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2008 OHIO POTATO GERMPLASM EVALUATION REPORT

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The Ohio State University

the
NORTHEAST (NE-1031)
REGIONAL PROJECTS
COOPERATING

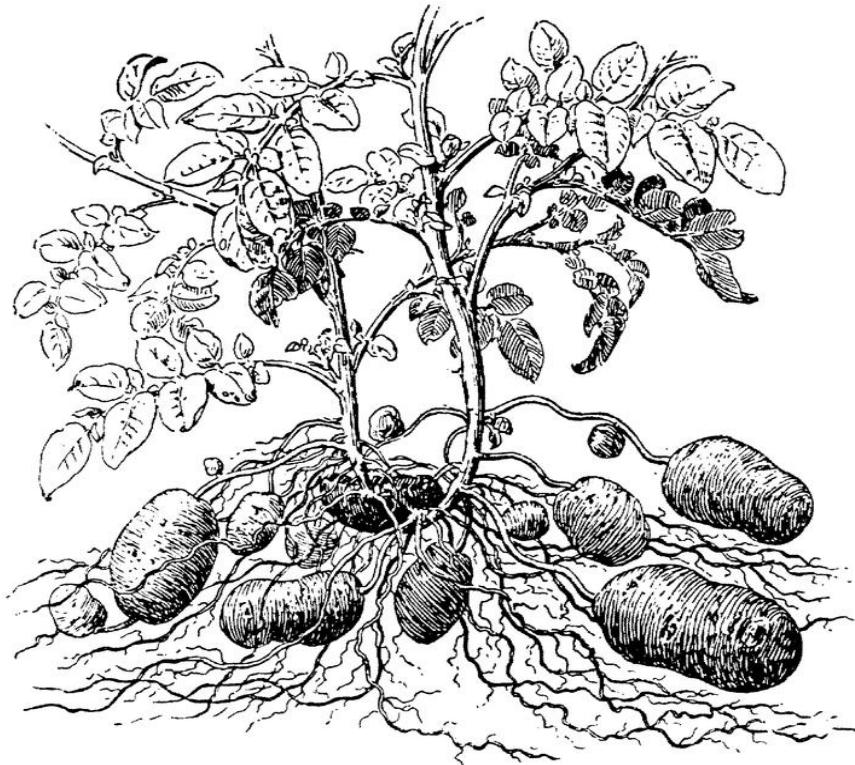


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OHIO POTATO GERMPLASM EVALUATIONS - 2008

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 ninety-two distinct varieties and experimental lines developed in three breeding programs were evaluated in 2008 (Table 1). Entries were placed into one of four experiments completed at the Ohio Agricultural Research and Development Center (OARDC) in Wooster, OH; Northeast Regional Project 1031 (NE-1031), Triple Observation (OBT), Double Observation (OBD) and Single Observation (OBS). Named varieties were included in at least one study, numbered entries in only one study. Entries were contributed by breeding programs in Maine (ME), New York (NY), and USDA (in Beltsville, MD). A total of twenty-nine varieties were contributed by ME, one by NY, thirty-nine by the USDA, with seventeen varieties included as standards. Pictures of the 92 selected varieties have been photographed for reference.

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 the OARDC are not irrigated tends to affect the performance of individual entries. Marketable yield of 5 varieties and seasonal rainfall for 1998-2008 at the OARDC are shown in Table 3.

Procedures

Planting

Seed potatoes were cut on May 7, 8, and 9, 2008 and then cured and stored under recommended temperature and humidity conditions at the OARDC until planting on May 27, 2008. Table 1 lists the cooperating breeding programs. Table 2 list the genotypes used for the four trials. Tables 3-5 contain season and historic information for the study site. Table 6 contains pre-plant soil analysis results. Soil type was a well-drained Wooster silt loam. All entries in the NE-1031 experiment were replicated three times. Entries in the Observation studies were replicated once, twice, or three times depending on seed availability.

Stand Establishment, Crop Yield and Quality

Plots were established on May 27, 2008 and percent stand was recorded four weeks later. Whole plots in the NE-1031 and OBT trials were harvested on September 22, 2008. Whole plots in the OBD and OBS trials were harvested on September 23, 2008.

At grading (October 28, 2008), the total weight of tubers produced by each genotype (across multiple plots, if present) was recorded. Approximately 50% of this total weight -- comprised of a subsample of tubers from all plots of the genotype -- was retained and graded. The weight of tubers in the A-size marketable external appearance, B-size, and cull categories was recorded. These weights were also expressed as percentages of the weight of the graded potatoes. The same percentages were then applied to the total weight of the potatoes produced by the genotype in order to calculate its marketable

yield (cwt/A). Total yield (cwt/A) was calculated for each plot and the average for each genotype was found.

Ratings of tuber external and internal quality were also completed on Nov. 7, 2008. Ten randomly selected 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. These observations, along with yield and quality data, determined which entries were forwarded to chipping quality evaluation.

Chipping Quality Evaluation

Samples were held in refrigerated storage (44-48° F) and then removed from storage and held under ambient conditions (approx. 70° F) until being processed on Dec. 12, 2008.

For chipping quality evaluation, three randomly selected tubers were placed in an abrasive peeler and sliced to an approximate thickness of 0.063 inches (approximately 16 slices per inch). Raw slices were rinsed in cold water and then fried in a continuous fryer containing clear liquid shortening maintained at 190°C (372°F). After frying, a representative sample was taken for visual color evaluation using standards contained in the manual published by the SFA by which chips light in color are scored “1” and very dark chips are scored “5”. Chip color was also measured with an Agtron Electronic Model M-350. Agtron readings and chip color are negatively related (high readings indicate lighter chip color). The percentage of chips with blister(s) greater than 1 cm (0.39 in.) was recorded.

Results

Yield, tuber traits, and chipping quality data are presented in Tables 7-11. Total yield and US #1 yield (cwt/A) averaged 261 and 205 (cwt/A) across all studies respectively, and entries; with a range of 81-345 (total) and 0-296 (US #1). Average total yield averaged 242 cwt/A among varieties and 217 cwt/A among the selections (a study range of 232-327 cwt/A) in the NE-1031 study. Of the 92 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 6, 29, and 57 entries, respectively.

1. Entries having an overall appearance rating of ≥ 7 (good-excellent) at grading.
 - NE-1031: AF 2291-10, AF 2376-5, AF 2393-7, Atlantic, B2327-2, BNC 41-13, BNC 48-1, Chieftan, Dark Red Norland, Kennebec, Yukon Gold
 - Triple Observation: AF 2376-5, AF 2393-7, AF 2497-2, AF 2867-10, AF 2873-1, Dark Red Norland, Superior, Yukon Gold, B2471-12, BCO01283-3, B0766-3, B1816-5, BCO01162-3, B2152-17, B2327-2, B2332-2, BCO01044-2, BCO01306-2, BCO01357-3, BCO01357-4, B2452-3, BNC49-1, BNC49-2, B2467-21, BP153-1, All Blue, Atlantic, Chieftan, Dark Red Norland, Gem Chip, Harley Blackwell, Snowden, Yukon Gold
 - Double Observation: B2486-4, B2489-3, B2491-19, BCO01371-2
 - Single Observation: AF 4006-5, AF 4013-3, AF 4014-9, AF 4015-2, AF 4031-1, AF 4047-3, AF 4054-1, AF 4075-2, AF 4081-2
2. Entries having an external tuber rating of ≥ 7 (good-excellent) at grading and marketable yield \geq

the study average.

- NE-1031: AF 2291-10, Atlantic, Chieftan, Dark Red Norland, Yukon Gold
 - Triple Observation: AF 2497-2, AF 2873-1, Dark Red Norland, Yukon Gold, BCO01283-3, B0766-3, B2152-17, B2332-2, BCO01044-2, BCO01357-3, BCO01357-4, B2452-3, BNC49-1, BNC49-2, B2467-21, BP153-1, Atlantic, Chieftan, Dark Red Norland, Gem Chip, Harley Blackwell, Snowden, Yukon Gold
 - Double Observation: B2486-4, B2489-3, B2491-19
 - Single Observation: AF 4054-1, AF 4075-2, AF 4081-2
3. Entries having a chip score of ≤ 3 .
- NE-1031: AF 2291-10, AF 2431-2, Atlantic, B1816-5, B2327-2, BNC 41-13, BNC 48-1, Dakota Diamond, Kennebec, Snowden, Superior
 - Triple Observation: AF 2497-2, AF 2873-1, B0766-3, B1992-106, BNC49-1, BNC49-2, B2460-23, Atlantic, Harley Blackwell, Ivory Crisp, Snowden
 - Double Observation: B2485-2, B2486-4, B2489-3, B2491-19, B2494-10, B2494-21
 - Single Observation: AF 4006-1, AF 4006-3, AF 4006-5, AF 4013-3, AF 4014-1, AF 4015-2, AF 4047-2, AF 4047-3, AF 4054-1, AF 4058-1, AF 4071-1, AF 4075-2

Table 1. List of programs participating in the 2008 Ohio Potato Germplasm Evaluations.

-----2008 experiment-----							
Number	Program	Genotypic Codes	NE-1031	Triple Observation	Double Observation	Single ¹ Observation	Total
1	Univ. Maine	AF	5	5		19	29
2	Cornell Univ.	NY	1				1
3	USDA	B	2	13	6		21
		BCO		9	1		10
		BD		1	2		3
		BNC	2	2			4
		BP		1			1
		named	9	14			23
		Total	19	45	9	19	92

¹ Refers to number of single row replicates. All other experiments contained two (Double Observation) or three (NE-1031, Triple Observation) replicates.

Table 2. List of varieties and experimental lines planted in the potato germplasm evaluations at the Ohio Agricultural Research and Development Center (OARDC) in Wooster, OH in 2008.

Experiment			
NE-1031	Triple Observation	Double Observation	Single Observation
1. AF 2291-10	20. AF 2376-5	65. BD833-1	74. AF 4006-1
2. AF 2376-5	21. AF 2393-7	66. BD856-2	75. AF 4006-3
3. AF 2393-7	22. AF 2497-2	67. B2485-2	76. AF 4006-5
4. AF 2431-2	23. AF 2867-10	68. B2486-4	77. AF 4013-1
5. AF 2574-1	24. AF 2873-1	69. B2489-3	78. AF 4013-3
6. Atlantic	25. D.R. Norland ¹	70. B2491-19	79. AF 4014-1
7. B1816-5	26. Kennebec ¹	71. B2494-10	80. AF 4014-9
8. B2327-2	27. Superior ¹	72. B2494-21	81. AF 4015-1
9. BNC 41-13	28. Yukon Gold ¹	73. BCO01371-2	82. AF 4015-2
10. BNC 48-1	29. B2461-12		83. AF 4015-3
11. Chieftain	30. B2471-12		84. AF 4023-1
12. Dakota Diamond	31. B2500-3		85. AF 4031-1
13. D.R. Norland	32. B2527-5		86. AF 4047-2
14. Katahdin	33. BCO01283-2		87. AF 4047-3
15. Kennebec	34. BCO01283-3		88. AF 4054-1
16. NY 137	35. BCO01401-2		89. AF 4058-1
17. Snowden	36. B0766-3		90. AF 4071-1
18. Superior	37. B1816-5		91. AF 4075-2
19. Yukon Gold	38. B1992-106		92. AF 4081-2
	39. BCO01162-3		
	40. B2152-17		
	41. B2327-2		
	42. B2332-2		
	43. BCO01044-2		
	44. BCO01306-2		
	45. BCO01306-3		
	46. BCO01357-3		
	47. BCO01357-4		
	48. B2452-3		
	49. BNC49-1		
	50. BNC49-2		
	51. B2460-23		
	52. B2467-21		
	53. BP153-1		
	54. BD659-11		
	55. All Blue		
	56. Atlantic		
	57. Chieftan		
	58. D. R. Norland		
	59. Gem Chip		
	60. Harley Blackwell		
	61. Ivory Crisp		
	62. Snowden		
	63. Superior		
	64. Yukon Gold		

¹ The seed source of these named varieties was the University of Maine.

Table 3. Yield of marketable A-size (cwt/A) tubers free of external defects of standard varieties grown at the OARDC in Wooster, OH 1998-2008.

Variety	Year and Mkt. Yield (cwt/A)										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Atlantic	196	152	175	213	125	240	*	211	327	225	277
Katahdin	205	238	204	61	103	223	204	211	241	232	256
Kennebec	151	118	242	184	116	225	151	164	199	226	203
Russet Burbank	*	*	150	41	19	151	*	*	*	*	*
Superior	167	165	174	66	100	218	146	140	149	141	226
Yukon Gold	248	174	224	165	103	135	164	155	222	223	255
Rainfall (inches, July-Aug)	6.31	5.67	5.22	6.2	2.83	10.91	8.5	7.1	7.74	10.57	5.7

Table 4. Cultural, nutrient, and pest management practices for the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2008.

Date planted	27-May-08
Dates harvested	22-Sep-08, 23-Sep-08
2007 main crop	Barley
Fertilizer	10-20-20 400lb/A preplant (disc-in)
Herbicide	Dual-Magnum (2pt/A), Sencor (1 lb/A)
Spacing (ft.) within, between row	1 X 3
Plot width, length (ft.)	3 X 30
Soil conditions at planting	Moist
Irrigation (inches)	None
Sprays applied	17-Jun Asana (8oz/A), Penncozeb (1lb/A), Kocide (1lb/A) 2-Jul Penncozeb (2lb/A), Kocide (1lb/A), Warrior (3oz/A) 8-Jul Penncozeb (2lb/A), Kocide (2lb/A), Warrior (3oz/A) 17-Jul Bravo WS (1.5pt/A), Baythroid (2oz/A) 24-Jul Bravo WS (1.5pt/A), Warrior (3oz/A) 1-Aug Quadris (6oz/A), Provado (3oz/A) 7-Aug Bravo (2pt/A), Kocide (1lb/A) 21-Aug Dithane DF (2lb/A), Tanos (8oz/A) Provado (3oz/A) 3-Sep Manex (2pt/A) 8-Sep Rely (3pt/A), Sticker (1pt/A), Ammonium Sulfate (4lb/A)

Table 5. Seasonal and historical climatic data for the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2008.

	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Avg. High Temp. (2008) (F)	67.5	80.2	82.9	80.0	77.7	62.0
Avg. Low Temp. (2008) (F)	45.0	58.9	60.4	56.5	52.7	38.7
Avg. Temp. (2008) (F)	56.3	69.3	71.9	68.2	64.9	49.7
Normal Avg. Temp. (Historical) (F)	58.5	67.6	71.5	69.9	65.6	52.1
Total Precip. (2008) (in.)	2.7	5.8	4.5	1.3	2.9	1.5
Normal Avg. Precip. (Historical) (in.)	3.9	3.9	4.1	3.6	3.1	2.3
Precip. deficit/surplus (2008) (in.)						
period	-1.23	1.89	0.35	-2.33	-0.24	-0.77
cumulative	-1.23	0.66	1.01	-1.32	-1.56	-2.33

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Table 6. Soil analyses for land used in the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2008.

