‘Smooth Delight One’ and ‘Smooth Delight Two’, Medium-chill Subacid Nectarines

David H. Byrne¹ and Natalie Anderson

Department of Horticultural Sciences, Texas A&M University, Horticulture–Forestry Science Building, College Station, TX 77843-2133

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‘Smooth Delight One’ and ‘Smooth Delight Two’ are being released by Texas A&M AgriLife to provide firm, attractive, subacid nectarines for the medium chill zone. This complementary pair of nectarines is subacid and ripens in mid-May to early June depending on the location. ‘Smooth Delight One’ has white flesh and ‘Smooth Delight Two’ has yellow flesh. These are the first subacid nectarines released for use in the medium chill zone of the southeastern United States.

Origin

The sister seedlings, ‘Smooth Delight One’ (TX2A232LWN) and ‘Smooth Delight Two’ (TX2B233LN) [*Prunus persica* (L.) Batsch], were developed by the Stone Fruit Breeding Program, Department of Horticultural Sciences, Texas A&M University, located in College Station, TX. The cultivars originated from a cross between ‘Sunmist’ (Sherman, 1997; Sherman et al., 1995b) a white-fleshed, acid-flavored nectarine released by the University of Florida, and ‘Arctic Star’, a white-fleshed nectarine with a subacid flavor released by Zaiger Genetics (Zaiger et al., 1995). ‘Sunmist’ is derived from a cross between ‘Flordaglo’ and ‘Mayfire’, whereas ‘Arctic Star’ is a hybrid between an unknown white nectarine and ‘Mayglo’ nectarine. Resulting seed from the ‘Sunmist’ × ‘Arctic Star’ cross were planted in 2000 in a high-density breeding orchard at the Texas A&M University Horticultural Farm in College Station, TX. In 2003, the selections TX2A232LWN (‘Smooth Delight One’) and TX2B233LN (‘Smooth Delight Two’) were marked for subsequent observation and noted as early, attractive nectarines, which were large for the season and had excellent flavor.

Two-year-old and older trees of the selections were subsequently evaluated during the 2005–10 fruit growing seasons at two medium chill sites (Floresville and College

Station, TX) and a higher chill location (Fowler, CA). Floresville, TX (lat. 29°11' N, long. 98°5' W, 155 m elevation) is southeast of San Antonio, TX. The mean monthly temperature of its coldest month averages ≈11.5 °C and has a chilling accumulation that is generally above 400 chill units as estimated with the mean monthly temperature of the coldest 2 months (Byrne and Bacon, 1992; Sharpe, 1970; Weinberger, 1956). College Station, TX (lat. 30°37' N, long. 96°22' W, 94 m elevation) has a mean monthly temperature of its coldest month of 10.7 °C and a chilling accumulation that is generally greater than 700 chilling units. The Fowler, CA, site (lat. 36°38' N, long. 119°42' W, 92 m elevation) has a mean monthly temperature of its coldest month of 8.5 °C and has a chilling accumulation that is generally above 850 chilling units (Table 1). These new subacid nectarines were productive at all three sites.

Description

‘Smooth Delight One’ and ‘Smooth Delight Two’ are being released for use in the medium chill zones where cultivars such as ‘Flordaking’ (Andrews et al., 1979), ‘TexKing’ (Byrne and Bacon, 2004), ‘Sunmist’ (Sherman, 1997; Sherman et al., 1995b), and ‘Sunraycer’ (Sherman et al., 1995a) are adapted. These are the first subacid nectarines released for the medium chill region of the southeastern United States.

