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OHIO POTATO CULTIVAR TRIALS

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OHIO STATEWIDE TRIALS - 1991

INTRODUCTION

The purpose of the statewide potato variety trials is to test new varieties for the benefit of Ohio growers when these varieties are grown under various farm conditions. Cultural and pest control practices in each case are those used by the cooperating grower. Stand, vigor, plant characteristics, diseases, and maturity were recorded in the fields. At harvest the tubers are evaluated, weighed, and graded, with samples taken for chipping tests.

Eleven cultivars were planted at each of three farms in 1991. These farms were selected to give different soil and climatic conditions. The cultivars were selected either because they looked promising in previous statewide trials, and in the previous observation trials on two cooperating farms, or were selected from the cultivar plots at the Ohio Agricultural Research and Development Center (OARDC), Wooster.

Farm Locations

The three farms referred to in the introduction are as follows:

Farm 1 (M) - Michael Farms, Urbana, Champaign County, (Irrigated)

Farm 2 (L) - Logan Farms, Mt. Gilead, Morrow County, (No irrigation)

Farm 3 (W) - Ohio Agric. Research and Dev. Center (OARDC), Wooster, Wayne County,
(No irrigation)

See Table 1 for summary of cultural practices followed on these cooperating farms--planting dates, harvest dates and related information.

PROCEDURES

Eleven cultivars were planted in four replicates on each of the three farms. Sixty seed pieces were planted in each replicate. Four additional cultivars were planted in three replications as observation plots at OARDC, Wooster.

The seed potatoes were cut and treated on May 2 and 7. Farm 1 was planted on May 5, Farm 2 was planted on May 16 and Farm 3 was planted on May 15. All were harvested from September 25 to October 2, 1991. The potatoes were harvested with flat bed diggers, then picked up and weighed. A sample of each cultivar was taken to The Ohio State University pilot plant (Columbus) for chip tests. Representative 40 pound samples were collected, then graded October 23 with 10 tubers cut for internal defects. Atlantic, Katahdin and Superior were standard varieties used for comparison.

WEATHER AND GROWING CONDITIONS

The 1991 growing season was extremely hot and dry. See Table 2 and 1991 North Central Report for specific data.

FIELD OBSERVATIONS

The average percent stand at Farm 1 was 80%; Farm 2 was 72%; and Farm 3 was the highest with an average of 83% (Table 3). However, Farm 1 had the highest yields at harvest. The average percent stand for all three locations was 78%; one of the lowest on record.

Ohio potato growers experienced one of the most difficult growing seasons in 1991 which has occurred for nearly 50 years. The hot and dry weather during the early part of the growing season affected crop development, especially tuber set and tuber enlargement (later in the season).

For the most part, except where plots were irrigated continuously, the yields in these trials were much lower than previous years. However, several cultivars seemed to have considerable tolerance to both heat and drought.

Gemchip is a round-white tuber with fairly shallow eyes. It seemed to tolerate drought under the conditions of these trials.

Superior, an old variety which is used primarily for early harvest, seemed to tolerate drought and heat surprisingly well. This may be due to the early tuber-setting characteristics of this cultivar.

Katahdin, released by USDA nearly sixty years ago, produced excellent tubers which were quite uniform in appearance and size. Perhaps the tolerance of this cultivar to high temperatures and drought conditions may help to explain the survival of this cultivar for these many years.

Castile is an oval to long-shaped tuber with a white appearance. It seems to have considerable yielding ability under stressful conditions. Bruising at harvest may be a major problem due to shape of the tubers. The plant growth during the season was excellent. More trials are needed before growers can plant on an extensive basis.

Snowden has been included in the Ohio trials since 1986. The tubers are round and have a fairly heavy netting. The plants tend to set many tubers. As a result, tuber size has been small, but tubers have been very uniform. There is considerable interest in this cultivar for chips. It may have a place as a fresh market variety when irrigation is available. Planting distances should be at least 12 inches between seed pieces.

In summary, many new cultivars are being released. Growers should make an effort to plant a small plot of these promising new cultivars which are mentioned in this report.

GRADES AND YIELDS

The following tables present yield information as well as grades and defects. Low yields this year are due largely in part to the hot, dry weather during the growing season. The average total yields for the three locations ranged from 216 to 322 cwt/A. However, Farm 1 had total yields ranging from 314 to 549 cwt/A. The average percent U.S. number 1's ranged from 81 to 93%.

