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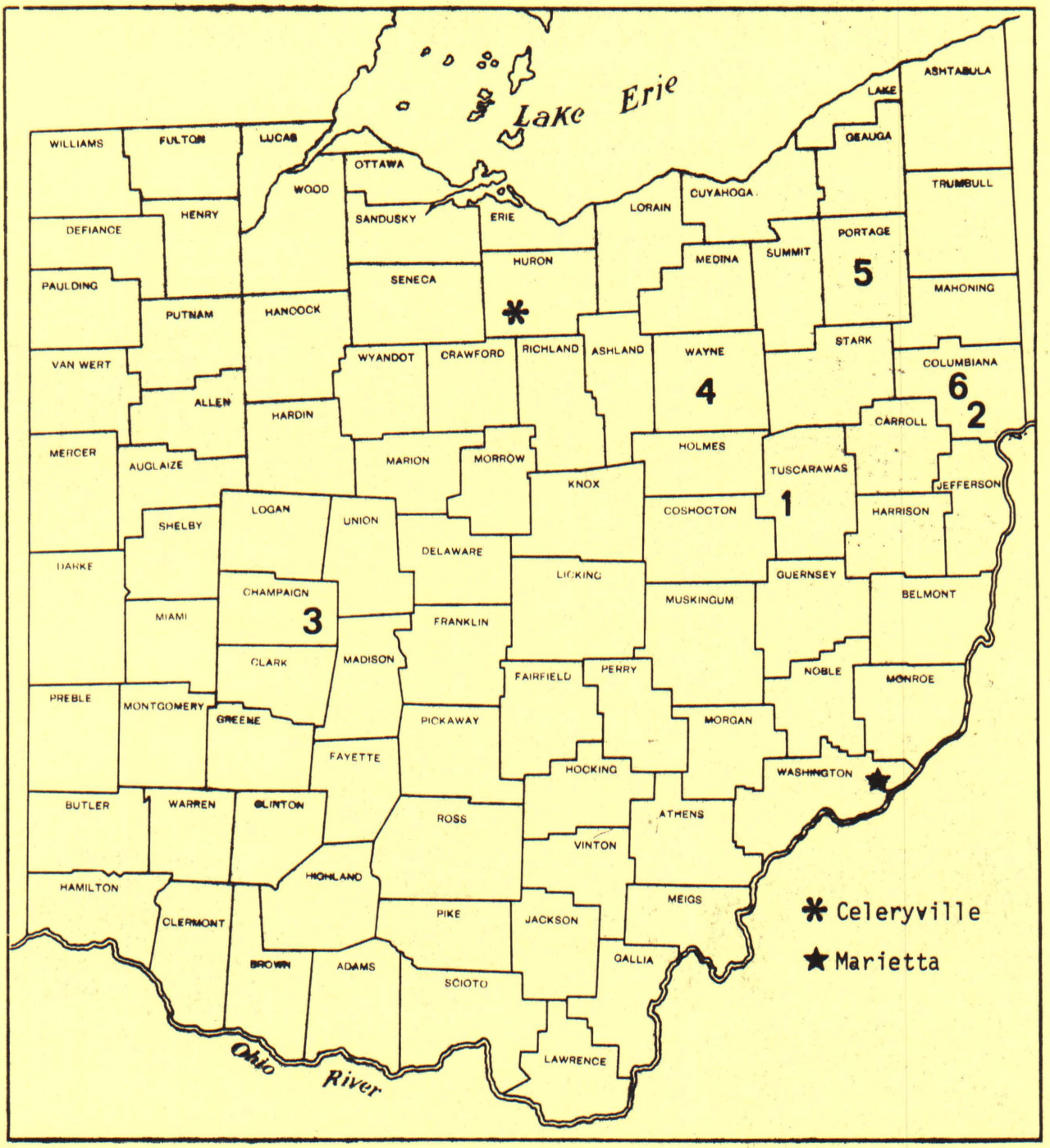
1973 OHIO POTATO CULTIVAR TRIALS

A. R. MOSLEY, E. C. WITTMEYER, R. E. PARTYKA, and F. I. LOWER

DEPARTMENT OF HORTICULTURE

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
WOOSTER, OHIO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MONROE
FAIRFIELD
PERRY
MORGAN
HOCKING
WASHINGTON
ATHENS
VINTON
MEIGS
JACKSON
GALLIA
LAWRENCE
Ohio River
Celeryville
Marietta

1973 OHIO POTATO CULTIVAR TRIALS

A. R. Mosley, E. C. Wittmeyer,[1] R. E. Partyka,[2] and F. I. Lower[3]

INTRODUCTION

The importance of cultivar evaluation in potato production has been well established in Ohio for a number of years. Therefore, cultivar trials continue to be an important phase of potato research in the state. At present, growers contribute significantly to the testing program. In 1973, plots were located on farms of seven cooperating growers and at the OARDC Muck Crops Branch, Celeryville.

In total, some 38 potato cultivars and advanced selections were evaluated in Ohio in 1973. These were divided into three groups based on location, overall goals, and soil type: 1) a statewide trial of eight cultivars and one advanced selection on six grower farms and 28 cultivars and advanced selections on two of these farms; 2) 13 cultivars in early market plots on a grower farm at Marietta; and 3) 10 cultivars on muck at the Muck Crops Branch, Celeryville.

