

2019 OHIO POTATO GERMPLASM EVALUATION REPORT

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**IN COOPERATION WITH
NORTHEAST (NE-1731)
REGIONAL PROJECT**

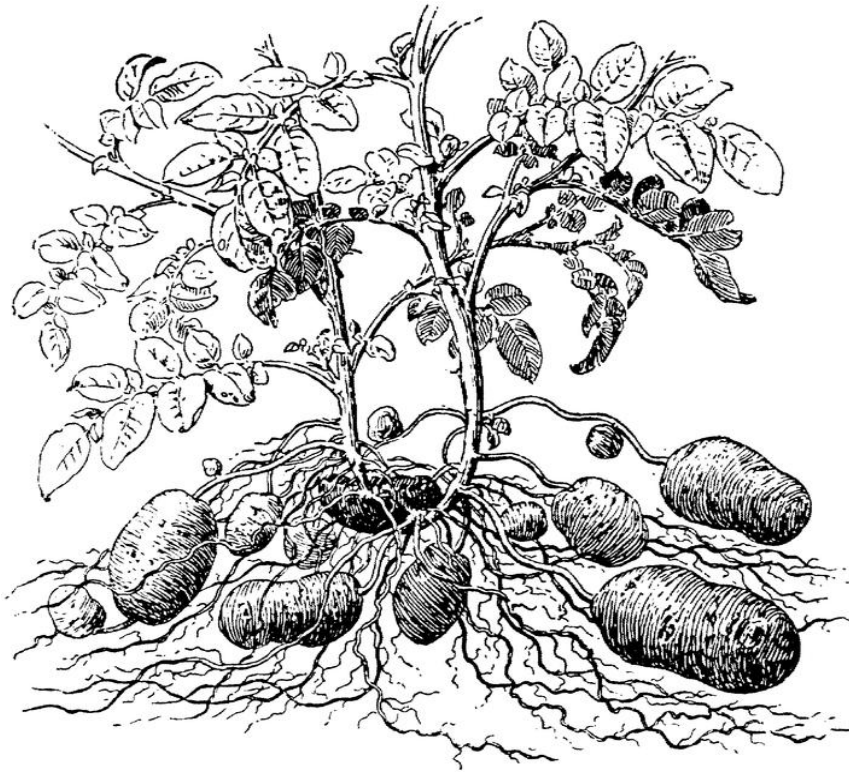


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OHIO POTATO GERMPLASM EVALUATIONS - 2019

Summary

Ohio cooperates with private and public breeders in the U.S. and elsewhere in evaluating varieties and experimental lines of fresh and processing potatoes. A total of fifty-two distinct varieties and experimental lines developed in four breeding programs were evaluated in 2019 (Table 1). Entries were placed into one of three experiments completed at the Ohio Agricultural Research and Development Center at The Ohio State University (OARDC) in Wooster, Ohio. The experiments are the Northeast Regional Project 1731 (NE-1731), Triple Observation (OBT) and Single Observation (OBS). Named varieties were included in one study, and numbered entries in three studies. Entries were contributed by breeding programs in Maine (ME), New York (NY), and USDA (in Beltsville, MD). Entries are listed in Table 2 and include a total of thirty-nine varieties contributed by ME, four by NY, one by the USDA, and eight varieties included as standards.

The studies were established to evaluate the growth and market traits of each entry when grown under non-irrigated conditions in Ohio. The fact that the trials at OARDC are not irrigated tends to affect the performance of individual entries. Marketable yield of six varieties and seasonal rainfall for 2009-2019 at OARDC are shown in Table 3.

Procedures

Planting, Stand Establishment and Cultural Practices

Seed potatoes were cut on May 9, 2019 and allowed to cure under recommended temperature and humidity conditions. Plots were established on May 16, 2019. All entries in the NE-1731 experiment were replicated three times. Entries in the Observation studies were replicated once or three times depending on the study. Percent stand was recorded at 3, 4 and 6 weeks after planting.

Tables 3, 4 and 5 contain plot management, climatic and historical yield data for the study site, located on a well-drained Wooster silt loam. Pest, weed and disease pressure were minimized using procedures and materials consistent with local commercial practices, including weekly pesticide applications. Vine kill was applied on September 11, 2019.

Crop Yield and Quality

Whole plots in the NE-1731 and Observation trials were harvested on September 24, 2019. Tubers were placed in a barn under ambient conditions. Tubers were transferred to humidified refrigerated (50 - 52° F) storage after grading on October 11, 2019.

On October 8, 2019, tubers were relocated for grading. At grading, the total weight of tubers produced by each genotype (across multiple plots, if present) was recorded. The entire harvested weight of each genotype was retained and graded for the NE-1731, OBT and OBS plots. The weight of tubers in the A-size (US #1), B-size, and cull categories was recorded. These weights were also expressed as percentages of the weight of the graded potatoes, and percentages were then applied to the total weight of the potatoes harvested for each genotype in order to calculate its marketable yield (cwt/A).

After grading, tubers were retained for internal and external quality ratings and chipping quality evaluations. Tubers set aside for internal and external quality ratings and for chipping were retained in humidified refrigerated (50-52° F) storage until November 4, 2019.

Tubers were rated for internal and external quality on October 23, 2019. Ten randomly selected, A-size, marketable tubers collected at grading were scored for tuber shape, color, surface texture, eye depth, general appearance, and the presence or absence of hollow heart, brown center, internal necrosis, and vascular discoloration using accepted protocols. (See Tuber Data Rating System on p.15). Digital images representing internal and external quality of each genotype were recorded.

In addition, three healthy tubers per genotype were evaluated for glucose content at the time of internal and external quality ratings on October 23, 2019. Tubers were cut in half lengthwise and glucose content rated using Potato Test Strips (Precision Labs, Inc., 9889 Crescent Park Drive, West Chester, OH 45069). Ratings of three tubers were averaged.

Chipping Quality Evaluation

Tubers were held in refrigerated humidified storage (50-52° F) until November 4, 2019. They were removed and held under ambient conditions (approx. 70°F) until being processed on November 5, 2019.

Chipping quality evaluation began with measurements of specific gravity. Eight pounds of potatoes were placed in a hydrometer and specific gravity was recorded. A subset of four potatoes was selected and peeled using a Rotato Express electric potato peeler or by hand. Peeled potatoes were sliced to an approximate thickness of 0.051 inches using a DeBuyer Kobra mandolin slicer. Slices were rinsed in cold water and then 25 slices fried in a Commercial Pro Model CPF32 electric fryer containing corn oil donated by Shearer's Foods, Inc. at 176-178°C (348-352°F) for approximately 3:00 minutes. After frying, the sample was visually evaluated for color using color standards in the Potato Chip Color Reference Chart published by the Snack Food Association. Chips that are very light in color are scored "1" and very dark chips are scored "6". The number of chips out of twenty-five with blister(s) greater than 1 cm (0.39 in) in diameter was recorded. Digital images of chips for each genotype were recorded.

