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2009 OHIO POTATO GERMPLASM EVALUATION REPORT

Matthew D. Kleinhenz, Michelle Young,
John Y. Elliot and Paul Courtright

Department of Horticulture and Crop Science and
Food Industries Center of
The Ohio State University

IN COOPERATION WITH NORTHEAST (NE-1031) REGIONAL PROJECT

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OHIO POTATO GERMPLASM EVALUATIONS - 2009

Introduction

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 sixty-eight distinct varieties and experimental lines developed in three breeding programs were evaluated in 2009 (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 (Beltsville, MD). A total of thirty-one lines were contributed by ME, two by NY and nineteen by the USDA, with sixteen varieties included as standards. Pictures of the 68 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 five varieties and seasonal rainfall for 1999-2009 at the OARDC are shown in Table 3.

Procedures

Planting

Seed potatoes were cut on May 28, 2009 and allowed to cure under recommended temperature and humidity conditions at the OARDC until planting on June 5, 2009. Percent stand was recorded five weeks later. Whole plots in the NE-1031 and Observation trials were harvested on October 12, 2009.

Tables 1-6 contain relevant plot, soil, 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 steps and materials consistent with local commercial practice, including weekly pesticide applications.

Tubers were placed in humidified refrigerated storage immediately after harvest until being graded for size and external appearance on November 4, 2009.

Crop Yield and Quality

At grading, 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 sub-sample 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 estimated 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 completed on Nov. 16, 2009. 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. 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^{o} F) until being removed on November 10, 2009 and held under ambient conditions (approx. 70^{o} F) until being processed on December 3, 2009 at the Food Industries Center.

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^{o}C (372^{o}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 321 and 256 (cwt/A) across all studies respectively, with a range of 124-496 (total) and 79-396 (US #1). Average total yield averaged 329 cwt/A among varieties and 358 cwt/A among the selections (a study range of 194-472 cwt/A) in the NE-1031 study. Of the 68 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 4, 19, and 45 entries, respectively.

1. Entries having an overall appearance rating of ≥ 7 (good-excellent) at grading.
    - NE-1031: Atlantic, B2452-3, Beacon Chipper, Chieftain, Dakota Diamond, Dark Red Norland, Kennebec, NY 138, NY 140, Superior, Yukon Gold
    - Triple Observation: Atlantic, B2471-12, B2492-7, B2501-10, B2538-5, BCO01044-2, BCO01283-2, BCO01306-2, BCO01306-3, BCO01357-4, BNC49-2, BP153-1, Dark Red Norland, Yukon Gold
    - Double Observation: AF 4058-1, AF 4121-3, AF 4123-5, AF 4128-2, AF 4129-5, AF 4135-2, AF 4135-6, AF 4137-10, AF 4147-4, AF 4148-1, AF, 4149-3, AF 4157-6
    - Single Observation: AF 4125-1, AF 4127-2, AF 4130-13, AF 4130-3, AF 4130-6, AF 4138-7, AF 4138-8, AF 4139-1

2. Entries having an external tuber rating of ≥ 7 (good-excellent) at grading and marketable yield ≥ the study average.
    - NE-1031: B 2452-3, Dakota Diamond, Kennebec, NY 140, Yukon Gold
    - Triple Observation: Atlantic, B2471-12, BCO01044-2, BCO01283-2, BCO01306-2, BNC49-2, Yukon Gold
    - Double Observation: AF 4058-1, AF 4121-3, AF 4129-5,, AF 4148-1, AF, 4149-3, AF

4157-6
- Single Observation: AF 4125-1, AF 4127-2, AF 4130-13, AF 4130-3, AF 4130-6, AF 4138-7, AF 4139-1

3. Entries having a SFA chip score of ≤ 3.
    - NE-1031: AF 2291-10, Atlantic, Beacon Chipper, NY 138, NY 140, Snowden
    - Triple Observation: AF 2497-2, Beacon Chipper, BNC49-1, BNC49-2
    - Double Observation: AF 4058-1, AF 4128-2, AF 4147-5, AF 4157-6
    - Single Observation: AF 4149-1

Table 1. List of programs participating in the 2009 Ohio Potato Germplasm Evaluations.

			2009 experiment				
Number	Program	Genotype Codes	NE-1031	Triple Observation	Double Observation	Single[1] Observation	Total
1	Univ. Maine	AF	2	2	13	14	31
2	Cornell Univ.	NY	2				2
3	USDA	B	1	9			10
		BCO		6			6
		BNC		2			2
		BP		1			1
4	Various	named	11	5			16
		Total	16	25	13	14	68

[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 Developmental Center (OARDC) in Wooster, OH in 2009.

Experiment

NE-1031	Triple Observation	Double Observation	Single Observation
1. AF 2291-10	17. AF 0339-39	42. AF 4058-1	55. AF 4006-5
2. AF 2574-1	18. AF 2497-2	43. AF 4121-3	56. AF 4108-3
3. Atlantic	19. Atlantic	44. AF 4123-5	57. AF 4122-2
4. B 2452-3	20. B2152-17	45. AF 4128-2	58. AF 4125-1
5. Beacon Chipper	21. B2471-12	46. AF 4129-5	59. AF 4127-2
6. Chieftain	22. B2492-7	47. AF 4135-2	60. AF 4127-3
7. Dakota Diamond	23. B2501-10	48. AF 4135-6	61. AF 4130-13
8. Dakota Jewel	24. B2538-5	49. AF 4137-10	62. AF 4130-3
9. Dark Red Norland	25. B2575-14	50. AF 4147-4	63. AF 4130-6
10. Katahdin	26. B2575-19	51. AF 4147-5	64. AF 4137-8
11. Kennebec	27. B2613-2	52. AF 4148-1	65. AF 4138-7
12. NY 138	28. B2614-4	53. AF 4149-3	66. AF 4138-8
13. NY 140	29. BCO01044-2	54. AF 4157-6	67. AF 4139-1
14. Snowden	30. BCO01283-2		68. AF 4149-1
15. Superior	31. BCO01306-2		
16. Yukon Gold	32. BCO01306-3		
	33. BCO01357-4		
	34. BCO01371-2		
	35. Beacon Chipper		
	36. BNC49-1		
	37. BNC49-2		
	38. BP153-1		
	39. Dark Red Norland		
	40. Katahdin		
	41. Yukon Gold		

Table 3. Yield (cwt/A) of marketable, A-size tubers of six varieties grown at the OARDC in Wooster, OH 1999-2009.

	Year and Mkt. Yield (cwt/A)											row
Variety	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**average**
Atlantic	152	175	213	125	240	*	211	327	225	277	276	222
Katahdin	238	204	61	103	223	204	211	241	232	256	280	205
Kennebec	118	242	184	116	225	151	164	199	226	203	290	193
Russet Burbank	*	150	41	19	151	*	*	*	*	*	*	90
Superior	165	174	66	100	218	146	140	149	141	226	224	159
Yukon Gold	174	224	165	103	135	164	155	222	223	255	267	190
Rainfall (inches, July-Aug)	5.67	5.22	6.20	2.83	10.91	8.50	7.10	7.74	10.57	5.70	8.77	7.20

Table 4. Cultural, nutrient, and pest management practices for the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2009.

Date planted	5-June	
Date vine-killed	1-Oct	
Date harvested	12-Oct	
2008 main crop	Rye	
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	23-June	Gavel (2lb/A), Asana (8oz/A)
	27-June	Quadris (8oz/A), Baythroid (2.5oz/A)
	7-July	Bravo WS (2pt/A), Tanos (8oz/A), Provado (3oz/A)
	17-July	Quadris (6oz/A)
	22-July	Bravo WS (2pt/A), Tanos (8oz/A), Baythroid (2.5oz/A)
	30-July	Gavel (2lb/A), Kocide (1lb/A)
	7-Aug	Gavel (2lb/A), Kocide (1lb/A)
	14-Aug	Gavel (2lb/A), Asana (8oz/A), Tanos (8oz/A)
	17-Aug	Gavel (2lb/A), Tanos (8oz/A)
	22-Aug	Quadris (8oz/A)
	31-Aug	Bravo WS (2pt/A)
	4-Sept	Bravo WS (2pt/A), Cuprofix Disperss. (1lb/A)
	11-Sept	Quadris (8oz/A)
	18-Sept	Gavel (2lb/A)
	24-Sept	Rely (3pt/A), Sticker (1pt/A), Ammonium Sulfate (4lb/A)
	1-Oct	Gramoxone (1.3pt/A)

Table 5. Seasonal and historical climatic data for the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2009.

	June	July	August	September	October
Avg. High Temp. (2009) (F)	78.6	78.1	80.1	73.3	58.9
Avg. Low Temp. (2009) (F)	55.7	56.5	59.9	52.7	39.3
Avg. Temp. (2009) (F)	67.2	67.5	69.6	62.6	49.1
Normal Avg. Temp. (Historical) (F)	67.6	71.5	69.9	63.4	52.1
Total Precip. (2009) (in.)	3.7	2.9	5.9	2.6	3.4
Normal Avg. Precip. (Historical) (in.)	3.9	4.1	3.6	3.1	2.3
Precip. deficit/surplus (2009) (in.)					
period	-0.2	-1.2	2.3	-0.5	1.1
cumulative	-0.2	-1.4	0.9	0.4	1.5

Table 6. Soil data[1] for land used in the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2009.

Factor	Level
pH	6.6
P (μg/g)	64
K (μg/g)	147
Ca (μg/g)	901
Mg (μg/g)	199

[1]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 2009.

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
1	AF 2291-10	96	358	303	84	3	13	1.081	1.088	2	1	24.6
2	AF 2574-1	96	405	318	78	5	17	1.074	1.079	5	0	6.0
3	Atlantic	98	308	241	78	3	19	1.084	1.090	3	0	14.9
4	B 2452-3	82	394	310	79	3	18	1.071	1.076	4	0	9.5
5	Beacon Chipper	96	291	230	79	2	19	1.081	1.086	2	0	26.9
6	Chieftain	96	320	264	82	4	14	1.066	1.073	5	0	8.7
7	Dakota Diamond	94	416	328	79	2	19	1.082	1.089	4	0	18.5
8	Dakota Jewel	97	194	158	81	4	15	1.061	1.067	5	0	5.5
9	Dark Red Norland	99	288	240	84	4	12	<1.060	1.066	5	0	8.1
10	Katahdin	97	372	285	77	1	22	1.074	1.078	4	1	13.8
11	Kennebec	99	472	290	62	2	36	1.069	1.076	4	0	16.0
12	NY 138	78	229	185	81	5	14	1.077	1.083	1	0	31.0
13	NY 140	92	406	334	82	2	16	1.079	1.084	2	0	31.2
14	Snowden	98	331	253	76	3	20	1.083	1.089	1	0	25.7
15	Superior	100	292	224	77	2	21	1.066	1.073	4	0	13.4
16	Yukon Gold	96	341	289	85	2	13	1.076	1.084	5	0	11.0
	Average	94	339	266	79	3	18	1.074	1.080	3	0	20.6

[1] Specific gravity done one one week prior to chipping with a tuber temperature of 62° F and a water temperature of 54° F.
SFA reports a correction of factor +0.0005. Specific gravity recorded here correction factor applied.
[2] Specific gravity done day of chipping with a tuber temperature of 64° F and a water temperature of 69° F.
SFA reports a correction of factor -0.0012. Specific gravity recorded here correction factor applied.
See reference table on page 15 for starch and dry matter conversions.
[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 2009.

		External[1]					Internal[2]				
Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
1	AF 2291-10	7	6	3	6	5	3	0	0	0	30
2	AF 2574-1	7	6	6	6	3	0	0	0	0	0
3	Atlantic	5	5	5	3	9	3	0	0	0	30
4	B 2452-3	5	4	4	6	8	0	0	0	1	10
5	Beacon Chipper	5	5	4	6	7	0	0	0	0	0
6	Chieftain	2	7	4	6	9	0	0	0	0	0
7	Dakota Diamond	6	7	5	9	8	3	0	0	1	40
8	Dakota Jewel	2	7	2	6	6	0	0	0	0	0
9	Dark Red Norland	2	5	3	7	9	0	0	0	0	0
10	Katahdin	7	6	3	3	5	0	0	0	0	0
11	Kennebec	7	8	5	6	8	0	0	0	1	10
12	NY 138	7	7	4	4	7	1	0	0	0	10
13	NY 140	6	6	5	6	7	2	0	0	3	50
14	Snowden	5	4	5	5	5	2	0	0	1	30
15	Superior	6	5	5	3	8	0	0	0	0	0
16	Yukon Gold	7	8	5	5	9	1	0	0	0	10

[1] See reference table for rating system on page 16.

[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 Observation Trials in 2009.

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	18	AF 2497-2	89	314	245	78	1	21	1.081	1.088	1.5	0	33.5
OBT	19	Atlantic	98	402	311	77	3	19	1.091	1.095	3.5	0	19.1
OBT	20	B2152-17	98	285	245	86	8	7	1.074	1.080	4.5	0	9.9
OBT	21	B2471-12	100	294	235	80	13	7	1.089	1.092	4	3	12.0
OBT	25	B2575-14	98	296	217	73	3	24	1.074	1.079	4.5	0	11.5
OBT	26	B2575-19	84	277	232	84	3	13	1.077	1.082	3.5	2	18.2
OBT	27	B2613-2	97	399	355	89	3	8	1.089	1.094	3.5	2	17.0
OBT	28	B2614-4	90	293	248	85	2	14	1.081	1.088	4	2	13.4
OBT	31	BCO01306-2	99	353	295	84	11	6	1.078	1.084	5	1	8.6
OBT	32	BCO01306-3	92	300	197	66	27	8	1.075	1.081	5	1	27.5
OBT	33	BCO01357-4	94	286	223	78	8	15	1.075	1.078	5	1	14.4
OBT	35	Beacon Chipper	83	303	232	77	3	21	1.078	1.084	3	0	28.5
OBT	36	BNC49-1	97	326	267	82	2	16	1.076	1.082	1	6	31.7
OBT	37	BNC49-2	94	176	138	78	3	19	1.082	1.085	3	1	22.5
OBT	41	Yukon Gold	94	335	245	73	3	24	1.076	1.084	4	2	16.2
		Average	94	309	245	79	6	15	1.079	1.085	3.7	1	18.9

Table 9 (cont.).

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	42	AF 4058-1	93	333	261	78	5	17	1.074	1.078	3	0	23.9
OBD	44	AF 4123-5	97	269	218	81	6	13	1.074	1.081	4	0	13.1
OBD	45	AF 4128-2	90	247	203	82	3	15	1.075	1.081	3	1	24.5
OBD	47	AF 4135-2	85	276	221	80	2	18	1.074	1.079	4	1	20.7
OBD	49	AF 4137-10	88	252	196	78	2	20	1.076	1.082	4	0	16.8
OBD	50	AF 4147-4	77	265	198	75	5	20	1.080	1.084	4	0	20.6
OBD	51	AF 4147-5	92	233	180	77	8	14	1.082	1.089	2	1	33.4
OBD	52	AF 4148-1	97	385	294	76	1	22	1.087	1.093	4	1	19.4
OBD	54	AF 4157-6	97	317	255	80	5	14	1.085	1.092	2	1	30.9
		Average	91	286	225	79	4	17	1.078	1.084	3	1	22.6
OBS	58	AF 4125-1	97	367	305	83	4	13	1.074	1.080	4	0	16.0
OBS	62	AF 4130-3	97	431	351	81	4	15	1.078	1.080	3.5	0	21.8
OBS	63	AF 4130-6	90	379	318	84	3	13	1.084	1.089	4	0	14.3
OBS	67	AF 4139-1	90	373	299	80	5	15	1.076	1.082	4	0	11.9
OBS	68	AF 4149-1	93	405	305	75	3	21	1.079	1.084	1.5	3	32.0
		Average	93	391	316	81	4	15	1.078	1.083	3.4	1	19.2

[1] Specific gravity done one one week prior to chipping with a tuber temperature of 62° F and a water temperature of 54° F.
SFA reports a correction of factor +0.0005. Specific gravity recorded here correction factor applied.

[2] Specific gravity done day of chipping with a tuber temperature of 64° F and a water temperature of 69° F.
SFA reports a correction of factor -0.0012. Specific gravity recorded here correction factor applied.
See reference table on page 15 for starch and dry matter conversions.

[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 Observation Trials and selected for chipping quality in 2009.

			External[1]					Internal[2]				
Study	Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
OBT	17	AF 0339-39	6	6	3	5	5	0	0	0	0	0
OBT	18	AF 2497-2	8	8	3	2	4	0	0	0	0	0
OBT	19	Atlantic	8	8	2	5	7	0	0	0	0	0
OBT	20	B2152-17	2	7	5	8	5	0	0	0	0	0
OBT	21	B2471-12	8	7	2	7	9	0	0	0	0	0
OBT	22	B2492-7	9	7	1	7	8	0	0	0	0	0
OBT	23	B2501-10	8	6	2	2	9	0	0	0	0	0
OBT	24	B2538-5	1	7	6	5	8	0	1	0	0	10
OBT	25	B2575-14	7	6	2	6	5	0	0	0	0	0
OBT	26	B2575-19	6	7	3	7	3	5	0	0	3	80
OBT	27	B2613-2	7	6	3	7	5	0	0	0	2	20
OBT	28	B2614-4	8	8	4	5	5	0	0	0	0	0
OBT	29	BCO01044-2	1	7	6	8	9	1	0	0	0	10
OBT	30	BCO01283-2	2	7	5	9	9	0	0	0	0	0
OBT	31	BCO01306-2	2	8	2	7	7	0	0	0	0	0
OBT	32	BCO01306-3	2	8	8	9	9	0	0	0	0	0
OBT	33	BCO01357-4	2	7	5	8	8	0	1	0	0	10
OBT	34	BCO01371--2	2	8	3	8	4	0	0	0	0	0
OBT	35	Beacon Chipper	7	5	3	7	6	1	0	0	1	20
OBT	36	BNC49-1	5	4	3	6	5	0	1	0	0	10
OBT	37	BNC49-2	5	4	4	5	9	2	0	0	1	30
OBT	38	BP153-1	7	6	1	6	8	0	0	0	0	0
OBT	39	Dark Red Norland	2	8	3	3	8	0	0	0	0	0
OBT	40	Katahdin	7	7	4	7	6	0	0	0	1	10
OBT	41	Yukon Gold	6	7	2	5	7	2	0	0	1	30

Table 10 (cont.).

			External[1]					Internal[2]				
Study	Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appear.	Hollow Heart	Brown Center	Necrosis	Vsclr Dsclrtn	% Defected Tubers
OBD	42	AF 4058-1	7	7	2	3	9	0	0	0	0	0
OBD	43	AF 4121-3	6	6	4	1	8	2	0	0	1	30
OBD	44	AF 4123-5	7	7	4	7	9	0	0	0	0	0
OBD	45	AF 4128-2	6	6	1	5	9	0	0	0	0	0
OBD	46	AF 4129-5	7	6	1	5	9	0	0	0	2	20
OBD	47	AF 4135-2	9	7	3	8	8	0	0	0	0	0
OBD	48	AF 4135-6	8	5	5	7	9	0	0	0	0	0
OBD	49	AF 4137-10	9	8	5	8	9	0	0	0	0	0
OBD	50	AF 4147-4	7	7	5	7	7	0	0	0	0	0
OBD	51	AF 4147-5	9	9	2	8	5	0	0	0	0	0
OBD	52	AF 4148-1	8	7	4	5	8	0	1	0	0	10
OBD	53	AF 4149-3	7	8	3	6	7	0	0	0	0	0
OBD	54	AF 4157-6	5	4	2	7	9	0	0	0	0	0
OBS	55	AF 4006-5	6	7	4	8	6	0	0	0	0	0
OBS	56	AF 4108-3	6	5	6	8	3	0	0	0	0	0
OBS	57	AF 4122-2	6	5	6	7	3	0	0	0	0	0
OBS	58	AF 4125-1	8	7	2	6	8	0	0	0	0	0
OBS	59	AF 4127-2	1	7	5	5	8	0	0	0	0	0
OBS	60	AF 4127-3	1	7	4	6	5	0	0	0	0	0
OBS	61	AF 4130-13	7	8	4	6	8	0	0	0	0	0
OBS	62	AF 4130-3	6	5	3	3	7	0	0	0	1	10
OBS	63	AF 4130-6	8	8	2	7	8	0	0	0	0	0
OBS	64	AF 4137-8	7	7	5	6	6	3	0	0	0	30
OBS	65	AF 4138-7	7	8	5	7	8	0	0	0	2	20
OBS	66	AF 4138-8	6	5	3	7	7	0	0	0	0	0
OBS	67	AF 4139-1	6	5	2	3	7	0	0	0	0	0
OBS	68	AF 4149-1	7	6	4	4	5	0	0	0	0	0

[1] See reference table for rating system on page 16.

[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 2009.