STATEWIDE TRIALS

General Procedure

Eight cultivars and one advanced selection were tested on farms of six cooperating growers (Table 1). Superior was included for purposes of comparison for earliness as in past years; Katahdin served a similar purpose for midseason to late-maturing entries. Kennebec was included as a chipping quality standard. Nineteen observational entries, representing a wide range in characteristics, were located on Farms 2 and 6 (Table 2).

Cultural practices used on grower farms were common to Ohio commercial operations in all instances (Table 3). To aid in this regard, plots were generally located adjacent to or within commercial fields so the time-course of spray and cultural practices would be identical to that used in the grower's field. Plots consisted of double 40-foot rows of 50 seed pieces each for major entries and double 25-foot rows for observational entries. Entries were replicated three times.

Stand, vigor, incidence and severity of diseases, and other disorders were evaluated during the growing season. Tubers were dug with a level-bed digger, picked up by hand, and weighed in the field. Fifty lb. samples were then saved from each plot for grading, sizing, and other measurements. In plots producing less than 50 lb. (i.e., observational plots), the entire yield was used for grading and sizing.

During the grading operation, 15 lb. samples of No. 1 tubers were collected from each replication of each cultivar at all locations for chip tests in the Horticulture Department Pilot Plant at Columbus (results will be reported later under separate cover). Some low-yielding observational entries were not chipped. Samples were also collected during the grading operation for vascular discoloration, hollow heart, and specific gravity studies.

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[1]Extension Horticulturist, [2]Extension Plant Pathologist, and [3]County Agent, Emeritus.

TABLE 1.---Sources, Origin, and Characteristics of Entries Listed in Approximate Order of Maturity, Ohio Potato Cultivar Trials, 1973.

Cultivar	Origin	Years in Ohio Tests	Resistant or Tolerant to	Comments
Superior	Wisconsin, 1961	11	Scab, late blight	Kennebec X Merrimack standard early cultivar in Ohio
Abnaki	USDA, Maine and N.Y., 1971	3	V. wilt, leaf roll, mild mosaic	High yields; susceptible to late blight and tuber rots
Norchip	N. D., 1968	6	Scab, some insects	Attractive; sets heavily; good chipper; susceptible to V. wilt
Shurchip	Nebr., 1968	5	Scab; tolerant to V. and F. wilts	High yields; attractive; susceptible to late blight
Penn 71	Pa., 1972	2	Late blight	Susceptible to V. wilt; Kennebec X Pennchip; sets lightly
6RF1	Pa.	2		
Kennebec	USDA, 1948	11	Late blight, net necrosis, mosaics	Susceptible to V. wilt; spindle tuber; high yields; low grade; all-purpose
Katahdin	USDA, 1935	11	Leaf roll, mosaic, net necrosis	Standard cultivar; widely adapted
Hudson (NY 41)	N.Y., 1973	4	Golden nematode	High yields; large tubers

TABLE 2.--Source, Origin, and Characteristics of Observational Entries, 1973.

Entry	Origin	Years in Ohio Tests	Plans for 1974	Resistant or Tolerant to	Comments
York	Canada, 1969	3	Early market trials only	Late blight, scab, silver scurf	Very early; high solids; attractive russet; susceptible to Rhizoc
Norland	N. D., 1957	2	Early market trials only	Common scab (moderate)	Susceptible to viruses and late blight; red; early; small if dry; low specific gravity
Haig (L)	Nebr., 1957	5	May include for early market	Scab, virus X	Lacks size; russet; late Haig, claimed to set lighter
LaRouge	La., 1962	2	Drop	Scab (slight)	Red, midseason; uniform; low specific gravity; poor chipper
Red LaSoda	La., 1948	2	Continue	Mosaic (slight)	High yields; attractive; cooks white; susceptible to scab and late blight
MS 709	Mich.	5	Continue		Variable yields; potential high yields; large; attractive
B 6692-5	USDA	3	May continue		Good yields and grades; attractive; shallow eyes
ND 7196-18	N. D.	4	Drop	Late blight (some)	Similar to Norchip in yields, specific gravity; chips; susceptible to blackleg and wilt
ND 6549-7	N. D.	1	Drop		Good French fries; internal flecking
Pa. 6 CX 6	Pa.	2	?		High specific gravity; susceptible to drought; slight russet
Nooksack (168-3)	Wash., 1973	4	Drop	Scab, V. wilt (moderate), net necrosis	Very dormant in storage; high specific gravity; russet
Monona	USDA and Maine, 1964	7	Drop	Mosaic (mild and rugose)	Frito-Lay; Katahdin selfed by Chippewa selfed; low yields; chips well from cold storage
BR 6448-7	USDA	3	Drop		Good yields, 1971 and 1972; low specific gravity; deep eyes
W 623	Wisc.	1	Continue		High yields in NCR trials, 1972 and 1973; potential chipper from storage
W 710	Wisc.	1	Continue		Good yields in Wisc.; attractive; uniform
W 629	Wisc.	1	May continue		Low solids
La. 71-110	La.	1	Drop		Good grades; fair yields; good chipper
B 6097-9	USDA	1	Drop		
Raritan (F 5459)	Maine	3	May drop	Late blight, virus A and X, V. wilt (moderate)	High specific gravity; average to high yields; large tubers; hollow heart in 1971

TABLE 3.--Cultural and Pest Control Practices by Farm, Ohio Potato Cultivar Trials, 1973.