Results

Yield, tuber characteristics, and chipping quality data are presented in Tables 6-9. Total yield and US #1 yield averaged 301 and 223 (cwt/A) across all studies respectively, with a range of 176-453 (total) and 99-350 (US #1). Average total yield in the NE-1731 study was 275 cwt/A among varieties and 296 cwt/A among the selections, with a study range of 189-405 cwt/A. Of the 52 entries evaluated, overall tuber appearance was rated poor-fair (scale rating of 1-3), fair-good (scale rating of 4-6), and good-excellent (scale rating of 7-9) in 2, 21, and 29 entries, respectively.

1. Entries having an overall appearance rating of ≥ 7 (good-excellent) at grading:
 - NE-1731: Atlantic, Chieftain, Katahdin, Superior, Yukon Gold, AF 4831-2, AF 5040-8, AF 5225-1, AF 5280-5, AF 5677-4, B 3012-1, NDAF 102629C-4, NDAF 113484B-1, NY 149, NY 151, NY 152, NY 164, WAF 10664-3
 - Triple Observation: AF 4648-2, AF 5648-3, AF 5819-2, NDAF 14424-2, NDAF 14477C-2, WAF 14096-5
 - Single Observation: AF 6198-2, AF 6206-3, AF 6236-7, AF 6237-3, WAF 15133-1
2. Entries having an overall appearance rating of ≥ 7 (good-excellent) at grading and marketable yield \geq the study average:

- NE-1731: Atlantic, Yukon Gold, AF 5225-1, NDAF 113484B-1, NY 149, NY 151, NY 152, NY 164
 - Triple Observation: AF 5648-3, AF 5819-2, WAF 14096-5
 - Single Observation: AF 6198-2, AF 6206-3, AF 6236-7, AF 6237-3
3. Entries having a chip score of ≤ 3 :
- NE-1731: Atlantic, Snowden, AF 5040-8, AF 5280-5, AF 5677-4, NDAF 102629C-4, NY 152, WAF 10664-3
 - Triple Observation: AF 4648-2, AF 5648-3, AF 5819-2, MSAFB 636-1, NDAF 14477C-2, WAF 14096-5
 - Single Observation: AF 6165-9, AF 6190-7, AF 6197-8, AF 6198-2, AF 6200-7, AF 6206-3, AF 6206-5, AF 6221-3, AF 6236-7, AF 6237-3, AF 6251-3, WAF 15133-1, WAF 15184-4, WAF 15204-4, WAF 15221-2

Table 1. List of programs participating in the 2019 Ohio Potato Germplasm Evaluations.

		----- 2019 experiment -----					
Number	Program	Genotype Codes	NE-1731	Triple Observation	Double Observation	Single ¹ Observation	Total
1	Univ. Maine	AF, MSAFB, NDAF, WAF	11	10		18	39
2	Cornell Univ.	NY	4				4
3	USDA	B	1				1
4	Various	named	8				8
Total			24	10	0	18	52

¹ Refers to number of single row replicates. All other experiments contained two (Double Observation) or three (NE-1731, Triple Observation) replicates.

Table 2. List of varieties and experimental lines planted in the potato germplasm evaluations at the OARDC in Wooster, OH in 2019.

----- Experiment -----					
NE-1731		Triple Observation		Double Observation	
				Single Observation	
1	Atlantic	25	AF 4648-2	35	AF 6165-9
2	Chieftain	26	AF 5648-3	36	AF 6190-7
3	Dark Red Norland	27	AF 5819-2	37	AF 6197-8
4	Katahdin	28	AF 6052-1	38	AF 6198-2
5	Kennebec	29	MSAFB 636-1	39	AF 6200-7
6	Snowden	30	NDAF 12238Y-2	40	AF 6206-3
7	Superior	31	NDAF 14424-1	41	AF 6206-5
8	Yukon Gold	32	NDAF 14424-2	42	AF 6221-3
9	AF 4831-2	33	NDAF 14477C-2	43	AF 6236-7
10	AF 5040-8	34	WAF 14096-5	44	AF 6237-3
11	AF 5225-1			45	AF 6245-6
12	AF 5245-1			46	AF 6251-3
13	AF 5280-5			47	AF 6253-1
14	AF 5412-3			48	AF 6261-2
15	AF 5414-1			49	WAF 15133-1
16	AF 5677-4			50	WAF 15184-4
17	B 3012-1			51	WAF 15204-4
18	NDAF 102629C-4			52	WAF 15221-2
19	NDAF 113484B-1				
20	NY 149				
21	NY 151				
22	NY 152 (Niagara)				
23	NY 164				
24	WAF 10664-3				

Table 3. Yield (cwt/A) of marketable, A-size tubers of six varieties grown at the OARDC in Wooster, Ohio from 2009-2019.

Variety	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019	average
Atlantic	276	197	153	57	391	290	262	85	342	270	248	234
Dk. Red Norland	240	201	133	61	184	304	336	.	359	417	259	249
Katahdin	280	79	70	25	304	214	230	65	311	395	217	199
Kennebec	290	101	59	43	108	240	263	21	.	337	146	161
Superior	224	104	110	45	174	295	257	49	318	330	139	186
Yukon Gold	267	113	91	60	359	232	339	92	306	313	277	223
Rainfall (inches, July 1-Aug 31)	10.57	5.70	8.77	4.56	8.55	6.62	4.11	6.80	5.56	6.36	12.72	7.30

*Rainfall for 2018 was July 1-Aug 28

Table 4. Cultural, nutrient, and pest management practices for the potato germplasm evaluations completed at the OARDC in Wooster, Ohio in 2019.

Date planted	16-May	
Date vine kill	11-Sep	ForFeit 280 (48 oz/A)
2018 main crop	Tillage Radish	
Fertilizer	10-20-20 (400 lb/A)	
Herbicide	16-May 26-Jun	Dual II-Magnum (1.33 pt/A), Sencor 75 DF (1 lb/A) Matrix SG (1 oz/A)
Insecticide	Admire (1 pt/A)	
Spacing (ft.) within, between row	1 x 3	
Plot width, length (ft.)	3 x 30	
Soil conditions at planting	Dry-Moist	
Irrigation (inches)	None	
Sprays applied	13-Jun 21-Jun 27-Jun 5-Jul 11-Jul 19-Jul 25-Jul 1-Aug 9-Aug 15-Aug 22-Aug	Entrust SC (8 fl oz/A), Quadris (5 fl oz/A) Penncozeb 75 DF (2 lbs/A), Tanos (8 oz/A), Kocide 2000 (1.5 lbs/A), Coragen (7.5 oz/A) Bravo Weather Stik (2 pt/A) Quadris (5 oz/A) Penncozeb 75 DF (2 lbs/A) Bravo Weather Stik (2 pt/A), Athena (15 oz/A) Quadris (5 oz/A), Coragen (5 oz/A) Orondis Ultra B (8 oz/A) Initiate 720 (2 pts/A) Quadris (5 oz/A) Bravo Weather Stik (2 pt/A)

Table 5. Seasonal and historical climatic data for the potato germplasm evaluations completed at the OARDC in Wooster, Ohio in 2019.

	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>
Avg. High Temp. (2019) (F)	77.5	77.5	85.0	80.3
Avg. Low Temp. (2019) (F)	55.2	57.4	64.3	60.0
Avg. Temp. (2019) (F)	66.3	67.2	74.0	69.4
Normal Avg. Temp. (Historical) (F)	61.0	67.6	71.5	72.2
Total Precip. (2019) (in.)	1.41	6.87	7.92	4.80
Normal Avg. Precip. (Historical) (in.)	2.10	3.90	4.10	3.60
Precip. deficit/surplus (2019) (in.)				
period	-0.69	2.97	3.82	1.20
cumulative	-0.69	2.28	6.10	7.30

Table 6. Percent stand, yield and chip quality for entries grown in the Ohio NE-1731 Regional Project experiment in 2019.

