

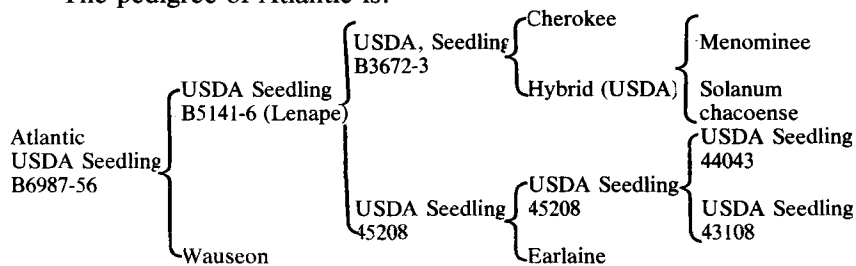
ATLANTIC: A NEW POTATO VARIETY WITH HIGH SOLIDS, GOOD PROCESSING QUALITY, AND RESISTANCE TO PESTS

R.E. Webb¹, D.R. Wilson², J.R. Shumaker³, B. Graves⁴, M.R. Henninger⁵, J. Watts⁶, J.A. Frank⁷ and H.J. Murphy⁸

Atlantic, a new potato variety, was released July 16, 1976, by the Agricultural Research Service of the United States Department of Agriculture, the Florida Agricultural Experiment Station, the Virginia Truck and Ornamentals Research Station, Norfolk, the New Jersey Agricultural Experiment Station, and the Maine Agricultural Experiment Station.

Atlantic was tested under the pedigree number B6987-56. It was selected from the progeny of a cross between the variety Wauseon and USDA seedling B5141-6. The female parent, Wauseon (3), was selected because of its high yields of smooth, creamy-white tubers and its resistance to common scab, latent and mild mosaics, and race A of the golden nematode. The male parent, B5141-6(1, 2) was selected because of its high solids content and chipping quality.

The pedigree of Atlantic is:



¹ Plant Pathologist, Vegetable Laboratory, Plant Genetics and Germplasm Institute, Beltsville Agricultural Research Center, Agricultural Research Service U.S. Department of Agriculture, Beltsville, Maryland 20705

² Horticulturist, Agricultural Research Service, U.S. Department of Agriculture, Presque Isle, Maine 04769

³ Associate Professor and Horticulturist, Institute of Food and Agricultural Sciences, Agricultural Research Center, Hastings, Florida 32045

⁴ Horticulturist, Virginia Truck and Ornamentals Research Station, Painter, Virginia 23420

⁵ Assistant Professor of Horticulture, Cook College-Rutgers University, New Brunswick, New Jersey 08903

⁶ Horticulturist, Wise Potato Chip Company, Berwick, Pennsylvania 18603

⁷ Plant Pathologist, Agricultural Research Service, U.S. Department of Agriculture, University of Maine, Orono, Maine 04473

⁸ Associate Professor of Agronomy, University of Maine, Orono, Maine 04473

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Description

PLANTS — Medium late maturing, medium large size, upright. *Stems*: thick, green; purple pigment at base with irregular stippled pigmentation pattern upward. *Wings*: prominent. *Nodes*: slightly swollen, sparsely pubescent. *Leaves*: bright, medium green, smooth, moderately pubescent, closed. *Terminal leaflets*: large, ovate, apex cuspitate, base obtuse, asymmetrical, mean blade length 105.4 ± 0.6 mm, mean width 69.1 ± 0.5 mm, index 65.6. *Primary leaflets*: large, ovate, apex cuspitate, base obtuse, mostly asymmetrical, three pairs, mean blade length 106.5 ± 1.0 mm, mean width 59.0 ± 0.5 mm, index 55.7. *Secondary leaflets*: numerous. *Tertiary leaflets*: many. *Midribs*: green, moderately pubescent. *Petioles*: green, sparsely pubescent.