Study	Entry #	Entry Name	Stand %	Total cwt/A	US #1 cwt/A	US #1 %	B-Size %	Cull %	Specific Gravity[1]
OBT	17	AF 0339-39	96	196	160	82	4	14	1.069
OBT	22	B2492-7	96	252	185	73	2	25	1.061
OBT	23	B2501-10	98	201	137	68	2	30	<1.060
OBT	24	B2538-5	98	276	213	77	3	20	1.065
OBT	29	BCO01044-2	97	327	297	91	3	7	1.066
OBT	30	BCO01283-2	92	333	279	84	9	7	1.071
OBT	34	BCO01371-2	97	215	147	68	27	5	1.066
OBT	38	BP153-1	94	225	189	84	1	15	1.066
OBT	39	Dark Red Norland	91	258	222	86	3	11	1.064
OBT	40	Katahdin	90	329	275	84	1	15	1.071
OBD	43	AF 4121-3	92	448	391	87	3	9	1.064
OBD	46	AF 4129-5	100	330	283	86	1	13	1.069
OBD	48	AF 4135-6	98	222	183	82	3	15	1.066
OBD	53	AF 4149-3	97	355	296	84	9	8	1.067
OBS	55	AF 4006-5	100	124	79	64	14	22	.
OBS	56	AF 4108-3	87	496	396	80	1	19	1.067
OBS	57	AF 4122-2	93	397	326	82	4	14	1.063
OBS	59	AF 4127-2	90	415	354	85	6	8	1.063
OBS	60	AF 4127-3	93	222	136	61	2	37	1.067
OBS	61	AF 4130-13	73	385	321	83	1	15	1.071
OBS	64	AF 4137-8	100	409	293	72	2	26	1.066
OBS	65	AF 4138-7	90	235	168	71	5	24	1.067
OBS	66	AF 4138-8	100	305	271	89	3	8	1.065

[1] Specific gravity done one one week prior to chipping with a tuber temperature of 62° F and a water temperature of 54° F.
SFA reports a correction of factor +0.0005. Specific gravity recorded here correction factor applied.
See reference table on page 15 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	1.987	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. 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

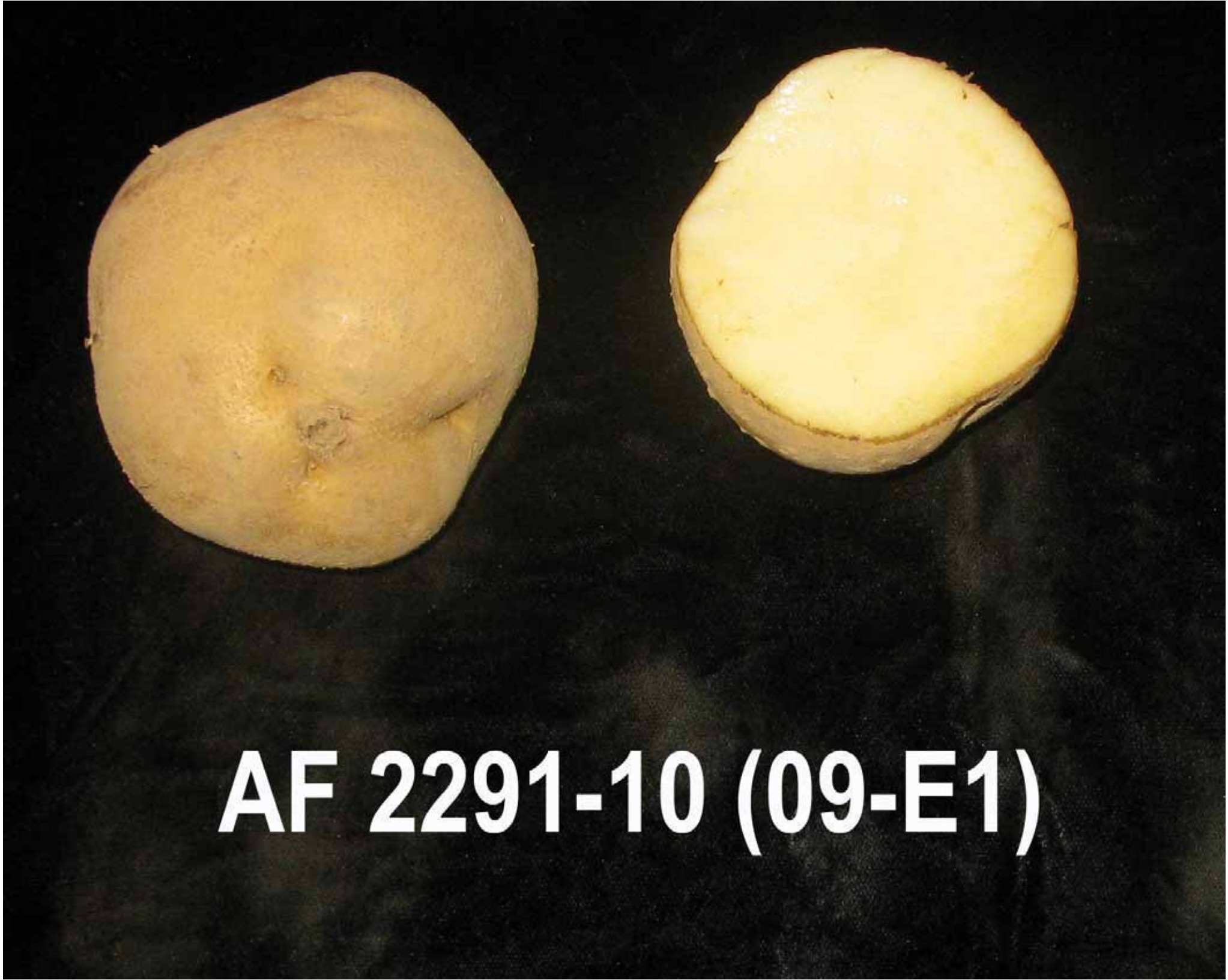
Plant Type
1. Decumbent-poor canopy
2. Decumbent-fair canopy
3. Decumbent-good canopy
4. Spreading-poor canopy
5. Spreading-fair canopy
6. Spreading-good canopy
7. Upright-poor canopy
8. Upright-fair canopy

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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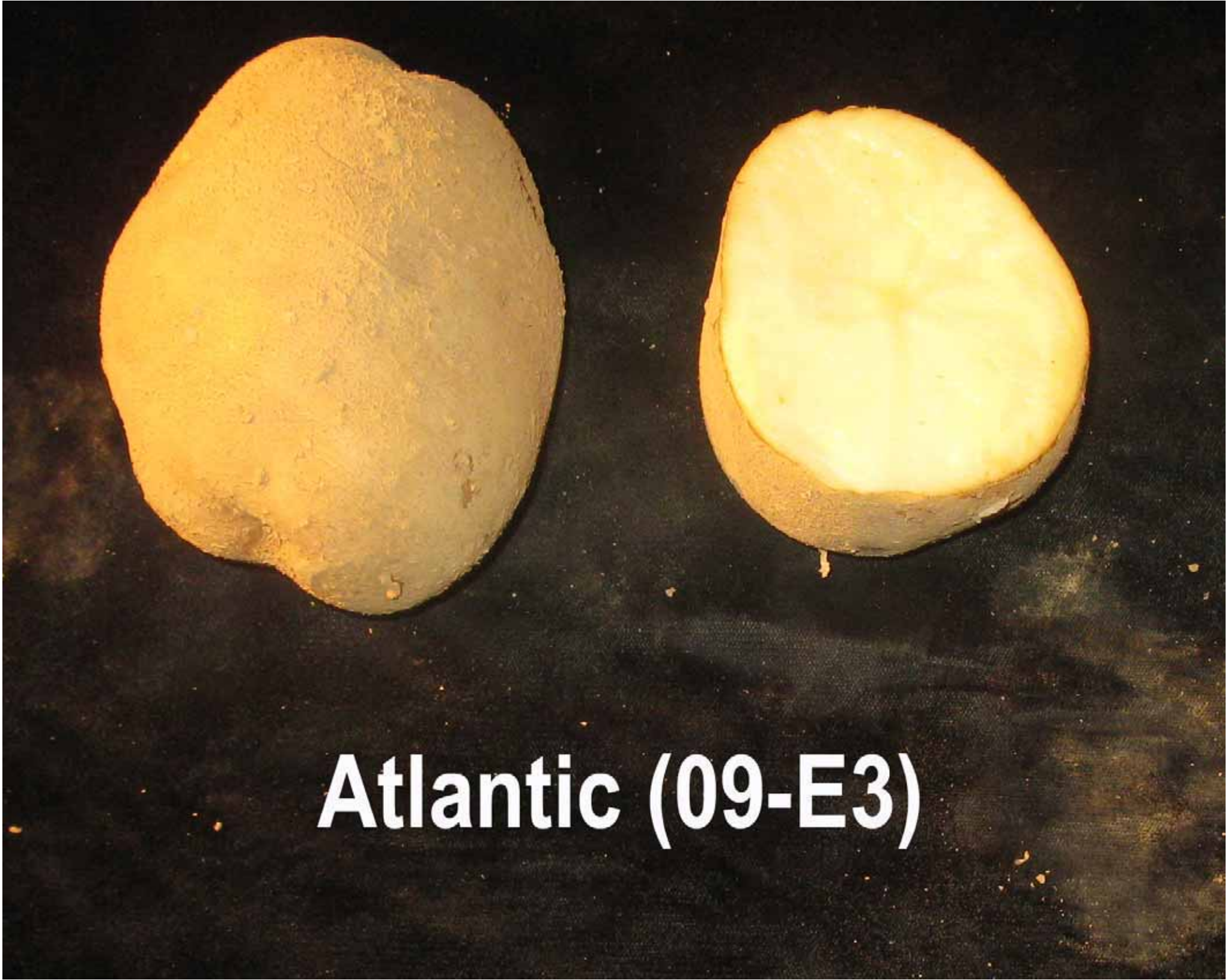
AF 2574-1 (09-E2)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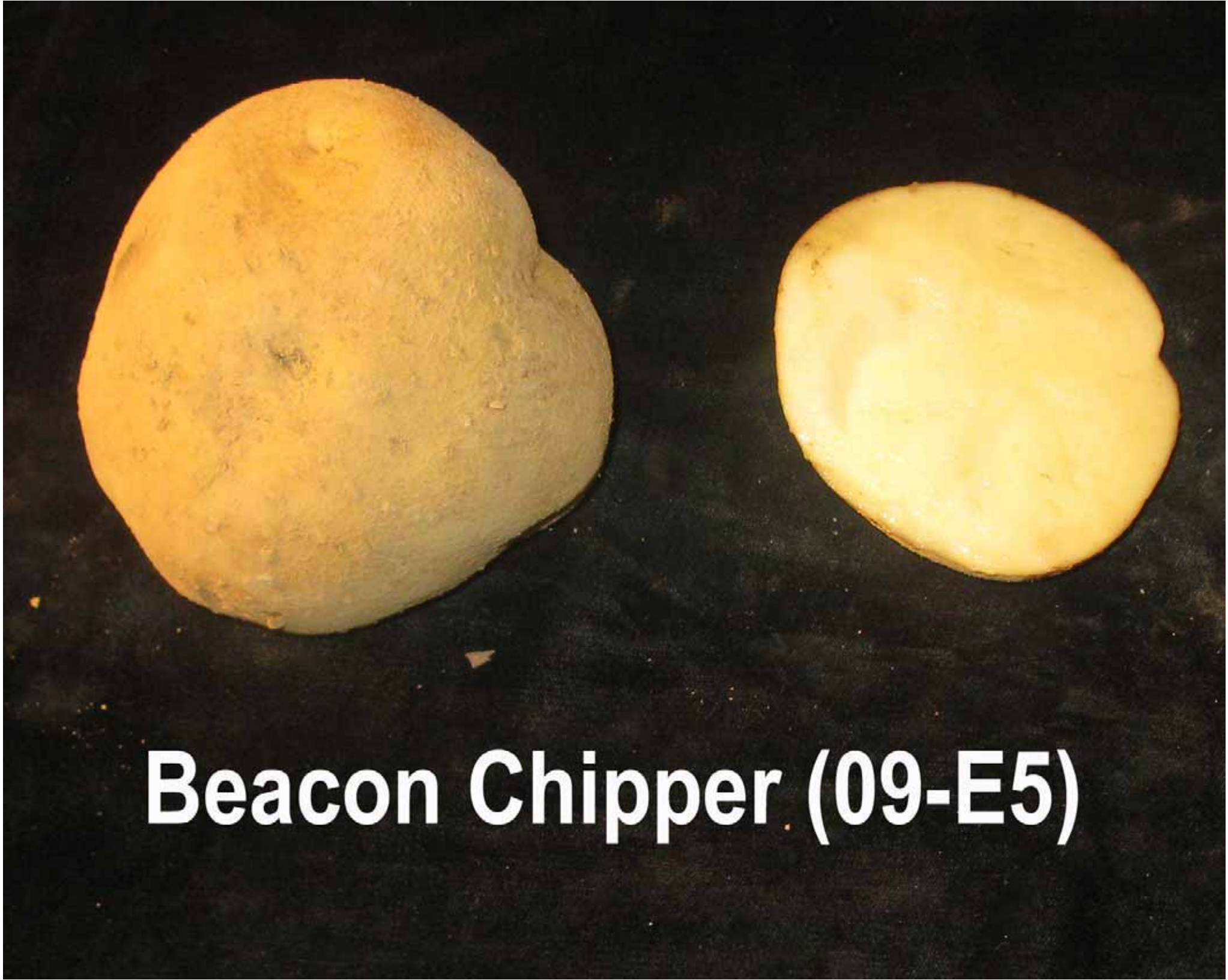
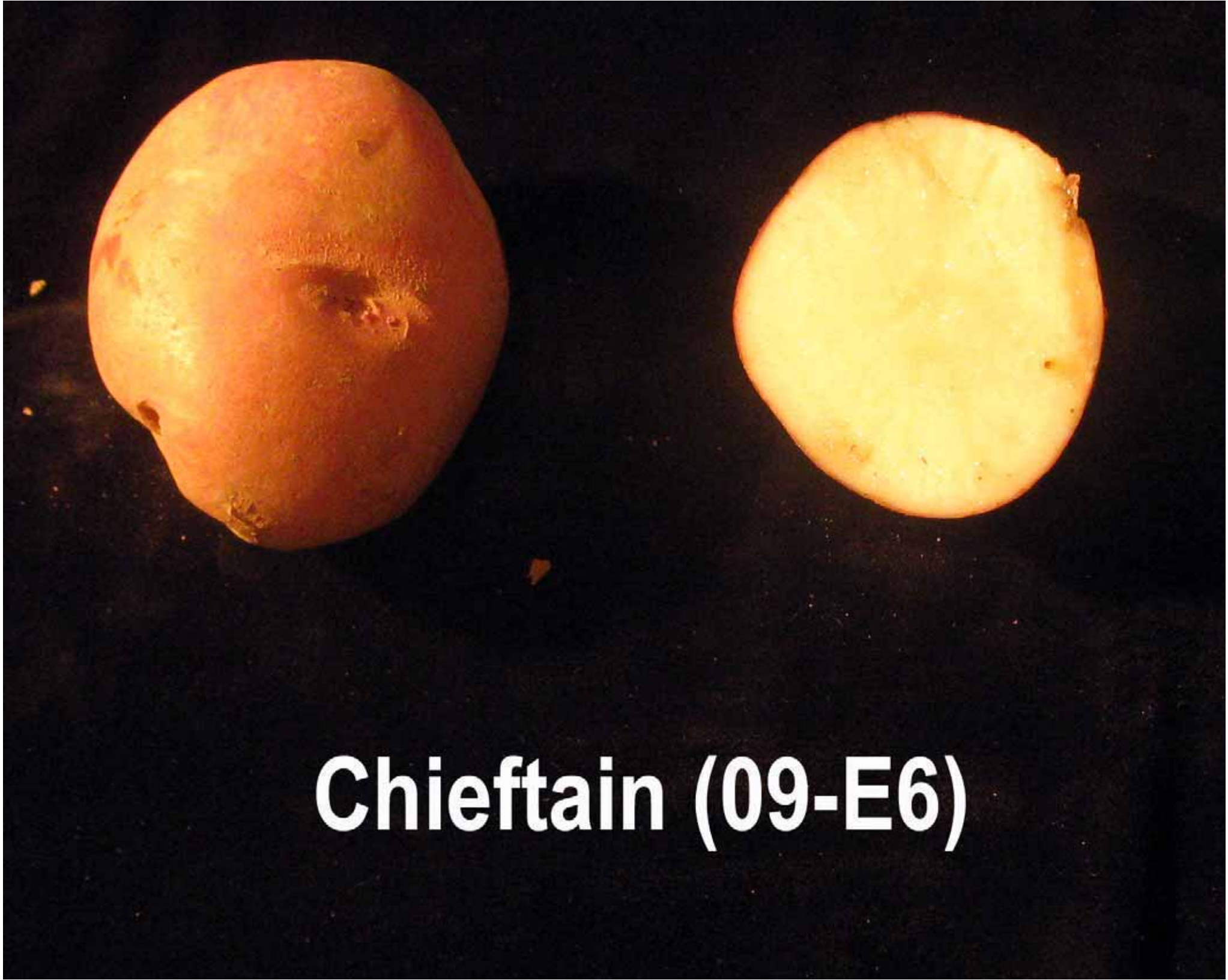
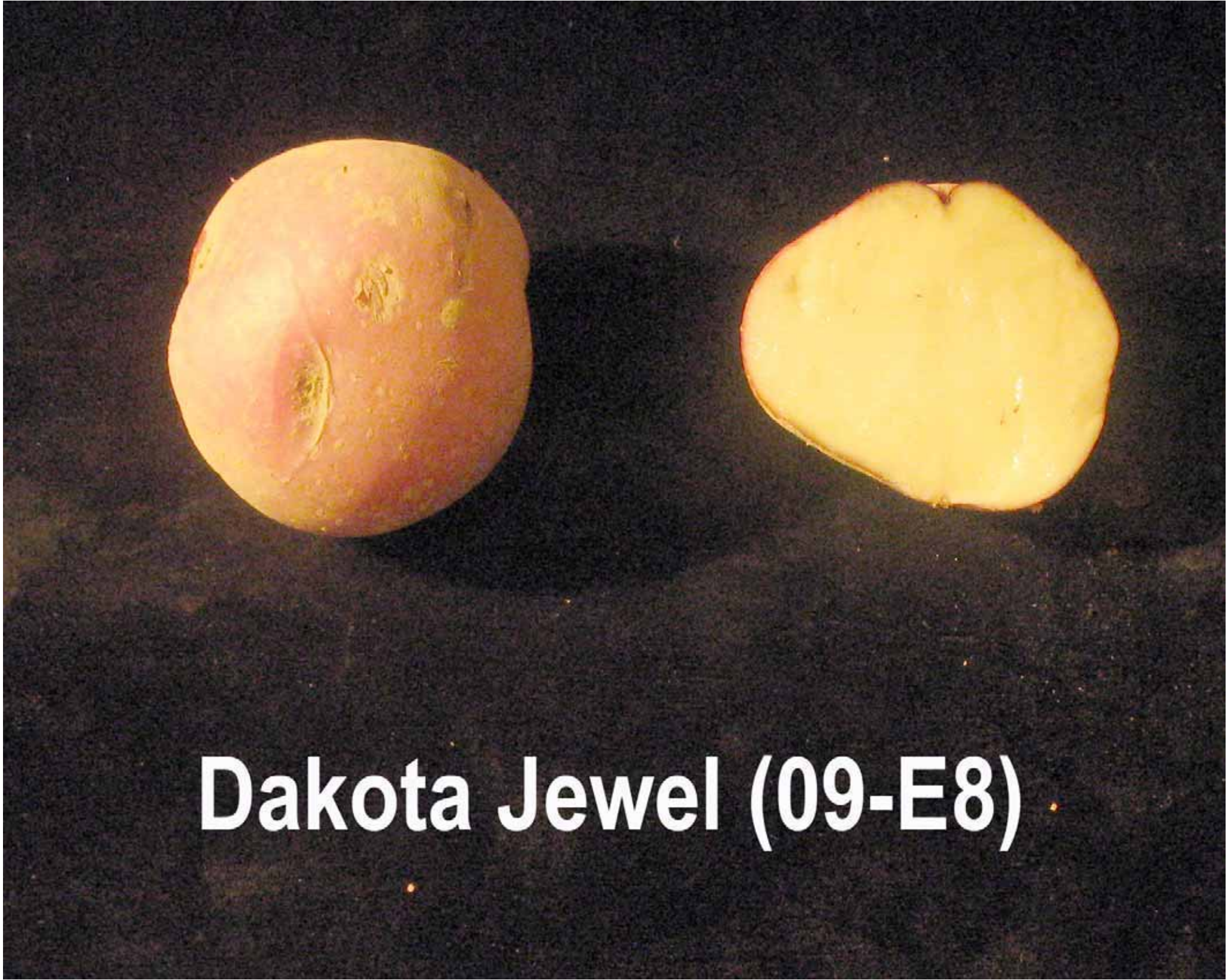
B 2452-3 (09-E4)

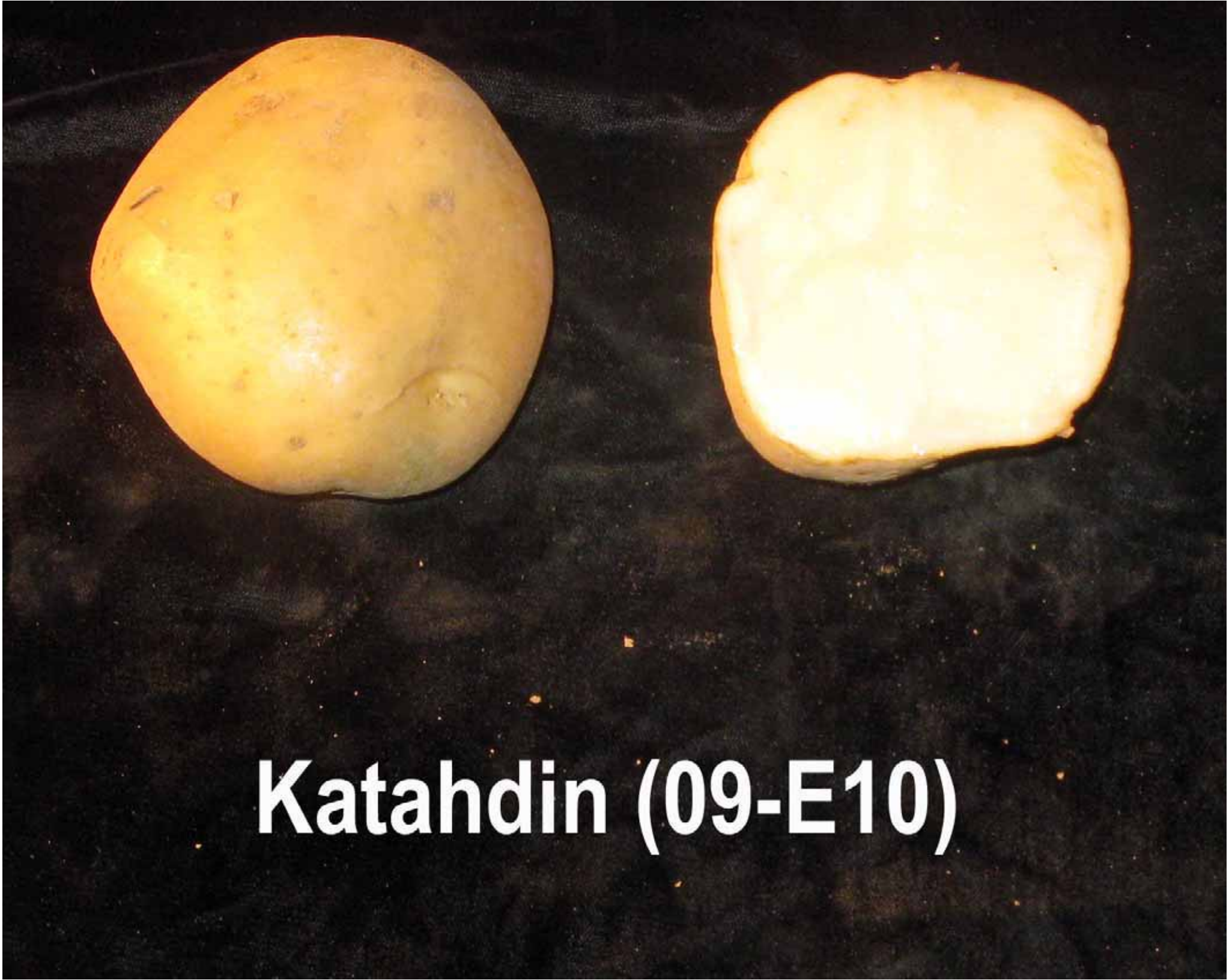

Beacon Chipper (09-E5)

