, and 50F.

Variety	38F. ¹		45F. ¹		50F. ¹		Tuber Rot ²
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	Total of 3 Temperatures
Butte	3.8	10.5	2.2	9.6	5.8	14.6	1.3
Centennial Russet	2.3	9.3	5.4	12.9	3.2	12.0	2.6
Lemhi	0.0	6.2	2.5	8.2	7.2	16.7	0.7
Russet Burbank	0.0	6.2	1.2	6.4	3.8	11.0	0.7

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 72. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 7 early and medium early maturing potato varieties during storage at 38F. from September 16, 1980 to March 6, 1981, and then at 45F. until June 2, 1981.

Variety	38F. ¹		45F. ¹		38 and 45F. ¹		Tuber Rot ²
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures
Cobblers	0.8	5.9	13.5	17.4	6.7	23.3	1.3
Superior	1.8	7.9	11.0	14.9	12.8	22.8	0.3
Trent	0.0	7.8	9.0	12.5	9.0	20.3	1.3
C7232-4	0.5	9.3	9.8	14.1	10.3	23.4	1.3
F69026	2.0	8.8	5.5	8.4	7.5	17.2	2.3
G6880-1	8.3	15.9	2.0	4.6	10.3	20.5	0.7
G712	4.8	10.6	11.5	14.9	16.3	25.5	1.7

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 73. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 10 medium maturing potato varieties during storage at 38F. from September 16, 1980 to March 6, 1981, and then at 45F. until June 2, 1981.

Variety	38F. ¹		45F. ¹		38 and 45F. ¹		Tuber Rot
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures ²
Kennebec	0.0	8.8	3.7	7.8	3.7	16.6	0.3
Croatan	0.0	8.6	10.8	16.6	10.8	25.2	4.7
Rideau	0.8	9.8	2.6	6.6	3.4	16.4	1.7
Yukon Gold	0.0	18.2	2.6	12.2	2.6	30.4	1.3
AF238-21	15.2	22.9	9.5	16.6	24.7	39.5	6.3
AF238-66	36.6	46.0	8.2	14.2	44.8	60.2	11.0
AK24-3	0.0	8.0	6.2	9.2	6.2	17.2	0.0
C7358-14A	0.0	7.4	9.2	13.8	9.2	21.2	0.7
C7358-26A	0.1	6.4	12.0	17.4	12.1	23.8	0.0
W718	0.0	8.5	3.2	7.2	3.2	15.7	0.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 74. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 6 medium late maturing potato varieties during storage at 38F. from October 16, 1980 to March 6, 1981, and then at 45F. until June 2, 1981.

Variety	38F. ¹		45F. ¹		38 and 45F. ¹		Tuber Rot ²
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures
Kennebec	10.4	20.5	3.6	4.2	14.0	24.7	4.3
Shepody	14.7	21.3	5.3	7.6	20.0	28.9	4.0
AF92-3	9.2	18.9	6.3	17.8	15.5	36.7	8.7
B6043-WV6	8.3	18.5	2.6	6.0	10.9	24.5	5.3
BR5991-WV16	5.8	14.6	2.6	7.0	8.4	21.6	9.7
F67036	2.5	9.8	7.4	10.8	9.9	20.6	1.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 75. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 4 late maturing potato varieties during storage at 38F. from October 21, 1980 to March 6, 1981, and then at 45F. until June 2, 1981.

Variety	38F. ¹		45F. ¹		38 and 45F. ¹		Tuber Rot
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures ²
Buckskin	1.9	7.2	4.6	7.6	6.5	14.8	1.7
Katahdin	8.2	13.8	2.1	4.6	10.3	18.4	2.0
B8086-3	3.6	7.6	8.4	11.5	12.0	19.1	1.7
CD106-16	3.6	8.6	6.8	9.8	10.4	18.4	1.7

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 76. Effect of storage temperatures upon sprout loss, total weight loss, and percent tuber rot for 4 russet and long type potato varieties during storage at 38F. from October 21, 1980 to March 6, 1981, and then at 45F. until June 2, 1981.

Variety	38F. ¹		45F. ¹		38 and 45F. ¹		Tuber Rot
	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Sprout Loss	% Total Wt. Loss	% Total of 3 Temperatures ²
Butte	3.8	10.5	5.0	11.6	8.8	22.1	1.3
Centennial Russet	2.3	9.3	3.0	6.2	5.3	15.5	2.7
Lemhi	0.0	6.2	8.4	11.6	8.4	17.8	0.3
Russet Burbank	0.0	6.2	7.2	10.2	7.2	16.4	0.3

¹Relative humidity maintained at 85%.

²Based on a 300-tuber sample.

Table 77. Sprouting characteristics of potato varieties at Presque Isle, Maine - 1980.

Variety ¹	Days to Indicated Sprout Length				
	First pip	1/8 inch	1/4 inch	3/8 inch	1/2 inch
<u>Early and Medium Early Varieties. Harvested - September 10, 1980.</u>					
Cobbler	131	138	145	160	190
Superior	111	109	118	124	145
Trent	111	112	118	131	138
C7232-4	111	114	124	131	145
F69026	138	145	148	152	160
G6880-1	152	160	166	180	190
G712-1	111	120	131	145	152
<u>Medium Maturing Varieties. Harvested - September 15, 1980.</u>					
Croatian	119	126	133	140	147
Kennebec	140	147	155	168	175
Rideau	119	133	140	147	155
Yukon Gold	126	147	151	155	161
AF238-21	106	110	115	119	126
AF238-66	119	126	140	148	155
AK24-3	140	147	161	175	185
C7358-14A	119	133	140	147	155
C7358-26A	75	86	98	106	113
W718	133	140	155	168	175
<u>Medium Late Maturing Varieties. Harvested - September 28, 1980.</u>					
Kennebec	120	127	134	148	155
Shepody	106	113	120	127	142
AF92-3	93	100	106	120	134
B6093-WV6	162	172	176	218	246
BR5991-WV16	93	97	100	120	134
F68036	106	110	113	127	142
<u>Late Maturing Varieties. Harvested - October 2, 1980.</u>					
Buckskin	138	151	172	193	214
Katahdin	96	123	130	138	144
B8086-3	89	93	96	97	99
CD106-16	89	92	96	116	130

. . . . continued

Table 77 - continued

Variety ¹	Days to Indicated Sprout Length				
	First pip	1/8 inch	1/4 inch	3/8 inch	1/2 inch
<u>Russeted and Long Type Varieties. Harvested - October 9, 1980.</u>					
Butte	95	102	109	123	137
Centennial Russet	109	131	137	144	162
Lemhi	89	102	116	131	137
Russet Burbank	131	144	151	165	179

¹Planted - May 20, 1980. Stored at 45F., 85% R.H.

guideline for most varieties. These data show that the Maine, New Hampshire, Vermont, and New Brunswick, Canada potato growers could, with the use of sprout inhibitors and choice of variety, extend the marketing season to 12 months or until new crop potatoes could be available.

In part, storage ability of any potato variety and its value for seed in southern United States and South American markets is related to the length of the rest period genetically inherent to a variety and how rapidly sprout development takes place after dormancy has been broken. In 1980, ten tuber samples of each variety grown at Presque Isle were selected at random from the six replicates 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 lengths were continued until sprout lengths reached one-half inch in length. Later, these measurements were converted into days from harvest to the sprout lengths indicated in Table 77.

Rest periods for the varieties grown at Presque Isle in 1980 and observed during the 1980-81 storage season varied from a low of 99 days for seedling B8086-3 to a high of 246 days for B6093-WV6. In general, rest periods were quite long for these varieties grown in 1980. Apparently, there is quite a difference between seasons also because several of the same varieties grown in the 1979 Presque Isle variety trial broke dormancy about ten days earlier during the 1979-80 storage season and reached one-half inch in length some ten days to two weeks earlier than in 1980-81 storage season.

Storage disorders were observed during the storage and sprouting periods and will be reported in the varietal observations section of this bulletin.

Preparation Losses:

Peeling, trimming, or paring losses vary by variety when hand peeled, steam-lye and steam peeled, or by use of abrasive peeling methods with the latter probably the most severe of the four methods. In 1980, duplicate 15-pound samples of tubers from each variety grown at Grand Isle, Maine were saved and stored at 38F. and 85% relative humidity until February 10, 1981. The samples were warmed for 48 hours at 65F. and abrasively peeled on February 13, 1981.

