'Sunrise' Highbush Blueberry

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'Sunrise' is an early maturing tetraploid highbush blueberry (*Vaccinium corymbosum* L.) resulting from the extended cooperative breeding program of the Agricultural Research Service of the U.S. Dept. of Agriculture (USDA) and the New Jersey Agricultural Experiment Station (NJAES). 'Sunrise' ripens with 'Duke' and 'Bluetta' in southern New Jersey (mid- to late June to mid-July) and $\approx$ 1 week before the midseason standard cultivar Bluecrop. Fresh fruit flavor of 'Sunrise' is generally better than that of 'Duke' and similar to that of 'Bluetta'. 'Sunrise' has larger (heavier) fruit, a larger plant stature, and is easier to manage than 'Bluetta'. Five-year-old plants of 'Sunrise' attained a height ranging between 1.6 to 1.8 m, whereas same age 'Bluetta' plants were <1.5 m tall. Another apparent advantage of 'Sunrise' over 'Bluetta' is the resistance to red ringspot virus (RRSV). 'Sunrise' has not expressed the symptoms of this virus, although it has been growing in a severely infested location for >10 years. Thus, 'Sunrise' may complement 'Duke' and be an alternative to 'Bluetta' for early season fresh fruit

for shipping or for local market sales in northern U.S. blueberry production areas.

Origin

'Sunrise', tested as G-482, originated from a cross of G-180 $\times$ Me-US 6620 made by A.D.D. at Beltsville, Md., in 1974 and has four highbush cultivars (Ivanhoe, Earliblue, Collins, and Coville) and one lowbush blueberry, *V. angustifolium* Ait., selection (North Sedgwick) in its ancestry (Fig. 1). 'Sunrise' was selected from a seedling field grown at the Atlantic Blueberry Co. Hammonton, N.J., in 1978 by A.D.D., G.J.G., and G.J. These workers, along with N.V. continued the

several fields at the Atlantic Co. in test rows of vegetatively propagated clones and finally in a replicated planting of elite clones and

Table 1. Relative ratings for fruit characteristics and productivity for 'Sunrise', 'Duke', and 'Bluetta'.

Cultivar	Fruit characteristics ^a					
	Size	Color	Scar	Firmness	Flavor	Yield
Sunrise ^b						
Mean	7.3	7.6	8.2	7.8	7.1	7.5
Range	(6-8)	(7-8)	(8-9)	(7-8)	(7-8)	(6-8)
Duke ^b						
Mean	7.8	8.0	8.0	7.9	6.7	8.6
Range	(7-8)	(8)	(8)	(7-8)	(6-7)	(8-9)
Bluetta ^a						
Mean	7.5	8.0	6.0	7.5	7.5	8.5
Range	(7-8)	(8)	(6)	(7-8)	(7-8)	(8-9)

^aFor size, scar, firmness, flavor, and yield 1 = poorest, 10 = best; for color, 1 = dark, 10 = light.

^bYears 1980-89.

^cYears 1985 and 1989.

Fig. 1. Pedigree of 'Sunrise' blueberry.

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Fig. 2. Fruit of 'Sunrise' highbush blueberry.

Table 2. Mean fruit yield, berry weight, and percentage of total harvest for 'Bluetta', 'Duke', and 'Sunrise' blueberry cultivars on four harvest dates (Hammonton, N.J., 1989).

Cultivar	Harvest dates				Season totals
	30 June	7 July	18 July	27 July	
Sunrise^z					
kg/plant ($\bar{x} \pm SE$)	3.5 $\pm$ 0.7	2.2 $\pm$ 0.2	1.3 $\pm$ 0.2	0.2 $\pm$ <0.1	7.2
g/fruit ($\bar{x} \pm SD$) ^x	1.8 $\pm$ 0.4	1.5 $\pm$ 0.4	1.4 $\pm$ 0.4	1.1 $\pm$ 0.4	1.5 $\pm$ 0.5
Percent of harvest	48.8	30.8	17.8	2.6	100
Duke^y					
kg/plant ($\bar{x} \pm SE$)	4.4 $\pm$ 0.6	3.1 $\pm$ 0.3	1.9 $\pm$ 0.3	0.2 $\pm$ 0.1	9.7
g/fruit ($\bar{x} \pm SD$) ^x	1.7 $\pm$ 0.6	1.3 $\pm$ 0.4	1.2 $\pm$ 0.4	1.1 $\pm$ 0.4	1.4 $\pm$ 0.5
Percent of harvest	45.8	32.0	19.8	2.4	100
Bluetta^y					
kg/plant ($\bar{x} \pm SE$)	3.3 $\pm$ 1.1	1.3 $\pm$ 0.2	0.3 $\pm$ 0.2	<0.1 $\pm$ 0.01	5.0
g/fruit ($\bar{x} \pm SD$) ^x	1.4 $\pm$ 0.4	1.1 $\pm$ 0.4	1.3 $\pm$ 0.5	0.8 $\pm$ 0.3	1.2 $\pm$ 0.5
Percent of harvest	67.0	26.6	6.0	0.4	100

^xMean of three plants.

^yMean of four plants.

^zMean of 30 berries.

standard cultivars. 'Sunrise' was introduced in early 1989.

Description

Evaluation of the original 'Sunrise' plant and of plants established in a replicated trial during 1980-1989 indicated that the most impressive and consistent traits of 'Sunrise' were productivity, ability to "hold flavor" after the fruit has ripened, small and dry fruit stem scar, fruit firmness, and overall good balance of fruit characteristics.

Rating data collected for 10 years on the original plant (Table 1) show that 'Sunrise' fruit (Fig. 2) may appear slightly smaller and darker to the eye than fruit of either 'Bluetta' or 'Duke'. 'Sunrise' had a fruit scar and firmness rating similar to that of 'Duke' and better than that of 'Bluetta'. We rated 'Sunrise' better for fruit flavor than 'Duke' and about the same as 'Bluetta'.

Replicated trial data from the 1989 season (Table 2) show that the 'Bluetta' crop, which was lighter, was harvested in two pickings, whereas three pickings were required to harvest crops of 'Sunrise' and 'Duke'. 'Sunrise' plants yielded a bigger crop than 'Bluetta' at every harvest but yielded less than or the same as 'Duke' at each harvest. However, differences were not significant at $P = 0.05$. In contrast to the rating data (Table 1), 'Sunrise' fruit was slightly heavier than 'Duke' or 'Bluetta' at most harvests. 'Sunrise' had a higher soluble solids content and titratable acidity at each harvest than 'Bluetta' or 'Duke' (N. V., unpublished data).

Plants of 'Sunrise' have been distributed to commercial propagators and to university cooperators for testing regional adaptation. Neither the USDA nor NJAES has plants for distribution. Contact N.V. at the NJAES Blueberry and Cranberry Research Center, Chatsworth, NJ 08019 for plant sources.