

3-1986

B814: Performance Evaluations of Potato Clones and Varieties in the Northeastern States - 1985

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ACKNOWLEDGMENTS

The authors express their sincere appreciation to all of the persons who helped conduct the 1985 Cooperative Variety Trials. Special thanks go to Hugh Murphy, Professor Emeritus at the University of Maine, for his many years of hard work and leadership in these cooperative trials. We extend our thanks to the Maine Seed Potato Board (Sangerville Project) for increasing and maintaining all of the seedstocks used in these trials. Appreciation goes to the following organizations which provided new seedlings to Sangerville for increase and eventual testing: Agricultural Research Service - USDA, Agriculture Canada, Cornell Potato Breeding Program, Idaho Potato Breeding Program, Maine Potato Breeding Program, Minnesota Potato Breeding Program, North Dakota Potato Breeding Program, and the Wisconsin Potato Breeding Program. We thank Agway, Inc. for arranging transportation of seed and supplies to many of the test locations. Our sincere gratitude is extended to Betty Paradis, Ruth Thompson, Judy Richards, and Mike Sippola for their efforts in the preparation of this manuscript.

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PERFORMANCE EVALUATIONS OF POTATO CLONES AND
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Agriculture Canada
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New Hampshire
New Jersey
New York

Ohio
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Rhode Island
Vermont
Virginia
West Virginia

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INTRODUCTION

New potato clones and varieties must be tested against commercially accepted cultivars to determine if they possess advantages over existing varieties. Possible improvements over the existing varieties could include greater disease resistance or tolerance, higher yield, more uniform tuber size distribution, improved storability, good processing characteristics, etc. Often new cultivars are sought to fill local special-purpose needs. The cooperative potato variety trials reported in this bulletin were conducted to provide information on the performance, adaptation, and performance stability of new potato clones under a wide range of geographic, climatic, soil, and cultural conditions. These tests are contributions to Regional Project NE-107 entitled, "Breeding and Evaluation of New Potato Clones for the Northeast."

The objectives of this regional project are: 1). To develop high quality, widely adapted, productive, pest resistant potato varieties for use in the northeast; 2). To determine regional performance, quality, and storage characteristics for promising potato clones and new varieties; 3). To evaluate promising clones and varieties for special-purpose needs such as pest outbreaks, processing, export, specialized market opportunities and/or production situations; 4). To develop management practices such as plant population, fertilizer rate, disease, weed, and insect control strategies that will improve the yield and/or quality of promising clones. Data presented in this report primarily address objectives 2 and 3.

MATERIALS AND METHODS

During the 1985 growing season, the 33 named varieties and 40 numbered clones listed in Table 1 were grown in 16 locations in the 11 cooperating states and New Brunswick, Canada. Seed for all clones and varieties was grown by the Maine State Seed Board in the Sangerville seedling increase and maintenance program. Seedpieces were

hand-planted at most locations, except New York where assisted-feed planters were used. Plot size varied from single, 20 ft. rows to double rows, 12 ft. long. Buffer rows and alleyways between plots were used as needed. All tests were conducted using randomized complete block designs. The number of replications varied from three at Water Mill, New York to six in Maine, West Virginia, and one New Jersey test. Seedpiece spacing, fertilization rates, planting and vine killing (if any) dates, and harvest date for each location are listed on each table of yield data. At several locations, such as Presque Isle, Maine, varieties were divided into maturity groups and each group was tested separately. Russeted and long-white varieties were also tested separately at several locations.

Cultural practices for each trial were similar to those used by commercial growers near the test location. At each location, replicated tuber samples were taken at harvest and were weighed, sized, and graded. Sizing and grading procedures varied among locations. Tuber samples were retained from most tests for determination of specific gravity and chip color. At Presque Isle, additional samples were retained for appearance ratings, peeling and preparation losses, storage studies, and determination of french fry color and texture. Specific gravity was determined using the air and water method (1) at the following locations: Maine, New Brunswick, and West Virginia. Most other locations utilized the potato hydrometer method (1). Total solids (when reported) were calculated using Von Schule's equations (1). Chip color determinations from the Presque Isle test were made on tubers stored for 1 to 2 months at 50 - 55°F. Data processing for the Maine, New Hampshire, and Vermont tests was conducted by the Computing and Processing Services (CAPS), University of Maine; Orono, Maine. Data analysis from all other tests was conducted by individual cooperators.

RESULTS AND DISCUSSION
DISEASE RESISTANCE

Information on disease resistance and/or tolerance for many of the varieties and clones tested during 1985 is presented in Table 1. This information should be regarded as a general indication of disease resistance or tolerance, however, no information regarding the degree of resistance or tolerance is implied. For more detailed information interested persons should consult with the plant breeder or one of the various agencies which conducted the disease resistance tests. These agencies include: U.S.D.A.-ARS, Agriculture Canada, the Maine Agricultural Experiment Station, and/or the state where the clone or variety was bred.

Varieties should be selected for resistance or tolerance to local pest problems and choice of variety should be made to best fit the needs of a production area. From Table 1, it is readily apparent that the varieties tested during 1985 possessed a wide range of disease resistance and/or tolerance. Varieties and clones were tested which were resistant to the following diseases: common and acid scab, fusarium, verticillium wilt, late and early blight, leafroll, viruses A, X, and Y, net necrosis, golden nematode, phoma, blackwart, bacterial pink eye, and silver scurf. Disease resistance information for several clones was not available and is listed as unknown.

YIELD AND SPECIFIC GRAVITY

Canada. Data for yield and specific gravity of nine early and medium-early maturing varieties grown at White's Cove, New Brunswick are reported in Table 2. This test was harvested without top-kill only 84 days after planting to simulate harvest for early market. No significant differences in total yield were observed. Jemseg and Yankee Supreme provided the highest usable yield and percentage of yield between 1-7/8 and 3-1/4 inches. Highest specific gravities were obtained by CF77154-10 and Yankee Supreme.

Table 1. Characteristics of potato varieties included in the 1985 Northeastern Regional (NE-107) Potato Variety Trials.

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Tolerance or Resistance ¹
Acadia Russet Atlantic	Russet Netted	Ob.-Long Rd.-Oblong	M. late Med.	M S	Fusarium, phoma, leafroll. Late blight, net necrosis, virus A and X, golden nematode, bacterial pink eye, common scab, verticillium wilt, and blackwart.
BelRus	Russet	Ob.-Long	M. late	S	Verticillium wilt, net necrosis, leafroll, virus A.
Campbell 14	White	Rd.-Oblong	M. late	S	Verticillium wilt, net necrosis.
Caribe	Purple	Rd.-Oblong	V. early	M.D.	Common scab, phoma, rhizoctonia.
Delta Gold (Yel. Flesh)	White	Round	M. late	S	Net necrosis, virus A.
Denali	Buff	Round	Med.	S	Common scab, virus S.
Elba (NY59)	Tan	Round	Late	M.S.	Late blight, early blight, verticillium wilt, golden nematode.
GoldRus	Russet	Oblong	Late	S	Common scab, net necrosis.
Green Mountain	White	Oblong	Late	M.D.	None
Hampton	Buff	Round	Late	S	Verticillium wilt, golden nematode.
Hudson	Buff	Rd.-Oblong	Late	M.S.	Verticillium wilt, golden nematode.
Islander	White-netted	Oblong	Med.	S	Common scab, net necrosis, golden nematode, early blight.
Jemseg	White	Round	Early	M	Blackwart, virus A, S, X and Y, common scab.
Katahdin	Cream	Round	Late	S	Leafroll, net necrosis, virus A and Y.
Kennebec	White	Oblong	Med.	S	Late blight, net necrosis, virus A

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
Monona	White	Round	M. Early	S	Verticillium wilt, virus A, X, and Y.
NemaRus (B9540-62)	Russet	Oblong	Med.	S	Fusarium tuber rot, virus X, and golden nematode.
Norchip	White	Round	M. Early	S	Common scab.
Norking Russet (ND388-1)	Russet	Oblong	M. Late	S	Common scab, verticillium wilt.
Norland	Red	Oblong	V. Early	S	Common scab, leafroll, virus A and Y, and blackwart.
Pungo	Buff	Round	M. Early	M.D.	Late blight, virus A, common scab.
Redsen	Red	Rd.-Oblong	Early	S	Late blight(race o), common scab, silver scurf.
Rhine Red	Red	Round	Med.	S	Unknown
Russet Burbank	Russet	Long	V. Late	S	Common scab, blackleg.
Russette	Russet	Oblong	Late	S	Verticillium wilt, net necrosis, virus A, bacterial pinkeye, common scab, early blight, rhizoctonia.
Shepody	Buff-netted	Long	M. Late	M.S.	Verticillium wilt, net necrosis, phoma, rhizoctonia.
Simcoe	White	Round	Early	S	Common scab, late blight, virus A and X, net necrosis.
Sunrise	White-netted	Rd.-Oblong	Med.	M.S.	Common scab, virus X, net necrosis, golden nematode.
Superior	Buff-netted	Round	M. Early	M.S.	Common scab.
Yankee Chipper	White	Rd.-Oblong	Med.	S	Net necrosis, golden nematode, virus X.
Yankee Supreme	Buff	Rd.-Oblong	Med.	M.S.	Net necrosis, virus X.
Yukon Gold (Yel. Flesh)	Yel.-white	Oblong	M. Early	S	Leafroll, virus A and X.
A7411-2	Russet	Long	Late	M.S.	Verticillium wilt, virus x and y.
A72685-2	Russet	Ob.-Long	Late	M.S.	Verticillium wilt.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
AF92-3	White	Rd.-Oblong	M. Late	S	Common scab, acid scab, net necrosis, late blight, verticillium wilt, virus X.
AF236-1	White	Oblong	M. Late	S	Net necrosis, early blight, late blight.
AF303-5	White	Round	M. Late	S	Verticillium wilt, net necrosis, early blight, rhizoctonia, hollow heart.
AF330-1	Wh.-netted	Round	M. Early	S	Net necrosis.
AF339-5	White	Oblong	Early	M.S.	Net necrosis, early blight, common scab, Fusarium Solani.
AF465-2	Russet	Oblong	M. Early	D	Net necrosis, common scab, acid scab, bruise.
AF474-2	Buff	Rd.-Oblong	M. Late	M.S.	Golden nematode, net necrosis.
AF9058-M	Buff	Rd.-Oblong	Med.	M.S.	Common scab, late blight.
B9140-32	Tan-netted	Round	Med.	M.S.	Virus A and X, golden nematode.
B9340-13	Buff	Round	M. Early	D	Virus A and X, golden nematode.
B9540-55	Russet	Long	Med.	S	Fusarium tuber rot.
B9569-2	Russet	Ob.-Long	Early	S	Virus X, golden nematode.
B9596-2	Russet	Ob.-Long	Med.	M.S.	Virus A.
BR7088-18	Buff	Round	M. Late	M.D.	Verticillium, late blight, net necrosis.
CF7523-1	White	Round	M. Early	S	Early blight, verticillium wilt, net necrosis, golden nematode.
CF7679-15	White	Round	M. Early	M.S.	Net necrosis, verticillium wilt, virus X.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
CF7688-9	White	Round	Med.	M.S.	Net necrosis.
CF7719-6	White	Oblong	Early	M.S.	Common scab, acid scab, late blight, net necrosis, golden nematode.
CF7750-1	Russet	Rd.-Oblong	M. Early	S	Common scab, net necrosis, virus X.
CF76183-2	Buff	Long	Early	M.S.	Common scab, net necrosis, late blight, virus Y.
CF77154-10	White	Round	Early	S	Net necrosis, golden nematode.
CS7232-4	Buff	Rd.-Oblong	M. Early	S	Net necrosis, common scab, bruise, hollow heart.
CS7296-5	Buff	Rd.-Oblong	M. Early	M.S.	Net necrosis, late blight.
CS73105-2R	Russet	Round	Med.	S	Net necrosis, common scab, acid scab.
CS7635-4	Buff	Round	Late	M.S.	Net necrosis, virus X, common scab, acid scab, verticillium, early blight.
CS7639-1	Buff	Round	M. Early	D	Golden nematode, virus X, net necrosis.
CS7697-24	Buff	Round	V. Early	M.S.	Net necrosis, verticillium, rhizoctonia.
CS7747-7	Buff	Ob.-Long	M. Early	S	Net necrosis.
CS77120-8	Tan-netted	Round	Med.	M.S.	Net necrosis, common scab, fusarium solani.
F70021	Buff	Round	M. Early	M.S.	Verticillium wilt, fusarium, leafroll, virus Y, rhizoctonia.
F73008 (Yel. Flesh)	Buff	Oblong	Late	M.S.	Late blight, early blight, verticillium wilt, rhizoctonia.
F74123 (Yel. Flesh)	Buff	Oblong	Med.	M.S.	Virus X and Y, golden nematode.

Table 1 - continued

Variety	Skin Color	Tuber Shape	Maturity Season	Eye Depth	Disease Resistance or Tolerance ¹
MN7973	Tan-netted	Oblong	Med.	D	Common scab, hollow heart.
ND534-4	Russet	Ob.-Long	M. Late	S	Common scab.
NY64	Tan	Oblong	Med.	M.S.	Common scab, golden nematode.
W752	Tan-netted	Oblong	Med.	S	Unknown.
WF564-3	Russet	Ob.-Long	Med.	M.S.	Late blight, net necrosis, acid scab, common scab, virus X.
WF591-1R	Russet	Rd.-Oblong	Med.	D	Net necrosis, common scab, early blight.

¹Data presented do not indicate degree of resistance or tolerance. Virus X is the latent mosaic virus and in combination with virus A results in mild mosaic. Virus X in combination with virus Y results in rugose mosaic.

Late blight resistance is generally to the common strain of Phytophthora infestans (Mont.) deBary.

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

Table 2. Total yield, usable yield, percentage of yield between 1-7/8 and 3-1/4 inches, specific gravity, and percent total solids for 9 early and medium early maturing potato varieties grown at White's Cove, New Brunswick, Canada - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Superior Yield	Percentage of yield 1-7/8 to 3-1/4 inches	Specific gravity	Percent total solids
Jemseg	207	183	114	88	1.065	17.05
Redsen	166	83	91	50	1.066	17.26
Sunrise	164	124	90	76	1.071	18.32
Superior	182	145	100	80	1.067	17.47
Yankee Supreme	201	161	110	80	1.078	19.79
AF330-1	202	142	111	70	1.070	18.10
CF77154-10	159	102	87	64	1.079	20.00
CS7232-4	180	137	99	76	1.071	18.32
CS7697-24	180	128	99	71	1.069	17.89
Waller Duncan LSD (k=100)	NS	43			0.002	

¹Planted - April 24; harvested - July 17, 1985. Fertilization: 165-220-165. Seedpieces of all varieties were spaced 10 inches apart.

Tests were conducted at Florenceville, New Brunswick to evaluate 21 main crop potato varieties (Table 3). The latter part of the season was quite dry and this test was harvested 132 days after planting. No varieties outyielded the standard variety, Katahdin. Several russeted and long varieties (GoldRus, NemaRus, A72685-2, and WF564-3) obtained numerically higher yields than Russet Burbank, but were not significantly higher in yield. Several varieties had high specific gravities most notable were A72685-2 and CF7688-9. In descending order the top five varieties for usable yield were NY64, GoldRus, CS7639-1, Elba, and CS7747-7. Of these five, only Elba and GoldRus had less than 10% tuber defects.

Delaware. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, and specific gravity for 13 round-white varieties grown at Rising Sun, Delaware are reported in Table 4. The top four yielding varieties were Sunrise, F74123, CS7639-1, and Jemseg. Usable yield for F74123, however, was very low due to high incidence of second growth. None of the varieties produced significantly higher usable yield than the standard variety, Superior. Usable yield was highest for Sunrise, CS7639-1, Jemseg, and CF7688-9. CF7688-9 attained the highest specific gravity (1.093), while Hampton attained the lowest (1.069).

A test comparing 12 russeted potato varieties was also conducted at Rising Sun, Delaware (Table 5). These varieties were harvested after 117 days. Eight of the twelve varieties outyielded BelRus, however, only WF564-3 had significantly higher yield. Acadia Russet, CF7750-1, and CS73105-2R produced 40% or more tubers which were 8 ounces or greater in weight. A72685-2 produced tubers with the highest specific gravity (1.087), while WF564-3 and WF591-1R had very low specific gravity.

Maine. Data for yield, percent tuber defects, percentage of yield in two tuber size classes, and specific gravity of seven early (100 days) maturing potato varieties grown at Presque Isle, Maine are presented in Table 6. Superior and CS7697-24 had highest yields and usable yields. AF339-5 and CF76183-2 had over 10% tuber defects.

Table 3. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 3-1/4 inches, specific gravity, and percent total solids for 21 main crop potato varieties grown at Florenceville, New Brunswick, Canada - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield 1-7/8 to 3-1/4 inches Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 3 inches	Percentage of yield 2 1/2 to 3 1/4 inches	Specific gravity	Percent total solids
Elba (NY59)	259	236	91	1	91	51	1.094	23.17
GoldRus	264	243	93	7	92	29	1.092	22.75
Hampton	267	214	94	15	80	50	1.085	21.27
Katahdin	285	229	100	4	80	49	1.090	22.33
Kennebec	272	226	95	11	83	53	1.090	22.33
NemaRus(B9540-62)	242	222	85	6	92	35	1.088	21.90
Redsen	235	190	82	3	81	27	1.074	18.95
Russet Burbank	204	190	72	16	93	32	1.094	23.17
A72685-2	263	215	92	6	82	41	1.097	23.80
AF236-1	235	222	82	12	94	54	1.094	23.17
AF330-1	224	184	78	16	82	24	1.090	22.33
CF7679-15	241	210	85	11	87	51	1.094	23.17
CF7688-9	203	163	71	14	80	25	1.096	23.59
CF77154-10	199	172	70	5	86	31	1.091	22.54
CS7232-4	229	199	80	4	87	44	1.089	22.11
CS7639-1	267	242	94	10	91	45	1.084	21.06
CS7747-7	252	234	88	15	93	42	1.084	21.06
MN7973	245	214	86	7	87	51	1.079	20.00
ND534-4	234	199	82	1	85	34	1.084	21.06
NY64	289	250	101	13	86	28	1.082	20.64
WF564-3	252	225	88	7	89	34	1.080	20.21
Waller Duncan								
LSD (k=100)	61	57					0.007	

¹Planted - May 21; harvested - September 30, 1985. Fertilization: 135-180-135.

Seedpiece spacing: Russet Burbank - 18 inches, all others 10 inches.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 4. 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 Rising Sun, Delaware - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Hampton	420	409	93	1	94	76	1.069	17.89
Jemseg	494	469	109	2	92	75	1.083	20.85
Simcoe	406	394	90	0	94	73	1.085	21.27
Sunrise	525	498	116	0	93	66	1.073	18.74
Superior	452	439	100	0	96	60	1.076	19.37
Yankee Supreme	446	430	99	0	95	72	1.082	20.64
Yukon Gold	419	399	93	1	88	74	1.082	20.64
CF7523-1	471	439	104	0	93	64	1.080	20.21
CF7679-15	426	404	94	0	90	70	1.083	20.85
CF7688-9	484	467	107	0	95	73	1.093	22.96
CS7639-1	498	474	110	2	91	74	1.071	18.32
F74123	515	360	114	27	66	51	1.071	18.32
NY64	480	457	106	0	93	64	1.082	20.64
LSD (0.05)	102	102					0.007	

¹Planted - April 3; harvested - July 29, 1985.

Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 200-200-200.

²Includes misshapen and growth cracked tubers.

Table 5. Yield, usable yield, percent defects, percentage of yield above 8 ounces, specific gravity, and percent total solids for 12 russeted potato varieties grown at Rising Sun, Delaware - 1985.

Variety ¹	Yield above 1-1/2 Inches Cwt./A.	Percent of BelRus Yield	Percent defects ²	Percentage of yield over 8 ounces	Specific gravity	Percent total solids
Acadia Russet	376	104	0	44	1.071	18.32
BelRus	360	100	0	31	1.078	19.79
NemaRus (B9540-62)	398	111	0	33	1.078	19.79
Norking Russet (ND388-1)	406	113	1	23	1.078	19.79
A72685-2	348	97	1	18	1.087	21.69
B9569-2	412	114	0	31	1.073	18.74
B9596-2	380	106	0	31	1.067	17.47
CF7750-1	334	93	0	40	1.060	15.99
CS73105-2R	330	92	2	40	1.073	18.74
ND534-4	366	102	1	27	1.071	18.32
WF564-3	477	133	6	21	1.053	14.52
WF591-1R	421	117	6	31	1.055	14.94
LSD (0.05)	95				0.028	

¹Planted - April 3; harvested - July 29, 1985. Fertilization: 200-200-200.

Seedpieces of all varieties spaced 9 inches apart.

²Includes growth cracked and misshapen tubers.

Table 6. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 7 early maturing potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 Inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Superior	362	357	100	1.3	98.7	45.9	1.091	22.54
Redsen	330	323	91	2.0	95.9	49.2	1.077	19.58
AF339-5	347	311	96	10.4	96.9	73.9	1.085	21.27
B9569-2	262	259	72	1.3	96.1	26.5	1.086	21.48
CF76183-2	335	289	92	13.5	98.5	53.9	1.087	21.69
CF77154-10	307	300	85	2.0	98.2	40.0	1.092	22.75
CS7697-24	386	352	107	8.8	96.7	56.8	1.086	21.48
Waller Duncan LSD (k=100)	26	24					0.004	

¹Planted - May 22; killed - August 26; harvested - September 9, 1985.

Seedpiece spacing: Superior, AF339-5, CS7697-24 - 8 inches.

Redsen, B9569-2 - 10 inches.

CF76183-2, CF77154-10 - 12 inches.

Fertilization: 145-145-145.

²Includes sunburned, misshapen, and growth cracked tubers.

Tubers of B9569-2 tended to be quite small, while AF339-5 produced 73.9% of tubers between 2-1/2 and 4 inches. Superior and CF77154-10 had the highest specific gravities (1.090) and only Redsen had a specific gravity lower than 1.080.

Performance data for nine medium-early (105 days) maturing varieties grown at Presque Isle are presented in Table 7. None of the clones produced significantly higher yields or usable yields than the check variety, Superior. The four highest yielding varieties were F70021, CS7639-1, Superior, and CF7679-15. CS7747-7 was high yielding, but had 16.8% tuber defects (mostly sunburn). Five of the nine varieties produced more than 60% of tubers in the 2-1/2 to 4 inch size class; however, AF465-2 did not size up well. Seven of the varieties had specific gravities above 1.080. Superior had the highest specific gravity (1.091).

