'Roygold' Peach

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Additional index words. *Prunus persica*, fruit breeding, bacterial spot, *Xanthomonas campestris* pv. *pruni*, processing peaches

'Roygold' is the fifth non-melting flesh clingstone peach [*Prunus persica* (L.) Batsch.] released from the Univ. of Arkansas peach breeding program. Previous releases were 'Allgold' and 'Goldilocks' in 1983 (Moore et al., 1984), and 'Goldnine' and 'GoldJim' in 2000.

'Roygold' is a very early clingstone processing peach with very good fruit quality, and above average bacterial spot resistance [caused by *Xanthomonas campestris* pv. *pruni* (Smith) Dye]. It is released to provide an early-season cultivar option for clingstone peach producers. 'Roygold' was named in honor of long-time Univ. of Arkansas fruit researcher Dr. Roy C. Rom, University Professor Emeritus.

Origin

'Roygold' resulted from a cross of 'GoldJim' (Ark. 219) × Ark. 310 made in 1990 at the University of Arkansas Fruit Substation, Clarksville (Fig. 1). The seedling trees of this cross were planted at this location in 1991 and 'Roygold' was selected in 1993 by J.N.M. and J.R.C. and tested thereafter as Ark. 560.

'Roygold' was evaluated at Clarksville, Ark. [west-central Arkansas, lat. 35°31'58"N; long. 93°24'12"W; U.S. Dept. of Agriculture (USDA) hardiness zone 7a; soil type Linker fine sandy loam (Typic Hapludult)] from 1994 through 1999. In all testing, trees were trained to an open-center system and pruned annually, spaced 5.5 m between trees, and fertilized annually with either complete or nitrogen fertilizers. Pests were managed using a pest management program typical for commercial orchards of the area including the applications of fungicides and insecticides. Each year that a crop was present fruit were thinned to a distance of 12 cm between fruit prior to pit hardening but after shuck split.

Data were collected from either the original selection tree or a two-tree observational plot at Clarksville. Comparison industry standard cultivars also planted at this site included 'Babygold 5' (Okie, 1998) and 'Allgold' and

'Goldilocks' (Moore et al., 1984). Field observations included the recording of bloom date, bloom intensity, fruit set and harvest date, and fruit ratings (conducted by J.R.C.) were taken for size, shape, firmness, skin color, flesh color, finish, and flavor with trees rated for vigor, crop, health, and bacterial spot susceptibility. The rating scale for these variables was 1 to 10 with a rating of 10 the highest possible and therefore most desirable rating for the traits, with the exception of vigor in which a rating of 10 indicated excessive vigor. A rating of 7 to 8 would be preferable for vigor in this rating scale. Additionally, a five-fruit sample was collected from 'Roygold' each year for 5 years (1994–95, 1997–99) and average fruit weight, size, color (using a model CR200 chroma meter; Minolta, Ramsey, N.J.), firmness (using a model FT327 Pressure Tester, 11-mm probe; McCormick Fruit Tree Co., Yakima, Wash.) and soluble solids (using a bench refractometer) were determined.

Description and performance

Fruit of 'Roygold' ripen on average 9 d before 'Allgold', 24 d before 'Goldilocks', and 27 d before 'Babygold 5' (Table 1). 'Roygold' also ripens on average 9 d prior to the fresh-market peach cultivar Redhaven (data not shown). We believe 'Roygold' is one of the earliest-ripening clingstone processing cultivars developed, comparable in earliness to the Vineland, Ont., Canada-developed 'Vulcan' (Okie, 1998) (maturity date for 'Vulcan' was not compared directly with 'Roygold' in Arkansas trials but rather in comparative maturity to that of 'Redhaven' provided by Neil Miles at Vineland, Ont., personal communication).

'Roygold' had similar to slightly lower fruit size ratings to the comparison cultivars as reflected in its average size rating of 7.8 on a 10-point scale (Table 2), and only 'Allgold' was rated substantially higher for size. Average fruit weight for 'Roygold' over 5 years was 157.0 g, which was smaller than the com-

parison cultivars Allgold, Goldilocks, and Babygold 5 (Table 1). Among the 5 years of data collection, average fruit weight ranged from the heaviest of 185.2 g in 1998 to 141.5 g in 1999 (data not shown). Attention to proper crop thinning is needed with 'Roygold' due to its common heavy fruit set coupled with its early ripening date. No bloom or near-bloom thinning was conducted on 'Roygold' (although early thinning might further increase fruit size).