<u>Factor</u>	<u>Level</u>
pH	6.3
P ($\mu\text{g/g}$)	47
K($\mu\text{g/g}$)	118
Ca ($\mu\text{g/g}$)	833
Mg ($\mu\text{g/g}$)	181

Soil analyses conducted at Service Testing and Analytical Research (STAR) Lab at the OARDC.

Table 7. Percent stand, yield, and chip quality for entries grown in the Ohio NE-1031 Regional Project experiment in 2008.

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 %	Agtron 350
8	1 AF 2291-10	93	315	274	87	3	10	1.090	1.094	3	0	24.9
	2 AF 2376-5	94	285	222	78	3	19	1.094	1.099	4	0	19.2
	3 AF 2393-7	97	251	193	77	17	6	1.076	1.082	4	0	18.1
	4 AF 2431-2	91	232	183	79	14	7	1.101	1.102	3	0	27.0
	5 AF 2574-1	97	296	256	86	3	10	1.087	1.091	4	0	19.3
	6 Atlantic	93	315	258	82	2	16	1.102	1.103	3	0	26.9
	7 B1816-5	98	269	238	88	5	6	1.081	1.082	2	0	29.2
	8 B2327-2	98	237	185	78	13	9	1.074	1.079	3	0	20.9
	9 BNC 41-13	96	273	221	81	11	9	1.092	1.096	2	0	27.2
	10 BNC 48-1	93	278	221	80	10	10	1.097	1.101	2	0	31.4
	11 Chieftain	97	278	232	83	4	13	1.077	1.079	5	0	13.3
	12 Dakota Diamond	88	275	226	82	4	14	1.098	1.100	2	0	34.3
	13 D.R. Norland	94	324	270	83	6	11	1.069	1.072	4	0	18.7
	14 Katahdin	86	289	256	89	2	9	1.081	1.082	4	0	22.9
	15 Kennebec	87	278	188	68	3	29	1.077	1.078	3	0	27.8
	16 NY 137	96	235	182	77	6	16	1.070	1.073	4	0	21.7
	17 Snowden	88	327	278	85	4	11	1.095	1.099	2	0	35.1
	18 Superior	84	273	226	83	3	14	1.079	1.082	3	20	29.6
	19 Yukon Gold	94	289	248	86	1	13	1.087	1.088	4	50	21.9
Average		93	280	229	82	6	12	1.086	1.089	3	0	24.7

¹ Specific gravity recorded prior to chipping (Dec. 3; tuber temperature 50° F water temperature 48° F). Per SFA no correction factor needed. See reference table on page 17 for starch and dry matter conversions.

² Specific gravity recorded at chipping (Dec. 12; tuber temperature of 64° F, water temperature of 74° F). SFA reports a correction factor of -0.0012 to be applied.

³ SFA Standard (1=light, 5=dark).

⁴ Percentage of chips that developed blisters greater than 1 cm in diameter during the frying process.

Table 8. Tuber characteristics for entries grown in the Ohio NE-1031 Regional Project experiment in 2008.

Entry #	Entry Name	External ¹					Internal ²				Vsclr	% Defected Tubers
		Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Dsclrtn		
1	AF 2291-10	7	4	2	7	7	0	0	0	0	0	0
2	AF 2376-5	9	9	2	3	7	0	0	0	3	30	
3	AF 2393-7	2	9	1	8	8	0	0	0	0	0	
4	AF 2431-2	9	5	6	9	5	0	0	0	0	0	
5	AF 2574-1	6	3	5	8	3	0	0	0	0	0	
6	Atlantic	5	4	1	5	7	0	0	0	2	20	
7	B1816-5	1	9	4	7	5	0	0	0	0	0	
8	B2327-2	2	5	1	8	8	0	0	0	0	0	
9	BNC 41-13	7	3	2	6	7	0	0	0	0	0	
10	BNC 48-1	6	3	1	7	9	0	0	0	0	0	
11	Chieftain	2	7	2	7	9	0	0	0	0	0	
12	Dakota Diamond	9	7	2	6	6	0	0	0	0	0	
13	D.R. Norland	2	8	6	6	8	0	0	0	1	10	
14	Katahdin	9	8	5	7	6	0	0	0	0	0	
15	Kennebec	8	7	6	9	8	0	0	0	0	0	
16	NY 137	9	4	3	7	6	0	0	0	0	0	
17	Snowden	5	3	3	3	5	0	0	0	0	0	
18	Superior	6	5	6	5	6	0	0	0	0	0	
19	Yukon Gold	6	7	2	5	9	0	0	0	0	0	

¹ See reference table for rating system on page 18.

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

Table 9. Percent stand, yield, and chip quality for entries grown in the Ohio Triple Observation Trial in 2008.

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 %	Agtron 350
OBT	20	AF 2376-5	91	268	214	80	2	18	1.100	1.099	4	10	29.5
OBT	22	AF 2497-2	96	301	258	86	1	14	1.084	1.089	2	0	37.5
OBT	24	AF 2873-1	89	300	239	80	9	12	1.086	1.090	2	0	36.4
OBT	28	Yukon Gold	94	280	249	89	2	9	1.083	1.087	4	0	23.0
OBT	29	B2461-12	83	260	211	81	10	9	1.100	1.100	4	0	23.7
OBT	30	B2471-12	91	282	218	77	15	7	1.090	1.094	4	20	21.4
OBT	31	B2500-3	84	266	215	81	7	12	1.087	1.089	4	0	17.9
OBT	36	B0766-3	89	279	236	85	3	12	1.090	1.096	3	10	37.8
OBT	37	B1816-5	98	256	223	87	8	5	1.080	1.082	4	0	22.6
OBT	38	B1992-106	93	313	279	89	4	7	1.093	1.098	2	0	30.2
OBT	39	BCO01162-3	89	255	180	70	22	7	1.086	1.092	4	20	17.4
OBT	43	BCO01044-2	90	272	232	85	3	11	1.081	1.085	5	0	0.9
OBT	44	BCO01306-2	96	250	187	75	20	5	1.091	1.094	5	20	14.1
OBT	45	BCO01306-3	94	233	133	57	30	13	1.088	1.091	4	0	17.1
OBT	46	BCO01357-3	87	284	251	88	7	4	1.084	1.090	4	0	18.7
OBT	47	BCO01357-4	89	300	283	94	6	0	1.081	1.085	5	0	19.3
OBT	49	BNC49-1	91	322	273	85	4	12	1.083	1.087	2	10	34.5
OBT	50	BNC49-2	100	309	283	92	3	5	1.095	1.098	2	0	32.3
OBT	51	B2460-23	83	330	281	85	6	9	1.105	1.101	3	10	30.1
OBT	55	All Blue	88	241	160	66	25	9	1.080	1.084	5	0	0.8
OBT	56	Atlantic	86	336	296	88	4	8	1.096	1.100	3	10	26.7
OBT	59	Gem Chip	94	323	277	86	3	11	1.085	1.089	4	0	26.1
OBT	60	Harley Blackwell	94	314	267	85	8	7	1.084	1.087	3	0	29.3
OBT	61	Ivory Crisp	93	323	272	84	5	11	1.096	1.099	3	40	25.4
OBT	62	Snowden	93	299	266	89	6	5	1.096	1.098	3	0	26.5
OBT	64	Yukon Gold	89	296	270	91	2	7	1.085	1.086	4	10	26.7
Average			91	288	240	83	8	9	1.089	1.092	3	0	24.1

Table 9 (cont.). Percent stand, yield, and chip quality for entries grown in the Ohio Double Observation Trial in 2008.

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 %	Agtron 350
OBD	67	B2485-2	93	300	262	87	4	9	1.08	1.082	3	0	34.2
OBD	68	B2486-4	97	264	224	85	10	5	1.08	1.084	2	10	37.0
OBD	69	B2489-3	98	251	199	79	5	16	1.096	1.098	3	0	32.1
OBD	70	B2491-19	83	248	199	80	12	8	1.088	1.092	3	0	28.3
OBD	71	B2494-10	90	327	280	86	3	12	1.092	1.095	3	70	33.2
OBD	72	B2494-21	97	293	194	66	5	29	1.092	1.094	3	0	28.3
Average			93	280	226	81	6	13	1.088	1.091	2	10	32.2

Table 9 (cont.). Percent stand, yield, and chip quality for entries grown in the Ohio Single Observation Trial in 2008.

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 %	Agtron 350
OBS	74	AF 4006-1	93	261	199	76	19	4	1.096	1.094	2	0	32.2
OBS	75	AF 4006-3	93	309	282	91	4	5	1.085	1.088	3	10	27.6
OBS	76	AF 4006-5	87	217	168	77	12	11	1.098	1.094	3	10	30.8
OBS	78	AF 4013-3	90	232	186	80	12	7	1.098	1.096	2	10	36.1
OBS	79	AF 4014-1	100	342	290	85	4	12	1.097	1.094	2	0	32.2
OBS	81	AF 4015-1	100	194	160	82	4	14	1.080	1.081	4	0	17.7
OBS	82	AF 4015-2	93	187	151	81	5	14	1.090	1.091	3	0	27.4
OBS	83	AF 4015-3	93	213	131	61	5	34	1.081	1.083	4	0	22.0
OBS	85	AF 4031-1	83	157	100	64	26	10	1.089	1.087	4	60	18.1
OBS	86	AF 4047-2	100	248	195	79	5	17	1.086	1.087	2	0	31.4
OBS	87	AF 4047-3	90	239	196	82	3	14	1.103	1.094	2	0	36.1
OBS	88	AF 4054-1	90	322	232	72	4	24	1.105	1.095	2	10	37.0
OBS	89	AF 4058-1	97	280	225	80	3	16	1.085	1.087	3	70	30.2
OBS	90	AF 4071-1	97	243	184	76	5	19	1.105	1.096	2	10	28.5
OBS	91	AF 4075-2	100	306	225	74	5	21	1.090	1.092	3	30	25.0
OBS	92	AF 4081-2	87	243	201	83	4	13	1.083	1.081	4	0	17.7
Average			93	250	195	78	8	15	1.092	1.090	3	10	28.1

¹ Specific gravity recorded prior to chipping (Dec. 3; tuber temperature 50° F water temperature 48° F). Per SFA no correction factor needed. See reference table on page 17 for starch and dry matter conversions.

² Specific gravity recorded at chipping (Dec. 12; tuber temperature of 64° F, water temperature of 74° F).

SFA reports a correction factor of -0.0012 to be applied.

³ SFA Standard (1=light, 5=dark).

⁴ Percentage of chips that developed blisters greater than 1 cm in diameter during the frying process.

Table 10. Tuber characteristics for entries grown in the Ohio Triple Observation Trial and selected for chipping quality in 2008

Study	Entry #	Entry Name	External ¹					Internal ²				% Defected Tubers
			Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrt	
OBT	20	AF 2376-5	8	7	2	6	8	0	0	0	4	40
OBT	21	AF 2393-7	2	7	3	8	8	0	0	0	0	0
OBT	22	AF 2497-2	9	8	2	3	7	0	0	0	2	20
OBT	23	AF 2867-10	7	4	2	8	8	0	0	0	0	0
OBT	24	AF 2873-1	8	5	2	8	8	0	0	0	1	10
OBT	25	D.R. Norland	2	8	6	3	8	1	0	0	1	20
OBT	26	Kennebec	9	7	6	3	4	0	0	0	0	0
OBT	27	Superior	9	5	6	4	8	0	0	0	0	0
OBT	28	Yukon Gold	9	5	2	6	9	0	0	0	0	0
OBT	29	B2461-12	7	4	5	8	6	0	0	0	1	10
OBT	30	B2471-12	8	8	4	6	7	0	0	0	1	10
OBT	31	B2500-3	7	6	3	7	6	0	0	1	3	40
OBT	32	B2527-5	9	7	1	9	4	0	0	0	0	0
OBT	33	BCO01283-2	2	7	3	9	6	0	0	0	0	0
OBT	34	BCO01283-3	2	7	6	9	7	0	0	0	0	0
OBT	35	BCO01401-2	1	8	3	8	6	0	0	0	0	0
OBT	36	B0766-3	7	4	6	5	8	0	0	0	0	0
OBT	37	B1816-5	1	6	6	8	8	0	0	0	0	0
OBT	38	B1992-106	5	3	4	8	6	2	0	0	0	20
OBT	39	BCO01162-3	1	8	9	9	7	0	0	0	0	0
OBT	40	B2152-17	2	7	5	7	8	0	0	0	1	10
OBT	41	B2327-2	2	6	1	5	9	0	0	0	0	0
OBT	42	B2332-2	2	7	2	8	8	0	0	0	0	0
OBT	43	BCO01044-2	1	8	6	9	9	0	0	0	0	0
OBT	44	BCO01306-2	2	8	4	8	9	0	0	0	0	0
OBT	45	BCO01306-3	2	9	8	9	6	0	0	0	0	0
OBT	46	BCO01357-3	2	8	4	7	8	0	0	0	0	0
OBT	47	BCO01357-4	2	8	3	7	7	0	0	0	0	0
OBT	48	B2452-3	7	5	2	7	8	1	0	0	0	10
OBT	49	BNC49-1	7	6	2	4	7	0	0	0	0	0
OBT	50	BNC49-2	6	5	1	2	7	2	0	0	0	20
OBT	51	B2460-23	6	4	2	7	5	0	0	0	0	0
OBT	52	B2467-21	9	7	3	7	7	0	0	0	0	0
OBT	53	BP153-1	7	7	2	7	8	0	0	0	0	0
OBT	54	BD659-11	3	7	2	8	1	0	0	0	0	0
OBT	55	All Blue	1	8	9	7	9	0	0	0	0	0
OBT	56	Atlantic	6	3	3	5	7	1	0	0	0	10
OBT	57	Chieftan	2	7	1	9	9	0	0	0	0	0
OBT	58	D. R. Norland	2	7	5	7	9	0	0	0	0	0
OBT	59	Gem Chip	8	9	1	6	7	0	0	0	0	0
OBT	60	Harley Blackwell	5	5	1	8	7	0	0	0	1	10
OBT	61	Ivory Crisp	6	5	2	3	6	0	0	0	1	10
OBT	62	Snowden	5	3	2	5	7	0	0	0	1	10
OBT	63	Superior	8	6	5	6	5	0	0	0	0	0
OBT	64	Yukon Gold	7	6	2	2	7	0	0	0	2	20

Table 10 (cont.). Tuber characteristics for entries grown in the Ohio Double Observation Trial and selected for chipping quality in 2008.

Study	Entry #	Entry Name	External ¹					Internal ²				
			Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrt	% Defected Tubers
OBD	65	BD833-1	3	7	8	7	3	0	0	0	0	0
	66	BD856-2	2	5	5	6	2	0	0	0	1	10
	67	B2485-2	9	7	2	7	6	0	0	0	0	0
	68	B2486-4	6	3	2	7	8	0	0	0	2	20
	69	B2489-3	7	4	2	9	8	1	0	0	2	30
	70	B2491-19	6	3	3	9	9	0	0	0	0	0
	71	B2494-10	5	3	2	7	6	1	0	0	0	10
	72	B2494-21	9	6	3	7	6	0	0	0	0	0
	73	BCO01371-2	2	7	2	7	8	0	0	0	0	0

Table 10 (cont.). Tuber characteristics for entries grown in the Ohio Single Observation Trial and selected for chipping quality in 2008.