Data for eight medium (110 days) maturing varieties grown at Presque Isle are presented in Table 8. None of the varieties produced significantly higher yield than the check variety, Kennebec. The three highest yielding varieties were F74123, CS77120-8, and Kennebec. Usable yield of F74123 was significantly higher than that of Kennebec. AF9058-M and CS77120-8 had over 10% tuber defects. All eight varieties sized up well and six had specific gravities over 1.080. W752 had the highest specific gravity at 1.101.

Data for five medium-late (115 days) maturing varieties are presented in Table 9. Three of the varieties were russeted and/or long-types (Norking Russet, Shepody, and ND534-4). None of the varieties produced significantly higher yield or usable yield than the standard variety, Kennebec. The two highest yielding varieties were AF474-2 and Kennebec. Kennebec and Shepody had over 10% tuber defects. Norking Russet and ND534-4 did not size up well, while the other three varieties did. All five varieties had specific gravities of 1.080 or higher.

Yield, usable yield, percent defects, percentage of yield in two tuber size classes, and specific gravity for five late (120 days) maturing potato varieties grown at Presque Isle are presented in Table

Table 7. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 9 medium-early maturing potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Superior	407	398	100	2.1	98.3	49.2	1.091	22.54
AF465-2	332	326	82	2.0	94.4	29.6	1.087	21.69
B9340-13	388	373	95	3.9	97.4	44.5	1.089	22.11
CF7679-15	408	394	100	3.4	94.6	72.7	1.088	21.90
CF7750-1	395	383	97	2.9	97.6	72.1	1.084	21.06
CS7296-5	352	320	87	9.3	95.7	60.2	1.082	20.64
CS7639-1	425	409	104	3.8	97.0	73.7	1.076	19.37
CS7747-7	410	341	101	16.8	98.2	57.7	1.089	22.11
F70021	436	419	107	3.9	98.0	68.1	1.079	20.00
Waller Duncan LSD (k=100)	32	37					0.002	

¹Planted - May 22; killed - September 3; harvested - September 13, 1985. Fertilization: 145-145-145.

Seedpiece spacing: Superior, B9340-13, CF7679-15, CS7296-5, F70021-1 - 8 inches.
 AF465-2, CF7750-1, CS7639-1 - 10 inches.
 CS7747-7 - 12 inches.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 8. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 8 medium maturing potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Kennebec Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Kennebec	473	442	100	6.7	96.4	70.0	1.088	21.90
Rhine Red	441	438	93	0.6	95.5	64.0	1.078	19.79
AF9058-M	433	384	92	11.1	97.0	54.0	1.074	18.95
B9140-32	273	267	58	2.2	97.4	67.0	1.085	21.27
CS77120-8	480	411	102	14.5	95.9	66.5	1.086	21.48
F74123	496	480	105	3.2	97.2	67.6	1.084	21.06
W752	413	387	87	6.1	97.0	53.9	1.101	24.65
WF591-1R	429	395	91	7.7	94.4	67.0	1.083	20.85
Waller Duncan LSD (k=100)	42	38					0.004	

¹Planted - May 22; killed - September 6; harvested - September 17, 1985. Fertilization: 145-145-145. Seedpiece spacing: Kennebec, Rhine Red, AF9058-M, B9140-32, CS77120-8, F74123 - 8 inches. W752, WF591-1R - 10 inches.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 9. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 5 medium-late maturing potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Kennebec Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Kennebec	435	379	100	12.9	96.5	74.8	1.088	21.90
Norking Russet (ND388-1)	352	346	81	1.6	9.2	over 10 ounces	1.090	22.33
Shepody	397	334	91	15.9	41.5	over 10 ounces	1.094	22.96
AF474-2	444	420	102	5.3	97.6	67.0	1.086	21.48
ND534-4	369	359	85	2.5	13.0	over 10 ounces	1.080	20.21
Waller Duncan LSD (k=100)	43	53					0.003	

¹Planted - May 22; killed - September 13; harvested - September 25, 1985.

Seedpiece spacing: Kennebec, AF474-2 - 8 inches
 Shepody - 10 inches
 ND534-4, Norking Russet - 12 inches

Fertilization: 145-145-145.

²Includes sunburned, misshapen, and growth cracked tubers.

10. Although all four test varieties had numerically higher yields than Katahdin, only yield of NY64 was significantly greater. The two varieties which had highest usable yields were Elba and CS7635-4. Usable yield of Elba was significantly higher than that of Katahdin. Usable yield of NY64 ranked third due to 11.6% tuber defects. All five varieties sized up well and had specific gravities above 1.080. The highest specific gravity was attained by CS7635-4 (1.100).

Yield and specific gravity for eight russeted varieties grown at Presque Isle are presented in Table 11. All varieties in this test were grown for 130 days and all except CS73105-2R were sized as Long-type potatoes. None of the varieties produced significantly higher total yield than Russet Burbank and, in fact, four produced significantly lower yields. The three varieties with highest total and usable yields were A7411-2, A72685-2, and Russet Burbank. Usable yield of A7411-2 was significantly higher than that of Russet Burbank. Russet Burbank and NemaRus each had more than 10% tuber defects. GoldRus, NemaRus, A7411-2, and A72685-2 sized up very well and each had more than 30% of yield in the 10 ounce or greater tuber size classes. Specific gravity of all eight varieties was 1.080 or higher.

New Jersey. Yield, usable yield, percent defects, percentage of yield in two grade size classes, and specific gravity for 20-round white potato varieties grown at New Brunswick, New Jersey are presented in Table 12. This test was harvested 124 days after planting. The five highest yielding varieties were NY64, W752, Atlantic, F74123, and CS7296-5. When usable yield are considered, the five highest yielding varieties were Atlantic, W752, NY64, CF7688-9, and CS7296-5. Only AF9058-M and CS77120-8 produced less than 60% of yield in the 2-1/2 inch or greater tuber size classes. Atlantic and W752 had the highest specific gravities at 1.080 each.

Yield and specific gravity data for 20 advanced round-white and red-skinned varieties grown at New Brunswick, New Jersey are presented in Table 13. This test was harvested 124 days after planting. The six highest yielding varieties were CF7523-1, Denali, Hampton, Norchip, Atlantic, and AF92-3. When usable yield is considered, the six highest

Table 10. 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 potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Katahdin	428	395	100	7.7	96.0	73.2	1.084	21.06
Elba (NY59)	480	461	112	3.9	96.4	67.8	1.090	22.33
Hampton	447	425	104	5.2	97.2	78.4	1.084	21.06
CS7635-4	461	445	108	3.5	97.1	73.9	1.100	24.44
NY64	487	430	114	11.6	97.6	62.8	1.089	22.11
Waller Duncan LSD (k=100)	56	59					0.004	

¹Planted - May 22; killed - September 18; harvested - September 30, 1985.

Seedpieces of all varieties were spaced 8 inches apart. Fertilization: 145-145-145.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 11. Yield, usable yield, percent defects, percentage of yield above 10 ounces, specific gravity, and percent total solids for 8 russeted potato varieties grown at Presque Isle, Maine - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of R. Burbank Yield	Percent defects ²	Percentage of yield over 10 ounces	Specific gravity	Percent total solids
Russet Burbank	427	382	100	10.4	22.2	1.099	24.22
GoldRus	365	334	85	8.6	36.5	1.086	21.48
NemaRus(B9540-62)	420	366	98	12.6	45.9	1.083	20.85
A7411-2	468	433	110	7.5	32.6	1.098	24.01
A72685-2	448	406	105	9.2	31.9	1.098	24.01
B9540-55	374	339	88	9.2	27.0	1.082	20.64
B9596-2	372	351	87	5.6	10.5	1.085	21.27
CS73105-2R	374	341	88	8.9	76.8% 2-1/2 to 4 inches	1.080	20.21
Waller Duncan LSD (k=100)	43	42				0.006	

¹Planted - May 22; killed - September 26; harvested - October 28, 1985. Fertilization: 145-145-145.
Seedpiece spacing: A7411-2, A72685-2, B9540-55, NemaRus, B9596-2 - 12 inches.
GoldRus, CS73105-2R - 14 inches.
Russet Burbank - 16 inches.

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

Table 12. Yield, usable yield, percent defects, percentage of yield over 1-7/8 and 2-1/2 inches, specific gravity, and percent total solids for 20 round white potato varieties grown at New Brunswick, New Jersey - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield over 1-7/8 Inches	Percentage of yield over 2-1/2 Inches	Specific gravity	Percent total solids
Atlantic	579	565	155	1	97	83	1.080	20.21
Katahdin	454	427	122	3	93	76	1.064	16.84
Superior	373	357	100	2	96	66	1.065	17.05
AF339-5	366	354	98	2	97	83	1.073	18.74
AF474-2	440	421	118	1	95	70	1.065	17.05
AF9058-M	395	354	106	5	90	50	1.065	17.05
CF7679-15	376	358	101	4	95	84	1.070	18.10
CF7688-9	552	529	148	2	96	80	1.078	19.79
CF77154-10	484	458	130	2	95	70	1.071	18.32
CS7296-5	554	509	148	6	92	76	1.068	17.68
CS7635-4	534	503	143	2	94	71	1.064	16.84
CS7639-1	535	496	143	5	93	80	1.062	16.42
CS7697-24	501	453	134	7	91	77	1.068	17.68
CS7747-7	507	449	136	7	88	62	1.069	17.89
CS77120-8	262	237	70	6	88	53	1.062	16.42
F70021	529	495	142	4	94	78	1.064	16.84
F74123	561	480	150	9	86	66	1.063	16.63
NY64	598	556	160	4	93	74	1.064	16.84
W752	595	560	160	3	94	73	1.080	20.21
WF591-1R	318	296	85	1	93	61	1.068	17.68
Waller Duncan LSD (k=100)	116	110					0.006	

¹Planted - April 17; harvested - August 20, 1985.

Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 200-100-100.

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

Table 13. Yield, usable yield, percent defects, percentage of yield over 1-7/8 and 2-1/2 inches, specific gravity, and percent total solids for 20 round white and red skinned potato varieties grown at New Brunswick, New Jersey - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield over 1-7/8 inches	Percentage of yield over 2-1/2 inches	Specific gravity	Percent total solids
Atlantic	569	537	116	3	94	79	1.082	20.64
Campbell 14	519	484	106	4	93	72	1.072	18.53
Caribe	458	432	96	4	94	78	1.069	17.89
Denali	600	571	122	2	95	73	1.094	23.17
Hampton	598	572	122	3	96	81	1.071	18.32
Islander	562	536	115	1	95	63	1.074	18.95
Jemseg	503	485	102	2	96	82	1.066	17.26
Katahdin	537	504	110	3	94	77	1.069	17.89
Norchip	584	540	119	4	93	68	1.071	18.32
Redsen	395	373	81	1	94	61	1.064	16.84
Rhine Red	561	531	115	2	95	76	1.073	18.74
Simcoe	347	333	71	1	96	70	1.075	19.16
Sunrise	456	429	93	3	94	73	1.069	17.89
Superior	490	477	100	1	97	71	1.073	18.74
Yankee Chipper	545	486	111	2	89	44	1.076	19.37
AF92-3	569	518	116	6	91	75	1.065	17.05
AF236-1	491	448	100	6	91	70	1.081	20.43
B9140-32	465	446	95	2	96	76	1.079	20.00
BR7088-18	513	487	105	3	95	74	1.075	19.16
CF7523-1	615	579	125	3	94	73	1.075	19.16
Waller Duncan LSD (k=100)	90	88					0.005	

¹Planted - April 17; harvested - August 20, 1985.

Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 200-100-100.

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

yielding varieties were CF7523-1, Hampton, Denali, Norchip, Atlantic, and Islander. Only Yankee Chipper produced less than 60% of yield in the 2-1/2 inch or larger tuber size classes. Denali had the highest specific gravity (1.094), but Atlantic and AF236-1 also had specific gravities above 1.080.

Yield and specific gravity data for 11 russeted potato varieties grown at Bridgeton, New Jersey are presented in Table 14. This test was harvested 131 days after planting. The top yielding varieties were Norking Russet, ND534-4, and Acadia Russet. Russet Burbank and Shepody had 39 and 37% tuber defects, respectively. Four other varieties had over 10% tuber defects. Highest usable yields were attained by ND534-4, Norking Russet, and CS73105-2R. Only NemaRus, Shepody, Acadia Russet, Norking Russet, and ND534-4 produced more than 10% of tubers in the 12 ounce or greater tuber size class. BelRus and A72685-2 attained the highest specific gravities 1.080.

New York. Yield, usable yield, percent defects, percentage of yield in two grade size classes, and specific gravity for six early maturing varieties grown at Riverhead, New York are presented in Table 15. A rotobeeper was used on these plots 120 days after planting. No significant differences in yield or usable yield were observed among varieties. Jemseg had the highest usable yield, however, Sunrise was rated as the most attractive variety. Jemseg and CF7679-15 had over 60% of tubers in the 2-1/2 to 4 inch size class. CF7679-15 was the only variety with a specific gravity over 1.080.

Similar data for 10 main-season varieties grown at Riverhead, New York are presented in Table 16. These varieties were grown for 140 days. AF303-5 attained significantly higher total and usable yields than the standard variety, Katahdin. The three top varieties for usable yield were AF303-5, F74123, and Shepody. AF303-5, Hampton, Hudson, and Katahdin had over 60% of yield within the 2-1/2 to 4 inch size class. Only Shepody and CF7688-9 had specific gravities over 1.080.

Performance data for seven russeted varieties grown at Riverhead, New York are presented in Table 17. These varieties were grown for 140

Table 14. Yield, usable yield, percent defects, percentage of yield above 12 ounces, specific gravity, and percent total solids for 11 russeted potato varieties grown at Bridgeton, New Jersey - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of BelRus Yield	Percent defects ²	Percentage of yield over 12 ounces	Specific gravity	Percent total solids
Acadia Russet	327	243	162	17	16	1.068	17.68
BelRus	202	147	100	5	3	1.080	20.21
NemaRus (B9540-62)	299	224	148	14	19	1.074	18.95
Norking Russet	338	254	167	13	14	1.075	19.16
Russet Burbank	309	116	153	39	0	1.079	20.00
Shepody	294	171	146	37	15	1.077	19.58
A72685-2	251	125	124	15	1	1.080	20.21
B9569-2	178	114	88	5	1	1.078	19.79
CF7750-1	189	144	94	7	3	1.079	20.00
CS73105-2R	291	247	144	5	9	1.075	19.16
ND534-4	333	266	165	2	11	1.070	18.10
Waller Duncan LSD (k=100)	66	68				0.004	

¹Planted - March 28; harvested - August 7, 1985. Fertilization: 200-200-200.
Seedpieces of all varieties were spaced 9 inches apart.

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

Table 15. Yield, usable yield, percent defects, percentage of yield between 2 and 4 inches, specific gravity, and percent total solids for 6 early maturing potato varieties grown at Riverhead, New York - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield from 2 to 4 in. Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield 2 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Superior	389	299	100	2	77	33	1.075	19.16
Chippewa	409	286	96	0	70	39	1.069	17.89
Jemseg	424	365	122	5	85	67	1.063	16.63
Sunrise	398	324	108	2	81	50	1.073	18.74
CF7679-15	360	325	109	1	90	61	1.082	20.64
CS7639-1	419	338	113	4	81	54	1.070	18.10
Waller Duncan LSD (k=100)	NS	NS					0.004	

¹Planted - April 15; killed - August 13; harvested - August 14, 1985.

Seedpieces of all varieties were spaced 9.3 inches apart.

Fertilization: 80-205-160 banded at planting plus 80 lbs/A of sidedressed N.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 16. Yield, usable yield, percent defects, percentage of yield between 2 and 4 inches, specific gravity, and percent total solids for 10 main season potato varieties grown at Riverhead, New York - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield from 2 to 4 in. Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 2 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Katahdin	438	365	100	3	83	61	1.068	17.68
Hampton	350	309	85	3	89	70	1.065	17.05
Hudson	322	274	75	2	85	62	1.072	18.53
Shepody	491	395	108	6	81	47	1.085	21.27
AF303-5	527	475	130	1	90	74	1.076	19.37
AF474-2	365	299	82	2	82	54	1.068	17.68
CF7523-1	450	365	100	2	82	50	1.070	18.10
CF7688-9	406	277	76	1	69	34	1.083	20.85
F74123	495	405	111	3	83	59	1.067	17.47
NY64	461	328	90	6	71	38	1.071	18.32
Waller Duncan LSD (k=100)	70	61					0.004	

¹Planted - April 15; killed - September 3; harvested - September 25, 1985.

Seedpieces of all varieties were spaced 9.3 inches apart.

Fertilization: 80-205-160 banded at planting plus 80 lbs/A of sidedressed N.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 17. Yield, usable yield, percent defects, percentage of yield above 8 ounces, specific gravity, and percent total solids for 7 russeted potato varieties grown at Riverhead, New York - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of BelRus Yield	Percent defects ²	Percentage of yield over 8 ounces	Specific gravity	Percent total solids
BelRus	299	197	100	2	23	1.075	19.16
Acadia Russet	478	352	179	2	54	1.074	18.95
NemaRus (B9540-62)	369	266	135	2	28	1.071	18.32
Russette	381	274	140	5	30	1.079	20.00
B9569-2	328	224	114	9	30	1.070	18.10
B9596-2	413	295	150	2	31	1.069	17.89
WF591-1R	376	268	136	3	33	1.075	19.16
Waller Duncan LSD (k=100)	51	44				0.004	

¹Planted - April 15; killed - September 3; harvested - September 25, 1985.
Seedpieces of all varieties were spaced 9.3 inches apart.

Fertilization: 80-205-160 banded at planting plus 80 lbs/A of sidedressed N.

²Includes sunburned, misshapen, and growth cracked tubers.

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days. All varieties except B9569-2 had significantly higher total and usable yields than the standard variety, BelRus. The highest yielders were Acadia Russet and B9596-2. Acadia Russet produced more than 50% of yield in the 8 ounce or greater tuber size class. Russette had the highest specific gravity (1.079).

Performance data for nine main-season (grown 122 days) potato varieties grown at Water Mill, New York are presented in Table 18. None of the varieties produced significantly higher yield or usable yield than Katahdin. The three top yielders in both categories were Hudson, CF7523-1, and Katahdin. Only B9569-2 did not size well, however, most of the test varieties had a high percentage of tuber defects. Hollow heart ratings are also presented in Table 18.

Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and hollow heart ratings for nine early maturing varieties grown at Freeville, New York are presented in Table 19. In this test, vines were mowed 110 days after planting. CS7639-1, CF7523-1, and Caribe produced significantly higher total yield than the standard variety, Superior. Usable yield of CS7639-1 was also significantly higher than Superior. Sunrise and CF7679-15 had over 10% tuber defects; however, all varieties sized well and had good specific gravity. Hollow heart was a severe problem in Monona.

Performance data for five medium (118 day test) maturing varieties grown at Freeville, New York are presented in Table 20. Total and usable yields of Katahdin were significantly higher than all varieties except F74123. All varieties sized well, however, Atlantic and CF7688-9 had 10% or more tuber defects. Atlantic attained the highest specific gravity (1.098).

Performance data for 12 late (128 day test) maturing varieties grown at Freeville, New York are presented in Table 21. None of the varieties had significantly higher total or usable yield than the standard variety, Katahdin. The three top varieties in usable yield were AF303-5, Elba, and Katahdin. Hampton, CF76183-2, F73008, and NY64 had over 10% tuber defects. Only CF76183-2 had a specific gravity lower than 1.080. Delta Gold had the highest specific gravity (1.092).

Table 18. Yield, usable yield, percent defects, and percentage of yield by distribution into grade size classes for 9 main season potato varieties grown at Water Mill, New York - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield from 2 to 4 in. Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield			Hollow heart ³
					0 to 2 inches	2 to 4 inches	over 4 inches	
Katahdin	302	286	100	6	11	85	4	0
Hampton	269	255	89	16	21	79	0	0
Hudson	336	317	111	13	19	80	1	3
NemaRus(B9540-62)	242	193	68	5	25	75	0	2
Sunrise	238	215	75	11	21	79	0	2
Superior	275	240	84	6	19	81	0	3
B9569-2	209	144	50	10	41	59	0	1
CF7523-1	328	289	101	5	16	83	1	0
NY64	257	236	83	22	30	70	0	0
Waller Duncan LSD (k=100)	41	34						

¹Planted - April 12; killed - August 22; harvested - October 9, 1985. Fertilization: 175-350-175. Seedpieces of all varieties were spaced 9.3 inches apart. NemaRus and B9569-2 were sized by weight (the 2 to 4 inch size class translates into 4 to 16 ounces for these clones).

²Includes sunburned, misshapen, and growth cracked tubers.

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

Table 19. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, percent total solids, and hollow heart ratings for 9 early maturing potato varieties grown at Freeville, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids	Hollow heart
Caribe	410	355	112	8	87	1.079	20.00	0
Monona	352	330	105	2	94	1.084	21.06	6
Sunrise	384	294	93	16	77	1.078	19.79	0
Superior	350	316	100	4	90	1.083	20.85	0
Yukon Gold	336	301	95	6	89	1.089	22.11	0
CF7523-1	412	363	115	4	88	1.085	21.27	0
CF7679-15	361	294	93	11	82	1.091	22.54	1
CF77154-10	338	298	94	6	89	1.079	20.00	0
CS7639-1	435	391	124	6	89	1.080	20.21	3
Waller Duncan LSD (k=100)	54	48				0.003		

¹Planted - April 29; vines mowed - August 18; harvested - August 22, 1985.
Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 150-150-150.

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

Table 20. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, percent total solids, and hollow heart ratings for 5 medium maturing potato varieties grown at Freeville, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids	Hollow ² heart
Atlantic	408	350	79	10	85	1.098	24.01	0
Katahdin	481	443	100	4	92	1.083	20.85	0
Monona	375	349	79	2	93	1.079	20.00	2
CF7688-9	368	312	70	13	84	1.090	22.33	3
F74123	483	437	99	5	91	1.079	20.00	0
Waller Duncan LSD (k=100)	77	74				0.005		

¹Planted - May 2; killed - August 29; harvested - September 11, 1985.
Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 150-150-150.

