

'Cooper' and 'Gulfcoast' Southern Highbush Blueberry

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'Cooper' and 'Gulfcoast' tetraploid southern highbush blueberries were developed by the Agricultural Research Service of the U.S. Dept. of Agriculture (USDA) breeding programs in Beltsville, Md., and Poplarville, Miss. These cultivars were released in 1987 for production in the coastal plains of the southeastern United States to provide fruit for the mid-May to early June market window, when the supply of fresh blueberries is low.

Origin

'Cooper' (tested as MS78) and 'Gulfcoast' (tested as MS90) resulted from the cross G-180 x US75 (Fig. 1) made by A.D.D. in Beltsville in 1974. Except for Fla 4B, a diploid, all parents in the pedigree are tetraploid. US75 is a tetraploid produced from a 4x x2x cross as the result of an unreduced gamete from Fla 4B. The approximate species composition based on pedigree is 72% *Vaccinium corymbosum* L. (sensu Camp, 1945), 25% *V. darrowi* Camp, and 3% *V. angustifolium* Ait. 'Cooper' was selected in 1977 and 'Gulfcoast' in 1978 by J.M.S. and A.D.D. from seedlings planted in Poplarville in 1975. We evaluated the cultivars from 1978 to 1992. 'Cooper' and 'Gulfcoast' were included in the 1988 Southern Regional Blueberry Germplasm Evaluation Trials planted at Auburn, Ala.; Castle Hayne, N.C.; Clarksville, Ark.; Nacogdoches,

Texas; and Poplarville, Miss. Four single-plant replications of seven entries were evaluated at each location from 1990 to 1992.

Description

Plants of 'Cooper' and 'Gulfcoast' are upright, moderately vigorous, and moderately productive. Mulching is required for these plants to reach their full growth potential (Spiers, 1992). Reduced plant vigor after the first two or three growing seasons has been a major deficiency of southern highbush cultivars. Mulched, irrigated, and lightly pruned, 'Cooper' and 'Gulfcoast' plants are vigorous after growing 5 years in Poplarville (Fig. 2).

'Gulfcoast' generally blooms earlier than 'Climax', an early flowering rabbiteye (*V. ashei* Reade), resulting in susceptibility to early spring freezes. 'Cooper' blooms later than 'Gulfcoast' but earlier than 'Tifblue' (late-flowering rabbiteye).

Fruit and plant characteristics of 'Cooper' and 'Gulfcoast' are average (Table 1). 'Gulfcoast' berries often retain the pedicel when picked, an objectionable characteristic for the fresh-fruit market. Except for this trait, 'Gulfcoast' would be recommended in Florida (Paul Lyrene, personal communication). Its flowering and ripening time closely matches that of 'Sharpblue', the most important highbush blueberry in Florida. 'Gulfcoast' is being planted as a pollinizer for 'Sharpblue' throughout most of the Florida peninsula. 'Cooper', however, does not receive enough chilling to be grown in Florida. The low productivity of 'Cooper' and 'Gulfcoast' in Clarksville in 1992 was caused by a March freeze. In 1992, 4 years after planting, both plants were smaller (Table 1) than comparable plants of 'Climax' (5.4 m³) and 'Tifblue' (5.7 m³) in Clarksville and 'Climax' (1.6 m³) and 'Tifblue' (3.2 m³) in Poplarville. However, more southern highbush (2153 plants/ha) than rabbiteye (1495 plants/ha) plants can be grown per unit area.

'Gulfcoast' ripens a few days earlier than 'Cooper' (Table 2), but half of the fruit on both cultivars ripened between 15 and 25 May in Auburn, Nacogdoches, and Poplarville and between 28 May and 15 June in Castle Hayne

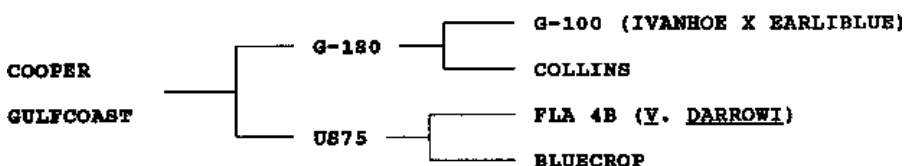


Fig. 1. Pedigree of 'Cooper' and 'Gulfcoast' southern highbush blueberry cultivars.



