‘Ozarkblue’ Southern Highbush Blueberry

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‘Ozarkblue’ is the first cultivar released from the Univ. of Arkansas blueberry breeding program, which began in the late 1970s and has involved cooperative efforts with the U.S. Dept. of Agriculture (USDA). A major emphasis of this program is the development of blueberry cultivars adapted to the climate and soils of the Upper South (lat. 33° to 36°) of the United States. ‘Ozarkblue’ is a southern highbush (*Vaccinium corymbosum* L.) cultivar and produces high yields of quality fruit that ripen later than midseason northern highbush (*V. corymbosum*) and most southern highbush cultivars but earlier than rabbiteye (*V. ashei* Reade) cultivars. ‘Ozarkblue’ is vigorous and has produced consistent crops each year of evaluation compared to other southern highbush and rabbiteye cultivars that often sustain yield reductions due to spring freezes. ‘Ozarkblue’ likely will be adapted to the Upper South and can be hand-harvested for commercial shipment or pick-your-own marketing.

Origin

‘Ozarkblue’ resulted from the cross of G-144 x FL 4-76 made in 1976 at Beltsville, Md., by A.D.D. (Fig. 1). G-144 is a USDA northern highbush selection, and FL 4-76 is an interspecific hybrid of *V. corymbosum*, *V. darrowi* Camp, and *V. ashei*. We estimate ‘Ozarkblue’ to be 81% *V. corymbosum*, 13% *V. darrowi*,

and 6% *V. ashei*. Possibly, a small amount of germplasm from *V. angustifolium* Ait. from the *V. corymbosum* parents also is included in the genetic makeup of ‘Ozarkblue’, but this amount cannot be determined from the available pedigree. ‘Ozarkblue’, tested as A-109, was selected in 1980 at the Main Experiment Station of the Univ. of Arkansas, Fayetteville, and was tested at this location and at Clarksville and Hope, Ark. Cultural practices included in all testing of ‘Ozarkblue’ involved adding peat to the planting holes, mulching with sawdust or pine straw at 10- to 15-cm depths, and using trickle irrigation. The most thorough testing was done at the Univ. of Arkansas Fruit Substation, Clarksville, along with northern highbush, southern highbush, and rabbiteye cultivars. The soil type at Clarksville is a Linker fine sandy loam (Typic Hapludults). The evaluation planting was established in 1988, with the first fruiting year in 1990. The planting was arranged in a randomized complete-block design with four two-plant replications used for bloom date, yield, and berry weight. These data, collected from 1990 through 1994, were

analyzed as a split-plot in time with cultivar as the main plot and year as the subplot. For two of the cultivars, ‘Ozarkblue’ and ‘Bluecrop’, we collected data throughout the entire evaluation period, while the other cultivars were excluded from replicated plot data collection after 1992. In the analysis of these data, the cultivar x year interaction was significant for all variables. Therefore, interaction means for these variables are presented with mean separation by LSD. Data for fruit scar, color, firmness, and flavor were collected from 1990 to 1994 from two to eight plants of each cultivar, and means for each cultivar over this time period are presented.

Description and performance

‘Ozarkblue’ plants are semi-upright and vigorous, but heavy crop loads can cause canes to often have a willow-like growth habit during the fruiting season. ‘Ozarkblue’ was more vigorous than other southern highbush cultivars in research plots at Fayetteville and Clarksville, perhaps attributable to its multispecies parentage. Also, ‘Ozarkblue’ exhibited excellent vigor in the first 2 years (nonfruiting) after planting at the Southwest Research and Extension Center, Hope. Plants were free of most diseases, with the possible exception of stem blight [*Botryosphaeria dothidea* (Mouq. ex Fr.) Ces & de Not] on plants at Clarksville. However, severity was low and no plants died. The only other disease common in the evaluation plantings was leaf infection by powdery mildew [*Microsphaera pennellata* var. *vaccinii* (Schw.) Cooke.], which was not observed on ‘Ozarkblue’.

Hardiness of ‘Ozarkblue’ flower buds has been excellent, with no damage at either Fayetteville or Clarksville. In a controlled freezer test, ‘Ozarkblue’, ‘Blue Ridge’, and

Fig. 1. Pedigree of ‘Ozarkblue’ southern highbush blueberry.