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

Table 21. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, percent total solids, and hollow heart ratings for 12 late maturing potato varieties grown at Freeville, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids	Hollow ² heart
Campbell 14	439	415	96	3	95	1.087	21.69	0
Delta Gold	461	410	95	6	90	1.092	22.97	0
Elba (NY59)	494	452	105	2	91	1.089	22.11	0
Hampton	409	340	79	11	85	1.080	20.21	0
Katahdin	448	432	100	2	97	1.085	21.27	0
Monona	321	312	72	1	98	1.080	20.21	2
Shepody	444	367	85	8	91	1.088	21.90	1
AF303-5	508	456	106	2	90	1.087	21.69	1
AF474-2	417	364	84	9	88	1.081	20.43	0
CF76183-2	328	256	59	16	78	1.075	19.16	0
F73008	420	358	83	11	84	1.087	21.69	1
NY64	462	396	92	13	86	1.085	21.27	0
Waller Duncan LSD (k=100)	62	52				0.004		

¹Planted - April 29; killed - September 6; harvested - September 16 and 17, 1985.
Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 150-150-150.

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

Table 21. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, percent total solids, and hollow heart ratings for 12 late maturing potato varieties grown at Freeville, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids	Hollow ² heart
Campbell 14	439	415	96	3	95	1.087	21.69	0
Delta Gold	461	410	95	6	90	1.092	22.97	0
Elba (NY59)	494	452	105	2	91	1.089	22.11	0
Hampton	409	340	79	11	85	1.080	20.21	0
Katahdin	448	432	100	2	97	1.085	21.27	0
Monona	321	312	72	1	98	1.080	20.21	2
Shepody	444	367	85	8	91	1.088	21.90	1
AF303-5	508	456	106	2	90	1.087	21.69	1
AF474-2	417	364	84	9	88	1.081	20.43	0
CF76183-2	328	256	59	16	78	1.075	19.16	0
F73008	420	358	83	11	84	1.087	21.69	1
NY64	462	396	92	13	86	1.085	21.27	0
Waller Duncan LSD (k=100)	62	52				0.004		

¹Planted - April 29; killed - September 6; harvested - September 16 and 17, 1985.
Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 150-150-150.

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

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Performance data for five russeted varieties (128 day test) grown at Freeville, New York are presented in Table 22. Acadia Russet had significantly higher total and usable yields than the other varieties. All varieties had similar tuber size distribution and had specific gravities over 1.080.

Since potato varieties often behave much differently on muck soils than on mineral soils, a test was conducted to evaluate varietal performance on muck soils at Savannah, New York (Table 23). The three highest yielding varieties were Elba, Katahdin, and AF303-5. Only Elba had significantly higher usable yield than Katahdin. Acadia Russet, Katahdin and NemaRus had over 10% defects. Northing Russet, Elba, and AF303-5 each had specific gravities over 1.080.

Ohio. Performance data for 21 potato varieties grown in a trial at Wooster, Ohio are presented in Table 24. This test was grown for 112 days. The four top varieties in total yield were Kennebec, Atlantic, WF564-3, and Hampton. All varieties sized well, but several (Kennebec, AF9058-M, WF564-3, Elba, and CF7750-1) had a very high percentage of tuber defects. Usable yield was highest for Hampton, Atlantic, and Yankee Supreme. Specific gravities for Denali, W752, CF7688-9, and Yankee Supreme were 1.090 or higher.

Pennsylvania. Yield, usable yield, percent defects, percentage of yield between 2-1/2 and 4 inches, and specific gravity for 14 potato varieties grown at Berlin, Pennsylvania are presented in Table 25. This test was grown for 115 days. Green Mountain, Kennebec, and A72685-2 had the highest total and usable yields. Usable yields of all test varieties were significantly lower than the standard; however, A72685-2 performed very well for a russet-long variety. Percentage of defects was over 10% for AF236-1, Kennebec, Green Mountain, and Norchip. B9596-2, B9540-55, ND534-4, W564-3, Northing Russet, Norchip, and NemaRus did not size well. Specific gravities of seven varieties were over 1.080.

Rhode Island. Performance data for 21 potato varieties grown at Kingston, Rhode Island for 123 days are presented in Table 26. Only yields of CS7697-24, Caribe, Yankee Supreme, NY64, and CF7523-1 were

Table 22. Yield, usable yield, percent defects, percentage of yield between 4 and 16 ounces, specific gravity, percent total solids, and hollow heart ratings for 5 russeted potato varieties grown at Freeville, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of A. Russet Yield	Percent defects ²	Percentage of yield 4 to 16 ounces	Specific gravity	Percent total solids	Hollow ² heart
Acadia Russet	434	324	100	2	74	1.085	21.27	1
NemaRus(B9540-62)	349	258	80	6	74	1.083	20.85	0
Norking Russet	335	240	77	3	71	1.090	22.33	1
ND534-4	329	246	76	3	75	1.085	21.27	0
WF591-1R	310	219	71	7	71	1.090	22.33	0
Waller Duncan LSD (k=100)	36	43				0.004		

¹Planted - April 29; killed - September 6; harvested - September 16 and 17, 1985.
Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 150-150-150.

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

Table 23. Yield, usable yield, percent defects, percentage of yield between 2 and 4 inches for round white varieties and between 4 and 16 ounces for russeted varieties, specific gravity, percent total solids, and hollow heart ratings for 10 potato varieties grown on muck soils at Savannah, New York - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield Cwt./A.	Percent of Katahdin Yield	Percent defects	Percentage of yield by size class ²	Specific gravity	Percent total solids	Hollow heart ³
Acadia Russet	571	352	72	11	62	1.077	19.58	0
Elba (NY59)	819	688	140	7	84	1.082	20.64	0
Hampton	528	465	95	6	88	1.078	19.79	1
Katahdin	638	491	100	12	77	1.078	19.79	0
NemaRus(B9540-62)	351	246	50	13	70	1.076	19.37	0
Norking Russet	488	424	86	0	87	1.086	21.48	0
Superior	332	276	56	5	84	1.073	18.74	0
AF303-5	594	523	107	3	87	1.084	21.06	0
ND534-4	314	268	55	3	86	1.072	18.53	0
NY64	387	314	64	8	80	1.080	20.21	0
Waller Duncan LSD (k=100)	100	94				0.004		

¹Planted - May 6; killed - September 9; harvested - September 23, 1985.

Seedpieces of all varieties were spaced 9 inches apart. Fertilization: 146-100-148 plus two foliar (5 lbs/A.) applications of 20-20-20. Supplementary boron, copper, manganese, magnesium, sulfur, and zinc were applied at planting.

²Percentage of yield between 2 and 4 inches for round white varieties and between 4 and 16 ounces for russeted varieties.

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

Table 24. Yield, usable yield, percent defects, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 21 potato varieties grown at Wooster, Ohio - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches	Specific gravity	Percent total solids
Atlantic	611	522	146	9.3	94.7	1.087	21.69
Denall	567	474	135	9.6	93.6	1.095	23.38
Elba (NY59)	576	497	137	10.7	97.1	1.078	19.79
Hampton	584	535	139	6.0	96.0	1.074	18.95
Katahdin	419	376	100	6.8	97.5	1.074	18.95
Kennebec	629	473	150	20.0	95.4	1.074	18.95
Monona	469	420	112	5.1	94.8	1.076	19.37
Norchip	574	492	137	9.0	94.9	1.082	20.64
Simcoe	402	358	96	6.6	95.7	-	-
Sunrise	516	460	123	6.6	95.9	1.080	20.21
Yankee Chipper	512	437	122	8.6	94.2	-	-
Yankee Supreme	568	510	136	6.4	96.2	1.090	22.33
Yukon Gold	461	430	110	4.0	97.2	1.086	21.48
AF9058-M	457	351	109	16.8	94.1	1.075	19.16
CF7679-15	500	449	119	7.3	96.9	1.080	20.21
CF7688-9	505	451	120	6.8	96.6	1.092	22.75
CF7750-1	383	325	91	10.4	95.2	1.085	21.27
CF77154-10	430	366	103	8.5	94.0	1.085	21.27
MN7973	450	422	107	3.1	96.9	1.070	18.10
W752	522	453	124	7.9	94.7	1.092	22.75
WF564-3	600	495	143	11.6	94.0	1.075	19.16
LSD (0.05)	73	74					

¹Planted - May 14; killed - September 3; harvested - September 17, 1985. Fertilization: 120-240-240.

Seedpieces of all varieties were spaced 12 inches apart.

²Includes mostly sunburned, growth cracked, misshapen, and undersized tubers.

Table 25. Yield, usable yield, percent defects, percentage of yield between 2-1/2 and 4 inches, specific gravity, and percent total solids for 14 potato varieties grown at Berlin, Pennsylvania - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Kennebec Yield	Percent defects ²	Percentage of yield 2-1/2 to 4 Inches	Specific gravity	Percent total solids
Acadia Russet	314	291	81	6	59.8	1.075	19.16
Green Mountain	430	405	110	11	56.6	1.089	22.11
Kennebec	389	370	100	13	70.6	1.083	20.85
NemaRus (B9540-62)	251	216	64	4	33.4	1.077	19.58
Norchip	254	219	65	10	30.9	1.079	20.00
Norking Russet (ND388-1)	279	230	72	4	20.6	1.082	20.64
A72685-2	357	330	92	4	60.9	1.089	22.11
AF236-1	339	314	87	16	55.3	1.084	21.06
AF330-1	312	288	80	6	45.5	1.084	21.06
B9540-55	179	116	46	2	10.6	1.072	18.53
B9596-2	261	193	67	3	8.8	1.078	19.79
F73008	306	275	79	9	47.8	1.082	20.64
ND534-4	294	241	76	3	14.6	1.077	19.58
WF564-3	292	246	75	3	19.3	1.075	19.16
LSD (0.05)	40	35				0.005	

¹Planted - May 14; killed - September 6; harvested - September 24, 1985. Fertilization: 112-56-56. Seedpieces of all varieties were spaced 8 inches apart.

²Includes sunburned, growth cracked, and misshapen tubers.

Table 26. Yield, percent of Katahdin yield, percent defects, and percentage of yield between 1-7/8 and 4 inches for 21 potato varieties grown at Kingston, Rhode Island - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield 1-7/8 to 4 inches
Acadia Russet	231	112	4.0	86.1
Caribe	275	133	4.6	87.4
GoldRus	127	62	2.0	72.7
Katahdin	207	100	6.3	86.4
Sunrise	195	94	4.6	85.6
Superior	233	112	3.7	89.2
Yankee Chipper	189	91	2.7	83.4
Yankee Supreme	265	128	4.9	88.5
Yukon Gold	182	88	3.7	89.9
AF330-1	178	86	2.4	88.5
AF339-5	209	101	2.6	90.0
CF7523-1	256	124	2.4	85.6
CF7679-15	230	111	4.3	86.8
CF7688-9	217	105	1.8	91.2
CS7232-4	205	99	2.8	91.7
CS7639-1	236	114	3.5	87.9
CS7697-24	292	141	4.7	86.2
F73008	220	106	2.4	90.9
NY64	264	127	5.5	84.8
WF564-3	208	101	1.8	84.7
WF591-1R	216	104	0.7	89.7
Waller Duncan				
LSD (k=100)	46			

¹Planted - April 22; killed - August 23; harvested - September 17, 1985.

Seedpieces of all varieties were spaced 10 inches apart.

²Fertilization: 105-210-210 at planting plus 30 lbs./A. N at blossom.

²Includes sunburned, growth cracked, and oversized tubers.

significantly higher than the standard variety, Katahdin. Percentage of defects was quite low for all varieties and only GoldRus had less than 80% of yield in the 1-7/8 to 4 inch size class.

Vermont/New Hampshire. Performance data for 19 potato varieties grown at Guildhall, Vermont for 102 days are presented in Table 27. Nine varieties had significantly higher yields than Katahdin; however, none of the varieties was higher in yield than Kennebec. The five top yielding varieties were Kennebec, CF7523-1, Rhine Red, Hampton, and AF303-5. All varieties sized quite well. BR7088-13, Yankee Chipper, CF7679-15, Campbell 14, and Yankee Supreme had specific gravities of 1.080 or above.

Virginia. Three variety trials were conducted at Painter, Virginia based on maturity season or tuber type. Performance data for 18 early to mid-season (115 day test) varieties are presented in Table 28. Total yields of CF7523-1, CS7697-24, and Yankee Supreme were significantly higher than the standard variety, Superior. Only usable yield of CF7523-1 was significantly higher than Superior. Percent tuber defects was 10% or higher for CF7688-9, Jemseg, Sunrise, CS7697-24, CS7747-7, and Pungo. All varieties except CF76183-2, Yankee Chipper, and CS7747-7 produced more than 60% of yield in the greater than 2-1/2 inch size class. Specific gravity for Denali, Atlantic, and CF7688-9 exceeded 1.090.

Performance data for four medium-late to late maturing (115 day test) varieties are presented in Table 29. Only NY64 had significantly higher yield and usable yield than the standard variety, Katahdin. Percent defects was 10% or higher for all varieties and particularly high for Shepody (24%). Only Shepody had a specific gravity over 1.080.

Results from a test of seven russeted varieties grown for 115 days are presented in Table 30. All varieties had significantly higher usable yield than the standard variety, BelRus. The top three varieties in usable yield were WF564-3, Acadia Russet, and WF591-1R. Only BelRus, ND534-4, and WF591-1R had fewer than 10% tuber defects. Percentage of yield consisting of tubers over 8 ounces was particularly

Table 27. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 19 potato varieties grown at Guildhall, Vermont - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Percent of Katahdin Yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Campbell 14	285	106	98.2	73.6	1.080	20.21
Elba (NY 59)	337	126	98.4	78.5	1.069	17.89
Hampton	363	135	84.9	68.4	1.071	18.32
Islander	302	113	96.1	68.7	1.079	20.00
Katahdin	268	100	96.9	77.2	1.071	18.32
Kennebec	424	158	95.7	79.5	1.071	18.32
Rhine Red	373	139	89.8	70.8	1.069	17.89
Sunrise	257	96	97.2	68.7	1.074	18.95
Superior	285	106	96.0	71.2	1.072	18.53
Yankee Chipper	282	105	96.0	59.7	1.082	20.64
Yankee Supreme	307	115	97.6	74.7	1.080	20.21
AF303-5	348	130	96.3	75.6	1.072	18.53
AF339-5	330	123	96.9	76.2	1.076	19.37
B9340-13	283	106	97.2	68.3	1.077	19.58
BR7088-13	320	119	96.2	72.9	1.088	21.90
CF7523-1	387	144	96.9	70.3	1.076	19.37
CF7679-15	319	119	90.5	73.6	1.081	20.43
CS7296-5	269	100	96.5	66.2	1.075	19.16
F70021	291	109	92.2	65.5	1.070	18.10
Waller Duncan						
LSD (k=100)	50				0.004	

¹Planted - May 21; killed - August 31; harvested - September 24, 1985.

Seedpieces of all varieties spaced 9 inches apart. Fertilization: 160-220-220-80.

Table 28. Yield, usable yield, percent defects, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 18 early to mid-season maturing varieties grown at Painter, Virginia - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Superior Yield	Percent defects ²	Percentage of yield above 1-7/8 Inches	Percentage of yield above 2-1/2 inches	Specific gravity	Percent total solids
Atlantic	339	299	108	4	88	80	1.096	23.1
Denali	289	245	92	3	85	71	1.098	23.6
Islander	290	232	93	6	79	64	1.079	19.4
Jemseg	197	163	63	12	82	77	1.076	18.9
Pungo	327	274	104	10	83	76	1.082	20.0
Sunrise	301	231	96	12	76	66	1.079	19.4
Superior	313	269	100	6	86	77	1.081	19.9
Yankee Chipper	252	170	81	7	68	44	1.087	21.1
Yankee Supreme	368	312	118	8	85	77	1.087	21.1
Yukon Gold	281	256	90	4	91	84	1.083	20.3
AF339-5	226	202	72	7	90	84	1.081	19.9
CF7523-1	403	337	129	5	84	73	1.083	20.3
CF7679-15	298	265	95	6	89	84	1.081	19.9
CF7688-9	293	222	94	16	75	68	1.092	22.3
CF76183-2	171	118	55	9	66	39	1.074	18.3
CF7750-1	178	140	57	7	79	61	1.080	19.7
CS7697-24	367	289	117	12	79	69	1.081	19.9
CS7747-7	300	213	96	10	70	54	1.074	18.3
Waller Duncan LSD (k=100)	44	45					0.004	

¹Planted - March 14; harvested - July 8, 1985.
Seedpiece spacing - 12 inches. Fertilization: 150-100-100.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 29. Yield, usable yield, percent defects, percentage of yield above 1-7/8 inches, specific gravity, and percent total solids for 4 medium late to late season maturing varieties grown at Painter, Virginia - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-7/8 inches Cwt./A.	Percent of Katahdin Yield	Percent defects ²	Percentage of yield above 1-7/8 inches	Percentage of yield above 2-1/2 inches	Specific gravity	Percent total solids
Hampton	254	205	103	11	81	72	1.072	18.0
Katahdin	246	204	100	10	83	76	1.069	17.3
Shepody	277	189	113	24	69	59	1.089	21.6
NY64	318	248	129	11	78	69	1.078	19.2
Waller Duncan LSD (k=100)	39	39					0.004	

¹Planted - March 14; harvested - July 8, 1985.

Seedpieces of all varieties were spaced 12 inches apart. Fertilization: 150-100-100.

²Includes sunburned, misshapen, and growth cracked tubers.

Table 30. Yield, usable yield, percent defects, percentage of yield over 8 ounces, specific gravity, and percent total solids for 7 russeted potato varieties grown at Painter, Virginia - 1985.

Variety ¹	Total yield Cwt./A.	Usable yield above 4 ounces Cwt./A.	Percent of BelRus Yield	Percent defects ²	Percentage of yield over 8 ounces	Specific gravity	Percent total solids
Acadia Russet	342	265	163	17	52	1.078	19.2
BelRus	210	142	100	9	14	1.085	20.7
Norking Russet (ND388-1)	309	235	147	10	31	1.081	19.9
CS73105-2R	249	191	119	14	38	1.077	19.0
ND534-4	308	237	147	9	38	1.073	18.2
WF564-3	365	283	174	10	28	1.068	17.1
WF591-1R	289	241	138	4	45	1.084	20.5
Waller Duncan LSD (k=100)	41	40				0.006	

¹Planted - March 14; harvested - July 8, 1985.

Seedpieces of all varieties were spaced 12 inches apart. Fertilization: 150-100-100.

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

high for Acadia Russet (52%) and WF591-1R (45%). Specific gravity of BelRus, WF591-1R, and Norking Russet exceeded 1.080.

West Virginia. Three separate tests were conducted at Morgantown, West Virginia based on maturity class or tuber type. Performance evaluations for six medium-early maturing varieties grown for 105 days are presented in Table 31. The standard variety, Kennebec, had significantly higher total and usable yields than the five test varieties. Aside from Kennebec, the two top yielding varieties were CF7679-15 and B9340-13. All varieties sized well and only CS7639-1 had specific gravity below 1.080. B9140-32 and CF7688-9 had specific gravities of 1.090.

Performance data for six medium-late to late maturing varieties grown for 115 days are presented in Table 32. Only AF303-5 had significantly higher total yield than the standard variety, Katahdin. Usable yields of AF303-5 and NY64 were higher than Katahdin. All varieties sized well and only Katahdin and NY64 had specific gravities below 1.080.

Performance data for seven russeted varieties grown for 115 days are presented in Table 33. All varieties, except NemaRus, had numerically higher total and usable yields than the standard variety, BelRus. Only Acadia Russet and ND534-4 had significantly higher total and usable yields than BelRus. All varieties sized well, but only BelRus had high specific gravity (1.088).

TUBER SIZE DISTRIBUTION AND TUBER DEFECTS

Tuber size distribution can have a profound effect on the desirability of a potato variety. Requirements for tuber size vary among growing regions and ultimately depend on the intended market for the potatoes. Potatoes intended for the french fry industry should ideally be of long type and in the 6 to 10 ounce size class. Percentage of tubers over 10 ounces in weight is sometimes used as an important indicator of tuber sizes conducive to french fry production. Chip producers generally require small to medium sized tubers.

Table 32. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 6 medium late to late maturing potato varieties grown at Morgantown, West Virginia - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of Katahdin Yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Campbell 14	270	270	90	94.0	73.5	1.081	20.46
Katahdin	301	295	100	93.9	78.0	1.073	18.74
AF236-1	271	271	90	96.0	82.3	1.087	21.69
AF303-5	371	359	123	91.7	74.6	1.089	22.11
BR7088-18	267	267	88	93.3	76.4	1.088	21.90
NY64	323	323	107	92.9	76.1	1.078	19.79
Waller Duncan LSD (k=100)	26	28				0.002	

¹Planted - May 5; killed - August 28; harvested - September 13, 1985. Fertilization: 100-200-200. Seedpieces of all varieties were spaced 9 inches apart.

Table 33. Yield, usable yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and percent total solids for 7 russeted potato varieties grown at Morgantown, West Virginia - 1985.

Variety ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent of BelRus Yield	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific gravity	Percent total solids
Acadia Russet	381	346	145	83.2	71.4	1.079	20.00
BelRus	262	262	100	87.9	73.0	1.088	21.90
NemaRus (B9540-62)	257	257	98	89.5	73.9	1.076	19.37
B9540-55	291	289	111	91.2	75.4	1.073	18.74
B9569-2	280	280	107	89.6	70.5	1.076	19.37
B9596-2	288	288	110	89.0	70.2	1.074	18.95
ND534-4	303	295	116	89.3	72.4	1.076	19.37
Waller Duncan LSD (k=100)	38	33				0.002	

¹Planted - May 5; killed - August 28; harvested - September 13, 1985. Fertilization: 100-200-200. Seedpieces of all varieties were spaced 9 inches apart.

In general, tablestock markets can utilize a range of size classes depending on the package, uniformity, and intended use. Uniformity is a desirable quality in all potato markets.

Detailed information on tuber size distribution is presented in Tables 34 through 56. Grade size classes varied considerably among locations and are therefore difficult to compare. General comments on grade size distribution have been presented in the previous section. No further attempt will be made to describe the detailed tuber size data provided in Tables 34 through 56. Readers who are interested in detailed information on a specific variety should consult the appropriate tables and bear in mind that tuber size distribution can vary considerably with environment, length of growing season, seedpiece spacing, and cultural practices.

Production of tubers with good external and internal appearance is a very important and desirable varietal characteristic. In most test locations, tubers were graded soon after harvest and percent total defects were calculated. A general discussion of percent total defects was included in the previous section. At several locations, tuber defects were evaluated by type. The most commonly observed external defects were sunburn, growth cracks, and misshapen tubers. At several locations, 10 large tubers were taken from each replication and cut to determine if internal defects such as hollow heart or internal necrosis were present. The ensuing discussion will serve to point out where problems occurred with tuber defects. The reader should note that no comments will be made about a variety if quality problems were not present. Please refer to Tables 34 through 56 for details about specific varieties or locations of interest.