Fig. 2. Five-year-old (left) 'Cooper' and (right) 'Gulfcoast' southern highbush blueberry plants.

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Table 1. Subjective rating and fruit traits plus plant volume of seven 'Cooper' and 'Gulfcoast' plants recorded at four locations over 3 years.^z

Trait	Cultivar	Auburn, Ala.			Castle Hayne, N.C.			Clarksville, Ark.			Poplarville, Miss.		
		1990	1991	1992	1990	1991	1992	1990	1991	1992	1990	1991	1992
Fruit size	Cooper	2.4 a ^y	6.6 a	---	---	7.5 a	6.5 a	7.0 a	7.0 a	7.5 a	5.8 a	6.8 a	7.3 a
	Gulfcoast	4.4 b	6.6 a	---	---	7.0 a	7.0 a	7.0 a	7.0 a	7.5 a	6.0 a	7.0 a	7.0 a
Picking scar	Cooper	7.0 a	7.0 a	---	---	7.0 a	7.0 a	7.5 a	7.5 a	8.2 a	6.0 a	7.0 a	6.5 a
	Gulfcoast	7.0 a	7.1 a	---	---	7.0 a	7.0 a	8.3 a	8.3 a	8.0 a	6.3 a	7.0 a	6.8 a
Fruit color	Cooper	6.9 a	7.1 a	---	---	7.5 a	7.0 a	8.3 a	8.3 a	7.2 a	6.0 a	6.3 a	7.0 a
	Gulfcoast	7.1 a	7.1 a	---	---	7.0 a	7.0 a	7.5 b	7.5 b	7.5 a	6.5 b	7.0 a	7.0 a
Fruit firmness	Cooper	7.1 a	7.4 a	---	---	7.0 a	7.0 a	8.7 a	8.8 a	8.0 a	7.0 a	7.0 a	7.0 a
	Gulfcoast	7.0 a	7.1 a	---	---	6.5 a	7.0 a	8.5 a	8.5 a	8.3 a	7.0 a	7.3 a	7.5 a
Fruit flavor	Cooper	6.8 a	7.0 a	---	---	7.0 a	7.5 a	8.5 a	8.5 a	8.0 a	7.0 a	6.8 a	7.0 a
	Gulfcoast	7.0 a	7.0 a	---	---	7.0 a	7.5 a	6.5 b	6.5 b	7.0 b	7.0 a	7.0 a	7.3 a
Plant productivity	Cooper	5.9 a	---	---	---	7.0 a	7.3 a	7.7 a	7.8 a	5.3 a	6.7 a	6.0 a	6.7 a
	Gulfcoast	5.5 a	---	---	---	7.8 a	7.8 a	8.0 a	8.0 a	5.0 a	8.0 b	7.3 a	7.5 a
Plant vigor	Cooper	5.9 a	---	---	---	7.5 a	7.0 a	6.7 a	6.8 a	7.5 a	---	7.0 a	7.0 a
	Gulfcoast	5.5 a	---	---	---	8.0 a	7.0 a	7.0 a	7.0 a	8.0 a	---	7.3 a	7.8 a
Plant volume (m ³)	Cooper	0.3 a	1.9 a	---	---	---	---	0.7 a	0.7 a	2.2 a	0.8 a	1.0 a	1.4 a
	Gulfcoast	0.2 a	2.0 a	---	---	---	---	0.5 a	0.5 a	2.1 a	0.7 a	1.1 a	1.2 a

^zRatings are made on a scale from 1 to 10 (8–10 = recognizable successively higher values than 7; 7 = average commercial value for the trait; 6 = least acceptable value for the trait; and 5–1 = recognizable successively lower values than 6).