SOIL ANALYSES OF STATEWIDE TRIAL PLOTS - 1991

Test Results	-----Cooperating Farms-----		
	1(M)	2(L)	3(W)*
pH	6.9	5.7	
P (lb/A)	484	196	
K (lb/A)	872	451	
CA (lb/A)	4270	2830	
Mg (lb/A)	827	451	
CEC (meq/100g)	15	13	
Ca (% base sat.)	70	54	
Mg (% base sat.)	23	14	
K (% base sat.)	7.3	4.4	
Zn (lb/A)	29.6	12.0	
B (lb/A)	1.5	.9	
OM (%)	4.1	3.1	
Mn (lb/A)	54	85	
Fe (lb/A)	97.2	102.6	
Zn (lb/A)	29.6	12.0	
Cu (lb/A)	2.7	26.8	
B (lb/A)	1.5	.9	
NO ₃ N (lb/A)	55	85	

Cooperating Farms:

1 = Michael Farms, Urbana

2 = Logan Farms, Mt. Gilead

3 = Ohio Agricultural Research and Development Center, Wooster

Soil analyses conducted at Research-Extension Analytical Lab, The Ohio Agricultural Research and Development Center, Wooster.

* Soil samples were not collected at Wooster

Table 1. Cultural and pest control practices used on Ohio statewide potato trials – 1991.

	<u>Farm 1 (M)</u>	<u>Farm 2 (L)</u>	<u>Farm 3 (W)</u>
Date planted	May 8	May 16	May 15
Date harvested	September 26	September 25	October 2
1990 crop	Cabbage	Rotation corn	Potatoes
Cover crop	Rye	Corn stalk	
Fertilizer applied in row	1000 lbs. 12-30-21	lbs. 150-200-200 75#N, 200#P 175K, 80S, Mg15#	1200 lbs. 10-20-20
sidedressed	Urea	75# 28%N w/ Lorax	
Herbicide	Dual, Sencor	Dual, Lorox	Dual, Sencor
Insecticide systemic	Phorate	Phorate	Penncap, Ambush, Guthion
Spacing	8" X 36"	8" X 36"	12" X 36"
Soil type	Silt loam	Brookston silt loam	Wooster silt loam
Soil conditions at planting	Excellent	Excellent w/ clods	Excellent
Irrigation	Yes	No	No

Table 2. Stand counts for Ohio statewide main trials and observational trial, 1991.

<u>MAIN TRIALS</u>				
<u>Cultivar*</u>	---Cooperating Farms---			<u>Mean</u>
	1(M)	2(L)	3(W)	
	-----% Emergence-----			
MS 700-70	87	75	72	78
Snowden	85	79	82	82
Gemchip	76	73	75	75
Superior	88	82	89	86
Allegheny	73	64	78	72
Atlantic	87	73	88	83
Norwis	88	67	92	82
AF 1060-2	65	62	73	67
Katahdin	80	77	87	81
Castile	76	77	92	82
S-3	71	65	83	73
Farm Mean	80	72	83	78
<u>OBSERVATION TRIAL</u>				
MN 13055			71	
Kanona (NY 71)			83	
W 1000			84	
Sangre			72	
Farm Mean			78	

* Some cultivars listed in this report were included as numbered lines in earlier reports, for example:

Snowden -- W855
 Gemchip -- BR7093-24
 Allegheny -- N.Y.72
 Norwis -- FL657
 Castile -- B7592-1

Table 3. Rainfall and irrigation records for Ohio statewide potato trial plots – 1991.

	<u>Farm 1 (M)</u>	<u>Farm 2 (L)</u>	<u>Farm 3 (W)</u>
Date planted	May 8	May 16	May 15
Date harvested	September 26	September 25	October 2
	<u>Rainfall/Irrig.</u>	<u>Rainfall</u>	<u>Rainfall</u>
	<u>(inches)</u>	<u>(inches)</u>	<u>(inches)</u>
May	3.5	3.56	2.58
June	4.0	1.34	1.67
July	5.5	2.49	0.86
August	5.5	2.61	3.07
Season Total	18.5	10	8.18
June/July/August Total	15.0	6.44	5.6
Ave. U.S. No. 1 Yields:			
Main Trials (Cwt/A)	401	172	133

Table 4. Percent of B's, culls, and hollow hearts for main trial cultivars. Results are the mean values for three farms, 1991.

Cultivar	% B's	% Culls	Internal Defects % Hollow Heart
MS700-70	1.3	5.1	2.5
Snowden	5.0	5.9	0.8
Gemchip	3.1	8.4	0
Superior	5.2	4.7	0
Allegany	4.0	6.3	0
Atlantic	3.0	4.2	0.8
Norwis	2.5	7.7	0
AF1060-2	3.9	10.4	0
Katahdin	3.5	8.3	0
Castile	5.8	7.0	0
S-3	1.7	16.6	0
Mean	3.5	7.7	0.4

Table 5. Total yield, percent U.S. No. 1 and marketable yield for main trial potato cultivars, Ohio statewide trials – 1991.