Tuber defect evaluations for round-white and russeted varieties grown at Rising Sun, Delaware are presented in Tables 35 and 36, respectively. F74123 was the only variety which had problems with external defects. This variety had a very high percentage (27%) of yield consisting of misshapen tubers (Table 35). WF564-3 and WF591-1R also had some problems with misshapen tubers (Table 36). Few internal defects were observed in either test. Internal necrosis was most common in Simcoe (Table 35).

Table 34. Percentage of total yield by distribution into grade size classes, percent defects, and types of defects for 21 main crop potato varieties grown at Florenceville, New Brunswick, Canada - 1985.

Variety	Less than 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Percent defects	Defect type by replicate ¹		
						Sunburn	Second growth	Growth cracks
Elba (NY59)	4	40	51	5	1	++	+	+
GoldRus	8	63	29	0	7	+	+++	++
Hampton	7	30	55	13	15	+++		++++
Katahdin	7	31	49	13	4	++++		+
Kennebec	7	30	53	10	11	+++	+	++
NemaRus (B9540-62)	8	56	35	1	6	+++	+	+
Redsen	16	54	27	3	3		+	+
Russet Burbank	7	60	32	0	16	+	+++	
A72685-2	13	40	41	5	6	++	+++	
AF236-1	6	40	54	0	12	+++	+	++
AF330-1	16	58	24	2	16	+		++++
CF7679-15	7	37	51	6	11	+++	+	+++
CF7688-9	19	55	25	1	14	+++		+++
CF77154-10	13	55	31	0	5	++	++	++
CS7232-4	10	42	44	3	4	+++	+	
CS7639-1	6	45	45	4	10	+		+++
CS7747-7	7	50	42	0	15	+++	++	++
MN7973	4	36	51	9	7	+++	+	++
ND534-4	11	51	34	3	1			
NY64	13	58	28	0	13	++		++++
WF564-3	10	55	34	0	7		+++	++

¹(+) Indicates the presence of a defect in one replicate.

Table 35. Percentage of yield by distribution into grade size classes, percent defects, hollow heart and internal necrosis ratings for 13 round white varieties grown at Rising Sun, Delaware - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches	% Mis- shapen	% Growth cracks	Hollow heart ¹	Internal necrosis ¹
Hampton	2	18	48	28	3	0	1	2	1
Jemseg	3	17	43	32	3	0	2	1	2
Simcoe	3	21	52	21	3	0	0	1	4
Sunrise	5	27	47	19	2	0	0	2	0
Superior	3	36	51	9	1	0	0	0	0
Yankee Supreme	4	23	51	21	1	0	0	2	0
Yukon Gold	4	14	39	35	7	1	0	0	0
CF7523-1	7	29	51	13	0	0	0	0	0
CF7679-15	5	20	43	27	5	0	0	3	0
CF7688-9	4	22	48	25	1	0	0	1	0
CS7639-1	3	17	38	36	4	1	1	2	0
F74123	4	15	29	22	3	27	0	0	2
NY64	5	29	43	21	2	0	0	0	0

¹Number found per 40 large tubers cut and examined for internal disorders.

Table 36. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 12 russeted potato varieties grown at Rising Sun, Delaware - 1985.

Variety	Below 4 ounces	4 to 8 ounces	Over 8 ounces	% Mis- shapen	% Growth cracks	Hollow heart ¹	Internal necrosis ¹
Acadia Russet	20	36	44	0	0	0	0
BelRus	25	44	31	0	0	0	1
Nemarus (B9540-62)	23	44	33	0	0	0	0
Norking Russet (ND388-1)	30	46	23	1	0	0	1
A72685-2	37	44	18	1	0	0	0
B9569-2	26	43	31	0	0	0	1
B9596-2	23	46	31	0	0	0	2
CF7750-1	19	41	40	0	0	0	0
CS73105-2R	22	36	40	0	2	1	1
ND534-4	31	42	27	1	0	0	0
WF564-3	33	40	21	5	1	0	1
WF591-1R	18	45	31	5	1	0	0

¹Number found per 40 large tubers cut and examined for internal disorders.

Tuber defect evaluations for potato varieties grown at Presque Isle, Maine are presented in Tables 37 through 42. AF339-5 and CF76183-2 had fairly high percentages of sunburned and misshapen tubers (Table 37). These two varieties also had some hollow heart, although incidence of hollow heart was generally quite low in Maine during 1985. CS7747-7 and CS7296-5 had relatively high percentages (13.0 and 4.9%, respectively) of sunburned tubers (Table 38). These two varieties also had moderate levels of misshapen tubers (over 3.0%) and some hollow heart. AF9058-M had considerable amounts of sunburned and misshapen tubers (5.6 and 5.5%, respectively; Table 39). CS77120-8 had 5.0% sunburn and 9.3% growth cracks (Table 39). Hollow heart was a problem in B9140-32 and CS77120-8. Sunburn was a severe problem in Kennebec (10.8%) and Shepody (11.7%) at this location during 1985 (Table 40). Shepody also had a fairly high incidence of misshapen tubers (4.2%). Data in Table 41 indicate that sunburn was a problem in Katahdin (7.3%), Hampton (4.7%), and NY64 (6.5%). NY64 also had 4.6% of yield consisting of misshapen tubers. Despite the favorable growing conditions for russet-long varieties during 1985, a fairly high incidence of sunburned and misshapen tubers was observed at Presque Isle (Table 42). NemaRus, GoldRus, A72685-2, and A7411-2 had 5.0% or more sunburn. Russet Burbank had 9.4% misshapen tubers by weight. Hollow heart was not a severe problem, but was most common in GoldRus and NemaRus.

Hollow heart and heat necrosis ratings for the New Jersey variety trials are presented in Tables 43 through 45. Hollow heart was somewhat of a problem in NemaRus, CS77120-8, CS7747-7, Atlantic, and Islander. Heat necrosis was most severe in Atlantic, CS7635-4, Norchip, F74123, and CF7750-1. Heat necrosis was observed to a lesser degree in CF7679-15, Yankee Chipper, Islander, and several other selections.

For early varieties at Riverhead, New York, hollow heart was a severe problem only in Jemseg (Table 46). Minor amounts of hollow heart were also observed in Sunrise, CF7679-15, and CS7639-1. Internal necrosis was a problem in CS7639-1. In the main season variety trial at Riverhead, hollow heart was occasionally observed in AF303-5,

Table 37. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 7 early maturing varieties grown at Presque Isle, Maine - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/4 inches	2-1/4 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Superior	1.3	17.0	35.8	41.8	4.1	0.0	0.5	0.7	0.1	0
Redsen	3.5	24.5	22.2	37.5	11.7	0.6	0.5	1.1	0.4	0
AF339-5	0.7	6.3	16.7	49.3	24.6	2.4	3.7	6.3	0.4	3
B9569-2	3.9	34.3	35.3	24.5	2.0	0.0	0.0	1.2	0.1	0
CF76183-2	1.5	15.0	29.6	46.9	7.0	0.0	5.3	8.0	0.2	6
CF77154-10	1.8	21.4	36.8	38.1	1.9	0.0	1.2	0.6	0.2	0
CS7697-24	2.9	14.8	25.1	47.2	9.6	0.4	4.6	2.1	2.1	0

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

Table 38. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 9 medium early maturing varieties grown at Presque Isle, Maine - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/4 inches	2-1/4 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Superior	1.7	17.0	32.1	42.6	6.6	0.0	0.5	1.6	0.0	0
AF465-2	5.6	28.5	36.3	28.0	1.6	0.0	0.3	1.7	0.0	0
B9340-13	2.6	21.5	31.4	40.8	3.7	0.0	2.0	1.9	0.0	0
CF7679-15	1.2	7.0	14.9	49.0	23.7	4.2	1.7	1.4	0.3	1
CF7750-1	1.7	6.5	19.0	54.1	18.0	0.7	1.4	1.5	0.0	0
CS7296-5	3.3	14.1	21.4	48.9	11.3	1.0	4.9	3.9	0.5	3
CS7639-1	1.6	7.5	15.8	54.4	19.3	1.4	2.9	0.8	0.1	0
CS7747-7	1.8	13.5	27.0	50.2	7.5	0.0	13.0	3.4	0.4	2
F70021	1.8	10.7	19.2	50.9	17.2	0.2	3.3	0.6	0.0	1

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

Table 39. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 8 medium maturing varieties grown at Presque Isle, Maine - 1985.

Variety	1-1/2 to 1-7/8 Inches	1-7/8 to 2-1/4 Inches	2-1/4 to 2-1/2 Inches	2-1/2 to 3-1/4 Inches	3-1/4 to 4 Inches	Over 4 Inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Kennebec	2.2	8.7	17.7	54.7	15.3	1.4	4.3	2.0	0.4	1
Rhine Red	2.3	11.7	19.8	46.1	17.9	2.2	0.1	0.4	0.1	0
AF9058-M	3.0	16.7	26.3	43.8	10.2	0.0	5.6	5.5	0.0	0
B9140-32	1.8	10.2	20.2	48.8	18.2	0.8	0.7	1.2	0.3	6
CS77120-8	3.3	10.6	18.8	48.7	17.8	0.8	5.0	0.2	9.3	6
F74123	2.3	9.7	19.9	53.8	13.8	0.5	1.4	1.8	0.0	1
W752	3.0	15.6	27.5	46.0	7.9	0.0	1.9	4.2	0.0	0
WF591-1R	2.4	8.1	19.3	50.1	16.9	3.2	1.5	2.4	3.8	2

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

Table 41. Percentage of yield by distribution into grade size classes, percent defects, and hollow heart ratings for 5 late maturing varieties grown at Presque Isle, Maine - 1985.

Variety	1-1/2 to 1-7/8 Inches	1-7/8 to 2-1/4 Inches	2-1/4 to 2-1/2 Inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 Inches	Over 4 Inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹
Katahdin	2.0	7.7	15.1	52.0	21.2	2.0	7.3	0.4	0.0	0
Elba (NY59)	1.9	9.8	18.8	49.9	17.9	1.7	3.3	0.6	0.0	0
Hampton	0.9	6.9	11.9	52.5	25.9	1.9	4.7	0.3	0.2	0
CS7635-4	1.0	6.6	16.6	52.4	21.5	1.9	3.2	0.1	0.2	0
NY64	1.7	12.1	22.7	49.0	13.8	0.7	6.5	4.6	0.5	0

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

Table 42. Percentage of total yield by distribution into grade size classes, percent defects, and hollow heart ratings for 8 russeted potato varieties grown at Presque Isle, Maine - 1985.

Variety	Below 4 ounces	4 to 10 ounces	10 to 16 ounce	Over 16 ounces	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹		
Russet Burbank	19.1	58.7	20.6	1.6	1.0	9.4	0.0	0		
GoldRus	13.7	49.8	27.3	9.2	6.5	1.2	0.9	6		
NemaRus (B9540-62)	8.9	45.2	32.8	13.1	7.6	4.8	0.2	4		
A7411-2	14.8	52.6	25.4	7.2	5.0	2.0	0.5	1		
A72685-2	16.8	51.3	19.4	12.5	5.9	3.2	0.1	3		
B9540-55	12.7	60.3	21.0	6.0	4.5	4.3	0.4	0		
B9596-2	12.5	77.0	8.8	1.7	1.9	3.6	0.1	0		
	1-1/2 to 1-7/8 Inches	1-7/8 to 2-1/4 Inches	2-1/4 to 2-1/2 Inches	2-1/2 to 3-1/4 Inches	3-1/4 to 4 Inches	Over 4 Inches				
CS73105-2R	1.6	6.5	13.1	51.5	25.4	4.8	1.9	0.7	3.4	0

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

Table 43. Percentage of total yield by distribution into grade size classes, percent defects, hollow heart ratings, and heat necrosis ratings for 20 round white potato varieties grown at New Brunswick, New Jersey - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches	Hollow heart ¹	Heat necrosis ¹
Atlantic	2	14	32	43	8	2	7
Katahdin	3	18	37	37	1	0	0
Superior	3	30	47	19	0	0	0
AF339-5	1	14	35	48	1	0	1
AF474-2	3	25	38	30	2	0	2
AF9058-M	5	41	41	9	0	0	0
CF7679-15	2	11	27	48	9	0	3
CF7688-9	2	16	38	40	2	0	0
CF77154-10	3	25	43	26	0	0	2
CS7296-5	2	16	43	32	1	0	1
CS7635-4	4	24	46	24	1	0	7
CS7639-1	2	13	35	43	2	0	0
CS7697-24	2	15	36	37	4	0	0
CS7747-7	4	27	35	26	0	2	2
CS77120-8	6	35	34	19	0	3	1
F70021	2	16	34	41	3	0	2
F74123	5	20	36	27	3	0	4
NY64	2	20	39	34	0	0	1
W752	3	21	42	31	0	0	0
WF591-1R	6	32	42	18	1	0	0

¹Number found per 10 large tubers cut and examined for internal disorders.

Table 44. Percentage of total yield by distribution into grade size classes, percent defects, hollow heart ratings, and heat necrosis ratings for 20 round white and red-skinned potato varieties grown at New Brunswick, New Jersey - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches	Hollow heart ¹	Heat necrosis ¹
Atlantic	3	16	25	43	10	0	6
Campbell 14	3	21	42	29	2	0	0
Caribe	2	17	45	31	2	0	0
Denall	3	22	42	31	1	1	0
Hampton	2	15	25	48	9	0	0
Islander	3	32	44	19	0	2	2
Jemseg	2	15	33	46	2	0	0
Katahdin	3	17	35	37	5	0	0
Norchip	4	25	44	22	1	0	6
Redsen	4	33	39	21	1	0	0
Rhine Red	3	19	31	38	7	0	0
Simcoe	3	26	38	30	1	0	1
Sunrise	3	21	35	35	5	0	0
Superior	2	26	52	18	1	0	0
Yankee Chipper	9	45	37	7	0	0	3
AF92-3	2	16	37	36	2	0	0
AF236-1	3	21	39	31	1	0	0
B9140-32	2	20	42	33	1	0	1
BR7088-18	2	21	38	36	1	0	2
CF7523-1	3	21	40	33	0	0	0

¹Number found per 10 large tubers cut and examined for internal disorders.

Table 45. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and heat necrosis ratings for 11 russeted potato varieties grown at Bridgeton, New Jersey - 1985.

Variety	Below 4 ounces	4 to 8 ounces	8 to 12 ounces	12 to 16 ounces	Over 16 ounces	Hollow heart ¹	Heat necrosis ¹
Acadia Russet	11	30	26	9	6	1	0
BelRus	28	43	20	2	1	0	1
NemaRus (B9540-62)	11	31	25	14	5	3	1
Norking Russet (ND388-1)	13	35	26	9	5	1	0
Russet Burbank	25	27	8	0	0	0	0
Shepody	9	26	13	14	1	1	0
A72685-2	36	37	11	1	0	0	0
B9569-2	31	46	16	0	1	0	0
CF7750-1	16	50	24	2	1	0	4
CS73105-2R	10	47	29	5	4	0	0

¹Number found per 10 large tubers cut and examined for internal disorders.

Table 46. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and internal necrosis ratings for 6 early maturing potato varieties grown at Riverhead, New York - 1985.

Variety	Below 2 Inches	2 to 2-1/2 Inches	2-1/2 to 3-1/4 Inches	3-1/4 to 4 Inches	Over 4 Inches	Hollow heart ¹	Internal necrosis ¹
Superior	23	44	33	0	0	0	1
Chippewa	30	31	37	2	0	0	0
Jemseg	15	18	56	11	0	15	0
Sunrise	18	31	47	3	1	3	1
CF7679-15	10	19	59	12	0	2	0
CS7639-1	19	27	51	3	0	2	6

¹Number found per 40 large tubers cut and examined for internal disorders. Hollow heart rating includes tubers with brown center.

Hudson, and CF7688-9 (Table 47). Internal necrosis was a severe problem in AF303-5 and was quite common in Hampton, F74123, CF7688-9, Hudson, and NY64. In the Riverhead russet trial, hollow heart was observed in Russette, B9569-2, B9596-2, and BelRus (Table 48). Internal necrosis was a problem in Acadia Russet and B9596-2.

Percent defects, hollow heart ratings, and internal necrosis ratings for 21 potato varieties grown at Wooster, Ohio are presented in Table 49. Kennebec, Yankee Chipper, AF9058-M and Elba had more than 3% sunburn. AF9058-M, Kennebec, CF7750-1, and Denali had more than 3% misshapen tubers. CF7679-15 was the only variety with any hollow heart. Internal necrosis was a severe problem in Atlantic, Elba, Monona, Sunrise, CF7679-15, and CF7750-1. Several other varieties had moderate levels of internal necrosis.

Hollow heart and heat necrosis were not a problem at Painter, Virginia during 1985 (Tables 51 to 53). The only varieties that had any hollow heart were CF7679-15 and CF76183-2. Low levels of heat necrosis were observed in CF76183-2, Sunrise, Yukon Gold, and WF564-3.

STORAGE CHARACTERISTICS

Storage characteristics are very important for potatoes grown in North America because a large percentage of the crop must be stored for several months prior to utilization. Potato varieties vary considerably in storage characteristics (2,3). Ideally storage studies should be conducted in large commercial storages, because many storage problems are observed only under commercial conditions. Since it is not possible to screen large numbers of new varieties in this manner, we have chosen to measure two indicators of storage potential under controlled conditions. These indicators are length of the dormancy period and total weight loss over time. Varieties with good storage potential are likely to have a long dormancy period and low weight loss. Once the storage potential of a variety is determined using these screening tools, the storage characteristics of a potentially important new variety should be confirmed under commercial conditions.

Table 47. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and internal necrosis ratings for 10 main season potato varieties grown at Riverhead, New York -1985.

Variety	Below 2 Inches	2 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 Inches	Hollow heart ¹	Internal necrosis ¹
Katahdin	17	22	58	3	0	1	1
Hampton	10	19	62	8	1	2	7
Hudson	15	23	57	5	0	3	3
Shepody	19	34	45	2	0	1	0
AF303-5	10	16	69	5	0	4	27
AF474-2	18	28	53	1	0	0	0
CF7523-1	18	32	50	0	0	0	0
CF7688-9	31	35	32	2	0	3	4
F74123	17	24	57	2	0	1	5
NY64	29	33	38	0	0	1	3

¹Number found per 40 large tubers cut and examined for internal disorders. Hollow heart rating includes tubers with brown center.

Table 48. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and internal necrosis ratings for 7 russeted potato varieties grown at Riverhead, New York - 1985.

Variety	Below 4 ounces	4 to 8 ounces	8 to 12 ounces	12 to 16 ounces	Over 16 ounces	Hollow heart ¹	Internal necrosis ¹
BelRus	29	48	15	3	5	2	1
Acadia Russet	18	28	35	10	9	0	4
NemaRus (B9540-62)	26	46	23	3	2	0	0
Russette	26	44	21	7	2	3	0
B9569-2	32	38	22	8	0	2	1
B9596-2	28	41	22	8	1	2	3
WF591-1R	26	41	25	6	2	0	1

¹Number found per 40 large tubers cut and examined for internal disorders. Hollow heart ratings include tubers with brown center.

Table 49. Percentage of yield by grade size distribution, percent defects, hollow heart ratings, and internal necrosis ratings for 21 potato varieties grown at Wooster, Ohio - 1985.

Variety	Below 1-7/8 inches	1-7/8 to 4 inches	% Sun- burn	% Mis- shapen	% Growth cracks	Hollow heart ¹	Internal necrosis ¹
Atlantic	5.3	94.7	1.3	1.3	0.4	0	6
Denali	6.4	93.6	0.7	3.3	0.0	0	0
Elba (NY59)	2.9	97.1	3.1	2.1	0.0	0	4
Hampton	4.0	96.0	0.6	0.6	0.0	0	2
Katahdin	2.5	97.5	1.8	1.0	0.0	0	0
Kennebec	4.6	95.4	7.7	5.4	0.0	0	0
Monona	5.2	94.8	0.2	1.1	0.0	0	4
Norchip	5.1	94.9	1.3	2.4	0.0	0	0
Simcoe	4.3	95.7	1.8	0.6	0.0	0	0
Sunrise	4.1	95.9	1.5	0.9	0.0	0	3
Yankee Chipper	5.8	94.2	3.9	1.8	0.1	0	0
Yankee Supreme	3.8	96.2	0.2	2.1	0.0	0	2
Yukon Gold	2.8	97.2	0.7	1.2	0.2	0	1
AF9058-M	5.9	94.1	3.9	5.5	0.2	0	0
CF7679-15	3.1	96.9	2.2	1.1	0.0	3	3
CF7688-9	3.4	96.6	1.6	0.1	0.0	0	0
CF7750-1	4.8	95.2	0.0	5.1	0.0	0	3
CF77154-10	6.0	94.0	1.9	1.8	0.1	0	1
MN7973	3.1	96.9	0.7	0.7	0.0	0	0
W752	5.3	94.7	0.8	0.4	0.0	0	0
WF564-3	6.0	94.0	0.0	2.7	0.0	0	1

¹Number found per 10 large tubers cut and examined for internal disorders.

Table 50. Percentage of yield by distribution into grade size classes for 19 potato varieties grown at Guildhall, Vermont 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches
Campbell 14	1.5	24.6	59.8	13.8	0.3
Elba (NY 59)	0.9	19.9	55.4	23.1	0.7
Hampton	1.1	16.5	40.5	27.9	14.0
Islander	2.5	27.4	55.0	13.7	1.4
Katahdin	0.7	19.7	48.2	29.0	2.4
Kennebec	1.3	16.2	46.3	33.2	3.0
Rhine Red	1.8	19.0	46.0	24.8	8.4
Sunrise	2.8	28.5	51.1	17.6	0.0
Superior	1.9	24.8	54.8	16.4	2.1
Yankee Chipper	4.0	36.3	53.8	5.9	0.0
Yankee Supreme	1.9	22.9	51.0	23.7	0.5
AF303-5	1.6	20.7	50.7	24.9	2.1
AF339-5	1.0	20.7	32.5	43.7	2.1
B9340-13	2.8	28.9	59.6	8.7	0.0
BR7088-18	1.7	23.3	55.6	17.3	2.1
CF7523-1	2.8	26.6	56.4	13.9	0.3
CF7679-15	0.9	16.9	40.4	33.2	8.6
CS7296-5	2.6	30.3	50.0	16.2	0.9
F70021	1.7	26.7	48.7	16.8	6.1

Table 51. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and heat necrosis ratings for 18 early to mid-season varieties grown at Painter, Virginia - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	Over 3-1/4 inches	Hollow heart ¹	Heat necrosis ¹
Atlantic	7	9	41	39	0	0
Denali	12	14	61	11	0	0
Islander	14	15	56	8	0	0
Jemseg	6	5	39	38	0	0
Pungo	6	8	35	41	0	0
Sunrise	12	10	51	16	0	1
Superior	8	9	55	22	0	0
Yankee Chipper	26	23	44	0	0	0
Yankee Supreme	8	8	46	30	0	0
Yukon Gold	5	7	42	42	0	1
AF339-5	3	5	43	41	0	0
CF7523-1	12	11	49	24	0	0
CF7679-15	5	5	33	51	1	0
CF7688-9	8	8	44	24	0	0
CF76183-2	26	27	39	0	1	2
CF7750-1	14	18	45	16	0	0
CS7697-24	9	10	41	28	0	0
CS7747-7	19	17	53	1	0	0

¹Number found per 20 large tubers (2-1/2 to 3-1/2 inch class) cut and examined for internal disorders.