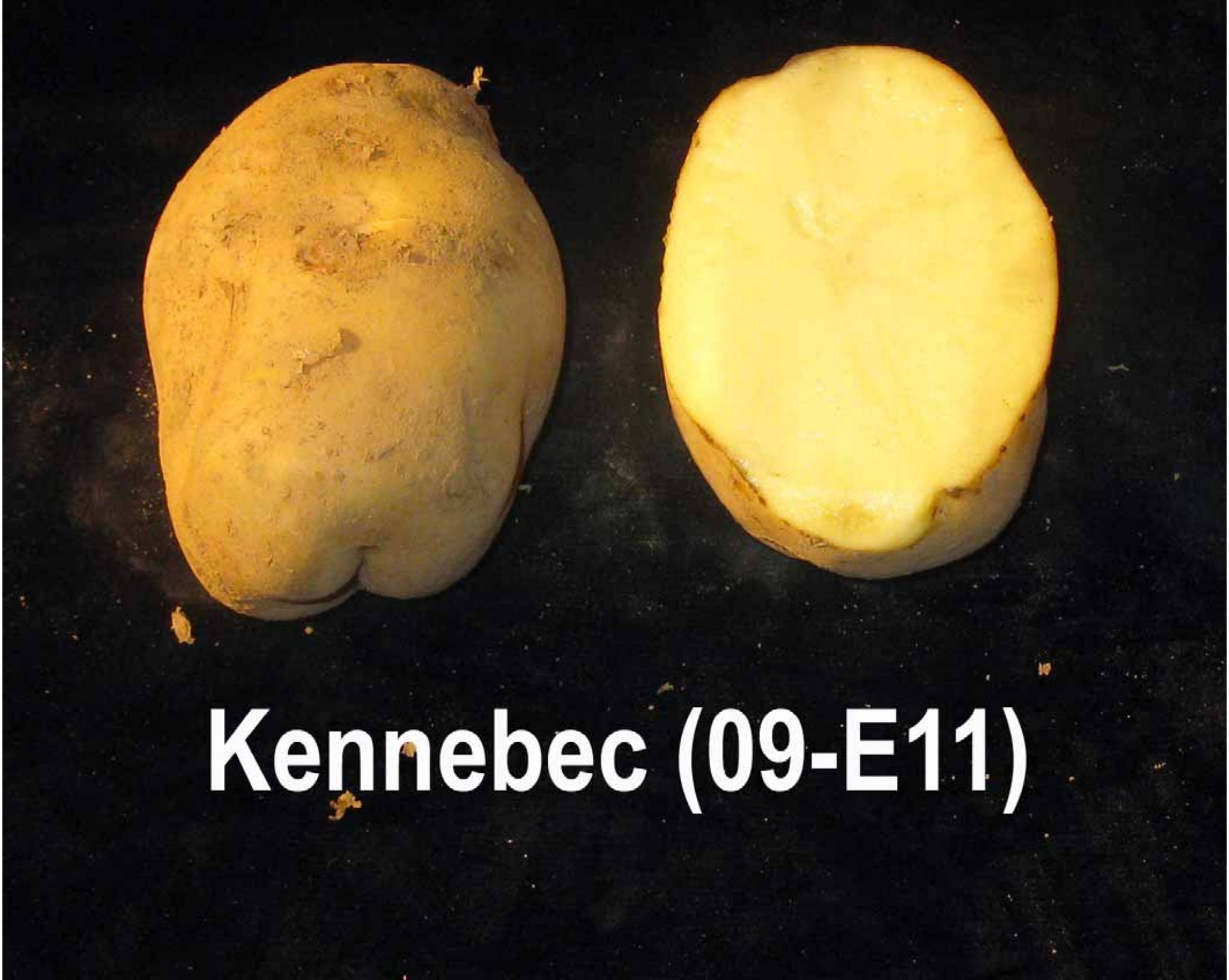

Chieftain (09-E6)


Dakota Diamond (09-E7)


Dakota Jewel (09-E8)


Dark Red Norland (09-E9)


Katahdin (09-E10)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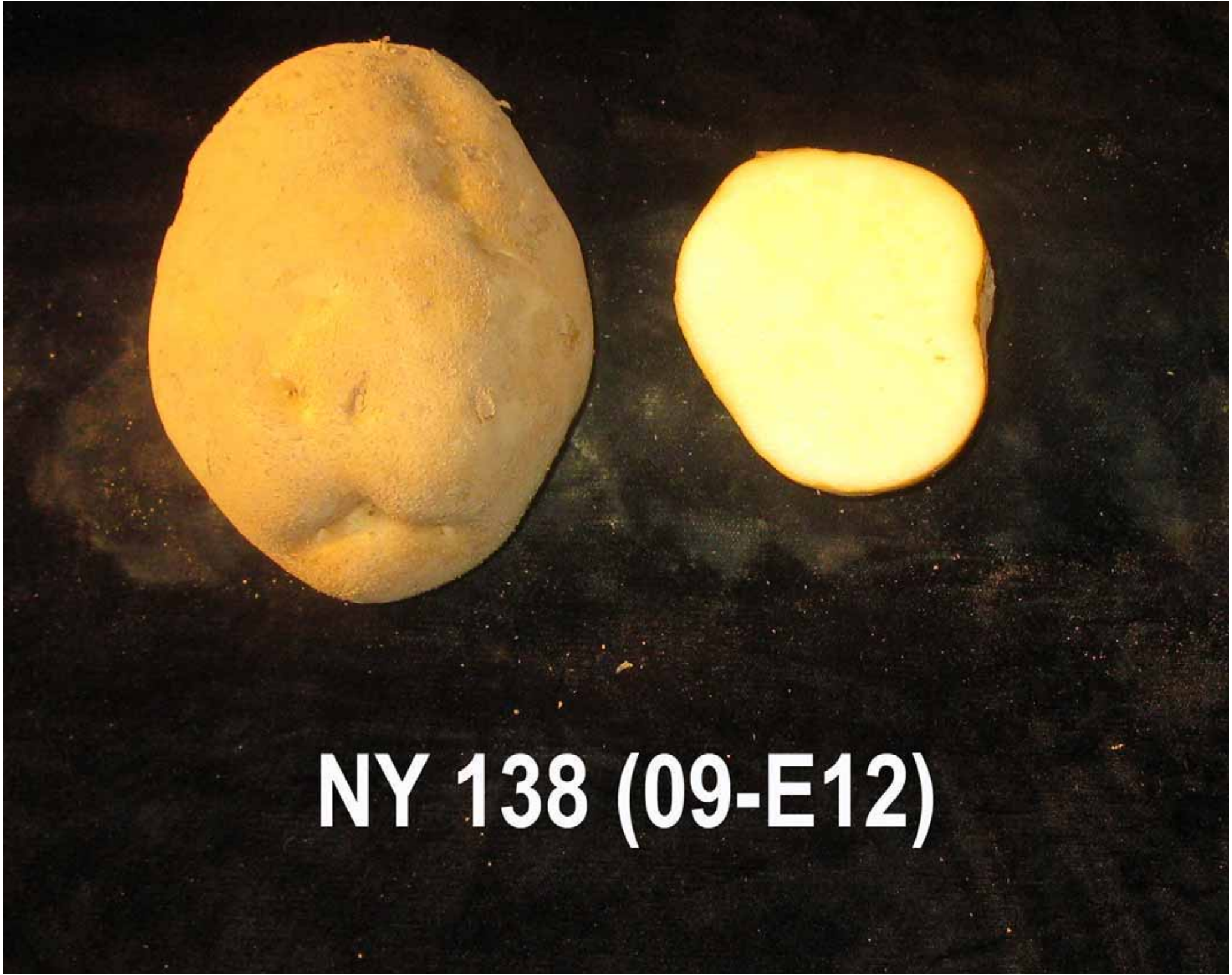
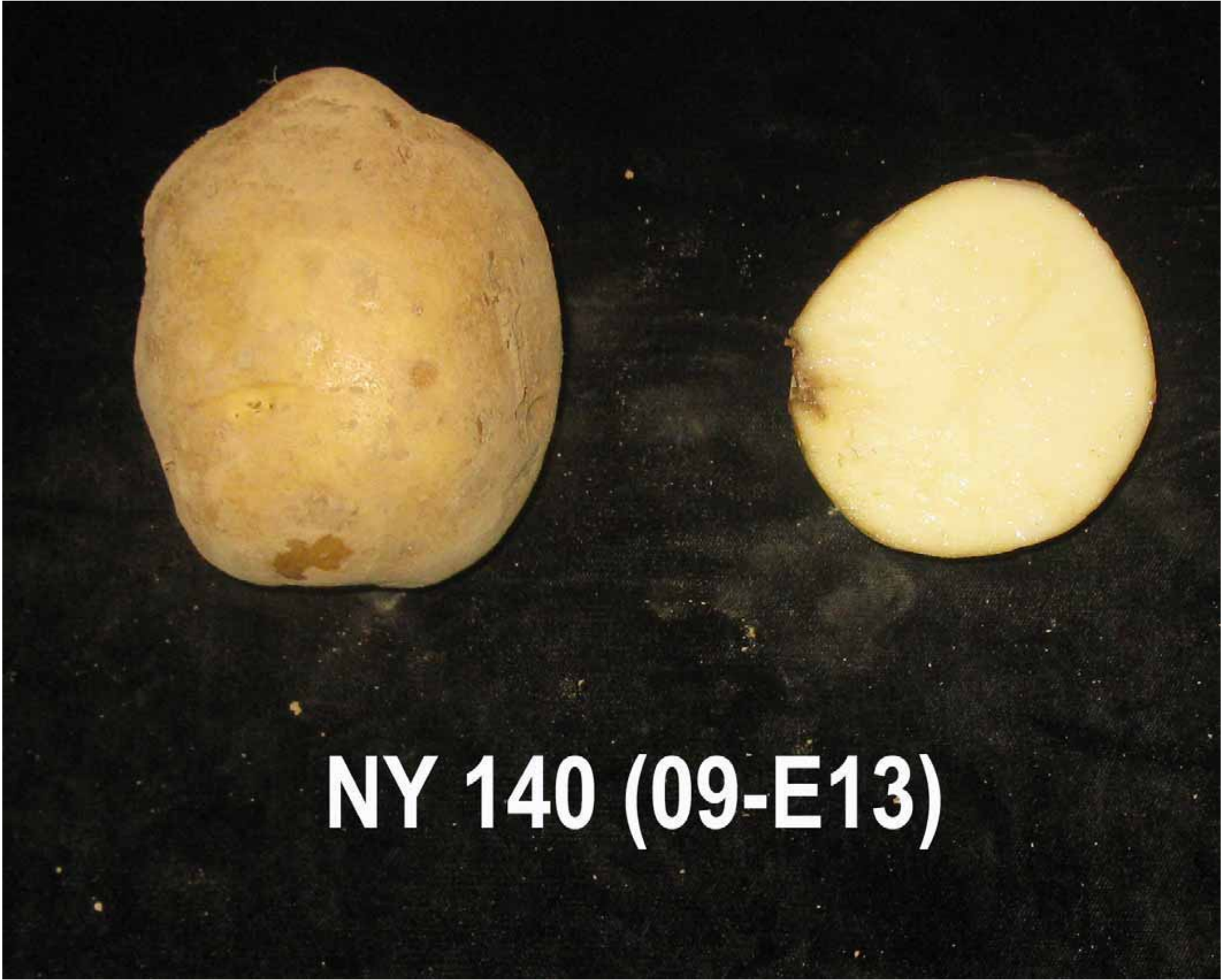
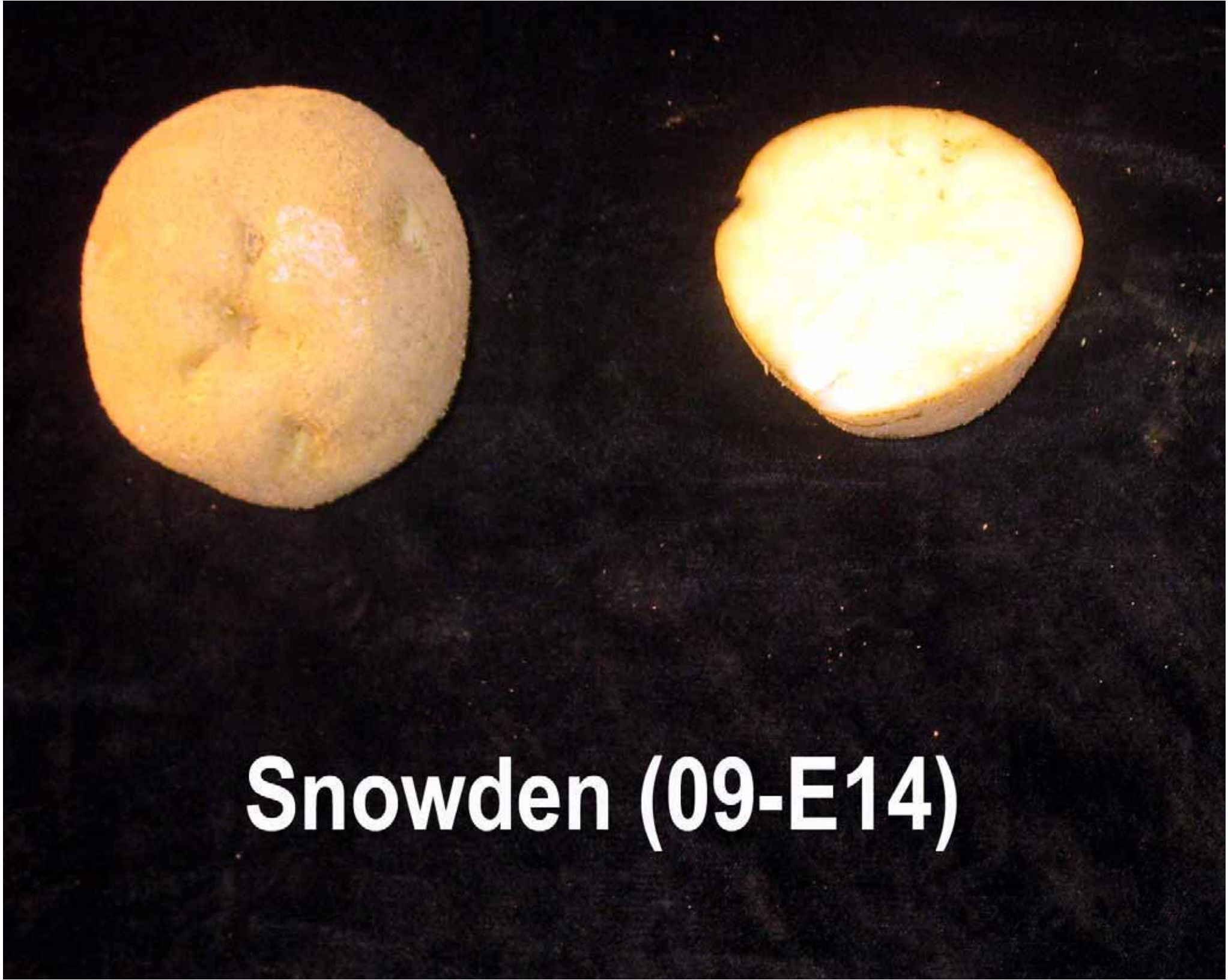

NY 138 (09-E12)


NY 140 (09-E13)

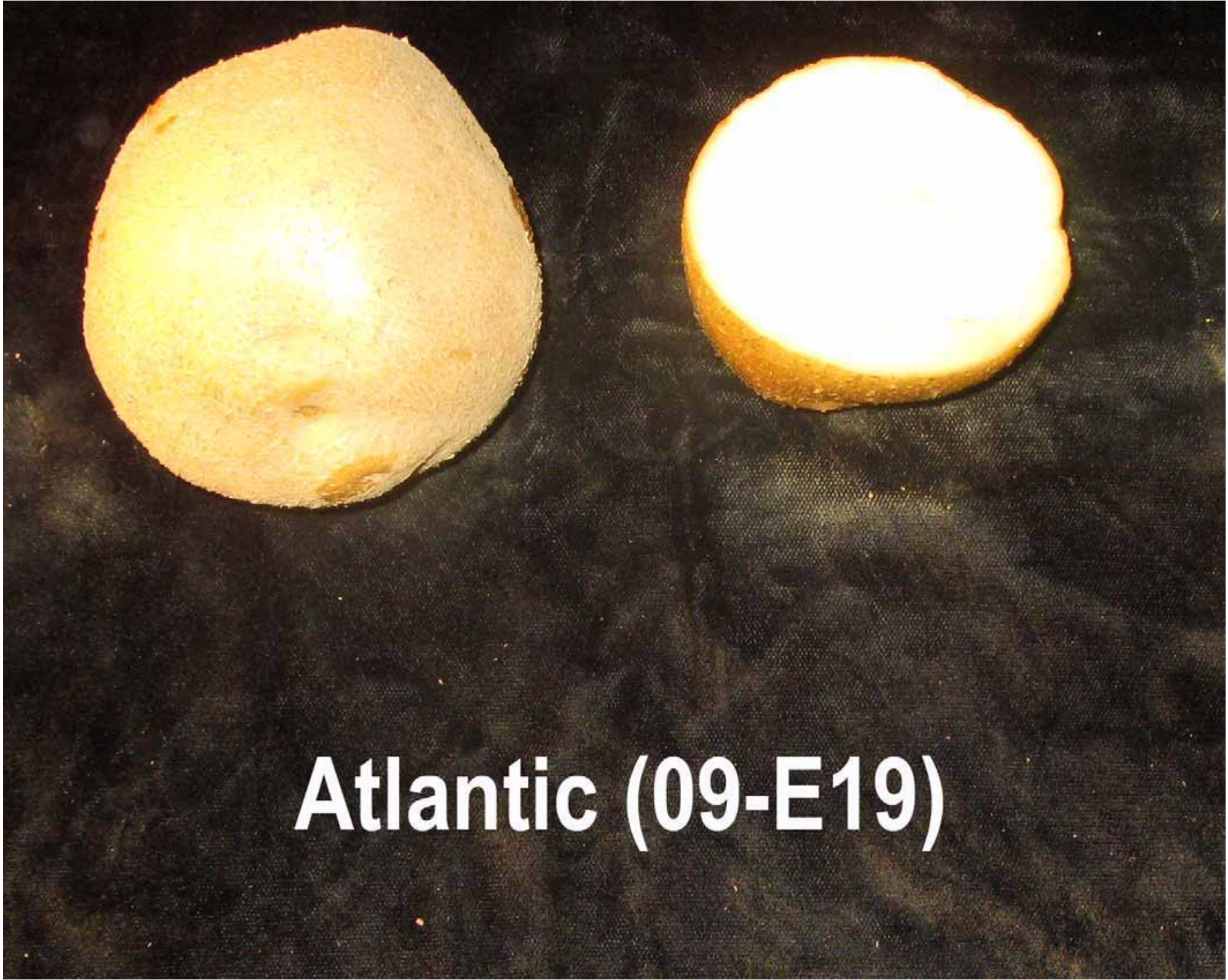

Snowden (09-E14)


Superior (09-E15)


Yukon Gold (09-E16)


AF 0339-39 (09-E17)


AF 2497-2 (09-E18)

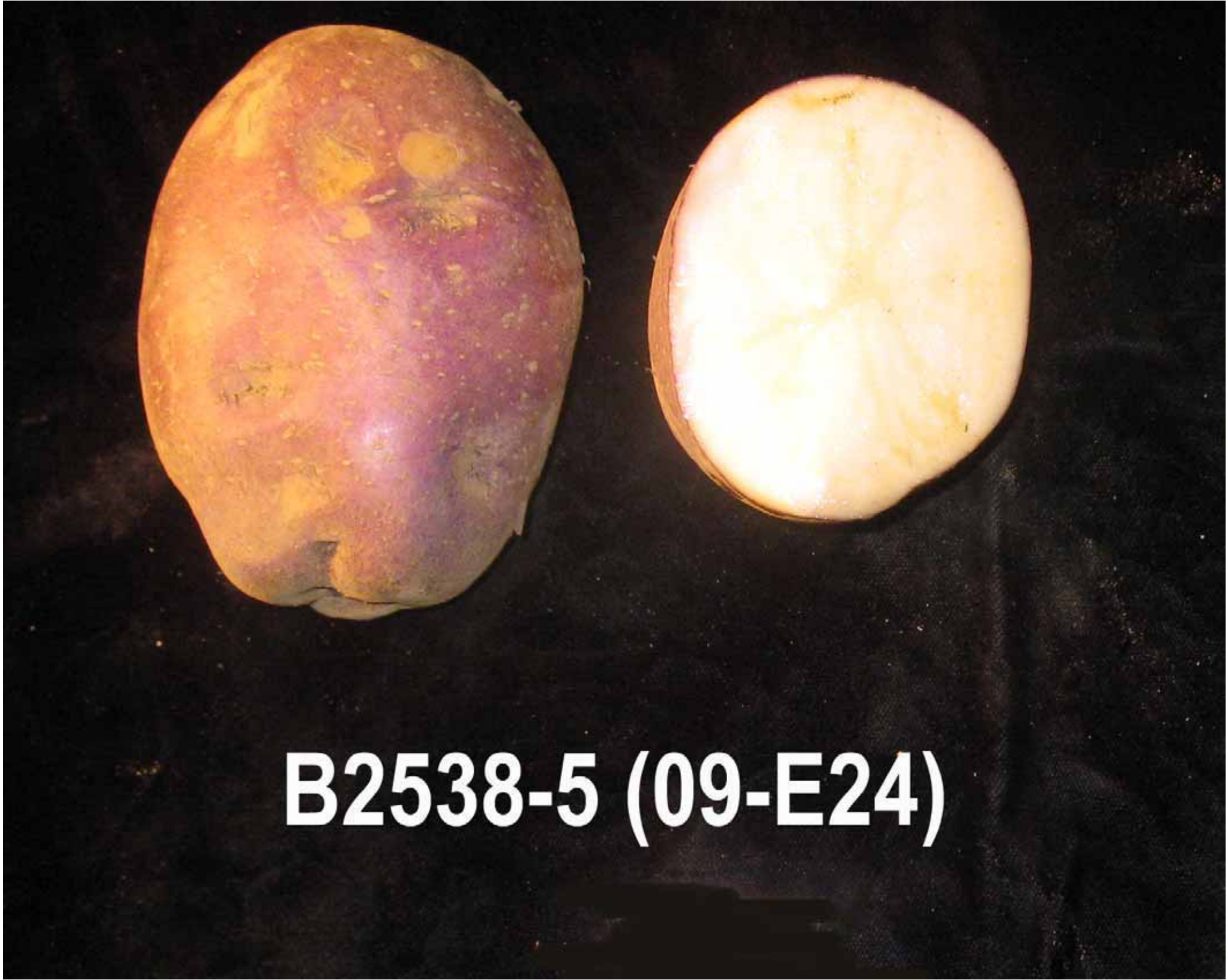

Atlantic (09-E19)


B2152-17 (09-E20)


B2471-12 (09-E21)


B2492-7 (09-E22)


