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**OHIO POTATO CULTIVAR TRIALS**

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The 1988 Ohio Potato Cultivar Trials were sponsored jointly by the Ohio Agricultural Research and Development Center, The Ohio State University, The Ohio Cooperative Extension Service, The Ohio Potato Growers Association, and the five cooperating potato operations: Chase Farms, Logan Farms, Michael Farms, Mellinger Farms, and Thompson Farms.

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## STATEWIDE TRIALS - 1988

Introduction

The purpose of the statewide variety trials is to test new varieties for the benefit of Ohio growers 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 were evaluated, weighed, and graded, with samples taken for chipping tests.

Twelve cultivars were planted at each of five farms. These farms were selected in order to give different soil and climate conditions. The cultivars were selected either because they looked promising in previous statewide trials or looked promising in the observation trials on two cooperating farms or were selected from the cultivar plots at the Ohio Agricultural Research and Development Center (OARDC), Wooster. The Katahdin and Norchip cultivars were included as standard varieties.

Farm Locations

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

Farm 1 (M) - Michael Farms, Urbana, Ohio, Champaign County -- main plots plus russet plots.

Farm 2 (TH) - Thompson Farms, Hanoverton, Ohio, Columbiana County -- main plots plus observation plots.

Farm 3 (Mel) - Mellinger Farms (Crystal Springs Farm), Leetonia, Ohio, Columbiana County -- main plots plus observation plots.

Farm 4 (L) - Logan Farms, Mt. Gilead, Ohio, Morrow County -- main plots.

Farm 5 (C) - Chase Farms, Defiance, Ohio, Defiance County -- main plots plus russet plots.

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

Procedures

Twelve cultivars were planted in three replicates on each of the five farms. In addition, 14 additional cultivars were planted for observation in smaller triplicated plots on Farms 2 and 3. Also, ten Russet cultivars were planted on Farms 1 and 5.

All farms were planted between May 4 and May 13, and harvested between September 29 and October 13. The growers' planters were used by driving very slowly. The potatoes were harvested with old flat bed diggers, then picked up and weighed. A representative 50 lb. sample was then graded with 10 tubers cut for internal effects. A sample of each cultivar was then taken to OSU for chip tests.

Superior, Norchip and Katahdin were used for comparison in the main trials. Atlantic and Monona were used in the observation trials. The observation and russet trials were among the main trial plots. During the growing season, stand counts were made and plant disease and stress were recorded as well as maturity season.

### Weather and Growing Conditions

The last two winters were unusually warm and dry. The 1987 spring and summer were both abnormally hot and dry. The 1988 spring also was warm and dry. The 1988 summer was the hottest on record in Ohio, and quite humid. It was also one of the driest on record. Farm 1 was irrigated regularly and the Farm 2 plots were irrigated three times in the most critical period (late June and July) with a total of five inches of water (Table 2). It had the highest average yields.

Farm 3 had the lowest average yields, but it had only 9.25 inches of rainfall from planting to harvest. It also had a ragweed problem between the rows which resulted in much lower yields where the weeds were worst. Apparently, the amount of moisture was the principal difference in yields among the five farms as usual.

The most extreme differences in both yields and grades in the replicates of most cultivars ever experienced occurred in 1988. Usually checking with the plot maps will indicate the reasons, such as wet, dry, weedy, or nutrient deficient spots. This was not true this year. The extreme summer heat may be the major cause.

### Field Observations

Stands were uniformly good on all farms (Table 3). The average in the Main trials was 92%. The mean for the last 14 years is 88%. The 1988 figure was exceeded only in 1986 with 95% and in 1987 with 93%, with both years dry in May and early June. The mean stand for the Observation trials was 93% and for the Russet trials, 92%.

No plant disease of any kind worthy of mention was found on Farm 2 and 3. Heat and drought stress was evident throughout, but no counts could be made.

On Farm 3, the slow growth due to lack of moisture provided an opportunity to record some differences in canopy on the different cultivars. The following were recorded as having poor or fair canopy.

#### August 12 - Poor Canopy

Rus. Norkotah  
Superior  
NY79  
NY78

#### Fair Canopy

MS716-15      NY72  
Atlantic      MS702-80  
ND651-9      W848  
Monona      F72090

No maturity records could be obtained in 1988 due to the drought in June, July and August with some rains in late August and early September. Early varieties that normally die in early August were still green in late September. Some late cultivars bloomed all summer and some a second time.

On August 13 on Farm 3, MS700-70, Katahdin and W971 were in full bloom. Some bloom remained on NY72, NY81, MS700-83, Langlade, LA01-38, W848, MS702-80 and NY78, on September 7. W971 was still almost in full bloom and some blossoms remained on NY72 and Kennebec. On August 15 on Farm 2, the same cultivars as on Farm 3 were in full bloom and W848 in part bloom.

### Tuber Defects

Most of the external defects consisted of misshapened tubers, second growth and growth cracks, apparently due to the late August and early September rains and late growth. See Table 4 for the percentage of B size and cull tubers for each Main trial cultivar. Scab was nearly absent in all cultivars on all farms.