Abrasive peeling and total preparation losses for 25 potato varieties grown in 1980 at Grand Isle, Maine are presented in Table 78. Varieties with deep eyes, irregular surfaces, and pigmented skin, scab lesions, and deeply indented stem ends usually resulted in the highest preparation losses. Of the 25 varieties peeled and trimmed, 22 varieties had total preparation losses of about 20% or less which is a rough guideline used as the maximum acceptable loss by french fry processors. Only six of the 25 varieties had peeling losses of less than 15% which is the guideline used by chippers.

Table 78. Preparation losses for 25 potato varieties grown at Grand Isle, Maine - 1980.

Variety ¹	% Abrasive peeling ² losses	% Paring losses	Total % Preparation losses
Buckskin	8.1	6.8	14.9
Butte	13.6	3.8	17.4
Centennial Russet	10.8	4.8	15.6
Cobbler	12.3	9.1	21.4
Croatan	6.0	6.1	12.1
Katahdin	7.6	6.8	14.4
Kennebec (med.)	10.2	6.6	16.8
Kennebec (med. late)	8.7	5.8	14.5
Lemhi	15.6	6.0	21.6
Russet Burbank	12.3	6.4	18.7
Shepody	12.2	7.0	19.2
Superior	8.6	7.8	16.4
AF92-3	16.3	4.6	20.9
AF238-21	14.2	4.8	19.0
AF238-66	8.8	4.2	13.0
AK24-3	14.1	3.4	17.5
B8086-3	6.3	7.9	14.2
BR5991-WV16	11.6	6.8	18.4
C7232-4	9.8	6.8	16.6
C7358-14A	14.1	3.8	17.9
C7358-26A	13.2	4.9	18.1
CD106-16	11.2	6.6	17.8
F68036	13.9	4.8	18.7
F69026	13.0	6.9	19.9
W718	9.4	6.2	15.6

¹Samples were stored at 38F., 85% R.H. from harvest until February 10, 1981, then warmed for 48 hours at 65F. before peeling.

²Average of two 8-pound samples peeled for two minutes in a Univex H-200 abrasive type peeler.

Using the 15% guideline, Buckskin, Croatan, Katahdin, AF238-66, B8086-3, and Kennebec met this goal.

After Cooking Darkening:

After cooking darkening causes some varieties in some years to be undesirable for boiling and processing into by-products, such as mashed, diced, patties, flakes, granules, and other products which are not fried. Varieties vary between years, among locations, and where grown under various cultural conditions in the tendency to show after cooking darkening.

Data presented in Table 79 represent the after cooking darkening indices for 30 potato varieties grown at Grand Isle, Maine, in 1980 and stored for approximately five months at 38F. There are no known standards for after cooking darkening but an acceptable rating by one processor was 7.0 or higher for frozen mashed and diced potato products. If this rating of 7.0 or higher is used as a standard, then only six of the 30 varieties listed in Table 79 were acceptable for by-product use.

Appearance and Defects:

General tuber appearance and visual defects in marketing fresh potatoes, particularly when washed prior to packaging in vent-view, clear poly bags, or count boxes are of great importance since many consumers buy a product on cosmetic appearance rather than nutritional or quality values. A detailed subjective classification of varieties grown at Presque Isle, Maine in 1980 was made for appearance and external defects. Maturity, skin color, brightness, tuber shape, size uniformity, smoothness of skin, and several external defects, such as sclerotial bodies, silver scurf, pitted and common scab, and other surface lesions, were all considered in making these ratings.

Appearance and external defects indices, as presented in Table 80, provide a relative comparison among new clones and standard commercial varieties grown under the same soil, cultural, and climatic conditions. In Table 80, the higher the index number, the better the appearance and fewer defects. In the final index, some of the defects are subtracted from the appearance index, since many of the defects recorded could be reduced or eliminated by improved cultural and/or handling practices. Note that a great number of varieties had better appearance ratings than the standards of Katahdin, Kennebec, Superior, and Russet Burbank.

As a point of reference, the average final index of 80 represents an almost ideal tuber in terms of eye appeal or cosmetic appearance. The data presented in Table 80 indicate that 16 of the 31 varieties evaluated had excellent appearance in 1980.

Table 79. After cooking graying indices for 30 potato varieties grown at Grand Isle, Maine - 1980.

Variety ¹	Color index ²
Buckskin	6.0
Butte	6.8
Centennial Russet	6.5
Cobbler	6.5
Croatan	6.7
Katahdin	6.3
Kennebec	6.5
Lemhi	6.4
Rideau	7.0
Russet Burbank	6.3
Shepody	6.3
Superior	6.0
Trent	6.5
Yukon Gold	Yellow Flesh
AF92-3	6.3
AF238-21	6.9
AF238-66	6.2
AK24-3	6.8
B6043-WV6	6.1
B8086-3	6.6
BR5991-WV16	6.1
C7232-4	7.3
C7358-14A	6.8
C7358-26A	7.3
CD106-16	7.1
F68036	6.7
F69026	6.7
G6880-1	7.2
G712-1	7.3
W718	6.5

¹All tuber samples were stored at 38F., 85% R.H. from harvest until February 11, 1980.

²Tubers diced, blanched for 5 minutes in boiling water, 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 80. Appearance and defects indices for 31 potato varieties grown at Aroostook Farm, Presque Isle, Maine - 1980.

Variety	Appearance index	Defects index	Final index ²
Buckskin	80.3	3.3	77.0
Butte	67.4	0.0	67.4
Centennial Russet	84.2	1.7	82.5
Cobbler	65.1	2.9	62.2
Croatan	80.3	0.2	80.1
Katahdin	81.1	3.0	78.1
Kennebec (med.)	85.3	2.8	82.5
Kennebec (med. late)	66.1	4.9	61.2
Lemhi	88.3	1.6	86.7
Rideau	92.3	2.8	89.5
Russet Burbank	68.9	2.6	66.3
Shepody	74.4	6.2	68.2
Superior	79.0	1.1	77.9
Trent	87.9	0.8	87.1
Yukon Gold	88.1	5.7	82.4
AF92-3	81.2	1.9	79.3
AF238-21	90.5	2.9	87.6
AF238-66	79.8	6.0	73.8
AK24-3	89.0	0.0	89.0
B6043-WV6	71.4	2.7	68.7
B8086-3	84.7	4.2	80.5
BR5991-WV16	77.9	4.1	73.8
C7232-4	85.7	1.4	84.3
C7358-14A	91.2	2.8	88.4
C7358-26A	85.2	0.9	84.3
CD106-16	72.4	8.4	64.0
F68036	83.7	0.4	83.3
F69026	78.2	1.2	77.0
G6880-1	97.5	1.3	96.2
G712-1	89.4	6.4	83.0
W718	80.1	2.0	78.1

¹Samples were stored at 38F., 85% R.H. from harvest until examined in January 1980.

²Rating code:

>80 = excellent

60 - 79 = satisfactory

<60 = unsatisfactory

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 mid-December 1981. Since by option voted at the 1979 annual meeting of the NE107 Technical Committee, cooperators were not required to provide samples for uniform evaluation for specific gravity and chip color determinations in Maine; therefore, chip color determinations are not available from all test locations.

For tuber samples which were available, potato chips were made by cutting each tuber in half and taking a slice from the center by use of a rotary food slicer. Tuber slices were rinsed in lukewarm water, placed on paper toweling to remove excess water, and fried in liquid vegetable 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 or 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 PC11 Color Chart 1206-U.

Chip colors for the Connecticut variety trial are presented in Table 81. Allagash Russet had the lightest chip color of 5.1, followed by Penn 71, F69026, Atlantic, Kennebec, and AF238-66. Sixteen of the 23 varieties grown in Connecticut had acceptable chip colors (7.0 or less) and only three varieties were higher than 8.0 in color.

Chip colors from unreplicated samples from Florenceville, New Brunswick, Canada are presented in Table 82. Seedling AF238-66 ranked first in chip color at 5.2, followed by C7232-4, Chipbelle, BR7093-23, and C7358-14A. Only six of the 18 varieties in trial had acceptable chip colors (7.0 or less) and another four had chip colors less than 8.0.

Chip color indices for all varieties grown at Presque Isle and Newport, Maine are shown in Table 83. Only one variety, C7232-4, had acceptable chip color at Presque Isle. At Newport, Chipbelle and C7232-4 were the only two varieties with acceptable chip color indices.