‘Smooth Delight One’ and ‘Smooth Delight Two’ bear crops of subacid, clingstone, melting-flesh nectarines in mid-May to early June that are firm, very attractive, and large

for the season (Tables 2 and 3; Fig. 1). Both cultivars have fruit that is round to slightly ovate. ‘Smooth Delight One’ has a cream white flesh and ground color, whereas ‘Smooth Delight Two’ has yellow flesh and ground color when ripe with little tendency toward browning. Both have a 70% to 90% light red to dark red over color with many degrees of shading and blending occurring between these colorations. The pits are elliptical to ovate in shape, medium size with the dimensions of 30 to 34 mm in length, 22 to 27 mm in width, and ≈17 to 20 mm in thickness. The cultivars have not demonstrated a tendency to develop split or shattered pits during the final stage of fruit swelling. The quality of these two cultivars is equal to or better than that of the other major cultivars in terms of flesh firmness, percent red blush, shape, ground color, appearance, flavor, and soluble solids (Tables 2 and 3). Both cultivars are resistant to skin cracking as compared with other cultivars and selections observed in the California experimental blocks.

In the lowest chill site, both cultivars ripened in early to mid-May after ‘Flordaking’ and before ‘TexKing’ and ‘Sunraycer’ (Table 2). In the higher chill site, they ripened in early June, ≈1 week after ‘Flordaking’ and with ‘Sunraycer’ and ‘TexKing’ (Table 3). The fruit development period for ‘Smooth Delight One’ varies from 86 to 98 d and for ‘Smooth Delight Two’ varies from 88 to 105 d. The shorter fruit development period for each cultivar corresponds to the lower chill site, which has a warmer spring as compared with the higher chill site (Tables 2 and 3). These new nectarine cultivars have lower acidity, fewer speckles on the skin surface, and are more attractive than the ‘Sunmist’ nectarine (data not shown).

In the medium chill zones of Texas (Floresville), ‘Smooth Delight One’ and ‘Smooth Delight Two’ bloomed ≈5 d before ‘Flordaking’, ‘TexKing’, and with ‘Sunraycer’ (Table 2). Thus, their chilling requirement is estimated at ≈350 to 400 chilling units (hours below 7 °C). Flowers of both nectarines are showy and pink in color with five petals. The self-fertile flowers have yellow anthers and abundant pollen.

Table 1. Chilling conditions at the Floresville and College Station, TX, and the Fowler, CA, evaluation sites.

Location	December temp (°C)		January temp (°C)		Chilling accumulation ²		Common cultivars
	Mean	Range	Mean	Range	Mean	Range	
Floresville ³	11.7	8.2–13.4	11.5	9.1–14.6	644	404–939	TexKing, Flordaking, TexPrince
College Station	11.2	7.3–12.9	10.7	8.4–14.1	723	561–1097	TexKing, TexRoyal, June Gold
Fowler	7.6	5.3–10.3	7.9	5.1–12.0	1119	788–1301	O’Henry, Elegant Lady

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¹To whom reprint requests should be addressed; e-mail dbyrne@tamu.edu.

²Chilling estimated with the mean monthly temperatures of the 2 coldest months using the equation Chilling = 2079 – (123.8*December/January mean monthly temperature in °C). (Byrne and Bacon, 1992; Sharpe, 1970; Weinberger, 1956).

³Floresville and Fowler used data from the San Antonio and the Fresno weather stations, respectively. All the sites used data from 2000–11.

Table 2. Fruiting characteristics of the ‘Smooth Delight One’ and ‘Smooth Delight Two’ compared with three medium chill cultivars at Floresville, Texas (2005–10).

Name	Full bloom ^z	FDP (days) ^z	Ripe date ^z	Size ^y	Wt (g)	Firm ^x	Blush ^x	Shape ^x	Tip ^x	Ground color ^x	Appearance ^x	Soluble solids (Brix)	Taste ^x
Flordaking	19 Feb.	80 b ^w	6 May c	6.2 a	138	6.0 b	3.4 c	5.3 d	5.4 c	6.5	5.4 c	8.6	5.4
Smooth Delight One	14 Feb.	86 ab	11 May bc	5.1 b	119	7.1 a	7.7 ab	7.7 ab	8.1 a	6.5	7.6 ab	9.6	6.0
Smooth Delight Two	13 Feb.	88 ab	10 May bc	5.5 ab	129	7.5 a	8.1 a	7.9 a	7.9 a	7.0	7.9 a	11.6	6.5
TexKing	18 Feb.	90 ab	18 May ab	6.3 a	143	6.9 a	6.0 b	6.0 c	6.3 b	6.9	6.9 b	9.9	6.0
Sunraycer	12 Feb.	96 a	19 May a	5.3 ab	128	7.0 a	7.3 ab	7.0 b	7.3 a	6.7	7.3 ab	9.0	6.0