Entry #	Entry Name	Stand %	Total cwt/A	US # 1 cwt/A	US # 1 %	B-Size %	Cull %	Specific Gravity ¹	Specific Gravity ²	Chip Color ³	Blister % ⁴	% Glucose before chipping ⁵
1	Atlantic	88	318	248	78	9	13	1.083	1.083	2	32	0.00
2	Chieftain	90	309	173	56	18	26	<1.060	1.060	5	16	0.12
3	Dark Red Norland	93	317	259	82	14	4	<1.060	1.060	5	8	0.03
4	Katahdin	82	265	217	82	6	12	<1.060	1.060	4	20	0.03
5	Kennebec	91	237	146	62	12	27	<1.060	1.060	5	8	0.00
6	Snowden	90	237	188	79	12	8	1.073	1.073	3	24	0.00
7	Superior	96	189	139	74	15	12	1.064	1.064	5	28	0.00
8	Yukon Gold	91	331	277	84	5	12	1.071	1.071	4	24	0.00
9	AF 4831-2	84	269	178	66	27	7	<1.060	1.060	6	0	0.12
10	AF 5040-8	96	308	209	68	18	14	1.083	1.083	2	24	0.07
11	AF 5225-1	89	373	291	78	16	7	1.067	1.067	5	24	0.08
12	AF 5245-1	97	189	146	78	14	9	1.070	1.070	4	44	0.03
13	AF 5280-5	93	228	164	72	19	9	<1.060	1.060	2	44	0.03
14	AF 5412-3	98	292	172	59	10	31	<1.060	1.060	6	4	0.87
15	AF 5414-1	88	256	170	66	14	20	1.060	1.060	6	4	0.42
16	AF 5677-4	91	265	214	81	13	6	1.075	1.075	2	16	0.00
17	B 3012-1	96	293	209	71	22	6	1.075	1.075	4	28	0.00
18	NDAF 102629C-4	97	238	181	76	15	9	1.069	1.069	2	40	0.00
19	NDAF 113484B-1	92	313	267	85	9	6	<1.060	1.060	4	20	0.00
20	NY 149	89	327	226	69	18	13	1.064	1.064	4	24	0.00
21	NY 151	91	405	346	85	8	6	1.060	1.060	5	48	0.00
22	NY 152 (Niagara)	91	404	331	82	15	3	1.080	1.080	1	16	0.00
23	NY 164	86	316	250	79	11	10	1.067	1.067	5	16	0.00
24	WAF 10664-3	92	253	197	78	13	9	1.072	1.072	3	20	0.00
Average		91	289	217	75	14	12	1.071	1.067	4	22	0.08

¹ Specific gravity recorded at chipping.² Specific gravity with correction factor based on SFA chart. See reference table on page 14 for starch and dry matter conversions.³ SFA Standard (1=light, 6 =dark).⁴ Percentage of chips that developed blisters greater than 1 cm in diameter during the frying process.⁵ Approximate % glucose 2 weeks before chipping. Average of 3 tubers using Potato Test Strips from Precision Labs, Inc., 9889 Crescent Park Drive, West Chester, OH 45069.

Table 7. Tuber characteristics for entries grown in the Ohio NE-1731 Regional Project experiment in 2019.

Entry #	Entry Name	External ¹					Internal ²				
		Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
1	Atlantic	5	5	3	3	7	30	0	30	0	30
2	Chieftain	3	6	2	3	7	0	0	10	0	10
3	Dark Red Norland	2	5	3	5	5	0	0	0	20	20
4	Katahdin	9	6	2	7	7	0	0	10	80	90
5	Kennebec	7	7	3	5	5	0	0	10	50	60
6	Snowden	5	4	2	7	5	0	0	30	50	80
7	Superior	6	5	2	7	7	0	0	30	40	60
8	Yukon Gold	7	7	2	9	7	0	0	20	50	50
9	AF 4831-2	3	8	3	5	7	0	0	40	50	80
10	AF 5040-8	6	8	2	3	7	0	0	20	60	70
11	AF 5225-1	6	7	2	5	7	0	0	20	70	90
12	AF 5245-1	1	8	3	7	5	0	0	30	50	70
13	AF 5280-5	6	7	2	7	7	0	0	20	50	70
14	AF 5412-3	1	7	5	5	3	0	0	10	100	100
15	AF 5414-1	2	7	3	5	5	0	0	20	80	80
16	AF 5677-4	6	6	2	3	7	0	0	20	90	90
17	B 3012-1	5	5	2	7	7	0	0	30	50	70
18	NDAF 102629C-4	6	7	2	5	7	0	0	10	90	100
19	NDAF 113484B-1	3	8	1	7	7	0	0	20	70	70
20	NY 149	6	7	2	7	7	0	0	20	80	80
21	NY 151	6	6	2	7	7	0	0	20	40	60
22	NY 152 (Niagara)	5	5	1	7	7	0	0	10	60	60
23	NY 164	2	8	2	7	7	10	0	30	30	40
24	WAF 10664-3	6	6	2	5	7	0	0	20	70	90

¹ See reference table for rating system on page 15.

² % of tubers out of 10 tubers that contain the defect.

Table 8. Percent stand, yield and chip quality for entries grown in the Ohio Triple Observation Trial in 2019.

Study	Entry #	Entry Name	Stand %	Total cwt/A	US # 1 cwt/A	US # 1 %	B-Size %	Cull %	Specific Gravity ¹	Specific Gravity ²	Chip Color ³	Blister % ⁴	% Glucose before chipping ⁵
OBT	25	AF 4648-2	91	261	217	83	9	8	1.081	1.081	2	28	0.00
OBT	26	AF 5648-3	92	301	248	82	14	4	1.080	1.080	2	44	0.00
OBT	27	AF 5819-2	89	398	312	78	10	12	1.061	1.061	3	12	0.00
OBT	28	AF 6052-1	91	226	144	64	17	20	<1.060	1.060	6	0	0.07
OBT	29	MSAFB 636-1	91	366	297	81	15	4	1.067	1.067	3	36	0.15
OBT	30	NDAF 12238Y-2	86	254	158	62	15	23	1.065	1.065	4	28	0.03
OBT	31	NDAF 14424-1	91	240	194	81	11	8	<1.060	1.060	5	4	0.15
OBT	32	NDAF 14424-2	90	242	197	81	11	7	<1.060	1.060	5	24	0.07
OBT	33	NDAF 14477C-2	90	251	197	78	11	11	1.071	1.071	2	4	0.00
OBT	34	WAF 14096-5	89	434	344	79	13	8	1.070	1.070	3	24	0.07
		Average	90	297	231	77	12	10	1.071	1.068	4	20	0.05

¹ Specific gravity recorded at chipping.² Specific gravity with correction factor based on SFA chart. See reference table on page 14 for starch and dry matter conversions.³ SFA Standard (1=light, 6=dark).⁴ Percentage of chips that developed blisters greater than 1 cm in diameter during the frying process.⁵ Approximate % glucose 2 weeks before chipping. Average of 3 tubers using Potato Test Strips from Precision Labs, Inc., 9889 Crescent Park Drive, West Chester, OH 45069.