At Deerfield, Massachusetts, Atlantic had the lightest chip color followed by Allagash Russet, BR7093-23, and AF238-21. Another five varieties were between 7.0 and 8.0 in chip color.

Potato chip colors for 19 potato varieties grown at Wooster, Ohio are shown in Table 85. Note that the abbreviated chip color standards issued by the Potato Chip/Snack Food Association were used in this test. Using the color indice rating of 3.0 or lighter for acceptability, all varieties grown in Ohio were acceptable in color.

Table 81. Chip color indices for 23 potato varieties grown in Connecticut - 1981.

Variety	Chip color ²
Allagash Russet	5.1
Atlantic	5.6
Butte	7.9
Centennial Russet	9.1
Green Mountain	8.0
Katahdin	6.8
Kennebec	5.8
Lemhi	6.4
Michibonne	7.2
Michimac	7.2
Penn 71	5.3
Russet Burbank	6.6
Shepody	6.3
Superior	6.3
AF92-3	6.3
AF238-66	5.8
B6043-WV6	7.6
B8086-3	6.9
BR5991-WV16	6.3
BR7093-23	6.5
C7358-26A	6.6
F69026	5.4
W564-3A	8.2
Waller Duncan L.S.D. (0.05)	0.9

¹Chips with lower indices are lighter in color.

Table 82. Chip color indices for 18 potato varieties grown at Florenceville, New Brunswick, Canada - 1981.

Variety	Chip color ¹
Chipbelle	6.6
Kennebec	8.2
Lemhi	9.0
Rosa	8.2
Russet Burbank	8.8
AF92-3	8.6
AF186-5	7.0
AF205-9	7.4
AF238-66	7.2
AF330-1	5.2
B6043-WV6	9.0
BR5991-WV16	7.6
BR7093-23	6.6
C7232-4	5.8
C7358-14A	6.8
CC26-1A	8.0
CF7353-1	7.4
W564-3A	9.0

¹Chips with lower indices are lighter in color.

Table 83. Chip color indices for varieties grown at two locations in Maine - 1981.

Variety	Location and Chip Color ¹	
	Presque Isle	Newport
Allagash Russet		8.1
Atlantic		8.1
Belchip		8.2
Buckskin		8.2
Butte	10.0	
Chipbelle	8.1	6.7
Croatan	8.6	
Denali		8.4
Katahdin	9.3	9.4
Kennebec (med.)	9.3	9.3
Kennebec (med. late)	9.2	
Lemhi	9.5	
Michibonne	9.5	9.2
Michimac	9.2	8.9
Monona		7.6
Norchip		8.2
Rideau	10.0	
Rosa	8.1	
Russet Burbank	9.5	
Shepody	8.8	
Superior	9.1	9.1
Trent	8.8	
Yukon Gold	9.9	
AF92-3	8.6	
AF186-5		8.0
AF201-25	9.1	
AF238-21	8.8	7.9
AF238-66	8.2	7.9
AF303-5	8.7	8.8
AF330-1	8.0	7.8
B6043-WV6	9.3	
B8086-3	9.4	9.9
B8943-4	9.1	
B8972-1	8.9	
BR5991-WV16	8.3	
BR7088-18	8.4	8.6
BR7093-23	8.1	8.3
C7232-4	6.4	6.6
C72132-2	8.8	
C7358-14A	8.7	
C7358-26A	9.6	
C7490-2	8.3	
C74109-8	9.6	
CC26-1A	8.9	8.3

. . . Cont.

Table 83 - continued

Variety	Location and Chip Color ¹	
	Presque Isle	Newport
CF7353-1	7.8	8.5
CF7523-1	10.0	9.5
F68036	9.9	
F69026	8.6	8.1
F73008	9.0	8.2
G6880-1	8.1	
G712-1	8.9	9.6
MN7973	9.4	
MN8224	8.5	
MN8757	10.0	10.0
MN9319	8.3	
W564-3A		9.9
W718	8.7	
Waller Duncan L.S.D. (0.05)	0.5	0.5

¹Chips with lower indices are lighter in color.

Table 84. Chip color indices for 14 potato varieties grown at Deerfield, Massachusetts - 1981.

Variety	Chip color ¹
Allagash Russet	6.4
Atlantic	6.0
BelRus	7.5
Campbell 12	8.4
Centennial Russet	8.5
Green Mountain	9.1
Hudson	9.1
Katahdin	7.7
Superior	7.2
AF238-21	6.8
B8086-3	7.7
BR7093-23	6.5
CD106-16	7.9
W564-3A	8.9
Waller Duncan L.S.D. (0.05)	0.9

¹Chips with lower indices are lighter in color.

Table 85. Chip color indices for 19 potato varieties grown at Wooster, Ohio - 1981.

Variety	Chip color ¹
Cobbler	1.0
Denali	1.0
Katahdin	1.0
Norchip	1.0
Shepody	1.0
Superior	1.0
AF92-3	2.0
AF238-4	1.0
AF238-66	2.0
AF330-1	1.0
B6043-WV6	2.0
B8086-3	1.0
BR5991-WV16	2.0
BR7093-23	1.0
CC26-1A	1.0
C7358-14A	1.0
C7358-26A	1.0
F68036	3.0
F69026	1.0

¹Chips with lower indices are lighter in color. Indices from fry color standards of the Potato Chip/Snack Food Association. Color rating of 3.0 or lighter is acceptable.

Pennsylvania chip colors for 18 potato varieties grown in that state are presented in Table 86. Penn 71 and AF238-66 had the lightest chip color index of 6.2, followed by Chippelle and Denali. Another six varieties had chip color indices of 7.0 or less. Only eight of the 18 varieties grown in Pennsylvania had unacceptable chip color.

At Guildhall, Vermont, only two varieties, Allagash Russet and Buckskin, had acceptable chip color. All other varieties except AF238-66 and F69026 were very dark colored.

Chip color indices for four variety tests conducted in West Virginia are shown in Table 88. Only two varieties, AF92-3 and C7232-4, came close to having acceptable chip color. All other varieties grown in the four trials had unacceptable chip color indices.

Tuber samples from the 1980 variety trial at Presque Isle, Maine were stored at 38F., removed on January 28, 1981, and warmed at 70F. for two and three-week periods. On February 11, 1981, samples from 38F. storage were chipped and rated for chip colors which were all very dark, as shown in Table 89, except for seedling C7232-4, which had an index of 9.4. Tubers reconditioned for two weeks were chipped and rated on February 10, 1981. These color indices are also presented in Table 89. Several varieties had made some progress in returning to the original chip color indices as determined on December 2, 1980. Seedling C7232-4 made the greatest improvement, but note that Buckskin also returned to the original Fall chip color of 8.8. When samples were reconditioned for three weeks, many more varieties showed some improvement in chip colors; but several made no improvement and probably these varieties would never recondition regardless of time exposed to 70F.

During early December 1981, samples from all varieties grown at Presque Isle, Maine in 1981 were tested for french fry color and texture. One french fry plug, 1/2-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 with paper toweling, and fried at 375F. for four minutes in liquid vegetable shortening. Each french fry was classified into one of five color classes ranging from "1 - very light" to "5 - very dark" using USDA Color Standards for Frozen French Fried Potatoes.

Color indices for french fries were calculated by multiplying the number of fries in each color class by the color class number, 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 1981 are presented in Table 90. Thirty-four of the 48 varieties tested had satisfactory french fry color (3.0 or less) but only 20 varieties had satisfactory texture ratings (1.2 or less).

Table 86. Chip color indices for 18 potato varieties grown in Pennsylvania - 1981.

Variety	Chip color ¹
Belchip	6.8
BelRus	7.4
Butte	8.3
Chipbelle	6.7
Denali	6.7
Green Mountain	9.2
Katahdin	7.1
Lemhi	6.8
Norchip	6.9
Penn 71	6.2
Rosa	7.2
Shepody	7.0
AF92-3	6.8
AF238-66	6.2
B6043-WV6	8.8
B8086-3	7.9
BR5991-WV16	7.5
F69026	6.8
Waller Duncan L.S.D. (0.05)	1.1

¹Chips with lower indices are lighter in color.

Table 87. Chip color indices for 20 potato varieties grown in Vermont - 1981.