'Roygold' fruit are generally round and averaged 6.3 cm in length and 6.8 cm in diameter in measurements taken over 5 years. Fruit shape ratings were slightly higher for 'Roygold' compared to the other cultivars (Table 2), indicating uniform shape and a lack of any negative shape attributes such as consistent protruding suture or distal tips on the fruit. Fruit firmness ratings for 'Roygold' exceeded all comparison cultivars (Table 2) and firmness is exceptional for this cultivar. Firmness data recorded by measuring fruit firmness at comparable maturity using a pressure tester averaged 5.4 kg for 5 years for 'Roygold', 3.7 kg for 'Allgold' and 4.0 kg for 'Goldilocks' (Table 1). 'Roygold' was surpassed slightly by 'Babygold 5' for average firmness value. Skin color of 'Roygold' is attractive as evidenced by its comparable skin color rating compared with the other cultivars (Table 2). Skin averaged 60% blush (data not shown). Skin ground color for 1999 had values for L of 68.2 (the lower the L value the darker the sample), a of 19.6 (the higher the a value the redder the sample), and b of 54.8 (the higher the b value the more yellow the sample) while skin over color values were L of 43.2, a of 34.1, and b of 25.6. Fruit finish ratings (reflecting a lack of skin defects such as cracking, bacterial spot lesions, etc.) were very good for 'Roygold' also, exceeding those of 'Goldilocks' and 'Babygold 5' (Table 2). Flesh color ratings for 'Roygold' were very good and exceeded those of the comparison cultivars (Table 2), which reflects its orange-gold flesh color with lack of red pigment in the flesh. In only one year of evaluation (1994), was any red pigment seen in the flesh of 'Roygold', and in that year only very slight specks of red were observed. This is a very desirable trait for a processing peach and is a strength of 'Roygold'. 'Roygold' was also rated consistently high for flavor, exceeding that of all other comparison cultivars (Table 2). Soluble solids content averaged 11.7% for 'Roygold' (Table 1). In only one year of evaluation (1998) were any fruit observed to have

Received for publication 13 Nov. 2000. Accepted for publication 6 Apr. 2001. Published with approval of the Director, Arkansas Agricultural Experiment station, manuscript no. 00089. We thank Bryan Blackburn, Effie Gilmore, David Gilmore, and Robert Bourne for data collection during the evaluation of 'Roygold'.

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Table 1. Bloom and harvest dates and fruit characteristics (from a five-fruit sample each year) of processing peach cultivars grown at the Univ. of Arkansas Fruit Substation, Clarksville.

Cultivar	Bloom date ^a		Harvest date ^a	Fruit wt ^b (g)	Fruit firmness ^c (kg)	Soluble solids (%) ^c
	10%	full				
Roygold	10 Mar.	20 Mar.	21 June	157.0	5.4	11.7
Allgold	14 Mar.	22 Mar.	30 June	203.5	3.7	11.4
Goldilocks	16 Mar.	24 Mar.	15 July	183.5	4.0	12.3
Babygold 5	16 Mar.	23 Mar.	18 July	182.6	5.9	14.9

^aMeans of 5 years, 1994–95 and 1997–99.

^bMeans of 4 years 1994 and 1997–99.

^cFirmness measured by fruit pressure tester, 11-mm-diameter probe.

split pits and this occurrence was very limited. The lack of split pits for an early-ripening peach is noteworthy because many early-ripening genotypes commonly express split pit. Lastly, fruit of 'Roygold' have been observed to hang well on the tree at maturity, which facilitates harvesting and may reduce the numbers of harvests required.

Though processing quality analysis has not been conducted, it is expected that 'Roygold' will have very good processing quality based on fruit ratings for flesh color, fruit firmness, flavor and soluble solids, which are all equal to or better than the 'Allgold' industry standard processing quality cultivar.