Table 8 (cont.). Percent stand, yield and chip quality for entries grown in the Ohio Single Observation Trial in 2019.

Study	Entry #	Entry Name	Stand %	Total cwt/A	US # 1 cwt/A	US # 1 %	B-Size %	Cull %	Specific Gravity ¹	Specific Gravity ²	Chip Color ³	Blister % ⁴	% Glucose before chipping ⁵
OBS	35	AF 6165-9	88	229	192	84	6	10	1.075	1.075	3	16	0.00
OBS	36	AF 6190-7	90	304	165	54	5	41	1.074	1.074	2	8	0.42
OBS	37	AF 6197-8	93	363	268	74	9	18	1.070	1.070	3	20	0.00
OBS	38	AF 6198-2	92	453	333	73	6	21	1.082	1.082	3	48	0.15
OBS	39	AF 6200-7	88	331	257	78	2	20	1.084	1.084	3	20	0.00
OBS	40	AF 6206-3	84	448	340	76	8	16	1.077	1.077	1	40	0.15
OBS	41	AF 6206-5	83	357	272	76	14	10	1.080	1.080	3	28	0.00
OBS	42	AF 6221-3	91	363	316	87	5	8	1.070	1.070	2	16	0.00
OBS	43	AF 6236-7	92	357	270	76	8	17	1.069	1.069	2	36	0.00
OBS	44	AF 6237-3	97	400	268	67	8	25	1.078	1.078	2	20	0.08
OBS	45	AF 6245-6	94	411	350	85	6	9	1.066	1.066	4	44	0.00
OBS	46	AF 6251-3	91	315	204	65	22	13	1.091	1.091	3	44	0.33
OBS	47	AF 6253-1	88	176	99	56	31	13	1.065	1.065	4	4	0.03
OBS	48	AF 6261-2	88	208	123	59	18	23	1.061	1.061	5	8	0.17
OBS	49	WAF 15133-1	91	304	190	62	7	31	1.081	1.081	3	8	0.00
OBS	50	WAF 15184-4	90	229	153	67	16	18	1.082	1.082	2	20	0.00
OBS	51	WAF 15204-4	81	197	110	56	19	26	1.082	1.082	2	52	0.00
OBS	52	WAF 15221-2	76	277	163	59	8	34	1.076	1.076	2	28	0.03
		Average	89	318	226	70	11	20	1.076	1.076	3	26	0.08

¹ Specific gravity recorded at chipping.² Specific gravity with correction factor based on SFA chart. See reference table on page 14 for starch and dry matter conversions.³ SFA Standard (1=light, 6 =dark).⁴ Percentage of chips that developed blisters greater than 1 cm in diameter during the frying process.⁵ Approximate % glucose 2 weeks before chipping. Average of 3 tubers using Potato Test Strips from Precision Labs, Inc., 9889 Crescent Park Drive, West Chester, OH 45069.

Table 9. Tuber characteristics for entries grown in the Ohio Triple Observation Trial in 2019.

Study	Entry #	Entry Name	External ¹					Internal ²				
			Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
OBT	25	AF 4648-2	6	7	2	7	7	0	0	20	0	20
OBT	26	AF 5648-3	6	6	2	5	7	0	0	30	50	80
OBT	27	AF 5819-2	7	6	3	5	7	0	0	30	20	40
OBT	28	AF 6052-1	3	8	2	7	5	0	0	30	50	70
OBT	29	MSAFB 636-1	6	6	3	5	5	0	0	10	40	40
OBT	30	NDAF 12238Y-2	3	7	3	7	5	0	0	20	70	70
OBT	31	NDAF 14424-1	3	7	2	5	5	0	0	20	60	60
OBT	32	NDAF 14424-2	3	7	2	5	7	0	0	40	40	70
OBT	33	NDAF 14477C-2	7	6	2	5	7	0	0	30	40	70
OBT	34	WAF 14096-5	7	7	2	5	7	0	0	20	20	40

¹ See reference table for rating system on page 15.² % of tubers out of 10 tubers that contain the defect.

Table 9 (cont.). Tuber characteristics for entries grown in the Ohio Single Observation Trial in 2019.

Study	Entry #	Entry Name	External ¹					Internal ²				
			Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
OBS	35	AF 6165-9	5	4	2	5	5	0	0	50	50	70
OBS	36	AF 6190-7	6	4	2	7	5	10	0	40	40	70
OBS	37	AF 6197-8	6	4	2	7	5	0	0	0	80	80
OBS	38	AF 6198-2	6	6	3	7	7	0	0	20	20	30
OBS	39	AF 6200-7	5	6	2	5	5	0	0	30	50	60
OBS	40	AF 6206-3	7	7	3	5	7	0	0	10	20	30
OBS	41	AF 6206-5	5	6	2	5	5	0	0	10	20	30
OBS	42	AF 6221-3	6	7	2	3	5	0	0	40	20	60
OBS	43	AF 6236-7	6	7	2	5	7	0	0	30	40	40
OBS	44	AF 6237-3	6	6	3	5	7	0	0	10	20	30
OBS	45	AF 6245-6	5	7	2	5	5	0	0	30	20	40
OBS	46	AF 6251-3	5	6	2	7	5	0	0	70	10	70
OBS	47	AF 6253-1	5	6	2	5	5	0	0	30	20	50
OBS	48	AF 6261-2	5	6	2	5	5	0	0	10	10	20
OBS	49	WAF 15133-1	6	7	3	3	7	0	0	10	0	10
OBS	50	WAF 15184-4	5	6	3	5	5	0	0	50	0	50
OBS	51	WAF 15204-4	6	6	3	5	5	0	0	20	30	50
OBS	52	WAF 15221-2	5	4	2	5	3	0	0	30	30	50

¹ See reference table for rating system on page 15.² % of tubers out of 10 tubers that contain the defect.

Conversion Table for Specific Gravity of Potato Tubers to Content of Starch and Dry Matter % (Calculated from Von Scheele equations: % starch = 17.565 + 199.07 (Sp. Gr.-1.0988); % dry matter = 24.181 + 211.04 (Sp. Gr.-1.0988))