Practice	Farm No. 1	2	3	4	5	6
Planted	May 5	May 8	May 11	May 19	June 7	June 15
Vines Killed	Sept. 20	Sept. 10	Aug. 19 (weeds, blight)	Sept. 29	Sept. 12 (Evik)	not killed
Harvested	Sept. 27	Sept. 28	Sept. 22	Oct. 23	Sept. 26	Oct. 5
Days to Killing	139	126	101	134	97	
Days to Harvest	146	144	135	158	112	113
Preceding Crop	Sweet Corn	Wheat	Potatoes	Wheat	Wheat	Hay
Cover Crop	Rye	Clover and Timothy	none	Ryegrass	Wheat	Timothy and Clover
Fertilizer/Acre						
Broadcast	150 lb. urea	none	none	none	none	none
Plowed Down	150 lb. urea and 350 lb. 6-24-24	40 lb. N.	none	none	100 lb. ammonium nitrate	none
Banded	500 lb. 12-24-24	1,000 lb. 10-20-20	1,400 lb. 9-18-18	1,100 lb. 17-17-17	1,000 lb. 13-34-10	1,000 lb. 10-20-20
Herbicide	40-45 lb. gran. Eptam	1 gal. Eptam	Lorox	Lorox	Lorox	50 lb. Eptam
Banded Insecticide	25 lb. Thimet	25 lb. Di-Syston	20 lb. Di-Syston	22 lb. Di-Syston	10 lb. 15% Di-Syston	20 lb. Di-Syston
Seed Spacing (in.)	9-1/2 x 34	8-1/2 x 36	9-1/2 x 34	10 x 34	8 x 32	11 x 34
Total Prec. (in.)	17.0	16.5	22.1	17.8	12.0	10.5
Soil Type	Sandy Loam	Canfield Silt Loam	Oakley Silt Loam	Silt Loam	Chile Silt Loam	Wooster Silt Loam

Results

Yield -- Hudson led all entries in yield of U.S. No. 1 or *marketable* tubers, with 341 cwt. per acre across all locations (Table 4). The two Pennsylvania entries, 6RF1 and Penn 71, produced lowest yields of 269 and 268 cwt./acre, respectively. Other yields were: Shurchip, 310; Norchip, 292; Abnaki, 291; Superior, 287; Katahdin, 283; and Kennebec, 280 cwt./acre. Hudson and Shurchip have ranked first and second in yield during the past 3 years of testing (Table 5). Abnaki dropped from third among eight cultivars in 1972 to fourth among nine cultivars in 1973. Both Norchip and Superior yielded relatively higher in 1973 than during the two previous years.

Yields differed considerably among farms. Farm No. 1 (irrigated sandy loam) averaged 341 cwt./acre of marketable potatoes across all cultivars, while Farm No. 2 (Canfield silt loam) yielded only 200 cwt. (Table 4). Plants appeared to be injured fairly severely by over-application of the fungicide Duter on Farm No. 2. Plots on Farm No. 3 were subjected to a severe outbreak of late blight and excessive weed growth in early August; accordingly, vines were killed in mid-August, leading to unusually low yields and erratic results. Therefore, Farm No. 3 was omitted from yield data.

TABLE 4.---Average Marketable* Yield in cwt. per Acre, Ohio Potato Cultivar Trials, 1973.

	Farm No.					
Cultivar	1	2	4	5	6	Average
Hudson	410.9	281.6	397.0	340.1	280.1	341.6
Shurchip	367.0	227.9	348.2	338.4	275.8	309.7
Norchip	366.6	189.6	349.3	316.8	237.5	292.1
Abnaki	353.4	209.0	335.5	309.5	227.3	291.2
Superior	309.9	193.2	355.7	353.0	224.0	287.2
Katahdin	317.8	208.2	373.1	318.1	197.2	283.0
Kennebec	291.8	139.7	332.8	375.5	262.0	280.2
6RF1	370.0	155.6	292.6	254.8	271.9	269.3
Penn 71	280.1	196.8	348.8	312.4	200.9	268.3
Average	340.8	200.2	349.2	324.3	242.0	
LSD 5% Level			40.7			54.6

*Marketable = U. S. No. 1 tubers.

TABLE 5.--Average Yields of Marketable Potatoes for Cultivars Grown in 1973 and for Those Grown 2 or More Years in 10 Years of Testing, Ohio Potato Cultivar Trials, 1973.