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'Cape Fear' were hardier than 'Georgiagem', 'Gulfcoast', 'Cooper', and 'O'Neal' southern highbush but not as hardy as 'Bluecrop' (Clark et al., 1996). Flower buds of 'Ozarkblue' collected in Jan. 1994 were only slightly damaged at -20°C , with more severe damage at -25°C . Some flower buds of 'Ozarkblue' survived -30°C in the study.

Bud swell (stage 2 buds) (Spiers, 1978) of 'Ozarkblue' was usually earlier than that for 'Bluecrop' at Clarksville in 1990–94. However, bud swell of 'Ozarkblue' was 2 to 7 days later than for other southern highbush cultivars (including 'Gulfcoast', 'Cooper', 'Cape Fear', and 'Georgiagem') in 1990–94, depending on year and cultivar. Also, bud swell of 'Ozarkblue' was usually 3 to 6 days later than for 'Climax' and 'Tifblue' rabbiteye cultivars. Chilling requirement of 'Ozarkblue' flower buds is higher than that of 'Cape Fear' and has been measured to be 800 to 1000 h below 7°C .

Ten percent and 50% bloom dates of 'Ozarkblue' from 1990 to 1994 were similar to those of 'Bluecrop', although earliness of bloom fluctuated among these clones (Table 1). 'Ozarkblue' bloomed later than 'Gulfcoast' and 'Cooper' southern highbush cultivars during 1990–92 (Table 1). 'Ozarkblue' was up to 32 days later in 10% bloom than 'Gulfcoast' (1992), while bloom dates of 'Ozarkblue' and 'Tifblue' were usually similar. No damage from late-spring freezes occurred during evaluation of 'Ozarkblue'. This result was attributed largely to later bud swell and bloom dates than for other cultivars.

'Ozarkblue' ripened later than 'Bluecrop', 'Cooper', and 'Gulfcoast' by 7 to 14 days but ripened earlier than 'Climax' by 7 days (Table 2). 'Ozarkblue' yielded consistently better than 'Bluecrop' during the evaluation period 1990–94 (Table 3). Also, 'Ozarkblue' yielded more than 'Climax', 'Cooper', 'Gulfcoast', and 'Tifblue' in 1990 and 1992. A spring freeze occurred in the planting in 1992 (-7°C on 10 Mar.) that damaged flowers and reduced yields of several cultivars, with the most extreme damage on 'Gulfcoast' and 'Climax' and significant damage on 'Cooper' and 'Tifblue'. 'Ozarkblue' and 'Bluecrop' bloomed later than most of these cultivars and no damage was noted on their flowers following the freeze, and yields were not reduced. The avoidance of freeze damage and possible greater hardiness of flower tissues allowed consistent full crops with 'Ozarkblue' throughout the evaluation period. Consistent cropping of high yields is a major attribute of 'Ozarkblue' compared to other southern highbush and rabbiteye cultivars in our evaluation in Arkansas.

Berry weight was consistently high for 'Ozarkblue', higher than that for 'Bluecrop' in 4 of 5 years, and similar to or higher than for other southern highbush and rabbiteye cultivars (Table 3). Reduced berry weight in 1994 was probably due to accidental excessive N fertilization, which reduced plant vigor. Fruit quality ratings including stem scar, color, firmness, and flavor were high for 'Ozarkblue' (Table 4). Perkins-Veazie et al. (1995) reported on the postharvest quality of several

Table 1. Ten percent and 50% bloom dates (day of year) of blueberry cultivars at the Univ. of Arkansas Fruit Substation, Clarksville, 1990–94.

Cultivar	Bloom dates									
	Bloom (%)									
	10 ^z					50 ^y				
	Year									
	1990	1991	1992	1993	1994	1990	1991	1992	1993	1994
Ozarkblue	92	92	98	106	100	106	98	105	112	104
Bluecrop	101	91	88	102	98	109	98	100	109	104
Climax	81	88	68	---	---	106	95	---	---	---
Cooper	78	85	81	---	---	95	88	85	---	---
Gulfcoast	72	82	66	---	---	83	84	81	---	---
Tifblue	86	91	98	---	---	108	98	103	---	---

^zLSD ($P = 0.05$) for comparison of cultivar mean 10% bloom dates for the same or different years = 4.

^yLSD ($P = 0.05$) for comparison of cultivar mean 50% bloom dates for the same or different years = 2.

