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'Bob Gordon' Elderberry

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Abstract

'Bob Gordon', a selection of the American elderberry (*Sambucus canadensis* L.; syn. *Sambucus nigra* ssp. *canadensis* (L.) R. Bolli), is a productive, adapted cultivar that has out-performed the standard 'Adams II' and other genotypes in multiple studies. 'Bob Gordon' has been under continuous evaluation since 1999, most recently in a cultivar trial conducted at two sites in Missouri and one in Oregon, and a pruning trial conducted at two Missouri sites. In the cultivar trial 'Bob Gordon' had greater overall mean yield (2.75 kg/plant) and larger berry size (92 mg) compared with Adams II (1.78 kg/plant and 60 mg, respectively). In the pruning trial 'Bob Gordon' also had greater mean yield (1.86 kg/plant) and larger berry size (86 mg) across multiple experimental variables compared with 'Adams II' (0.65 kg/plant and 63 mg, respectively).

The American elderberry [*Sambucus canadensis* L.; syn. *Sambucus nigra* ssp. *canadensis* (L.) R. Bolli] is an emerging horticultural crop with increasing use for wine, juice, jelly, colorant, and dietary supplement products in North America (4). In past years elderberries were largely harvested from the wild, and only minor efforts were made to select or develop improved cultivars (1). More recently, increased interest and rapidly developing markets have driven the need for improved elderberry cultivars with consistent, superior fruit production. The Elderberry Improvement Project was initiated at Missouri State University and the University of Missouri in 1997 with several goals, including the development of American elderberry cultivars adapted to Midwestern environments (2). 'Bob Gordon' (Fig. 1) is the second release from the project, following 'Wyldewood' (3).

Origin

'Bob Gordon', originally described and tested as 'Gordon B' (6, 7, 8), was identified and collected from the wild by Robert Gordon, Charlotte Cooper, and Andrew Thomas near Osceola, Mo. (lat. 37.930N, long. 93.634W, alt. 255 m), on 29 Sept. 1999. 'Bob Gordon' is named in honor of Robert F. Gordon, born 1939, who owned and managed a diversified orchard and farm operation near Osceola, Mo. from 1972 to 2011, and on whose farm the original collection was made.



Fig. 1. 'Bob Gordon' elderberry plants (left) and fruit cyme (right).

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Description and Performance

'Bob Gordon' has been under continuous observation and testing since 1999 at two locations in Missouri: Missouri State University's State Fruit Experiment Station at Mountain Grove and the University of Missouri's Southwest Research Center at Mt. Vernon. Both of these sites are in southern Missouri (USDA Hardiness Zone 6), about 140 km apart, with relatively similar climate and soil conditions. Initial screening took place in observation plots at the two Missouri sites. Replicated evaluation of 'Bob Gordon' and 11 other genotypes, including the standard cultivar 'Adams II' and the previously released 'Wyldewood', occurred at both Missouri sites from 2003 to 2006, hereafter referred to as the "cultivar trial." In addition, this study included a third site at Corvallis, OR, where 'Bob Gordon' was compared with three other elderberry genotypes, including 'Adams II'(6). 'Bob Gordon' was also included in a 7-year (2000 to 2006) study at both Missouri sites that evaluated performance and response of three genotypes to four pruning treatments, hereafter referred to as the "pruning study" (10). Outstanding performance and superiority over the standard 'Adams II' and other genotypes within these two studies prompted the release of this cultivar.

'Bob Gordon' consistently produces heavy yields of high quality fruit, with large, dark purple berries that ripen uniformly within the cyme, are resistant to shattering, and are efficient to harvest. The fruiting cymes are often presented in a decumbent position when ripe, making them somewhat resistant to bird predation (5). The florets are abundant and easily removed from the cyme for use as a marketable product. Spring budbreak is later than 'Adams II' by an average of 14 days (6).

Some phenology and yield parameters for 'Bob Gordon,' compared with the standard 'Adams II' and the previously released 'Wyldewood' derived from the cultivar trial (6), are summarized in Table 1. Table 2 presents broad means comparing 'Bob Gordon' and 'Adams II' across years, sites, and pruning treatments in the pruning study (10). Additional information, including more detailed statistical analysis, is included in these two papers. 'Bob Gordon' blossoms in mid-June in southern Missouri. The harvest season for 'Bob Gordon' is generally similar to 'Adams II', but earlier than 'Wyldewood', usually beginning in late July and continuing through August in Missouri. Plants that are annually pruned to the ground produce primary shoots that ripen fruit over a 3-week period, allowing for the harvest of the majority of the fruit in three harvests at 7-day intervals. Unpruned plants ripen fruit over a 4-week period (10).

In all cases in both studies 'Bob Gordon' produced comparable or greater average yields, fruiting cyme sizes, and berry sizes than 'Adams II'. Compared with 'Wyldewood', which was included only in the cultivar trial, 'Bob Gordon' generally yielded more at Mt. Vernon but less at Mountain Grove. The greatest overall mean yield of 'Bob Gordon' fruit was 2.49 kg/plant within the pruning study at Mountain Grove (10), whereas the largest individual berries averaged 104 mg in the cultivar trial at Mt. Vernon (6). Yield variability was noted between the Mountain Grove and Mt. Vernon sites in both studies, with Mountain Grove plots producing higher yields but smaller berries than the Mt. Vernon plots. Growing conditions were generally similar at both sites; however, the Mountain Grove plots were established on raised soil ridges very near a large irrigation lake, which may have influenced production. Yield declines for 'Bob Gordon' and the other genotypes were noted over the four-year cultivar trial at the Mountain Grove site, but not at Mt. Vernon, raising questions concerning long term productivity of elderberry plantings. 'Bob Gordon' plants are generally medium-sized, to 2.2 m in Missouri, with a spreading to upright growth habit. In the pruning study, 'Bob Gordon' plants were taller than 'Adams II' at both locations; however, no height differences between these two cultivars were observed in the cultivar trial.