B2501-10 (09-E23)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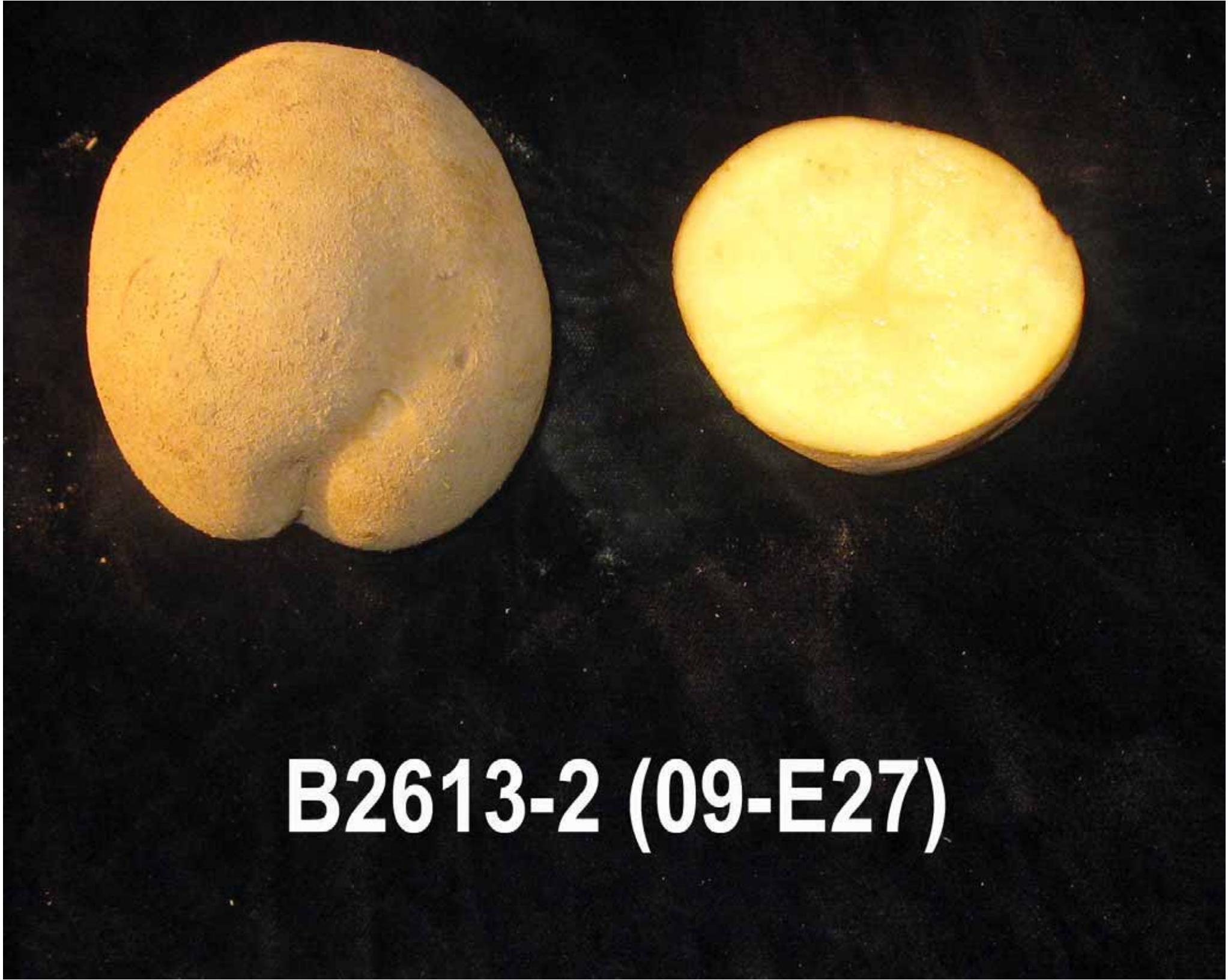
B2575-14 (09-E25)


B2575-19 (09-E26)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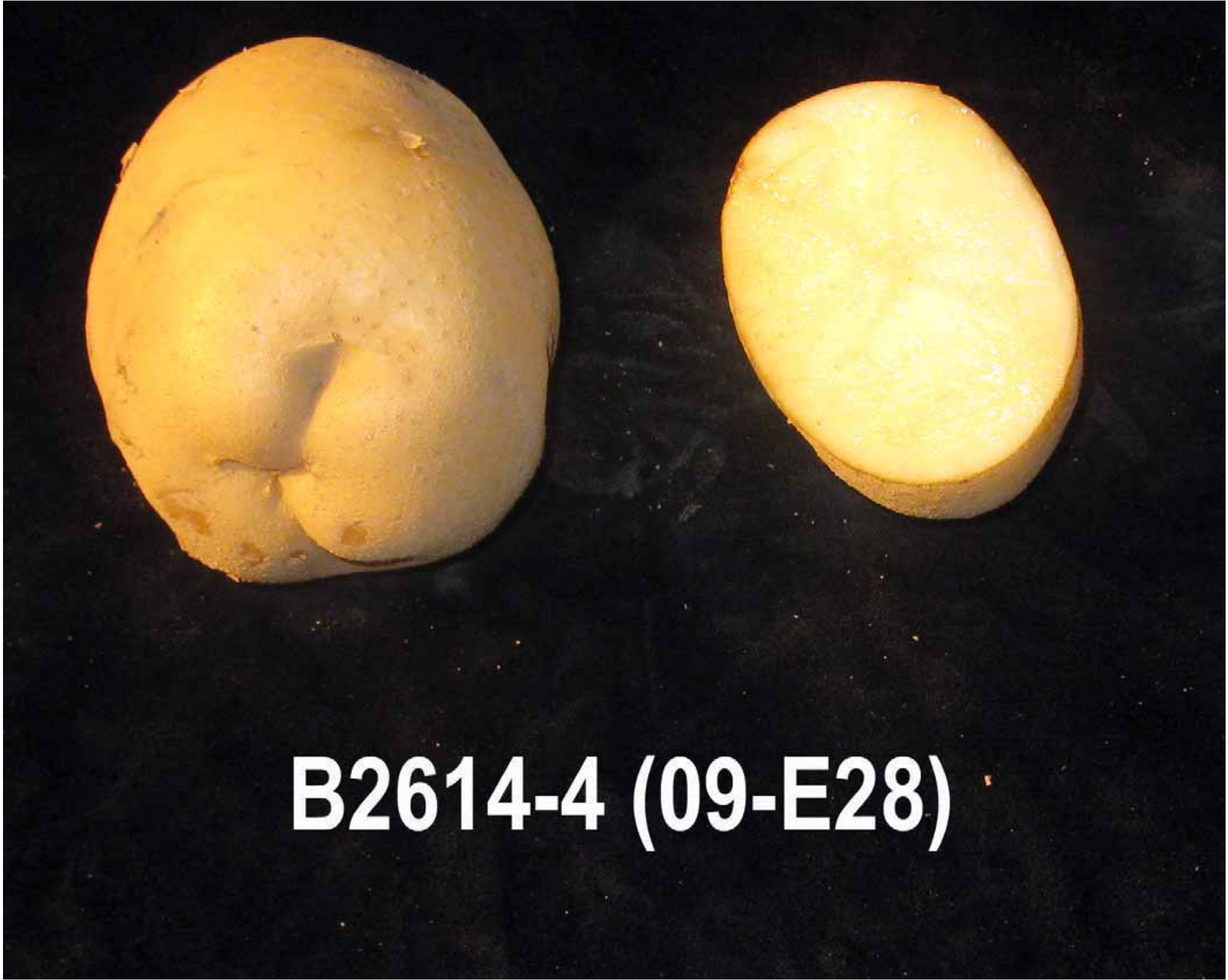
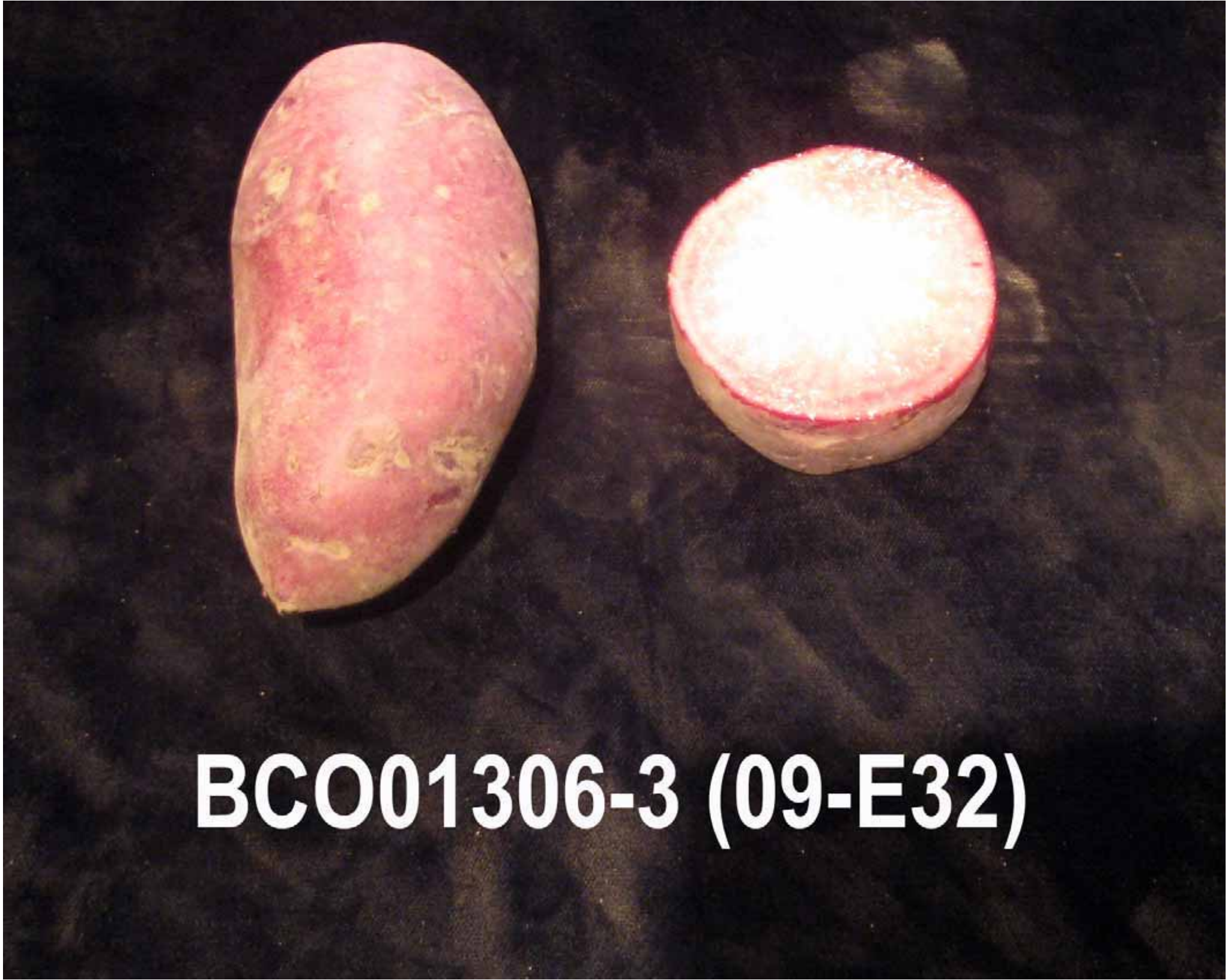

B2614-4 (09-E28)


BCO01044-2 (09-E29)


BCO01283-2 (09-E30)

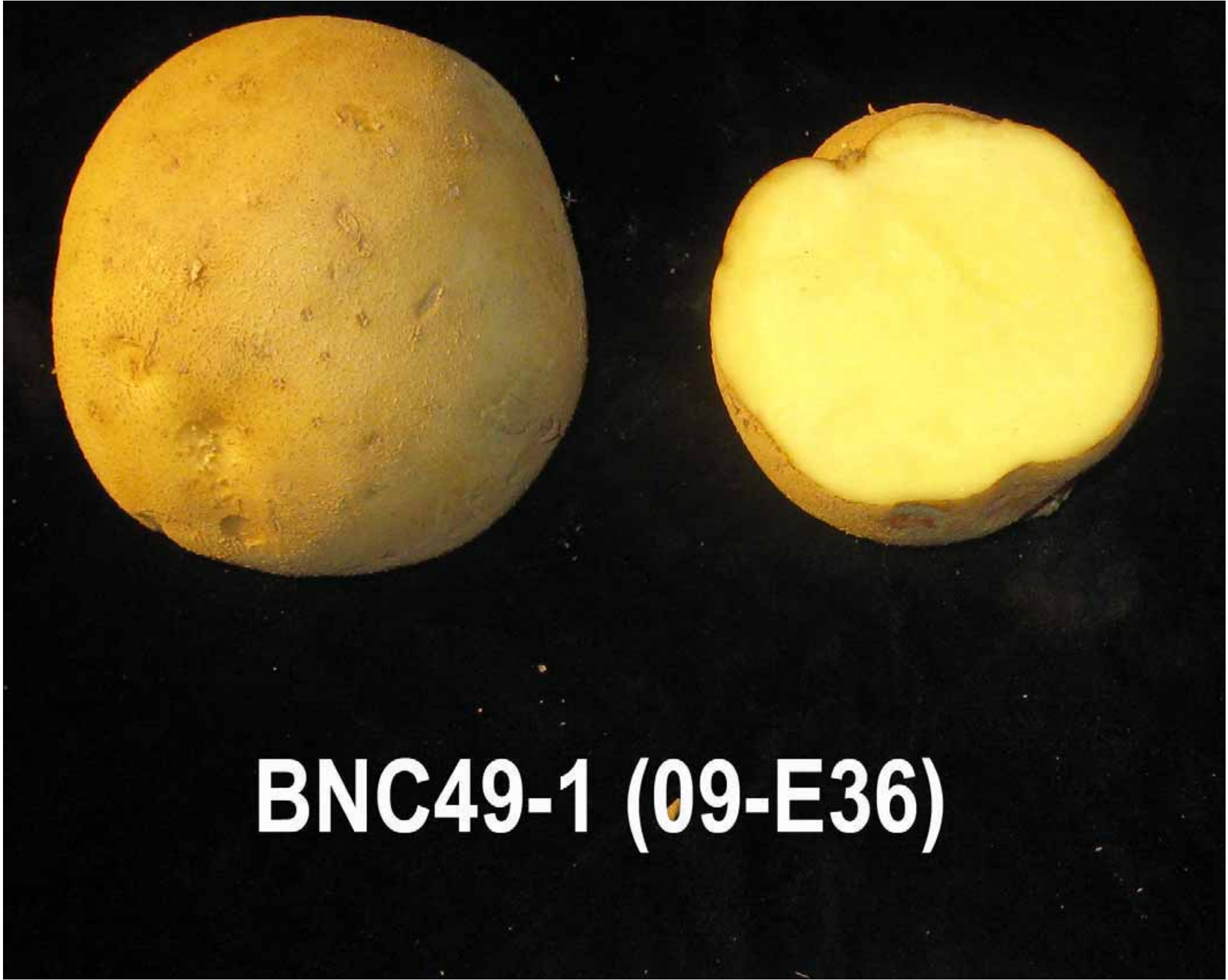

BCO01306-2 (09-E31)


BCO01306-3 (09-E32)


BCO01357-4 (09-E33)


BCO01371-2 (09-E34)


Beacon Chipper (09-E35)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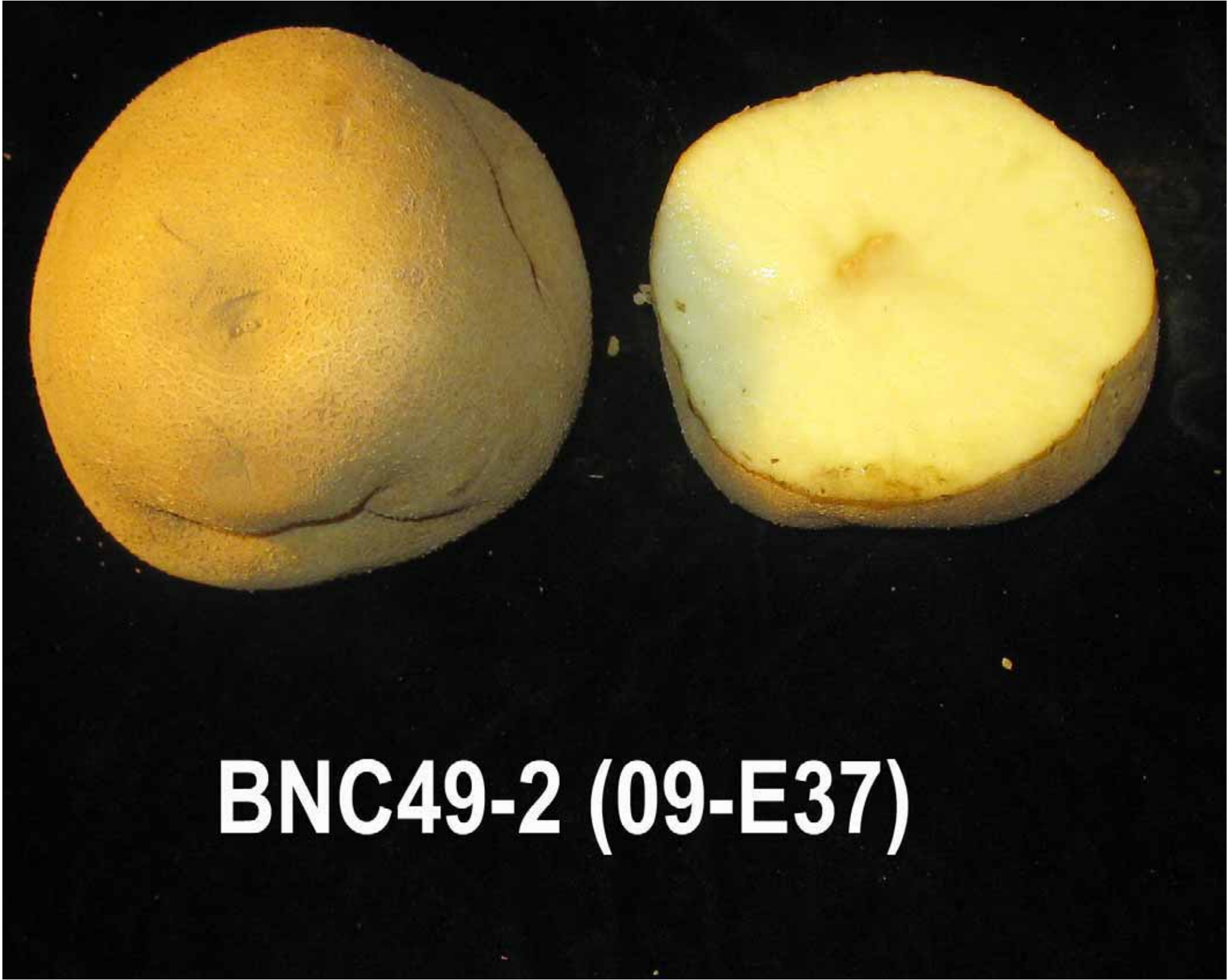
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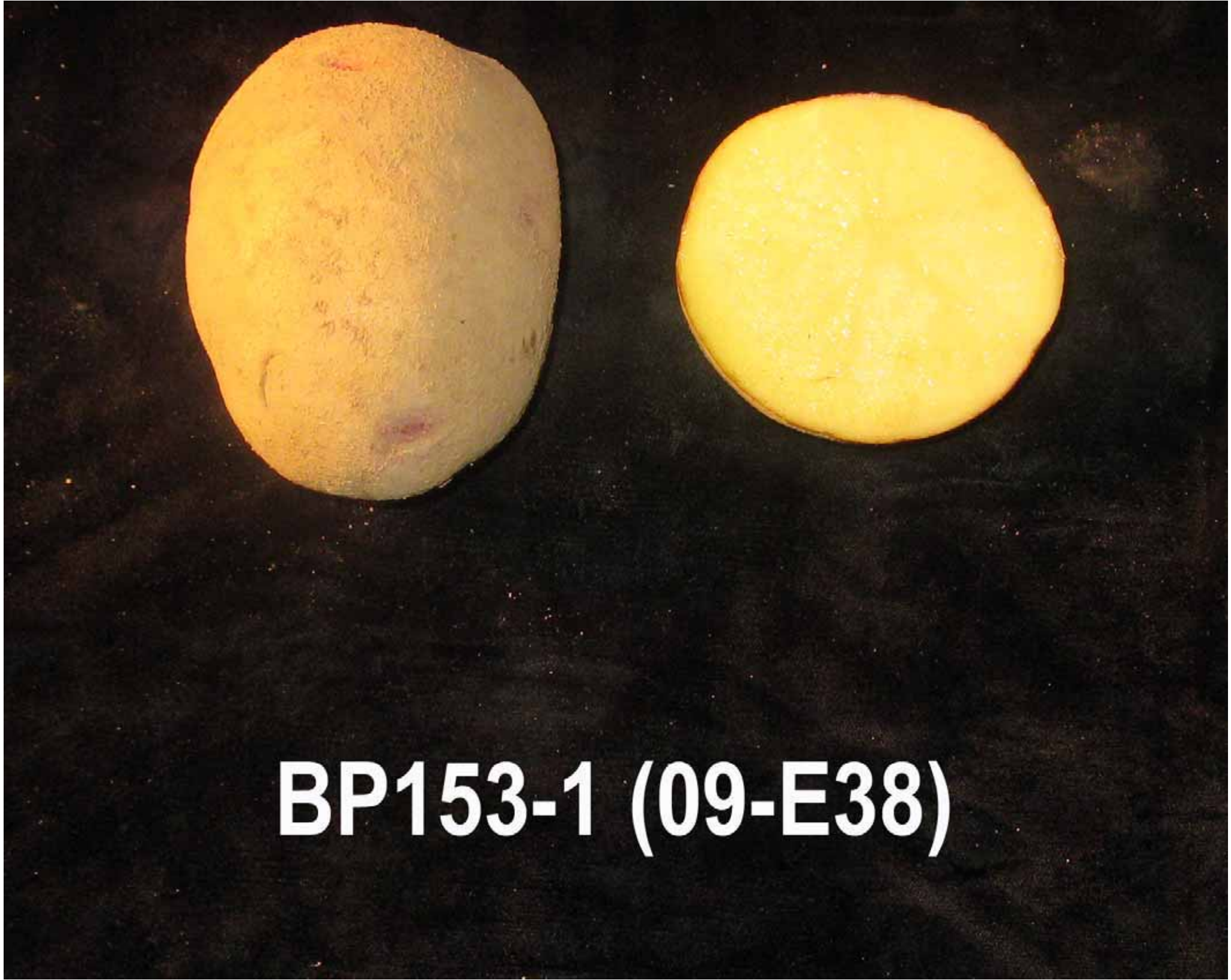
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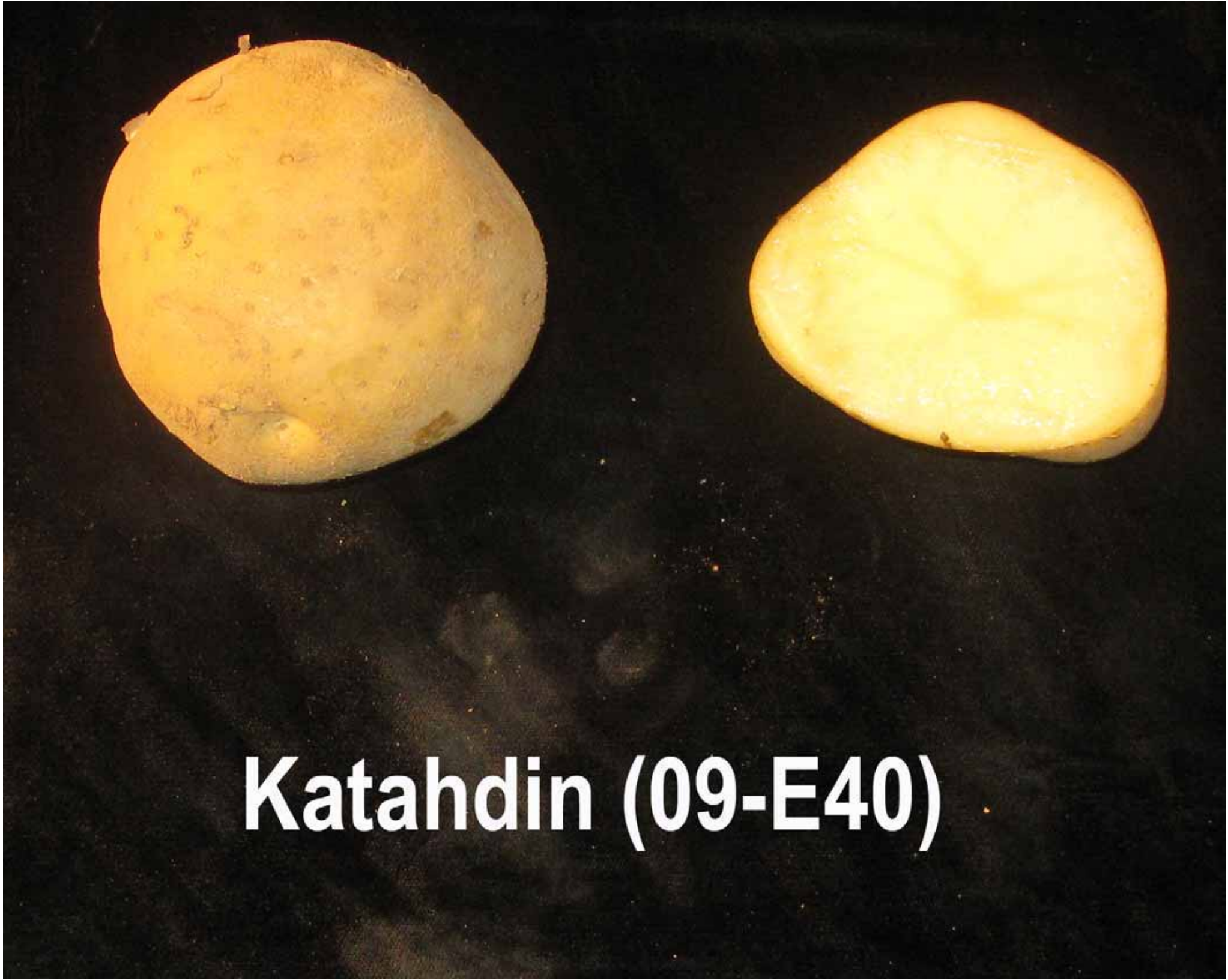
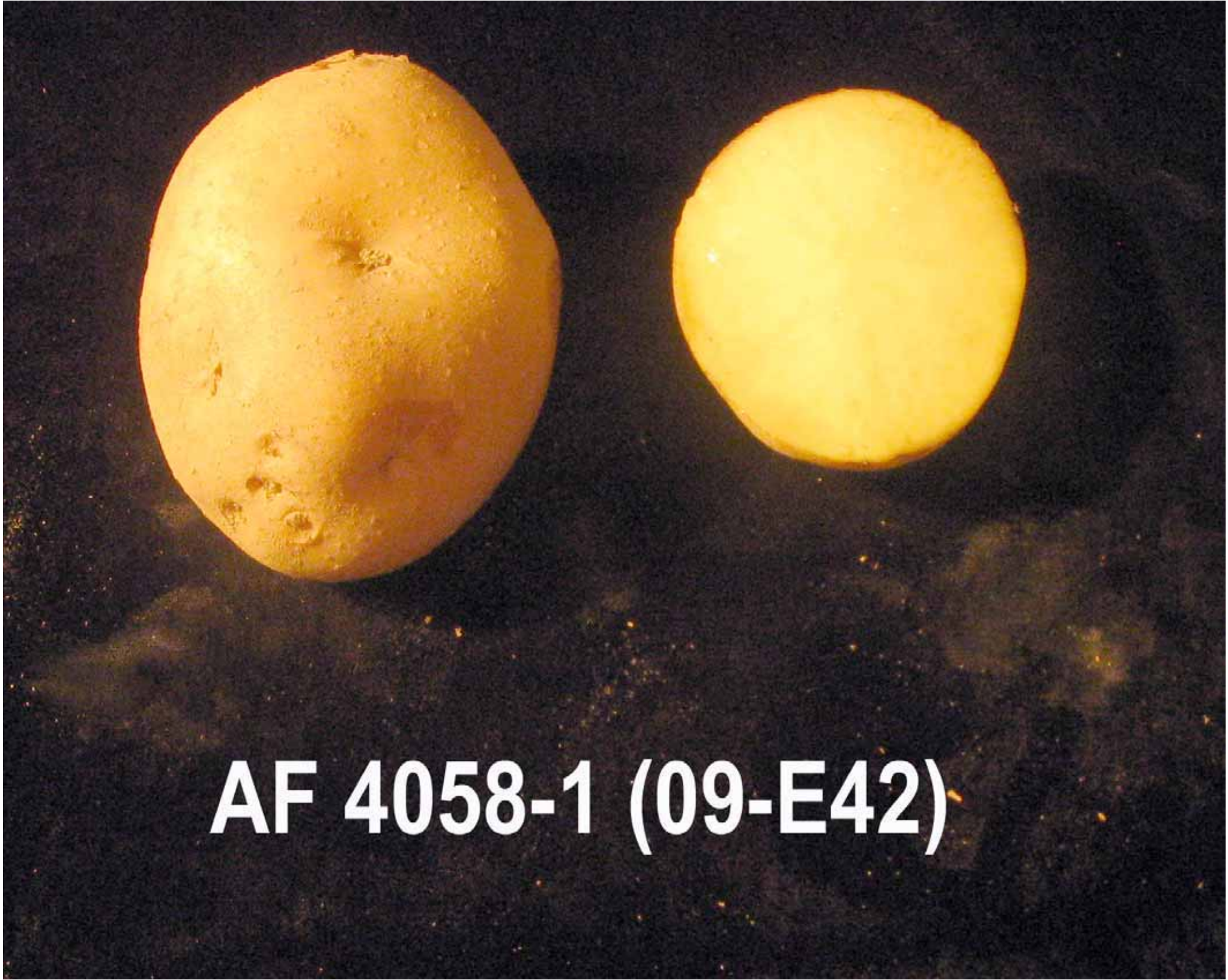
Dark Red Norland (09-E39)