Internal defects were generally minor in 1988. In the Main trials of the ten tubers of each replicate that were cut, no cultivar showed as much as 2% of any one defect on any farm, nor as much as 2% of all defects for the five farms. In the Observation trials on two farms, the only cultivars showing as much as 2% of any one defect on one of the farms were W971 with 3.0% hollow heart, and necrosis as follows: Atlantic 2.0%, NY72 3%, MS702-83, and F72090 3.7%. In the Russet trials on two farms, no cultivar showed 2% of any defect on any farm or 2% of all defects on both farms.

### Yields

Total and U.S. No. 1 yields with other data are shown in Tables 5-7. the yields of many cultivars varied greatly from farm to farm. They averaged lower than in most years. As usual, in the Main trials, LA01-38 led in the average yields for the five farms.

### Soil analyses of statewide trial on plots - 1988

Test Results	----- Cooperating Farms <sup>2</sup> -----				
	1	2	3	4	5
pH	6.5	5.4	5.2	5.3	5.2
P (lb/A)	418	726	506	352	132
K (lb/A)	515	528	409	395	208
CA (lb/A)	3780	1470	1410	2500	2610
Mg (lb/A)	526	344	128	366	199
CEC (meq/100 g)	15	13	13	14	12
Ca (% base sat.)	64	28	27	44	53
Mg (% base sat.)	15	11	4	11	7
K (% base sat.)	4.5	5.2	4.0	3.5	2.1
Zn (lb/A)	14.1	15.8	15.4	12.4	6.3
B (lb/A)	1.3	.6	.8	.9	.7
OM (%)	3.7	2.1	2.5	3.0	2.1

<sup>2</sup> 1 - Michael Farms, Urbana

4 - Logan Farms, Mt. Gilead

2 - Thompson Farms, Hanoverton

5 - Chase Farms, Defiance

3 - Mellinger Farms, Leetonia

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

Table 1. Cultural and pest control practices used on Ohio statewide potato trials - 1988.

	Farm 1 (M)	Farm 2 (Th)	Farm 3 (Mel)	Farm 4 (L)	Farm 5 (C)
Date planted	May 4	May 7	May 12	May 13	May 11
Date killed	-	September 14	September 14	September 30	October 3
Date harvested	September 29	October 6	October 5	October 13	October 12
1987 crop	Sweet corn	Wheat	Wheat	Corn	Corn
Cover crop	Rye	Clover-Timothy	Stubble	Stubble	Stubble
Fertilizer plowed down		50 lbs N			Broadcast ?
Applied in row	1200 lbs 10-25-25	900 lbs 9-25-25	1100 lbs 10-20-20	lbs 150- 195-175 +30# S+15#	Liquid-112g 5-15-15 Mg.
Side dressed	Three applications for total of 120 HgN				
Herbicide Incorporated Preemergence	Sencor + Dual	Lorox + Dual	Dual + Lorox	Dual + Lorox	?
Systemic Insecticide	Temik	Temik	Thimet 10#	Thimet 15#	Thimet
Spacing	8 x 36	9 x 36	8 x 36	9 x 36	10-1/2 x 36
Soil type	Silt loam	Silt loam	Silt loam	Heavy silt loam	Sandy silt loam

Table 2. Rainfall and irrigation records for Ohio statewide potato trial plots - 1988.

	Farm 1 (M)		Farm 2 (Th)		Farm 3 (Mel)	Farm 4 (L)	Farm 5 (c)
Date planted	May 4		May 7		May 12	May 13	May 11
Date killed	Dead September 1		September 14		September 14	September 30	October 3
Date harvested	September 29		October 6		October 5	October 13	October 12
	<u>Rainfall - Irrig.</u>		<u>Rainfall - Irrig.</u>		<u>Rainfall</u>	<u>Rainfall</u>	<u>Rainfall</u>
	-----		-----		inches	-----	-----
May	.7	.75	2.4		1.6	.90	.55
June	0	4.75 (4) <sup>2</sup>	.3	2.0 (1)	.4	1.19	.45
July	4.10	4.00 (3)	3.9	3.0 (2)	4.05	4.21	2.65
August			3.2		1.65	2.95	3.55
September	--		2.4		1.55	2.59	3.05
October							.30
Season Total	14.3		17.2		9.25	11.84	10.25
June/July/August	12.85		12.2		6.10	8.35	6.65
June 1-August 20	--		9.4		4.45	5.86	6.50
Avg. Yields							
U.S. No. 1							
Main Trials							
Cwt/A	233		249		117	155	174

<sup>2</sup>Number of irrigation applications

Table 3. Stand counts for 1988 statewide main trials, observational, and russet trials. Counts were made 35-39 days after planting.