Specific Gravity	Starch %	Dry Matter %	Specific Gravity	Starch %	Dry Matter%
1.050	7.85	13.88	1.081	14.02	20.43
1.051	8.05	14.09	1.082	14.22	20.64
1.052	8.25	14.31	1.083	14.42	20.85
1.053	8.45	14.32	1.084	14.62	21.06
1.054	8.65	14.73	1.085	14.82	21.27
1.055	8.85	14.94	1.086	15.02	21.48
1.056	9.04	15.15	1.987	15.22	21.69
1.057	9.24	15.38	1.088	15.41	21.90
1.058	9.44	15.57	1.089	15.61	22.11
1.059	9.64	15.78	1.090	15.81	22.33
1.060	9.84	15.99	1.091	16.01	22.54
1.061	10.04	16.21	1.092	16.20	22.75
1.062	10.24	16.42	1.093	16.41	22.96
1.063	10.44	16.63	1.094	16.61	23.17
1.064	10.64	16.84	1.095	16.81	23.38
1.065	10.84	17.05	1.096	17.01	23.59
1.066	11.04	17.26	1.097	17.21	23.89
1.067	11.23	17.47	1.098	17.41	24.01
1.068	11.43	17.68	1.099	17.60	24.22
1.069	11.63	17.89	1.100	17.80	24.44
1.070	11.83	18.10	1.101	18.00	24.65
1.071	12.03	18.32	1.102	18.20	24.86
1.072	12.23	18.53	1.103	18.40	25.07
1.073	12.43	18.74	1.104	18.60	25.28
1.074	12.63	18.95	1.105	18.80	25.49
1.075	12.83	19.16	1.106	19.00	25.70
1.076	13.03	19.37	1.107	19.20	25.91
1.077	13.22	19.58	1.180	19.40	26.12
1.078	13.42	19.79	1.109	29.60	26.34
1.079	13.62	20.00	1.110	19.79	26.55
1.080	13.82	220.21	1.111	19.99	26.76

Factors Affecting the Specific Gravity of the White Potato in Maine. Maine Agricultural Experiment Station. Bulletin 583. May 1959.

TUBER DATA RATING SYSTEM

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 netting
7. Mod. smooth
8. Smooth
9. 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. 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

Air Pollution

1. Dead
2. ---
3. Mod. Defol.
4. ---
5. Mod. Injury
6. ---
7. Mild Injury
8. ---
9. No symptoms

Plant size

1. Very small
2. +
3. Small
4. +
5. Medium
6. +
7. Large
8. +
9. Very large

Plant Maturity

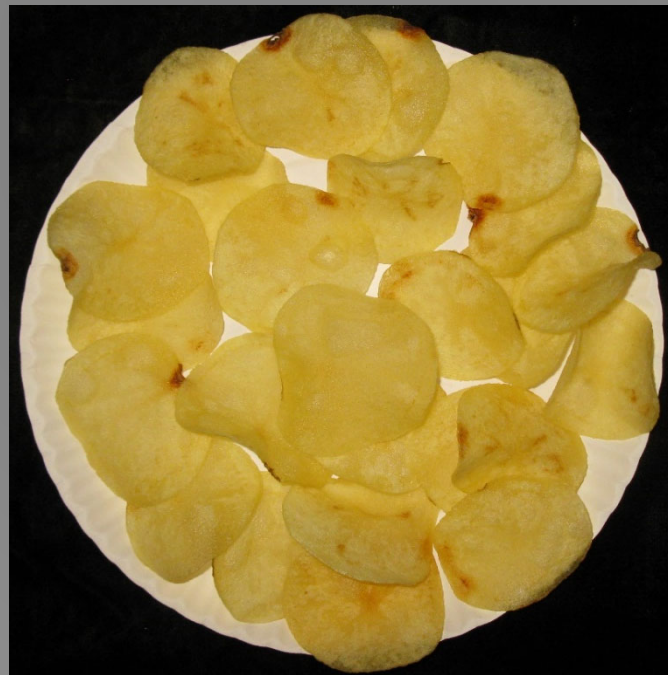
1. Very early
2. Early
3. +
4. Medium early
5. Medium
6. Medium late
7. +
8. Late
9. Very late

Plant Appearance

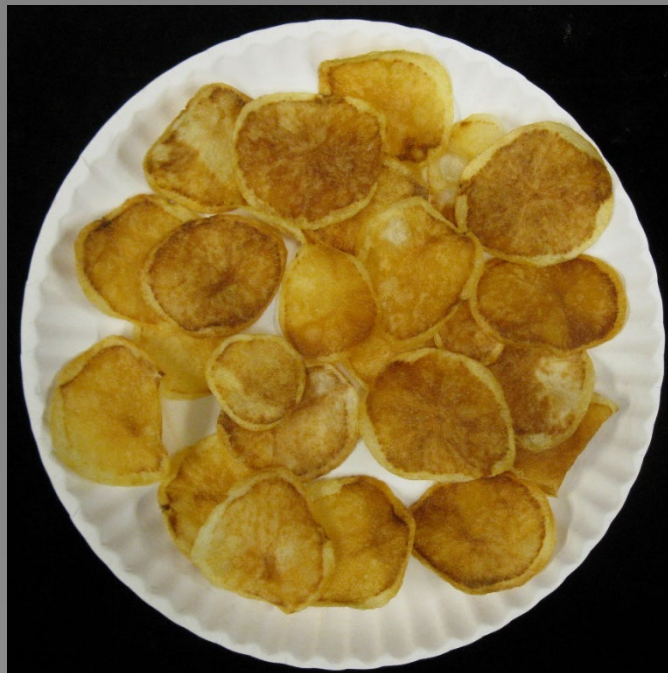
1. Very poor
2. Poor
3. +
4. --
5. Fair
6. +
7. --
8. Good
9. Excellent