Study	Entry #	Entry Name	External ¹					Internal ²				Vsclr	% Defected Tubers
			Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Dsclrtn		
OBS	74	AF 4006-1	7	4	3	8	6	0	0	0	0	0	0
OBS	75	AF 4006-3	7	6	2	8	5	0	0	0	0	0	0
OBS	76	AF 4006-5	7	8	5	7	8	0	0	0	0	0	0
OBS	77	AF 4013-1	9	7	4	7	6	0	0	0	0	0	0
OBS	78	AF 4013-3	8	8	3	9	7	0	0	0	0	0	0
OBS	79	AF 4014-1	7	5	2	2	3	0	0	0	3	30	
OBS	80	AF 4014-9	9	7	2	7	8	0	0	0	0	0	0
OBS	81	AF 4015-1	8	9	1	8	6	0	0	0	0	0	0
OBS	82	AF 4015-2	8	5	2	6	8	0	0	0	0	0	0
OBS	83	AF 4015-3	9	7	2	4	6	0	0	0	0	0	0
OBS	84	AF 4023-1	7	7	2	6	3	0	0	0	0	0	0
OBS	85	AF 4031-1	9	9	4	9	8	0	0	0	0	0	0
OBS	86	AF 4047-2	7	5	2	7	5	0	0	0	0	0	0
OBS	87	AF 4047-3	6	4	2	6	7	0	0	0	4	40	
OBS	88	AF 4054-1	7	6	4	8	7	0	0	0	2	20	
OBS	89	AF 4058-1	9	8	4	7	5	0	0	0	0	0	0
OBS	90	AF 4071-1	9	6	2	5	6	0	0	0	1	10	
OBS	91	AF 4075-2	9	7	3	8	8	0	0	0	1	10	
OBS	92	AF 4081-2	7	6	2	7	8	0	0	0	2	20	

¹ See reference table for rating system on page 18.

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

Table 11. Percent stand and total yield for entries grown in the Ohio Observation Plots but not selected for chipping quality evaluation in 2008.

Study	Entry #	Entry Name	Stand %	Total cwt/A	US #1 cwt/A	US #1 %	B-Size %	Cull %	Specific Gravity ¹
OBT	21	AF 2393-7	81	218	179	82	12	6	1.068
OBT	23	AF 2867-10	99	256	214	83	2	14	1.079
OBT	25	D.R. Norland	98	329	288	88	4	8	1.071
OBT	26	Kennebec	87	298	218	73	2	25	1.076
OBT	27	Superior	92	265	218	82	3	15	1.073
OBT	32	B2527-5	94	104	0	0	100	0	.
OBT	33	BCO01283-2	86	256	205	80	14	6	1.075
OBT	34	BCO01283-3	88	343	275	80	13	7	1.072
OBT	35	BCO01401-2	92	219	163	74	22	4	1.076
OBT	40	B2152-17	89	292	241	82	13	5	1.079
OBT	41	B2327-2	96	256	202	79	16	5	1.077
OBT	42	B2332-2	91	285	254	89	5	6	1.074
OBT	48	B2452-3	88	266	230	86	3	10	1.078
OBT	52	B2467-21	82	282	244	83	5	12	1.100
OBT	53	BP153-1	97	345	285	82	1	17	1.073
OBT	54	BD659-11	88	81	81	0	100	0	.
OBT	57	Chieftan	91	309	263	85	6	9	1.076
OBT	58	D. R. Norland	93	312	276	88	6	6	1.066
OBT	63	Superior	89	273	234	86	4	10	1.075
OBD	65	BD833-1	88	137	0	0	100	0	.
OBD	66	BD856-2	100	94	0	0	100	0	.
OBD	73	BCO01371-2	85	211	130	62	34	4	1.065
OBS	77	AF 4013-1	100	284	235	83	5	12	1.075
OBS	80	AF 4014-9	100	260	185	71	8	21	1.078
OBS	84	AF 4023-1	97	259	216	84	5	12	1.093

¹ Specific gravity recorded prior to chipping (Dec. 3; tuber temperature 50° F water temperature 48° F).

Per SFA no correction factor needed

See reference table on page 17 for starch and dry matter conversions.

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	1.087	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	1.108	19.40	26.12
1.078	13.42	19.79	1.109	19.60	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. Moderately
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

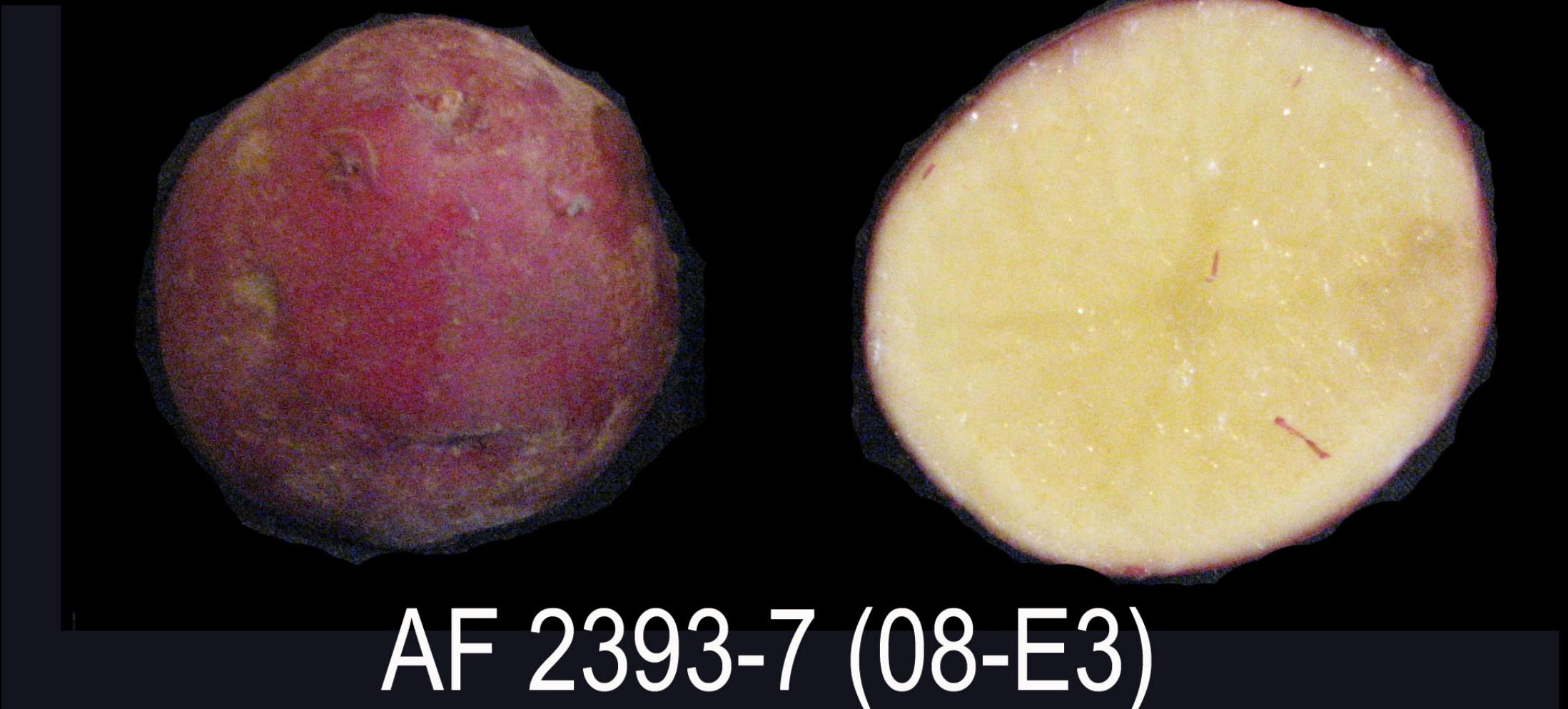
1. Very poor
2. Poor
3. +
4. --
5. Fair
6. +
7. --
8. Good
9. Excellent



AF 2291-10 (08-E1)



AF 2376-5 (08-E2)



AF 2393-7 (08-E3)



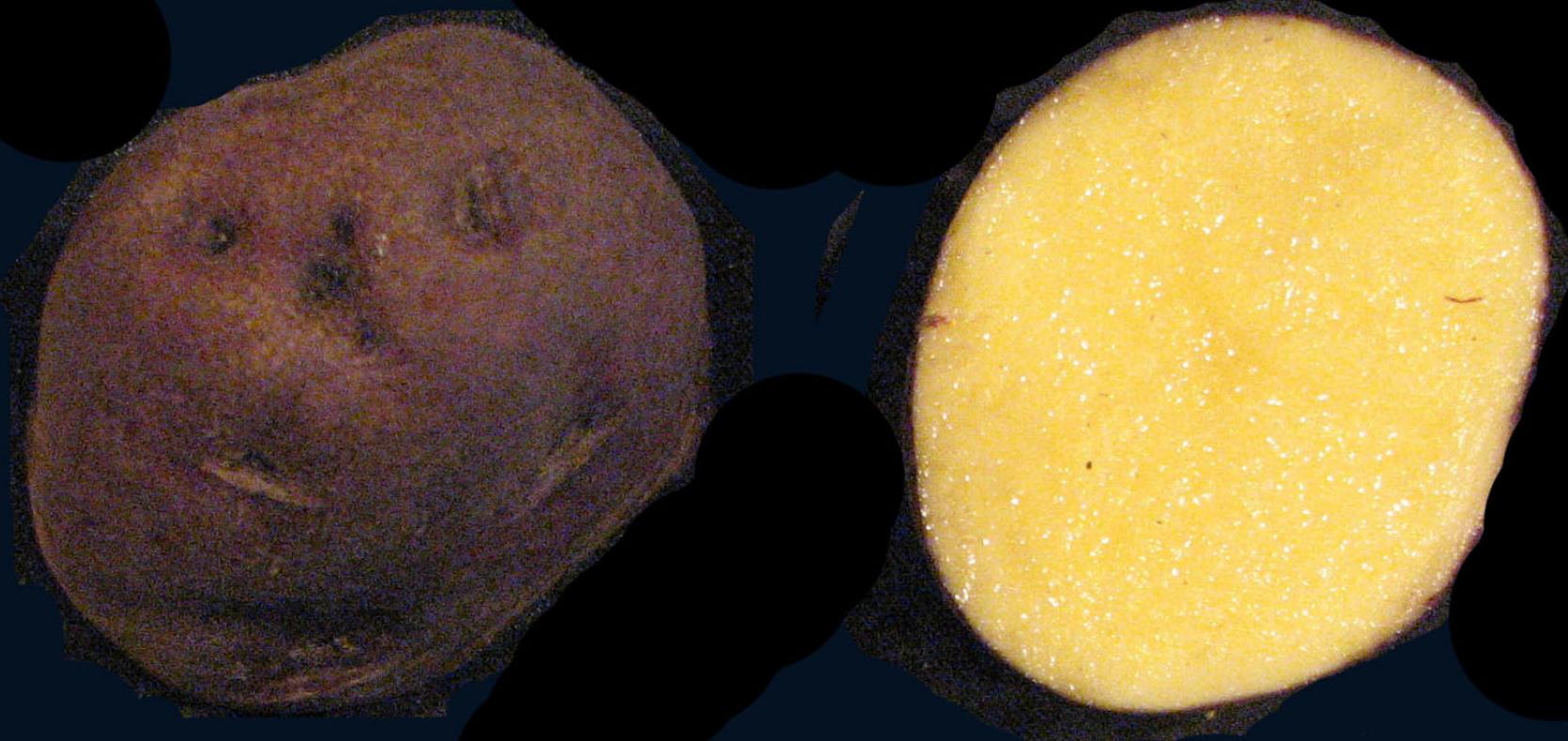
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AF 2574-1 (08-E5)



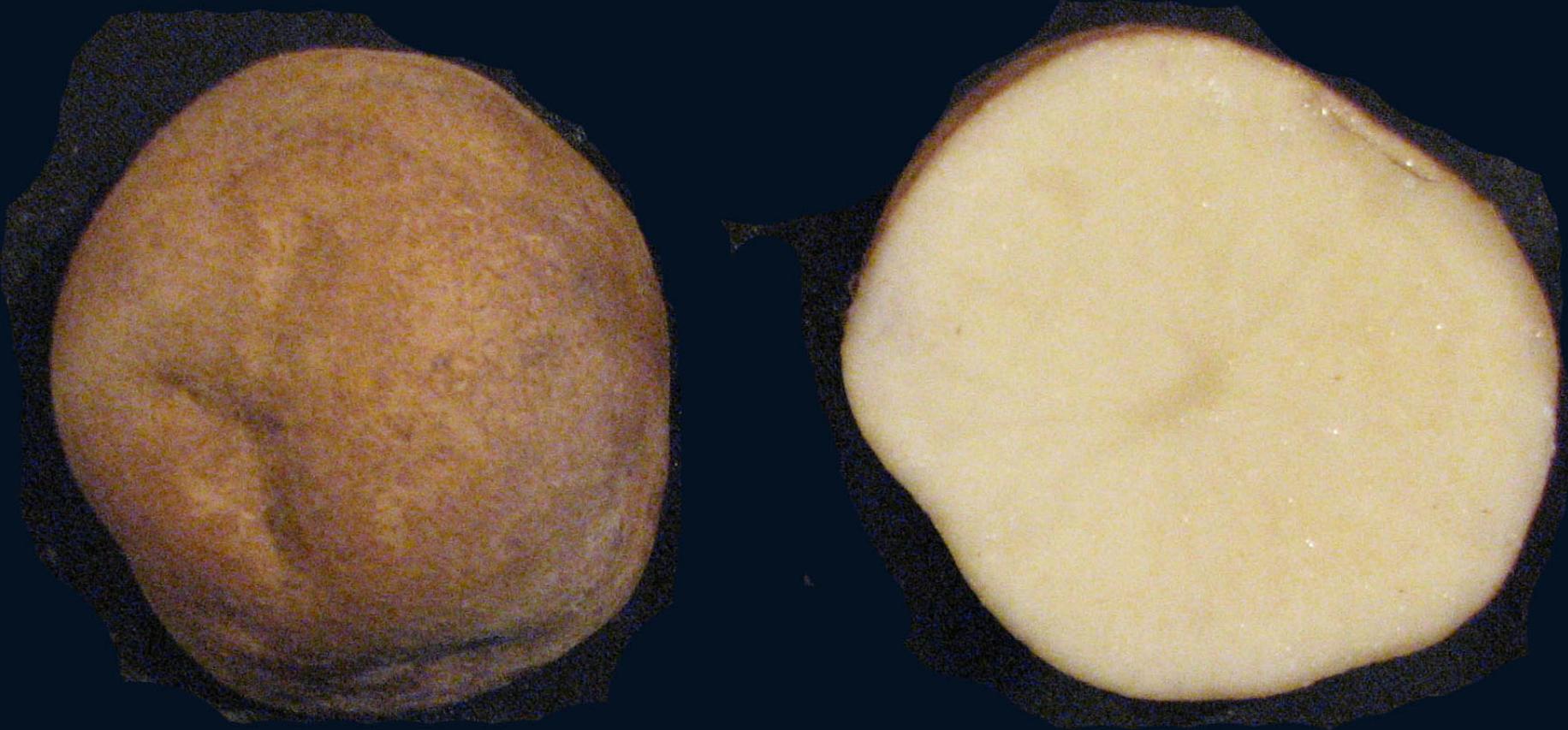
Atlantic (08-E6)