Katahdin (09-E40)


Yukon Gold (09-E41)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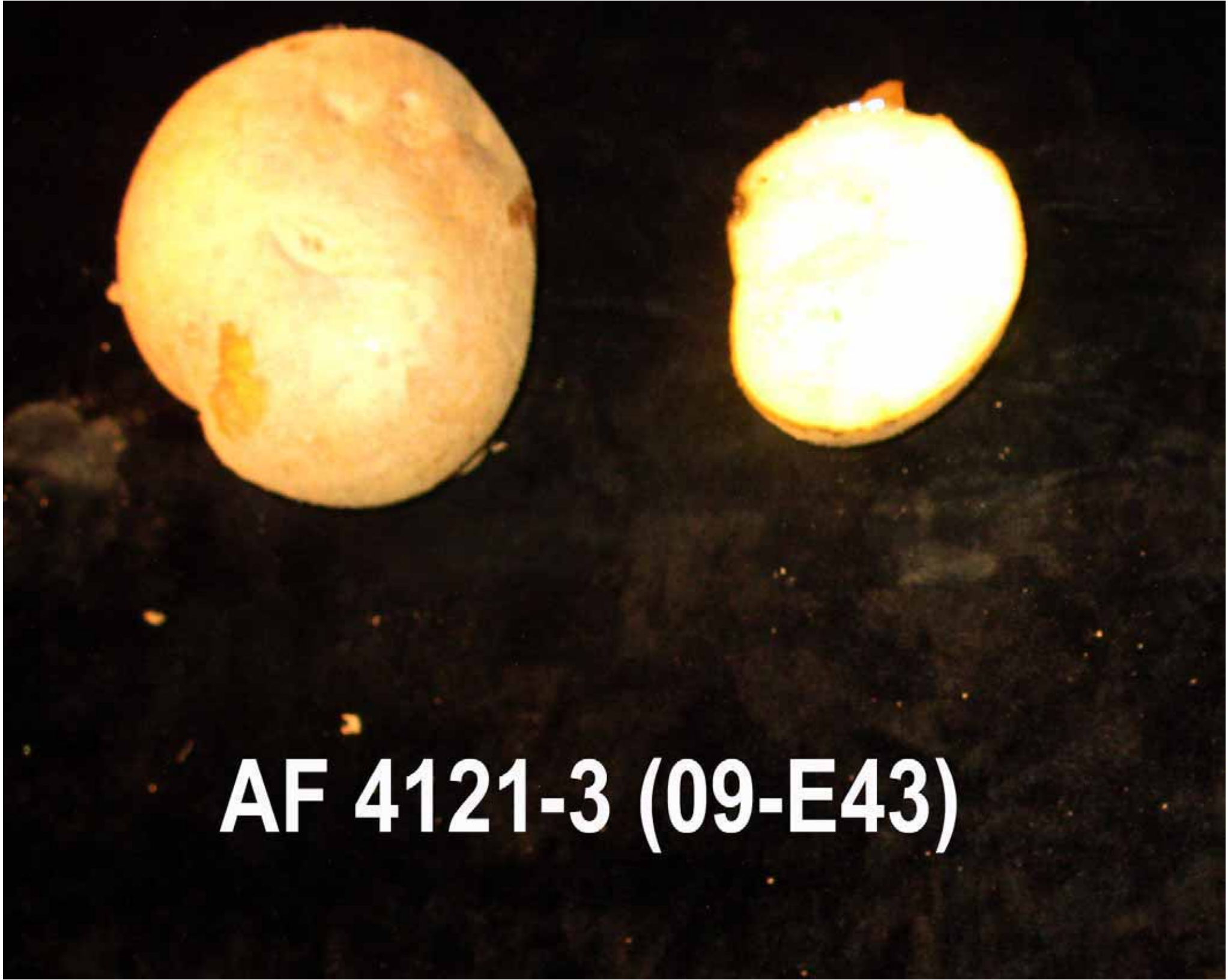
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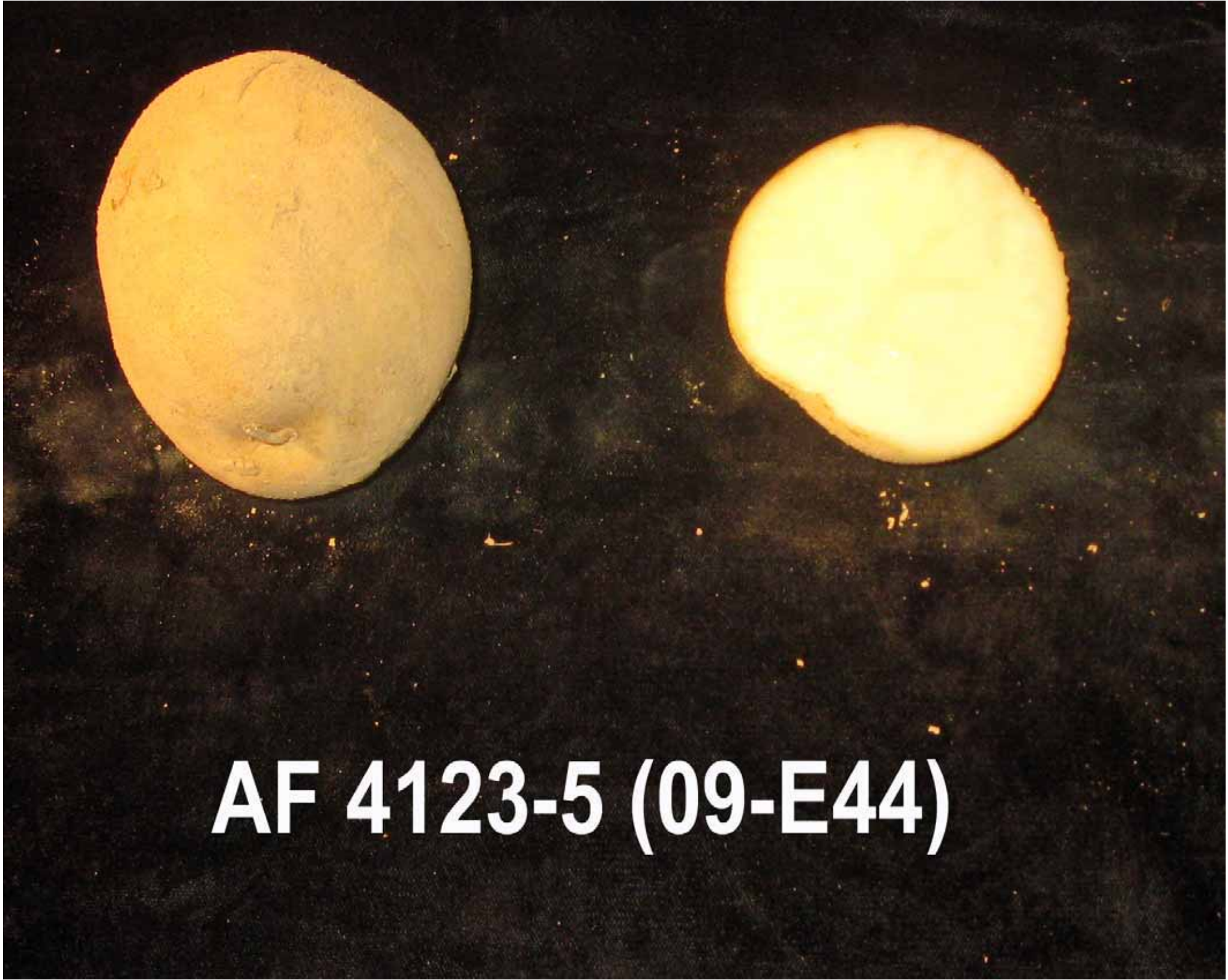
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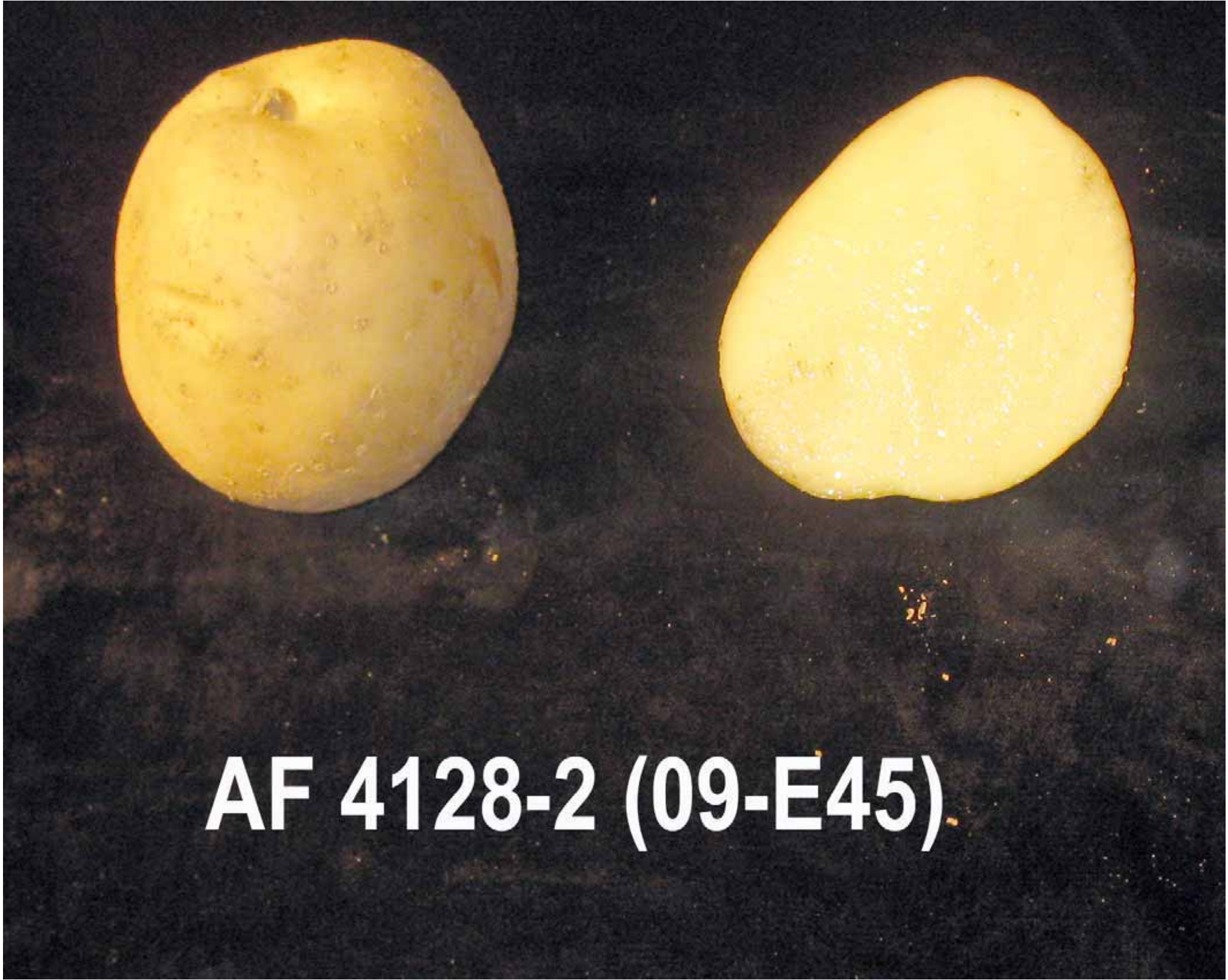
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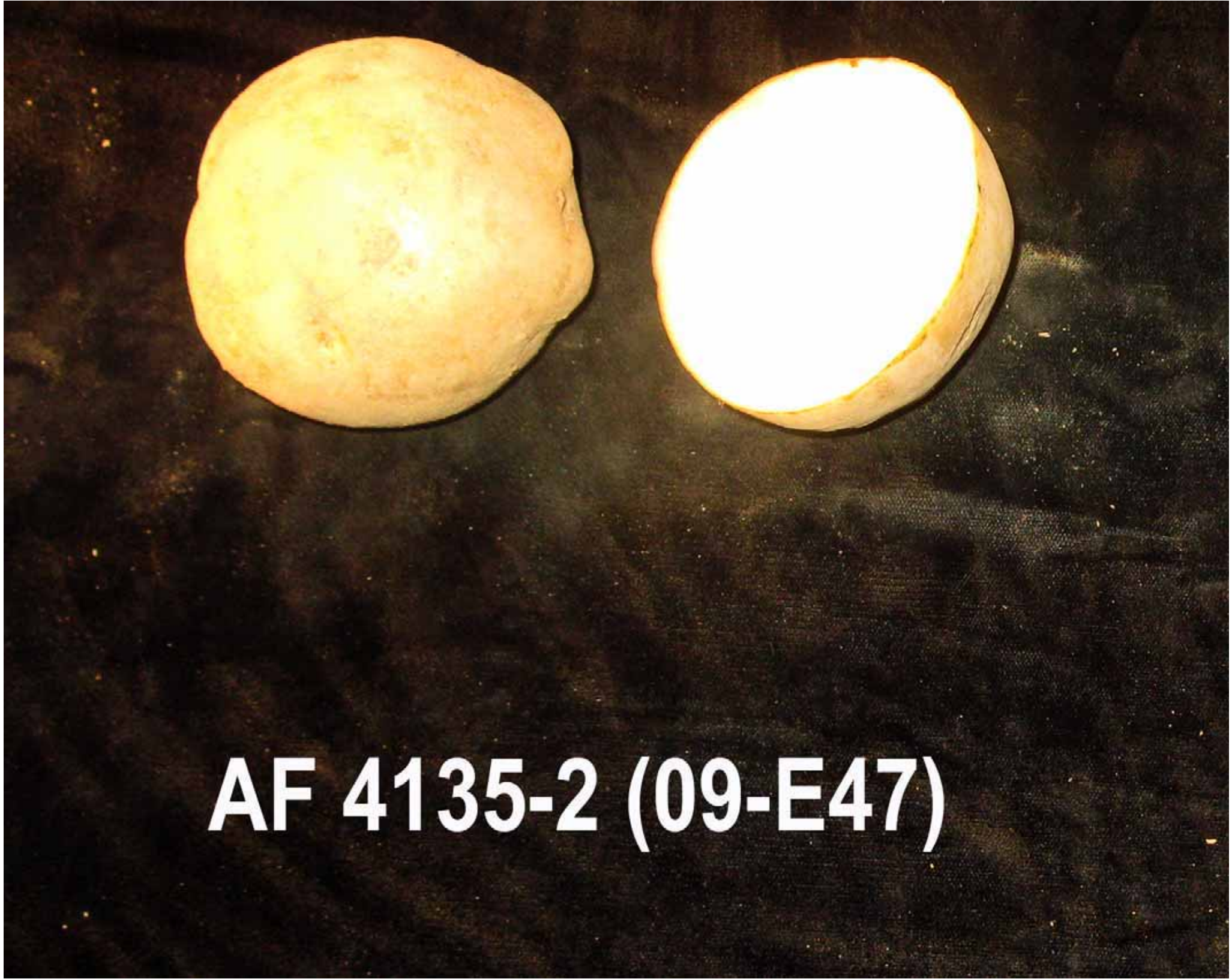
AF 4129-5 (09-E46)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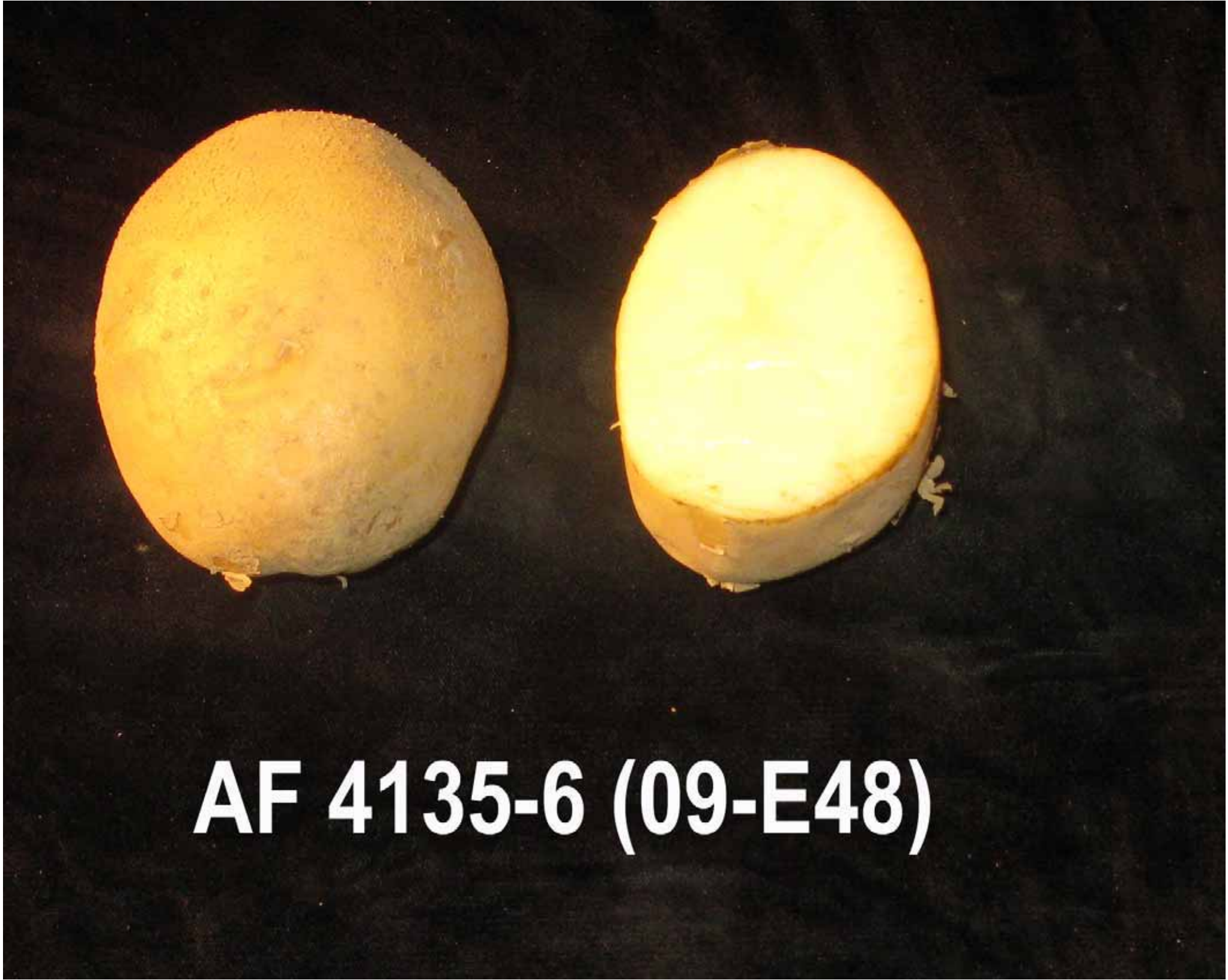

