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Agricultural Research Service

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The Maine Agricultural and Forest Experiment Station
University of Maine
Orono, Maine
and
Cornell University Agricultural Experiment Station
Cornell University
Ithaca, New York

NAMING AND RELEASE OF THE HARLEY BLACKWELL POTATO VARIETY

The Agricultural Research Service, U.S. Department of Agriculture, and the Agricultural Research Service of North Carolina, and the Agricultural Experiment Stations of Virginia, New Jersey, Pennsylvania, Florida, and New York, and the Maine Agricultural and Forest Experiment Station announce the release of the potato variety HARLEY BLACKWELL, a white-, netted-skinned variety suitable for chipping directly from the field in the mid-Atlantic and southern states where internal heat necrosis has been a problem in the variety 'Atlantic'.

HARLEY BLACKWELL, evaluated under the pedigree B0564-8, was selected from a cross of B0155-24 x B9935-8. B0155-24, the female parent, was selected because of its high specific gravity, good chip color, resistance to PVX, PVY and race A of the golden nematode. B9935-8, the white-skinned male parent, was selected because of its oblong tuber conformation, good chip color, and resistance to internal heat necrosis and race A of the golden nematode.

Breeding and seedling tuber production of HARLEY BLACKWELL were done at the Beltsville Agricultural Research Center (BARC), Beltsville, MD, by R.E. Webb. Clonal selection and field performance evaluations were done on Chapman and Echo Lake Farms, Presque Isle, Maine by K.G. Haynes. Foliar and soil-borne disease evaluations were done by R.W. Goth (USDA) and B.J. Christ (Pennsylvania State University). Preliminary evaluations were undertaken with cooperators in North Carolina (G.C. Yencho), Virginia (S.B. Sterrett), New Jersey (M.R. Henninger), Pennsylvania (B.J. Christ), Florida (D.P. Weingartner, C.M. Hutchinson and J.M. White), Maine (G.A. Porter), and New York (D.E. Halseth and J.B. Sieczka). Interregional performance trials through the NE-107 project began in 1993, and grower trials began in 2000. Results are shown in the attached table.

HARLEY BLACKWELL is a medium-maturing variety, similar in maturity to 'Atlantic'. Tubers are round, white-skinned, with a slightly lighter netting than 'Atlantic'. Tubers of HARLEY BLACKWELL are attractive, smooth, and have a much lower incidence of internal heat necrosis than 'Atlantic'. The specific gravity of HARLEY BLACKWELL averages 0.005 to 0.010 lower than the specific gravity of 'Atlantic', depending on location. Potato chips produced from HARLEY BLACKWELL directly from field production in the mid-Atlantic states are lighter than or equal in color to those produced from 'Atlantic'. Total glycoalkaloid content of HARLEY BLACKWELL grown in Presque Isle, ME in 2000 averaged 7.36 mg/100 g fresh weight as compared to 9.07 for 'Atlantic' and 10.85 for 'Monona'.

HARLEY BLACKWELL is resistant to race A of the golden nematode, internal heat necrosis and air pollution damage. It is susceptible to Verticillium wilt and late blight. It is moderately

susceptible to early blight, has intermediate resistance to common scab, and has some tolerance to powdery scab.

Certified seed of HARLEY BLACKWELL is available from the seed growers listed in the Maine Seed Potato Certification Directory, and foundation seed may be contracted from the Uihlein Farm in Lake Placid, N.Y. by contacting Dr. Keith Perry, Department of Plant Pathology, Cornell University, Ithaca, N.Y. 14853 or from Mr. Arthur Shur, SeedPro Division, S & R Corporation, Island Falls, ME 04747.

Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new varieties.

Johnny Wynne

12/13/2002

Director, North Carolina Agricultural Research Service

Date

Kriton Hatzios

1/13/2003

Director, Virginia Agricultural Experiment Station

Date

Keith Cooper

1/13/2003

Director, New Jersey Agricultural Experiment Station

Date

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2/14/2003

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Director, Maine Agricultural and Forest Experiment Station