B1816-5 (08-E7)



B2327-2 (08-E8)



BNC 41-13 (08-E9)



BNC 48-1 (08-E10)



Chieftain (08-E11)



Dakota Diamond (08-E12)



D.R. Norland (08-E13)



Katahdin (08-E14)



Kennebec (08-E15)



NY 137 (08-E16)



Snowden (08-E17)



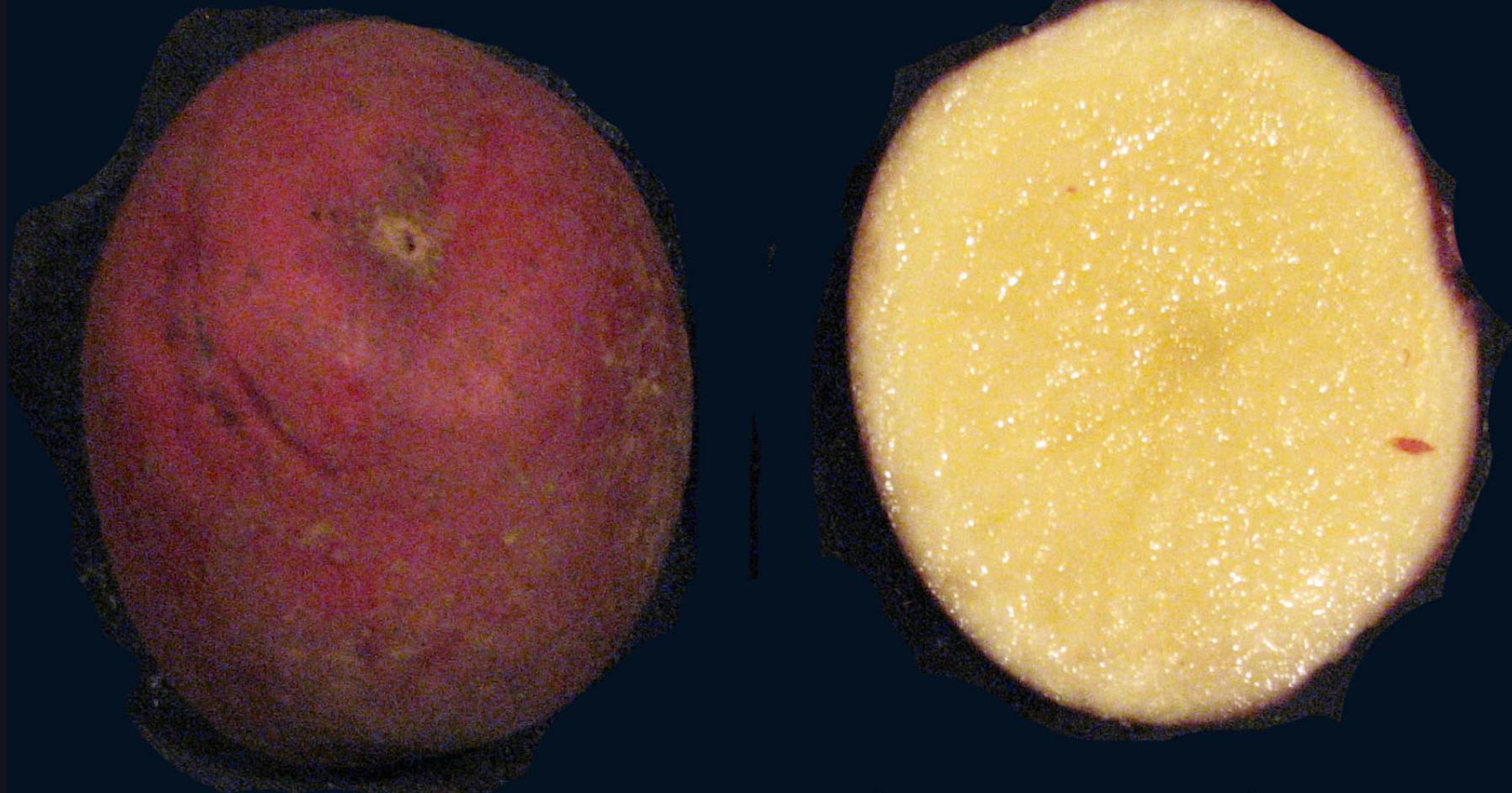
Superior (08-E18)



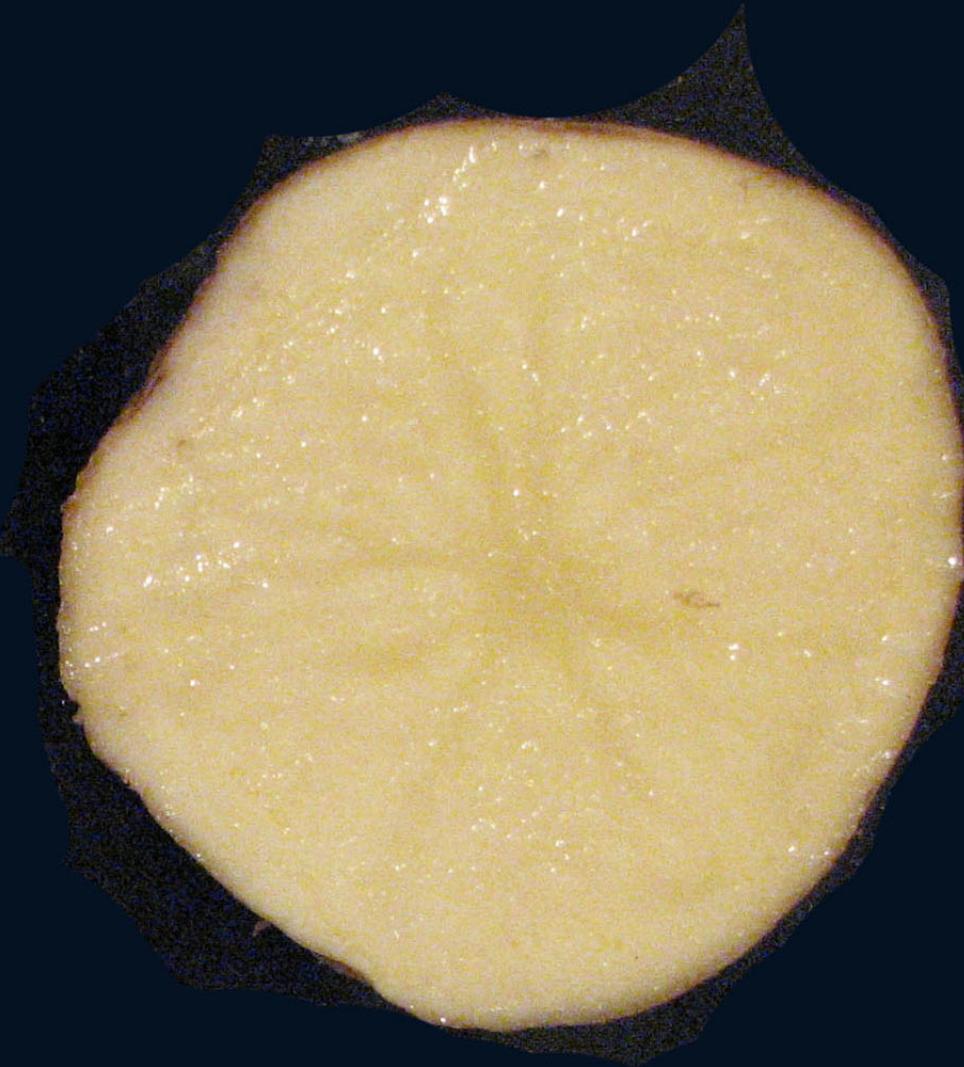
Yukon Gold (08-E19)



AF 2376-5 (08-E20)



AF 2393-7 (08-E21)



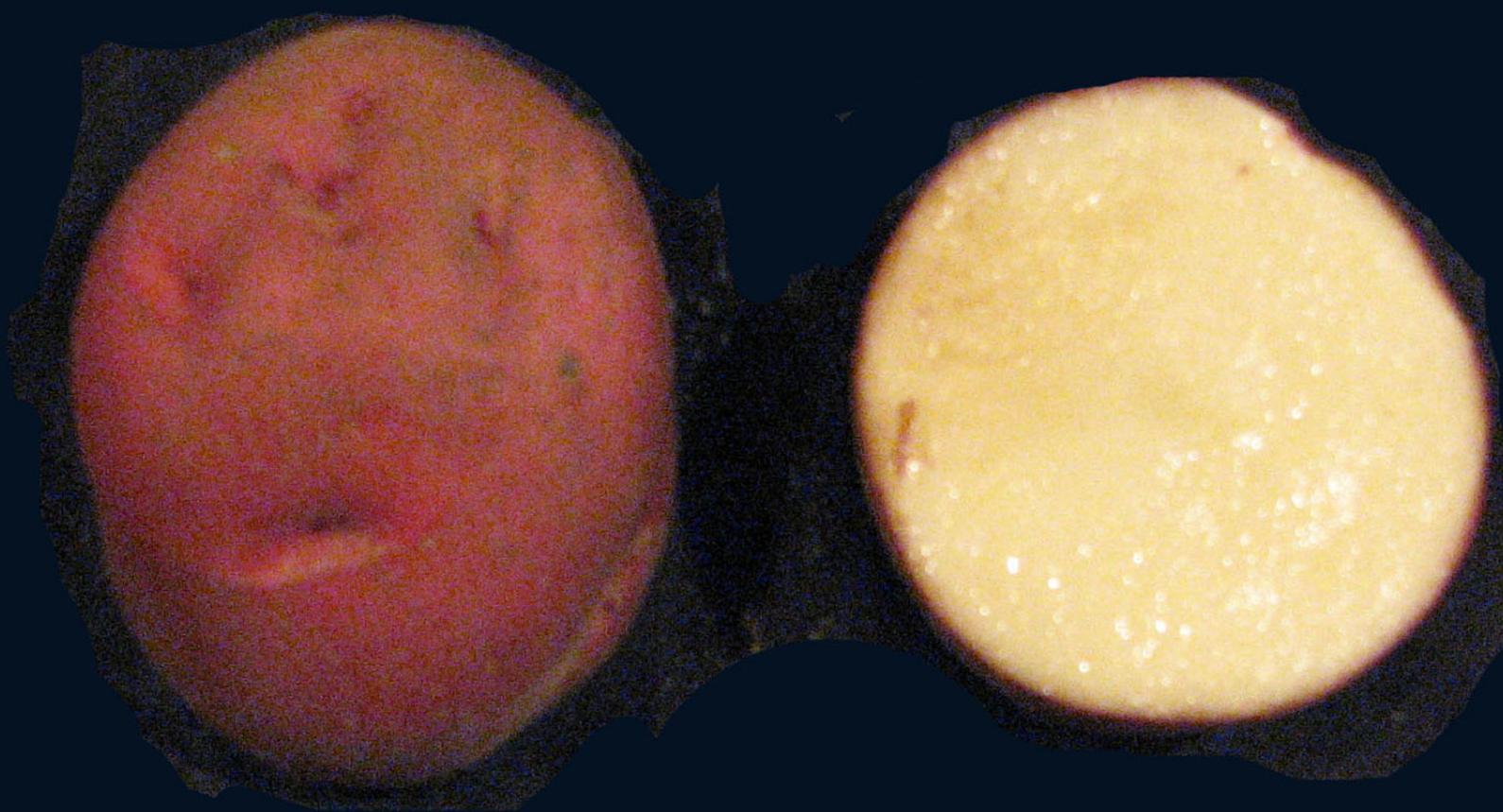
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AF 2867-10 (08-E23)



AF 2873-1 (08-E24)



D.R. Norland (08-E25)