Variety	Chip color ¹
Allagash Russet	6.6
Belchip	8.0
BelRus	8.4
Buckskin	6.8
Campbell 13	8.5
Chippewa	8.6
Cobbler	8.5
Denali	8.5
Katahdin	9.1
Kennebec	8.5
Pungo	10.0
Russet Burbank	9.4
Shepody	8.8
AF92-3	8.3
AF238-66	7.6
B6043-WV6	9.9
B8086-3	8.5
BR5991-WV16	9.5
CA02-7	8.5
F69026	7.3
Waller Duncan L.S.D. (0.05)	0.9

¹Chips with lower indices are lighter in color.

Table 88. Chip color indices for 35 potato varieties grown in West Virginia - 1981.

Variety	Chip color ¹
<u>Early Maturing</u>	
Allagash Russet	8.1
Kennebec	9.6
AF238-66	9.0
AF330-1	8.1
C7232-4	7.2
C7358-14A	10.0
C7358-26A	9.9
F69026	9.4
W564-3A	10.0
W718	9.8
Waller Duncan L.S.D. (0.05)	0.5
<u>Medium-Early Maturing</u>	
Atlantic	8.2
Croatan	8.1
Denali	9.2
Monona	8.0
Tobique	8.5
AF186-5	8.8
AF205-9	8.2
AF238-21	8.9
CF7523-1	10.0
G712-1	9.8
Waller Duncan L.S.D. (0.05)	0.5
<u>Late Maturing</u>	
Michibonne	8.5
Michimac	10.0
Rosa	9.3
Shepody	9.9
AF92-3	7.4
AF303-5	9.3
CF7353-1	8.7
F67128	8.2
F68036	9.2
F73008	8.8
Waller Duncan L.S.D. (0.05)	0.6

. . . . Cont.

Table 88 - continued

Variety	Chip color ¹
<u>Russeted Varieties</u>	
BelRus	8.2
Butte	9.7
Centennial Russet	10.0
Lemhi	7.9
Russet Burbank	9.3
Waller Duncan L.S.D. (0.05)	0.4

¹Chips with lower indices are lighter in color.

Table 89. Potato chip indices for 30 potato varieties grown at Presque Isle, Maine - 1980.

Variety ¹	50F.	38F.	2 wks.	3 wks.
	12-2-80	2-11-80	70F. 2-10-81	70F. 2-10-81
Buckskin	8.8	10.0	8.8	9.1
Butte	10.0	10.0	10.0	10.0
Centennial Russet	10.0	10.0	10.0	10.0
Cobbler	9.0	10.0	9.7	9.4
Croatan	8.1	10.0	9.7	8.5
Katahdin	9.5	10.0	10.0	10.0
Kennebec	8.8	10.0	10.0	9.4
Lemhi	10.0	10.0	9.6	9.1
Rideau	9.5	10.0	10.0	9.9
Russet Burbank	9.5	10.0	9.9	10.0
Shepody	8.7	10.0	10.0	9.3
Superior	7.8	10.0	9.1	8.6
Trent	8.1	10.0	10.0	9.5
Yukon Gold	9.8	10.0	10.0	9.7
AF92-3	9.8	10.0	10.0	10.0
AF238-21	7.2	10.0	10.0	9.3
AF238-66	7.1	10.0	10.0	8.7
AK24-3	9.1	10.0	10.0	9.8
B6043-WV6	8.8	10.0	10.0	10.0
B8086-3	10.0	10.0	9.8	9.6
BR5991-WV16	8.7	10.0	10.0	10.0
C7232-4	4.9	9.4	7.6	6.1
C7358-14A	7.5	10.0	10.0	9.9
C7358-26A	8.7	10.0	10.0	9.8
CD106-16	9.6	10.0	10.0	10.0
F68036	10.0	10.0	10.0	10.0
F69026	6.6	10.0	8.8	8.2
G6880-1	7.3	10.0	9.8	8.2
G712-1	6.9	10.0	10.0	9.8
W718	8.1	10.0	9.2	8.5
Bayes L.S.D. (0.05)	0.6	N.S.	0.4	0.4

¹Chips with lower indices are lighter in color.

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

Table 90. French fry color and texture indices for 48 potato varieties grown at Presque Isle, Maine - 1981.

Variety	French fry	
	Color ¹	Texture ²
Butte	4.4	1.4
Chipbelle	2.1	1.3
Croatan	2.4	1.0
Katahdin	3.3	1.6
Kennebec (med.)	2.6	1.0
Kennebec (med. late)	3.0	1.4
Lemhi	3.0	1.8
Michibonne	3.0	1.5
Michimac	2.7	1.9
Rideau	4.5	2.1
Rosa	1.7	1.5
Russet Burbank	3.4	1.5
Shepody	3.0	1.6
Superior	3.0	1.4
Trent	2.5	1.2
Yukon Gold	4.1	1.0
AF92-3	2.4	2.1
AF201-25	3.2	1.8
AF238-21	2.5	1.0
AF238-66	2.0	1.2
AF303-5	2.6	2.2
AF330-1	1.7	1.1
B6043-WV6	3.6	1.0
B8086-3	3.4	1.1
B8943-4	2.6	1.8
B8972-1	2.6	1.5
BR5991-WV16	2.3	1.5
BR7088-18	1.9	1.5
BR7093-23	2.4	1.3
C7232-4	1.0	1.0
C72312-2	2.4	1.2
C7358-14A	2.7	1.5
C7358-26A	3.4	1.1
C7490-2	2.8	1.1
C74109-8	3.3	1.1
CC26-1A	3.1	1.0
CF7353-1	1.6	1.6
CF7523-1	3.6	1.0
F68036	4.4	1.7
F69026	2.6	1.0
F73008	2.3	2.0
G6880-1	2.5	1.0
G712-1	2.9	1.2

. . . Cont.

Table 90 - continued

Variety	French fry	
	Color ¹	Texture ²
MN7973	2.9	2.2
MN8224	1.5	0.9
MN8757	4.6	1.3
MN9319	2.3	1.9
W718	1.7	1.3
Waller Duncan L.S.D. (0.05)	0.4	0.5

¹French fries with lower indices are lighter in color.

²Lower texture indices indicate a mealier texture.

Seedpiece Spacing and Nitrogen Rate Studies:

Seedpiece spacing and nitrogen rate studies for Allagash Russet, AF186-5, and AF205-9 were repeated in 1981 because of the less than satisfactory plant stand attained in the 1980 tests. In 1981, all treatments had 99 or 100 percent plant stands.

Results of a seedpiece spacing and nitrogen rate study with the Allagash Russet are presented in Table 91. Increasing the seedpiece spacing from eight to 14 inches decreased total yields significantly at all three rates of nitrogen used. Tuber size distribution was toward the larger size classes as the seedpiece spacing increased, but not significantly. Yields did not necessarily increase as the nitrogen fertilization increased up to 160 pounds per acre. From the 1981 data presented in Table 91, it would appear that an 8-inch seedpiece spacing with a nitrogen rate of 130 pounds per acre would produce the highest total yield with an acceptable tuber size distribution.

Yields, specific gravities, and tuber size distribution data for a seedpiece spacing and nitrogen rate study with seedling AF186-5 are presented in Table 92. The data suggest that the eight and ten-inch seedpiece spacing provided the highest yields. Nitrogen rates higher than 100 pounds per acre did not increase yields significantly in this study.

Data for a nitrogen rate and seedpiece spacing study conducted with seedling AF205-9 are presented in Table 93. Eight-inch seedpiece spacing produced the highest total yield and up to 160 pounds of nitrogen per acre gave the highest yield.

Varietal Herbicide Damage:

Metribuzin herbicide damage to potatoes varies considerably among varieties. During 1981, another metribuzin susceptibility study was conducted with three seedling and two named varieties using varying rates of metribuzin applied at layby. Data presented in Table 94 indicate that yields of AF205-9, CC26-1A, AF186-5, and Chipbelle were not affected by layby applications of metribuzin. Foliage of Chipbelle was damaged after the application of 0.50 lb. of metribuzin at layby but apparently recovered from the damage. Jemseg, however, was damaged by metribuzin, as indicated by a yield decline from 378 cwt. per acre to 334 cwt. per acre as the rate of metribuzin increased from 0.10 A.I. per acre to 0.50 lb. A.I. per acre applied at layby.

Table 91. Effect of seedpiece spacing and nitrogen fertilization on total yield, specific gravity, and tuber size distribution of the Allagash Russet potato variety. Maine - 1981.

