

‘Crimson Joy’ Peach

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The U.S. Department of Agriculture–Agricultural Research Service (USDA–ARS) stone fruit breeding program at Byron, GA, is one of the few public programs that remain active in developing new peach cultivars adapted to the southeastern climate and suitable for the regional shipping industry. The “prince” series peach cultivars, most of which produce large, firm, melting, freestone fruit with yellow flesh, normal acidity, and high blush, were released to meet this need (Okie, 1993; Okie and Layne, 2008a, 2008b; Okie et al., 1982; Okie and Reilly, 1987). As a continuation of this effort, ‘Crimson Joy’ (tested as BY99P3866) is released, along with two other “Joy” cultivars (Chen and Okie, 2020a, 2020b). This cultivar has a chilling requirement estimated at ≈ 700 chill hours (CH) and is suited for areas with medium to high chill accumulation. ‘Crimson Joy’ is well adapted to the southeastern climate, has performed well in Georgia and South Carolina, and is suggested for trial wherever ‘GaLa’ or ‘Harvester’ are grown.

Origin

‘Crimson Joy’ tree was an open-pollinated (OP) seedling of BY96P3423 (Fig. 1), which itself resulted from ‘Blazeprince’ \times BY91R2435 (“R” in selection names denotes fruit with rough skin) (Okie and Prince, 1982). BY91R2435 was

an OP seedling of BY88R2387, which resulted from a cross of BY84R2112 \times BY83N1119. BY84R2112 was an OP seedling of BY81R145, itself an OP seedling of BY78AP290. BY83N1119 was an OP nectarine seedling of BY78AP320, which—like BY78AP290—was a selection from ‘Pekin’ \times ‘Durbin’. The original seedling tree of ‘Crimson Joy’ was designated as 99-3866w when planted at the Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, in 1999. It was evaluated and selected when it first fruited in 2001, and was designated as BY99P3866 in subsequent years of evaluation.

Description

‘Crimson Joy’ trees are moderately vigorous and semispreading in growth habit. Leaf glands are reniform. Trees have large, showy, pink self-fertile flowers and require ≈ 700 CH (< 7.2 °C or 45 °F) to break bud in Byron, GA. Trees produce firm, round, freestone, and nearly full-blushed fruit with melting yellow flesh and normal acidity. Trees showed little bacterial spot symptoms on fruit or leaves throughout the evaluation years, suggesting ‘Crimson Joy’ is highly resistant

to the disease. No virus symptoms have been observed. Trees have not been tested extensively in northern climates, but the original seedling was one of the few peaches to crop at Byron in some years with spring freezes.

Performance

Performance in Byron, GA, was evaluated yearly based on the selected original seedling, as well as on multiple nonreplicated grafted trees (‘Guardian’ as rootstock) in Byron, GA. Integrated pest management was applied as recommended by the station farm management team and southeastern extension professionals. No bactericides were used on any trees under evaluation, to maximize bacterial spot expression. The CH received each year at Byron or other cities in Georgia can be calculated using the calculator at www.georgiaweather.net. The CH in Byron from 2007 to 2019 were listed previously (Chen and Okie, 2020b), and the average was ≈ 937.5 . ‘Crimson Joy’ trees crop well in most years, and tend to crop excessively in some years with favorable weather. The trees also set considerable fruit in some years with spring frost and/or insufficient chill. For example, in 2015, a severe spring frost caused varying degrees of crop loss in many peaches (Chen et al., 2016); in 2017, an extremely insufficient chill resulted in little bloom in all high-chill peach cultivars (Chen and Beckman, 2019). In both years, ‘Crimson Joy’ yielded a nearly full crop, suggesting it might be less vulnerable to similar weather scenarios. The fruit ripen about with ‘Harvester’ and ‘Redhaven’, and about a week after ‘GaLa’ in mid to late June in Byron, GA.

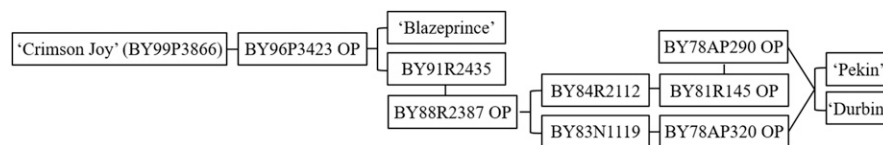


Fig. 1. Pedigree of ‘Crimson Joy’ peach. OP = open-pollinated seedling.