Cultivar	Cooperating Farms					Cultivar Mean
	1 (M)	2 (Th)	3 (Mel)	4 (L)	5 (C)	
	- - - - - % Emergence - - - - -					
	<u>MAIN TRIALS</u>					
Russet Norkotah	93	98	99	98	94	96
NY79	88	92	95	92	98	93
Superior	96	95	89	93	99	94
MS700-83	90	91	93	94	87	91
Norchip	89	97	91	95	92	93
MS716-15	90	96	88	97	93	93
Langlade (W718)	88	88	84	93	91	89
LA01-38	86	91	82	91	91	88
MS700-70	89	95	93	97	94	93
Katahdin	87	84	94	94	91	90
NY81	84	83	91	92	90	88
NY72	86	92	92	91	92	91
Farm Mean	89	92	91	94	93	92
	<u>OBSERVATION TRIALS</u>					
Atlantic		94	88			91
ND651-9		100	97			98
Monona		91	96			94
NY78		92	95			94
W832		96	92			94
W848		98	84			91
AF236-1		97	99			98
Nema Rus		90	89			90
Kennebec		--	86			86
NY72		96	92			94
W855		87	92			90
W971		94	93			94
W979		95	97			96
MS702-80		97	91			94
F72090		94	93			93
Farm Mean		94	92			93
	<u>RUSSET TRIALS</u>					
B9569-2	92				96	94
Rus Norkotah	88				87	87
ND1113-10	90				96	93
Nema Rus	94				86	90
AF236-1	82				92	87
W752	98				96	97
W1005 Rus	90				98	94
W81-38.86	86				97	92
ND671-4	97				--	97
TC582-1	93				98	96
Farm Mean	91				94	92



Table 4. Percentage of B's and culls, and major external defects for main trial cultivars. Results are the mean values for all five farms.

Cultivar	% B's	% Culls	Major Defects <sup>2</sup>	
			External	Internal
LA01-38	4.5	15.7	Sh 2nd (Cr)	No cultivar with over 1% total internal defects
MS760-70	4.5	15.0	Sh 2nd	
NY81	3.9	8.8	Sh 2nd Cr (Sc)	
MS700-83	5.1	16.4	Cr. 2nd Sh (Gr)	
NY72	5.3	13.0	Sh Cr 2nd (Gr F, Sc.)	
Katahdin	4.4	14.8	Sh 2nd Sc. Gr.	
Langlade (W718)	10.6	13.8	Sh 2nd Gr. Cr.	
MS716-15	5.8	9.1	Sh. Cr. 2nd.	
NY79	5.0	9.3	Sh. 2nd. Cr.	
Norchip	8.2	24.1	Sh. Cr. 2nd.	
Superior	18.0	21.9	Sh. 2nd. (Cr. Gr.)	
Rus. Norkotah	17.7	29.6	Sh. 2nd.	
Average	7.7	15.0		

<sup>2</sup>Abbreviations for external defects:

- Sh - misshapen
- 2nd. - second growth
- Cr. - growth cracks
- Gr. - greening
- Sc. - scab
- F. - feathering

Table 5. Total yield, percent U.S. No. 1 and marketable yield for main trial potato cultivars, statewide trials - 1988.

	Farm 1 (M)			Farm 2 (TH)			Farm 3 (Me1)			Farm 4 (L)			Farm 5 (C)			Mean of 5 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	Yield cwt/A	No.1 %	No.1 cwt/A	Yield cwt/A	No.1 %	No.1 cwt/A
LA01-38	321	95	305	394	82	323	199	69	137	236	90	212	286	70	200	290	80	233
NY79	299	95	284	302	90	272	122	69	84	118	92	109	156	82	128	204	68	160
MS700-83	300	92	276	318	73	232	225	73	164	237	78	185	274	77	211	270	75	205
NY81	293	94	275	308	85	262	236	83	196	243	88	214	247	87	215	267	81	235
MS700-70	282	91	257	355	88	312	182	61	113	240	86	206	367	76	279	291	87	232
Superior	289	83	240	333	80	200	90	42	38	105	64	67	209	54	113	218	60	131
Rus. Norkotah	276	87	240	282	56	158	138	26	36	96	50	48	102	44	45	191	53	105
Horchip	256	87	223	293	68	199	185	62	115	181	79	143	205	58	119	235	68	160
MS716-15	231	93	215	276	88	243	176	67	118	174	92	160	195	87	170	213	76	184
Langlade	234	83	194	343	82	281	171	65	111	69	75	52	249	73	182	242	85	181
NY72	171	85	145	298	87	259	187	75	140	222	85	189	266	77	205	273	79	213
Katahdin	162	89	144	323	77	249	203	76	154	207	82	170	300	72	216	237	79	187
Mean	259	90	233	319	78	249	221	53	117	196	79	155	245	71	174	243	76	185

Table 6. Total yield, percent U.S. No. 1 and marketable yield for observational trial potato cultivars, statewide trials - 1988.

	Farm 2 (Th)			Farm 3 (Me)			Mean of 2 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
F72090	454	81	368	167	81	135	310	81	251
Monona	394	82	323	177	77	136	290	79	229
Atlantic	362	89	322	184	74	136	277	82	227
W848	347	88	305	139	71	99	256	79	202
W855	351	87	305	194	50	97	296	68	201
W979	317	89	282	165	89	147	240	89	214
NY72	316	89	281	128	75	96	230	82	189
MS702-80	299	90	269	170	70	119	242	80	194
NY78	331	81	268	173	79	137	254	80	203
ND651-9	279	81	226	148	50	74	231	65	150
W832	329	62	204	165	48	79	256	55	141
AF236-1*	270	73	197	186	69	128	230	71	163
Nema Rus	271	58	157	159	66	105	211	62	131
W971	100	67	67	83	66	55	91	67	61
Kennebec				130	70	90			
Mean	319	80	255	158	69	109	246	74	182

\*Now named Somerset.