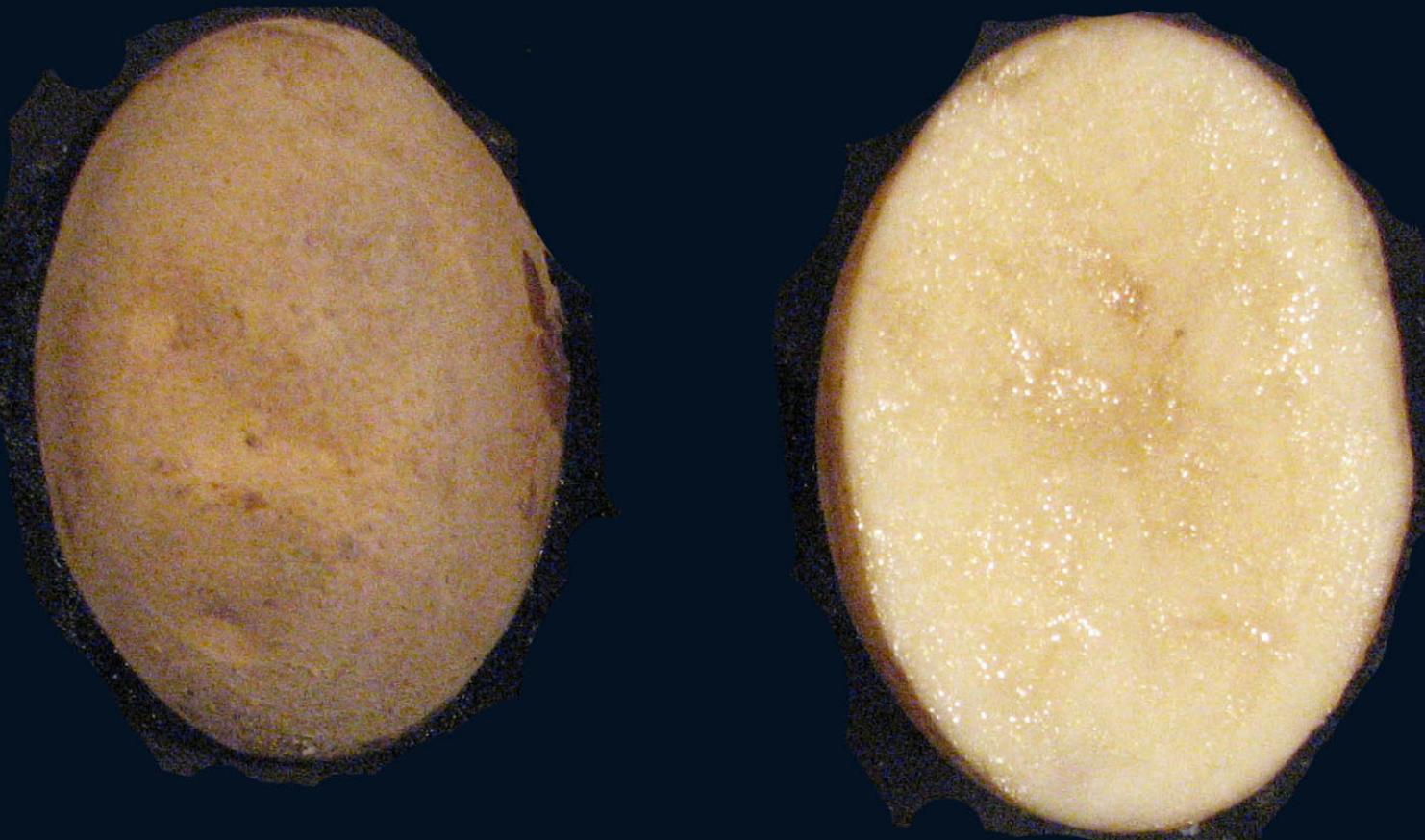
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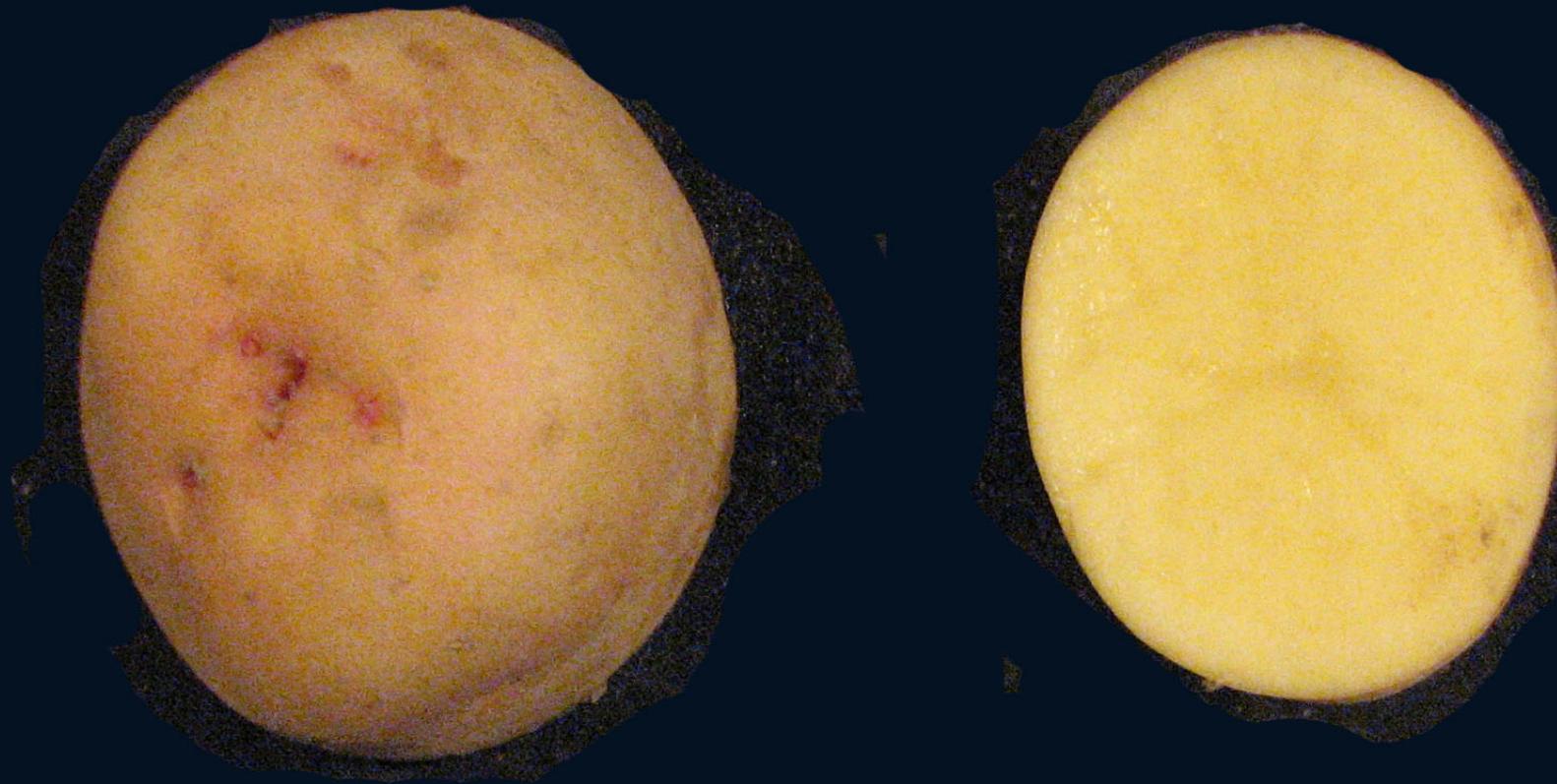
Superior (08-E27)



Yukon Gold (08-E28)



B2461-12 (08-E29)



B2471-12 (08-E30)



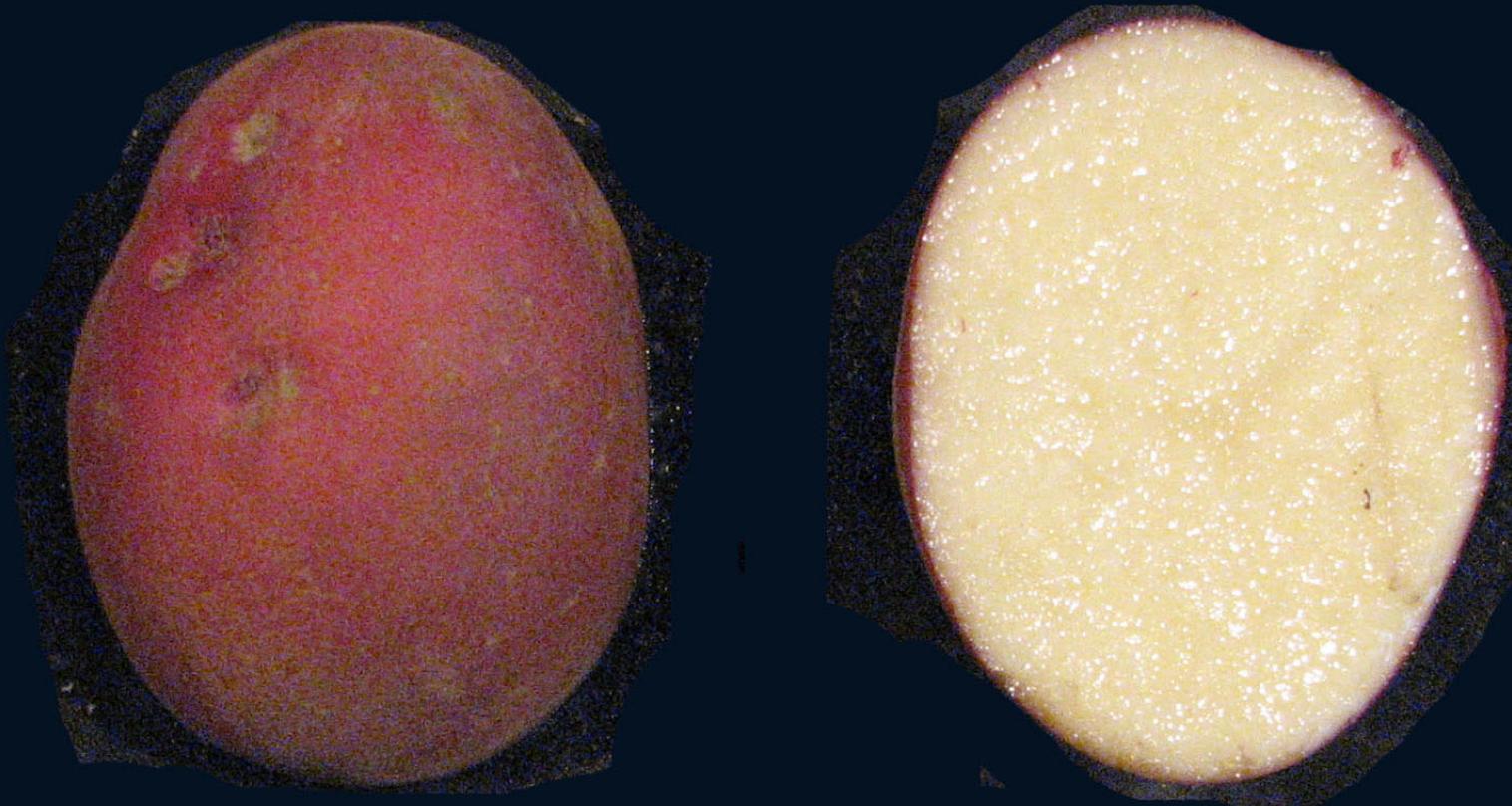
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B2527-5 (08-E32)



BC001283-2 (08-E33)



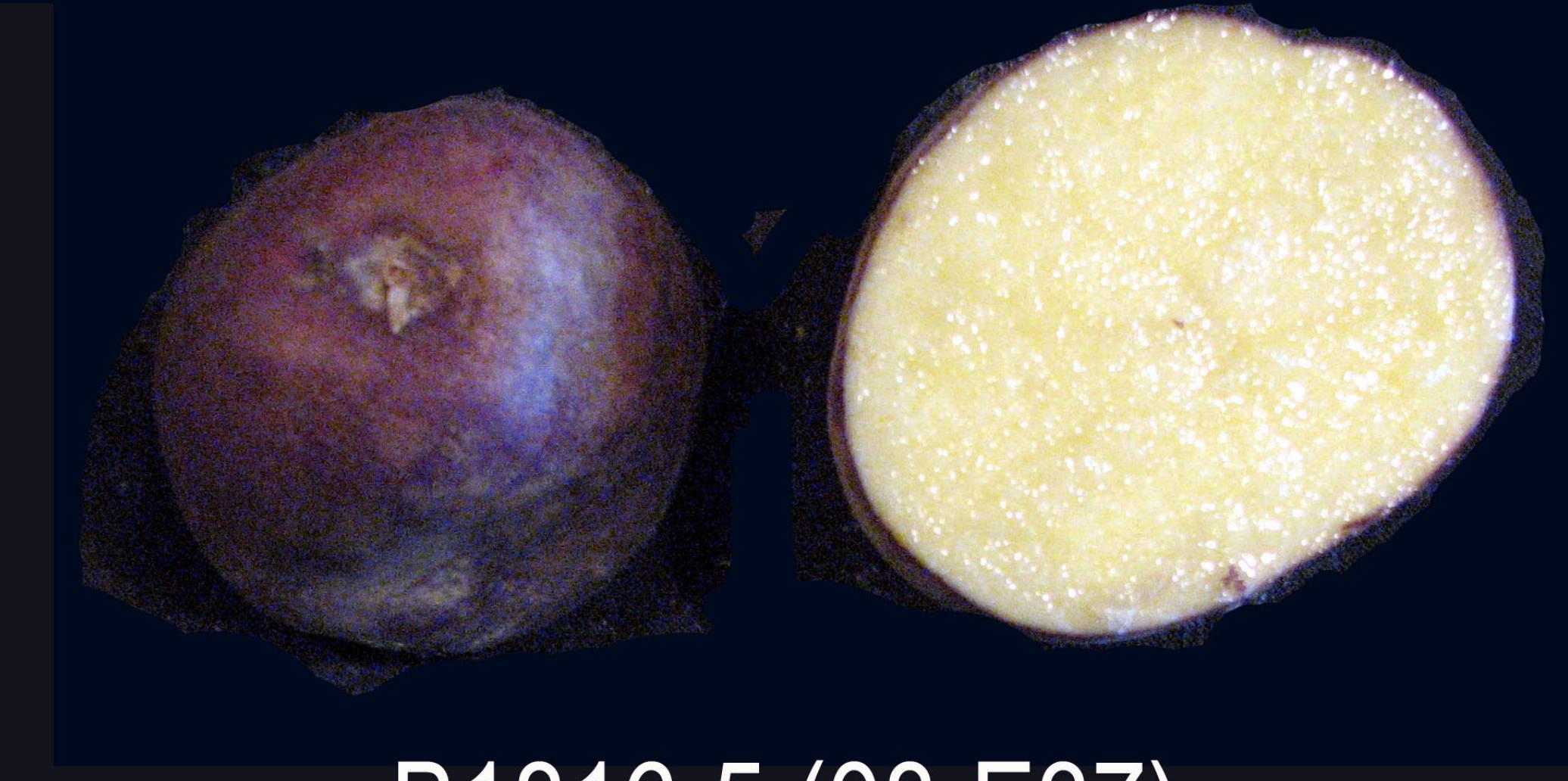
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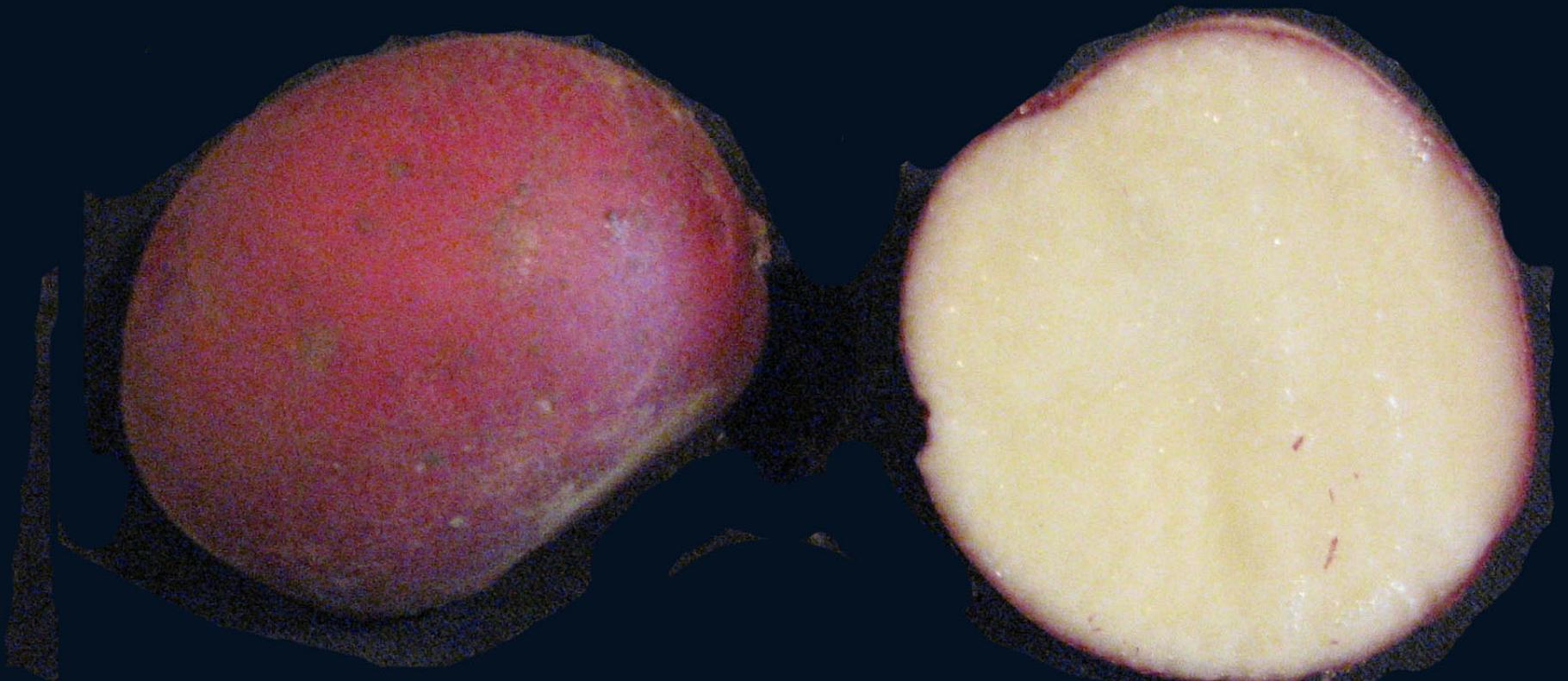
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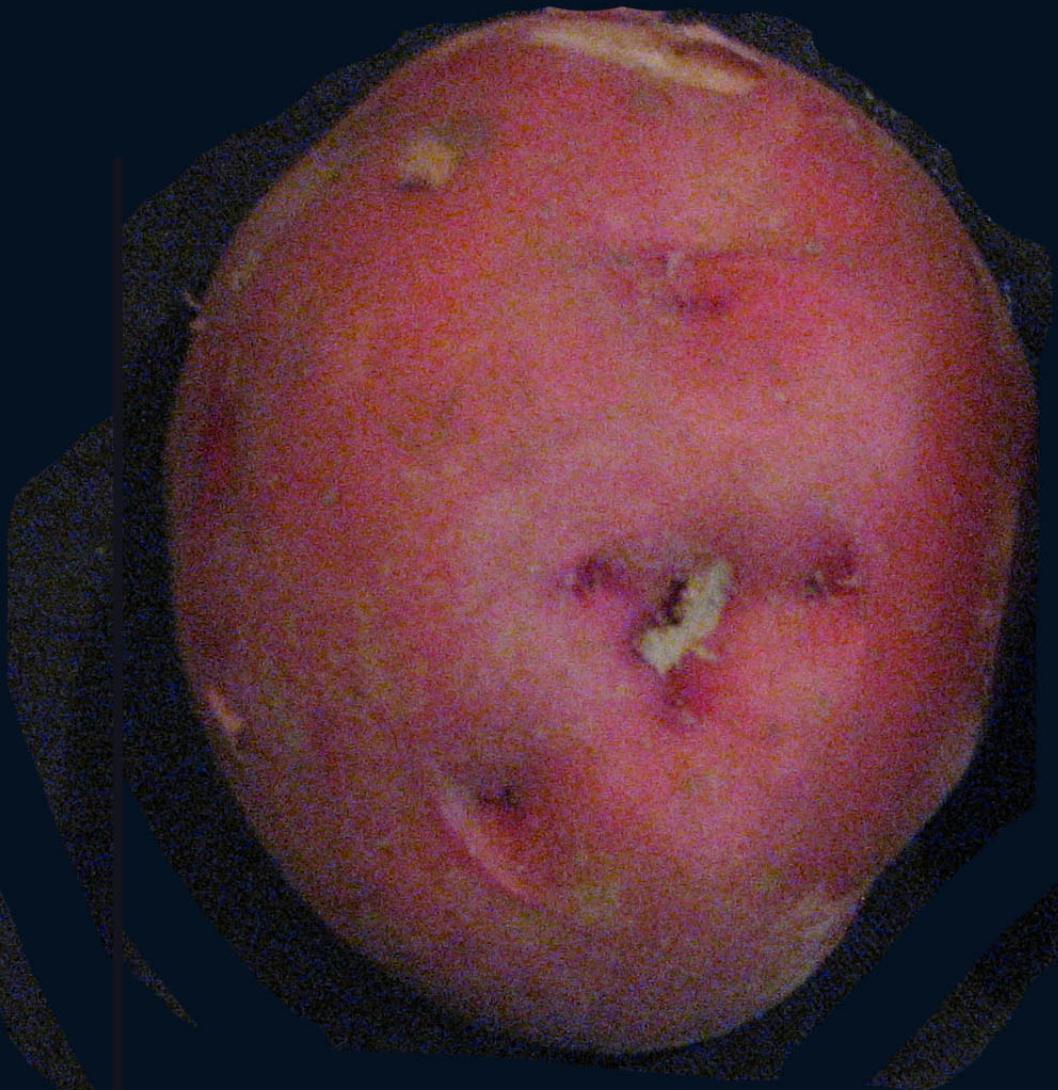
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B2152-17 (08-E40)