Table 52. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and heat necrosis ratings for 4 medium late to late maturing varieties grown at Painter, Virginia - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	Over 3-1/4 inches	Hollow heart ¹	Heat necrosis ¹
Hampton	8	9	44	28	0	0
Katahdin	7	7	40	37	0	0
Shepody	8	10	46	12	0	0
NY64	11	9	49	21	0	0

¹Number found per 20 large tubers (2-1/2 to 3-1/2 inch class) cut and examined for internal disorders.

Table 53. Percentage of total yield by distribution into grade size classes, hollow heart ratings, and heat necrosis ratings for 7 russeted potato varieties grown at Painter, Virginia - 1985.

Variety	Below 4 ounces	4 to 8 ounces	8 to 12 ounces	Over 12 ounces	Hollow heart ¹	Heat necrosis ¹
Acadia Russet	6	26	26	25	0	0
BelRus	24	53	14	0	0	0
CS73105-2R	9	42	26	8	0	0
Norking Russet (ND388-1)	14	45	24	7	0	0
ND534-4	14	39	26	12	0	0
WF564-3	12	49	20	9	0	1
WF591-1R	14	37	30	15	0	0

¹Number found per 20 large tubers (8 to 12 ounce class) cut and examined for internal disorders.

Table 54. Percentage of yield by distribution into grade size classes for 6 medium-early maturing potato varieties grown at Morgantown, West Virginia - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches
Kennebec	9.1	13.5	18.3	59.0	0.0
B9140-32	10.2	12.2	34.7	42.3	0.0
B9340-13	11.8	14.7	31.0	42.5	0.0
CF7679-15	7.4	10.7	22.6	56.5	2.7
CF7688-9	12.6	14.9	21.2	51.3	0.0
CF7639-1	11.3	20.2	17.0	51.5	0.0

Table 56. Percentage of yield by distribution into grade size classes for 7 russeted potato varieties grown at Morgantown, West Virginia - 1985.

Variety	1-1/2 to 1-7/8 inches	1-7/8 to 2-1/2 inches	2-1/2 to 3-1/4 inches	3-1/4 to 4 inches	Over 4 inches
Acadia Russet	8.6	11.8	18.4	53.0	8.1
BelRus	12.0	14.9	19.4	53.6	0.0
NemaRus (B9540-62)	10.4	15.7	19.0	54.9	0.0
B9540-55	8.1	15.8	16.9	58.6	0.7
B9569-2	10.4	19.1	25.7	44.8	0.0
B9596-2	11.0	18.7	24.0	46.2	0.0
ND534-4	8.0	16.9	21.8	50.7	2.7

Sprout inhibitors can often be used to prolong storage life of varieties with short dormancy periods.

Sprouting characteristics for 45 potato varieties grown at Presque Isle, Maine during the 1984 growing season are presented in Table 57. All varieties were stored at 45°F and 85% relative humidity from harvest until each observation date. The varieties which demonstrated very short dormancy periods were CF74135-3, CF76183-2, CF7688-9, CF72111-5, CF72107-15, Katahdin, GoldRus, CF7750-1, CF7789-1, and WF564-3. These observations are very consistent with those from the previous storage season(2,3). Redsen, B5662-WV13, Rhine Red, B7019-WV1, NY67, Elba, and Russet Burbank had relatively long dormancy periods (Table 57).

Sprout and weight loss values for 45 potato varieties grown at Presque Isle, Maine during the 1984 growing season and stored during 1984 - 1985 are presented in Tables 58 through 67. Murphy *et al.* (2) suggest that total weight loss values above 5, 10, and 14% at 38, 45, and 50°F, respectively, may be considered borderline to excessive. Using these criteria most of the 1984 selections would be considered acceptable. Weight loss for the following varieties would be considered unacceptable: CF74135-3, CF76136-11, CF7719-6, AF9058-M, CF7688-9, W752, and GoldRus. For detailed information on weight loss of individual varieties, please consult Tables 58 through 67.

APPEARANCE AND DEFECTS INDEX

Appearance of tubers can be of great importance to consumers when purchasing potatoes from bulk displays or in clear poly bags. A subjective evaluation of tuber appearance is made at Presque Isle, Maine to evaluate such characteristics as uniformity of shape and size, general desirability of external appearance, and presence of external blemishes, defects, or diseases. Tubers are washed and the following list of characteristics is evaluated: skin set, skin color, brightness, tuber shape, uniformity of size, smoothness of skin, and presence of enlarged lenticels, sclerotial bodies, silver scurf, scab lesions or other surface blemishes.

Table 57. Sprouting characteristics of potato varieties stored at Presque Isle, Maine - 1984.

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 11, 1984.</u>					
Redsen	155	162	176		197
Superior	148	162	169		176
B5662-WV13	141	197	215	228	249
CF7622-6	141	162	169		190
CF7679-15	113	141	162	169	176
CF7719-6	120	162	169	176	190
CF7722-19	113	141	155		162
CF74135-3	85	99	120	134	148
CF76136-11	106	141	155	162	169
CF76183-2	99	127	148		162
CF77154-10	141	162	169		176
<u>Medium Maturing Varieties. Harvested - September 17, 1984.</u>					
Agassiz	114	142	163		170
Kennebec	135	156	163		170
Norking Russet (ND388-1)	135	156	163	170	191
Rhine Red	156	170	191	199	212
AF307-5	142	156	163		191
AF332-9	135	156	170		191
AF9058M	107	142	156	163	170
CF7688-9	100	121	135	149	156
CF72111-5	100	128	142		156
ND534-4	142	163		191	199
W752	100	128	156	163	170
<u>Medium Late Maturing Varieties. Harvested - September 19, 1984.</u>					
Crystal	119	154	161		168
Kennebec	133	154	161		175
AF236-1	133	154	161		189
B6928-WV14	105	140	154	161	175
B6949-WV3	140	161			189
B7019-WV1	189	197	210		224
B7805-1	105	126	154	161	168
CF7587-7	91	126		154	161
CF72107-15	84	112	140	147	154

. . .continued

Table 57. Sprouting characteristics of potato varieties stored at Presque Isle, Maine - 1984.

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 11, 1984.</u>					
Redsen	155	162	176		197
Superior	148	162	169		176
B5662-WV13	141	197	215	228	249
CF7622-6	141	162	169		190
CF7679-15	113	141	162	169	176
CF7719-6	120	162	169	176	190
CF7722-19	113	141	155		162
CF74135-3	85	99	120	134	148
CF76136-11	106	141	155	162	169
CF76183-2	99	127	148		162
CF77154-10	141	162	169		176
<u>Medium Maturing Varieties. Harvested - September 17, 1984.</u>					
Agassiz	114	142	163		170
Kennebec	135	156	163		170
Norking Russet (ND388-1)	135	156	163	170	191
Rhine Red	156	170	191	199	212
AF307-5	142	156	163		191
AF332-9	135	156	170		191
AF9058M	107	142	156	163	170
CF7688-9	100	121	135	149	156
CF72111-5	100	128	142		156
ND534-4	142	163		191	199
W752	100	128	156	163	170
<u>Medium Late Maturing Varieties. Harvested - September 19, 1984.</u>					
Crystal	119	154	161		168
Kennebec	133	154	161		175
AF236-1	133	154	161		189
B6928-WV14	105	140	154	161	175
B6949-WV3	140	161			189
B7019-WV1	189	197	210		224
B7805-1	105	126	154	161	168
CF7587-7	91	126		154	161
CF72107-15	84	112	140	147	154

. . .continued

Table 57 - continued

Variety ¹	Days to Indicated Sprout Length				
	First pip	1/8 inch	1/4 inch	3/8 inch	1/2 inch
Late Maturing Varieties. Harvested October 9, 1984.					
Elba (NY59)	141	134	148	177	190
Erik	120	134	148		162
Hampton	106	134	148		169
Katahdin	92	134	141	148	162
Red Pontiac	113	134	148		162
NY64	113	134	148		169
NY67	141	169	177	204	211
Russet and Long Varieties. Harvested October 9, 1984.					
Alaska Russet	106		134	141	148
GoldRus	92	113	134	141	148
Lemhi	92	134			169
Russet Burbank	169	177	190	204	211
CF7750-1	64	85	106	120	127
CF7789-1	64	85	113	127	141
WF564-3	78	113	127	134	141

¹Planted - May 21, 1984. Stored at 45F, 85% R.H.

Table 58. Effect of storage temperatures upon sprout loss and total weight loss of 11 early and medium early maturing potato varieties during storage from September 13, 1984 until March 29, 1985.

Variety	38F. ¹		45F. ¹		50F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Redsen	0.0	4.9	0.4	7.5	3.6	10.3
Superior	0.0	4.2	0.8	6.7	2.5	9.4
B5662-WV13	0.0	4.9	0.1	6.5	0.5	8.1
CF7622-6	0.0	4.4	0.4	6.4	8.0	16.3
CF7679-15	0.0	4.5	1.1	7.3	2.3	9.1
CF7719-6	0.0	6.3	1.1	9.1	5.0	16.5
CF7722-19	0.0	5.3	3.2	9.6	5.9	13.6
CF74135-3	0.0	5.1	7.1	16.1	15.5	28.1
CF76136-11	0.0	5.3	2.1	10.7	3.5	11.9
CF76183-2	0.0	4.7	1.3	7.9	4.8	13.7
CF77154-10	0.0	4.9	1.1	8.3	6.1	15.7

¹Relative humidity maintained at 85%.

Table 59. Effect of storage temperatures upon sprout loss and total weight loss of 11 medium maturing potato varieties during storage from September 18, 1984 to March 29, 1985.

Variety	38F. ¹		45F. ¹		50F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Agassiz	0.0	3.7	2.3	9.1	4.3	11.1
Kennebec	0.0	5.0	0.5	7.4	1.3	9.1
Rhine Red	0.0	4.7	0.2	6.3	2.5	9.6
AF307-5	0.0	4.2	1.0	6.7	5.3	13.1
AF332-9	0.0	3.7	0.5	6.2	2.1	8.0
AF9058M	0.0	3.8	1.3	11.1	1.5	16.6
CF7688-9	0.0	5.8	11.3	19.9	5.9	14.9
CF72111-5	0.0	4.4	2.5	9.3	6.9	16.1
ND388-1	0.0	3.8	0.3	5.7	2.7	9.1
ND534-4	0.0	4.2	0.3	5.9	1.7	8.2
W752	0.0	5.0	2.3	9.7	9.9	17.8

¹Relative humidity maintained at 85%.

Table 60. Effect of storage temperatures upon sprout loss and total weight loss for 9 medium late maturing potato varieties during storage from September 26, 1984 until March 29, 1985.

Variety	38F. ¹		45F. ¹		50F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Crystal	0.0	3.1	1.3	6.9	2.4	9.1
Kennebec	0.0	3.8	0.6	6.8	1.4	7.1
AF236-1	0.0	3.8	0.6	7.2	1.8	8.0
B6928-WV14	0.0	3.8	1.6	7.7	3.8	10.4
B6949-WV3	0.0	3.4	0.6	5.8	1.0	6.1
B7019-WV1	0.0	2.7	0.0	5.2	0.6	5.2
B7805-1	0.0	3.8	0.6	5.9	1.6	6.5
CF7587-5	0.0	3.6	1.2	7.3	3.4	10.5
CF72107-15	0.0	3.2	0.5	9.1	5.5	12.4

¹Relative humidity maintained at 85%.

Table 61. Effect of storage temperatures upon sprout loss and total weight loss for 7 late maturing potato varieties during storage from October 18, 1934 until March 29, 1985.

Variety	38F. ¹		45F. ¹		50F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Elba	0.0	3.5	0.6	5.9	1.1	5.3
Erik	0.0	3.7	0.5	7.4	3.3	9.5
Hampton	0.0	3.1	0.6	5.3	2.3	6.5
Katahdin	0.0	3.9	1.0	6.7	1.8	7.6
Red Pontiac	0.0	3.3	3.3	9.7	6.3	12.8
NY64	0.0	2.5	0.6	5.3	1.4	5.4
NY67	0.0	3.7	0.1	5.3	0.9	5.7

¹Relative humidity maintained at 85%.

Table 62. Effect of storage temperatures upon sprout loss and total weight loss for 7 russeted potato varieties during storage from October 19, 1984 until March 29, 1985.

Variety	38F. ¹		45F. ¹		50F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Alaska Russet	0.0	2.5	0.9	5.1	9.3	15.5
Gold Rus	0.0	4.5	2.3	11.6	7.7	16.8
Lemhi	0.0	3.4	0.5	6.0	4.3	10.7
Russet Burbank	0.0	3.2	0.0	3.9	0.9	4.7
CF7750-1	0.0	3.4	2.6	9.3	7.7	14.1
CF7789-1	0.0	3.1	2.3	8.1	7.5	14.3
WF564-3	0.0	2.7	1.8	6.7	3.9	8.9

¹Relative humidity maintained at 85%.

Table 63. Effect of storage temperatures upon sprout loss and total weight loss for 11 early and medium early maturing potato varieties during storage at 38F. from September 13, 1984 until March 29, 1985, and then at 45F. until June 5, 1985.

Variety	38F. ¹		45F. ¹		38F. and 45F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Redsen	0.0	4.9	0.8	2.9	0.8	7.8
Superior	0.0	4.2	5.2	8.1	5.2	12.3
B5662-WV13	0.0	4.9	0.7	2.5	0.7	7.4
CF7622-6	0.0	4.4	2.5	5.3	2.5	9.7
CF7679-15	0.0	4.5	2.9	5.1	2.9	9.6
CF7719-6	0.0	6.3	3.3	7.7	3.3	14.0
CF7722-19	0.0	5.3	3.1	5.8	3.1	11.1
CF74135-3	0.0	5.1	7.6	12.5	7.6	17.6
CF76136-11	0.0	5.3	3.0	6.6	3.0	8.3
CF76183-2	0.0	4.7	4.5	8.2	4.5	12.9
CF77154-10	0.0	4.9	5.0	8.8	5.0	13.7

¹Relative humidity maintained at 85%.

Table 64. Effect of storage temperatures upon sprout loss and total weight loss for 11 medium maturing potato varieties during storage at 38F. from September 18, 1984 until March 29, 1985, and then at 45F. until June 5, 1985.

Variety	38F. ¹		45F. ¹		38F. and 45F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Agassiz	0.0	3.7	6.3	9.1	6.3	12.8
Kennebec	0.0	5.0	3.5	5.7	3.5	10.7
Rhine Red	0.0	4.7	2.7	4.9	2.7	9.6
AF307-5	0.0	4.2	2.2	4.2	2.2	8.4
AF332-9	0.0	3.7	5.6	8.1	5.6	11.8
AF9058M	0.0	3.8	5.4	10.7	5.4	14.5
CF7688-9	0.0	5.8	7.4	11.4	7.4	17.2
CF72111-5	0.0	4.4	6.3	9.4	6.3	13.8
ND388-1	0.0	3.8	4.4	7.4	4.4	11.2
ND534-4	0.0	4.2	5.2	7.7	5.2	11.9
W752	0.0	5.0	4.9	8.2	4.9	13.2

¹Relative humidity maintained at 85%.

Table 65. Effect of storage temperatures upon sprout loss and total weight loss of 9 medium maturing potato varieties during storage at 38F. from September 26, 1984 until March 29, 1985, and then at 45F. until June 6, 1985.

Variety	38F. ¹		45F. ¹		38F. and 45F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Crystal	0.0	3.1	3.6	6.0	3.6	9.1
Kennebec	0.0	3.8	3.6	5.7	3.6	9.5
AF236-1	0.0	3.8	2.5	5.3	2.5	9.1
B6928-WV14	0.0	3.8	3.5	5.2	3.5	9.0
B6949-WV3	0.0	3.4	1.5	3.9	1.5	7.3
B7019-WV1	0.0	2.7	2.0	3.5	2.0	6.2
B7805-1	0.0	3.8	1.9	3.4	1.9	7.2
CF7857-5	0.0	3.6	5.9	9.3	5.9	12.9
CF72107-15	0.0	3.2	2.5	5.1	2.5	8.3

¹Relative humidity maintained at 85%.

Table 66. Effect of storage temperatures upon sprout loss and total weight loss for 7 late maturing potato varieties stored at 38F. from October 18, 1984 until March 29, 1985, and then at 45F. until June 6, 1985.

Variety	38F. ¹		45F. ¹		38F. and 45F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Elba	0.0	3.5	2.1	3.5	2.1	7.0
Erik	0.0	3.7	1.7	5.4	1.7	9.1
Hampton	0.0	3.1	2.4	4.1	2.4	7.2
Katahdin	0.0	3.9	1.1	3.0	1.1	6.9
Red Pontiac	0.0	3.3	5.0	7.7	5.0	11.0
NY64	0.0	2.5	4.3	6.3	4.3	8.8
NY67	0.0	3.7	1.0	2.6	1.0	6.3

¹Relative humidity maintained at 85%.

Table 67. Effect of storage temperatures upon sprout loss and total weight loss for 7 russeted potato varieties during storage at 38F. from October 19, 1984 until March 29, 1985, and then at 45F. until June 6, 1985.

Variety	38F. ¹		45F. ¹		38F. and 45F. ¹	
	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss	% Sprout loss	% Total Wt. loss
Alaska Russet	0.0	2.5	3.3	4.9	3.3	7.4
Gold Rus	0.0	4.5	6.3	11.8	6.3	16.3
Lemhi	0.0	3.4	2.5	5.0	2.5	8.4
Russet Burbank	0.0	3.2	3.7	6.1	3.7	9.3
CF7750-1	0.0	3.4	3.9	6.9	3.9	10.3
CF7789-1	0.0	3.1	3.3	5.6	3.3	8.7
WF564-3	0.0	2.7	5.5	8.3	5.5	11.0

¹Relative humidity maintained at 85%.

MAINE AGRICULTURAL EXPERIMENT STATION BULLETIN 814

Appearance and external defects Indices, as presented in Table 68, give a relative comparison of new varieties versus accepted standard varieties. Higher indices indicate better appearance and fewer defects. The four round-white varieties with the highest appearance ratings during 1984 were CF7679-15, Elba, B6928-WV14, and CF7722-19. The three top russet-long types were Northing Russet, GoldRus, and ND534-4. Kennebec (med. late), Alaska Russet, and CF7789-1 had very low ratings.

PREPARATION LOSSES

Peeling, trimming, and paring losses vary by variety when hand, steam, steam-lye, or abrasive peeling methods are used. Duplicate 10-lb samples were saved from each variety grown at Presque Isle, Maine during 1984. These samples were stored at 45°F and 85% relative humidity until February 6, 1985 and were then warmed to 65°F for 24 hours before being abrasively peeled.

Abrasive peeling losses and total preparation losses for 45 potato varieties grown at Presque Isle, Maine during 1984 are presented in Table 69. Total preparation losses of less than 15% are generally considered acceptable by processors, while losses exceeding 20% are not acceptable (2,3). Fifteen varieties had losses less than 15%, while six varieties (W752, CF7719-6, CF74135-3, Alaska Russet, CF76183-2, and WF564-3) had more than 20% total preparation losses. Most of these varieties were either long types or had relatively high percentages of misshapen and growth cracked tubers.

AFTER COOKING DARKENING

After cooking darkening or graying causes some varieties to be undesirable for boiling or processing into products which require white flesh color. A variety's tendency to darken may vary among years, locations, and cultural conditions. Comparisons should always be made between the test variety and a standard variety.

Table 68. Appearance and defects indices for 45 potato varieties grown at Aroostook Farm, Presque Isle, Maine - 1984.

Variety ¹	Appearance index	Defects index	Final index ²
Agassiz	77.3	7.5	69.8
Alaska Russet	74.0	24.8	49.2
Crystal	70.6	5.0	65.6
Erik	74.0	1.2	72.8
Gold Rus	86.8	8.5	78.3
Hampton	79.6	10.6	69.0
Katahdin	71.8	14.5	57.3
Kennebec (med.)	74.8	14.9	59.9
Kennebec (med. late)	61.8	20.0	41.8
Lemhi	74.9	8.9	66.0
Red Pontiac	67.0	11.9	55.1
Redsen	69.2	5.5	63.7
Rhine Red	73.0	14.3	58.7
Russet Burbank	74.8	6.5	68.3
Superior	75.9	3.1	72.8
AF236-1	80.1	9.2	70.9
AF307-5	73.7	20.2	53.5
AF332-9	64.6	6.9	57.7
AF9058M	71.0	11.5	59.5
B5662-WV13	81.3	10.8	70.5
B6928-WV14	81.8	2.8	79.0
B6949-WV3	75.4	9.0	66.4
B7019-WV1	78.2	15.7	62.5
B7805-1	79.4	14.5	64.9
CF7587-5	75.7	12.9	62.8
CF7622-6	77.7	10.1	67.6
CF7679-15	91.7	1.4	90.3
CF7688-9	69.4	17.4	52.0
CF7719-6	70.5	15.9	54.6

Table 68 continued.

Variety ¹	Appearance index	Defects index	Final index ²
CF7722-19	80.4	4.9	75.5
CF7750-1	84.7	13.7	71.0
CF7789-1	60.8	11.0	49.8
CF72107-15	76.8	20.4	56.4
CF72111-5	73.4	12.8	60.6
CF74135-3	77.2	11.8	65.4
CF76136-11	73.7	7.2	66.5
CF76183-2	69.5	17.4	52.1
CF77154-10	76.9	16.7	60.2
ND388-1 (Norking Russet)	80.0	1.6	78.4
ND534-4	79.8	5.5	74.3
NY59 (Elba)	84.8	2.8	82.0
NY64	69.3	11.0	58.3
NY67	81.6	9.0	72.6
W752	68.9	10.0	58.9
WF564-3	78.0	11.5	66.5

¹Samples were stored at 45F., 85% R.H. from harvest until examined on January 22-23, 1985.

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

Table 69. Preparation losses for 45 potato varieties grown at Presque Isle, Maine - 1984.