Table 7. Total yield, percent U.S. No. 1 and marketable yield for russet trial cultivars statewide trials - 1988.

Cultivar	Farm 1 (M)			Farm 2 (C)			Mean of 2 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
Nema Rus	277	92	255	233	79	184	255	86	219
W81-38.86	299	80	239	215	40	86	270	60	162
ND1113-10	262	90	236	265	71	188	265	80	212
Rus. Norkotah	260	82	213	149	49	73	217	66	143
B9569-2	250	74	185	176	39	65	219	57	125
AF236-1	231	77	178	312	69	215	270	73	197
W752	208	65	135	255	40	102	227	52	118
TC582-1	196	53	104	266	58	154	230	56	129
W1005 Rus	138	37	51	259	27	70	191	32	61
ND671-4	49	57	28						
Mean	228	71	162	242	52	126	232	62	144

Named in 1988: B9569-2 Coastal Russet  
 TC582-1 Russet Nugget  
 AF236-1 Somerset

Table 8. 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	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
<u>Early and Med. Early</u>										
Jemseg			207	294	161					
Superior										131
Conestoga					141	230	266	321	225	
Rus. Norkotah									272	105
<u>Early Midseason</u>										
Crystal	425	273	254							
Atlantic	414									
Langlade (W718)	386	296	311	388						184
Norchip	309	201	231	337	184	208	228	301	236	160
<u>Midseason</u>										
LA01-38							359	413	330	235
Katahdin	346	267	292	374	238	315	335	363	276	187
<u>Late</u>										
Denali		316	269	300	206					
Elba (NY59)			324	373	245			393		
Neb. A 129-69-1		320	336	341	207	278				
WNC521-12							325	344		
MS700-70									241	233

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 which are well known and used as standards for comparison.

Wooster Trials Table 1. Plant stand, yields, grade distribution, specific gravity and chip test results for 1988.

Cultivar	Plant Stand %	Total Yield - - -cwt/A-	U.S. No. 1 - - -	U.S. No. 1 - - -	B Size - - -%	Culls - - -	Spec. Gravity	% Blisters	Chip Color	Agtron E-5F
Langlade	70	262	176	67	9	24	<1.060	40 <sup>z</sup>	2 <sup>y</sup>	51.6
A74212-1	74	291	137	47	8	45	1.061	40	2	50.5
WHC672-2	83	205	152	74	4	22	1.073	20	2	55.9
AF564-2	81	239	196	82	4	14	1.064	20	1	55.6
AC77513-1	83	86	52	60	9	31	<1.060	30	3	47.1
CS7232-4	82	256	182	71	2	27	1.065	20	1	61.4
BR7093-24	79	197	140	71	6	23	1.063	30	2	57.5
Russet Horkotah	81	264	140	53	10	37	1.068	40	2	50.3
LSD (0.05)	16	69								

<sup>z</sup>Percentage of chips which develop blisters greater than 20 mm in diameter during the frying process.

<sup>y</sup>PC/SFA designation

Wooster Trials Table 2. Tuber data, external defects and internal disorders for main trial cultivars for 1988.

Cultivar	Tuber data <sup>z</sup>					% External Defects				Internal Disorders <sup>y</sup>		
	Tuber Color	Skin Tex.	Tuber Shape	Eye Depth	Overall Appear.	Growth Cracks	Second Growth	Sun Grn.	Defect Free	Hollow Heart	Int. Nec.	Defect Free
Langlade	7	7	3	5	6	7	10	10	73	8	0	22
A74212-1	6	5	7	5	4	0	53	17	40	1	0	29
WNC672-2	5	5	2	6	5	0	20	0	80	0	7	23
AF564-2	7	6	3	5	6	0	7	7	86	0	13	17
AC77513-1	5	3	4	5	6	0	5	5	90	6	0	24
CS7232-4	7	6	5	5	5	10	13	3	70	0	0	30
BR7093-24	7	7	3	5	5	0	5	15	85	2	1	27
Russet Norkotah	4	3	7	6	6	0	23	0	77	0	0	30

<sup>z</sup>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) -- 3) deep 4) -- 5) intermediate 6) -- 7) shallow 8) -- 9) very shallow

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

<sup>y</sup>Hollow heart and internal necrosis ratings indicate the number of affected tubers found per 30 large tubers sampled.

Observation Trials (Wooster) Table 1. Total yields, U.S. No. 1 yields, and grade distribution for observation entries, 1988.

