

# CULTIVAR & GERMPLASM RELEASES

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## 'O'Neal' Southern Highbush Blueberry

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'O'Neal' is a very early to early ripening southern highbush blueberry cultivar with cane canker [*Botryosphaeria corticis* (Demaree & Wilcox) Arx and Muller] resistance and a low-chilling requirement. It ripens in the same season as 'Wolcott'. The term "southern highbush" is used here to indicate that one or more low-chilling southern species (in this case *Vaccinium darrowi* Camp and *V. ashei* Reade) are an important component of the genetic background of this cultivar. 'O'Neal' is productive and produces very large fruit with, in our judgment, good color and excellent firmness, flavor, and picking scar. It should set a new standard for flavor among early ripening southern highbush cultivars. The name 'O'Neal' was chosen to honor James M. O'Neal, Jr., who devoted 20 years of service to the blueberry and strawberry breeding programs at North Carolina State Univ. Released cooperatively by the North Carolina Agricultural Research Service and the USDA, 'O'Neal' is intended primarily as a large-fruited, very high quality, early ripening cultivar for hand-harvest and commercial shipment for fresh-market outlets. It is not adapted to mechanical harvesting for fresh-market outlets using current over-row mechanical harvesters. However, it is adapted for pick-your-own plantings in the piedmont region of the southern United States with appropriate soil modification (Ballington and Krewer, 1989) and supplemental irrigation.

### Origin

Tested as NC 1688, 'O'Neal' originated

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from a cross of 'Wolcott' × Fla. 64-15 made by A.D.D. at Beltsville, Md. (Fig. 1). The parentage of Fla. 61-3, the paternal parent of Fla. 64-15, was determined from Sherman and Sharpe (1977). *Vaccinium angustifolium* Ait. is also a significant component in the background of this cultivar. 'O'Neal' was selected at Castle Hayne, N. C., in 1972 by G.J.G. and A.D.D. and evaluated by

J. R. B., C. M. M., S. D. D., and A.D.D. It has also been tested in Arkansas, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas and is recommended for grower trials throughout the southeastern United States.

### Description and performance

'O'Neal' was first established in duplicate plot selection trials at the Horticultural Crops Research Station at Castle Hayne, N. C., and, based on its performance there, was established in replicated trials at Castle Hayne, Raleigh, and Fletcher, N.C. Fletcher is located in the mountains of western North Carolina, and 'O'Neal' has not been consistently flower-bud hardy there, where winter minima sometimes drop to -26C, so data from this location were omitted. 'O'Neal' is early blooming in southeastern North Carolina, and crop losses due to freezing temperatures regularly occur where irrigation for frost protection is not provided. 'O'Neal' was successfully established in replicated trials at Castle Hayne and Raleigh.

Table 1. Performance of highbush blueberry cultivars, Ideal Farm, Castle Hayne, N. C., 1986 (sixth growing season).

Cultivar	Yield (g/plant)	% Ripe 6 June 1986	Size* (cup count)	Rating <sup>y</sup>			
				Color	Scar	Firmness	Flavor
O'Neal	2740*	65	71	7.4	8.0	8.1	7.8
Wolcott	1440**	57	88	7.2	7.2	6.5	6.8
Bounty	2940	42	58	7.7	7.7	7.8	7.4
LSD 0.05	NS	---	28	0.03	0.04	0.06	0.04

\*Number of berries in a 226-cm<sup>3</sup> container.

<sup>y</sup>Rated on a scale of 1 to 9, where 5 and below is unsatisfactory, 6 is acceptable, 7 is good, and 8 and above is superior.

\*\*Crop reduction due to freeze injury on the first flowers.

\*\*\*Severe bud mite infestation reduced yield.