^yPaired cultivar means separated by *t* test at *P* ≤ 0.05.

Table 2. Ripening date, yield, and mean berry weight of 'Cooper' and 'Gulfcoast' planted in 1988 and recorded at five locations over 3 years.

Trait	Harvest	Cultivar	Auburn, Ala.			Castle Hayne, N.C.			Clarksville, Ark.			Poplarville, Miss.			Nacogdoches, Texas		
			1990	1991	1992	1990	1991	1992	1990	1991	1992	1990	1991	1992	1990	1991	1992
Julian date ^z		Cooper	142 a ^y	145 a	---	---	148 a	162 a	165 a	165 a	161 a	---	140 a	135 a	139 a	137 a	140 a
		Gulfcoast	139 a	143 a	---	---	146 a	159 b	164 a	162 a	155 b	---	145 a	136 a	135 a	133 a	137 a
Yield (g/plant)		Cooper	32 a	1200 a	---	---	1600 a	3600 a	698 a	698 a	2380 a	---	821 a	726 a	435 a	566 a	2307 a
		Gulfcoast	67 a	1880 a	---	---	2920 b	5380 a	1210 b	1210 b	2160 a	---	1970 b	555 a	1086 b	723 a	2102 a
Berry wt (g/berry)	First	Cooper	0.7 a	1.4 a	---	---	1.9 a	1.7 a	1.5 a	1.6 a	2.0 a	---	2.1 a	1.5 a	1.1 a	1.8 a	1.2 a
		Gulfcoast	1.3 b	1.7 a	---	---	2.1 a	1.9 a	1.7 a	1.8 a	2.1 a	---	2.0 a	1.9 a	1.2 a	1.8 a	1.1 a
	Second	Cooper	0.5 a	1.1 a	---	---	2.0 a	1.8 a	1.4 a	1.3 a	1.8 a	---	2.2 a	1.3 a	1.1 a	1.6 a	1.2 a
		Gulfcoast	0.8 a	1.6 a	---	---	1.6 a	2.1 a	1.6 a	1.6 a	1.7 a	---	2.0 a	1.5 a	1.1 a	1.7 a	1.1 a
	Third	Cooper	---	1.0 a	---	---	1.8 a	1.7 a	1.1 a	1.1 a	1.8 a	---	2.1 a	1.5 a	1.0 a	1.5 a	1.2 a
		Gulfcoast	---	1.3 a	---	---	1.6 a	1.7 a	1.6 a	1.6 a	2.3 b	---	1.8 a	1.4 a	1.0 a	1.6 a	0.9 b
	Fourth	Cooper	---	0.9 a	---	---	1.3 a	1.5 a	0.9 a	0.9 a	1.6 a	---	1.5 a	1.1 a	0.6 a	0.9 a	1.1 a
		Gulfcoast	---	1.2 a	---	---	1.2 a	1.4 a	1.5 b	1.5 b	2.3 b	---	1.6 a	1.4 a	0.6 a	1.5 a	0.8 b

^zJulian date is when 50% of the fruit is ripe.

^yPaired cultivar means separated by *t* test at *P* ≤ 0.05.

and Clarksville. Yields of 4-year-old 'Cooper' and 'Gulfcoast' plants were ≈8 and 12 t·ha⁻¹, respectively, at Castle Hayne; both cultivars yielded ≈5 t·ha⁻¹ at Clarksville and Poplarville (Table 2). Clarksville yields were reduced by a March freeze. Berry weight for both cultivars was stable over four harvest dates (Table 2).

'Cooper' and 'Gulfcoast' plants have been distributed to commercial propagators. A limited number of plants for research or propagation purposes may be requested from J.M.S. at the USDA, Agricultural Research Service, Small Fruit Research Station, Poplarville, MS 39470.

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