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4/23/2003

Administrator, Agricultural Research Service

Date

U.S. Department of Agriculture

Table 1. Marketable yield (MT ha⁻¹), specific gravity, number of tubers with internal heat necrosis out of 40 and rating of internal heat necrosis, and chip color of Harley Blackwell as compared to Atlantic for states that evaluated both clones from 1991 to 2001.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
USDA ¹	2001	29.5	22.7	1.094	1.086	-	-	7.4	7.8
	2000	39.2	39.4	1.090	1.089	-	-	7.5	7.8
	1999	39.3	36.2	1.091	1.085	-	-	5.3	5.7
	1998	39.3	34.4	1.096	1.091	-	-	5.5	5.8
	1997	40.4	31.8	1.077	1.075	-	-	2.6	1.6
	1996	43.4	38.1	1.091	1.086	-	-	6.5	6.6
	1995	25.5	18.9	1.086	1.087	-	-	6.2	5.9
	1993	23.5	19.9	1.081	1.075	-	-	7.5	8.5
	1992	50.3	42.5	1.094	1.091	-	-	8.8	8.5
	1991	29.6	24.2	1.085	1.084	-	-	8.2	7.5
Mean(10)		36.0	30.8	1.089	1.085				

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
NC ²	2001	25.3	25.0	1.068	1.066	0	0	3	3
	2000	32.4	32.7	1.078	1.072	0	0	3.5	3
		44.1	46.5	1.073	1.069	3-7	0	1.5	3
		33.4	37.2	1.076	1.067	1-7	0	2	4
	1999	36.0	31.1	1.077	1.075	11-8	0	3.5	2.5
		37.5	35.3	1.072	1.068	3-8	0	3.5	2
		17.8	20.4	1.094	1.090	1-8	0	2.5	3
	1998	26.1	35.1	1.074	1.069	12-8	0	4	4
		27.6	29.5	1.079	1.076	17-6	0	6	4
		29.5	31.7	1.080	1.072	4-8	2-8	4	7
		36.5	31.4	1.081	1.077	12-8	0	5	4
	1997	26.1	25.2	1.094	1.087	0	0	4	3
		41.6	37.3	1.082	1.074	17	1	5	3

Table 1. Continued.

<u>Marketable Yield</u>	<u>Specific Gravity</u>	<u>Internal Heat Necrosis</u>	<u>Chip Color</u>
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<u>State</u>	<u>Year</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	1997	28.6
		24.5	21.4	1.087	1.082	11	0	3	3		
	1996	47.2	41.9	1.077	1.073	2	0	3	3		
		17.0	28.8	1.072	1.068	1	0	5	3		
		25.2	38.4	1.070	1.062	2	1	5	3		
		28.0	24.1	1.068	1.064	1	0	4	4		
	1995	39.3	43.5	1.081	1.075	1	0	2	2		
	1994	39.0	44.1	1.080	1.077	22	0	3	5		
	1993	39.4	45.9	1.085	1.081	5	1	4	3		
Mean(22)		31.9	33.4	1.079	1.074						
VA ²	2001	20.7	24.0	1.091	1.081	2-6	0	4	3		
	2000	39.4	28.7	1.084	1.077	10-6	0	4	3		
	1999	13.4	14.8	1.075	1.079	8-6	0	3	3		

Table 1. Continued.

		<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
<u>State</u>	<u>Year</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
	1994	30.5	32.0	1.069	1.064	3-7	0	3	5

	1993	30.5	27.7	1.089	1.079	1-7	0	3	2
	1992	38.4	32.0	1.089	1.079	0-9	0	3	2
	1991	29.6	23.9	1.083	1.079	14-6	0	2	-
Mean(7)		28.9	26.2	1.083	1.077				
NJ ²	2001	48.0	39.8	1.087	1.073	38-3	0	4	2
	2000	33.4	34.1	1.082	1.070	9-6	0	4.5	3.5
		31.7	32.4	1.081	1.072	16-5	0	-	-
	1999	51.8	57.1	1.077	1.074	33-5	0	-	2
		52.1	55.0	1.075	1.071	40-4	2-8	-	-
	1998	51.3	44.3	1.075	1.070	37-5	1-8	5	3
		58.3	43.7	1.073	1.068	39-2	0	-	-
	1997	38.4	26.7	1.084	1.074	33-6	0	5	-

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>		33.4
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	
		43.2	39.8	1.071	1.062	33-4	1-5	-	-	
	1996	40.7	30.5	1.088	1.072	11-7	0	5	3	

		51.2	48.1	1.087	1.077	20-5	1-6	-	-
	1995	60.5	43.5	1.071	1.064	36-5	0	5	4
		68.5	43.0	1.079	1.081	36-4	0	5	6
	1994	49.1	40.2	1.076	1.065	36-5	0	5	3
	1993	32.2	20.5	1.075	1.067	9-6	10-6	4	3
	1992	52.8	46.6	1.090	1.077	21-6	0	6	-
	1991	33.1	26.9	1.079	1.072	38-5	0	6	4
Mean(18)		46.1	38.8	1.080	1.071				
PA ³	2001	57.8	60.8	1.094	1.083	-	-	4	4
	2000	58.5	63.3	1.094	1.083	-	-	4	4