Cultivar	Total Yield cwt/A	U.S. No. 1 cwt/A	U.S. No. 1 - - - -	B Size - % - - - -	Culls - - - -
B0220-14	220	119	54	2	44
B0240-11	283	212	75	11	14
B0242-2	228	178	78	5	17
W83-64.87 Rus	211	152	72	13	15
W1006	87	59	68	6	26
W82-56.87 Rus	131	113	86	9	5
W1024	317	266	84	5	11
W1022	240	173	72	7	21
W1014	232	186	80	6	14
W1033 Rus	148	68	46	7	47
ND651-9	191	120	63	14	23
ND860-2	149	134	90	5	5
ND2224-5R	254	218	86	2	12
NDT9-1068-11R	257	208	81	2	17
ND671-4 Rus	232	200	86	2	12
B0186-1	324	181	56	2	42
B0190-9	196	118	60	6	34
B045-6	247	200	81	11	8
B9596-2	310	229	74	10	16
BC0038-1	92	78	85	4	11
AC77101-1	128	102	80	10	10
AC80545-1	128	92	72	8	20
AC77226-10	128	96	75	12	13
C08011-5	177	147	83	4	13
AC77226-13	102	76	75	8	17
MN10874	143	83	58	15	27
MN12966	213	149	70	4	26
MN12567	230	159	69	15	16
B220-14	312	193	62	3	35
B9922-11	148	96	65	5	30
AF875-16	242	140	58	4	38
B9792-157	317	257	81	3	16
AF522-5	271	179	66	8	26
B0172-15	228	150	66	3	31



Observation Trials (Wooster) Table 2. Tuber data, external defects, and internal disorders for observation entries, 1988.

	-Tuber Data <sup>Z</sup> -					-% External Defects -				-Internal Disorders <sup>Y</sup> -		
	Tuber Color	Skin Tex	Tuber Shape	Eye Depth	Overall Appear.	Growth Cracks	2nd Growth	Sun Grn.	Defect Free	HH	Int. Nec.	Defect Free
B0220-14	6	4	7	7	5	0	20	0	80	0	0	10
B0240-11	7	6	2	6	4	10	20	20	50	7	2	3
B0242-2	7	6	4	5	6	0	10	0	90	0	0	10
W83-64.87 Rus	5	3	7	7	7	10	10	10	70	0	0	10
W1006	7	7	4	6	5	0	30	10	60	0	0	10
W82-56.27 Rus	6	6	4	6	6	0	10	0	90	0	0	10
W102N	7	6	3	7	6	0	0	10	90	0	0	10
W1022	7	8	3	6	5	0	20	20	60	1	1	9
W1014	8	7	2	5	5	0	20	20	60	0	0	10
W1033 Rus	4	2	7	5	1	80	30	0	10	0	0	10
ND651-9	7	7	4	6	4	0	30	10	60	0	0	10
ND860-2	7	6	2	6	7	0	0	0	100	0	0	10
ND2224-5R	1	7	4	6	7	0	20	0	80	0	2	8
NDT9-1068-11R	2	7	3	6	6	0	20	0	80	0	0	10
ND671-4 Rus	5	3	7	6	8	10	10	0	80	2	0	8
B0186-1	5	4	6	6	6	0	20	0	80	0	0	10
B0190-9	6	6	4	5	4	10	20	0	70	0	0	10
B045-6	5	4	2	5	5	0	0	0	100	0	0	10
B9596-2	6	6	6	5	4	0	20	0	80	0	1	9
BC0038-1	7	7	4	5	2	0	10	20	30	0	0	10
AC77101-1	5	4	5	6	6	20	0	0	80	0	0	10
AC80545-1	6	6	3	5	4	0	20	0	80	2	0	8
AC77226-10	5	4	5	6	5	0	20	0	80	0	0	10
CO8011-5	5	3	7	5	6	0	20	0	80	3	0	7
AC77226-13	4	3	6	6	7	0	20	0	80	8	0	2
MN10874	4	3	7	6	5	30	30	0	40	0	0	10
MN12966	2	8	4	6	7	10	10	0	80	0	0	10
MN12567	7	6	3	5	6	0	0	0	100	0	0	10
B220-14	6	5	4	5	4	0	30	0	70	0	0	10
B9922-11	4	3	6	5	6	20	10	0	70	3	0	7
AF875-16	7	5	3	5	6	0	10	20	70	2	0	8
B9792-157	6	6	3	3	5	0	0	20	80	0	0	10
AF522-5	4	3	6	7	6	20	20	0	70	0	1	9
B0172-15	7	6	6	4	1	10	60	20	10	1	1	8

<sup>Z</sup>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) -- 3) deep 4) -- 5) intermediate 6) -- 7) shallow 8) -- 9) very shallow

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

<sup>Y</sup>Hollow heart and internal necrosis ratings indicate the number of affected tubers found per 10 large tubers sampled.