AF 4135-6 (09-E48)

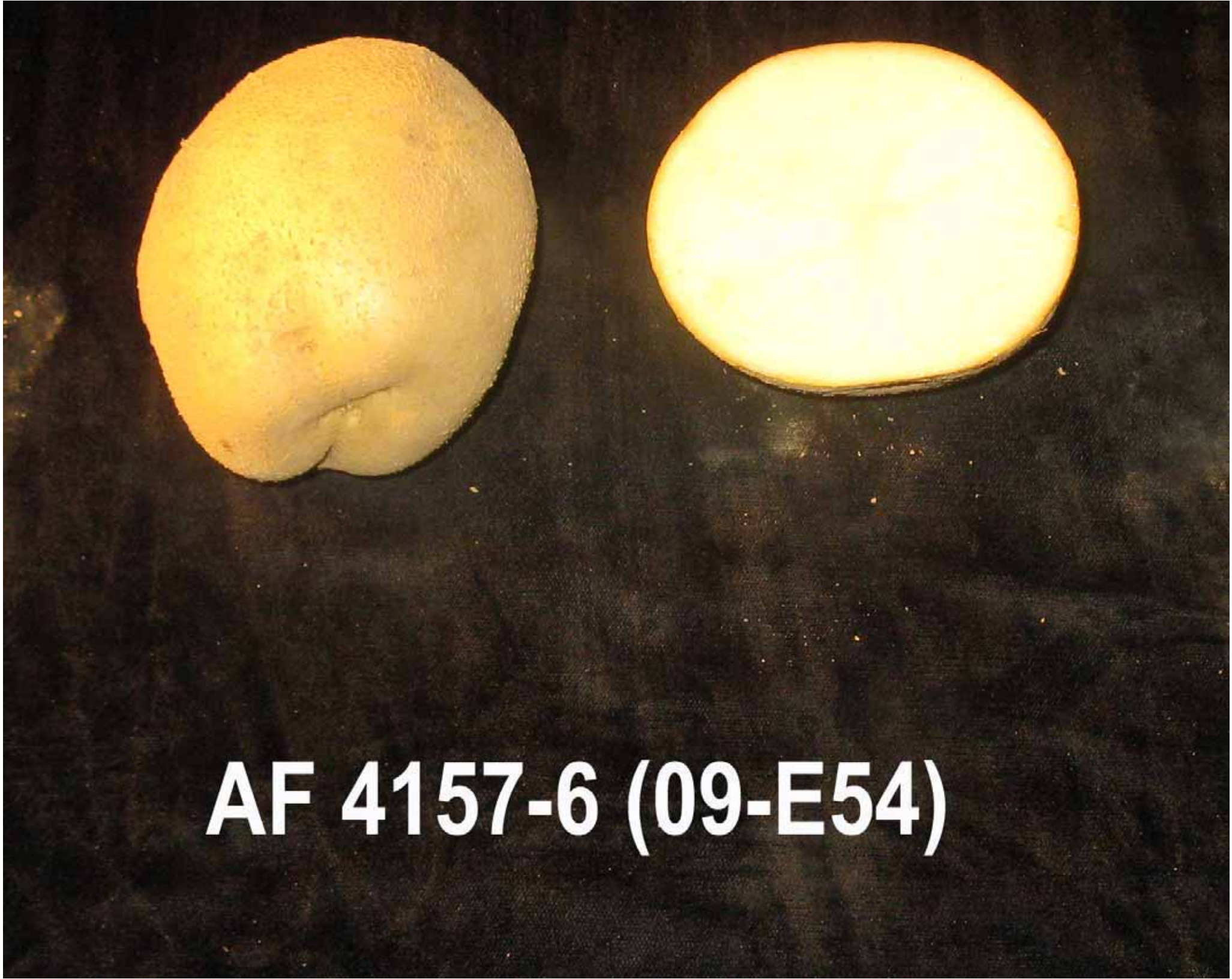

AF 4137-10 (09-E49)


AF 4147-4 (09-E50)


AF 4147-5 (09-E51)


AF 4148-1 (09-E52)


AF 4149-3 (09-E53)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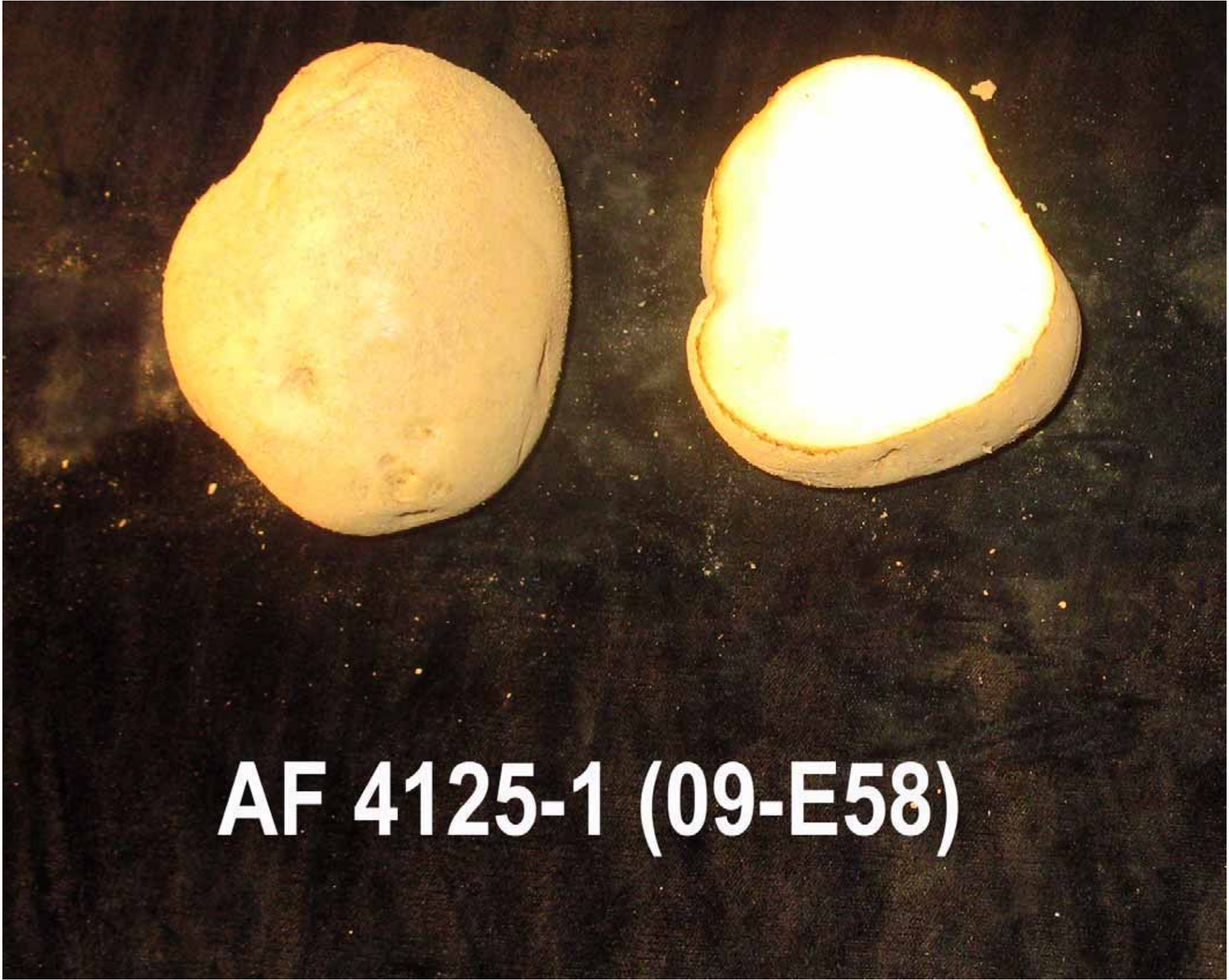
AF 4006-5 (09-E55)


AF 4108-3 (09-E56)