Variety	Years Tested										Av. Yield
	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	cwt./A.
Early											
Haig			204	254	233			310	296		260
Cobbler	244	251									248
Alamo					298	286	308	277			293
Superior	261	289	255	283	269	308	269	275	228	287	273
Iopride							321	302			312
Medium Early											
Snowflake	276	285	195								252
Norgold Russet	263	259	221								248
LaChipper	316	326	282	325	272	301					304
Platte				315	273	302					297
Monona			229	288	231	284	274	300			268
Wauseon							297	270			284
Abnaki								319	297	291	303
Midseason											
Peconic					305	297	349	290			311
Arenac	257	332	202								264
Penobscott			222		307	425					318
Shurchip						385	282	335	304	310	323
Norchip					307	282	355	294	284	292	302
Hudson (NY41)								347	352	342	347
Katahdin	218	405	270	327	284	290	344	285	277	283	298
Kennebec	253	394	290	286					285	280	298
Lenape				326	263	274					288
Penn 71										268	268
Late											
Sebago	268	374	225	299							292
Ona	247	402	234	350	319						310
6RF1										269	269

Grade -- The Pennsylvania selection 6RF1 produced the highest percentage (8.07%) of B-sized tubers (Table 6). Tubers of 6RF1 were also smaller than those of any other entry, averaging only 0.31 lb. per tuber. Small tuber size combined with a tendency toward skin feathering and excessive mechanical damage indicate that 6RF1 is probably too late for Ohio conditions. Abnaki yielded the lowest percentage of B's, with 2.60%. Hudson tubers tended to be large, weighing an average of 0.47 lb. This tendency toward overlarge tubers may be a fault with this cultivar. Norchip, which tends to set heavily, yielded 5.37% B's and tubers weighing an average of 0.35 lb. each, or second smallest. A modification in spacing or nitrogen fertilization may be beneficial for Hudson and Norchip. Wider spacing and high nitrogen generally favor larger tubers.

Cullage was serious in some entries, ranging from 21% for Kennebec to less than 7% for Superior (Table 6). Penn 71 yielded 13.9% culls, followed by Hudson, 11.6%; Katahdin, 11.4%; Norchip, 11.0%; Abnaki, 11.0%; Shurchip, 9.68%; and 6RF1, 7.7% cull tubers. Greening and off-shapes accounted for the majority of cull tubers.

Specific Gravity -- Specific gravity ranged from 1.073 for Norchip, a chipping cultivar, to 1.061 for Katahdin (Table 6). Tubers of Superior averaged 1.070; all other entries fell between 1.067 and 1.063 specific gravity. Although Kennebec is considered to be an excellent chipping potato, specific gravity averaged only 1.064.

TABLE 6.--Grade, Specific Gravity, Average Tuber Weight, Major Defects, and Percent of Perfect Stand, Ohio Potato Cultivar Trials, 1973.

Cultivar	Average Percent			Specific Gravity*	Av. Tuber Wt., Lb.	Major Defects†	Percent Stand
	Marketable	B-Size	Culls				
Hudson	85.8	3.21	11.63	1.067**	0.47	Gr., Sh.	80.5
Shurchip	86.6.	3.69	9.68	1.063	0.39	Sh.	71.6
Norchip	83.6	5.37	11.03	1.073	0.35	Sh., Gr.	78.6
Abnaki	86.4	2.60	11.01	1.066	0.40	Gr., Sh.	82.8
Superior	90.0	3.01	6.93	1.070	0.45	Sh., Gr.	71.2
Katahdin	85.8	2.75	11.43	1.061	0.44	Gr., Sh.	80.1
Kennebec	75.3	3.69	20.99	1.064	0.40	Sh., Gr.	79.9
6RF1	84.3	8.07	7.65	1.064	0.31	Gr., Sh.	72.2
Penn 71	83.4	2.75	13.87	1.066	0.42	Sh., Gr.	69.0
LSD 5% level	4.29	1.23	4.08		0.03		5.09

*Data based on one farm.

†Sh = misshaped; Gr = sungreening.

**Values obtained by the potato hydrometer method.

TABLE 7.--Marketable Yield, Grade, Percent Stand, Season of Maturity, and Comments on Observational Selections, Ohio Potato Cultivar Trials, 1973.

Selection	Yield cwt./A.	Percent Marketable	Use in 1974	Percent Stand	Season of Maturity	Comments
Red Lasoda	298	82	Continue	79	Midseason	Excellent red color
LaRouge	296	82	Drop	82	Midseason	Excellent red color
MS 709	269	86	Continue	76	Midseason	Low S.G.*; variable shape, yields
ND 6549-7	259	87	Drop	69	Early	Susceptible to H.H.†; high S.G.; large lenticels
ND 7196-18	250	83	Drop	81	Early	Susceptible to H.H., wilt; low S.G.; internal flecking
W 710	240	88	Continue	76	Early	Low S.G.; large tubers, lenticels; uniform
6 CX 6	237	79	?	88	Midseason	Low S.G.; variable size; Rhizoc.
Raritan**	228	94	Drop	75	Late	Some H.H.; russet
W 623	217	74	Continue	84	Midseason	Long tubers; low grades; poor vigor
Haig (L)	215	77	?	88	Early	Small tubers; very round
B 6692-5	196	92	?	77	Early	Susceptible to H.H.; low S.G.; variable size; attractive
La. 71-110	186	78	Drop	67	Late	Low S.G.; medium rough shape
BR 6448-7	182	67	Drop	56	Early	Low S.G.; rough; poor vigor
Nooksack	171	82	Drop	77	Midseason	Long russet; susceptible to wilt; variable size, shape
W 629	158	88	Continue	72	Early	Low S.G.; varied size; low vigor
York	150	89	Continue	63	Very Early	Poor stands; low yields
Monona	143	85	Drop	65	Early	Very low S.G.; poor stands, vigor, shape
Norland	133	92	Continue	83	Very Early	Red; low S.G.; uniform; small
B 6097-9††	132	83	Drop	60	Late	Poor stands, vigor; long, flat
Average	209	83.5		76		

*S.G. = Specific Gravity.
†H.H. = Hollow Heart.
**Farm No. 6 only.
††Farm No. 2 only.