Seedpiece spacing and nitrogen fertilization rate ¹	Yield Cwt./Acre	Specific gravity	Percent tuber size distribution					
			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
<u>100 lbs. N/Acre</u>								
8 inches	318	1.079	2.9	14.0	23.2	50.0	9.9	0.0
10 "	282	1.077	3.2	17.0	25.2	43.0	11.6	0.0
12 "	277	1.078	2.1	12.4	20.7	50.0	14.8	0.0
14 "	262	1.080	3.1	10.7	20.3	51.8	14.1	0.0
<u>130 lbs. N/Acre</u>								
8 inches	353	1.079	3.6	12.0	26.4	47.7	10.3	0.0
10 "	306	1.079	3.0	12.4	22.1	49.7	12.4	0.4
12 "	285	1.078	1.7	10.8	21.8	56.0	9.7	0.0
14 "	277	1.080	1.9	6.3	18.4	53.1	19.8	0.5
<u>160 lbs. N/Acre</u>								
8 inches	343	1.081	2.6	9.9	22.8	52.9	11.2	0.6
10 "	311	1.080	3.1	11.5	21.7	51.4	12.3	0.0
12 "	335	1.081	3.9	11.3	18.0	52.5	13.2	1.1
14 "	268	1.082	4.2	9.2	16.0	45.2	25.4	0.0
Waller Duncan L.S.D. (0.05)	38	0.004						

¹Planted - May 21; killed - August 31; harvested - September 15, 1981.

P₂O₅ and K₂O held constant at 160 lbs. per acre.

Table 92. Effect of seedpiece spacing and nitrogen fertilization on total yield, specific gravity, and tuber size distribution of seedling variety, AF186-5. Maine - 1981.

Seedpiece spacing and nitrogen fertilization rate ¹	Yield Cwt./Acre	Specific gravity	Percent tuber size distribution						
			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	
<u>100 lbs. N/Acre</u>									
8 inches	298	1.080	6.1	24.5	30.6	33.3	5.5	0.0	
10 "	299	1.081	4.3	24.3	35.0	33.5	2.9	0.0	
12 "	286	1.079	5.4	15.9	24.9	43.5	10.3	0.0	
14 "	259	1.080	3.9	13.1	20.7	51.3	11.0	0.0	
<u>130 lbs. N/Acre</u>									
8 inches	295	1.081	4.4	19.8	29.2	42.3	4.3	0.0	
10 "	291	1.079	5.1	19.1	26.7	42.6	6.5	0.0	
12 "	272	1.077	3.9	13.5	20.6	52.9	9.1	0.0	
14 "	268	1.078	4.8	11.6	23.4	46.1	14.1	0.0	
<u>160 lbs. N/Acre</u>									
8 inches	299	1.079	4.4	22.7	31.9	35.0	6.0	0.0	
10 "	306	1.077	3.6	16.1	25.3	47.1	7.2	0.7	
12 "	299	1.078	3.6	13.3	20.8	55.5	8.8	0.0	
14 "	282	1.078	3.8	14.0	20.6	48.5	13.1	0.0	
Waller Duncan L.S.D. (0.05)	30	0.002							

¹Planted - May 21; killed - August 31; harvested - September 15, 1981.

P₂O₅ and K₂O held constant at 160 lbs. per acre.

Table 93. Effect of seedpiece spacing and nitrogen fertilization on total yield, specific gravity, and tuber size distribution of potato seedling, AF205-9. Maine - 1981.

Seedpiece spacing and nitrogen fertilization rate ¹	Yield Cwt./Acre	Specific gravity	Percent tuber size distribution				
			1½ to 1-7/8 inches	1-7/8 to 2¼ inches	2¼ to 2½ inches	2½ to 3¼ inches	3¼ to 4 inches
<u>100 lbs. N/Acre</u>							
8 inches	350	1.082	9.2	30.9	35.8	23.2	0.9
10 "	327	1.080	6.3	26.5	30.7	32.5	4.0
12 "	342	1.082	6.8	19.8	31.0	39.6	2.8
14 "	315	1.079	5.5	17.5	24.2	46.6	6.2
<u>130 lbs. N/Acre</u>							
8 inches	368	1.081	6.9	30.3	30.0	31.6	1.2
10 "	343	1.081	6.9	22.8	28.5	38.6	3.2
12 "	347	1.080	5.1	18.0	26.8	45.8	4.3
14 "	339	1.081	5.3	16.6	25.3	48.8	4.0
<u>160 lbs. N/Acre</u>							
8 inches	382	1.082	6.8	24.8	30.1	33.1	5.2
10 "	355	1.081	7.1	20.3	29.2	39.2	4.2
12 "	318	1.080	6.2	22.0	26.2	42.0	3.6
14 "	305	1.080	5.7	18.2	25.1	43.0	8.0
Waller Duncan L.S.D. (0.05)	27	0.003					

¹Planted - May 21; killed - August 31; harvested - September 15, 1981.

P₂O₅ and K₂O held constant at 160 lbs. per acre.

Table 94. Effect of three rates of metribuzin applied at layby on yield, specific gravity, crop injury, and weed control to 5 potato varieties. Maine - 1981.

Treatments ¹ Lbs. A.I./A. Applied At Layby	Yield Cwt./A.	Specific gravity	% Crop Injury and Weed Control			
			Crop Injury ²		Quackgrass ³	
			7-27	8-18	7-27	8-18
<u>AF205-9</u>						
0.10	320	1.073	1	0	100	100
0.25	337	1.073	1	1	98	98
0.50	331	1.074	1	1	99	98
<u>CC26-1A</u>						
0.10	310	1.074	0	1	100	100
0.25	304	1.073	0	0	100	99
0.50	300	1.072	1	1	99	99
<u>AF186-5</u>						
0.10	312	1.073	5	7	100	100
0.25	311	1.073	5	5	100	100
0.50	323	1.072	2	5	98	98
<u>Chipbelle</u>						
0.10	227	1.074	1	0	99	99
0.25	194	1.075	7	1	100	100
0.50	228	1.075	14	1	100	99
<u>Jemseg</u>						
0.10	378	1.070	2	3	99	99
0.25	347	1.071	3	4	99	99
0.50	334	1.072	2	2	100	100
<u>Waller Duncan</u>						
L.S.D. (0.05)	43	0.005				

¹Planted - May 26; killed - August 26; harvested - September 15, 1981.

Preemergence overall treatment of 0.50 lb. per acre of metribuzin applied - June 4. Temperature - 78F., clear; soil - moist; wind - 3-5 mph, north.

Layby treatments applied - July 20. Temperature - 64F., overcast; vines - moist; soil - dry; wind - 4-6 mph, south.

²Rating code: 0 percent = no crop damage.
100 percent = all crop plants killed.

³Rating code: 100 percent = complete absence of weeds and perfect or ideal crop.
0 percent = weeds dominate crop and almost all crop plants killed.

Observations for Varieties Grown in the
1981 Northeast Cooperative Variety Trials

The following notes, observations, and opinions represent a compilation of information from the many cooperators in the 1981 Northeast Potato Variety Trials. Most of the cooperators supplied observations on the data collection sheets and/or by additional written or oral communications. The senior author condensed the many observations for inclusion in this section of the variety trial report.

ACADIA RUSSET - A very recent release by Agriculture Canada which has been tested under seedling number F68036. Acadia Russet is a medium late maturing variety with resistance to leafroll, fusarium, and phoma tuber rot. Tubers are oblong-long in type, lightly russeted with a buff colored skin. This variety has excellent yield, good appearance, and good boiling and baking qualities. This should be a very acceptable variety for fresh market and restaurant trade in count boxes.

ALLAGASH RUSSET - Released by Maine in 1979 as a medium maturing, tightly russeted variety, with oblong-long type tubers. This variety has resistance to net necrosis. Yields have been variable among test locations and years. It also has a tendency toward hollow heart, tuber growth cracks, and misshapen tubers. It usually produces good chip color, has exceptionally good reconditioning ability, and excellent culinary quality.

ATLANTIC - A medium maturing variety with resistance to late blight, net necrosis, and golden nematode. Tubers are oblong, slightly netted, and very attractive. Atlantic is high yielding, high in specific gravity, and is an excellent chipper. In the mid-Atlantic areas, internal necrosis and hollow heart have been problems. In most other areas, however, it has been an excellent variety for fresh market and processing.

BATOCHÉ - A red skinned, medium-early maturing variety from Canada, it has good resistance to verticillium wilt. It has higher specific gravity than most red skinned varieties, retains its red color after harvesting, and is a very acceptable variety for early processing.