Cultivar	Farm 1 (M)			Farm 2 (L)			Farm 3 (W)			Mean of 3 Farms		
	Yield cwt/A	No. 1 %	No. 1 cwt/A	Yield cwt/A	No. 1 %	No. 1 cwt/A	Yield cwt/A	No. 1 %	No. 1 cwt/A	Yield cwt/A	No. 1 %	No. 1 cwt/A
MS 700-70	476	95	452	230	95	218	143	90	129	283	93	263
Snowden	438	94	412	192	92	177	165	74	122	265	87	231
Gemchip	498	95	473	173	92	159	142	69	98	271	85	230
Superior	314	93	292	161	89	143	197	86	169	224	89	199
Allegany	394	91	359	164	91	149	89	84	75	216	89	192
Atlantic	433	97	420	225	94	212	200	83	166	286	91	260
Norwis	408	92	375	187	90	168	164	86	141	253	89	225
AF 1060-2	437	88	385	173	87	151	188	78	147	266	84	223
Katahdin	419	92	385	200	89	178	134	79	106	251	87	218
Castile	455	96	437	188	80	150	178	84	150	274	87	238
S-3	549	76	417	214	89	190	204	78	159	322	81	238
Mean	438	92	401	192	90	172	164	81	133	265	87	229

Table 6. Mean U.S. No. 1 yields in cwt. per acre for major entries in the Ohio statewide potato trials of all farms each year grown in the last ten years and grown more than one year.

Cultivar	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<u>Early & Med. Early</u>										
Jemseg	300	161								
Superior							131		207	224
Conestoga		141	230	266	321	225				
Rus. Norkotah					302	272	105			
<u>Early Midseason</u>										
Crystal										
Langlade (W718)	373						181	188		
Norchip	274	184	208	228	301	236	160	161	235	
<u>Midseason</u>										
Snowden (W855)								167		231
LA01-38 (LaBelle)				359	413	330	233	211	272	
Katahdin	341	238	315	335	363	276	187	178	246	251
Atlantic								193	260	260
<u>Late</u>										
Castile (B7592-1)								191		280
Allegany (N.Y.72)							213	184		192
Denali	311	206								
Elba (NY59)	388	245			393					
Neb.A129-69-1	327	207	278							
WNC521-12				325	344					
MS700-70					378	281	232	187	230	263
Gemchip (BR7093-24)									268	230
Steuben (NY81)							235	215		

Some of the cultivars grown in Ohio for which the characteristics are well known after several years of testing have been omitted in later years. Some cultivars listed were included in the trials prior to the last ten years. Among these are Shurchip, Monona, Kennebec, Atlantic, Crystal, Sebago, Red Pontiac, Red LaSoda, etc. Katahdin, Norchip and Superior are well known and used as standards for comparison.

Table 7. Specific gravity, chip color, percent blister, and Agtron E-5F readings of potato cultivars grown at three farms in statewide trials, 1991.

Cultivar	Farm 1 (M)				Farm 2 (L)				Farm 3 (W)			
	Specific Gravity	Chip Color y	% z Blister	Agtron	Specific Gravity	Chip Color	% Blister	Agtron	Specific Gravity	Chip Color	% Blister	Agtron
MS700-70	1.079	2	0	57.3	1.079	2	10	55.8	1.078	2	30	62.1
Snowden	1.076	1	40	66.3	1.085	2	30	55.2	1.087	1	40	72.2
Gemchip	1.068	3	30	45.5	1.077	3	30	53.8	1.073	1	30	64.0
Superior	1.078	2	10	55.0	1.081	3	30	46.6	1.091	1	20	61.5
Allegany	1.080	1	0	65.3	1.083	1	10	67.5	1.078	1	20	61.4
Atlantic	1.081	1	30	69.5	1.090	1	0	63.4	1.092	1	0	70.0
Norwis	<1.065	1	10	63.3	1.067	1	10	67.3	1.078	1	10	70.8
AF1060-2	<1.065	4	20	35.4	1.070	3	60	46.4	1.078	3	20	49.7
Katahdin	1.075	3	20	54.1	1.068	3	20	44.7	1.065	1	40	68.0
Castile	1.074	3	10	52.2	1.080	2	50	55.0	1.078	2	30	54.2
S-3	1.076	2	0	60.3	1.088	3	20	48.1	1.086	1	30	63.6
Farm Mean	1.074	2.1	15.4	56.7	1.079	2.2	24.5	54.9	1.080	1.4	24.5	63.4
Cultivar	Mean of 3 Farms											
	Specific Gravity	Chip Color	% Blister	Agtron								
MS700-70	1.079	2	13.3	58.4								
Snowden	1.083	1.3	36.7	64.6								
Gemchip	1.073	2.3	30	54.4								
Superior	1.083	2	20	54.4								
Allegany	1.083	1	10	64.7								
Atlantic	1.088	1	10	67.6								
Norwis	1.070	1	10	67.1								
AF1060-2	1.071	3.3	20	43.8								
Katahdin	1.069	2.3	26.7	55.6								
Castile	1.077	2.3	30	53.8								
S-3	1.083	2	16.7	57.3								
Mean	1.078	1.9	20.3	58.3								

y PC/SFA Standards; 1=light (high Agtron index readings), 5=dark (low Agtron index readings)

z Percentage of chips that develop blisters > 20 mm in diameter during the frying process.

