

'May Joy' Peach

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The US Department of Agriculture, Agricultural Research Service (USDA-ARS) stone fruit breeding program at Byron, GA, USA, 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. Over the past decades, the USDA-ARS peach breeding program in Byron has released the Prince and Joy series cultivars with similar fruit attributes to cover the entire harvest seasons (Chen 2021; Chen and Okie 2024; Okie et al. 1985). As a continuation of this effort, a new early-season cultivar, May Joy (tested as BY02P2562), has been released. This cultivar has a chilling requirement estimated at ~650 chill hours based on relative bloom time compared with standard cultivars and is suited for trial in areas wherever 'Flavorich' (syn. 'Rich May', USPP7432, ~700 h) and 'Carored' (public release, ~650 h) are grown.

Origin

The 'May Joy' tree was selected from 'Scarletprince' × Y153-53 (Fig. 1). Y153-53 is a peach selection introduced decades ago from the USDA-ARS Fresno breeding program (pedigree record is unavailable). Y153-53 fruit ripen with almost full blush in approximately early May at Byron, GA, USA. The original seedling tree of 'May Joy' was designated as 02-2562d when planted at Southeastern Fruit and Tree Nut Research Laboratory in Byron in 2002. It was evaluated and selected when it first fruited in 2003 and was designated as BY02P2562 in subsequent years of evaluation.

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Description

'May Joy' trees are moderately vigorous and semispreading in growth habit. Leaf glands are reniform. Trees have large showy pink self-fertile flowers and require ~650 chill hours (below 7.2 °C or 45 °F) to break bud at Byron. Trees produce round, clingstone, and nearly full blushed fruit with melting yellow flesh and normal acidity. In 10 fruits harvested on 13 May 2019, the titratable acidity ranged from 0.53 to 0.71 g/100 mL (0.63 on average, presuming that malic acid is dominant), the pH values 3.4 to 3.7 (3.56 on average), and soluble solid content 9.3 to 13.1 °Brix (11.45 on average) (Chen and Okie 2023). The original seedling and grafted trees were among the few peaches at Byron requiring ~650 chill hours and ripening in May to set at least partial crops in some years with spring frost. Trees have not been extensively tested in northern climates. Trees showed few bacterial spot symptoms on fruit or leaves throughout the evaluation years, in contrast to

susceptible cultivars, suggesting 'May Joy' is at least moderately resistant to the disease. No virus symptoms have been observed.

Performance

Performance in Byron, GA, USA was evaluated yearly on the original selected seedling, as well as on multiple sets of nonreplicated grafted trees of varied ages ('Guardian' as rootstock) in different test blocks during 2004–10 and 2014–22 (no data in 2011–13 due to retirement). Spacing for seedling and grafted trees is ~0.9 m × ~6.1 m (3 ft × 20 ft) and ~4.6 m × ~6.1 m (15 ft × 20 ft), respectively. Trees were managed according to extension service guidelines for the southeast. No bactericides were used on any trees under evaluation to maximize bacterial spot expression. 'May Joy' trees crop well in years without severe spring frost and tend to crop excessively when weather is favorable. The trees also set a partial crop (data not shown) without frost protection in 2015 when a severe spring frost was reported at Byron (Chen et al. 2016). Likewise, the trees set considerable fruit without Dormex spray in 2017 when an extremely insufficient chilling (~520 h) was recorded at Byron (Chen and Beckman 2019), suggesting it might produce a viable early-season crop under some unfavorable weather scenarios or chilling ranges. The fruit ripen generally in early to mid-May in Byron ~1 week before 'Flavorich' and 2 to 3 weeks before 'Carored'. At maturity, the fruit surface is ~90% bright red (Fig. 2). The fruit

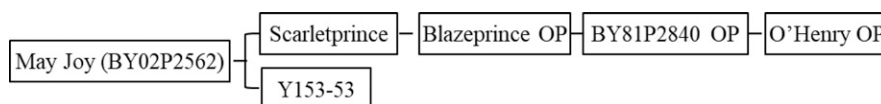


Fig. 1. Pedigree of 'May Joy' peach (OP = open-pollinated seedling). Y153-53 is an early-season peach selection (pedigree record unavailable) introduced decades ago from the US Department of Agriculture—Fresno peach program. Y153-53 fruit ripen in approximately early May at Byron, GA, USA.



Fig. 2. Typical ripe 'May Joy' fruit on a tree (left) and harvested (right) at Byron, GA, USA on 11 May 2021, showing the size, shape, exterior, flesh, and pit in different fruit and section views (right, top, and bottom): back and suture sides, blossom and stem ends, and longitudinal and latitudinal sections. The sections are deliberately cut unequally so that they can be separated intact from the clingstones (pits) by hand twisting. Fruit are freshly harvested from an orchard at Byron, without washing or any other treatment. Each square on a Scor-Pal board is equivalent to 1 cm × 1 cm. Both photos were taken outdoors under natural sunlight.

Table 1. Evaluation data of ‘May Joy’, ‘Cardinal Joy’, ‘Flavorich’, and ‘Carored’ in Byron, GA, USA.ⁱ

Cultivar	Size (cm)	Set (0–9)	Blush (0–9)	Attractiveness (0–9)
May Joy	5.94 ± 0.12 a	4.48 ± 0.63 a	7.39 ± 0.13 a	6.04 ± 0.34 ab
Cardinal Joy	6.24 ± 0.10 a	6.36 ± 0.44 a	7.41 ± 0.11 a	7.13 ± 0.20 b
Flavorich	6.12 ± 0.09 a	5.58 ± 0.57 a	7.13 ± 0.16 a	6.08 ± 0.36 ab
Carored	6.20 ± 0.10 a	4.55 ± 0.56 a	7.32 ± 0.23 a	5.36 ± 0.41 a

ⁱ Trees were grafted on ‘Guardian’ rootstock. Evaluation data were collected from multiple sets of four or six trees in different test blocks during 2004–10 and 2014–22 (missing data during 2011–13 due to retirement). Means, standard errors, and letters of statistical significance of fruit size, set, blush, and attractiveness of ‘May Joy’, ‘Cardinal Joy’, ‘Flavorich’, and ‘Carored’. Size was equatorial circumference-based diameter of fruit measured using a circular measuring tape (Cranston Machinery Co., Oak Grove, OR, USA). Set, redness, and attractiveness were rated on a 0 to 9 scale (i.e., none to highest, with 6 to 8 being presumably commercially desirable). Statistical analysis was performed using the GLIMMIX procedure with Tukey’s honestly significant difference test in SAS 9.4 (SAS Institute Inc., Cary, NC, USA). Means with the same letter are not significantly different ($\alpha = 0.05$).

are small to medium, 5.3 to 6.6 cm (≈ 2.1 – 2.5 inches) in diameter. ‘May Joy’ fruit size, set, and blush means are not significantly different from those of ‘Cardinal Joy’ (Chen and Okie 2024), ‘Flavorich’, and ‘Carored’ at Byron (Table 1). Although with the least average fruit size and set among the four cultivars over the evaluation years, May Joy ripens

much earlier, thus extending the season with commercial quality fruit.

Availability

Requests for the cultivar or prospective licensees should be addressed to USDA-ARS, Office of Technology Transfer, 5601 Sunnyside

Avenue, Room 4-1192, Beltsville, MD 20705–5131, USA, or via license@usda.gov.

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