Potato Germplasm Evaluation 2019

External and Internal Quality Images
Potato Chip Images



1 Atlantic



2 Chieftain



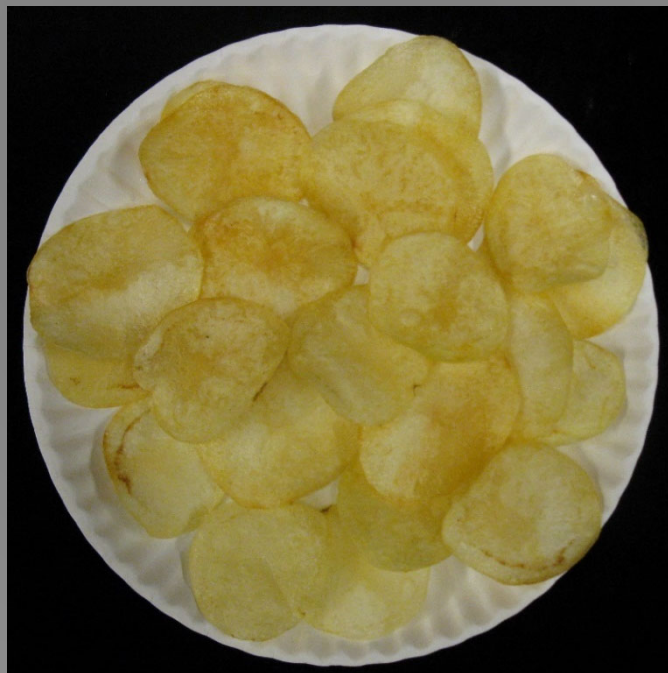
3 Dark Red Norland



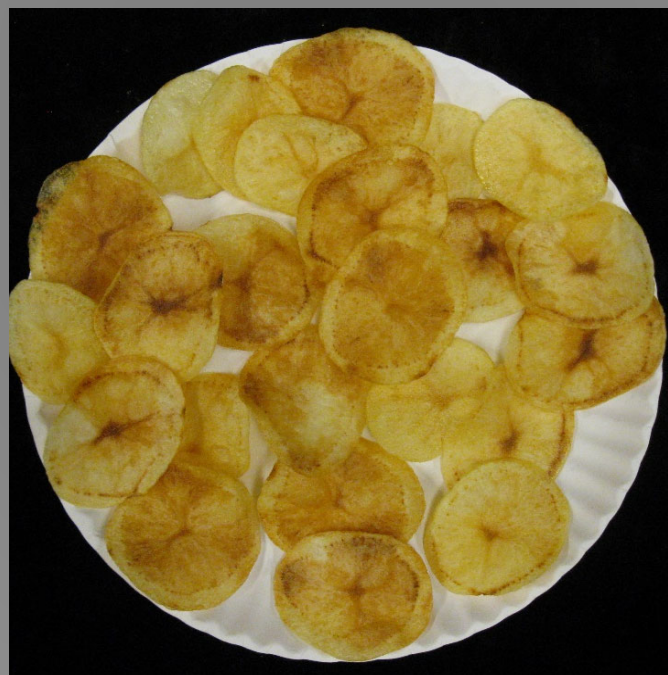
4 Katahdin



5 Kennebec



6 Snowden



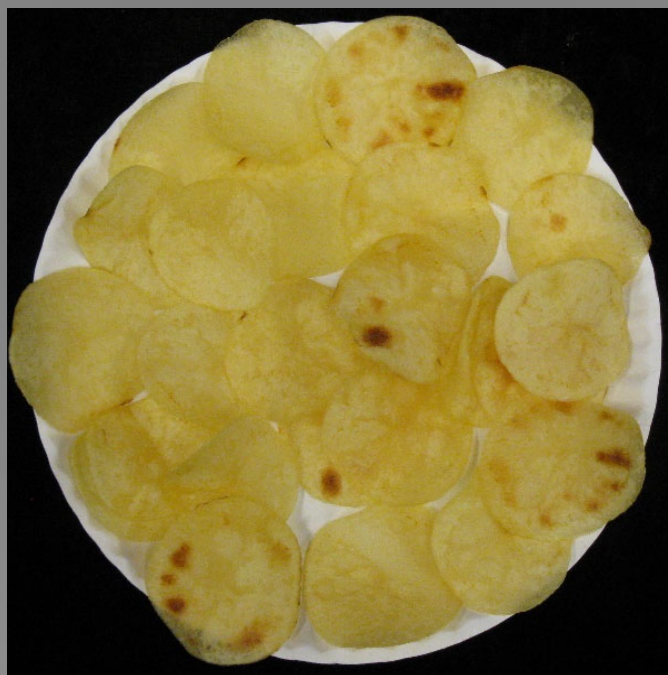
7 Superior



8 Yukon Gold



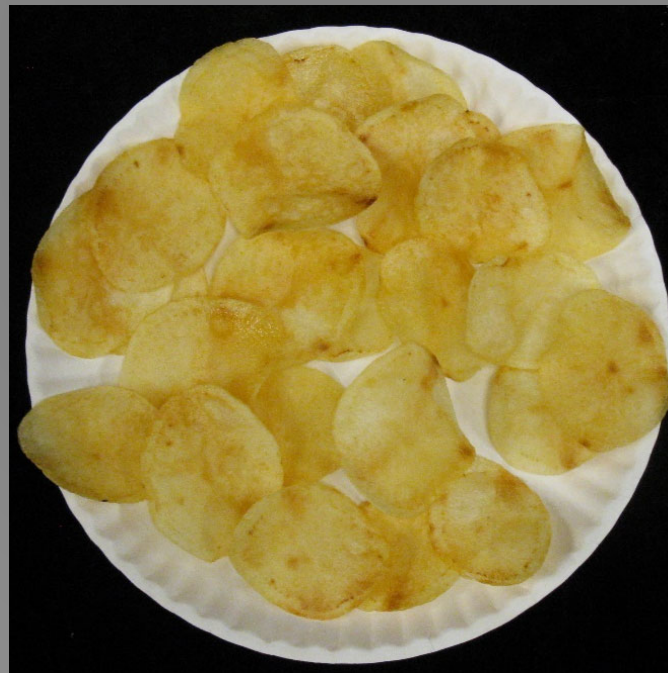
9 AF 4831-2



10 AF 5040-8



11 AF 5225-1



12 AF 5245-1



13 AF 5280-5



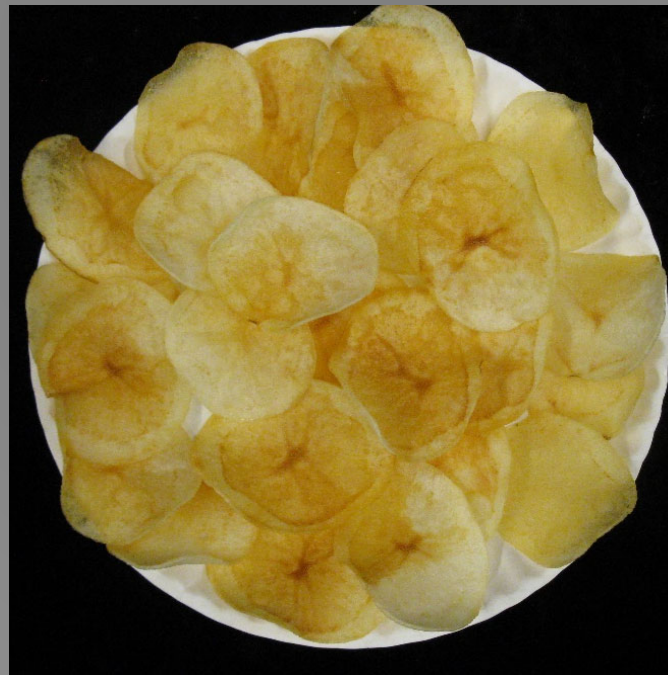
14 AF 5412-3