Observation Trials (Wooster) Table 1. Total yields, U.S. No. 1 yields, grade distribution, tuber data and internal disorders for observation entries, 1991.

Cultivar	Yield Cwt/A	Total No. 1 Cwt/A	U.S. No. 1	U.S. B size %	Culls	z					y			
						Tuber Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Internal Necrosis	Hollow Heart	Vascular Discoloration	Defect Free
MN13055	125	99	79	15	6	2.0	6.0	3.0	5.0	5.0	0	0	0	10
Kanona (NY71)	114	75	66	27	7	6.7	6.0	2.5	6.0	5.7	0	0	0	10
W1000	139	114	82	12	6	6.7	5.0	2.0	6.0	6.0	0	0	0	10
Sangre	118	68	58	20	22	1.5	6.0	2.0	6.5	5.0	0	0	0	10

z Tuber Data Rating System

Tuber Color: 1) purple 2) red 3) pink 4) dark brown 5) brown 6) tan 7) buff 8) white 9) cream

Skin Texture: 1) part. russet 2) heavy russet 3) mod. russet 4) light russet 5) netted 6) slight net. 7) mod smooth
8) very smooth

Tuber Shape: 1) round 2) mostly round 3) round to oblong 4) mostly oblong 5) oblong 6) oblong to long 7) mostly long
8) long 9) cylindrical

Eye Depth: 1) very deep 2) deep 3) deep 4) intermediate 5) intermediate 6) shallow 7) shallow 8) very shallow 9) very shallow

Appearance: 1) very poor 2) poor 3) poor 4) fair 5) fair 6) good 7) good 8) excellent 9) excellent

y Hollow heart and internal necrosis ratings indicated the number of affected tubers found per 10 tubers sampled.

1991 NORTH CENTRAL REGIONAL POTATO TRIALS

Location Wooster, Ohio Soil Type Wooster silt loam
 Fertilizer Treatment 600 lbs 10-20-20 Disked in (spring)
600 lbs 10-20-10 At planting Date Planted May 15, 1991
 Date Harvested October 2, 1991 Size of Plots Single rows - 30 ft. long
 Spacing - Between Hills 12 inches Spacing - Between Rows 36 inches
 Replications 4 Number of Hills per Replication 30

Environmental Factors (rainfall, temperature, irrigations, etc.):

	Rainfall	Long Term	Air Temperature (°F)		Long Term	Ave.
	(in.)	Ave.(in.)	Ave. Min.	Ave. Max.	Min.	Max.
May(15-31)	2.58	2.71	60.4	84.1	49.0	73.0
June	1.67	3.97	57.4	84.5	55.5	79.4
July	0.86	4.17	61.2	87.8	59.6	83.6
August	3.07	3.68	59.4	86.2	57.9	82.0
September	2.63	3.17	49.9	76.6	51.4	75.7
Growing Season						
Total	10.81	17.70				

Sprays Applied:

6/5 Penncap M (2 qts.) + Dithane M-45 (3 lbs.)
 6/17 Bravo (1 qt.) + Ambush (10 oz.)
 6/25 Bravo (1 pt.) + Ambush (8 oz.)
 7/1 Guthion (1 lb.) + Bravo (1 qt.)
 7/10 & 7/18 Bravo (1 qt.) + Ambush (10 oz.)
 7/25 & 8/2 Bravo (1 qt.) + Ambush (8 oz.) + Guthion (8 oz.)
 8/13 Bravo (1 qt.) + Ambush (8 oz.) + Guthion (5 oz.)

Other Data (vine killing, specific gravity determinations, etc.):

Herbicide: 5/16 Dual (1pt.) + Sencor 75W (10 oz.)
 Vine Killing: 9/4 Diquat (1 pt.) + spreader
 Previous Crop: Potatoes

Specific gravity determined using weight in air-weight in water method, and solids determined by tabular conversion.

Objective chip color measurements were made with Agtron E-5F.

Early blight evaluations were not made due to lack of disease pressure.