'Bob Gordon' was rated as slightly to moderately susceptible to a leaf spot disease ten-

Table 1. Phenology and yield data for 'Adams II', 'Bob Gordon', and 'Wyldewood' elderberry at two Missouri and one Oregon sites from 2004-2006 (excerpted from Finn et al., 2008).

Site	Year	Cultivar	Full bloom	First ripe fruit	Yield (kg/plant)	Cyme size (g/cyme)	Berry wt (mg)
Mountain Grove, MO	2004	Adams II	6 June a [z]	14 July a	2.66 a	58.6 a	55 b
	2004	Bob Gordon	8 June a	14 July a	3.33 a	63.6 a	80 a
	2004	Wyldewood	15 June b	25 July b	5.67 a	90.7 a	69 a
	2005	Adams II	8 June a	15 July a	2.17 b	26.8 a	51 a
	2005	Bob Gordon	8 June a	10 July a	3.17 a	33.5 a	66 a
	2005	Wyldewood	19 June b	28 July b	3.43 a	36.3 a	63 a
	2006	Adams II	16 June a	22 Aug a	0.38 b	24.6 b	52 b
	2006	Bob Gordon	27 June b	22 Aug a	0.94 a	103.9 a	91 a
	2006	Wyldewood	28 June b	21 Aug a	1.73 a	108.1 a	52 b
Mt. Vernon, MO	2004	Adams II	4 June a	5 July a	0.40 a	30.1 a	66 b
	2004	Bob Gordon	11 June a	5 July a	0.70 a	45.3 a	107 a
	2004	Wyldewood	24 June b	21 July b	0.35 a	42.0 a	88 a
	2005	Adams II	13 June a	13 July a	0.38 a	11.5 b	70 b
	2005	Bob Gordon	7 June a	5 July a	1.32 a	28.7 a	109 a
	2005	Wyldewood	26 June b	28 July b	0.43 a	30.9 a	111 a
	2006	Adams II	--	8 Aug a	0.44 b	27.1 b	66 b
	2006	Bob Gordon	22 June b	9 Aug a	1.89 a	134.3 a	97 a
	2006	Wyldewood	10 July a	1 Sept b	0.90 a	58.1 a	91 a
Corvallis, OR	2004	Adams II	21 June a	1 Aug a	3.39 b	33.0 a	--
	2004	Bob Gordon	23 June a	30 July a	5.49 a	26.0 a	--
	2005	Adams II	16 June a	3 Aug a	4.44 a	28.0 a	--
	2005	Bob Gordon	19 June a	31 July a	5.22 a	16.3 a	--
Overall means [y]		Adams II	12 June	26 July	1.78	30.0	60
		Bob Gordon	16 June	24 July	2.75	56.5	92
		Wyldewood	25 June	5 Aug	2.09	61.0	79

[z] Comparisons of statistical differences among cultivars are within site and year; means with similar letters are not significantly different according to Duncan's Multiple Range Test ($P \leq 0.05$).
[y] Broad means across multiple sites and years.

tatively identified as *Pseudomonas viridiflava* Burkholder (Dowson), and minor eriophyid mite (Eriophyidae) damage was observed at both Missouri sites. 'Bob Gordon' had significantly less leaf spot and mite damage compared with 'Adams II' in the pruning study (10) while leaf spot and mite susceptibility were not significantly different from 'Adams II' in the cultivar trial (6). 'Bob Gordon' has not been virus indexed.

Within the pruning study, a separately-published evaluation of fruit characteristics was conducted comparing 'Bob Gordon' with 'Adams II' fruit across numerous experimental variables (9). In that study, 'Bob Gordon' produced fruit with the following overall means: pH 4.73, titratable acidity (TA) in terms of malic acid 0.65 g/100 ml, and total soluble solids concentration (TSS) 11.62 °Brix; whereas 'Adams II' produced fruit with pH 4.97, TA 0.60 g/100 ml, and TSS 11.24 °Brix. These differences were statistically different

Table 2. Yield and plant height data for 'Bob Gordon' and 'Adams II' elderberry from pruning study at two Missouri sites, 2002-2006 (excerpted from Thomas et al., 2009).

Cultivar	Yield (kg/plant)	Number of cymes per plant	Cyme size (g/cyme)	Berry wt (mg)	Plant height (cm)
Adams II	0.65 b [z y]	21.6 b	36 b	63 b	145 b
Bob Gordon	1.86 a	37.1 a	87 a	86 a	175 a

[z] Comparisons of statistical differences between cultivars are within columns; means with similar letters are not significantly different according to Duncan's Multiple Range Test ($P \leq 0.05$).
[y] Broad means across two sites, five yield seasons, and four pruning regimens.

for pH and TA, but not for TSS. These limited results suggest that 'Bob Gordon' fruit may have more desirable enological characteristics compared with 'Adams II' grown in Missouri.

Availability

A limited number of unrooted cuttings from non-virus indexed plants are available for test purposes to federal and state experiment stations from University of Missouri and Missouri State University by contacting the authors.

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