BELCHIP - A late maturing chipping variety that produces round, cream colored tubers. Belchip has resistance to late blight, common scab, and golden nematode. Yields have been equal to Katahdin but with higher specific gravities. Storage quality has been poor. Tubers are rough and poor in general appearance. Belchip chips well from the field, after storage, and after reconditioning.

BELLEISLE - A late maturing variety from Canada that produces oblong tubers that are slightly netted, and have very distinctive pink eyes.

This variety has resistance to net necrosis, common scab, and fusarium tuber rot. Yields and specific gravity of tubers have been good. It is a good baker, boiler, and usable for early french fry production. It received an early set-back in acceptance because of susceptibility to metribuzin herbicide damage.

BELRUS - A medium late maturing variety that produces very heavily russeted oblong-long type tubers. BelRus has resistance to net necrosis, leafroll, and verticillium wilt. BelRus always has high specific gravity but has a record of being very erratic in yield. Plant size is small, root system small and shallow, and susceptible to blackleg and mosaic diseases. Two packers of count boxes, however, have developed a very successful restaurant market for this variety but many growers have discontinued growing because of high losses in yield and grade-out. Recent studies in Maine have indicated that this variety is a symptomless carrier of ring rot disease¹.

BISON - An early maturing, round-oblong, red skinned variety from North Dakota. In the Northeast variety trials tubers have been small, prone to growth cracks, and have large amounts of hollow heart. Chip colors have been dark and storage shrinkage losses high. Regardless of the high yield, Bison has no value to Northeast potato production.

BUCKSKIN - A late maturing, round, rough skinned, and buff colored variety from Pennsylvania. Tubers have a tendency to develop hollow heart and scab easily. This variety, however, produces good yields of high specific gravity tubers with good chip color. Its poor general appearance suggests that future production in the Northeast is questionable.

BUTTE - A late maturing russeted variety released by the Western states of Idaho, Washington, and Oregon. Tubers are oblong to long and available from many commercial garden seed catalogs. Butte has resistance to net necrosis and virus X, but tubers develop hollow heart and "thumb nail" cracks which distract from its general appearance. Tubers have high specific gravity. Yields have been erratic, and fried colors very dark. Butte has no future for commercial production in the Northeast and seed stocks have been eliminated from Sangerville.

CAMPBELL 11 - Released by the now discontinued Campbell Institute for Agricultural Research Potato Breeding Program. Tubers are round to oblong in type, buff colored, and fair to good in appearance. Campbell 11 has medium maturity, resistance to late blight, verticillium wilt, and golden nematode. This variety is a good chipper, has good storage ability, and low preparation losses. It

¹Manzer, F.E. 1981. Reaction of the potato variety BelRus to bacterial ring rot infection. Life Sci. and Me. Agri. Exp. Sta. Misc. Rpt. 256.

is not a good yielding variety and has poor vine growth. New York cooperators continue to test Campbell 11 because it is a chipping variety that has golden nematode resistance.

CAMPBELL 12 - Also released from the Campbell Institute Breeding Program in 1977. Tubers are round to oblong, buff colored, quite attractive in appearance but often irregular in shape. Campbell 12 has resistance to late blight with yields equal to Kennebec and is a fair to poor chipper. It has a tendency to produce heat sprouts when grown on Long Island and in New Jersey. This variety appears to be unacceptable for commercial production.

CAMPBELL 13 - Another medium maturing variety released by Campbell Institute for Agricultural Research in 1977. Tubers are round to oblong, smooth, white skinned, and slightly netted. This variety has resistance to late blight, net necrosis, verticillium wilt, and golden nematode. Yields have been higher than Kennebec, specific gravity high, fried colors satisfactory, and storage ability very good. NE107 cooperators have given Campbell 13 an overall rating of very good. In Maine, it appears to be a good replacement for Kennebec for processing.

CARIBE - A recently named early maturing, purple skinned variety from Agriculture Canada. This variety has been tested under seedling number F69026. Caribe has resistance to common scab, phoma, and virus Y. Tubers are uniform in size, smooth, and yellow fleshed. Yields and specific gravity of tubers are very good. Chip colors have been acceptable and this variety will recondition late in the season. Canada expects good acceptance in the Caribbean area and in North Africa.

CENTENNIAL RUSSET - Released as a late maturing russet variety with oblong-long type tubers. Tubers are heavily russeted and prone to "thumb nail" growth cracks and hollow heart. Usable yields are higher than Russet Burbank because of fewer misshapen tubers, but specific gravity and fried color of chips have been unsatisfactory. So far, it would appear that Centennial Russet has not been accepted in the Northeast.

CHIPBELLE - A very recent release by USDA and tested under the seedling number of B6987-184. This late maturing chipping variety produces oblong shaped tubers which are buff colored and only fair in general appearance. Yields have been erratic among locations but specific gravity and chip color have been very good. Growth cracks and hollow heart were reported for this variety grown in 1981 and it apparently is susceptible to metribuzin herbicide injury. Consensus of opinion among cooperators at the 1982 NE107 Technical Committee meeting was that larger scale tests should be conducted and specific management criteris be developed for Chipbelle.

CHIPPEWA - An old medium late maturing variety that was released in 1933. Tubers are generally very large, elliptical-oblong shaped, and very bright in general appearance. Yields are usually high,

specific gravities very low, and chip colors very dark. Very few acres are grown but for some mid-Atlantic areas, Chippewa is a good boiling and baking potato. Some 450 acres of Chippewa seed are still produced in Maine.

COBBLER - An old standard variety that has early maturity and produces round tubers that are usually quite rough and deep eyed. Chip color, specific gravity, and culinary quality of tubers are all very satisfactory. Many people indicate that Cobbler has a better flavor when boiled or baked than most new varieties. Lack of disease resistance, erratic yield, and poor storage characteristics have reduced the acreage grown to less than 100 acres in Maine.

CROATAN - From North Carolina is a medium maturing, round, white variety. Tubers are generally very irregular in shape. Yields and specific gravities have been low but chip colors fair.

DELTA GOLD - A yellow fleshed, medium late maturing variety released in 1979 by the USDA and Maine. Tubers are round, white with a yellowish tinge, and very attractive. This is an excellent baking variety but has been discarded from further trials because of low yields. We are maintaining small amounts of seedstocks for test purposes only.

DENALI - A medium maturing variety from Alaska. Its tubers are round, buff colored, and very attractive. Disease resistance is unknown. Specific gravity of tubers has been good but yields have been on the low side. Chip colors have not been up to the expected rating for light colors. Denali reconditions well but has a very short dormancy period. This variety does not appear to have much value for the Northeast potato areas.

GREEN MOUNTAIN - Developed and released by Vermont years ago as a high yielding, high dry matter, baking potato. Because of the lack of disease resistance and because it does not process well, this variety has just about disappeared from commercial production.

HUDSON - A golden nematode resistant variety released by New York. It has late maturity and produces oblong shaped, attractive white skinned tubers. Hudson has excellent baking quality, good specific gravity, but does not process well. Yields have been erratic and since the set per plant is light, tubers tend to be large and have hollow heart.

JEMSEG - An early maturing, round, white variety released by Agriculture Canada in 1979. This variety has good yield, sizes up much earlier than Superior, and tubers have very good general appearance. Jemseg does not process well but could be a very good substitute for Cobbler as an early market variety.

KATAHDIN - Released by the USDA in 1932 as a late maturing, round white variety with resistance to leafroll and net necrosis. In the NE107 variety trials, Katahdin is the standard for late maturing

varieties. Katahdin has good production versatility, good storage performance, and all around cultural dependability. Katahdin represents a challenge to many new varieties in the round, white category.

KENNEBEC - A medium maturing variety released in 1948 and is the standard for the medium and medium late maturing varieties in the Northeast variety trials. For many years, it was the accepted chipping and processing variety but is gradually being replaced by other varieties. Kennebec is another all around variety to grow over a wide range of soil, climatic, and cultural conditions, although in the 1981 trials, its yield performance was not good.

LEMHI - A new russeted variety from Idaho tested under the seedling number A68678-1. Lemhi is a late maturing variety that produces oblong type, attractive, and high specific gravity tubers, as compared to Russet Burbank. Yields have been slightly higher than Russet Burbank and with a higher grade-out. Lemhi has fewer tuber defects than Russet Burbank, has satisfactory processing ability, poor storage ability, and is perhaps too late for good maturity in Maine. NE107 cooperators were concerned about excessive hollow heart and poor storage quality of Lemhi.