SUMMARY SHEET

Selection Number or Variety	Aver. (1) Maturity	Most Representative Scab Area-Type (A-T)	CWT/A Aver. Yield	CWT/A Yield U.S. #1	Average Percent U.S. #1	Average % Solids	Gen.(4) Merit Rating	Chip (5) Color	Early Blight Reading	Comments and General Notes
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EARLY TO MEDIUM MATURITY

Red Norland	2	0-0	156	136	87	18.95		2		light red skin color
Norchip	3	T-1	173	125	72	21.90		1		scab, offshape; vasc discoloration
Norgold Russet	3	T-1	137	84	61	18.74		3		second gwth; misshapen tubers

MEDIUM LATE TO LATE MATURITY

MN12567	4	0-0	128	79	62	20.43		2		poor shape, appearance
MN12966	3	T-1	119	54	45	19.16		2		promising; shallow eyes
MN13035	5	0-0	155	105	68	18.10		3		unif. size, shape; good color
MS401-1Y	3	T-3	182	142	78	23.80	3	1		good appear. & skin color
MS402-8	3	T-3	71	55	78	21.48		1		beautiful appearance
ND1871-3R	5	0-0	117	96	82	18.10	5	1		excellent shape; beautiful
ND1538-1Russ	3	0-0	191	130	68	21.90	1	2		good shape,skin;needs irrigation
LA12-59	5	T-3	206	157	76	20.00	4	1		large tubers;medium red color
W856	4	T-4	141	87	62	20.43		1		variable size; vasc. discoloration
W870	4	T-1	160	114	71	25.07	2	1		promising;good shape, appear.
W877	3	0-0	145	120	83	23.38		1		good appear./poor int. quality
Red Pontiac	4	T-1	170	121	71	17.05		3		light red skin,tubers off-shape
Russet Burbank	4	0-0	166	37	22					not suited for dryland in OH
Eide Russet	4	0-0	114	80	70	20.00		2		small tubers,poor appearance
AVERAGE	3.6		148.9	101.3	68	20.5		1.7		

1) 1-Very Early-Norland maturity; 2-Early-Irish Cobbler maturity; 3-Medium-Red Pontiac maturity; 4-Late-Katahdin maturity;

5-Very Late-Kennebec or Russet Burbank maturity.

2) AREA: T- Less than 1%; 1- 10-20%; 2- 21-40%; 3- 41-60%; 4- 61-80%; 5- 81-100%. TYPE: 1. Small, superficial; 2. Larger, superficial; 3. Larger, rough pustules; 4. Larger pustules, shallow holes; 5. Very large pustules, deep holes.

3) Percent total solids, not total solids/acre.

4) Place top five among all entries including check varieties; disregard maturity classification. (Rate first, second, third, fourth, fifth (in order) for overall worth as a variety).

5) Chip Color - PCII Color Chart of Agtron. Indicate what Agtron you are using.

SUMMARY OF GRADE DEFECTS

Selection Number or Variety	Percent External Defects (1)					Percent Internal Defects (1)				
	Scab (2)	Growth Cracks	Off Shape and Second Growth	Sun Green	Tuber Rot	Total (3) Tubers free of External Defects	Hollow Heart	Internal Necrosis	Vascular Discolor- ation	Normal Tubers (4)

EARLY TO MEDIUM MATURITY

Red Norland	0	0	8	0	0	92	0	0	0	100
Norchip	12	0	25	0	0	63	0	5	70	25
Norgold Russet	3	0	22	0	0	75	0	0	0	100

MEDIUM LATE TO LATE MATURITY

MN12567	0	0	12	0	0	88	0	0	5	95
MN12966	3	0	12	0	0	85	0	0	0	100
MN13035	0	0	10	0	0	90	0	0	5	95
MS401-1Y	28	0	0	2	0	70	0	0	0	100
MS402-8	2	0	0	0	0	98	0	0	0	100
ND1871-3R	0	0	2	0	0	98	0	0	0	100
ND1538-1Russ	0	0	25	0	0	75	0	0	0	100
LA12-59	5	2	5	0	0	88	0	0	0	100
W856	7	0	13	0	0	80	0	0	20	80
W870	10	0	10	0	0	80	0	0	5	95
W877	0	0	8	0	0	92	0	80	0	20
Red Pontiac	3	0	25	0	0	72	0	15	5	80
Russet Burbank	0	0	88	0	0	12	0	0	5	95
Eide Russet	0	0	18	2	2	78	0	0	5	95
AVERAGE	4.3	.1	16.6	0.2	0.1	78.6	0	5.9	7.1	87.1

1) Based on two 20 tuber samples. Percentage based on number of tubers

2) Includes all tubers with scab lesions whether merely surface, pitted or otherwise and regardless of area. Be sure to count tubers with any amount of scab in this category.