Variety ¹	% Abrasive Peeling ² losses	% Paring losses	% Total Preparation losses
Agassiz	12.1	3.9	16.0
Alaska Russet	17.4	3.9	21.3
Crystal	15.1	4.1	19.2
Erik	15.5	2.5	18.0
Gold Rus	14.1	4.5	18.6
Hampton	10.3	3.7	14.0
Katahdin	11.8	3.9	15.7
Kennebec (med.)	9.9	5.9	15.8
Kennebec (med. late)	9.8	5.3	15.1
Lemhi	15.5	3.4	18.9
Red Pontiac	10.3	6.5	16.8
Redsen	10.9	4.2	15.1
Rhine Red	7.1	6.3	13.4
Russet Burbank	14.2	4.8	19.0
Superior	9.8	6.1	15.9
AF236-1	13.3	3.1	16.4
AF307-5	10.9	4.3	15.2
AF332-9	14.0	4.7	18.7
AF9058M	9.1	5.4	14.5
B5662-WV13	6.8	4.3	11.1
B6928-WV14	4.9	5.3	10.2
B6949-WV3	11.3	5.5	16.8
B7019-WV1	11.6	5.6	17.2
B7805-1	13.0	4.3	17.3
CF7587-7	12.1	3.8	15.9
CF7622-6	11.6	2.8	14.4
CF7679-15	12.8	2.9	15.7
CF7688-9	10.6	7.1	17.7
CF7719-6	19.5	3.3	22.8

Table 69. continued.

Variety ¹	% Abrasive Peeling ² losses	% Paring losses	% Total Preparation losses
CF7722-19	12.7	3.7	16.4
CF7750-1	8.8	4.0	12.8
CF7789-1	4.7	4.9	9.6
CF72107-15	10.7	4.0	14.7
CF7211-5	8.5	4.4	12.9
CF74135-3	18.7	3.9	22.6
CF76136-11	8.2	5.1	13.3
CF76183-2	17.0	3.7	20.7
CF77154-10	15.2	3.0	18.2
ND388-1 (Norking)	8.9	4.5	13.4
ND534-4	5.8	4.3	10.1
NY59 (Elba)	6.5	5.1	11.6
NY64	14.3	3.8	18.1
NY67	7.7	4.0	11.7
W752	20.2	4.2	24.4
WF564-3	17.1	3.5	20.6

¹Samples were stored at 45F., 85% R.H. from harvest until February 6, 1985, then warmed for 24 hours at 65F. before peeling.

²Average of two 10-pound samples peeled for two minutes in a Univex H-200 abrasive type peeler.

After cooking darkening indices for 45 potato varieties grown at Presque Isle, Maine during 1984 are presented in Table 70. All varieties were stored at 45°F and 85% relative humidity for about 5 months prior to evaluation. Murphy *et al.* (2,3) suggest that a rating of 7.0 may be considered as an approximate value for acceptable color. Values lower than 7.0 would be unacceptable. Based on the acceptable value of 7.0, only B6928-WV14 had unacceptable color. Five varieties had color indices which were poorer than the standard varieties, Katahdin and Kennebec.

FRIED PRODUCT COLOR AND TEXTURE

Tubers were saved from all specific gravity tests conducted at Presque Isle, Maine during 1985. All samples were stored at 50-55°F until frying tests were made in late November and early December. One half-inch diameter french fry plug (stem to seed end) was removed from each of five tubers and trimmed to uniform length (approximately 2-1/2 inches). The plugs were rinsed in lukewarm water, blotted dry, and fried for 4 min at 375° F in soybean oil. Each french fry plug was classified according to the USDA color Standards for Frozen French Fried Potatoes (1978 edition). Texture indices were assigned to each plug based on internal texture (1 = mealy, 2 = intermediate, or 3 = salvey). Weighted color and texture indices were calculated and are reported in Table 71. Nineteen varieties had acceptable french fry color (less than 3.0). The following varieties had fry colors less than 2.0: B9140-32, CF76183-2, CF77154-10, B9340-13, W752, GoldRus, and Superior. Only W752 had a texture rating less than 2.0 (indicates mealy texture).

Evaluation of chip color was generally conducted by cutting each tuber in half and taking a slice (1/16 inch thick) from the center of 10 tubers using a rotary food slicer. The tuber slices were rinsed in lukewarm water, blotted dry, and then fried at 375°F in soybean oil until bubbling stopped. Unless otherwise indicated, the chips were immediately rated for color using the Potato Chip Institute Color Chart 1206-U. Weighted averages were calculated for each variety and are

Table 70. After cooking graying indices for potato varieties grown at Presque Isle, Maine - 1984.

Variety or Clone ¹	Color index ²	Variety or Clone ¹	Color index ²
Agassiz	8.1	B7805-1	7.5
Alaska Russet	7.6	CF7587-7	8.2
Crystal	8.9	CF7622-6	8.2
Erik	8.6	CF7679-15	7.9
Gold Rus	8.0	CF7688-9	8.2
Hampton	8.2	CF7719-6	8.2
Katahdin	7.7	CF7722-19	8.2
Kennebec (Med.)	8.3	CF7750-1	8.2
Kennebec (Med. late)	7.6	CF7789-1	8.1
Lemhi	7.7	CF72107-15	8.1
Red Pontiac	7.8	CF72111-5	7.8
Redsen	8.0	CF74135-3	8.2
Rhine Red	7.8	CF76136-11	8.6
Russet Burbank	7.4	CF76183-2	7.8
Superior	8.0	CF77154-10	8.1
AF236-1	7.1	ND388-1 (Norning Russet)	8.0
AF307-5	7.8	ND534-4	7.3
AF332-9	8.4	NY59 (Elba)	7.8
B5662-WV13	8.3	NY64	7.6
B6928-WV14	6.6	NY67	7.8
B6949-WV3	7.8	W752	7.9
B7019-WV1	7.5	WF564-3	7.6

¹All tuber samples were stored at 45F., 85% R.H. from harvest until February 7, 1985, then warmed at 65F. for 48 hours.

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

Table 71. French fry color and texture indices for 40 potato varieties grown at Presque Isle, Maine - 1985.

Variety	French fry		Variety	French fry	
	color ¹	texture ²		color ¹	texture ²
Elba (NY59)	4.2	2.5	CF7679-15	2.7	2.5
GoldRus	1.8	2.5	CF7750-1	3.4	2.8
Hampton	3.5	2.6	CF76183-2	1.1	2.9
Katahdin	2.8	2.7	CF77154-10	1.1	2.8
Kennebec	2.6	2.1	CS7296-5	3.8	2.6
NemaRus (B9540-62)	2.2	2.3	CS7635-4	2.7	2.4
Norking Russet (ND388-1)	2.5	2.6	CS7639-1	4.3	2.7
Redsen	2.8	2.5	CS7697-24	2.4	2.6
Rhine Red	3.2	2.4	CS7747-7	4.3	2.9
Russet Burbank	2.7	2.4	CS73105-2R	4.2	2.7
Shepody	3.0	2.3	CS77120-8	2.9	2.3
Superior	1.8	2.8	F70021	4.4	2.4
A7411-2	2.7	2.5	F74123	4.5	3.0
A72685-2	4.3	2.6	ND534-4	3.1	2.9
AF339-5	3.0	2.3	NY64	3.9	2.3
AF465-2	3.0	2.9	W752	1.4	1.4
AF474-2	3.1	2.8	WF591-1R	3.3	2.7
AF9058-M	4.0	2.6			
B9140-32	1.1	2.8			
B9340-13	1.4	2.9			
B9540-55	2.0	2.3			
B9569-2	3.4	2.5	Waller Duncan LSD		
B9596-2	3.0	2.8	(k=100)	0.3	0.3

¹French fries with lower indices are lighter in color.

²Lower texture indices indicate a mealier texture.

reported for several locations in the following tables. Color ratings of 7.0 or less are generally considered acceptable. Several locations used other ratings systems. These systems are outlined on the appropriate tables.

Chip colors for 30 potato varieties grown in New Brunswick, Canada are presented in Table 72. Eleven of the 30 entries had acceptable chip colors. Colors were particularly light for AF236-1, AF330-1, CF77154-10, and CS7232-4. At Rising Sun, Delaware, nine out of 10 varieties had acceptable chip colors (Table 73). Only CF7679-15 produced chips with indices over 3.0. Chip color indices for 40 potato varieties grown at Presque Isle, Maine are presented in Table 74. Acceptable indices were attained by eight of these varieties. Particularly low indices (6.0 or less) were observed for B9140-32, CF76183-2, and CF77154-10. Chip color indices for 40 potato varieties grown at New Brunswick, New Jersey are presented in Table 75. Nineteen varieties produced acceptable chips soon after harvest; however, only eight produced acceptable chips after 11 days of storage. Evaluations for chip color were made on 14 varieties grown at Berlin, Pennsylvania (Table 76). Only two varieties (Acadia Russet and Green Mountain) had chip indices above the acceptable level of 3.0. AF236-1, AF330-1, and Norchip produced the lightest chips. Nine of nineteen potato varieties grown at Guildhall, Vermont produced chips with acceptable color (Table 77). Sunrise, Yankee Chipper, BR7088-18, Campbell 14, and B9340-13 each had chip indices below 6.0. Chip color indices for 18 potato varieties grown at Painter, Virginia are presented in Table 78. All varieties produced acceptable chips within 3 days of harvest, while chips from Yukon Gold and CF7679-15 were unacceptable 17 days after harvest.

Storage conditions have a profound effect on the chip color of many potato varieties. Tuber samples from the 1984 Maine trials were stored at 38°F from November until early February. None of the tested varieties had acceptable chip color when fried out of this storage (Table 79). To test for reconditioning potential, parallel samples

Table 72. Chip color indices for 30 potato varieties grown in New Brunswick, Canada - 1985.

Variety	Chip color ¹
<u>Early Harvest</u> - White's Cove, New Brunswick	
Jemseg	10.0
Redsen	10.0
Sunrise	10.0
Superior	10.0
Yankee Supreme	9.0
AF330-1	9.0
CF77154-10	8.8
CS7232-4	9.0
CS7697-24	10.0
<u>Main Crop Varieties</u> - Florenceville, New Brunswick	
Elba (NY59)	8.4
GoldRus	6.5
Hampton	7.5
Katahdin	7.5
Kennebec	6.5
NemaRus (B9540-62)	6.5
Redsen	6.6
Russet Burbank	7.0
A72685-2	7.8
AF236-1	4.5
AF330-1	5.4
CF7679-15	7.4
CF7688-9	7.0
CF77154-10	4.7
CS7232-4	5.2
CS7639-1	8.0
CS7747-7	8.2
MN7973	6.5
ND534-4	8.0
NY64	8.0
WF564-3	8.0

¹Chips with lower indices are lighter in color. Values are from unreplicated samples.

Table 73. Chip color indices for 10 potato varieties grown at Rising Sun, Delaware - 1985.

Variety	Chip color ¹
Jemseg	1.75
Simcoe	1.20
Sunrise	1.25
Superior	3.00
Yankee Supreme	1.75
Yukon Gold	2.00
CF7679-1	3.30
CF7523-1	1.60
CS7639-1	2.10
F74123	2.15

¹Chip colors based on the Potato Chip/Snack Food Association Charts. Ratings are an average of 20 judges.

1 = lighter color

5 = dark color

Table 74. Chip color indices for 40 potato varieties grown at Presque Isle, Maine - 1985.

Variety	Chip color ¹	Variety	Chip color ¹
Elba (NY59)	9.0	CF7679-15	8.1
GoldRus	7.0	CF7750-1	8.3
Hampton	8.2	CF76183-2	6.0
Katahdin	7.7	CF77154-10	4.9
Kennebec	7.5	CS7296-5	8.7
NemaRus (B9540-62)	7.5	CS7635-4	7.3
Norking Russet (ND388-1)	7.6	CS7639-1	9.3
Redsen	7.5	CS7697-24	7.3
Rhine Red	8.4	CS7747-7	9.3
Russet Burbank	7.9	CS73105-2R	9.1
Shepody	7.9	CS77120-8	7.6
Superior	7.0	F70021	9.1
A7411-2	8.0	F74123	9.0
A72685-2	9.4	ND534-4	9.0
AF339-5	8.1	NY64	8.1
AF465-2	7.9	W752	6.6
AF474-2	8.7	WF591-1R	8.9
AF9058-M	9.3		
B9140-32	5.6		
B9340-13	6.4		
B9540-55	6.9		
B9569-2	8.4		
B9596-2	8.8	Waller Duncan LSD (k=100)	0.4

¹Chips with lower indices are lighter in color.

Table 75. Chip color indices for 40 potato varieties grown at New Brunswick, New Jersey - 1985.

Variety	Chip Color ¹		
	Days after Harvest		
	4	7	11
Test 1 - 20 Varieties:			
Atlantic	3	5	6
Katahdin	4	6	-
Superior	4	4	5
AF339-5	8	6	-
AF474-2	6	6	-
AF9058-M	6	6	-
CF7679-15	5	6	-
CF7688-9	6	3	5
CF77154-10	5	5	-
CS7296-5	6	7	-
CS7635-4	5	7	-
CS7639-1	8	6	-
CS7697-24	5	5	-
CS7747-7	6	7	-
CS77120-8	6	7	-
F70021	6	6	-
F74123	6	8	-
NY64	7	6	-
W752	6	3	4
WF591-1R	8	8	-
Test 2 - 20 Varieties:			
Atlantic	3	5	6
Campbell 14	2	4	3
Caribe	4	2	3
Denali	3	5	6
Hampton	5	4	6
Islander	3	4	5
Jemseg	3	4	5
Katahdin	4	6	-
Norchip	3	3	5
Redsen	3	4	4
Rhine Red	6	6	-
Simcoe	3	2	3
Sunrise	3	4	2
Superior	4	4	5
Yankee Chipper	2	2	4
AF92-3	6	4	5
AF236-1	2	6	6
B9140-32	2	1	5
BR7088-18	3	3	3
CF7523-1	5	7	-

¹Chip colors with lower numbers are lighter in color. Rating scale is as follows: 1 to 4 = acceptable; 5 = borderline; 6 or above = unacceptable.

Table 76. Chip color indices for 14 potato varieties grown at Berlin, Pennsylvania - 1985.

Variety	Chip Color ¹
Acadia Russet	4.4
Green Mountain	3.6
Kennebec	2.2
NemaRus (B9540-62)	2.5
Norchip	1.9
Norking Russet (ND388-1)	2.5
A72685-2	2.5
AF236-1	1.5
AF330-1	1.7
B9540-55	2.0
B9596-2	2.5
F73008	2.0
ND534-4	2.6
WF564-3	2.5
LSD (0.05)	0.5

¹Chip colors based on the Potato Chip/Snack Food Association Charts.

1 = lighter color

5 = dark color

Table 77. Chip color indices for 19 potato varieties grown at Guildhall, Vermont - 1985.

Variety	Chip color ¹
Campbell 14	5.3
Elba (NY59)	9.0
Hampton	8.1
Islander	6.3
Katahdin	7.6
Kennebec	7.3
Rhine Red	7.7
Sunrise	5.0
Superior	6.2
Yankee Chipper	5.1
Yankee Supreme	7.1
AF303-5	6.5
AF339-5	8.2
B9340-13	5.5
BR7088-18	5.1
CF7523-1	7.9
CF7679-15	7.9
CS7296-5	6.6
F70021	8.0

¹Chips with lower indices are lighter in color.

Table 78. Chip color Indices for 18 potato varieties grown at Painter, Virginia - 1985.

Variety	Chip Color ¹	
	Days after Harvest	
	3	17
Atlantic	3	3
Denali	2	4
Jemseg	3	3
Islander	2	2
Pungo	4	5
Sunrise	3	2
Superior	5	3
Yankee Chipper	2	2
Yankee Supreme	3	3
Yukon Gold	5	6
AF339-5	3	4
CF7523-1	3	5
CF7679-15	3	6
CF7688-9	1	3
CF76183-2	2	2
CF7750-1	3	5
CF7697-24	1	3
CS7747-7	4	5

¹Chip colors with lower numbers are lighter in color. A rating scale with a maximum value of 9 was used. A rating of 5 is marginal, while a rating of 6 or above is unacceptable. Readings were from unreplicated samples.

Table 79. Potato chip indices for 45 potato varieties grown at Presque Isle, Maine - 1984.

Variety ¹	50F.	38F.	2 wks.	3 wks.
	<u>11-26-84</u>	<u>2-5-85</u>	<u>70F.</u> <u>2-4-85</u>	<u>70F.</u> <u>2-4-85</u>
Agassiz	7.7	10.0	9.8	9.6
Alaska Russet	9.4	10.0	10.0	10.0
Crystal	8.1	10.0	10.0	10.0
Erik	10.0	10.0	9.7	9.8
Gold Rus	8.6	10.0	10.0	10.0
Hampton	10.0	10.0	10.0	9.9
Katahdin	9.8	10.0	10.0	10.0
Kennebec (med.)	8.9	10.0	9.8	9.6
Kennebec (med. late)	8.9	10.0	8.8	8.6
Lemhi	9.2	10.0	10.0	10.0
Red Pontiac	10.0	10.0	10.0	9.7
Redsen	8.0	10.0	10.0	10.0
Rhine Red	9.9	10.0	9.9	9.6
Russet Burbank	8.9	10.0	9.9	9.6
Superior	8.0	10.0	8.3	7.2
AF236-1	6.9	9.0	10.0	10.0
AF307-5	8.4	10.0	10.0	10.0
AF332-9	9.6	10.0	10.0	10.0
AF9058M	9.9	10.0	10.0	10.0
B5662-WV13	8.1	10.0	10.0	10.0
B6928-WV14	9.9	10.0	10.0	10.0
B6949-WV3	9.1	10.0	9.9	9.9
B7019-WV1	8.0	10.0	10.0	9.0
B7805-1	8.5	10.0	10.0	9.9
CF7587-7	8.5	10.0	10.0	10.0
CF7622-6	10.0	10.0	10.0	10.0
CF7679-15	9.7	10.0	9.4	9.8
CF7688-9	9.4	10.0	10.0	10.0
CF7719-6	9.0	9.0	10.0	10.0

Table 79. continued.

Variety ¹	50F.	38F.	2 wks.	3 wks.
	11-26-84	2-5-85	70F. 2-4-85	70F. 2-4-85
CF7722-19	9.5	9.0	10.0	10.0
CF7750-1	9.8	10.0	10.0	10.0
CF7789-1	9.7	10.0	9.9	9.8
CF72107-15	7.7	10.0	9.9	9.9
CF72111-5	9.3	10.0	10.0	10.0
CF74135-3	8.7	10.0	10.0	9.9
CF76136-11	9.2	10.0	10.0	9.8
CF76183-2	7.3	10.0	10.0	9.6
CF77154-10	6.5	9.0	9.9	9.9
ND388-1 (Norking Russet)	8.6	10.0	10.0	10.0
ND534-4	9.8	10.0	10.0	10.0
NY59 (Elba)	10.0	10.0	10.0	10.0
NY64	9.9	10.0	10.0	10.0
NY67	10.0	10.0	10.0	10.0
W752	8.0	10.0	9.0	8.9
WF564-3	10.0	10.0	10.0	10.0

¹Chips with lower indices are lighter in color.

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

were taken out of 38^oF storage and warmed at 70^oF for 2 and 3 week intervals. Chip colors for several clones improved slightly during the reconditioning period, however, only Superior reconditioned to any great extent (Table 79).

RESISTANCE TO POTATO WART DISEASE AND GOLDEN NEMATODE, PATHOTYPE A

NE-107 entries which were tested in New Brunswick during 1984 and 1985 were also screened for resistance to potato wart disease and golden nematode. This screening was conducted at Avondale, Newfoundland by Mr. K.G. Proudfoot. Five seedpieces of each entry were planted at a field site which is known to be infested by both diseases. Data from these screenings are presented in Table 80. Entries scored as (+) were infected with the indicated disease. Those with a (-) or TR may have escaped field infection or may be resistant. Hampton, Kennebec, and Jemseg were the only selections with no wart infection during both 1984 and 1985. Fourteen clones demonstrated no golden nematode root cysts during 1984.

METRIBUZIN SENSITIVITY

Sensitivity to metribuzin herbicides varies among varieties and should be quantified before widespread release of a variety occurs. During 1985, two named varieties (GoldRus and Russette) and three numbered clones (AF330-1, CF7750-1, and CF7523-1) were exposed to three rates of metribuzin in a field study with six replications. Considerable foliar damage was observed in GoldRus and Russette at the highest metribuzin rate (Table 81). Yield and specific gravity varied significantly among varieties, but not with metribuzin rate. This lack of rate response was consistent among varieties (rate by variety interaction was not significant).

Table 80. Reaction of selected NE107 entries to potato wart and golden nematode (pathotype A) at Avondale, Newfoundland.

Variety	Wart ¹		Golden nematode ²
	1984	1985	1984
Belchip	+		-
Campbell 14		+	
Chipbelle	-		-
Conestoga	-		+
Crystal	+		+
Elba (NY59)	+	+	-
GoldRus	+		+
Hampton	-	-	-
Islander	-	+	-
Jemseg	-	-	+
Katahdin	-		+
Kennebec	-	-	+
NemaRus (B9540-62)		+	
Norking Russet (ND388-1)	+		+
Redsen	+		+
Russet Burbank	+		+
Sebago	+		+
Sunrise	-	+	-
Superior	-	+	+
Yankee Chipper	+	+	-
Yankee Supreme	+		+
A72685-2		+	
AF236-1		+	
AF303-5	-	+	+
AF307-5	+		+
AF330-1	+		+
B6949-WV3	tr		+
B7805-1	+		-
BR7088-18	+		+
BR7093-23	+		-
CF72107-15	+		-
CF7523-1	tr	+	-
CF7679-15		tr	
CF7688-9		+	
CF77154-10	-	+	-
CS7232-4	+	+	-
CS7639-1		+	
CS7697-24		+	
CS7747-7		+	
F73008	tr		+
MN7973		+	
ND534-4		+	
NY64	+	tr	-
WF564-3	tr	+	+

¹Rating system: - = no disease symptoms; + = plants and/or tubers infected; tr = trace of infection.

²Rating system: - = no cysts observed; + = cysts present on roots.

Table 81. Effect of three metribuzin rates applied at Layby on yield, specific gravity, and phytotoxicity ratings of 5 potato varieties. Presque Isle, Maine - 1985.