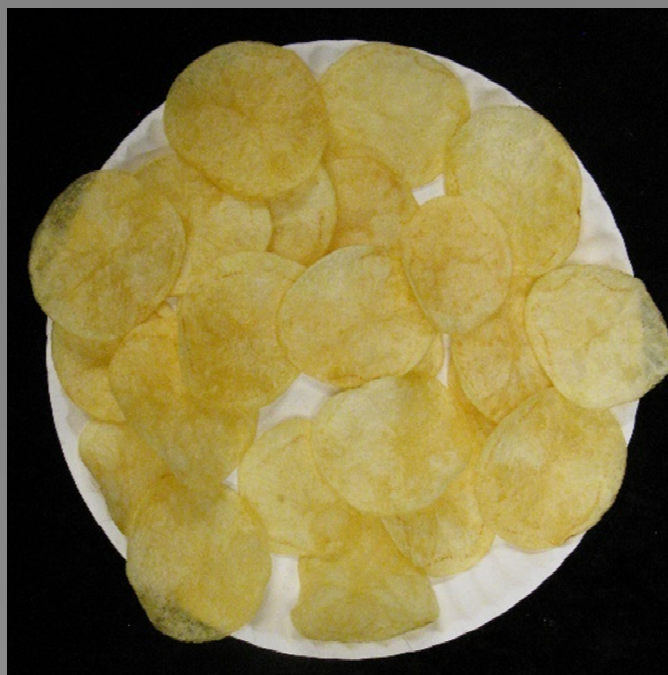
15 AF 5414-1



16 AF 5677-4



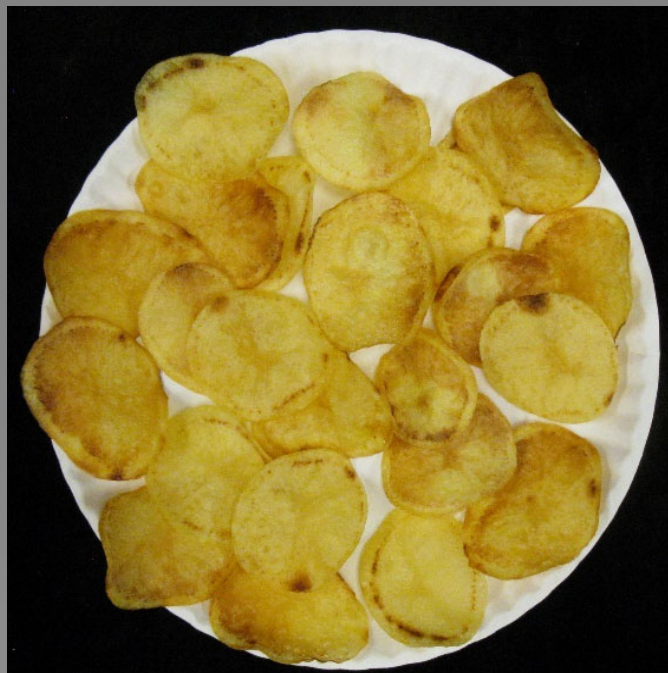
17 B 3012-1



18 NDAF 102629C-4



19 NDAF 113484B-1



20 NY 149



21 NY 151



22 NY 152



23 NY 164



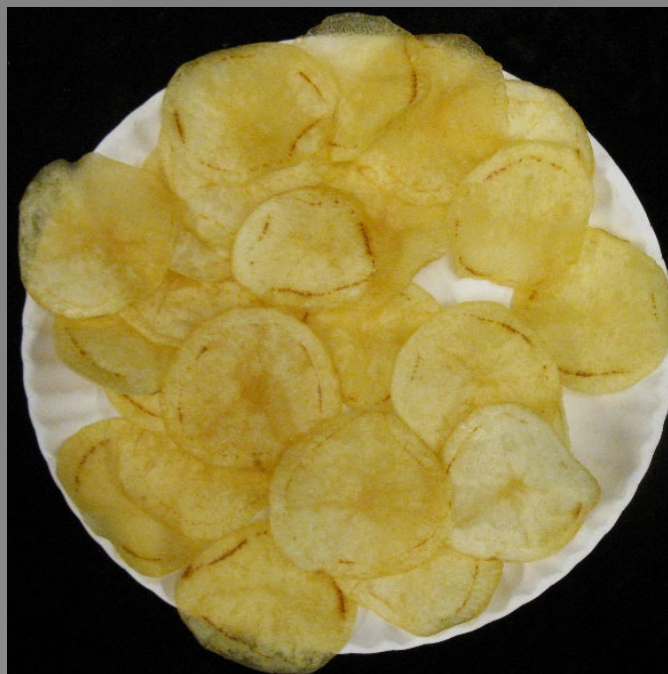
24 WAF 10664-3



25 AF 4648-2



26 AF 5648-3



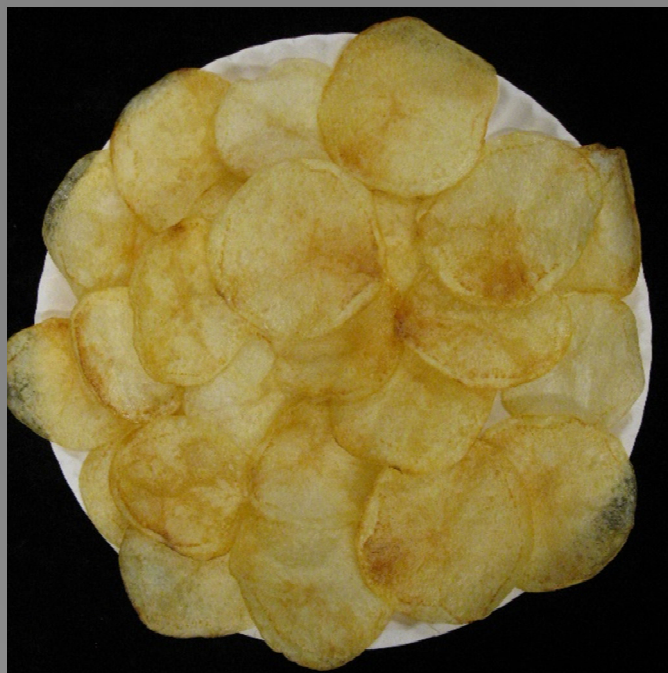
27 AF 5819-2



28 AF 6052-1



29 MSAFB 636-1



30 NDAF 12238Y-2



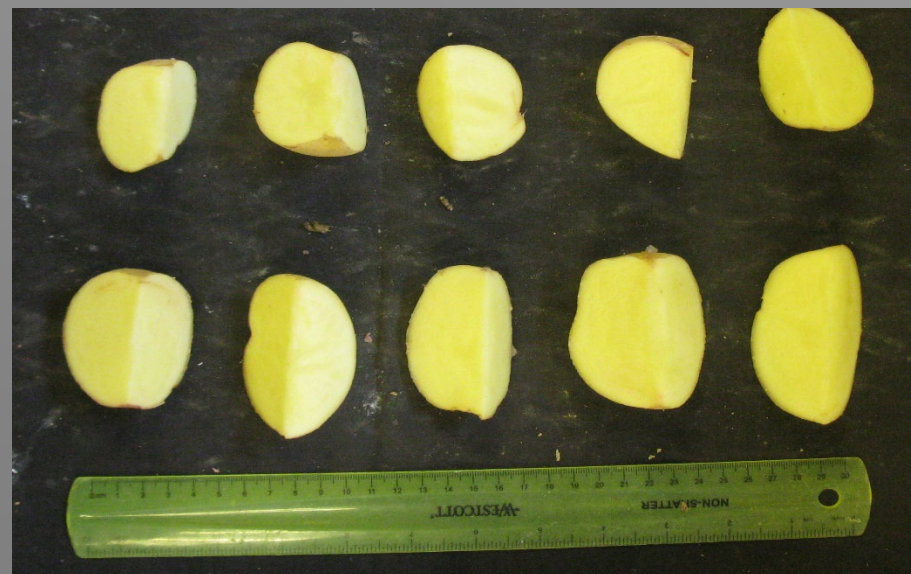
31 NDAF 14424-1



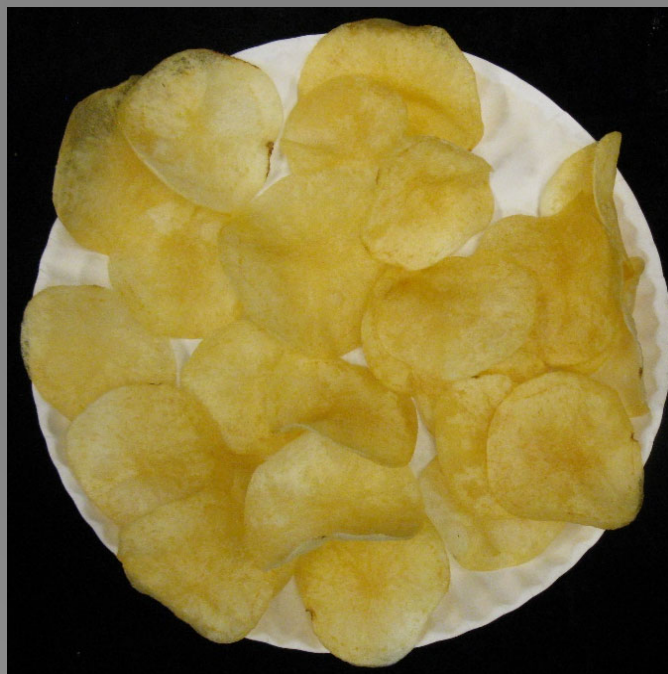
32 NDAF 14424-2