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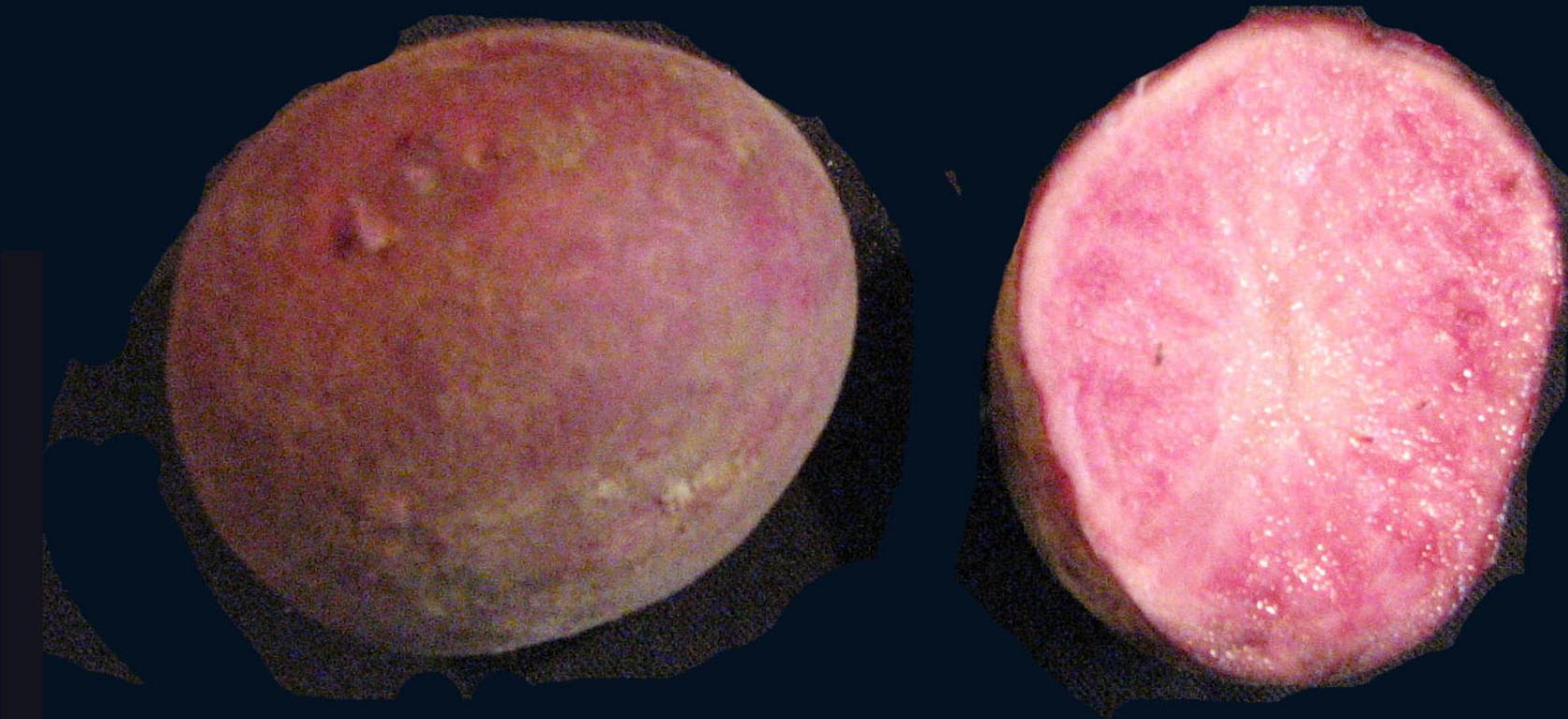
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BC001306-3 (08-E45)



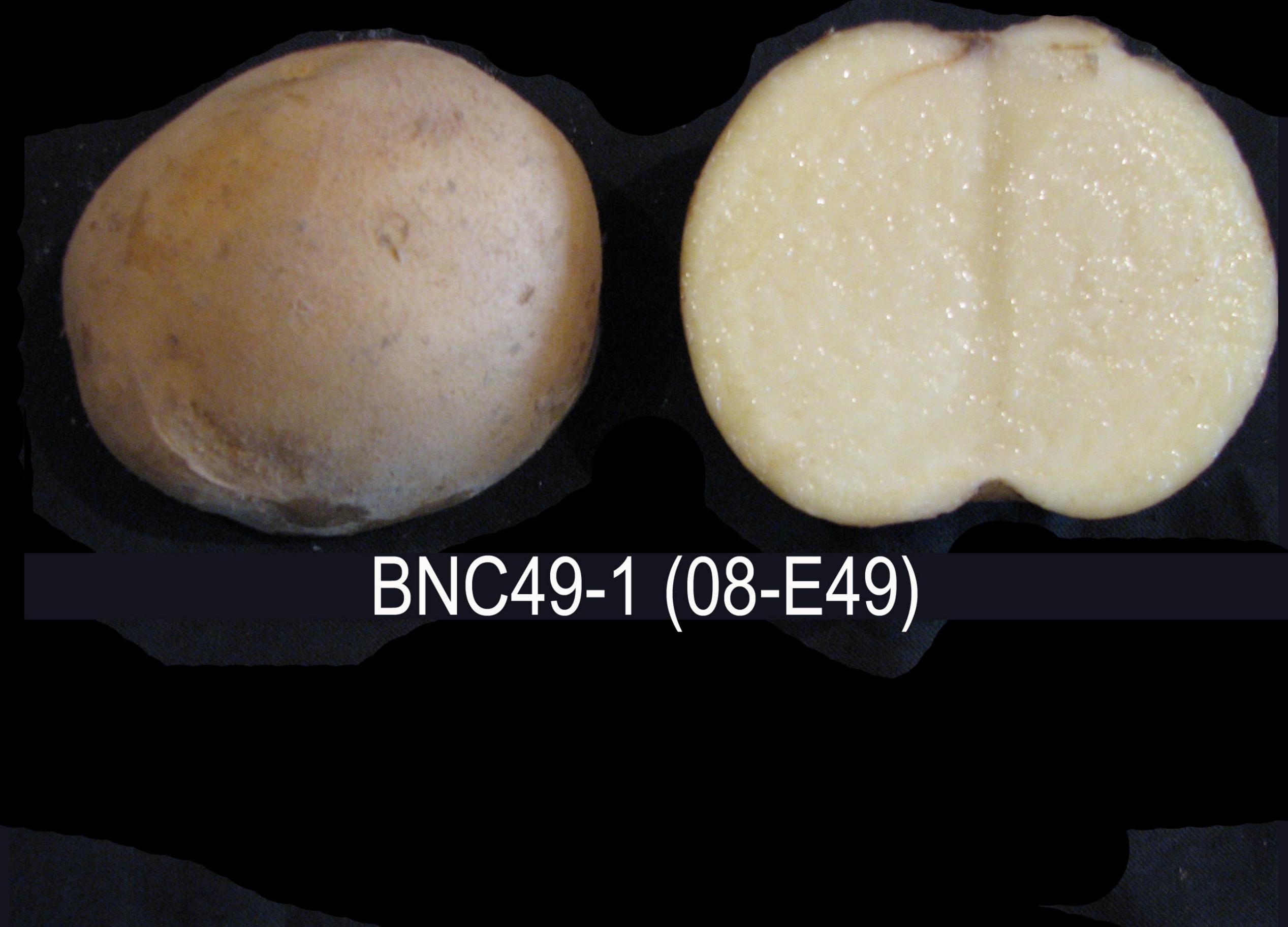
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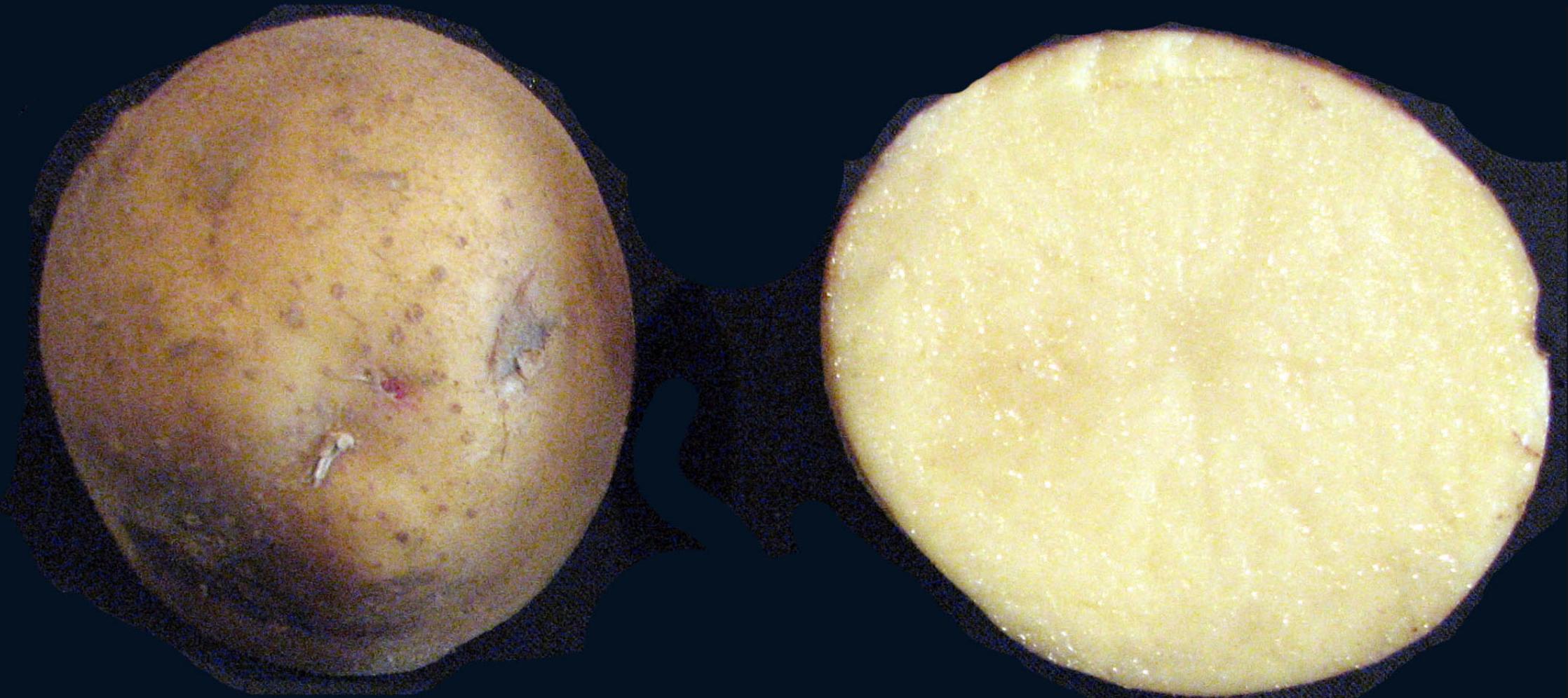
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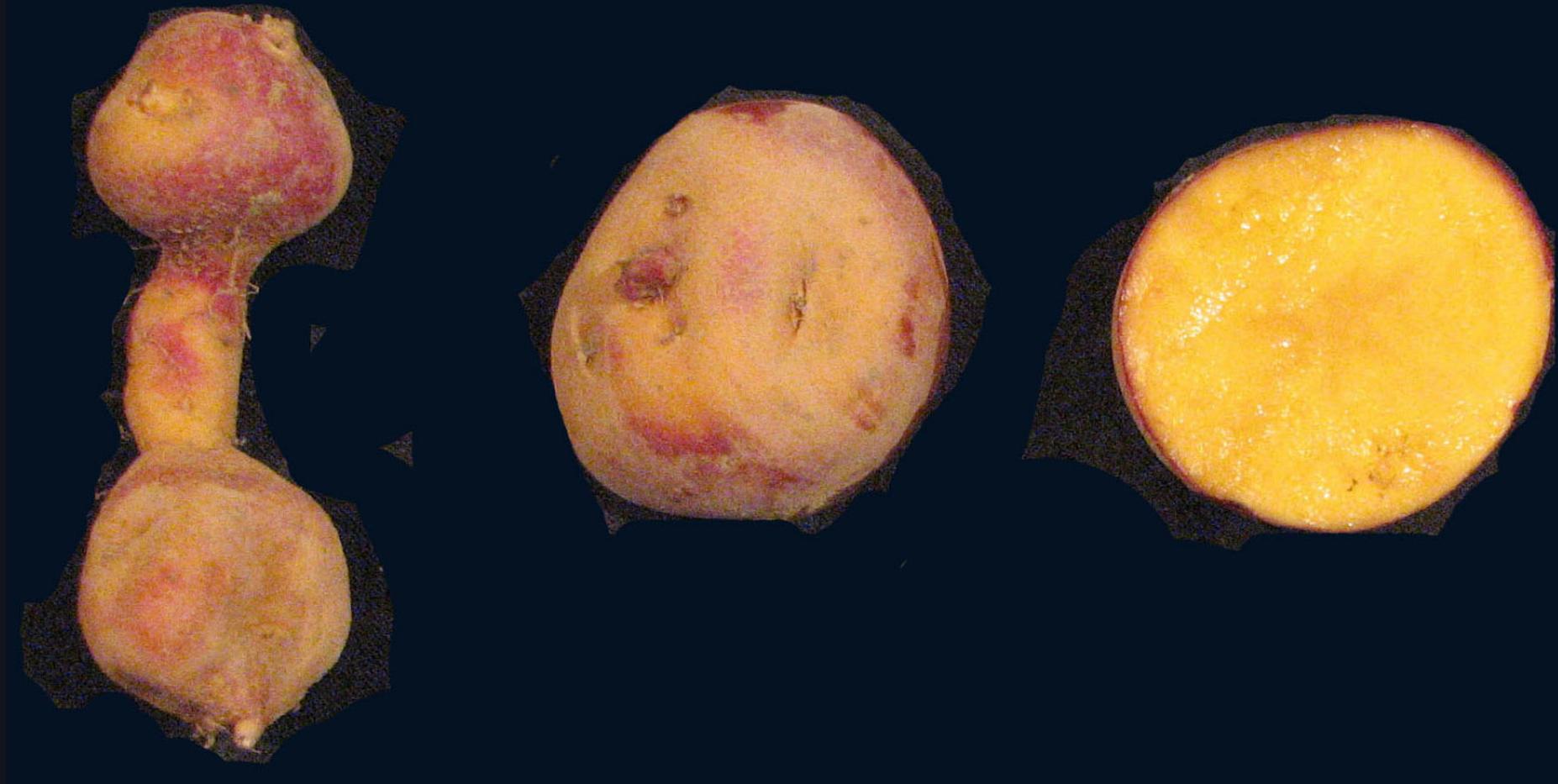
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BP153-1 (08-E53)