MICHIBONNE - A medium late maturing round variety from Michigan. Tubers have a distinctive buff color with medium to shallow eyes. Yields in first year of NE107 trials were equal to Kennebec and specific gravities slightly higher. Chip colors and french fry colors were dark. We have no storage, reconditioning, or appearance ratings available for this variety at this time.

MICHIMAC - A medium maturing variety from Michigan that produces round, tan colored tubers with medium deep eyes. In first year trials in the Northeast, yields were lower than Kennebec and specific gravity quite low. Chip colors and french fry colors were very dark. Michimac had quite a lot of hollow heart and many misshapen tubers. Storage, reconditioning, and appearance data are not available.

MONONA - A medium maturing, round, white chipping variety with very attractive tubers. Monona has resistance to verticillium wilt and mosaic. It has been a very dependable chipping variety but acreage has declined because of unsatisfactory yields. It has been replaced in Maine with variety FL657.

NORCHIP - A medium early maturing chipping variety from North Dakota. Tubers are round, white skinned, and quite rough in appearance. It has resistance to common scab. Yields and chip colors have been erratic. Storage ability is poor, preparation losses high, and it has lost some of its popularity as a standard for chipping varieties.

NORLAND - A very early red skinned variety from North Dakota. Tubers are round to oblong, quite attractive, and with good culinary qualities early in the season. It is very sensitive to air pollutants

and has been known to produce low yields when under moisture stress. Its primary use is for early roadside markets and home gardens.

PECONIC - A medium early maturing, golden nematode resistant variety released in 1966 by New York and used as a standard by New York for new golden nematode resistant varieties. Tubers are round, cream colored with fair appearance. Its yields are good and it has high specific gravities. It is not a good storage variety, does not process well, and usually has a very poor grade-out for fresh market.

PENN 71 - A late maturing chipping variety from Pennsylvania. Tubers are round, white, rough, do not store well, and have high preparation losses. Penn 71 has good yielding ability, has good chip colors, and good specific gravity. This variety has late blight resistance but shows hollow heart and internal necrosis. Penn 71 was discarded from Sangerville and revived again in 1979.

PUNGO - A medium early variety that has been quite popular in the South Atlantic states. Tubers are round, buff colored, rough, and have medium to deep eyes. Pungo yields well, stores poorly, and has resistance to late blight. Like Katahdin, many growers consider Pungo an undesirable variety but it continues to be popular in the Southern states.

RIDEAU - A red skinned, medium maturing variety from Agriculture Canada. It has resistance to verticillium wilt, common scab, and mosaic. Tubers are usually large in size and show many small growth cracks. Yields have been less than Kennebec but equal in specific gravity. Appearance ratings, however, have been better than Kennebec, but it has had unacceptable chip colors. NE107 cooperators have indicated that it should be discarded from further trials.

ROSA - A recent release from the New York breeding program, Rosa is late in maturity with round, buff colored tubers with medium deep, very distinctive pink eyes. Rosa has resistance to early blight and golden nematode. Rosa has average yields, high specific gravity, and fair general appearance. This variety has had poor chip color, stores well, and is a good baker.

RUSSET BURBANK - An old russeted variety with very late maturity and is the standard check variety for long and russeted varieties. Tubers are long, have a long dormancy period, are frequently misshapen, and knobby. Regardless of all its presumably undesirable characteristics, it ranks first in total acreage grown in North America and probably will hold that position for many more years.

RUSSETTE - A russeted variety released by USDA in 1981 and tested under the seedling number B7583-6. Tubers are medium long, cylindrical shaped with a russeted skin much more attractive than BelRus. This variety has resistance to verticillium wilt, net necrosis, and viruses X and Y which means resistance to mosaics. Yields have been erratic but higher in usable yield than Russet Burbank. Russette is late in maturity, a good storage variety, and variable in chip color.

Most locations report very slow emergence and very poor plant appearance.

SEBAGO - An old variety released by USDA and Maine in 1938. Sebago is late maturing and has resistance to late blight and virus X. Tubers are round to flat, short oblong, cream colored, and fair in appearance. Sebago is a high yielder, particularly where growing temperatures are high. Sebago is still a popular variety in many foreign markets and southern United States.

SHEPODY - A 1980 release by Agriculture Canada and tested under seedling number F69016. Shepody produces oblong to long tubers with buff colored skin which are usually fair to good in general appearance in Maine and New Brunswick, but poor to very poor in the mid-Atlantic states. Yields have been slightly lower than Kennebec but specific gravities have been much higher. It has slight hollow heart, growth crack, and misshapen tuber problems. Storage to date has been quite good but it is susceptible to phoma tuber rot. This medium late maturing variety has resistance to verticillium wilt and fusarium tuber rot. The Maritime Provinces are increasing acreage quite rapidly for use in french fry processing.

SUPERIOR - A medium early maturing variety with resistance to common scab and is the second most popular variety produced in Maine. Tubers are short-oblong with sort of a scurfy-netted skin. Superior has replaced Cobbler as the standard early variety in the Northeast. Superior yields well, has good specific gravity, has good fried color, and is used for early processing. It does not store well after January in most years.

TOBIQUE - A medium early maturing variety from Canada, released as a chipping variety. Tobique has resistance to verticillium wilt, net necrosis, and fusarium tuber rot. Tubers are round-oblong, white, and with very distinctive reddish areas around the medium shallow eyes. Yields have been lower than Kennebec but tubers have very high specific gravities. Tuber appearance, storage characteristics and preparation losses have been satisfactory.

TRENT - An early maturing variety from Agriculture Canada with resistance to common scab and rhizoctonia sclerotia. Tubers are round to short-oblong, buff colored, and have good general appearance. Yield has been lower than Superior but specific gravities have been much higher. It does not have good chip color, has poor storage ability, and has a questionable future in the Northeast. There is some suspicion that the true seed from Trent are sold under the name of "Explorer" by vegetable seed houses.

WAUSEON - A medium maturing, round, white variety released by the Campbell Institute for Agricultural Research. Wauseon has resistance to common scab, late blight, net necrosis, and golden nematode. Tubers have excellent appearance, are high in specific gravity, and yields are usually good but less than Kennebec. Wauseon has good storage characteristics but is a poor processor.

YUKON GOLD - An early maturing, yellow fleshed variety released by Agriculture Canada in 1981 and tested under seedling number G6880-1. Tubers are round-oblong, extremely yellow in color to the point of appearing "light struck". Yukon Gold has resistance to leafroll and viruses A and X. Specific gravity of tubers is very high, yields are less than Kennebec, defects are low, and chip colors are only fair.

AF92-3 - A medium late maturing Maine seedling with resistance to acid scab, net necrosis, late blight, and stem-end browning. Tubers are round to oblong, blocky, white skinned, and quite rough in general appearance. Yields have been less than Kennebec but tubers are higher in specific gravity. Storage characteristics are good, preparation losses low, and fried colors acceptable. NE107 cooperators' comments were not favorable for this variety.

AF186-2 - A golden nematode resistant variety that produces tubers that are oblong, white, and quite rough in general appearance. This medium late maturing seedling has resistance to net necrosis and acid scab. Yields are lower than Kennebec and this seedling has been discarded from further testing.

AF186-5 - A medium maturing Maine seedling that has resistance to common scab, net necrosis, and golden nematode. Tubers are oblong shaped with a white and netted skin. This seedling yields well and tubers have average specific gravity. Chip and french fry colors are better than those from Kennebec. Culinary qualities are equal to Katahdin. This variety is presently in large scale tests for processing and fresh market production trials.

AF201-25 - A medium late maturing seedling with resistance to net necrosis, late blight, and golden nematode. Tubers are oblong to long in type, white skinned, and fair in general appearance. Yield in first of test was lower than Kennebec. Storage, processing, and appearance data is not available at this time.

AF205-9 - A medium maturing, golden nematode resistant seedling that produces oblong, white tubers. It also has resistance to net necrosis and virus X. Yielding ability has been equal to Kennebec but tubers are higher in specific gravity. Processing, chip colors, and reconditioning ability have been satisfactory. Culinary qualities have been poor. This variety is in large scale tests at the present time prior to naming and release.