Average 10% bloom date at Clarksville for 'Roygold' was 13 Mar., 4 to 6 d earlier than that of the comparison cultivars (Table 1). During the 5 years of bloom data accumulation, 10% bloom date varied from 3 Mar to 13 Mar. Full bloom date was 2 to 4 d earlier than comparison cultivars also (Table 1). Full bloom varied from 12 Mar. to 25 Mar. over the 5 years. Bloom intensity and fruit set ratings for 'Roygold' either exceeded or were comparable for those of 'Allgold' and surpassed those for 'Goldilocks' (data not shown). The heavy fruit set capability of 'Roygold' should provide increased reliability in cropping, which offsets some of the risk

of spring frost damage due to its earlier bloom. Flowers of 'Roygold' are showy and are self-fertile. Tree vigor was rated slightly lower for 'Roygold' compared with that for 'Allgold' and 'Goldilocks' (Table 2), although this difference was minimal and would not affect canopy management decisions. Ratings for tree health for 'Roygold' surpassed those of 'Goldilocks' and 'Babygold 5' (Table 2), with this due mainly to the lack of bacterial leaf spot on 'Roygold'. 'Roygold' was observed to be comparable to 'Allgold' in bacterial spot resistance ['Allgold' has good bacterial spot resistance (Moore et al., 1984)], and less susceptible to this disease than

Fig. 1. Pedigree of 'Roygold' peach. O.P. = open-pollinated

Table 2. Subjective evaluations of fruit and plant characteristics of processing peach cultivars. Data are means of 5 years (1994–95 and 1997–99) and ratings are from the Univ. of Arkansas Fruit Substation, Clarksville. Ratings are based on a scale of 1 to 10 with a rating of 10 the highest possible and most desirable (except for vigor) with a rating of less than 6 considered unacceptable.

Characteristics	Cultivar			
	Roygold	Allgold	Goldilocks	Babygold 5
<i>Fruit</i>				
Size ^z	7.8	8.6	7.6	8.0
Shape ^y	7.8	7.2	7.4	7.2
Firmness ^x	8.2	7.8	7.8	7.6
Skin color ^w	7.8	8.0	7.8	7.0
Flesh color ^v	8.4	7.6	7.4	6.2
Finish ^u	8.0	8.2	7.4	6.6
Flavor ^t	7.8	7.4	7.2	7.2
<i>Plant</i>				
Vigor ^s	7.6	8.0	8.4	7.0
Crop ^r	8.6	9.0	7.8	8.3
Health ^q	8.8	9.0	6.8	6.3

^z10 = very large fruit.

^y10 = round or mostly round and free of bulging suture and blossom-end tip.

^xBased on hand pressure applied to whole, unpeeled fruit with 10 = very firm fruit.

^wPreferred is a light, bright-red over-orange ground color with 10 = full expression of these colors.

^vPreferred is uniform orange color with no trace of red pigment with 10 = no red in flesh and uniform orange color.

^uPreferred is bright finish free of any blemish or skin cracks or inconsistencies with 10 = free of all surface blemishes or skin cracks.

^tRatings based on fresh samples and higher values indicate good sweetness and expression of peach flavor and low in astringency or other undesirable flavor components.

^sRatings based on good shoot growth, but not overly vegetative; optimum is a rating of 7 to 8 with a rating of 10 considered excessive vigor.

^r10 = full crop; 9 = 90% crop, etc.

^qFreedom from poor health due largely from disease with 10 = no disease or health concerns. The most important disease involved in this rating is bacterial spot and a higher rating indicates a lower occurrence of this disease. Nondisease factors could involve poor health due to mineral deficiencies or insect damage.

'Goldilocks' and 'Babygold 5' (data not shown). In 1999 bacterial spot was observed on 'Roygold'. This infection was limited almost entirely to leaf lesions. We believe that 'Roygold' can be grown without the use of bactericides in commercial production to control bacterial spot. No other disease problems have been seen on 'Roygold', although a commercial fungicide program was used that controlled brown rot [caused by *Monilinia fructicola* (G. Wint.) Honey] and peach scab (caused by *Cladosporium carpophilum* Thuem.). Chilling requirement of 'Roygold' has not been measured but is probably near 750 h below 7 °C based on observations of budbreak and bloom in comparative plantings with test cultivars of known chill requirement.

The outstanding characteristics of 'Roygold' include early ripening for a processing cling peach, good fruit quality particularly for flesh color, flavor and firmness, consistent production, and above-average bacterial spot resistance. 'Roygold' is recommended for trial where other eastern North American-developed processing clingstone peaches are grown.

Availability

'Roygold' budwood is available from: J.R.C., 316 Plant Science, Dept. of Horticulture, Univ. of Arkansas, Fayetteville, AR 72701.

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