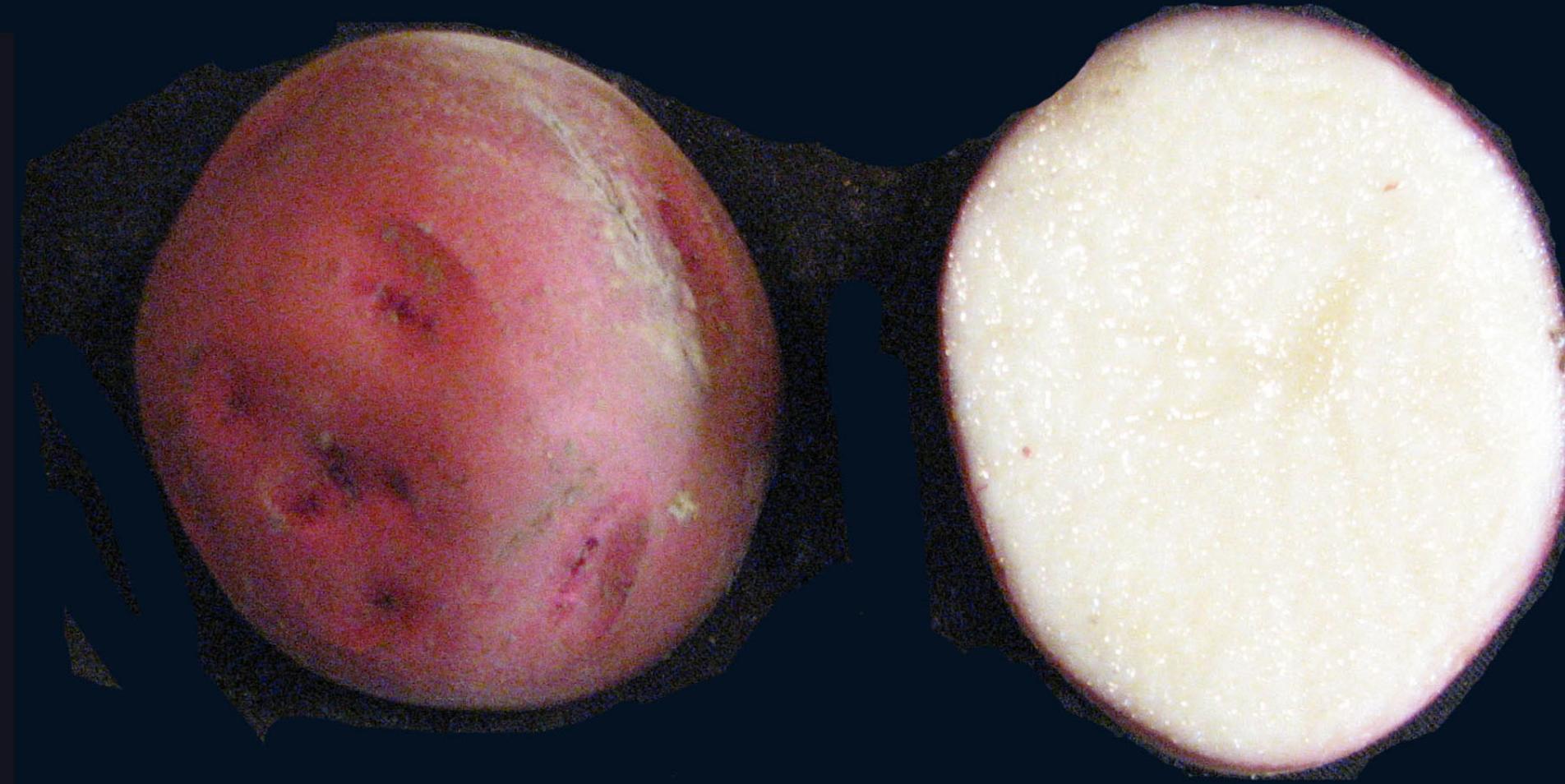
BD659-11 (08-E54)



All Blue (08-E55)



Atlantic (08-E56)



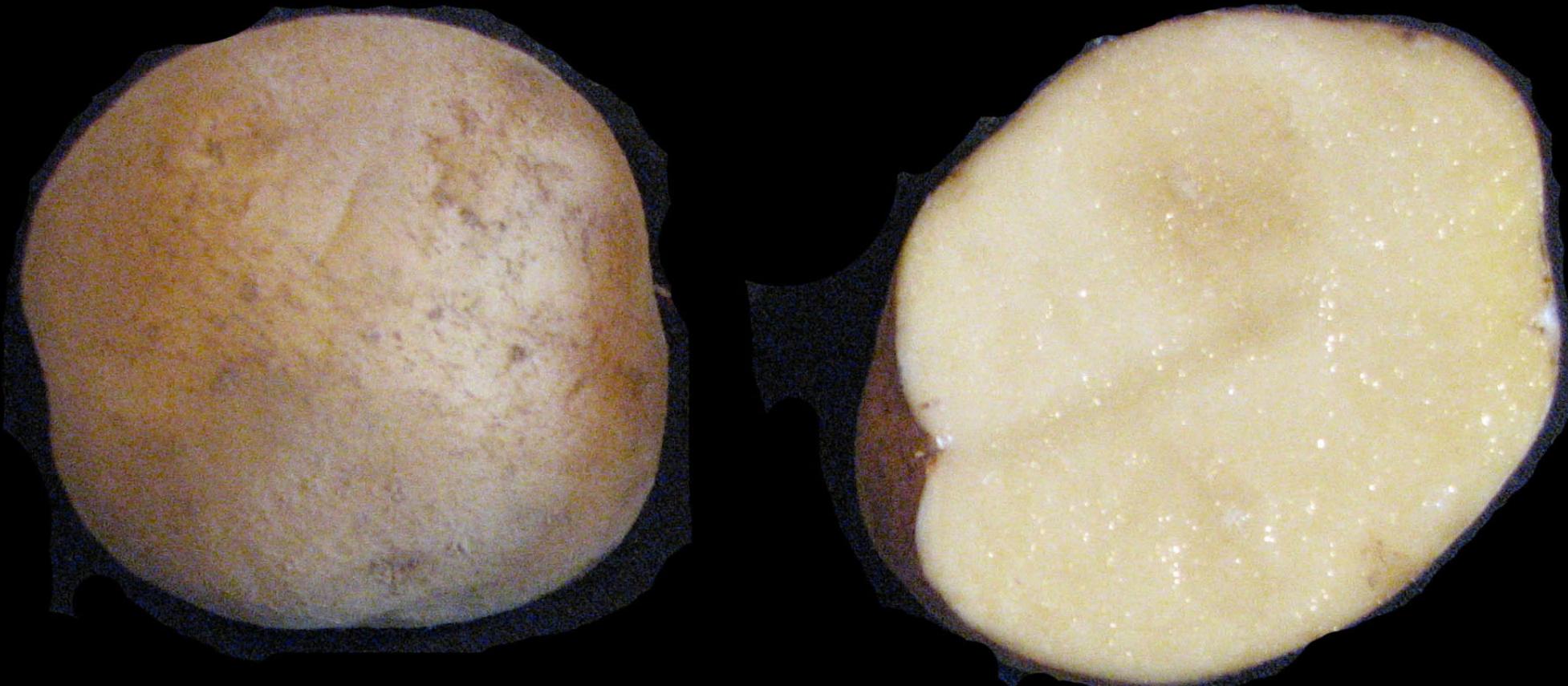
Chieftan (08-E57)



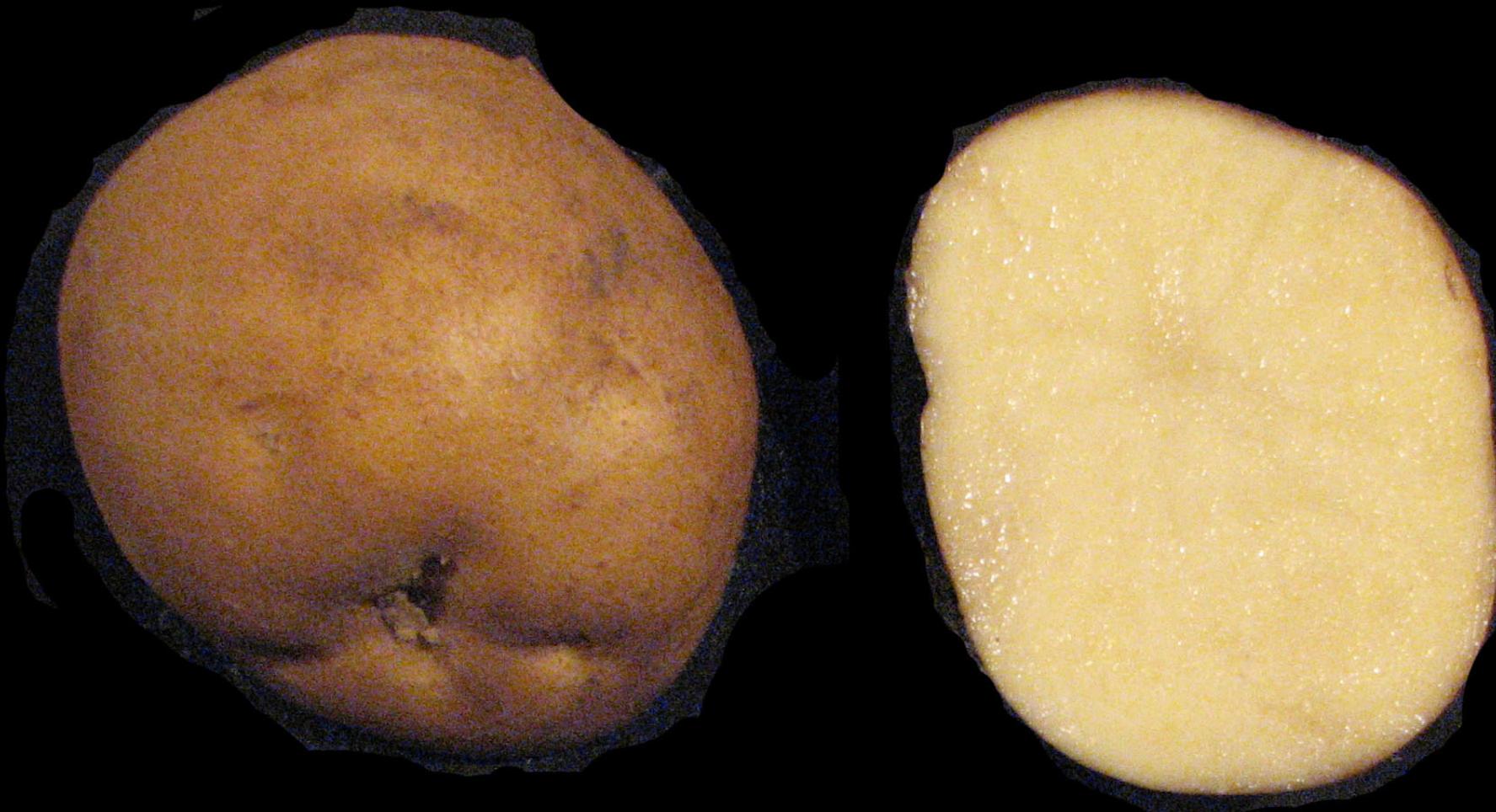
D.R. Norland (08-E58)



Gem Chip (08-E59)



Harley Blackwell (08-E60)



Ivory Crisp (08-E61)



Snowden (08-E62)



Superior (08-E63)



Yukon Gold (08-E64)



BD833-1 (08-E65)