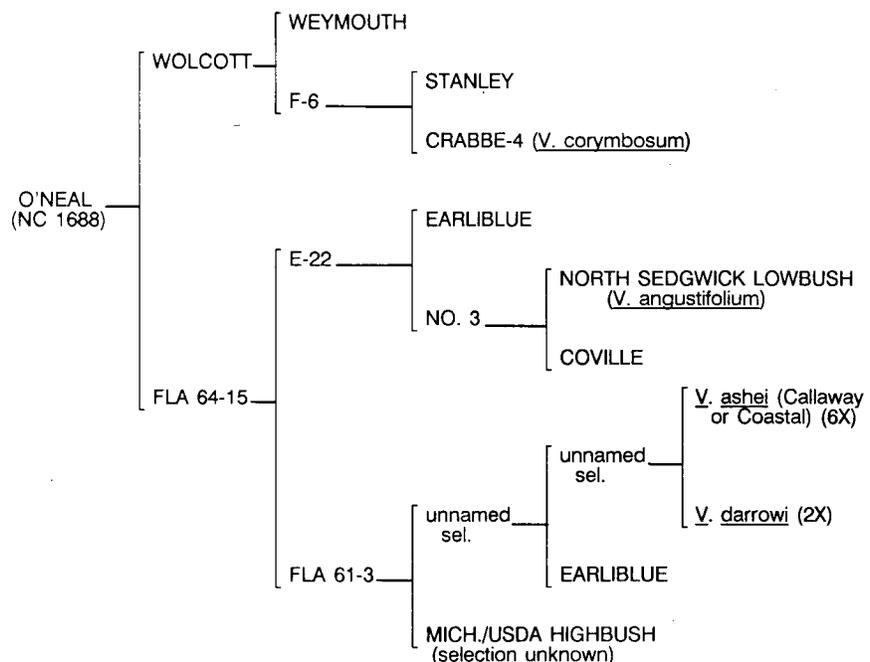


Fig. 1. Parentage of the 'O'Neal' southern highbush blueberry.

Table 2. Performance of highbush blueberry cultivars, University Farms Research Unit 4, Raleigh, N. C., 1986 (fifth growing season).

Cultivar	Yield <sup>2</sup> (g/plant)	% Ripe 2 June 1986	Size <sup>3</sup> (cup count)	Rating <sup>x</sup>			
				Color	Scar	Firmness	Flavor
O'Neal	2650	87	56	7.4	8.0	8.0	8.0
Bluecrop	3080	7	77	8.0	6.3	7.3	7.0
Blue Ridge	2060	77	91	8.0	6.3	8.0	7.9

<sup>1</sup>Means of four replications, except for 'Bluecrop', which had only three productive replications due to location in the field. Not analyzed statistically.

<sup>2</sup>Number of berries in a 226-cm<sup>3</sup> container.

<sup>3</sup>Rated on a scale of 1 to 9, where 5 and below is unsatisfactory, 6 is acceptable, 7 is average, and 8 and above are superior.

The Castle Hayne trial was established on a typical highbush blueberry soil (Mainland, 1977). The planting at Raleigh was established on a Cecil sandy loam soil. This is an upland mineral soil with a pH of around 5.0. The soil on this site was modified by incorporating 0.3 m<sup>3</sup> of composted pine bark per plant with a rotovator just before planting. Supplemental and frost protection irrigation were available on each site. Recommended plant and soil management practices were followed with each planting (Ballington and Krewer, 1989; Mainland, 1977), except that the planting at Raleigh was not mulched.

'O'Neal' was compared to 'Wolcott' and 'Bounty' at Castle Hayne (Table 1). It ripened slightly earlier than 'Wolcott'. It was somewhat, but not significantly, larger than 'Wolcott' or 'Bounty'. Fruit color was significantly better than for either of the other cultivars, as was picking scar, firmness, and flavor. It was a particularly notable improve-

ment over 'Wolcott' for these last three characteristics.

At Raleigh, 'O'Neal' was compared with 'Bluecrop' and 'Blue Ridge' (Table 2). 'O'Neal' yielded less than 'Bluecrop', and rated lower than 'Bluecrop' and 'Blue Ridge' for fruit color; it was earlier ripening, larger-fruited, and had a superior picking scar than either of the other cultivars. 'O'Neal' was superior to 'Bluecrop' and equal to 'Blue Ridge' for fruit firmness and flavor in this test.

'O'Neal' plants are vigorous, semi-upright, and widely adapted to soils, both in the commercial blueberry production area in southeastern North Carolina and on lighter soils in the piedmont. Irrigation is recommended whenever 'O'Neal' is established on upland sites. It is early blooming and has a chilling requirement of ≈400 hr below 7.2C. Therefore, irrigation for frost protection is also recommended. Flowers are fully self-

fertile. 'O'Neal' propagates easily from both softwood and hardwood cuttings.

'O'Neal' is field-resistant to the predominant race of stem canker in eastern North Carolina (race 1), but is susceptible to all other known races. New plantings should be established with canker-free nursery plants. 'O'Neal' is susceptible to stem blight [*Botryosphaeria dothidea* (Mouq. ex Fr.) Ces & de Not.]; however, this disease does not appear to move rapidly into the plant crown, as it does with 'Bluechip' and 'Croatan'. 'O'Neal' is susceptible to blueberry bud mite (*Aceria vaccinii* Keifer), but not as susceptible as 'Wolcott'.

#### Availability

A list of nurseries propagating plants of 'O'Neal' blueberry is available from J.R.B. Neither the North Carolina Agricultural Research Service nor the USDA/ARS has plants for sale or distribution.

#### Literature Cited

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