‘Onyx’ Trailing Blackberry

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‘Onyx’ is a new trailing blackberry (Rubus subg. Rubus Watson) cultivar from the U.S. Department of Agriculture–Agricultural Research Service (USDA-ARS) breeding program in Corvallis, OR, released in cooperation with the Oregon Agricultural Experiment Station. ‘Onyx’ is a vigorous, somewhat erect, thorny, trailing blackberry that produces moderate yields of uniform, firm, and sweet high-quality fruit with excellent flavor that are suited for the local and wholesale fresh market (Figs. 1 and 2). ‘Onyx’ is being released primarily as a result of its outstanding fresh fruit quality in the late season. An application for a U.S. plant patent has been submitted.

Origin

‘Onyx’, tested as ORUS 1523-4, was selected in Corvallis, OR, in 1997 from a cross made in 1995 of OSC 1466 and ORUS 1117-11 (Fig. 3). OSC 1466 was selected in 1966 and has always been noted for its productivity and outstanding fruit quality, especially flavor, but its fruit are small. ORUS 1117-11 is a thornless selection with high yields of late-ripening fruit with excellent quality. ‘Onyx’ is being released primarily as a result of its outstanding fresh fruit quality in the late season.

Description and Performance

‘Onyx’ has been evaluated most extensively in trials at Oregon State University’s North Willamette Research and Extension Center (Aurora, OR; OSU-NWREC) as well as observation plots with the USDA-ARS in Corvallis, OR, and in commercial fields in Oregon’s Willamette Valley. In the trials, standard cultural practices for trailing blackberry production were used, including annual pre- and post-emergent herbicide applications, spring nitrogen fertilization (78 kg N/ha), weekly overhead application of 2.5 to 5.0 cm of irrigation during the growing season depending on rainfall. At OSU-NWREC, dormant applications of liquid lime sulfur and copper hydroxide were made to control leaf and cane spot caused by Septoria rubi Westend, purple blotch caused by Septocycya ruborum (Lib) Petr., rust caused by Kuehmeola uredinis (Link) Arth., and anthracnose caused by Elsinoe veneta [Burkholder] Jenk. Plots also received a single bloom-time application of captan to control anthracnose, botrytis caused by Botrytis cinerea Pers.: Fr., cane spot, purple blotch, and stamen blight caused by Hapalosphaeria deformans (Syd.) Syd. at labeled rates. At the OSU-NWREC, ‘Onyx’ was planted in 1999 and 2005 in single, three-plant observation plots within a replicated trial that included the cultivars Adrienne, Black Diamond, Black Pearl, Everthornless, Marion, Metolius, Navaho, Nightfall, Obsidian, Silvan, Siskiyou, and Waldo as well as single plots of the cultivars Apache, Čačanska Bestrna, Loch Tay, and Shawnee. Of these cultivars, ‘Loch Tay’, ‘Navaho’, ‘Obsidian’, ‘Metolius’, and ‘Siskiyou’ fruit are commonly sold in the wholesale fresh market and ‘Black Diamond’ and ‘Black Pearl’, although primarily cultivars for processing, also have had some success as fresh market cultivars. The rest are almost exclusively grown for the processing market. In 2002 at the OSU-NWREC, ‘Onyx’ was planted along with other selections and ‘Siskiyou’ and ‘Marion’ in a randomized complete block design with four three-plant replications used for determining fresh fruit characteristics. Three replications were harvested once a week to determine harvest season, yield, and average fruit weight based on a randomly selected subsample from each harvest (Finn et al., 1999; Waldo, 1957). These data, collected from 2003–2006, were analyzed as a split plot in time with cultivar as the main plot and year as the subplot with mean separation by least significant difference. Of the 13 genotypes harvested from this replicated trial, only the data from ‘Marion’ and ‘Siskiyou’ were included in the analysis. The cultivar x year interaction was significant for yield but not for fruit weight (Table 1). Thus, mean fruit weight is presented for each year of the trial. The fruit-ripening season in Oregon was characterized by the dates on which 5%, 50%, and 95% of the total fruit were harvested (data not shown). Subjective fruit evaluations were made during the 2003–2006 fruiting seasons using a 1 to 9 scale (9 = the best expression of each trait). The fruit ratings included sterility (subjective rating of drupelet set), firmness (as measured subjectively by hand in the field on six to eight fruit), color (ideal is a solid, dark black), shape (with a uniform, long conic berry being ideal), texture (subjectively rated when chewed while tasting berries in the field), separation (subjective rating of how easily the ripe fruit were separated from...
the plant), and flavor (subjectively rated by tasting fruit in the field) (Table 2). Plant ratings were conducted one time each year during the fruiting season for primocane and florican vigor, spines (1 = numerous, large spines; 9 = spineless), flowering or fruiting lateral length (1 = very short; 5 = very long) and strength (1 = weak, droopy; 5 = stiff, sturdy), and damage resulting from winter injury (1 = dead; 9 = no injury).