AF238-21 - A medium maturing Maine seedling with resistance to net necrosis only. Tubers are oblong-round but mostly round with fair appearance. Its sizes are toward the smaller size. Yields have been lower than Kennebec but specific gravity of tubers higher. Culinary qualities, fried colors, and storage quality are only fair. However, seedstocks will be increased for grower trials.

AF238-66 - A medium maturing, high yielding variety with resistance to net necrosis. Tubers are round to oblong, buff colored, and only

average to poor in general appearance. Yields are much higher than Kennebec, specific gravity is about the same, but the seedling produces high percentages of small sized tubers.

AF303-5 - A medium late maturing seedling with resistance to net necrosis, verticillium wilt, and early blight. Tubers are round, white, and fair to good in general appearance. Yields have been less than Kennebec but specific gravities higher. Chip colors are acceptable, preparation losses low, storage qualities fair, and reconditioning ability poor.

AF330-1 - A medium early maturing variety with resistance to net necrosis. Tubers are round, white and slightly netted. Yields are less than Superior and tubers are about the same in specific gravity and chip color. Tubers have been small in size. Storage, reconditioning, and sprouting characteristics are not available.

B6043-WV6 - A medium late maturing variety selected by West Virginia from the USDA breeding program. It has multigenic late blight resistance. Tubers are round to oblong, buff colored, and good for general appearance. Yields, specific gravity, and chip colors are not as good as Kennebec. Storage ability is very good.

B8086-3 - A medium late maturing seedling with resistance to net necrosis and virus A. Tubers are round, netted, and poor in general appearance. Yields have been higher than Kennebec and specific gravity about the same. This variety has been withdrawn by USDA from further trials.

B8943-4 - A late maturing, oblong type, russeted variety with resistance to common scab, net necrosis, golden nematode, and virus A. In first year of trial, yields and specific gravities were less than Russet Burbank. Culinary qualities, storage ability, and fried colors are not available at this time.

BR5991-WV16 - A medium late maturing variety from West Virginia with late blight resistance. Tubers are round, buff colored, and fair in appearance. Yields were good at most locations where tested. It does not have satisfactory chip color, does not recondition, but has excellent storage ability.

BR7088-18 - A medium late maturing variety with resistance to verticillium wilt. Tubers are round, buff colored, and have excellent general appearance. Yields are low, specific gravity high, chip colors satisfactory, and storage ability poor.

BR7093-23 - A late maturing, oblong shaped, white variety with resistance to verticillium wilt, early blight, and acid scab. This variety had higher yields and specific gravity than Katahdin. Chip and french fry colors have been good, storage ability fair, and it reconditions quite well.

C7232-4 - A medium early excellent chipping variety. Tubers are

round-oblong, buff colored, and have a very high appearance rating. Yields are only average but specific gravities of tubers have been quite high. This variety has no known disease resistance. This variety does not store well, is sensitive to metribuzin herbicide, and sprouts early.

C7358-14A - A medium maturing variety with resistance to golden nematode, early blight, and acid scab. Tubers are round to oblong, white, and slightly netted. General appearance in 1981 was only fair. Yields have been lower than Kennebec but specific gravity much higher. Chip colors have been satisfactory. It does not re-condition well and storage ability has been only fair. Commercial acceptance is questionable.

C7358-26A - A medium maturing, oblong type, russeted variety that has very good appearance. This variety has resistance to verticillium wilt, early blight, acid scab, common scab, virus X, and net necrosis. The four-year yield average was better than Kennebec. Chip colors have not been good, storage ability is poor, and probably this seedling will be discarded from future trials.

C7490-2 - A medium late maturing variety with unknown disease resistance. Tubers are short-oblong, white, rough and unattractive in general appearance. In first year of trial at Aroostook Farm, yields and specific gravity were not particularly good. Storage data, chip colors, and appearance ratings are not available at this time.

C74109-8 - Another medium variety with disease resistance to virus X. Tubers are oblong shaped, white, and have an excellent appearance rating. In first year of trial at Aroostook Farm, yields were less than Kennebec with about the same specific gravity. Storage and processing data are not available at this time.

CA02-7 - A late maturing, round, white variety with resistance to verticillium wilt, early blight, common scab, golden nematode, and virus X. Yields have been variable and specific gravities were low. This variety was discarded in 1980 by mutual consent of the Northeast cooperators but re-entered for increase at Sangerville in 1981 for more testing by Long Island and Ohio.

CC26-1A - A medium early maturing variety that produces round to oblong, cream colored tubers. It has resistance to net necrosis, stem-end browning, and virus X. Yields and specific gravity are similar to Superior. Appearance ratings, storage ability, tuber size distribution, and chip colors have been good to excellent. This variety is being considered for large scale testing in 1982.

CD106-16 - A late maturing, oblong, buff colored seedling with resistance to late blight, acid scab, and common scab. Yields have been very good in some areas. Storage ability was good. This variety has been discarded because of low specific gravity, poor chip color, and lack of processing ability.

CF7353-1 - A medium late, purple skinned, round to mostly oblong shaped variety. It has resistance to early blight, verticillium wilt, and net necrosis. It is, however, susceptible to scab. Yield in first year of trial was less than Kennebec but it had about the same specific gravity. It also had some hollow heart. Appearance rating was excellent but not as good as Caribe (F69026) from Canada, although it holds its color better. Storage, reconditioning, and processing data are not available at this time. A limited market acceptance test was conducted in the Miami, Florida area.

CF7523-1 - A medium early, round, white variety with resistance to golden nematode, net necrosis, and early blight. In first year of trial, its yield and specific gravity were equal to Superior. Appearance of tubers is satisfactory, chip colors are good, but size of tubers tend to be small. Processing, storage, and reconditioning data are not available.

F67128 - A medium late maturing variety from Agriculture Canada with resistance to verticillium wilt, leafroll, and virus X. Tubers are round-oblong, buff colored, and quite rough in general appearance. Yields are lower than Kennebec, specific gravity is low, chip color is poor, as is processing ability. This variety has been eliminated from further trials.

F68036 - See description for Acadia Russet.

F69026 - See description for Caribe.

F73008 - A medium late maturing variety that produces round-oblong, buff colored tubers with yellow flesh. Tuber sizes are quite uniform, quite rough, with a low satisfactory general appearance rating. Yields have been lower than Kennebec but specific gravity higher. Chip colors are satisfactory and storage ability acceptable, if not stored too late in the season. Preparation, processing, and reconditioning data are not available at this time.

G6880-1 - An early maturing, round, white variety from Agriculture Canada that will be released shortly under the name Simcoe. Yields have been lower than Superior but specific gravity of tubers much higher. Chip colors and reconditioning ability have been good. Preparation losses and storage data for this variety also were good. It appears to be a good variety for early fresh market and early processing.

G712-1 - A medium maturing variety from Agriculture Canada that produces round, white tubers. Yields are much less than Kennebec but specific gravity much higher. Chip colors have been poor, it does not recondition well, it has a good appearance rating, and it has good storage characteristics.

MN7973 - A medium maturing variety from Minnesota that produces oblong shaped tubers that are tan colored with light netting. In first year of trial at Aroostook Farm, yields were less than Kennebec.

Tubers are quite large, rough, and deep eyed. No storage, processing, or appearance data are available at this time.

MN8224 - A medium maturing, round, buff colored variety from Minnesota. In first year of trial yield was lower than Kennebec but tubers were much higher in specific gravity. General appearance was poor. No processing, storage, or reconditioning data are available at this time.

MN8757 - A round, purple, medium maturing variety from Minnesota. Yielding ability in first year of trial was very high but tubers had low specific gravity. Tubers tend to be quite large but did not have hollow heart. No storage, processing, or reconditioning data are available. Appearance rating was excellent.

MN9319 - A medium late maturing variety from Minnesota which produces long-oblong, tan, and heavily netted tubers. In first year of trial yields were equal to Russet Burbank. Tubers were large, coarse, misshapen, and had many growth cracks. Storage and processing data are not available.

W564-3A - A medium maturing russet which originated in Washington state but was selected by Maine. This variety has resistance to common scab, acid scab, late blight, virus X, and net necrosis. Yields have been higher than Kennebec but specific gravity of tubers has been very low. Chip colors are dark, it does not recondition, or store well. Grower trials with this variety have not been favorable.

W718 - from Wisconsin. This is a medium maturing seedling that produces round and netted tubers. Yields have been very high, specific gravities low, and chip colors barely acceptable. This variety does recondition, has long storage ability, a poor appearance rating, but good tuber size distribution.