## 1988 NORTH CENTRAL REGIONAL POTATO TRIALS

Location Wooster, OH Soil Type Wooster silt loam  
 Fertilizer Treatment 1200 lbs 10-20-20 Date Planted May 19, 1988  
 Date Harvested September 26, 1988 Size of Plots single rows - 30 ft.  
 Spacing - Between Hills 12 inches Spacing - Between Rows 36 inches  
 Replications 30 hills/rep Number of Replications 3

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

	Rainfall (in)		- - -Temperature (°F) - - -		
	1988	Mean 80 yr.	Ave. Minimum	Ave. Maximum	
May	1.3	4.0	46	74	Supplemental irrigation was provided during the '88 season
June	0.5	4.0	51	83	
July	6.4	4.2	61	90	
Aug.	3.4	3.7	61	84	
Sept.	3.0	3.1	51	74	

Sprays Applied:

1 application - Dithane M45 + Thioldan  
 3 applications - Dithane M45 + Asana  
 2 applications - Dithane M45 + Penncap  
 2 applications - Bravo 500 + Thioldan  
 1 application - Bravo 500

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

Herbicide: Dual/Lexone  
 Vine Killing: Diquat + spreader (Sept. 12)  
 Previous Crop: plowdown alfalfa

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

SUMMARY SHEET

Selection Number or Variety	Aver. 1/ Mat.	Most 2/ Representative Scab Area-Type	CWT/A Aver. Yield	CWT/A Aver. Yield US #1	Aver. Percent US #1	Aver. 3/ Total Solids	Gen. 4/ Merit Rating	PC/SFA Chip 5/ Color	Early 6/ Blight Reading	Comments and General Notes
<b>EARLY TO MEDIUM MATURITY</b>										
Norland		T-1	213	158	74	15.4		2	uniform	medium tubers
Norgold Russet		0-0	191	86	45	15.4		3		
Norchip		0-0	209	130	62	17.5		2	offshape	and 2nd growth
MN13035		0-0	255	201	79	15.4	5	3	attract.	red color, promise
MN13056		0-0	166	113	68	15.4		2	small tubers	
NEA 219-70-3		1-2	181	129	71	15.4		2	scab,	other external defects
<b>MEDIUM LATE TO LATE MATURITY</b>										
MN12823		1-1	126	69	55	17.1		2	attract.	white skin, low yield
MS700-70		0-0	239	198	83	16.7	1	3	good yield	and grade
MS716-15		0-0	191	170	89	18.6	3	2	attractive tubers,	uniform
NEA22.75-1		1-1	173	135	78	15.4		2		
NEA129.69-1		0-0	111	81	73	15.4		2	poor yield,	wide size range
NDT9-1068-11R		0-0	272	223	82	16.0	4	3	very promising	red potato
ND2224-5R		0-0	159	122	77	15.4		4	nonunif.	tuber size, fair
ND1215-1		0-0	154	103	67	15.4		2	low yield,	low solids
W855		0-0	212	180	85	17.3	2	2	deep eyes	and bud end
W1005		0-0	188	109	58	13.2		3	offshape	and 2nd growth
Rose Gold		0-0	230	182	79	19.0		3	fairly uniform,	good yield
Red Pontiac		0-0	218	165	76	15.4		2	and growth,	nonuniform tuber

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. Due to the unusual weather in 1988, maturity rating could not be determined.

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 and fifth (in order) for overall worth as a variety).

5/ Chip Color - PCI Color Chart or Agron. Indicate what Agron you are using.

6/ Early Blight - 1-susceptible; 5-highly resistant.

SUMMARY OF GRADE DEFECTS

Selection Number or Variety	Percent External Defects (1)					Total (4) Tubers Free of External Defects	Percent Internal Defects (2)			
	Scab (3)	Growth Cracks	Off Shape and Second Growth	Sun Green	Tuber Rot		Hollow Heart	Internal Necrosis	Vascular Discolor- ation	Normal Tubers (5)
<b>EARLY TO MEDIUM MATURITY</b>										
Norland	3	0	27	0	0	73	0	7	0	93
Norgold Russet	0	0	30	7	0	63	7	0	0	93
Norchip	0	3	37	7	0	53	0	0	0	100
MN13035	0	0	13	0	0	87	0	0	0	100
MN 13056	0	10	10	0	0	80	0	0	0	100
NEA 219-70-3	18	13	13	10	0	64	3	3	0	94
<b>MEDIUM LATE TO LATE MATURITY</b>										
MN12823	5	0	45	15	0	55	0	0	0	100
MS700-70	0	0	0	3	0	97	3	7	0	90
MS716-15	0	3	0	3	0	94	0	3	0	97
NEA22.75-1	15	0	5	0	0	95	3	3	0	94
NEA129.69-1	0	0	0	10	0	90	0	0	0	100
NDT9-1068-11R	0	10	0	0	0	90	7	17	0	76
ND2224-5R	0	0	20	0	0	80	0	0	0	100
ND1215-1	0	0	5	15	0	80	0	0	0	100
W855	0	0	3	0	0	97	7	0	0	93
W1005	0	0	40	0	0	60	0	0	0	100
Rose Gold	0	0	17	0	0	83	0	0	0	100
Red Pontiac	0	0	40	0	0	60	4	0	0	96

(1) Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers.

(2) Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers.

(3) 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.

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

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

Appendix A. Summary of reported general merit ratings for varieties in the 1988 North Central Regional Potato Trials.