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
	1999	46.8	37.5	1.081	1.069	-	-	4	5
	1998	54.3	47.6	1.092	1.085	-	-	4	3
	1997	39.4	45.5	1.071	1.068	-	-	4	3
	1996	51.6	57.6	1.091	1.084	-	-	6	5

	1995	33.6	37.5	1.091	1.083	-	-	5	5
	1994	38.3	43.0	1.089	1.087	-	-	6	5
	1993	32.0	22.7	1.084	1.076	-	-	5	6
Mean(9)		45.8	46.2	1.087	1.080				
FL ⁴	2002	42.7	33.6	1.078	1.072	3	0	4	2
		31.2	30.6	1.081	1.075	6	0	3	2
		33.3	31.4	1.086	1.080	5	0	2	2
		38.4	38.8	1.079	1.075	19	0	4	2
	2000	36.9	28.3	1.078	1.073	2.5	0	-	-

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
	1999	39.6	38.3	1.073	1.065	0	0	-	-
	1998	40.9	34.4	1.080	1.072	-	-	-	-
Mean(7)		37.6	33.6	1.079	1.073				
ME ⁵	1998	49.2	40.7	1.092	1.085	-	-	66	66
		33.4	36.3	1.094	1.081	-	-	58	59

		25.8	35.4	1.096	1.089	-	-	55	57
	1997	26.9	25.9	1.088	1.078	-	-	64	64
		21.8	16.8	1.096	1.082	-	-	58	63
	1996	38.9	37.4	1.080	1.091	-	-	56	62
	1995	24.9	20.6	1.090	1.089	-	-	61	65
	1994	27.7	22.7	1.116	1.113	-	-	64	63
Mean		31.1	29.5	1.098	1.088				
NY ⁶	2000	45.7	34.0	1.097	1.085	0	0	55	48

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
	1999	43.9	38.0	1.089	1.076	0	0	62	62
	1998	40.0	30.1	1.090	1.078	2.5	0	61	59
	1997	36.1	34.6	1.089	1.073	0	5	52	57
	1996	38.0	38.7	1.088	1.075	2.5	0	59	53
	1995	39.2	33.9	1.083	1.076	0	0	58	55
	1994	28.7	26.6	1.089	1.078	0	2.5	54	56

	1993	38.5	35.2	1.084	1.074	0	0	53	46
Mean(8)		38.8	33.9	1.089	1.077				
LI ⁷	1998	46.9	42.1	1.090	1.076	58	3	-	-
	1997	47.8	29.9	1.082	1.073	36	5	-	-
	1996	49.4	42.1	1.087	1.074	31	0	-	-
	1995	54.2	43.8	1.081	1.074	48	0	-	-
	1994	40.1	22.7	1.079	1.070	66	0	-	-

Table 1. Continued.

<u>State</u>	<u>Year</u>	<u>Marketable Yield</u>		<u>Specific Gravity</u>		<u>Internal Heat Necrosis</u>		<u>Chip Color</u>	
		<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>	<u>Atlantic</u>	<u>Blackwell</u>
	1993	59.1	48.1	1.083	1.074	56	0	-	-
Mean(6)		49.6	38.1	1.084	1.074				

¹ Chip scores given following processing out of 10⁰C storage in January. For chip scores, ≤ 7.0 is considered satisfactory, except for 1997 when ≤ 3.0 is considered satisfactory.

² Internal heat necrosis (IHN) rated on a scale of 9= none to 1=essentially 100% of the parenchyma tissue involved. IHN reported as number of tubers (out of 40) with IHN and the average rating (NC) or the worst tuber rating (VA). For chip scores, ≤ 3.0 is considered satisfactory.

³ Chip scores given following processing out of 12.8⁰C storage in November. For chip scores, ≤ 5.0 is considered satisfactory.

⁴ IHN given as percentage of tubers with symptoms. For chip scores, ≤ 3.0 is considered satisfactory.

⁵ The average from multiple sites are listed for some years. Chip scores given following processing out of 10⁰ C in December. Chip scores given from Agtron readings: the higher the number, the lighter the chip.

⁶ IHN given as percentage of tubers with necrosis symptoms. Chip scores given following storage at 45⁰ F until early February, then held at 65⁰ F two weeks, and chipped in mid-February: Agtron readings <50 are unacceptable, >60 represent bright white chip color.

⁷ IHN given as percentage of tubers with symptoms.