BD856-2 (08-E66)



B2485-2 (08-E67)



B2486-4 (08-E68)



B2489-3 (08-E69)



B2491-19 (08-E70)



B2494-10 (08-E71)



B2494-21 (08-E72)



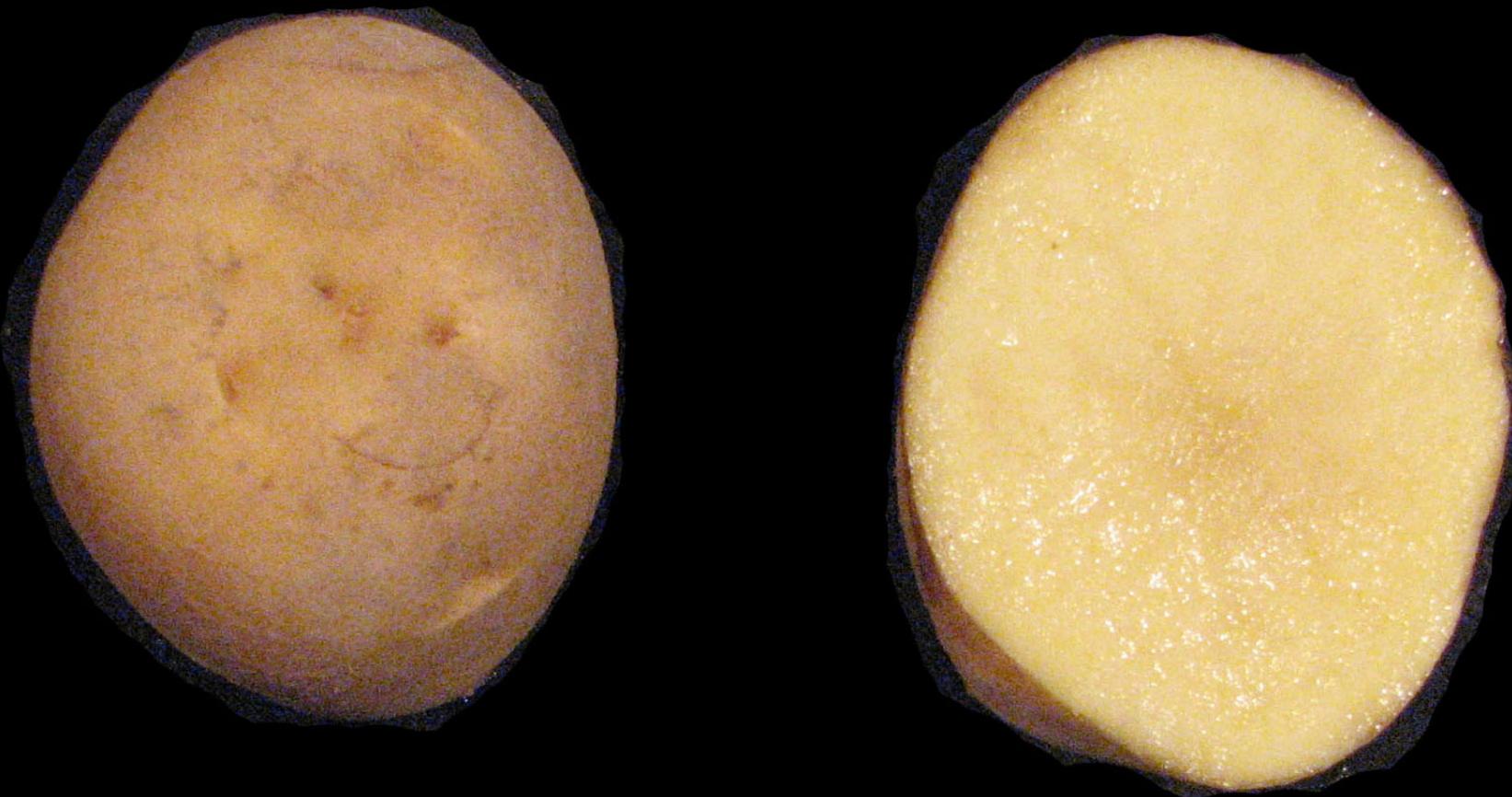
BC001371-2 (08-E73)



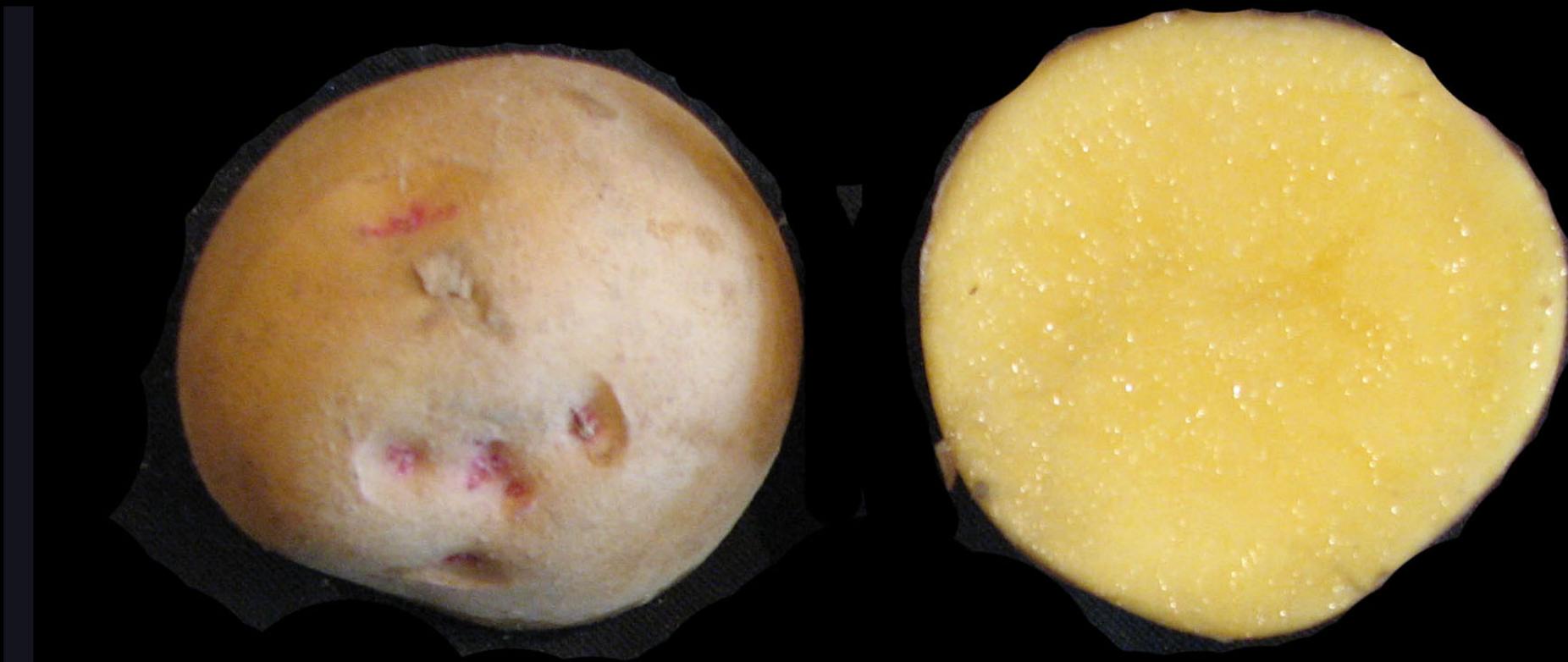
AF 4006-1 (08-E74)



AF 4006-3 (08-E75)



AF 4006-5 (08-E76)



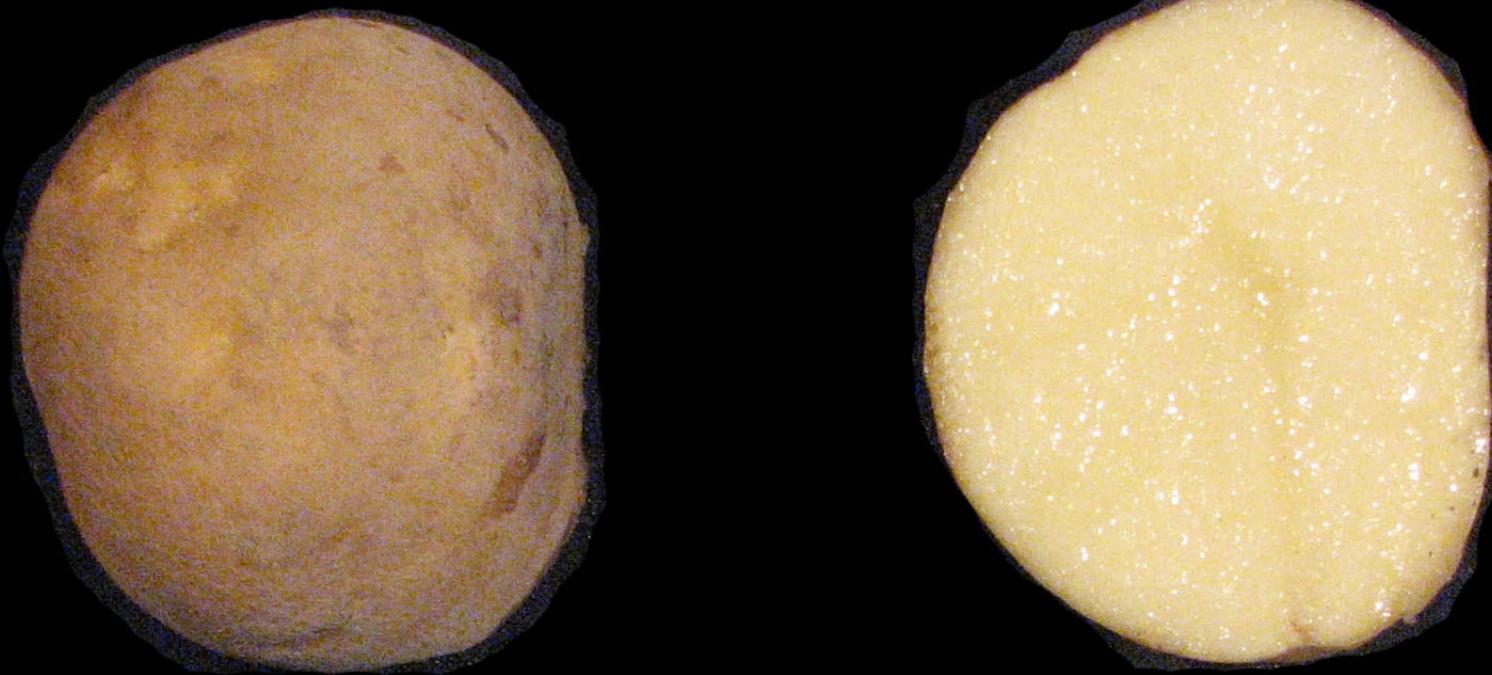
AF 4013-1 (08-E77)



AF 4013-3 (08-E78)



AF 4014-1 (08-E79)



AF 4014-9 (08-E80)



AF 4015-1 (08-E81)



AF 4015-2 (08-E82)



AF 4015-3 (08-E83)



AF 4023-1 (08-E84)



AF 4031-1 (08-E85)



AF 4047-2 (08-E86)



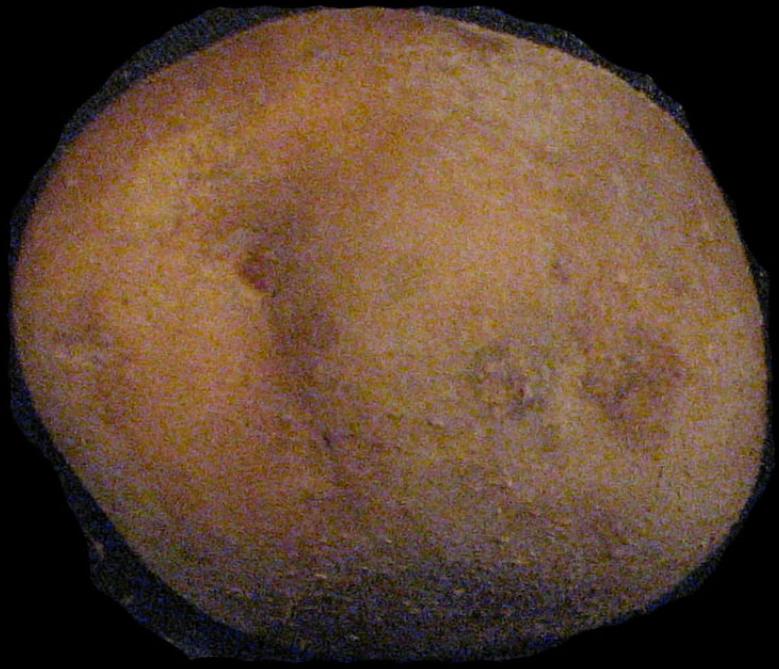
AF 4047-3 (08-E87)



AF 4054-1 (08-E88)



AF 4058-1 (08-E89)



AF 4071-1 (08-E90)



AF 4075-2 (08-E91)



AF 4081-2 (08-E92)



AF 2376-5 (08-E20)



AF 2497-2 (08-E22)



AF 2073-1 (08-E24)



Yukon Gold (08-E28)



B2461-12 (08-E29)



B2471-12 (08-E30)



B2500-3 (08-E31)



B0766-3 (08-E36)



B1816-5 (08-E37)



B1992-106 (08-E38)



BC001162-3 (08-E39)



BC001044-2 (08-E43)



BC001306-2 (08-E44)



BC001306-3 (08-E45)



BCO01357-3 (08-E46)



BC001357-4 (08-E47)



BNC49-1 (08-E49)

BNC49-2 (08-E50)



B2460-23 (08-E51)

All Blue (08-E55)





Atlantic (08-E56)

A white rectangular tray is filled with a large quantity of Gem Chip (08-E59) potato chips. The chips are thin, round, and have a distinctively wavy, crinkled texture. They are heavily seasoned, appearing dark brown and almost black in some areas, particularly along the edges and in the center of the wavy folds. The tray is set against a dark, textured background.

Gem Chip (08-E59)



Harley Blackwell (08-E60)



Ivory Crisp (08-E61)



Snowden (08-E62)



Yukon Gold (08-E64)



B2485-2 (08-E67)



B2486-4 (08-E68)



B2489-3 (08-E69)

B2491-19 (08-E70)



B2492-10 (08-E71)



B2494-21 (08-E72)



AF 4006-1 (08-E74)



AF 4006-3 (08-E75)



AF 4006-5 (08-E76)



AF 4013-3 (08-E78)



AF 4014-1 (08-E79)



AF 4015-1 (08-E81)



AF 4015-2 (08-E82)



AF 4015-3 (08-E83)



AF 4013-1 (08-E85)



AF 4047-2 (08-E86)

A white rectangular tray is filled with approximately 20-25 round, fried tortilla chips. The chips are light yellow with darker brown, charred edges and some small dark spots. They are piled in a somewhat loose, scattered manner across the tray.

AF 4047-3 (08-E87)



AF 4054-1 (08-E88)



AF 4058-1 (08-E89)



AF 4071-1 (08-E90)



AF 4075-2 (08-E91)



AF 4081-2 (08-E92)