FLOWERS — Profuse. *Buds*: faint, diffuse lavender pigment on green background; heavily pubescent. *Calyx lobes*: green, awl-shaped, heavily pubescent. *Corolla*: pale lavender. *Anthers*: orange. *Stigma*: bilobed, rounded, green. *Style*: straight. *Pollen*: abundant, of excellent quality.

TUBERS (Fig. 1) — oval to round, smooth, mean length 79.1 ± 0.3 mm, mean width 73.2 ± 0.7 mm, mean thickness 60.7 ± 0.6 mm. *Indices*: width to length, 93; thickness to length, 77; thickness to width, 83. *Skin*: light-to-heavy scaly net, white (may be dark in heavy soils or those high in organic matter). *Eyes*: white, shallow. *Flesh*: white. *Sprouts*: white with lavender internodes in darkness, purple in light. *Dormancy*: medium. *Maturity*: medium late, tubers detach easily from stolons.

Characteristics

In cooperative tests with many state research and extension personnel and tests by three private agencies, Atlantic has demonstrated the following characteristics: high yields of attractive tubers; tolerance to scab and Verticillium wilt; resistance to the bacterial disease pink eye, to common races of the late blight fungus and to race A of the golden nematode¹; immunity to virus X and tuber net necrosis caused by current season infection with the leafroll virus; high solids content; excellent chip and french fry quality, and acceptable fresh market quality. Atlantic has developed tuber necrosis from an unknown cause when grown in the sandy soils of Virginia, New Jersey and Long Island, New York, and is not recommended for those areas. Some indications of hollow heart were observed, particularly in oversize tubers (diameter 10.1 cm > 4 inches) at 30.4 cm (12 inches) plant spacing under overhead irrigation and in poor plant stands under cool, moist growing conditions. Atlantic is low in total glycoalkaloids.

Atlantic was evaluated for yield, specific gravity, and chipping quality from 1973 through 1975 in replicated trials with locally adapted varieties in

¹ Evaluation by Dr. Martin Harrison, Cornell University.

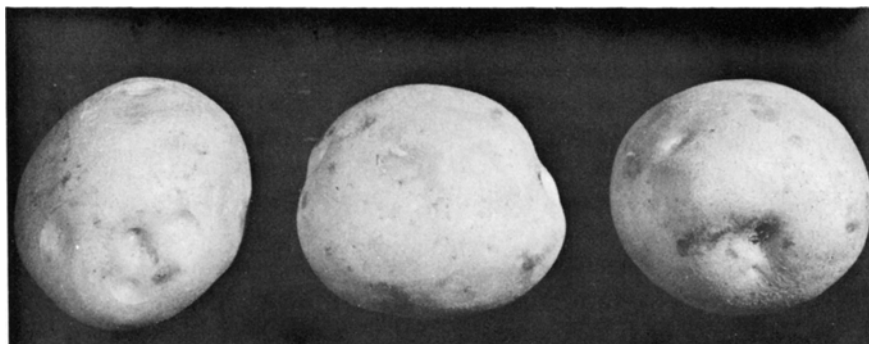


FIG. 1. Tubers of Atlantic grown in Maine.

Florida, Virginia, New Jersey, and Maine. Three-year mean yields of Atlantic exceeded those of Sebago in Florida by 40%, Superior in New Jersey by 20% and in Maine by 17%, and Katahdin in Maine by 21% (Table 1). Yields of Atlantic equalled those of Pungo in Virginia, but tuber conformation of Atlantic, including shallow eyes, was much superior to that of Pungo. In addition, Atlantic tubers did not sprout prematurely, a relatively common problem in Pungo tubers during warm growing seasons such as that of 1975. In commercial trials with $\frac{1}{2}$ -acre (0.2-ha) plantings, Atlantic has been tested in Florida, Virginia, Maine, and Wisconsin; it has been tested less intensively in Ohio, New York (upstate and Long Island), Alabama, North Carolina, Mississippi, Nebraska, and California. According to reports from these areas, its yield and other characteristics were entirely satisfactory.