AF 4122-2 (09-E57)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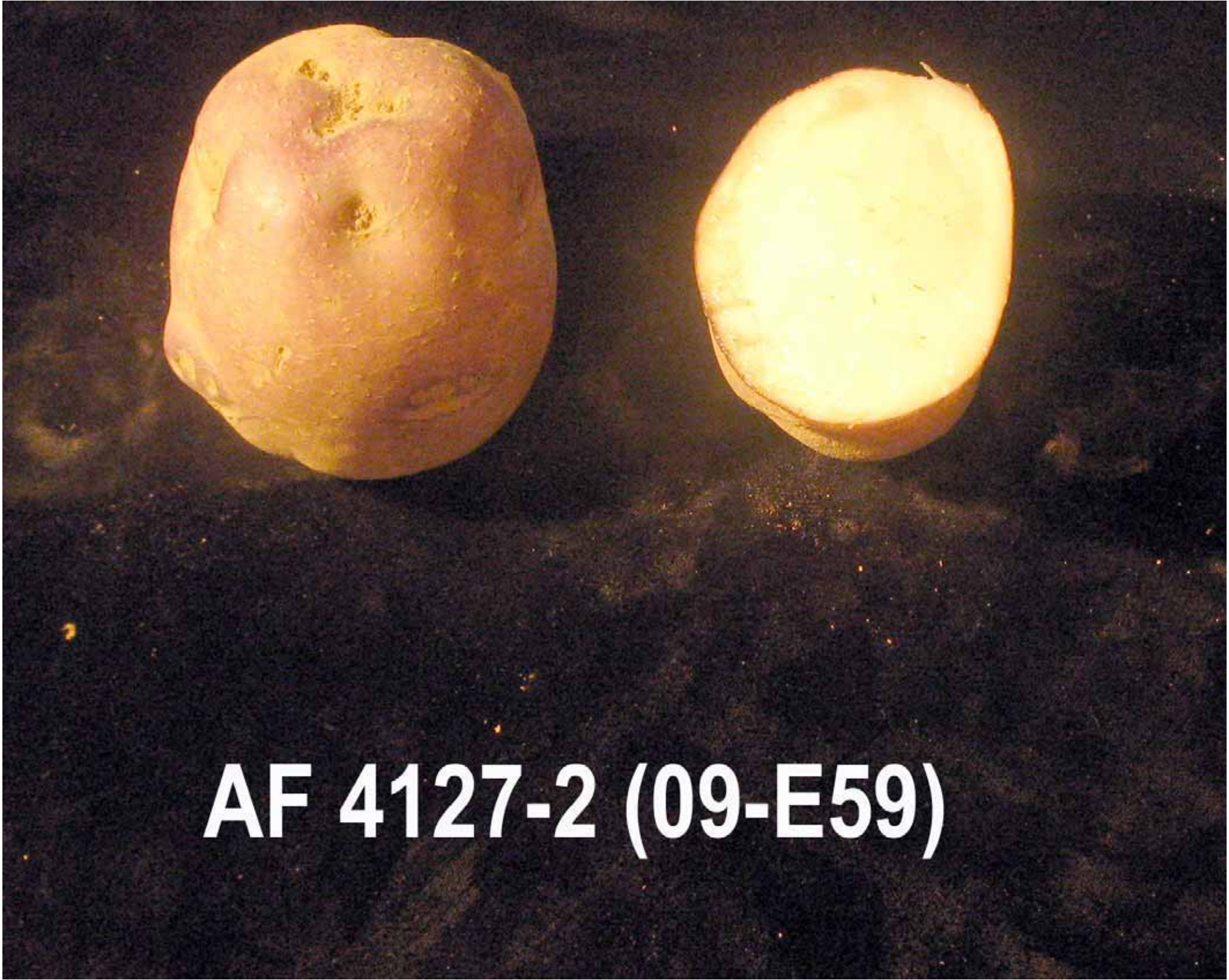
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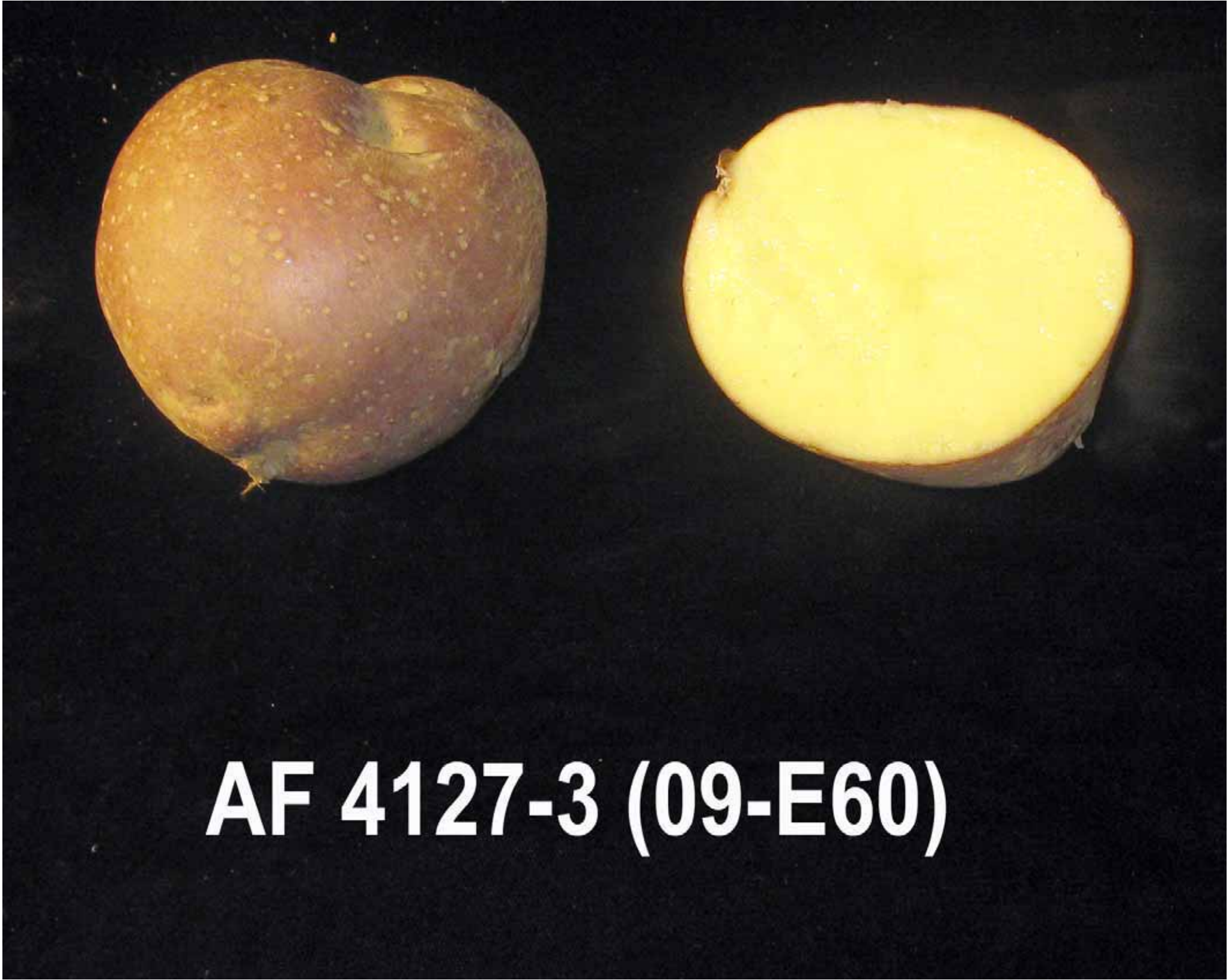
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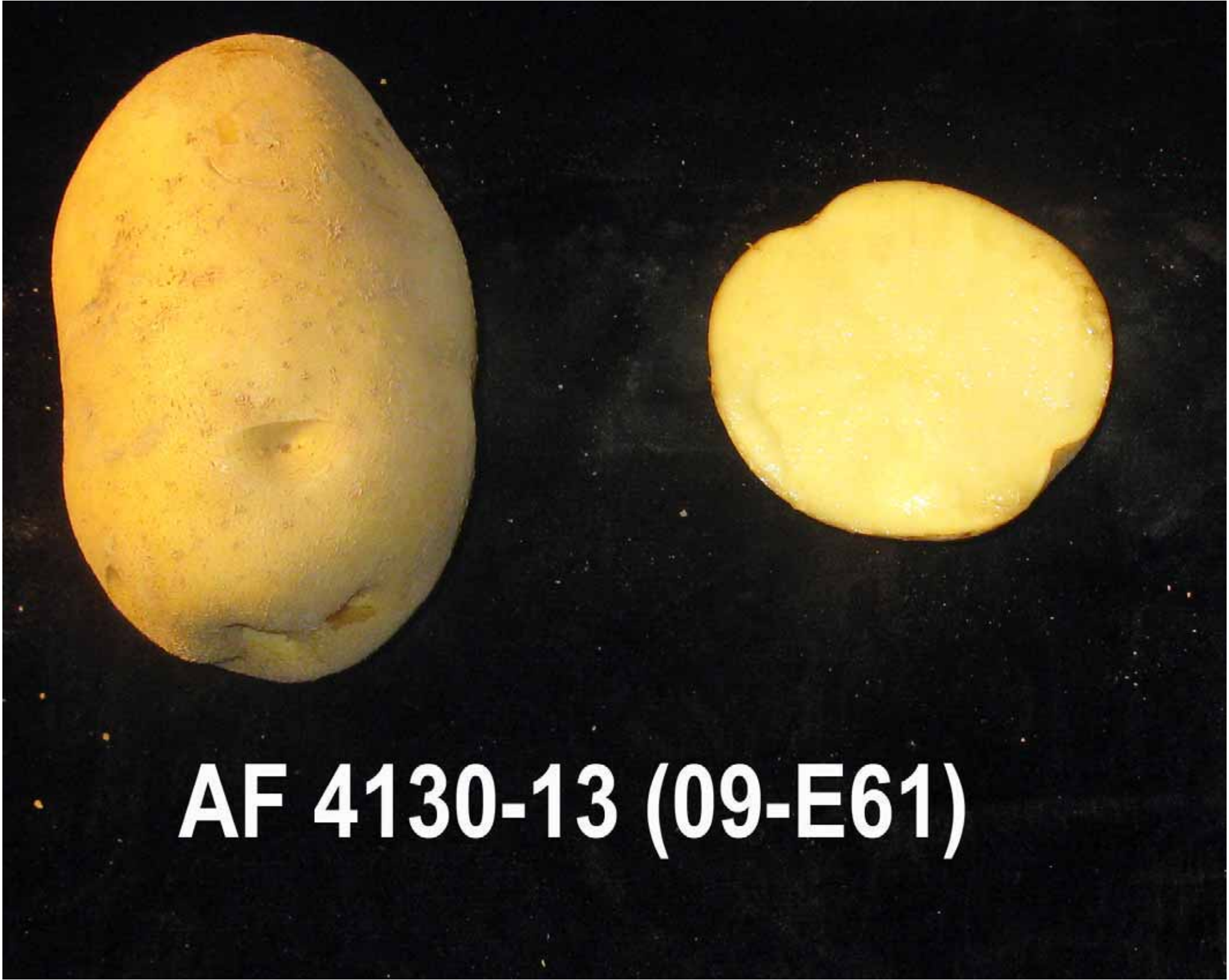
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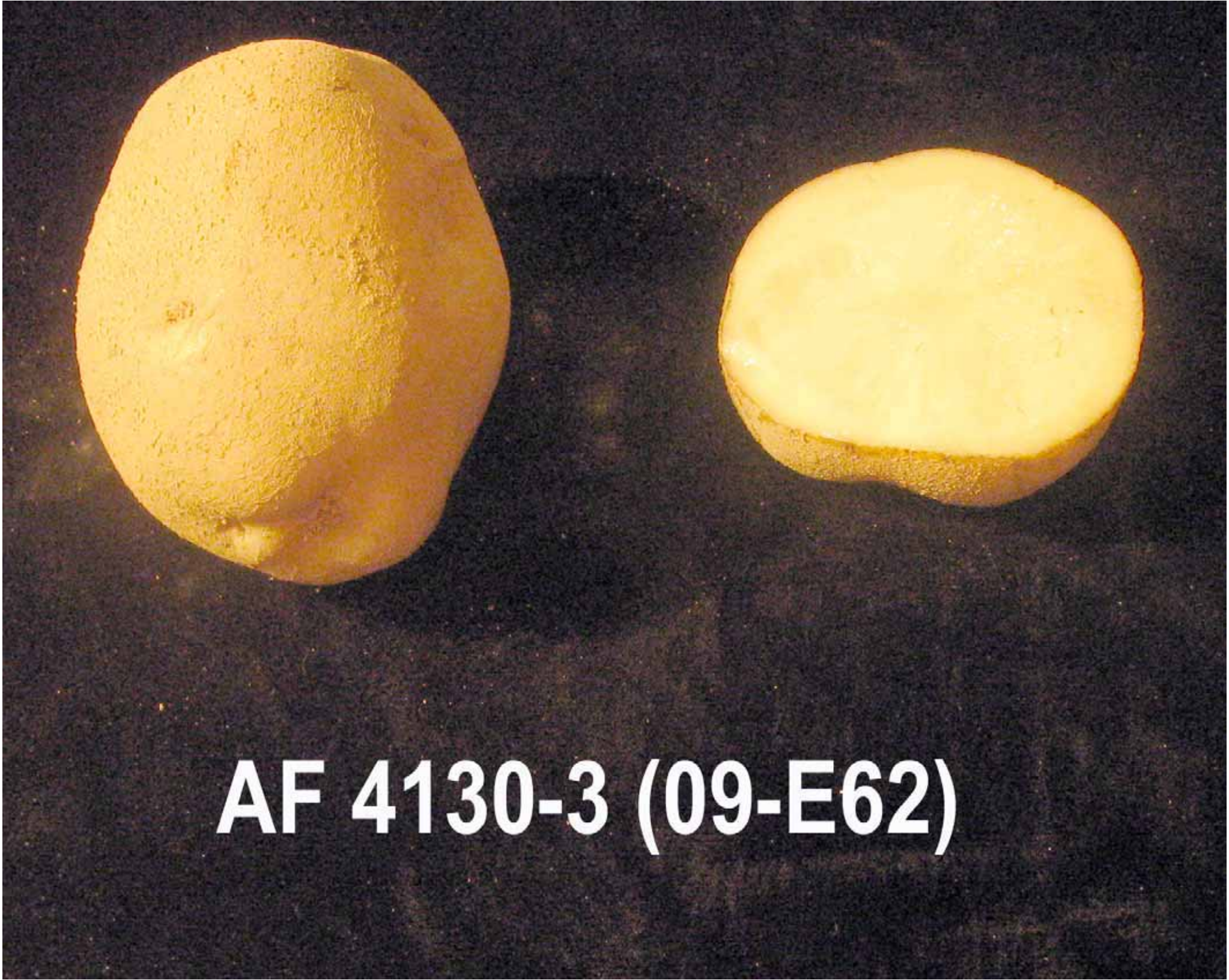
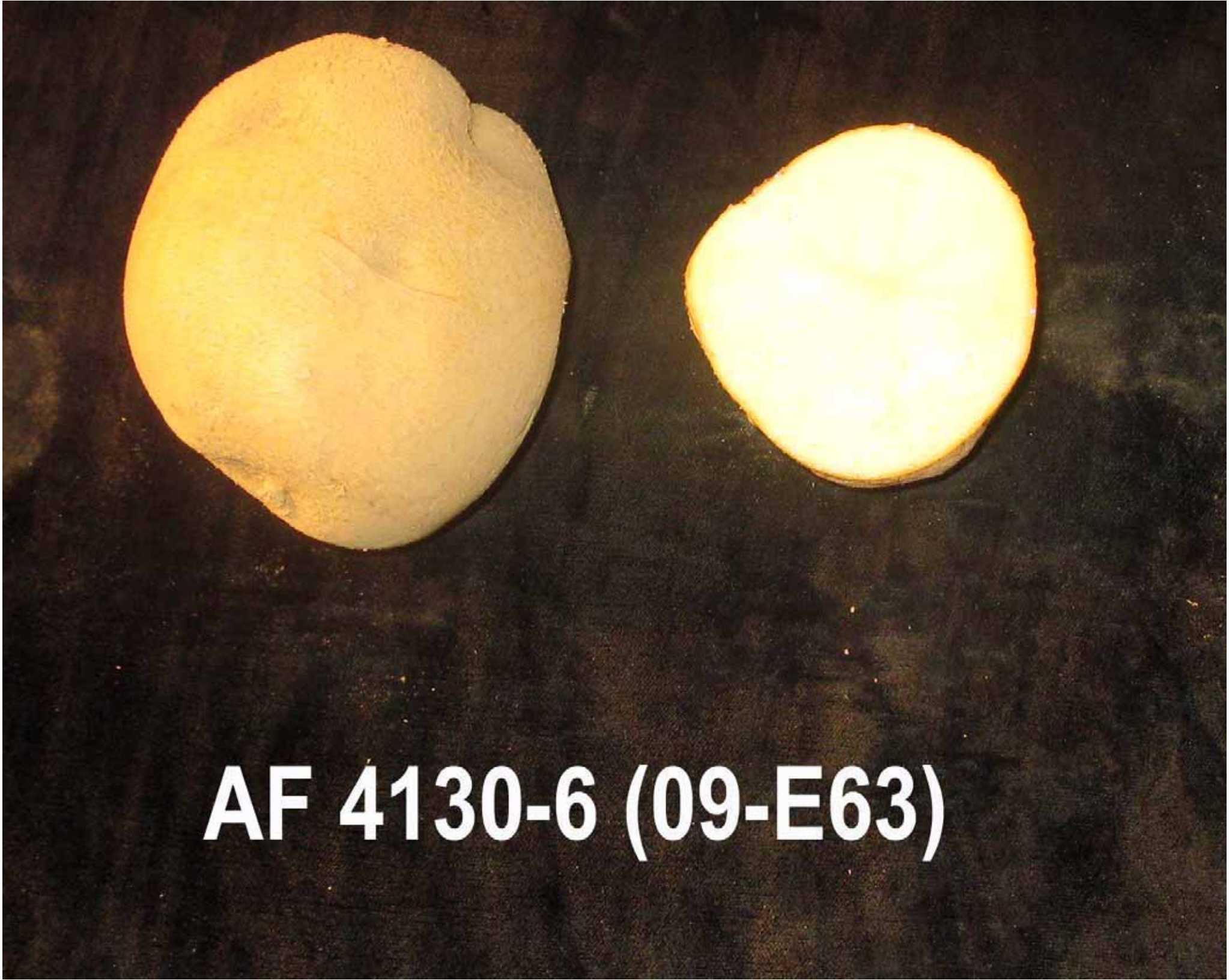
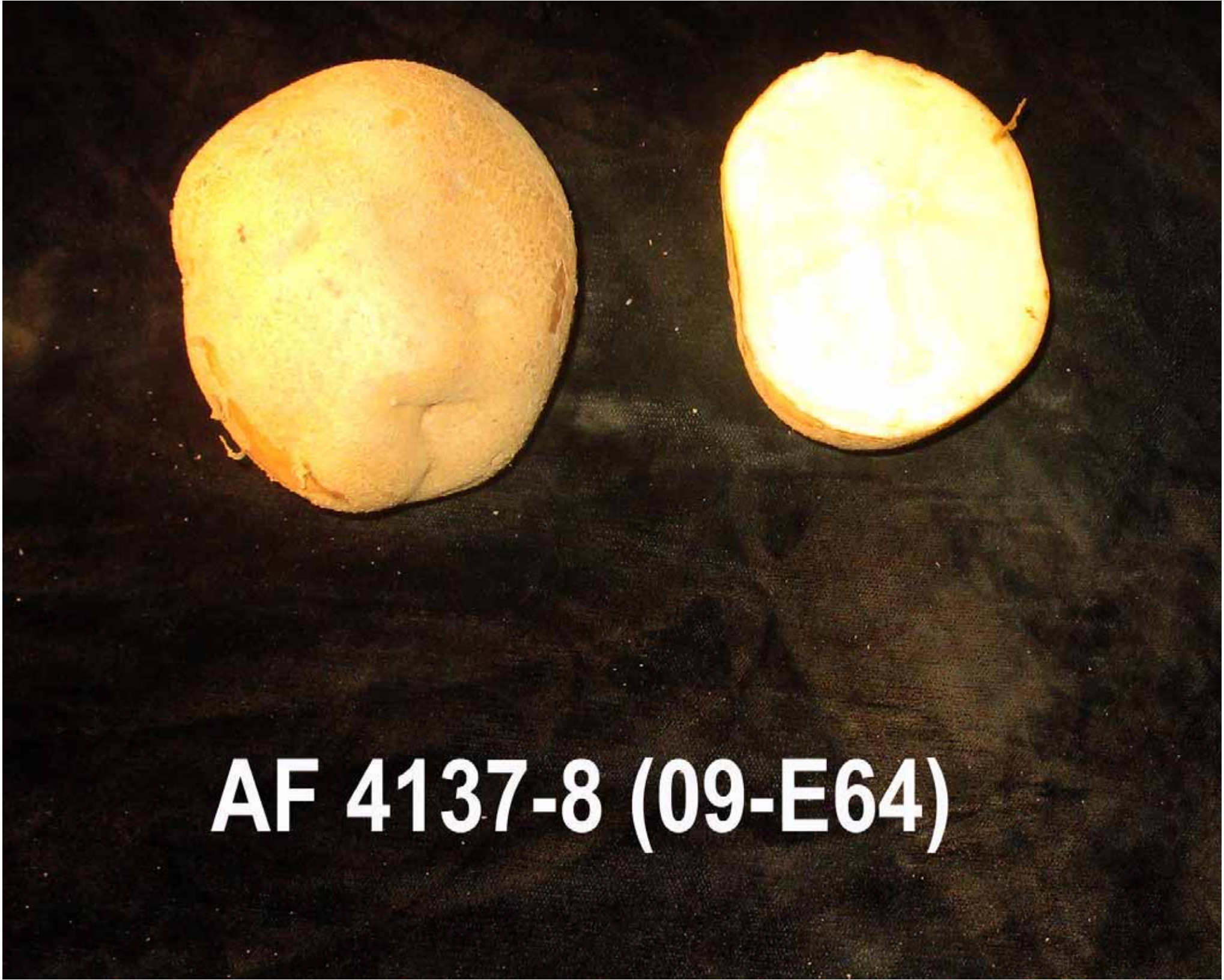
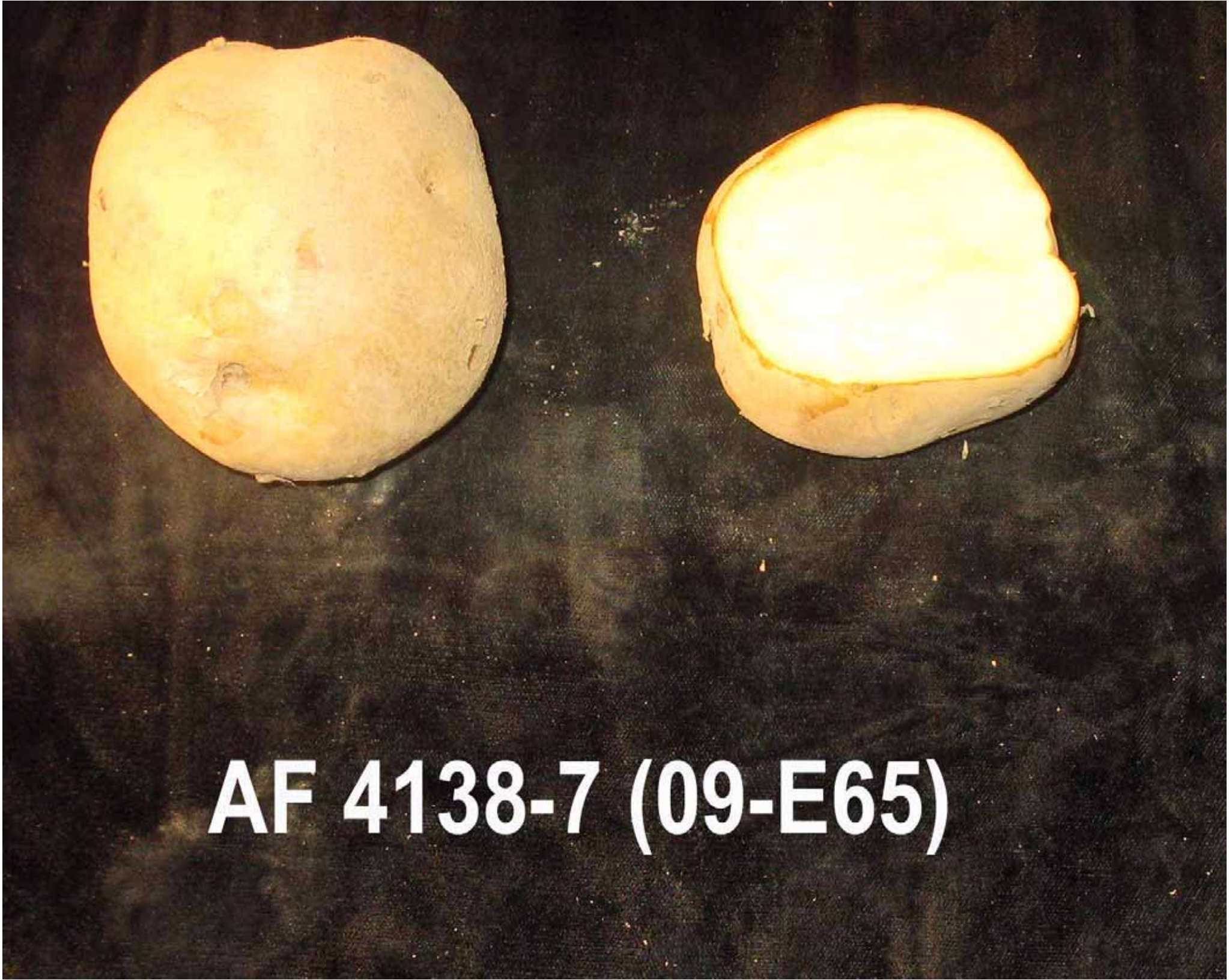
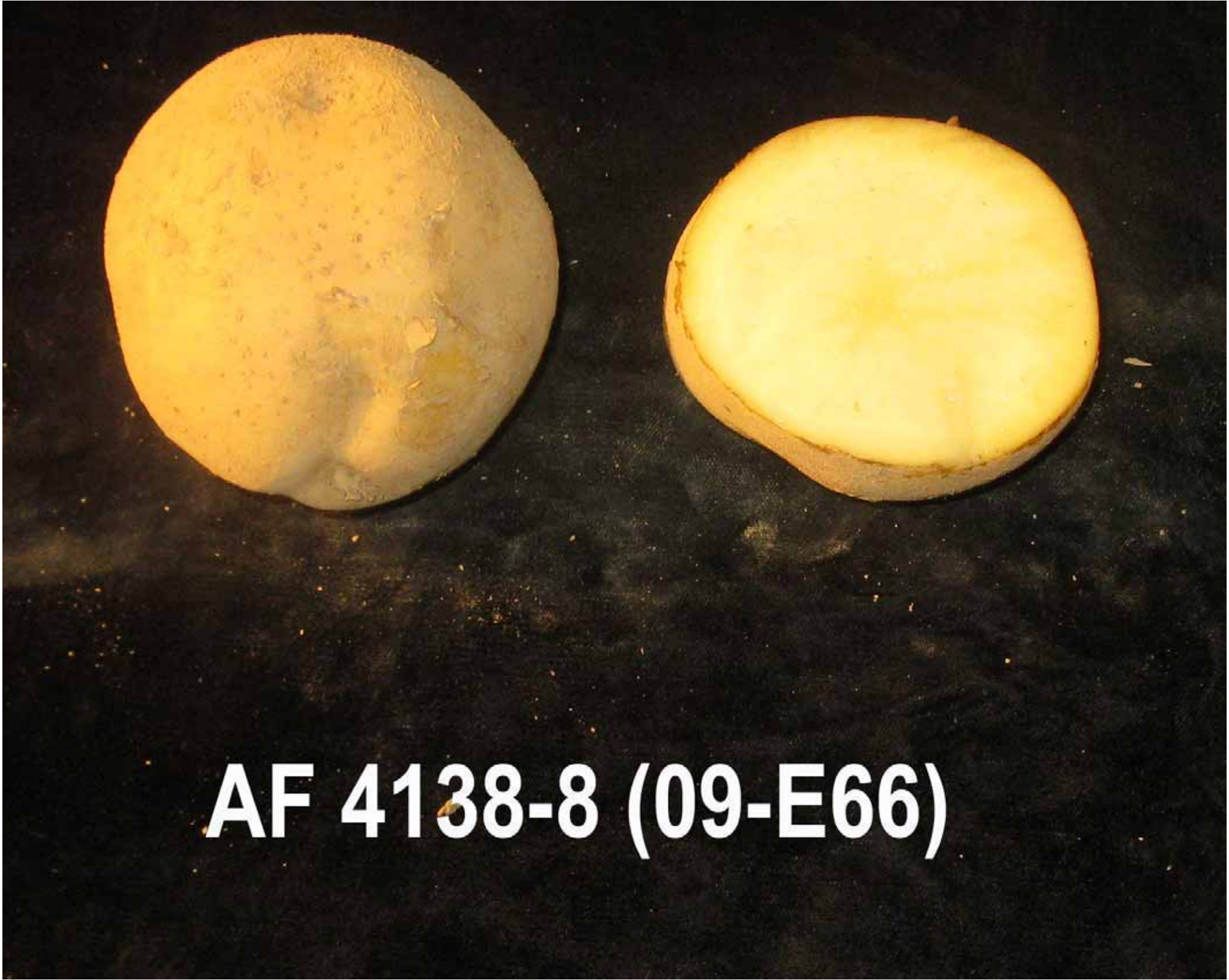

AF 4130-3 (09-E62)


AF 4130-6 (09-E63)


AF 4137-8 (09-E64)