Observational Selections -- Red Lasoda led the observational entries in yield in 1973, with 298 cwt./acre of marketable potatoes (Table 7). Remaining entries in the top five yielding selections were LaRouge, 296 cwt.; MS 709, 269 cwt.; ND 6549-7, 259 cwt.; and ND 7196-18, 250 cwt./acre. ND 7196-18 appeared to be very susceptible to internal flecking in 1973 and will be excluded from further trials on that basis. Similarly, LaRouge will be dropped from further testing since Red Lasoda appears to be slightly more promising. The USDA seedling B 6097-9 produced the lowest yield, with only 132 cwt./acre. The early cultivars York, Monona, and Norland yielded only slightly better, with 150, 143, and 133 cwt./acre, respectively.

Several observational entries failed to produce satisfactory stands in 1973. The USDA seedlings BR 6448-7 and B 6097-9 averaged only 56% and 60% stands, respectively. Plant vigor was also noticeably poor throughout the growing season for these two selections. Stands were also poor for York, 63%; Monona, 65%; La. 71-110, 67%; and ND 6549-7, 69% of perfect stand.

Stand -- The importance of stand in yield production is not clear. Only 71.6% of Shurchip seed produced plants (Table 6), yet this cultivar ranked second in marketable yield with 310 cwt./acre. Abnaki lead in percent stand with 82.8%, while Penn 71 ranked lowest in both stand and yield with 69% and 268 cwt./acre, respectively.

Stem-end Discoloration -- Twenty-one tubers per cultivar were collected at each farm in both 1972 and 1973 for evaluation of stem-end or vascular discoloration. After visual examination, infected tubers were cultured to determine whether Fusarium or Verticillium were associated with the discolored areas. Averaged values for all farms (Table 8) showed Shurchip and Katahdin to have the highest percentage of vascular discoloration in both years. More Verticillium was isolated from the tubers than Fusarium. Superior, Norchip, and Penn 71 had more Verticillium than Fusarium. It is interesting to note that Norchip, Shurchip, Penn 71, York, and Red Lasoda did not have stem-end discoloration when grown at Marietta for early harvest in 1973 (Table 11).

TABLE 8.---Average Percent of Tubers Showing Vascular Discoloration, Ohio Potato Cultivar Trials, 1972-1973.

Vascular Discoloration Rank Low To High			
1973		1972	
Penn 71	14.2	Haig	14.3
Hudson	15.0	Hudson (NY41)	14.3
Kennebec	15.0	Norchip	22.9
6RF1	15.8	Abnaki	23.8
Norchip	16.7	Superior	24.8
Superior	20.0	Kennebec	25.7
Abnaki	21.7	Katahdin	28.6
Shurchip	23.3	Shurchip	33.3
Katahdin	25.8		

MARIETTA EARLY MARKET TRIALS

Potatoes are grown primarily for early fresh-market outlets in southeastern Ohio. Crops are generally planted in early April, harvested in July and August, and sold at harvest as table stock. Chipping is not considered a major market outlet.

Thirteen potato cultivars were evaluated for late summer cropping on a grower farm near Marietta in 1973. Entries are listed according to season of maturity and briefly described in Table 9. Superior and Katahdin were included for purposes of comparison, with Superior serving as a standard for early cultivars and Katahdin for midseason to late entries.

Procedure

Cut seed were treated with Polyram and planted April 20 in Wheeling gravelly loam. Planting had been delayed 3 weeks due to rain. A rye cover crop was plowed down. Fertilizer was banded beside rows at planting at the rate of 1,050 lb./acre of 12-12-12 containing 2% magnesium. Seeds were spaced 9-1/2 inches apart in 34-inch rows. Plots consisted of double 40-foot rows containing 50 seed pieces each and were replicated three times. The systemic fungicide Di-Syston was banded at planting at the rate of 20 lb./acre of 15% granules. Weeds were controlled by mechanical cultivation and post-emergence application of Eptam at 1 gal./acre. Fungicides and additional insect control measures were applied as needed.

Results

Vines were shredded on August 2 and tubers were dug on August 3, for a total growing season of only 104 days. Consequently, tubers were unusually small and yields were lower than normal. All but the earliest cultivars were immature when harvested. Noticeable feathering and/or mechanical skin injury were evident for Abnaki, Shurchip, Penn 71, Kennebec, Katahdin, LaRouge, Red LaSoda, and Onaway.

Yield -- Marketable yields ranged from 301 cwt./acre for Shurchip to 137 cwt. for York (Table 10). Abnaki, which generally yields well, was second lowest with only 180 cwt./acre. The unusually short growing season may have accounted in part for the poor performance by Abnaki and Katahdin (195 cwt.), since midseason or late-maturing cultivars probably were still growing actively and increasing tuber size at harvest. Other high-yielding cultivars were Onaway (254 cwt.), Norchip (243 cwt.), Kennebec (243 cwt.), and LaRouge (231 cwt.). Shurchip apparently is widely adapted and yields well under a wide range of conditions. It has ranked either first or second in grower trials at Marietta and elsewhere for the past 3 years (Table 5).