Table 2. Percent yield by harvest date for blueberry cultivars at the Univ. of Arkansas Fruit Substation, Clarksville, 1991.

Cultivar	Percent total yield								
	Harvest date (day of year)								
	143	150	157	164	171	178	185	192	199
Ozarkblue	---	---	12	38	30	20	---	---	---
Bluecrop	---	25	36	26	11	2	---	---	---
Climax	---	---	---	46	30	18	5	1	---
Cooper	---	25	46	25	4	---	---	---	---
Gulfcoast	29	34	20	10	4	---	---	---	---
Tifblue	---	---	---	---	5	21	34	28	12

Table 3. Yield and berry weight of blueberry cultivars at the Univ. of Arkansas Fruit Substation, Clarksville, 1990–94.^z

Cultivar	Fruiting characteristic									
	Yield (kg/plant) ^y					Mean berry wt (g) ^x				
	Year									
	1990	1991	1992	1993	1994	1990	1991	1992	1993	1994
Ozarkblue	2.3	2.7	4.9	6.6	8.1	1.9	2.5	2.3	2.2	1.7
Bluecrop	1.1	1.2	2.3	3.9	3.9	1.9	2.1	1.9	1.7	1.4
Climax	0.4	3.0	1.9	---	---	1.4	1.6	1.9	---	---
Cooper	0.7	2.2	2.4	---	---	1.5	1.8	1.7	---	---
Gulfcoast	1.2	4.3	2.2	---	---	1.9	1.6	2.1	---	---
Tifblue	0.4	5.0	3.3	---	---	1.4	1.6	1.3	---	---

^zPlanting was established in 1988.

^yLSD ($P = 0.05$) for comparison of cultivar mean yields for the same or different years = 1.0.

^xLSD ($P = 0.05$) for comparison of cultivar mean berry weights for the same or different years = 0.2.

Table 4. Fruit quality ratings^z of blueberry cultivars at the Univ. of Arkansas Fruit Substation, Clarksville. Data are means of 5 years, 1990–94.

Cultivar	Fruit quality attribute (rating)			
	Scar	Color	Firmness	Flavor
Ozarkblue	8.6	8.3	8.7	7.8
Bluecrop	7.4	8.2	7.5	6.9
Climax	8.4	7.8	8.4	8.2
Cooper	7.5	7.7	8.2	7.4
Gulfcoast	7.5	7.6	7.8	6.8
Tifblue	9.4	8.4	8.3	7.1

^zRating scale of 1–10; 10 = best. For scar, a higher rating was given for a small stem scar.

blueberry cultivars and found that the scar diameter of 'Ozarkblue' was significantly smaller than that of 'Bluecrop', 'Gulfcoast', and 'Cooper' but similar to that of 'Climax'. Also, total anthocyanin content of 'Ozarkblue' before fruit storage was higher than for 'Bluecrop', similar to 'Cooper' and 'Gulfcoast', and lower than for 'Climax'. We rated fruit firmness higher for 'Ozarkblue' than for 'Bluecrop' (Table 4), and this greater firmness is probably due to a higher epidermal firmness of 'Ozarkblue' compared to 'Bluecrop' (Perkins-Veazie et al., 1995). Flavor of 'Ozarkblue' is sweet and subacid and more intense than for 'Bluecrop'. Soluble solids concentration of 'Ozarkblue' was reported

higher than for 'Bluecrop', 'Cooper', and 'Gulfcoast' and similar to 'Climax' (Perkins-Veazie et al., 1995). Titratable acidity (expressed as citric acid) was higher and pH lower for 'Ozarkblue' than for other cultivars (Perkins-Veazie et al., 1995). Additionally, postharvest storage quality of 'Ozarkblue' was higher than for other cultivars, including 'Cooper', 'Gulfcoast', 'Bluecrop', and 'Climax' (Perkins-Veazie et al., 1995). Other components of postharvest performance for which 'Ozarkblue' was rated high included lack of retention of pedicels on harvested fruit, retention of fruit firmness following storage for 21 days at 5 °C, low total weight loss, and low incidence of decay during storage.

Availability

An application for a U.S. plant patent has been filed for 'Ozarkblue'. A list of nurseries licensed to propagate and sell 'Ozarkblue' can be obtained from J.N.M.

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