Variety	Alberta	IA	IN	KY	Manitoba	MI	MN	MO	ND	NE	OH	Ontario	SD	WI	--- Total ---		
															n	pts.	Avg. Rating
<b>Early to Medium Maturity</b>																	
Norland		5	3		2			5	5						5	20	4
Norgold Russet	3	4					5								3	12	4
Norchip			5		4			4							3	12	4.3
MN13035							3		3	1	5	2			5	14	2.8
MN13056	5			4						5				1	4	15	3.75
NEA 219-70-3				5											1	5	5
<b>Medium Late to Late Maturity</b>																	
MN12823				1	5										2	6	3
MS700-70					3						1	5		1	4	10	2.5
MS716-15	1	2	1			1		1	4	2	3	1	4	5	11	25	2.27
NEA22.75-1			4	3		5				3					4	15	3.75
NEA129.69-1															--	--	--
NDT9-1068-11R		1				2	4		2		4	3	2	4	8	22	2.75
ND2224-5R	4	3	2	2		4		3	1						7	19	2.7
ND1215-1	2														1	2	2
W855						3		2		4	2			2	5	13	2.6
W1005							1						3	3	3	7	2.3
Rose Gold							2					4			2	6	3
Red Pontiac					1								5		2	6	3

## Ohio

M.A. Bennett, A.D. Bisges, and E.C. Wittmeyer  
The Ohio State University

**Introduction:** Twenty-eight potato varieties and clones were tested at the Ohio Agricultural Research and Development Center, Wooster during the 1988 growing season. This test was conducted as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

**Methods:** Single-row plots 30 feet long (3 ft. apart and 12 inches between seedpieces) were planted on May 19 using a randomized complete block design and three replications. Soil type was a Wooster silt loam (fine-loamy, mixed, mesic Typic Fragiudalf) with a pH of 6.0 and organic matter of 3%. Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied as a plow-down application and the remainder banded at planting. Herbicides used were Dual/Lexone, with other cultural practices also similar to those used on commercial potato operations in Ohio. Vines were killed at 116 days with Diquat + spreader. Specific gravity was determined using the potato hydrometer method. Chip color was evaluated using the standards established by the Potato Chip/Snack Food Association. Objective color determinations were made with the Agtron E-5F. Hollow heart and internal necrosis ratings indicate the number of affected tubers found per 30 large tubers examined.

**Results:** Weather conditions during much of the 1988 growing season were characterized by above normal day/night temperatures and below normal rainfall. Poor tuber set and high levels of second growth resulted from high temperatures early in the season and lush vine growth triggered by late-season rainfall. No unusual disease or insect problems were detected in the 1988 plots. Fifteen varieties/clones produced marketable yields that were greater than the standard variety Katahdin (Ohio Table 1). Percentage of total yield of these varieties which was classified as U.S. No. 1 ranged from 66-90%.

Among the varieties/clones with high marketable yields, AF875-16 shows promise as a potential chipping variety. Very little second growth was observed in this variety under the stressful 1988 growing season. Atlantic, AF875-16, and Kanona exhibited very good overall tuber appearance. However, the levels of hollow heart in AF875-16 and both hollow heart and internal necrosis in Atlantic are cause for concern (Ohio Table 2). Among the entries being considered for further testing in Ohio are five which showed no hollow heart or internal necrosis: AF909-8, B9792-61, CS7635-4, NY81, and W752. AF909-8, B9792-61, B9792-157, CS7635-4, NY81, and Atlantic were the entries which exceeded 200 CWT/A marketable yields.

Ohio Table 1. Yield, marketable yield, percentage of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1988.

Variety	Total Yield CWT/A	Marketable Yield		Size Distribution by Class (% of total yield)			
		CWT/A	% of Std	U.S. No. 1 (>1-7/8")	B Size	Culls	Spec. Gravity
Atlantic	273	246	151	90	7	3	1.080
Coastal Russet	237	149	91	63	19	18	1.060
Katahdin (std)	209	163	100	78	9	13	1.062
Kennebec	236	153	94	65	11	24	1.070
Monona	246	170	104	69	5	26	1.062
Norchip	246	133	82	54	17	29	1.070
Russet Burbank	178	78	48	44	28	28	1.061
Superior	242	172	106	71	6	23	1.073
A7411-2	138	72	44	52	17	31	1.068
A72685-2	85	54	33	63	22	15	1.073
A75188-3	142	82	50	58	20	22	1.067
A76147-2	260	101	62	39	9	52	1.065
AF522-5	106	45	28	42	13	45	1.067
AF875-16	250	195	120	78	4	18	1.087
AF909-8	310	211	129	68	7	25	<1.060
B0172-15	189	98	60	52	6	42	<1.060
B9792-61	276	248	152	90	5	5	1.074
B9792-157	256	218	134	85	5	10	1.060
CS7635-4	259	205	126	79	6	15	1.060
CS7639-1	276	193	118	70	5	25	1.063
CS7697-24	294	194	119	66	11	23	1.063
F70021	191	128	79	67	15	18	1.060
Kanona (NY71)	230	193	118	84	5	11	1.064
NY72	202	172	106	85	6	9	1.070
NY76	227	161	99	71	25	4	1.060
NY79	219	175	107	80	5	15	1.060
NY81	264	216	133	82	6	12	1.075
W752	253	192	118	76	13	11	1.078
Waller Duncan LSD (k=100, 5% level)	82						

Ohio Table 2. Tuber shape and appearance, tuber defects, hollow heart ratings, internal necrosis ratings, and chip color for varieties grown at Wooster, Ohio - 1988.