3) This total - tubers free from any external defect of any sort.

4) Percentage normal tubers are those showing no internal defects. Some individual tubers will have more than one type of internal defect.

Ohio

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The Ohio State University, Columbus and Wooster, OH

Introduction: Twenty-seven varieties and clones were tested in 1991 at the Ohio Agricultural Research and Development Center, Wooster, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

Methods: Plots were planted on May 15, 1991, with 30 hills spaced 12 inches apart, in rows 36 inches apart. A randomized complete block design with 4 replications was used. Soil type was a Wooster silt loam (fine-loamy, mixed, mesic Typic Fragiudalf) with a pH of 6.0 and an organic matter of 3.0%. Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied at plow-down, and the remainder banded at planting. Herbicides used were Dual and Sencor. Pesticides included Bravo, Penncap, Dithane, Ambush, and Guthion. Plots were vinekilled on September 4 which was 112 days after planting. All plots were mechanically harvested on October 2, 1991. Chip samples were stored at 52°F and chipped 44 days after harvest. Chip color was evaluated using the standards established by the Potato Chip/Snack Food Association (PC/SFA). Objective color measurements were made with the Agtron E-5F. Specific gravity was determined using the potato hydrometer method. Hollow heart and internal necrosis ratings (Ohio Table 2) indicated the percent of affected tubers found per 20 tubers examined.

Results: Top yielding entries included AF1060-2, NYE55-27, B9792-8B, AF875-15, Atlantic, Norchip, NY85, Russet Norkotah, Prestile, and B0241-8. These ten varieties/clones produced total yields ranging from 162 cwt/A to 235 cwt/A, and percentage of U.S. No. 1 ranged from 50-85%. Potential for internal necrosis was noted for three of the ten top-yielding entries (Atlantic, Norchip, and B0241-8) with a range of 20-70% of the 20 sampled tubers affected.

Early blight readings were not made due to lack of disease pressure. Rainfall during the 1991 growing season was only 60% of the long-term average for Wooster. Lack of irrigation and above normal temperatures throughout the summer reduced yields and triggered high levels of internal necrosis in several varieties.

Ohio Table 1. Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio – 1991.

Variety	Total Yield Cwt/A	Marketable Yield		Size Distribution by Class (% of Total Yield)			Specific Gravity
		U.S. #1's Cwt/A	% of STD	U.S. No. 1 (>1-7/8")	B Size	Culls	
B0257-3	156	115	95	74	21	5	1.093
NYE55-27	200	153	126	77	15	8	1.098
Somerset	155	126	104	81	5	14	1.086
Steuben	141	124	102	88	2	10	1.075
Russet Norkotah	166	133	110	80	12	8	1.081
AF828-5	157	131	108	84	4	12	1.082
Norchip	179	124	103	69	13	18	1.087
B0241-8	162	136	112	84	9	7	1.088
NYE55-35	133	106	88	80	7	13	1.095
F100-1	111	93	77	84	8	8	1.088
B9792-8B	206	102	84	50	18	32	1.093
LaBelle	159	122	101	77	5	18	1.081
NY84	129	102	84	79	8	13	1.074
NY85	173	147	121	85	4	11	1.094
Kennebec	155	105	87	68	8	24	1.074
AF875-15	203	144	119	71	7	22	1.087
Chaleur	90	83	69	92	1	7	1.072
Allegany	101	56	46	55	14	31	1.076
NYE55-44	141	123	102	88	2	10	1.070
B9955-46	141	120	99	85	3	12	1.082
NYE11-45	134	113	93	85	6	9	1.065
AF1060-2	235	147	121	63	12	25	1.076
Katahdin (std)	147	121	100	83	35	12	1.071
NYE57-13	132	100	83	76	15	9	1.083
Gemchip	158	111	92	71	17	12	1.075
Atlantic	192	163	135	85	5	10	1.098
Prestile	165	132	109	80	3	17	1.077
W.D. LSD (K=100;5%level)	38.1			19.3			

Ohio Table 2. Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio – 1991.