‘Onyx’ produced yields comparable to those of ‘Marion’ but higher than ‘Siskiyou’ and ‘Waldo’ (Table 2). ‘Onyx’ plants were rated thornier than ‘Siskiyou’ and ‘Marion’ and more vigorous than these two as well as ‘Waldo’ (Table 2). ‘Onyx’ canes have fruiting laterals that are fairly long, comparable to ‘Marion’, and longer than those of ‘Siskiyou’ or ‘Waldo’, thereby presenting the fruit well for hand-picking. No serious cane disease has been noted on ‘Onyx’ because it was selected. ‘Onyx’ was more cold-tolerant than ‘Marion’, ‘Siskiyou’, and ‘Waldo’ in a replicated trial. In Feb. 2006, temperatures early in the month were warm (12 to 15 °C) during the day and moderate at night (1 to 7 °C); however, in the third week of February, the night temperatures dropped to ~5 to ~8 °C. Although ‘Marion’ had severe cold injury symptoms, damage was insignificant on ‘Onyx’, perhaps because ‘Onyx’ had not yet deacclimated, unlike ‘Marion’. The canes are as resistant to cane and leaf spot as those of ‘Marion’.

‘Onyx’ has consistently produced medium-sized fruit that are larger than ‘Marion’ but smaller than ‘Siskiyou’ (Table 1). The fruit are conic with compact uniform drupelets and are more uniformly shaped and show less drupelet set problems than ‘Marion’ but are not quite as perfectly formed as ‘Waldo’ (Table 2). ‘Onyx’ fruit are as firm as those of ‘Siskiyou’ and much firmer than ‘Waldo’ and ‘Marion’ (Table 2). The combination of ‘Onyx’ fruit size, shape, and firmness makes them well suited for packing in clamshells for the wholesale fresh market. The fruit color is dark black and less purple than ‘Marion’, ‘Siskiyou’, and ‘Waldo’ (Table 2). The fruit texture is typical for a high-quality trailing blackberry with the seeds not being particularly crunchy or noticeable (Table 2). The fruit flavor was rated as excellent, although not as outstanding as ‘Marion’ or ‘Siskiyou’ but better than ‘Waldo’ (Table 2). ‘Marion’s fruit flavor is the standard by which others are measured, because ‘Marion’ has an intense flavor and a rich, complex mixture of aromatic compounds and high acidity (Hall et al., 2002; Yorgey and Finn, 2005). This intense flavor in ‘Marion’ is preferred in a processed product in which blackberries may make up a small proportion of the end product.

‘Onyx’ fruit have a similar percent soluble solids to ‘Marion’, ‘Black Pearl’, ‘Navaho’, ‘Nightfall’, ‘Obsidian’, ‘Siskiyou’ and ‘Waldo’ fruit and higher levels than ‘Black Diamond’ and ‘Loch Tay’ but lower than ‘Thornless Evergreen’, which ripens 5 weeks later in August to September (Table 3). The pH of ‘Onyx’ fruit was comparable to most cultivars but was higher than that of ‘Marion’ or the acidic ‘Nightfall’ (Table 3). The titratable acidity for ‘Onyx’ fruit was relatively low compared with most processing cultivars developed for the Pacific Northwest industry, although it was higher than that of ‘Loch Tay’ (Table 3). ‘Onyx’ flavor, although not as intense as ‘Marion’, as discussed previously, is sweet and fruity with less acidity than is typical for ‘Marion’ fruit, making it very desirable to the average consumer.