TABLE 1. — *Three-year mean yields of Atlantic, and locally adapted varieties grown at four locations, 1973 through 1975.*

Variety	Yield of U.S. No. 1 tubers ¹							
	Florida		Virginia		New Jersey		Maine	
	metric tons/ha	cwt/ acre	metric tons/ha	cwt/ acre	metric tons/ha	cwt/ acre	metric tons/ha	cwt/ acre
Atlantic	10.9	240	13.4	295	16.2	356	14.5	328
Sebago	7.8	171						
Pungo			13.8	304				
Superior					13.5	297	12.7	280
Katahdin							12.4	272

¹ Tubers more than 4.8 cm (1-7/8 inches) in diameter.

Compared with locally adapted varieties grown in Florida, Virginia, New Jersey, and Maine, Atlantic excelled in total solids content, which is usually expressed in specific gravity ratings (Table 2). Atlantic contained

24.4% more total solids than Sebago in Florida, 14.8% more than Pungo in Virginia, 14.9% more than Superior in New Jersey, and 18.1% more than Superior and Katahdin in Maine. Other test locations also reported that the specific gravity of Atlantic was higher than that of varieties commonly grown in those areas.

Mean chip color scores were better for Atlantic than for locally adapted varieties grown in Florida, Virginia, New Jersey, and Maine (Table 3). Atlantic produced excellent chips when either processed within 2 weeks of harvest and then held at ambient air temperature for 6 weeks (Florida, Virginia, New Jersey) or held in 4°C (39°F) temperature storage for 3 months and then reconditioned at 21°C (70°F) for 14 days (Maine). Atlantic also consistently produced high-quality chips when processed directly from 10°C (50°F) storage at monthly intervals for 7 months. In 1973 and 1975, years with moderate rainfall during harvest in Maine, Atlantic produced acceptable chips when processed directly from 4°C (39°F) after 3 months of storage, so accumulation of reducing sugars apparently was slow.

TABLE 2. — *Three-year mean specific gravity and total solids content of Atlantic and locally adapted varieties at four locations, 1973 through 1975.*

Variety	Specific gravity				Total solids, %			
	Florida	Virginia	N. J.	Maine	Florida	Virginia	N. J.	Maine
Atlantic	1.079	1.086	1.078	1.098	19.4	20.9	19.2	23.5
Sebago	1.061				15.6			
Pungo		1.073				18.2		
Superior			1.066	1.081			16.7	19.9
Katahdin				1.081				19.9

TABLE 3. — *Three-year mean chip color ratings of Atlantic and locally adapted varieties grown at four locations, 1973 through 1975.*

Variety	Chip scores ¹			
	Florida	Virginia	New Jersey	Maine
Atlantic	3.1	3.0	3.9	4.6
Sebago	3.9			
Pungo		4.0		
Superior			3.1	5.1
Katahdin				6.2

¹ Scores of 1-5, desirable; 6, acceptable; over 6, unacceptable.

Although the potential fresh-market quality of Atlantic has not been systematically assessed, the tubers have excellent eye appeal. Baked tuber samples presented to members of a service club were rated excellent.

When tuber samples were rated individually by various members of the research team and others, the baking quality of Atlantic was acceptable to all.

Tuber wet rot at harvest in 1976, after several days of heavy rains in Florida and an unusually wet harvest season in Maine, was low compared to that in other varieties grown in the same areas.

With its high yield in widely separated areas, attractive tubers, consistently high specific gravity, excellent chipping quality, and resistance to several pests, Atlantic should be a highly valuable round white variety for processing and the fresh market. Unfortunately, Atlantic cannot be recommended for production in the light sandy soils of Long Island, New York; New Jersey and Virginia until the factor(s) that induced the tuber necrosis can be identified and control measures developed. Although hollow heart has not presented a problem in most research and commercial trials of Atlantic, production of oversized tubers that might have hollow heart can be minimized through moderate fertilization, close spacing of seedpieces, proper timing of overhead irrigation, and killing of vines when tubers have grown to the desired size.

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