Variety	Vine Data — at vinekill —		Tuber Data ^z		Hollow Heart %	Internal Necrosis %	y Chip Color
	Plant Size	Maturity	Shape	Appear- ance			
B0257-3	6.7	5.5	2	7	0	0	2
NYE55-27	7.2	6.2	3	5	0	0	1
Somerset	5.9	8.2	4	8	0	0	1
Steuben	7.7	8.2	3	5	0	10	1
Russet Norkotah	7.9	6.9	6	5	0	0	2
AF828-5	6.2	6.7	3	5	0	30	1
Norchip	6.9	5.4	3	6	0	20	1
B0241-8	7.6	7.5	3	5	0	20	1
NYE55-35	6.9	8.2	2	6	0	80	1
F100-1	6.6	6.4	4	6	0	0	1
B9792-8B	8.5	8.7	2	5	0	0	2
LaBelle	6.5	8.6	3	6	0	0	2
NY84	7.4	7.7	3	8	0	0	2
NY85	7.1	5.7	3	6	0	0	1
Kennebec	8.1	7.9	5	5	0	0	2
AF875-15	6.1	5.5	3	6	0	0	1
Chaleur	4.7	5.7	2	8	0	0	3
Allegany	9.0	9.0	2	4	0	0	1
NYE55-44	7.5	7.1	2	6	0	0	1
B9955-46	6.2	8.0	3	6	5	5	1
NYE11-45	7.6	6.5	3	6	0	0	1
AF1060-2	7.5	6.6	2	6	0	5	2
Katahdin (std)	7.1	7.5	3	7	0	35	1
NYE57-13	7.5	7.5	2	6	0	0	1
Gemchip	7.1	8.1	2	6	0	5	2
Atlantic	6.7	7.1	2	6	0	70	1
Prestile	8.5	8.6	3	6	0	0	2

z See standard NE 107 rating system
y PC/SFA standards

Ohio Table 3. Plant stand, plant type, plant appearance, air pollution, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio – 1991.

Variety	% Plant Stand	Plant Type	Plant Appearance	Air Pollution	z % Blister	Agtron E-5F	y -----Tuber Data-----		
							Skin Texture	Eye Depth	Skin Color
B0257-3	95	6.0	8.5	9.0	40	55.9	6.0	6.0	7.0
NYE55-27	82	6.5	6.6	9.0	30	69.5	4.5	6.5	5.3
Somerset	79	8.2	7.6	9.0	30	66.6	7.0	7.0	7.0
Steuben	53	8.7	7.9	8.7	0	67.7	5.0	5.3	5.0
Russet Norkotah	91	8.7	8.0	9.0	10	55.3	3.0	7.0	4.0
AF828-5	76	7.5	7.9	9.0	20	67.6	7.0	10.0	6.8
Norchip	88	6.0	8.2	9.0	10	66.3	7.0	7.0	6.8
B0241-8	82	7.0	7.1	9.0	10	65.7	5.5	6.8	5.8
NYE55-35	48	6.0	6.1	9.0	0	64.8	5.0	7.0	6.0
F100-1	72	7.5	7.2	9.0	40	65.7	6.0	7.0	6.0
B9792-8B	88	8.7	8.6	9.0	40	57.3	6.0	6.5	5.8
LaBelle	66	5.5	7.2	9.0	30	56.9	6.0	5.5	6.8
NY84	73	7.7	7.2	9.0	30	54.6	7.0	6.0	7.0
NY85	82	6.0	8.6	9.0	10	67.8	5.5	7.0	6.8
Kennebec	82	9.0	8.4	9.0	20	56.7	7.0	6.0	7.0
AF875-15	82	5.1	6.5	9.0	20	66.7	6.0	5.8	6.5
Chaleur	74	4.1	4.9	9.0	30	52.8	7.0	6.8	7.5
Allegany	80	9.0	8.7	9.0	0	70.6	5.5	6.0	6.0
NYE55-44	74	7.7	7.0	7.0	40	67.1	6.0	7.0	6.3
B9955-46	68	5.6	6.5	9.0	30	66.1	7.0	5.3	7.0
NYE11-45	66	8.1	6.9	9.0	10	59.5	7.0	7.0	7.5
AF1060-2	89	7.5	7.2	9.0	0	59.5	7.0	7.0	7.0
Katahdin (std)	82	6.0	7.1	9.0	30	66.1	7.0	6.0	7.0
NYE57-13	77	8.7	7.6	9.0	20	65.7	6.0	6.5	7.0
Gemchip	65	5.5	7.4	9.0	40	56.6	7.0	6.0	6.5
Atlantic	81	6.0	8.1	9.0	30	66.0	5.0	6.0	5.5
Prestile	78	8.2	7.5	9.0	20	55.4	6.0	6.0	6.8

z See standard NE 107 rating system

y Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process

Table 1. (Fremont) Plant stand, total yields, U.S. No. 1 yields, grade distribution, specific gravity and internal disorders for Fremont entries, 1991.