Variety	Tuber data <sup>1</sup>		Total	Tuber Defects (%)			Hollow Heart Rating	Internal Necrosis Rating	Chip Color <sup>2</sup>
	Shape	Appearance		Sun-burn	Mis-Shapen	Growth Cracks			
Atlantic	4	6	10	7	3	0	5	10	2
Coastal Russet	7	3	33	7	23	3	0	1	4
Katahdin (std)	3	4	43	17	23	3	2	1	3
Kennebec	4	2	50	10	37	3	2	1	1
Monona	6	2	67	27	33	7	0	5	2
Norchip	3	3	50	17	30	3	0	0	1
Russet Burbank	8	2	57	0	40	17	0	0	2
Superior	3	4	34	7	27	0	1	0	3
A7411-2	8	2	80	0	60	20	0	0	2
A72685-2	7	4	40	0	40	0	0	0	2
A75188-3	7	6	20	0	20	0	0	0	3
A76147-2	7	2	93	13	50	30	0	0	3
AF522-5	5	6	20	0	20	0	0	2	2
AF875-16	3	7	23	3	3	17	8	0	1
AF909-8	3	5	23	10	3	10	0	0	2
B0172-15	6	3	54	0	47	7	6	0	2
B9792-61	3	4	31	7	17	7	0	0	2
B9792-157	3	5	23	13	3	7	6	0	2
CS7635-4	3	6	20	10	7	3	0	0	1
CS7639-1	4	5	30	3	17	10	0	0	3
CS7697-24	3	5	23	17	3	3	2	4	2
F70021	4	5	60	10	35	15	0	1	3
Kanona (NY71)	2	8	3	3	0	0	1	0	3
NY72	2	6	7	0	7	0	3	0	2
NY76	2	6	6	3	3	0	0	0	2
NY79	3	5	44	7	7	30	1	5	2
NY81	3	6	23	10	3	10	0	0	3
W752	3	6	17	0	17	0	0	0	2

<sup>1</sup> See Standard NE107 rating system, page 24

<sup>2</sup> PC/SFA Standards



Ohio Table 3. Plant stand, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1988.

Variety	Plant Stand (%)	% Blister <sup>1</sup>	Agtron E-5F	Tuber Data		
				Skin Texture	Eye Depth	Skin Color
Atlantic	93	80	33.3	6	5	7
Coastal Russet	89	70	36.6	6	6	6
Katahdin (std)	93	60	33.6	7	5	7
Kennebec	90	60	34.5	6	5	6
Monona	88	70	37.1	7	4	7
Norchip	97	50	34.2	7	5	6
Russet Burbank	97	70	32.3	2	5	4
Superior	84	60	33.9	6	5	7
A7411-2	88	90	36.5	5	5	6
A72685-2	87	40	42.4	3	6	4
A75188-3	90	70	36.9	6	7	6
A76147-2	72	90	37.4	6	5	7
AF522-5	30	40	36.4	4	6	5
AF875-16	91	70	38.2	6	5	7
AF909-8	94	70	37.5	7	5	6
B0172-15	95	50	37.3	5	5	6
B9792-61	84	30	36.9	5	5	6
B9792-157	86	20	38.1	6	5	7
CS7635-4	91	20	38.7	6	5	7
CS7639-1	80	20	38.4	6	5	7
CS7697-24	81	20	43.8	6	5	7
F70021	80	10	42.5	7	5	7
Kanona (NY71)	78	20	39.0	6	6	6
NY72	89	70	43.9	6	5	7
NY76	68	40	39.5	6	6	7
NY79	85	30	47.6	6	5	7
NY81	86	30	51.2	6	7	7
W752	84	20	52.0	6	6	7

<sup>1</sup> Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

TUBER DATA RATING SYSTEM

for

POTATO VARIETY TRIALS - NE107Tuber 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. Rd. to obl.
4. Mostly obl.
5. Oblong
6. 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



### LOCATIONS OF 1988 OHIO POTATO VARIETY TRIALS

- 1 - Michael Farms, Urbana
- 2 - Harold Thompson Farm, Hanoverton
- 3 - Mellinger Farms, Leetonia
- 4 - Logan Farms, Mt. Gilead
- 5 - Chase Farms, Defiance
- 6 - Ohio Agricultural Research and Development Center, Wooster

APPENDIX B - Observation Trials. Specific gravity, chip color, percent blister, and Agtron readings for entries grown at Wooster, Ohio - 1988.

Cultivar	Specific Gravity	Chip Color	% Blister	Agtron E-5F
Atlantic	1.080 <sup>z</sup>	2 <sup>y</sup>	80 <sup>x</sup>	33.3
B0242-2	<1.060	2	10	59.9
W1024	1.069	2	20	56.5
ND860-2	1.073	2	10	54.2
AF675-16	1.082	1	40	50.4
B9792-157	1.070	1	30	58.4
Norchip	1.070	1	50	34.2

<sup>z</sup>Specific gravity values were generally below desired levels and reflect the extreme heat stress during the 1988 growing season.

<sup>y</sup>PC/SFA Standards

<sup>x</sup>Percentage of chips that develop blisters >20 mm in diameter during the frying process.

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