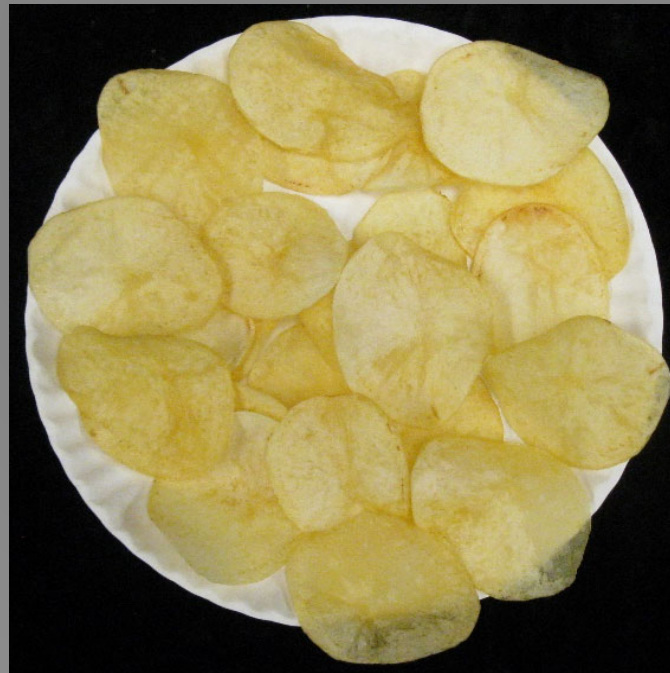
33 NDAF 14477C-2



34 WAF 14096-5



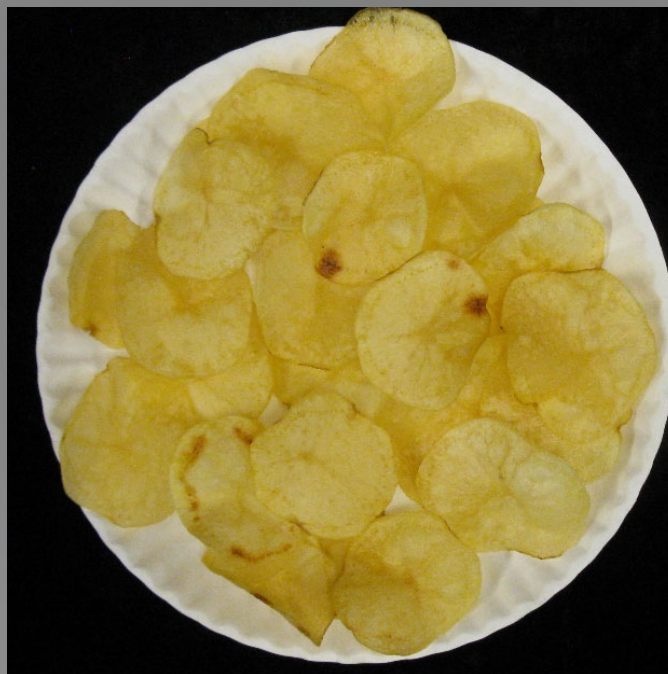
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36 AF 6190-7



37 AF 6197-8



38 AF 6198-2



39 AF 6200-7



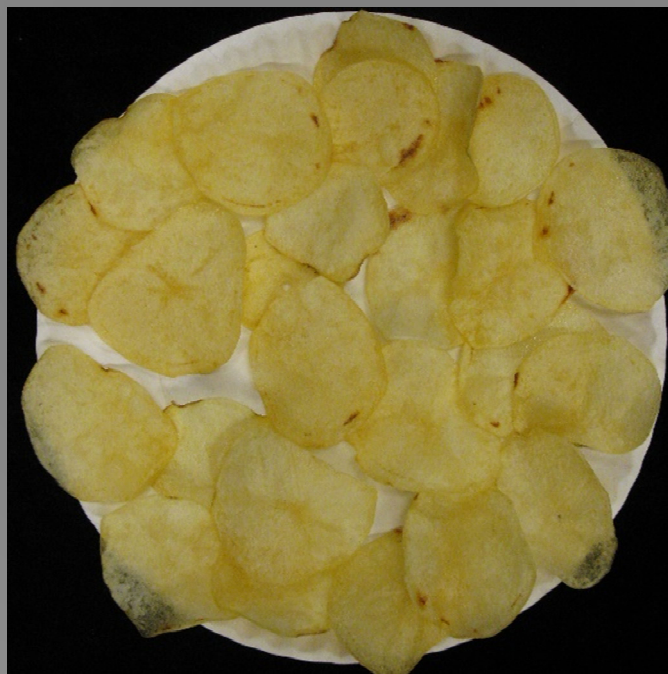
40 AF 6206-3



41 AF 6206-5



42 AF 6221-3



43 AF 6236-7



44 AF 6237-3



45 AF 6245-6



46 AF 6251-3



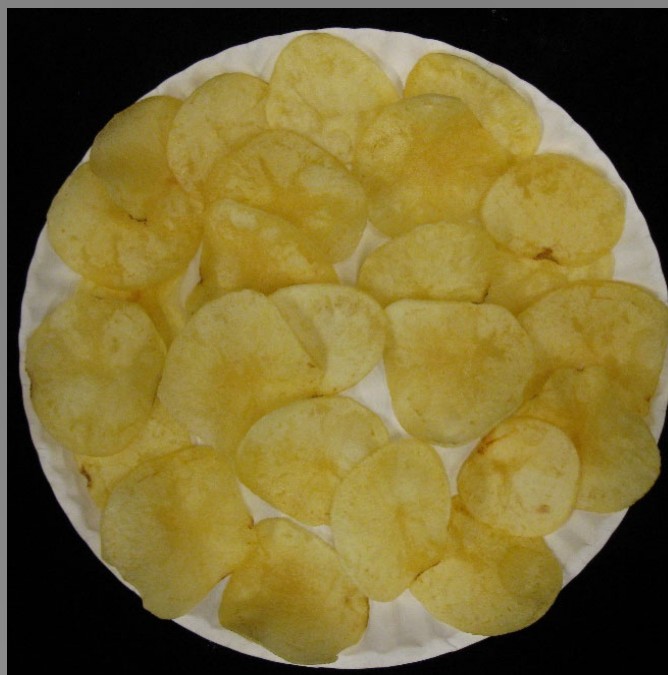
47 AF 6253-1



48 AF 6261-2



49 WAF 15133-1



50 WAF 15184-4



51 WAF 15204-4



52 WAF 15221-2