Cultivar	Total Yield Cwt/A	U.S. No. 1 Cwt/A	U.S. No. 1 ----- ----- -----	B Size ----- ----- -----	Culls	Specific Gravity	% Blister	Chip Color	Agtron E-5F	Internal Disorders	
										Hollow Heart	Internal Necrosis
Eide Russet	109	88	81	12	7	1.079	40	4	35.1	0	0
BO220-14	163	109	67	15	18	1.079	10	2	57.0	1.25	0
Coastal Russet	112	75	67	29	4	1.072	30	3	35.5	0	0
ND1538-1Russ	158	96	61	35	4	1.077	20	3	47.3	0	0
MS401-1	125	88	70	26	4	1.080	10	2	58.6	1.25	0
Frontier Russet	140	92	66	28	6	1.082	10	2	61.5	0	0
Russet Norkotah	134	94	70	27	3	1.068	40	4	33.9	0	0
LA12-59	86	62	72	21	7	1.089	30	2	54.2	0	0
ND2224-5R	93	61	66	30	4	1.065	0	3	36.7	0	0
Sangre	120	90	75	21	4	1.072	20	3	48.8	0	0
Red Norland	143	83	58	38	4	<1.065	30	3	45.3	.25	0
S-3	102	76	75	5	20	1.065	20	2	57.8	.25	0

All data based on 4 reps

z Hollow heart and internal necrosis ratings indicated the average number of affected tubers found in 40 tubers sampled.

PLANTED: May 28, 1991
 FERTILIZER: 1200 lb/A 10-20-20
 60 lbs/A N

HARVEST DATE: October 9, 1991
 PLANT SPACING: Row length 30'; 36 " between rows;
 12" spacing within rows
 PEST MANAGEMENT: Furadan 1 1/2 lbs/1000ft row at planting
 Guthion 1.06lb/A on July 25
 Thiodan 2lb/A on August 18

**TUBER DATA RATING SYSTEM FOR
POTATO VARIETY TRIALS – NE 107**

Tuber Skin Color

1. Purple
2. Red
3. Pink
4. Dark Brown
5. Brown
6. Tan
7. Buff
8. White
9. Cream

Skin Texture

1. Part. russet
2. Heavy russet
3. Mod. russet
4. Light russet
5. Netted
6. Slight net.
7. Mod. smooth
8. Smooth
9. Very smooth

Tuber Shape

1. Round
2. Mostly round
3. Round to oblong
4. Mostly oblong
5. Obl. to long
7. Mostly long
8. Long
9. Cylindrical

Eye Depth

1. VD
2. --
3. D
4. --
5. Intermediate
6. --
7. S
8. --
9. VS

Appearance

1. Very poor
2. --
3. Poor
4. --
5. Fair
6. --
7. Good
8. --
9. Excellent

PLANT RATING SYSTEM

Plant Type

1. decumbent–poor canopy
2. decumbent–fair canopy
3. decumbent–good canopy
4. spreading–poor canopy
5. spreading–fair canopy
6. spreading–good canopy
7. upright–poor canopy
8. upright–fair canopy
9. upright–good canopy

Air Pollution

0. dead
1. decreasing plant appearance
2. with varying degrees
3. of defoliation
- 4.
5. most leaves have symptoms, but generally appearance is still good
6. good plant condition with decreasing
7. percent of foliar symptoms
- 8.
9. no symptoms

Plant Size

1. very small
2. +
3. small
4. +
5. medium
6. +
7. large
8. +
9. very large

Plant Maturity

1. very early
2. early
3. +
4. medium early
5. medium
6. medium late
7. +
8. late
9. very late

Plant Appearance

1. very poor
2. poor
3. +
4. --
5. fair
6. +
7. --
8. good
9. excellent



LOCATIONS OF 1991 OHIO POTATO VARIETY TRIALS

1. Michael Farms, Urbana
2. Logan Farms, Mt. Gilead
3. Ohio Agricultural Research and Development Center, Wooster

Appendix A. Summary of reported general merit ratings for varieties in the 1991 North Central Regional Potato Trials.

Variety	Alberta	IA	IN*	LA*	Manitoba	MI	MN*	MO*	ND	NE	OH	Ontario	SD	WI*	-----Total-----		Ave. Rating
															n	pts.	
EARLY TO MEDIUM MATURITY																	
Norland		3													1	3	3
Norchip		4								3			3		3	10	3.3
Russet Norgold															0	0	0
MEDIUM LATE TO LATE MATURITY																	
MN12567	3				4	5			3				5		5	20	4
MN12966					2										1	2	2
MN13035															0	0	0
MS401-1Y		2									3	2			3	7	2.3
MS402-8															0	0	0
ND1871-3R	2					3			1		5				4	11	2.8
ND1538-1Russ	1					1			2	5	1	4	4		7	18	2.6
LA12-59										1	4		2		3	7	2.3
W856		1			5	4			5			5			5	20	4
W870	4				1	2			4	4	2	1			7	18	2.6
W877												3			1	3	3
Red Pontiac	5				3					2			1		4	11	2.8
Russet Burbank															0	0	0
Eide Russet															0	0	0

* Ratings not received

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