AF 4138-7 (09-E65)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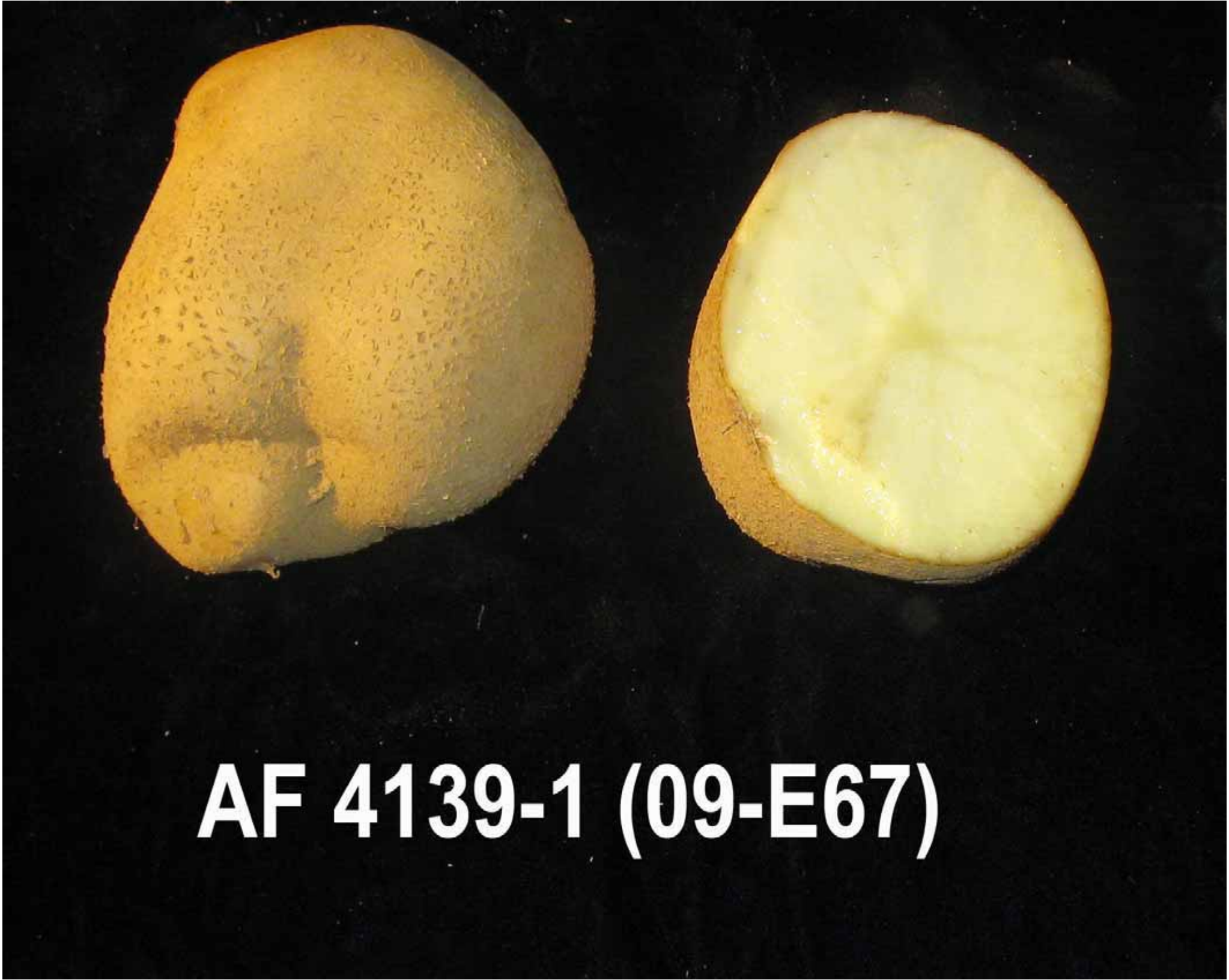
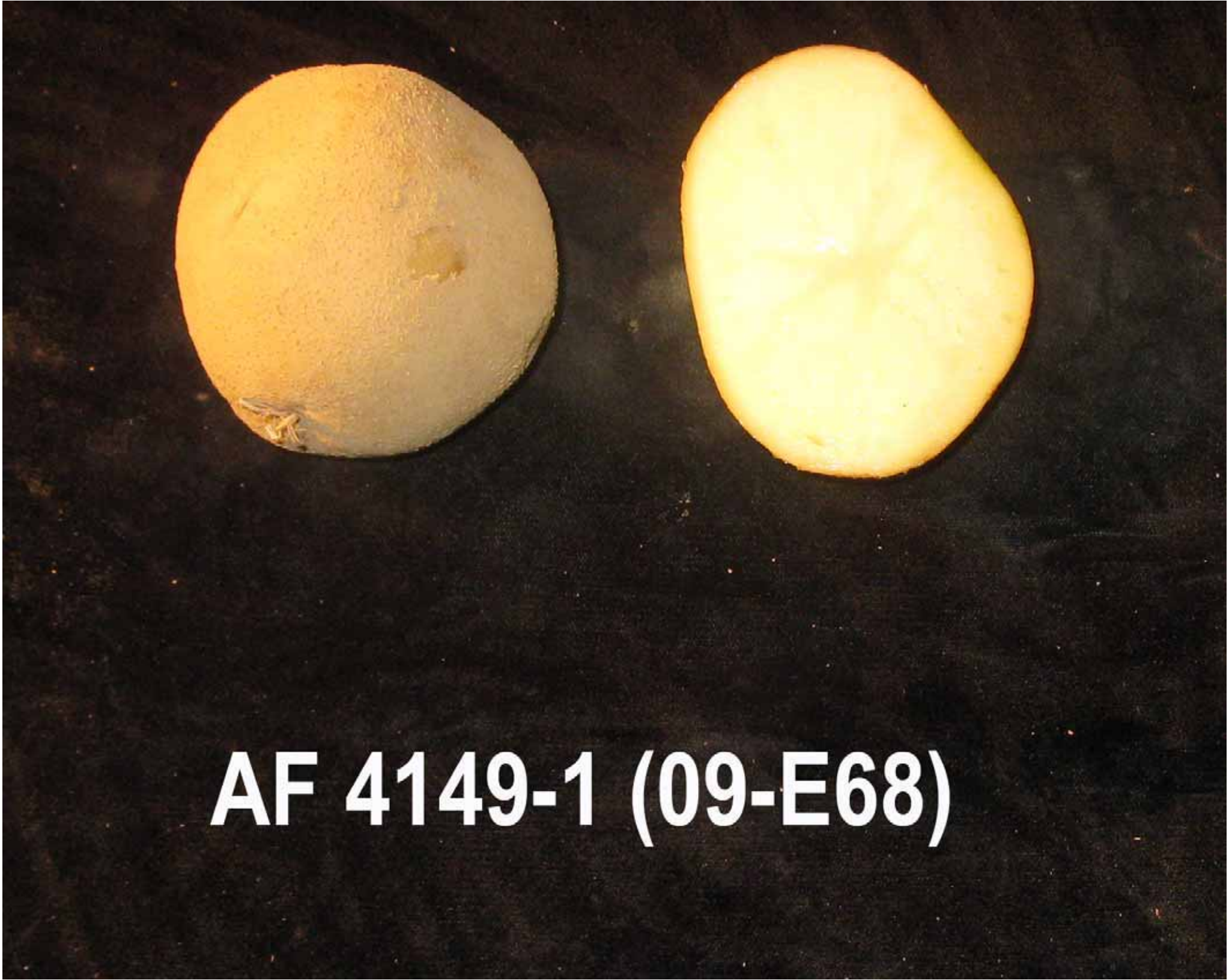
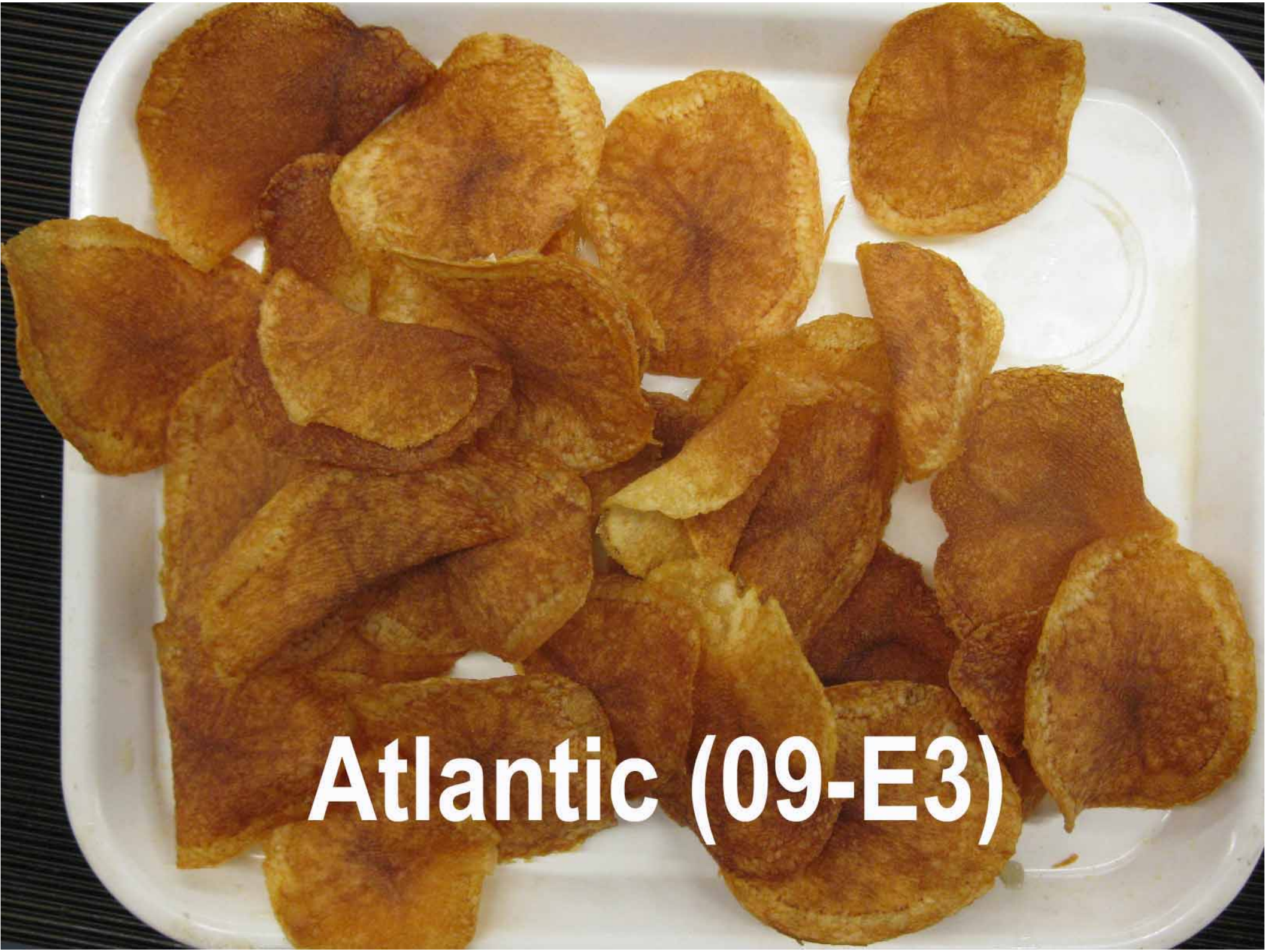

AF 4139-1 (09-E67)


AF 4149-1 (09-E68)


AF 2291-10 (09-E1)


AF 2574-1 (09-E2)


Atlantic (09-E3)


B 2452-3 (09-E4)


Beacon Chipper (09-E5)


Chieftain (09-E6)


Dakota Diamond (09-E7)


Dakota Jewel (09-E8)

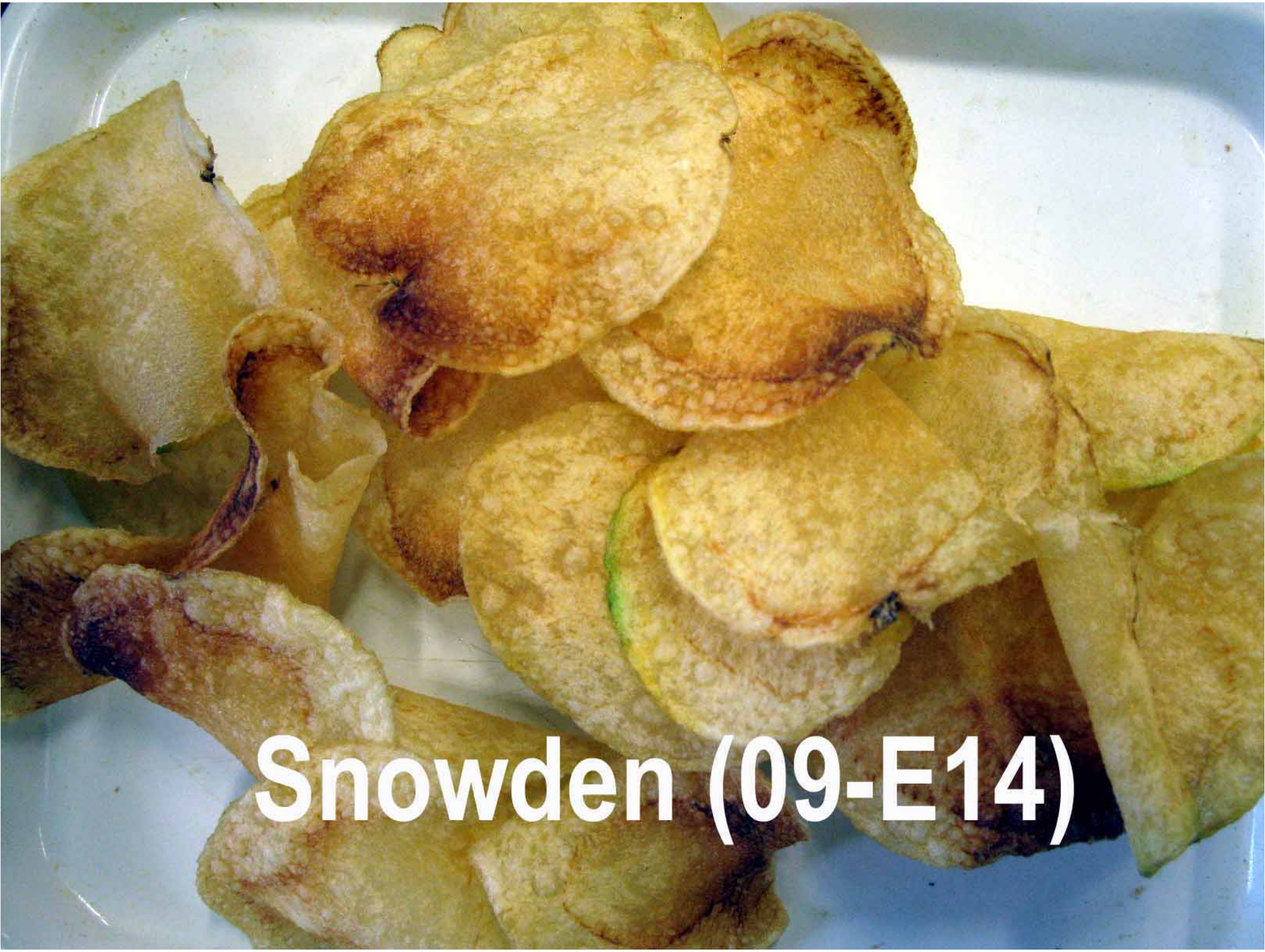

Dark Red Norland (09-E9)


Katahdin (09-E10)


Kennebec (09-E11)


NY 138 (09-E12)


NY 140 (09-E13)


Snowden (09-E14)


Superior (09-E15)


Yukon Gold (09-E16)


AF 2497-2 (09-E18)


Atlantic (09-E19)


B2152-17 (09-E20)


B2471-12 (09-E21)


B2575-14 (09-E25)


B2575-19 (09-E26)


B2613-2 (09-E27)

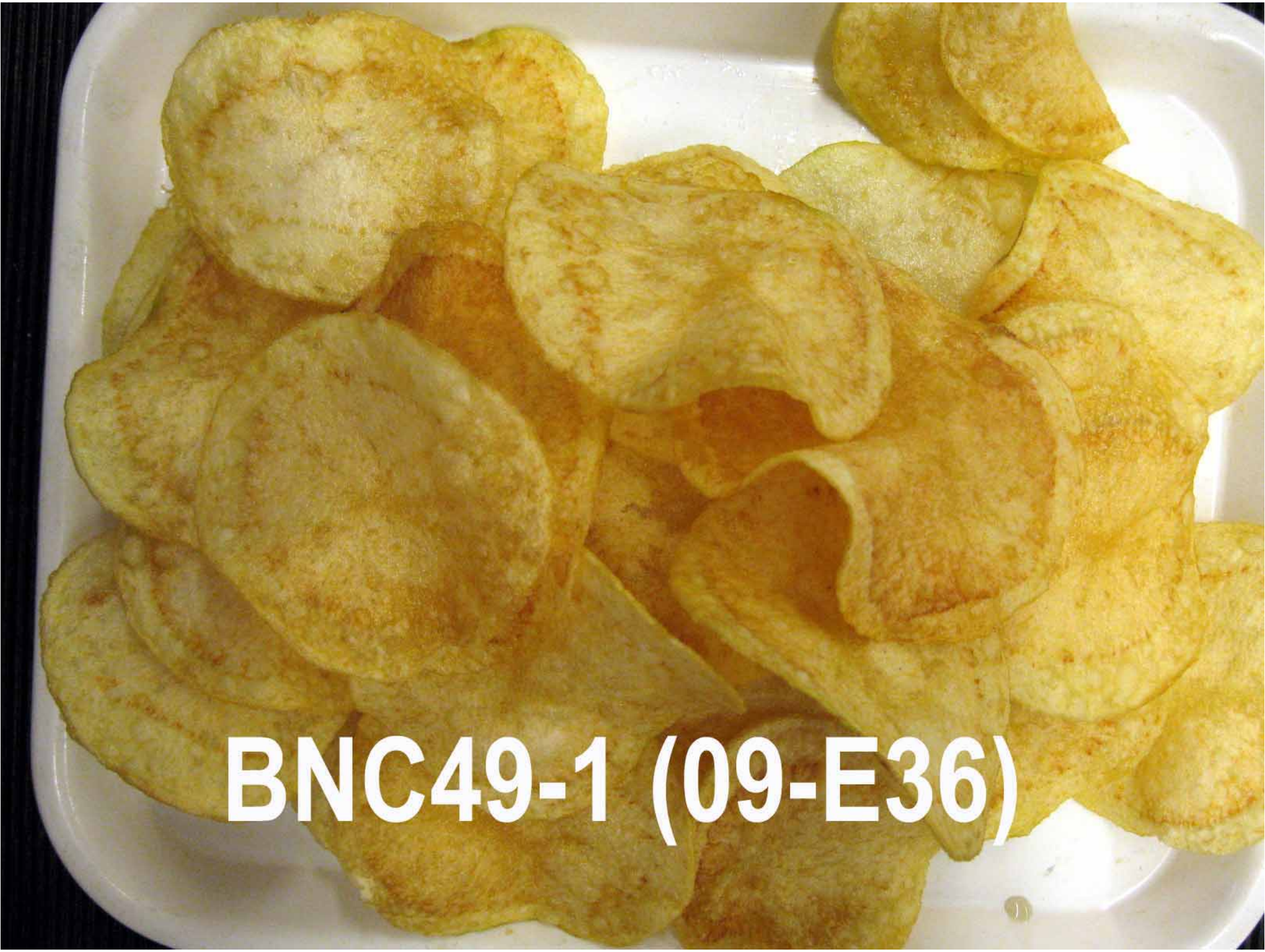

B2614-4 (09-E28)

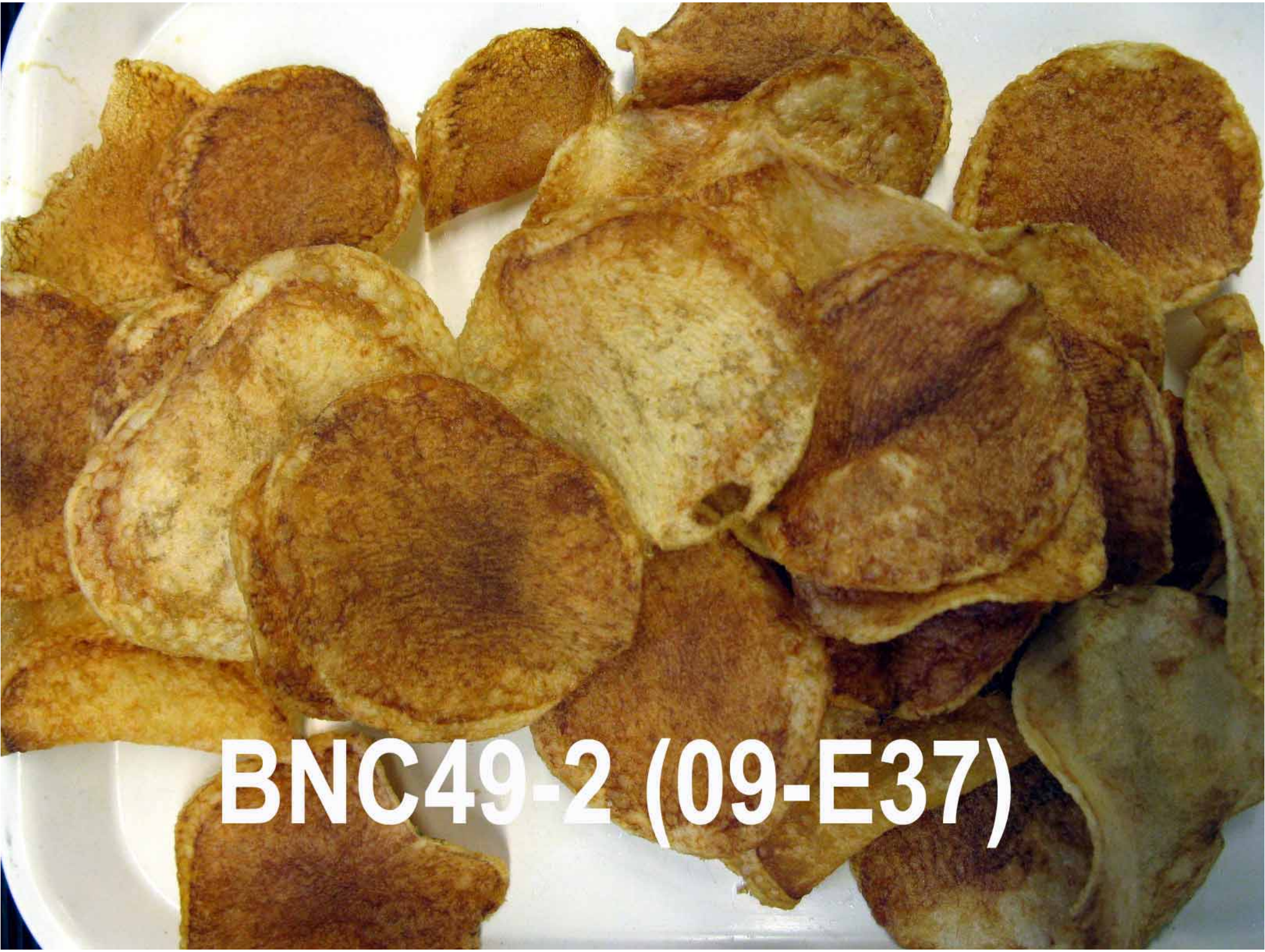

BCO01306-2 (09-E31)


BCO01306-3 (09-E32)


BCO01357-4 (09-E33)


Beacon Chipper (09-E35)


BNC49-1 (09-E36)


BNC49-2 (09-E37)


Yukon Gold (09-E41)


AF 4058-1 (09-E42)


AF 4123-5 (09-E44)


AF 4128-2 (09-E45)

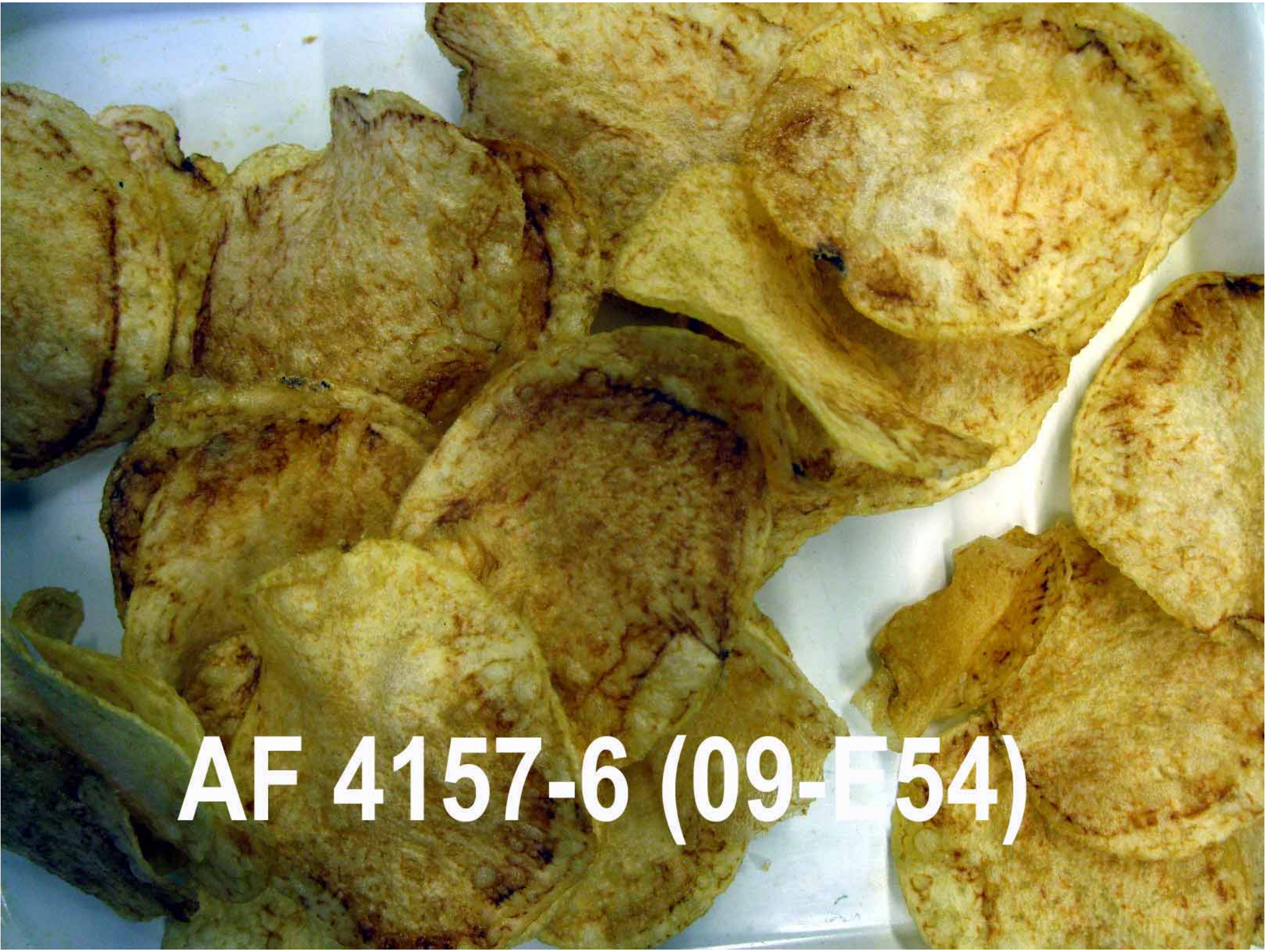

AF 4135-2 (09-E47)


AF 4137-10 (09-E49)


AF 4147-4 (09-E50)


AF 4147-5 (09-E51)


AF 4148-1 (09-E52)


AF 4157-6 (09-F54)


AF 4125-1 (09-E58)


AF 4130-3 (09-E62)


AF 4130-6 (09-E63)


AF 4139-1 (09-E67)


AF 4149-1 (09-E68)