Superior produced highest grades with 92.8% marketable tubers, followed by Katahdin with 90.2%. Superior also produced the highest percentage of marketable tubers in the 1973 statewide trials (Table 5). The lowest percentage of marketable tubers (75.2%) was produced by Haig, primarily because more than 23% of the Haig yield consisted of B-size and smaller tubers (Table 10). Tubers were unusually small for other cultivars as well. Norland averaged less than 0.2 lb. per tuber compared to 0.31 lb. for Onaway. An average A-size tuber in Ohio normally weighs from 0.35 to 0.45 lb. Almost 20% of the Norland yield was comprised of B-size and smaller tubers. Superior ranked lowest in this regard, with only 6.7% B's.

TABLE 9.--Origin, Recognized Disease Resistance, and General Characteristics of Entries, Marietta Trials, 1973.

Cultivar*	Origin	Resistant to	Years in Ohio Tests	Characteristics
York	Canada, 1969	Late blight, scab, silver scurf	3	Susceptible to Rhizoc; high S.G.; attractive; light russet
Norland	N.D., 1957	Common scab (moderate)	2	Susceptible to viruses and late blight; red; small; low S.G.
Superior	Wisconsin, 1961	Scab, late blight	11	Standard early cultivar in Ohio
Haig (L)	Nebraska, 1957	Scab, virus X	5	Small tubers; russet; late Haig
Norchip	N.D., 1968	Scab, insects	6	Attractive; sets heavy; chips; susceptible to V. wilt
Abnaki	USDA, Maine, and N.Y., 1971	V. wilt, leaf roll, medium mosaic	3	Good yields; susceptible to late blight and tuber rots
Shurchip	Nebraska, 1968	Scab. Tolerant to V. and F. wilts	5	Good yields; attractive; susceptible to late blight
Onaway	USDA and Michigan, 1957	Scab, late blight, mild mosaic	2	Susceptible to wilt; attractive; nice skin; good yields
Penn 71	Pa., 1972	Late blight	2	Susceptible to V. wilt; sets lightly
LaRouge	La., 1962	Scab (moderate)	2	Red; uniform; low S.G.
Katahdin	USDA, 1935	Leaf roll, mosaic	11	Standard Ohio cultivar; widely adapted
Kennebec	USDA, 1948	Late blight, net necrosis, mosaic	11	Good yields; low grades; all-purpose
Red LaSoda	La., 1948	Mosaic (moderate)	2	Good yields; attractive; susceptible to scab, early blight

*Ranked by approximate order of maturity.

TABLE 10.--Yield, Grade, Percent of Perfect Stand, and Comments, Marietta Trials, 1973.

Cultivar	Marketable cwt./Acre	Percent Marketable	Percent B's*	Percent Culls	Av. Tuber Wt., Lb.	Percent Stand	Comments
Shurchip	301.9	81.7	16.9	1.4	0.23	93.0	Russet; large lenticels; small tubers
Onaway	254.4	84.1	12.2	3.6	0.31	94.0	Some rough second growth; large lenticels
Norchip	244.0	84.0	14.6	1.2	0.23	90.3	Small; smooth; attractive
Kennebec	243.7	85.4	13.8	0.8	0.27	84.0	Excellent; smooth shape
Red LaSoda	231.4	84.5	14.0	2.4	0.25	95.3	Bright purplish red; attractive
LaRouge	231.1	77.1	20.6	1.6	0.21	89.6	Bright purplish red; small; rough shape
Penn 71	221.9	88.8	9.4	1.8	0.30	72.3	Rough, white, smooth skin; attractive
Superior	221.4	92.9	6.7	0.5	0.23	84.0	Small tubers; high grades
Haig (L)	220.5	75.2	23.8	1.0	0.21	93.3	Low grades; small; rough skin
Katahdin	194.6	90.2	9.0	0.8	0.27	87.0	Smooth; shallow eyes; attractive
Norland	192.1	78.6	20.8	0.6	0.19	85.3	Dull red; smooth; very small
Abnaki	180.5	83.4	15.0	1.4	0.24	91.7	Creamy white; smooth
York	136.9	82.7	16.8	0.2	0.23	83.3	Very early; attractive; low yields
LSD 5% level	49.1	6.78			0.05	6.48	

*Tubers passing a 1-7/8" screen.

Percent Stand -- Due to late planting (and possibly seed treatment), stands were relatively good, averaging 88% and ranging from a high of 94% for Onaway to only 72% for Penn 71. Based on results of 1973 Ohio tests, low stands appear to be somewhat characteristic of Penn 71 at Marietta and across the state (Tables 6 and 10).

Vascular Discoloration -- It is interesting to note that vascular discoloration was absent from Norchip, Shurchip, Penn 71, York, and Red LaSoda at Marietta (Table 11), while Norchip, Shurchip, and Penn 71 showed considerable discoloration of the stem end at other locations when harvested later (Table 8). Attempts to culture Fusarium and Verticillium from the discolored areas were negative in most cases. Only traces of Verticillium and Fusarium were present.

TABLE 11.---Average Percent of Tubers Showing Vascular Discoloration, Marietta Trials, 1972-1973.