Variety and Treatments ¹ Lbs Metribuzin A. I. per Acre	Yield Cwt./A.	Specific gravity	Crop Injury Rating ²
<u>AF330-1</u>			
0.10	345 ^{bc}	1.081 ^d	8.8
0.25	361	1.081	8.8
0.50	416	1.079	8.7
<u>CF7750-1</u>			
0.10	346 ^C	1.082 ^C	8.5
0.25	349	1.081	8.7
0.50	344	1.082	8.2
<u>CF7523-1</u>			
0.10	427 ^a	1.087 ^b	8.5
0.25	402	1.089	8.7
0.50	411	1.087	8.2
<u>GoldRus</u>			
0.10	292 ^d	1.088 ^b	8.5
0.25	334	1.086	8.3
0.50	285	1.087	6.8
<u>Russette</u>			
0.10	389 ^{ab}	1.096 ^a	8.3
0.25	400	1.096	8.2
0.50	388	1.095	7.3
<u>F-Test for Main Effects and Interaction</u>			
Varieties	**	**	
Metribuzin Rates	NS	NS	
Varieties x Metribuzin Rates	NS	NS	

¹Planted - May 30; killed - September 26; harvested - October 4, 1985
Preemergence overall treatment of 0.5 lb. metribuzin per acre applied
on June 17. Temperature 68 F., sunny; soil - moist.
Layby treatments applied July 17. Temperature 69 F., sunny; soil - wet.

** Significantly different at the 1% level. Yield and specific gravity
for varieties followed by the same letter (averaged across metribuzin
rates) are not significantly different (Waller Duncan LSD k=100).

²Rating code: 9 = no crop damage. 1 = all crop plants killed.

NITROGEN RATE AND SEEDPIECE SPACING STUDIES

MAINE. Nitrogen rate and seedpiece spacing studies were conducted on clones AF236-1 and CF7523-1. A factorial treatment combination with three nitrogen rates and four seedpiece spacings was utilized in a randomized complete block design with six replications. Single row plots, 20 ft long were used. The soil was a Caribou gravelly loam, pH 4.5. Soil test levels of potassium were rated as excessive and phosphorus was high. The preceding crop was a poor stand of red clover.

Total and usable yields of CF7523-1 were not significantly affected by nitrogen rate, but declined linearly with increased seedpiece spacing (Table 82). Specific gravity was slightly reduced at the highest nitrogen rate, while percent defects increased at wide seedpiece spacings. Nitrogen rate did not greatly influence tuber size distribution; however, tuber size increased as seedpiece spacing was widened, (Table 82). Eight inch seedpiece spacings would be recommended for seed growers, while spacings could be widened to 10 inches for tablestock use. A nitrogen rate of 130 lbs/A would be adequate under these cropping conditions.

Total and usable yields of AF236-1 declined linearly with increased seedpiece spacing, but were not affected by nitrogen rate (Table 83). Specific gravity was not affected by either practice. Yield in both tuber size classes was significantly increased when nitrogen rates and seedpiece spacings were increased (Tables 83). Growers desiring maximum yield should space seedpieces 8 inches apart and fertilize with 130 lbs N per acre. If larger tuber size is desired, seedpiece spacing can be widened to 10 to 12 inches. Past experience shows that hollow heart can be a problem in large tubers of AF236-1. Sunburning was a severe problem in this test due to poor hilling (Table 83). Percent defects would be much lower under normal conditions.

New York. The effects of nitrogen rate on yield and quality of NemaRus, B9569-2, and CF7523-1 were studied in tests at Riverhead, New York. A randomized complete block design with four replications was

Table 82. Effect of seedpiece spacing and nitrogen fertilization on total yield, usable yield, yield in two market size classes, and specific gravity of clone CF7523-1 grown at Presque Isle, Maine - 1985.

Treatment ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent defects	Tuber Size Distribution				Specific gravity
				1-7/8 to 4 inches		2-1/2 to 4 inches		
				Cwt./A.	%	Cwt./A.	%	
Seedpiece Spacing (inches)								
8	574	538	6.1	428	74.6	259	44.8	1.084
10	540	493	8.7	423	78.5	295	54.5	1.084
12	507	461	9.4	401	79.0	290	57.1	1.083
14	478	427	10.6	400	83.8	310	64.7	1.084
Nitrogen Rate (lbs/A)								
100	516	468	9.4	409	79.7	285	55.8	1.084
130	529	489	7.6	409	77.4	284	53.8	1.085
160	529	482	9.0	421	79.8	295	56.3	1.083
Orthogonal Contrasts:								
Seedpiece Spacing	L**	L**		L*		L*		NS
Nitrogen	NS	NS		NS		NS		Q*
N*S Interaction	NS	NS		NLxSL*		NLxSL*		NS

¹Planted - May 24; killed - September 9; harvested - September 17, 1985. Experiment was set up with a factorial treatment combination. L=statistically significant linear trend, *=significant, **=highly significant. Q=statistically significant quadratic trend. NS=not significantly different. P₂O₅ and K₂O were held constant at 160 lbs/A.

Table 83. Effect of seedpiece spacing and nitrogen fertilization on total yield, usable yield, yield in two market size classes, and specific gravity of clone AF236-1 grown at Presque Isle, Maine - 1985.

Treatment ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield above 1-1/2 inches Cwt./A.	Percent defects ²	Tuber Size Distribution				Specific gravity
				1-7/8 to 4 inches		2-1/2 to 4 inches		
				Cwt./A.	%	Cwt./A.	%	
Seedpiece Spacing								
(Inches)								
8	470	369	21.6	361	77.3	208	44.5	1.090
10	433	340	21.6	340	78.8	188	43.2	1.092
12	424	311	26.7	354	83.5	245	57.4	1.091
14	406	300	26.4	338	83.4	223	54.8	1.089
Nitrogen Rate								
(lbs/A)								
100	421	316	25.1	338	80.6	201	47.6	1.090
130	442	340	23.5	354	80.3	218	49.4	1.090
160	436	334	23.6	353	81.4	229	52.8	1.091
Orthogonal Contrasts:								
Seedpiece Spacing	L**	L**		LC*		LC**		NS
Nitrogen	NS	NS		L*		L**		NS
N*S Interaction	NS	NS		NS		NS		NS

¹Planted - May 24; killed - September 9; harvested - September 17, 1985. Experiment was set up with a factorial treatment combination. L=statistically significant linear trend, *=significant, **=highly significant. C=statistically significant cubic trend. NS=not significantly different. P₂O₅ and K₂O were held constant at 160 lbs/A.

²Defects were almost entirely due to sunburning.

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used. Plots were three rows wide and 30 feet long. Nitrogen was applied in split applications consisting of 80 lbs per acre sidedressed as ammonium nitrate on June 4 and the remainder applied at planting.

Total and usable yields of NemaRus and CF7523-1 were maximized at 190 lbs of nitrogen per acre (Tables 84 and 85). B9569-2 did not respond to nitrogen rates above 160 lbs per acre (Table 84). Tuber defects, size distribution, hollow heart, and specific gravity were not significantly affected by nitrogen rate.

Table 84. Effect of nitrogen fertilization on total yield, usable yield, percent defects, percentage of total yield by tuber size distribution, and specific gravity of NemaRus and B9569-2 grown at Riverhead, New York - 1985.

Treatment ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield 4 to 16 oz. Cwt./A.	Percent defects	Tuber Size Distribution (%)				Specific gravity
				4 to 8 ounces	8 to 12 ounces	12 to 16 ounces	over 16 ounces	
<u>NemaRus</u>								
Nitrogen Rate (lbs/A)								
160	332	237	2	46	21	4	0	1.072
190	374	274	2	49	22	2	0	1.072
220	390	289	3	47	24	4	0	1.072
Waller-Duncan LSD (k=100)		38	42					NS
<u>B9569-2</u>								
Nitrogen Rate (lbs/A)								
160	339	246	4	49	18	5	2	1.074
190	362	263	3	47	19	7	5	1.075
220	343	244	4	46	19	6	1	1.073
Waller-Duncan LSD (k=100)		NS	NS					NS

¹Planted - April 24; harvested - October 2, 1985. The standard practice is 160 lbs/A of nitrogen.

Table 85. Effect of nitrogen fertilization on total yield, usable yield, percent defects, yield by tuber size distribution, and specific gravity of CF7523-1 grown at Riverhead, New York - 1985.

Treatment ¹	Yield above 1-1/2 inches Cwt./A.	Usable yield 2 to 4 in. Cwt./A.	Percent defects	Tuber Size Distribution (%)				Specific gravity
				2 to 2-1/2 in.	2-1/2 to 3-1/4 in.	3-1/4 to 4 in.	over 4 in.	
<u>CF7523-1</u>								
Nitrogen Rate (lbs/A)								
160	419	347	4	32	51	0	0	1.075
190	463	397	3	32	53	1	0	1.074
220	459	380	3	35	47	1	0	1.074
Waller-Duncan LSD (k=100)		NS	47					NS

¹Planted - April 24; harvested - October 2, 1985. The standard practice is 160 lbs/A of nitrogen.

SUMMARY INFORMATION FOR 1985 NE107 VARIETIES

Acadia Russet - A medium-late maturing variety with lightly russeted skin that was released by Canada in 1981. Tubers are generally oblong to long and have a fairly good appearance. Acadia Russet has tolerance to leafroll, fusarium, and phoma tuber rot. Yields of Acadia Russet have generally been quite good, and it frequently ranks as a top yielder in the mid-Atlantic states and more southerly locations of this project. Specific gravity is usually moderate (<1.080), and size distribution is good, but Acadia Russet does not process. Its main utilization is for fresh pack and count boxes.

Atlantic - A medium maturing variety with slightly netted, round to oblong tubers. Atlantic has resistance to late blight, golden nematode, bacterial pink eye, net necrosis, verticillium wilt, viruses A and X, common scab, and blackwart. Atlantic is very high yielding, has high specific gravity, and chips quite well. Hollow heart and heat necrosis can be a problem in some areas, such as the mid-Atlantic states. Atlantic is grown quite extensively in the northeast and is a popular variety in Florida. Care must be taken to prevent infection with fusarium during storage.

BelRus - A medium-late maturing variety with heavily russeted oblong to long tubers. BelRus has resistance to verticillium wilt, net necrosis, leafroll, and virus A. Yields of BelRus vary dramatically with growing conditions possibly due to its small shallow-rooted plants. Specific gravities are high, and tuber type is very good, consequently, packers generally pay a premium price for BelRus. Tuber size distribution of BelRus frequently runs toward the smaller size classes. Marginal soil conditions should be avoided for this variety.

Campbell 14 - A medium-late maturing potato variety with white, round to oblong, attractive tubers. Campbell 14 has moderate yields, good table quality, and chips fairly well at harvest. This variety is susceptible to common scab. Campbell 14 was tested in upstate New York, Vermont, West Virginia, and New Jersey during 1985. Yields were comparable to Katahdin in the former three locations, but much lower in the latter. Yields are reported to average above those of Katahdin and Superior. Specific gravity has been consistently better than Katahdin.

Caribe - A very early maturing variety with purple skin which was released by Agriculture Canada in 1984. Tubers are round to oblong and fairly rough in appearance. Caribe produces very good early season yields and has good chip colors, but specific gravity tends to be low. This variety has resistance to common scab, phoma, and rhizoctonia. Caribe was tested in three NE107 locations during 1985, and yields were

higher than Superior in two of these locations. Caribe has potential as either an early season, specialty, or home garden variety.

Delta Gold - A yellow-fleshed, medium-late maturing variety with round, white, very attractive tubers. This variety has resistance to net necrosis and virus A. Delta Gold is an excellent baking potato and has high specific gravity, but yields have averaged lower than Kennebec. It may have a place in the growing specialty market for yellow-fleshed potatoes and for home gardens.

Denali - A medium maturing, chipping variety from Alaska which has round, buff-colored tubers. Denali has some resistance to common scab and virus S. Denali was tested in New Jersey, Ohio, and Virginia during 1985. Yields were very high at the former two locations, but were fairly low in Virginia. Specific gravities have generally been very high. Internal necrosis has not been a problem in this variety.

Elba(NY59) - A late maturing variety from New York which has round, tan colored tubers with very good appearance and cooking quality. Elba has resistance to late blight, early blight, verticillium wilt, and golden nematode. This variety has very good potential as a tablestock variety. Yields have consistently been very good. In three years of testing in Maine, usable yields were 110% those of Katahdin. Specific gravity was higher than Katahdin and percent defects lower. Similar data have been obtained from other NE107 locations. Elba is quite susceptible to common scab and heat necrosis can be a problem in some areas.

GoldRus - A late maturing, heavily russeted variety released by the U.S.D.A. in 1982. Tubers are oblong, blocky, and quite attractive. Total yields have been less than Russet Burbank, but higher than BelRus. In three years of testing in Maine, usable yield was 107% that of Russet Burbank, but specific gravity was considerably lower. Fry color has been very good, and this variety is resistant to net necrosis. At Presque Isle, scab was a problem in this variety during 1985. Detection of sunburning can also be a problem. Hollow heart has often been observed in large tubers.

Green Mountain - A late maturing, oblong variety which has very high yields and dry matter content. Green Mountain is an old variety which does not process, but has excellent baked quality. Its main weakness is lack of disease resistance, and it is particularly susceptible to common scab, late blight, and net necrosis. Green Mountain is a traditional garden variety and could also be used for specialty packs.

Hampton - A late maturing table variety with round, buff-colored tubers. Hampton has good appearance and resistance to golden nematode and verticillium wilt. Hampton was recently released by New York and was

tested as NY63. In three years at Maine, usable yields were 108% those of Katahdin and specific gravity was similar. Hampton was widely tested during 1985 with varied results. Performance was very good in five locations, average in three, and poor in three. Percent sunburn was high in several locations and internal necrosis was a problem in Long Island and Ohio. Hampton is susceptible to common scab and late blight.

Hudson - A late maturing variety from New York which has resistance to verticillium wilt and golden nematode. Tubers of Hudson are round to oblong, buff-colored, and quite attractive. Hudson was grown at two Long Island locations during 1985. Yields were higher than Katahdin at one location and lower at the other. Hollow heart and internal necrosis were a problem. Culinary characteristics are reportedly quite good. Hudson is primarily grown in New York as a tablestock variety.

Islander - A medium maturing variety which produces white-netted, oblong tubers and has resistance to common scab, early blight, net necrosis, and golden nematode. Yields have generally been similar to Katahdin and Superior, but specific gravity is often higher. Islander chips quite well, but occasionally has problems with hollow heart. Islander was tested in New Jersey, Vermont, and Virginia during 1985. Yields were good in New Jersey, but average elsewhere. Percent defects were low and chip colors were very good. Islander was tested as clone AF186-5 and was released in 1983 by Maine and New York.

Jemseg - An early maturing variety from Canada that produces round to oblong tubers with white skin and good appearance. Jemseg is the standard early variety in Canada. It sizes early, has fair culinary characteristics, and chips well under some conditions. Jemseg was tested at five NE107 locations during 1985. Yields were very good at four locations, but quite poor in Virginia. Specific gravities were low, but chip colors were good. Hollow heart was a problem in Long Island.

Katahdin - A late maturing variety released by the U.S.D.A. in 1935. Katahdin produces round, cream-colored tubers and is resistant to leaf-roll, net necrosis, and viruses A and Y. This variety is used as the standard late maturing test variety in many NE107 tests. Katahdin is susceptible to scab, silver scurf, fusarium, and is very susceptible to rhizoctonia. As a result tubers are frequently set near the surface and are often sunburned. This variety is and has been a very successful general purpose variety, however, acreage in Maine has declined rapidly in recent years.

Kennebec - A medium maturing variety released by the U.S.D.A. in 1948. Kennebec produces oblong, white-skinned tubers which are attractive and have good culinary characteristics. This variety is frequently used as the standard mid-season variety in NE107 tests. Yield and specific

gravity of Kennebec are consistently good; however, tuber defects (sunburn, growth cracks, and misshapen tubers) can be a severe problem under adverse growing conditions. Kennebec is resistant to late blight, net necrosis, and virus A, but highly susceptible to verticillium wilt and bacterial pink eye. Kennebec is an excellent garden variety and is still a valuable general purpose variety in some areas.

Monona - A medium maturing chipping variety which produces round, white-skinned tubers. Monona has resistance to verticillium wilt and viruses A, X, and Y. This old variety, which was released by Frito-Lay, Inc. in 1964, is frequently a standard chipping variety in NE107 tests. Yields of this variety are generally fairly low, but a high percentage of yield is usually marketable. Considerable hollow heart was observed in this variety during 1985.

NemaRus (B9540-62) - A medium maturing russeted variety which was released by the U.S.D.A. in 1985. Tubers are oblong, heavily russeted, and quite attractive. NemaRus has resistance to fusarium tuber rot, golden nematode, and virus X. This variety made its NE107 debut in 1985 and was tested at 10 locations. In Maine, total and usable yields were slightly less than Russet Burbank and fry color was acceptable. Yields in Delaware, New Brunswick, New Jersey, and Long Island were higher than the standard varieties, but yields in five other locations were not exceptional. Hollow heart was a problem in large tubers. Specific gravity was acceptable, but generally lower than Russet Burbank and BelRus.

Norchip - A medium-early maturing chipping variety which was released by North Dakota in 1968. Tubers are round, buff-colored, and have excellent chipping qualities. This variety is frequently used as a standard chipping variety in NE107 tests. Norchip was in three tests during 1985. Yields were high in New Jersey and Ohio, but fairly low in Pennsylvania. Specific gravity and chip colors were acceptable. Norchip is resistant to common scab.

Norking Russet (ND388-1) - A medium-late maturing variety which produces russeted, oblong tubers. Norking Russet was released in 1985 by North Dakota and has been tested in NE107 for two years. Yields in Maine have averaged lower than Russet Burbank and Kennebec. Specific gravity, fry color, and appearance have been very good. Percent defects have been low, but average tuber size has been very small. During 1985, Norking Russet had high yields and specific gravities in Delaware, New Jersey, and New York. Percent defects were generally low, but several locations reported problems. This variety is resistant to common scab and verticillium wilt.

Norland - An early maturing, red-skinned variety with resistance to common scab, leafroll, viruses A and Y, and blackwart. Tubers are

oblong, attractive, and have fairly good culinary qualities. Yields are erratic and specific gravity is low. Norland is very sensitive to air pollution. This variety was released by North Dakota in 1957 and is popular for early fresh market and as a garden variety.

Pungo - A medium-early maturing variety which produces round, buff-colored tubers that are rough in appearance. Pungo was released by the U.S.D.A. and Virginia in 1950 and is the standard variety in Virginia and North Carolina. This variety has resistance to late blight, common scab, and virus A. Pungo yields quite well and has relatively high specific gravity, but poor storage characteristics.

Redsen - A medium-early, red-skinned chipping variety from North Dakota. Tubers are round to oblong and generally quite attractive. Redsen has resistance to late blight, common scab, and silver scurf. In three years of testing in Maine, usable yields averaged only 85% those of Superior, specific gravities were low, and chip colors were marginal. Yields throughout the northeast have been lower than standard varieties. Storage characteristics are reportedly good.

Rhine Red - A medium maturing, red-skinned variety with round tubers. Rhine Red was released by Wisconsin. In three years testing in Maine, usable yield was 108% that of Kennebec, specific gravity was slightly lower, and processing qualities were poor. Percent defects were variable, but very low in 1985. Misshapen tubers and growth cracks were problems during past years. Rhine Red was also tested in New Jersey and Vermont during 1985. Yields were excellent but specific gravities were low at these locations. Rhine Red has good potential as a red-skinned tablestock variety.

Russet Burbank - A very late maturing, russeted variety which produces long tubers that are excellent for baking and french fries. Russet Burbank was first grown in 1874 and is the most widely grown variety in North America. It has resistance to common scab and blackleg. Yield and specific gravity of Russet Burbank are very high and storage characteristics are good. Russet Burbank is poorly adapted to most areas of the northeast (it does fairly well in Maine and New Brunswick). In some years, tuber defects (particularly misshapen and knobby tubers) greatly reduce usable yields. Conditions were excellent for Russet Burbank in Maine during 1985 and quality was good; however, a shorter season replacement is still needed.

Russette - A late maturing, russeted variety with attractive, oblong tubers and good disease resistance. Russette was released in 1981 by the U.S.D.A. and has resistance to verticillium wilt, net necrosis, virus A, bacterial pink eye, common scab, early blight, and rhizoctonia. Yields and specific gravity in Maine have been equal to Russet Burbank, percent defects have been much lower, and processing qualities have been

oblong, attractive, and have fairly good culinary qualities. Yields are erratic and specific gravity is low. Norland is very sensitive to air pollution. This variety was released by North Dakota in 1957 and is popular for early fresh market and as a garden variety.

Pungo - A medium-early maturing variety which produces round, buff-colored tubers that are rough in appearance. Pungo was released by the U.S.D.A. and Virginia in 1950 and is the standard variety in Virginia and North Carolina. This variety has resistance to late blight, common scab, and virus A. Pungo yields quite well and has relatively high specific gravity, but poor storage characteristics.

Redsen - A medium-early, red-skinned chipping variety from North Dakota. Tubers are round to oblong and generally quite attractive. Redsen has resistance to late blight, common scab, and silver scurf. In three years of testing in Maine, usable yields averaged only 85% those of Superior, specific gravities were low, and chip colors were marginal. Yields throughout the northeast have been lower than standard varieties. Storage characteristics are reportedly good.

Rhine Red - A medium maturing, red-skinned variety with round tubers. Rhine Red was released by Wisconsin. In three years testing in Maine, usable yield was 108% that of Kennebec, specific gravity was slightly lower, and processing qualities were poor. Percent defects were variable, but very low in 1985. Misshapen tubers and growth cracks were problems during past years. Rhine Red was also tested in New Jersey and Vermont during 1985. Yields were excellent but specific gravities were low at these locations. Rhine Red has good potential as a red-skinned tablestock variety.

Russet Burbank - A very late maturing, russeted variety which produces long tubers that are excellent for baking and french fries. Russet Burbank was first grown in 1874 and is the most widely grown variety in North America. It has resistance to common scab and blackleg. Yield and specific gravity of Russet Burbank are very high and storage characteristics are good. Russet Burbank is poorly adapted to most areas of the northeast (it does fairly well in Maine and New Brunswick). In some years, tuber defects (particularly misshapen and knobby tubers) greatly reduce usable yields. Conditions were excellent for Russet Burbank in Maine during 1985 and quality was good; however, a shorter season replacement is still needed.

Russette - A late maturing, russeted variety with attractive, oblong tubers and good disease resistance. Russette was released in 1981 by the U.S.D.A. and has resistance to verticillium wilt, net necrosis, virus A, bacterial pink eye, common scab, early blight, and rhizoctonia. Yields and specific gravity in Maine have been equal to Russet Burbank, percent defects have been much lower, and processing qualities have been

quite good. Russette has a long dormancy period and low weight loss in storage. This variety has good potential as a russeted fresh market variety and for processing. Emergence tends to be slow; however, this might be corrected by extending the seed warming period before planting.