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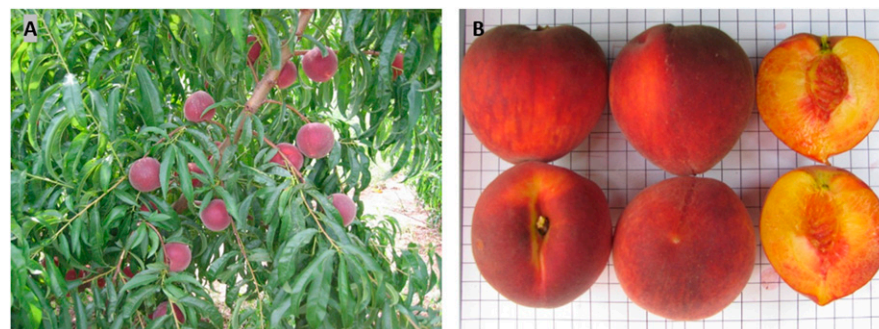


Fig. 2. Typical ripe ‘Crimson Joy’ fruit on a tree at Byron, GA, on 30 June 2004 (A) and harvested on 16 June 2016 (B) showing the size, shape, exterior, flesh, and pit in different views: back side and stem end (left top and bottom), suture side and apex end (middle top and bottom), and longitudinal halves with and without the pit (right top and bottom). Fruit is freshly harvested from an orchard at Byron, GA, without washing or any other treatment. Each square on a Scor-Pal board is equivalent to 1 \times 1 cm. Both photos were taken outdoors in natural sunlight.

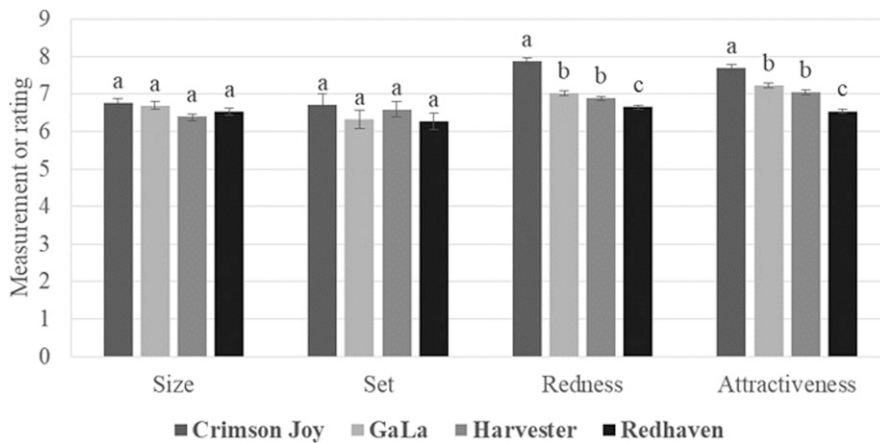


Fig. 3. Statistical analysis of fruit evaluation data using the GLIMMIX procedure with Tukey's honestly significant difference test in SAS 9.4 (SAS Institute Inc., Cary, NC). The F values and probability > F (in parentheses) of GLIMMIX type III tests for size, set, redness, and attractiveness are 2.67 (0.0503), 0.75 (0.524), 50.36 (<0.0001), and 44.86 (<0.0001), respectively. Least squares means (LS-means), SE bars, and letters of statistical significance are showed. LS-means with the same letter are not significantly different ($\alpha = 0.05$). Size is the diameter (in centimeters) converted from the equatorial circumference of fruit measured using a circular measuring tape (Cranston Machinery Co., Oak Grove, OR). Set, redness, and attractiveness are rated on a 0- to 9-point scale (i.e., none to highest, and 6–8 is presumably commercially desirable).

At maturity, the fruit surface is 90% to 95% bright red, with a yellow ground color and little pubescence (Fig. 2). The fruit are medium to large, ≈ 6 to 7 cm (≈ 2.5 – 2.8 inches) in diameter when adequately thinned. Both fruit set and size are not significantly different from those of 'GaLa', 'Harvester', and 'Redhaven' (Fig. 3). According to the average rating of redness (blush) during the

evaluation years, 'Crimson Joy' fruit (7.9 on a 0- to 9-point scale) are redder than 'GaLa' (7.0), 'Harvester' (6.9), and 'Redhaven' (6.6). Likewise, the fruit appear more attractive, with the average rating of 7.7, compared with 7.2, 7.1, and 6.5 for 'GaLa', 'Harvester', and 'Redhaven', respectively (Fig. 3). Performance data for South Carolina is available at <http://www.clemsonpeach.org>.

Availability

The cultivar is maintained at the USDA-ARS Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA. Requests for the cultivar should be addressed to USDA-ARS, Office of Technology Transfer, 5601 Sunnyside Avenue, Room 4-1192, Beltsville, MD 20705-5131. Prospective licensees can also contact the same office via license@usda.gov.

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