Percent of Tubers Discolored			
1973		1972	
Norchip	0	Abnaki	0
Shurchip	0	Shurchip	0
Penn 71	0	Haig	0
York	0	Onaway	0
Red LaSoda	0	Superior	0
LaRouge	5	Katahdin	9.5
Onaway	10	Alamo	14.3
Katahdin	10	Chippewa	14.3
Kennebec	10	Cobbler	23.8
Haig	10	Seminole	23.0
Norland	15		
Abnaki	15		
Superior	20		

CELERYVILLE TRIALS, 1973

Ten cultivars were evaluated at the OARDC Muck Crops Branch, Celeryville, in 1973. Ranked by approximate order of maturity, entries were:

Early	Penn 71
Superior	Katahdin
	Kennebec
Midseason	Hudson
Norchip	Late
Abnaki	6RF1
Shurchip	
Onaway	

Cultivars are described with regard to origin, disease resistance, years tested in Ohio, and general characteristics in preceding sections (Tables 1 and 9). As in previous years, Superior was included as a comparison for earliness and Katahdin for midseason to late cultivars.

Methods

Prior to planting on May 14, fertilizer was broadcast and incorporated at the rate of 850 lb./acre of 0-25-25. Cut seed were treated 1 week before planting. Seeds were spaced 11 inches apart in 34-inch rows. Plots were single 22-foot rows and were replicated four times.

The systemic insecticide Thimet was banded at the rate of 30 lb./acre of 10% granules at planting. Phosdrin and Thiodan at recommended dosages were alternated weekly for insect and late-season aphid control. Dithane M-45 was applied weekly at the rate of 3 lb./acre after plants were 6 to 8 inches tall. Weed control was achieved by a combination of mechanical cultivation and post-emergence application of Eptam at 4 lb./acre.

Tubers were dug with a level bed digger and picked up by hand on Sept. 20, for a growing season of 129 days. Tubers were sized and graded with a commercial potato grader. Eight-lb. samples of U.S. No. 1 tubers were collected from each plot after grading for specific gravity determinations.

Results

Yield -- Yields were unusually low and erratic at Celeryville in 1973 (Table 12). Portions of the planting were flooded early in the growing season and this may have accounted in part for the unusual trends in yield. Katahdin produced highest yields with 264 cwt./acre of U.S. No. 1 tubers, while Penn 71 ranked lowest in yield with only 98 cwt./acre. Hudson (formerly NY 41), which led in yield on muck in 1972 with 312 cwt. of marketable potatoes, yielded only 150 cwt. in 1973. Hudson led in yield on mineral soils in both 1972 and 1973 (Table 5) and on muck in 1972 (Table 13). Norchip ranked second lowest in yield in 1972, but second highest in 1973 with 231 cwt./acre.

Grades -- The percentage of tubers graded U.S. No. 1 ranged from 85% for Katahdin and Norchip to 72% for Kennebec (Table 12). Kennebec also yielded the highest

TABLE 12.--Yield, Grades, Average Tuber Weight, Specific Gravity, and Percent Stand, Celeryville Trials, 1973.

Cultivar	Marketable Yield cwt./Acre	Yield, Percent			Av. Wt., Lb.	Specific Gravity	Percent Stand
		No. 1	B's and Cs	Culls			
Katahdin	264	85	10.7	4.2	0.27	1.065	87
Norchip	231	85	8.6	6.3	0.33	1.072	92
Shurchip	212	76	13.4	10.4	0.55	1.069	81
Abnaki	205	84	10.7	5.6	0.26	1.070	98
Onaway	202	79	8.2	12.8	0.28	1.062	94
6RF1	201	80	14.1	6.5	0.27	1.065	83
Kennebec	156	72	15.9	11.7	0.29	1.068	81
Hudson	150	83	6.9	10.3	0.31	1.068	72
Superior	109	81	11.7	7.1	0.28	1.070	79
Penn 71	98	78	11.2	10.7	0.36	1.068	74

percentage (15.9%) of undersized tubers (B's and C's). Hudson yielded less than 7% B's and C's. Onaway yielded almost 13% cull tubers, while Katahdin produced less than 4.5% culls. Abnaki and Norchip also produced low cullage, with 5.6 and 6.3% culls, respectively. Average tuber weight ranged from 0.55 lb. for Shurchip to 0.26 lb. for Abnaki. Tubers tended to be small for most cultivars in 1973; only four entries averaged more than 0.3 lb. per tuber.

Stand -- Percent stand varied widely among cultivars. Only 72% of Hudson seed survived to produce plants at Celeryville in 1973 (Table 12). At the same time, Hudson produced the second highest stands on mineral soil in 1973 (Table 6). This unusually low survival rate on muck may have accounted for Hudson's low yields. Abnaki produced highest percent stand with a 98% survival rate.

Specific Gravity -- Tubers of the chipping cultivar Norchip averaged 1.072 specific gravity, followed by Abnaki and Superior with 1.070 specific gravity. Onaway tubers averaged only 1.062. All other entries ranged between 1.065 and 1.069.

TABLE 13.--Average Marketable Yields of Cultivars in cwt./Acre by Year, Muck Crops Potato Trials, 1969-1973.