Shepody - A medium maturing variety which produces long, white-skinned tubers. Shepody has resistance to verticillium wilt, net necrosis, phoma, and rhizoctonia. Shepody processes well into french fries and also has good baking and boiling characteristics. This variety is gaining popularity in eastern Canada and northern Maine as an earlier-season processing variety than Russet Burbank. It was tested in NE107 as F69016 and is currently being re-evaluated. Yields generally average about 90% those of Kennebec and specific gravity is usually high. Yields were very good in Maine, Long Island, and upstate New York tests during 1985. Shepody had more than 20% tuber defects in the Virginia and New Jersey tests.

Simcoe - An early maturing, round, white variety from Agriculture Canada (Guelph). Simcoe has resistance to common scab, late blight, golden nematode, and viruses A and X. Tubers have good appearance, chip well out of the field, and have been relatively free of internal disorders. In several NE107 tests over the past two years, Simcoe yields averaged only 83% those of Superior.

Sunrise - An early maturing variety with white-netted, round to oblong tubers. Sunrise has resistance to common scab, net necrosis, virus X, and golden nematode. This variety was released by Maine in 1984. It is primarily a tablestock variety, but can produce acceptable chips out of the field. Sunrise produces attractive tubers and generally has yields and specific gravity near those of Superior. In ten NE107 tests during 1985, Sunrise usable yields averaged 96% of the standard variety (usually Superior), and specific gravity was slightly lower. This variety was originally tested as clone CF7358-14.

Superior - A medium-early maturing variety with round, buff-netted tubers. Superior was released by Wisconsin in 1961 and has resistance to common scab. Superior is frequently used as an early standard variety in NE107 tests and has been a very successful early table and chipping variety. This variety is highly susceptible to verticillium wilt and late blight. Superior sprouts early in storage unless treated with a sprout inhibitor.

Yankee Chipper - A medium maturing variety with round to oblong, white-skinned, very attractive tubers. Yankee Chipper was released by Maine in 1983 and was originally tested in NE107 as clone AF205-9. It has resistance to net necrosis, golden nematode, and virus X. Yield of Yankee Chipper is reportedly near that of Superior, specific gravity is quite good, and chip quality is excellent. Tubers tend toward the

necrosis, late blight, verticillium wilt, and virus X. Yield and gravity are reported to be moderate. New Jersey was the only location that tested this clone during 1985. Yields were 109% those of Superior, but specific gravity was low. This selection has been dropped from testing due to erratic yields and poor appearance.

AF236-1 - A medium maturing clone from Maine that produces oblong tubers with excellent chip color. It has resistance to late blight, early blight, and net necrosis. In three years testing at Maine, yields averaged 50 cwt/A. less than Kennebec, specific gravities were very good, appearance was rated as very good, and small-lot storage samples had low weight loss. At four locations during 1985, usable yields averaged 91% of the standard variety (usually Katahdin), gravities were very good, and chip colors were good. Tuber defects, such as sunburning and growth cracks can be a problem. This clone has potential as a chipping and baking variety.

AF303-5 - A medium-late maturing, round-white clone with resistance to verticillium wilt, net necrosis, early blight, and rhizoctonia. In three years at Presque Isle, yields were similar to those of Kennebec. At five NE107 locations during 1985, usable yields averaged 119% those of Katahdin, gravities were high, and appearance was rated as fair. Internal necrosis was a severe problem in the Long Island test. This high yielding clone has potential as a tablestock variety in regions where heat necrosis is not a problem.

AF330-1 - A medium-early maturing clone from Maine that produces round tubers and has resistance to net necrosis. Yields over the past two years have been variable but generally less than Superior and Katahdin. Tuber size runs toward the smaller classes. Chip colors have been good.

AF339-5 - An early sizing clone that appeared in NE107 for the first time during 1985. Tubers are flat, oblong, white, and not very attractive. AF339-5 has resistance to common scab, early blight, net necrosis, and fusarium. Usable yields at Presque Isle were 87% those of Superior. Specific gravity was fairly good, chip color was poor, and some problems with sunburn, hollow heart, and misshapen tubers were encountered. Yields in New Jersey and Vermont were higher than Superior, while those in Virginia and Rhode Island were lower. Tuber defects were not a problem at these locations.

AF465-2 - A medium-early, oblong clone from Maine that produces tubers with russeted skin. This clone has resistance to common scab, acid scab, net necrosis, and bruising. During its first year of testing at Presque Isle, yields were 82% those of Superior, specific gravity was good, tuber size was generally small, and fried product color was

marginal. Percent tuber defects were very low. This clone may have potential as an early russet for fresh market.

AF474-2 - A medium-late maturing clone that produces round to oblong, buff-colored tubers with good appearance. This clone has resistance to golden nematode and net necrosis. During its first year of testing at Presque Isle, AF474-2 had very high usable yield (110% of Kennebec), high specific gravity, and poor chip colors. In New Jersey and two New York locations usable yields averaged only about 90% those of Katahdin.

AF9058-M - A medium-maturing clone which produces buff-colored, round to oblong tubers. AF9058-M has resistance to common scab and late blight. In two years of trials at Maine, usable yield was 93% of Kennebec, specific gravity was variable, chip colors poor, and percent defects were high. Sunburned, growth cracked, and misshapen tubers averaged more than 15% of yield. Tuber defects were also high in Ohio, but performance in New Jersey was similar to Superior. This clone will be dropped from further testing.

B9140-32 - A medium maturing clone with round, tan-netted tubers. This U.S.D.A. clone has resistance to golden nematode, virus A, and virus X. B9140-32 is of interest because of its excellent chip and fry color. It was tested in NE107 for the first time during 1985, and yields were very low. Heat damage to the sprouts of seedpieces may have caused this poor performance. In Maine, usable yield was only 60% that of Kennebec. Specific gravity was good and percent external defects were very low, however, hollow heart was a problem. Usable yield in New Jersey was only 69% that of Kennebec; however, B9140-32 performed fairly well in the New Jersey trials when compared to other clones.

B9340-13 - A medium-early maturing clone with round, buff-colored tubers. This U.S.D.A. clone also has resistance to golden nematode, virus A, and virus X. B9340-13 was tested for the first time in NE107 during 1985. Specific gravities were generally high, chip colors were acceptable, and percent defects low. Usable yields in Maine and Vermont were near those of Superior. Usable yield in West Virginia was 85% that of Kennebec.

B9540-55 - A medium maturing, russeted clone from the U.S.D.A. that produces long tubers that have resistance to fusarium tuber rot. During its first year of NE107 testing, usable yield in Maine was 89% that of Russet Burbank, specific gravity was 1.082 (R. Burbank was 1.099), and fry color was very good. Usable yields in Pennsylvania were very low; however; performance in the West Virginia trials was similar to the other russeted clones.

B9569-2 - An early maturing, russeted clone which produces oblong to long, attractive tubers. This U.S.D.A. clone has resistance to virus X and golden nematode. Specific gravities were fairly high during 1985, however, fry colors were unacceptable. Yields in Maine were quite low during 1985; however, its early maturity and low percent defects were a plus. Usable yields were variable in tests within the mid-Atlantic region and were particularly low in New Jersey and at one Long Island location. At four locations where BelRus also appeared, usable yields of B9569-2 averaged very close to BelRus. It may be useful as an early fresh market russet in areas where golden nematode is a problem.

B9596-2 - A medium maturing, russeted clone which produces oblong to long, very attractive tubers. This U.S.D.A. clone has resistance to virus A. Usable yields in Maine during 1985 were 92% those of Russet Burbank; however, average tuber size was quite small. Specific gravity was acceptable (1.085), percent defects was low, and fry colors were quite dark. In the Delaware, Long Island, and West Virginia trials where BelRus was also tested usable yields averaged 120% those of BelRus; however, specific gravity was much lower. Usable yields were very low in Pennsylvania, and small tuber size was a problem. Heat necrosis and hollow heart were observed in the Long Island trials.

BR7088-18 - A medium-late maturing clone which produces round, buff-colored tubers. This clone has resistance to late blight, verticillium wilt, and net necrosis. BR7088-18 can have acceptable chip color and usually has high specific gravity, but erratic yields and high tuber defects have been a problem. Hollow heart has been particularly bothersome. This clone was tested in New Jersey, Vermont, and West Virginia during 1985. Usable yields were similar to Superior and chipping characteristics were very good. Heat necrosis can be a problem in some areas.

CF7523-1 - A medium-early, round-white clone which has resistance to early blight, verticillium wilt, golden nematode, and net necrosis. CF7523-1 is a high yielding tablestock selection that produces tubers with generally good appearance. During 1985, CF7523-1 was tested at eight locations. Usable yields averaged 116% of the standard variety (usually Superior) and specific gravity was moderate. Chip colors have not been acceptable. The dormancy period for this clone is fairly short; however, weight loss in small scale storage tests has been moderate. This selection may be useful as a fresh market variety in areas where golden nematode is a problem.

CF7679-15 - A medium-early maturing clone from the Maine program that produces round-white, very attractive tubers. It has resistance to verticillium wilt, net necrosis, and virus X. CF7679-15 has been in the Maine trials for two years. Yields have been similar to those of Superior, specific gravity has been much higher, and percent external defects have been fairly low. Tuber size has been quite large, and

consequently hollow heart has been observed. Chip colors have been unacceptable. CF7679-15 was extensively tested in NE107 during 1985. Usable yields at 10 locations averaged 100% of the standard variety (usually Superior), specific gravities were high, and percent external defects were low. Hollow heart can be a problem in large tubers, and heat necrosis was present at several mid-Atlantic locations. Cooking quality has been rated quite well. This clone is a good tablestock prospect in areas where scab is not a problem.

CF7688-9 - A medium maturing clone which produces round, white-skinned tubers with resistance to net necrosis. In three years of Maine trials, yields were similar to Kennebec, specific gravity was very high, and chip colors were unacceptable. Tuber appearance has been rated fair to poor. CF7688-9 was widely tested in NE107 during 1985. Across nine locations, usable yields were extremely variable, but averaged 92% of the standard (usually Katahdin). Specific gravity was consistently high, but chip colors were variable. Percent defects, small tuber size, hollow heart, and heat necrosis were problems at several locations. This selection has been dropped from NE107 testing.

CF7719-6 - An early maturing selection which produces oblong, white-skinned tubers and has good disease resistance. CF7719-6 has resistance to common scab, acid scab, late blight, golden nematode, and net necrosis. During 1984, yields at Presque Isle, Maine were very low, and percent defects was high. Yields were below average at most locations, and chip colors were unacceptable. This selection has been dropped from NE107 testing.

CF7750-1 - A medium-early maturing, russeted clone from Maine with resistance to common scab, net necrosis, and virus X. Tubers are round to oblong and fairly attractive. In two years of testing in Maine, usable yields have averaged less than Superior and 93% of Russet Burbank. Specific gravity, tuber size, and external quality have been acceptable; however, fry colors have been dark. Usable yields were very low in the other four NE107 test locations (Delaware, New Jersey, Ohio, and Virginia) during 1985. Heat necrosis was observed in New Jersey. This clone has been dropped from NE107 testing due to disease problems.

CF76183-2 - An early maturing clone from Maine which produces long, white-skinned tubers. This clone has resistance to common scab, late blight, net necrosis, and virus X. CF76183-2 has very good chip and fry colors. Usable yields in Maine over the past three years have averaged only 70% those of Superior. External defects, particularly sunburned and misshapen tubers, have been very common, and hollow heart has been somewhat of a problem in large tubers. Although this clone has several very positive traits, yield has been low and percent defects high at most locations. It will be dropped from further testing.

CF77154-10 - An early maturing clone from the Maine program that produces round tubers with excellent chipping quality. This clone has resistance to golden nematode and net necrosis. During three years of testing in Maine, specific gravity and chip color have been excellent, percent defects have been low, and tuber size has tended toward the smaller classes. Usable yield has averaged 87% that of Superior. In four other trials during 1985, CF77154-10 had usable yields equal to Superior, but much less than Kennebec. This clone has potential as a chipping variety.

CS7232-4 - A medium-early maturing clone from the Maine program that produces buff-colored, round to oblong tubers. Chipping quality of this clone has been excellent. It has resistance to common scab, hollow heart, and net necrosis. This clone has been extensively tested in past years. Yields have been variable but generally lower than Superior, appearance has been fair, and specific gravity fairly good. It was tested in Canada and Rhode Island during 1985. Usable yield was 88% of the standard variety (Kennebec and Superior, respectively) at each location. This clone may be named in the near future because of its excellent chipping characteristics.

CS7296-5 - A medium-early maturing clone which produces round to oblong, buff-colored tubers. It has resistance to late blight and net necrosis. This clone was tested in NE107 for the first time during 1985. Usable yield in Maine was 80% that of Superior, specific gravity was moderate, and chip color was poor. CS7296-5 was also tested in New Jersey and Vermont during 1985. At these locations, usable yield averaged 118% that of Superior. Further testing will be required to determine if this clone has a chance as a tablestock variety.

CS73105-2R - A medium maturing, russeted clone which produces round tubers. This clone is resistant to net necrosis, common scab, and acid scab. During its first year in NE107 trials, CS73105-2R was tested in four locations. Usable yield in Maine was 89% that of Russet Burbank, specific gravity was moderate, and fry color was dark. Usable yields in the other three test locations (Delaware, New Jersey, and Virginia) averaged 130% those of BelRus. This selection will be dropped from further testing.

CS7635-4 - A late maturing, round-white clone which has good disease resistance. This clone has resistance to common scab, acid scab, net necrosis, verticillium wilt, early blight, and virus X. During its first year of testing, CS7635-4 was a top performing round white in the Maine trials. Usable yield was 113% that of Katahdin, specific gravity was very high, fry color was acceptable, and percent defects were low. Data on culinary quality and storage characteristics are not available at this time. CS7635-4 was also tested in New Jersey during 1985. Usable yield was 118% of Katahdin, but specific gravity was low and chip

color marginal. This clone could be a good general purpose variety, if performance is stable across years.

CS7639-1 - A medium-early maturing clone which produces round, buff-colored tubers and has resistance to golden nematode, net necrosis, and virus X. This clone was widely tested during 1985. Across eight locations, usable yield averaged 109% of the standard variety (usually Superior). Specific gravity was moderate to low, and chip color was almost always unacceptable. Overall appearance was rated as fair to good; however, tests in New Brunswick faulted its culinary quality. Additional data will be required to determine the potential of this high yielding clone.

CS7697-24 - An early maturing clone which produces buff-colored, round tubers. CS7697-24 has resistance to net necrosis, verticillium wilt, and rhizoctonia. During its first year of testing, usable yields in Maine were equal to Superior, specific gravity was good, and chip color was marginal. Appearance was rated as very good. Usable yield at four other locations averaged 112% those of Superior. Specific gravity was variable but approximately equal to Superior. Internal quality was good at all locations. CS7697-24 could be a useful early variety where verticillium wilt is a problem. Susceptibility to scab may be a problem.

CS7747-7 - A medium-early maturing clone which produces buff-colored, oblong to long tubers that have resistance to net necrosis. During its first year of testing, usable yields in Maine were 86% those of Superior, specific gravity was high, and fry colors were poor. This clone had 13% sunburned tubers by weight, otherwise total yield was very good. In three other NE107 tests, usable yields were slightly higher than Superior, specific gravity was variable, chip color was poor, and percent defects were high at two locations. Heat necrosis and hollow heart were problems in New Jersey. This clone will be dropped from further testing.

CS77120-8 - A medium maturing clone which produces tan-netted, round tubers. This clone has resistance to common scab, fusarium, and net necrosis. In the 1985 Maine trials, it had very high total yield, but sunburning, growth cracks, and hollow heart caused problems. Usable yield was 93% that of Kennebec, and specific gravity was good; however, fry colors were unacceptable. Usable yields in New Jersey were only 66% those of Superior. More data are necessary to evaluate this clone.

F70021 - A medium-early maturing clone which produces round, white-skinned tubers. F70021 has resistance to verticillium wilt, fusarium, leafroll, virus Y, and rhizoctonia. This clone is from Agriculture Canada (Fredericton) and made its first appearance in NE107 during 1985. Usable yields in Maine were 105% those of Superior. Specific gravity and percent defects were fairly low, and fry colors were very dark.

color marginal. This clone could be a good general purpose variety, if performance is stable across years.

CS7639-1 - A medium-early maturing clone which produces round, buff-colored tubers and has resistance to golden nematode, net necrosis, and virus X. This clone was widely tested during 1985. Across eight locations, usable yield averaged 109% of the standard variety (usually Superior). Specific gravity was moderate to low, and chip color was almost always unacceptable. Overall appearance was rated as fair to good; however, tests in New Brunswick faulted its culinary quality. Additional data will be required to determine the potential of this high yielding clone.

CS7697-24 - An early maturing clone which produces buff-colored, round tubers. CS7697-24 has resistance to net necrosis, verticillium wilt, and rhizoctonia. During its first year of testing, usable yields in Maine were equal to Superior, specific gravity was good, and chip color was marginal. Appearance was rated as very good. Usable yield at four other locations averaged 112% those of Superior. Specific gravity was variable but approximately equal to Superior. Internal quality was good at all locations. CS7697-24 could be a useful early variety where verticillium wilt is a problem. Susceptibility to scab may be a problem.

CS7747-7 - A medium-early maturing clone which produces buff-colored, oblong to long tubers that have resistance to net necrosis. During its first year of testing, usable yields in Maine were 86% those of Superior, specific gravity was high, and fry colors were poor. This clone had 13% sunburned tubers by weight, otherwise total yield was very good. In three other NE107 tests, usable yields were slightly higher than Superior, specific gravity was variable, chip color was poor, and percent defects were high at two locations. Heat necrosis and hollow heart were problems in New Jersey. This clone will be dropped from further testing.

CS77120-8 - A medium maturing clone which produces tan-netted, round tubers. This clone has resistance to common scab, fusarium, and net necrosis. In the 1985 Maine trials, it had very high total yield, but sunburning, growth cracks, and hollow heart caused problems. Usable yield was 93% that of Kennebec, and specific gravity was good; however, fry colors were unacceptable. Usable yields in New Jersey were only 66% those of Superior. More data are necessary to evaluate this clone.

F70021 - A medium-early maturing clone which produces round, white-skinned tubers. F70021 has resistance to verticillium wilt, fusarium, leafroll, virus Y, and rhizoctonia. This clone is from Agriculture Canada (Fredericton) and made its first appearance in NE107 during 1985. Usable yields in Maine were 105% those of Superior. Specific gravity and percent defects were fairly low, and fry colors were very dark.

Appearance was rated as good, and culinary qualities are also reported to be good. Usable yields in New Jersey and Vermont were also very good. Heat necrosis was observed in New Jersey.

F73008 - A late maturing clone that produces oblong, yellow-fleshed tubers. It has resistance to early blight, late blight, verticillium wilt, and rhizoctonia. F73008 is a high yielding selection, which can be used for fresh market or for processing. Tuber defects have been a problem in past years. Similar observations were made at three locations during 1985.

F74123 - A medium maturing clone that produces oblong, yellow-fleshed tubers. F74123 has resistance to virus X, virus Y, and golden nematode. This clone was a top performer in the Maine trials during 1985. Usable yields were 109% those of Kennebec, percent defects were low, and fry color was poor. At three other locations (New Jersey, Long Island, and upstate New York) usable yields averaged 107% those of Katahdin. Usable yield in Delaware was very low, because misshapen tubers were a severe problem. Heat necrosis was a problem in New Jersey and Long Island. This high yielding, yellow-fleshed clone could become a valuable variety for fresh, specialty, and export markets.

MN7973 - This Minnesota clone has been recently named Tolaas. It is a medium maturing variety which produces oblong tubers with tan-netted skin. Tolaas has resistance to common scab and hollow heart. Yield, specific gravity, and size distribution of Tolaas have been poor over the past few years. Tolaas was included in Ohio and New Brunswick trials during 1985. Usuable yields averaged 92% of Kennebec, and specific gravities were fairly low.

ND534-4 - A medium-late maturing, russeted clone from North Dakota. ND534-4 produces very attractive, oblong to long tubers and has resistance to common scab. In two years of testing in Maine, usable yields have averaged 75% those of Russet Burbank, specific gravity has been low, and fry colors poor. Percent defects have been very low and tuber size quite small. Yield and size distribution of ND534-4 have been much better in the more southerly locations of the test region. It was a top-performing russeted clone in the New Jersey, Pennsylvania, Virginia, and West Virginia tests during 1985.

NY64 - A late maturing clone from New York which produces oblong tubers and very high yields. NY64 has resistance to common scab and golden nematode. In three years of Maine testing, usable yields were 97% those of Katahdin. Total yields were very high; however, external defects were also very high. This clone does not chip, but has acceptable specific gravity and good culinary characteristics. Yields and tuber defects have been high across the testing region. A possible tablestock

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selection where common scab is a problem, but Elba would be a better choice where heat necrosis and scab are not problems.

W752 - A medium maturing clone from Wisconsin that has oblong, tan-netted tubers. Disease resistance data have not been made available for this clone. Performance has been variable in two years of testing. In Maine during 1984, yields were low, percent defects high, and tuber size quite small. During 1985, yields were equal to Superior, percent defects were low, and size was adequate. W752 was also tested in New Jersey and Ohio during 1985, usable yields averaged 94% those of Atlantic. No internal necrosis problems were encountered. This clone is of interest because of its high dry matter. Chip colors have been variable; however, french fry color and texture have been rated very good.

WF564-3 - A medium maturing clone that is being developed by Maine. Tubers are oblong to long, lightly russeted, and variable in appearance. This clone has resistance to late blight, common scab, acid scab, virus X, and net necrosis. In extensive NE107 testing, yields have been variable, but often quite high. Specific gravity is generally low and tuber defects, particularly growth cracks, can be high under some conditions. WF564-3 is intended for fresh market utilization and does not process. Evaluation of cooking quality has been mixed. Evaluation in Maine and New Brunswick has indicated that culinary characteristics are borderline acceptable. During 1985, WF564-3 lived up to its reputation for high yields and low total solids. Specific gravity was low, but it was a top yielding russeted variety in Delaware, New Brunswick, Ohio, Pennsylvania, and Virginia. Its future will likely depend on consumer acceptance of its culinary qualities.

WF591-1R - A medium maturing, round to oblong, russeted clone. It has resistance to net necrosis, common scab, and early blight. During its first year of NE107 testing usable yields were fairly high in Maine, Delaware, Virginia, and New Jersey, but low in two New York trials and Rhode Island. Specific gravity and percent defects were variable, but fry colors were poor. Appearance was generally rated as poor.

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