1973		1972		1971		1970		1969	
Katahdin	264	NY 41	312	Abnaki	360	Katahdin	326	Norchip	221
Norchip	231	Shurchip	309	Shurchip	328	Superior	264	Katahdin	173
Shurchip	212	Abnaki	302	Norchip	315	Shurchip	239	Shurchip	168
Abnaki	205	Kennebec	296	Haig	311	Norchip	217	Superior	128
Onaway	202	Haig	290	Katahdin	308				
6RF1	201	Katahdin	270	Superior	159				
Kennebec	156	Norchip	232						
Hudson (NY 41)	150	Superior	167						
Superior	109								
Penn 71	98								
Average	183		272		297		262		173

SUMMARY OF CHARACTERISTICS OF SELECTED VARIETIES

Hudson -- Hudson, formerly NY 41, was released by New York in 1973. It is resistant to the golden nematode which has been a serious pest in New York but not in Ohio. It is similar to Katahdin for resistance to common scab and intermediate between Kennebec and Katahdin for resistance to Verticillium wilt. In Ohio tests, Hudson has outyielded all other varieties on mineral soils, averaging 347 cwt./acre of U.S. No. 1 potatoes. It also outyielded all others on muck in 1972. Plants are large and spreading and compete effectively with weeds. Hudson tubers tend to be larger than those of Katahdin but somewhat similar in appearance. Hollow heart has not been excessive in Ohio. Tuber skin is generally smooth and creamy, but some lenticel enlargement has been noted under wet conditions in Ohio. Hudson is an excellent table stock potato but is not suitable for chipping from storage. It is of higher specific gravity than Katahdin, somewhat mealier when cooked, and is said to be less subject to after-cooking darkening. Seed will not be available in quantity before the 1975 planting season.

Shurchip -- Shurchip is a round russet released by Nebraska in 1969. It has yielded well in Ohio tests, ranking second only to Hudson during the last 3 years. It is moderately resistant to common scab and tolerant to Fusarium and Verticillium wilts. Tops are intermediate in size and spreading. Shurchip tubers are similar in size to Katahdin, slightly russeted, and round to oblong, with shallow eyes. Shurchip was released as a chipping variety but is gaining in popularity among table stock growers in Ohio. It is somewhat slower-cooking than Katahdin and may be firmer when baked. Specific gravity is generally slightly higher than Katahdin.

Norchip -- Norchip was released by North Dakota in 1968. It is susceptible to late blight, Verticillium wilt, and virus X, but is moderately resistant to common scab. Yields have been only average in Ohio. Tops mature early to midseason and are of medium size and upright. Tubers are smooth-skinned and creamy white, with shallow eyes. However, under certain Ohio conditions, Norchip is susceptible to growth cracks and off-shapes, with shouldering at the tuber ends. Tubers vary in shape but are generally round to oblong. Norchip tends to set heavily and tubers often run small. Wider spacing may favor larger tubers. This variety is equal to or better than Kennebec for chipping with higher gravity tubers, but is not considered a table stock variety.

Abnaki -- Abnaki was released by the USDA in 1971 in cooperation with New York and Maine. It is resistant to Verticillium wilt, leaf roll, mild mosaic, and net necrosis due to leaf roll, and is more resistant to common scab than Katahdin. Foliage and tubers of Abnaki are susceptible to late blight. Abnaki has yielded well in Ohio. However, large tubers appear to be highly suceptible to hollow heart. Abnaki tubers are round, uniform in size, and creamy white, with shallow eyes. This variety is similar to Katahdin in specific gravity and processing and cooking qualities. It has not chipped well from low temperature storage in Ohio tests.

Katahdin -- Katahdin has been a standard midseason-to-late variety in Ohio for many years. It was released by the USDA in 1935 and is resistant to mild mosaic, moderately resistant to leaf roll, and immune to net necrosis and potato wart. It is widely adapted, producing satisfactorily under a wide range of conditions. Tops are medium to large. Tubers of Katahdin are elliptical to roundish, with shallow eyes and smooth, white skin. Katahdin is widely used as an all-purpose table stock potato and is a leading variety for potato salads. It chips and fries satisfactorily from the field, but may not be the best choice for chipping from prolonged storage.

Superior -- Superior is a widely grown standard early cultivar in Ohio. It was released by Wisconsin in 1961 and is moderately resistant to common scab but may be slightly susceptible to virus X and late blight. Due to its early maturity, Superior normally produces lower yields than Katahdin. Muck growers often plant Superior in preference to Katahdin due to its better resistance to scab. Superior tubers are oval to oblong, generally smooth in shape and uniform in size, with light, flaky russet skins. Tubers set deep on short rhizomes and do not green readily; skins generally toughen at an early stage of development. Superior is an all-purpose potato which chips and cooks fairly well.

Kennebec -- Kennebec is a midseason variety released by the USDA in 1948. It is somewhat resistant to late blight, mild mosaic, and net necrosis, but is susceptible to Verticillium wilt. Tops are large, vigorous, and upright. Yields are generally high, but grades are low due to a tendency toward rough shapes, greening, and field rots. It is also subject to pink-eye rot in storage. Tubers of Kennebec are white, smooth, and elliptical to oblong. It is an excellent general-purpose potato suitable for boiling, baking, frying, or processing into chips. Kennebec is a very important chipping variety in Ohio despite its average to low specific gravity. It is a good choice for chipping from storage.

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