^zFull bloom = 60% to 80% flowers open; FDP = fruit development period, number of days from full bloom to ripe; Ripe date = date when 20% fruit is firm ripe stage.

^ySize ratings of diameter (mm) 0 to 9, 4 = 51 to 57, 5 = 58 to 64, 6 = 65 to 70, 7 = 71 to 76.

^xRating scale 0 to 9; 0 to 4 = unacceptable, 5 = marginal, 6 = good, 7 = very good, 8 to 9 = excellent for commercial use.

^wMean separation within columns by Duncan’s multiple range test at the 5% level. Items with the same letter are not significantly different. No letters within a column indicates no significant differences.

Table 3. Fruiting characteristics of the ‘Smooth Delight One’ and ‘Smooth Delight Two’ compared with four medium chill cultivars at Fowler, CA (2005–10).

Name	Full bloom ^z	FDP (days) ^z	Ripe date ^z	Size ^y	Wt (g)	Firm ^x	Blush ^x	Shape ^x	Tip ^x	Ground color ^x	Appearance ^x	Soluble solids (Brix)	Taste ^x
Flordaking	24 Feb.	84 c ^w	23 May c	6.9	176 ab	6.3 b	2.9 c	7.2 bc	7.2 b	6.2	5.3 d	11.0 b	6.0 b
Sunraycer	21 Feb.	99 b	1 June b	6.4	151 b	7.0 ab	5.6 b	7.0 bc	7.5 ab	6.3	6.4 c	11.2 b	6.1 b
Smooth Delight One	19 Feb.	98 b	1 June b	7.1	160 b	7.4 a	7.8 a	7.8 a	7.8 a	7.0	7.7 a	13.8 ab	7.3 a
Smooth Delight Two	17 Feb.	105 b	4 June b	6.4	149 b	7.0 ab	7.9 a	7.5 bd	7.8 a	6.9	7.6 ab	15.3 a	7.4 a
TexKing	24 Feb.	99 b	4 June b	7.3	192 ab	7.0 ab	6.5 ab	7.2 bc	7.5 ab	6.8	7.0 ac	11.1 b	6.2 b
TexPrince	20 Feb.	116 a	15 June a	7.5	225 a	7.0 ab	6.0 ab	7.5 bc	8.0 a	7.0	6.5 bc	NA	6.0 b

^zFull bloom = 60% to 80% flowers open; FDP = fruit development period, number of days from full bloom to ripe; Ripe date = date when 20% fruit is firm ripe stage.

^ySize ratings of diameter (mm) 0 to 9, 4 = 51 to 57, 5 = 58 to 64, 6 = 65 to 70, 7 = 71 to 76.

^xRating scale 0 to 9; 0 to 4 = unacceptable, 5 = marginal, 6 = good, 7 = very good, 8 to 9 = excellent for commercial use.

^wMean separation within columns by Duncan’s multiple range test at the 5% level. Items with the same letter are not significantly different. No letters within a column indicates no significant differences.

NA = not available.

Fruit of ‘Smooth Delight One’ (left) and ‘Smooth Delight Two’ (right).

Fig. 1. Fruit of ‘Smooth Delight One’ (left) and ‘Smooth Delight Two’ (right).

The trees of both nectarine cultivars are vigorous with the typical semispreading growth habit of a peach tree as is seen in ‘TexKing’, ‘TexPrince’, and ‘TexRoyal’. No observations have been made on resistance for either peach rust [*Tranzschelia discolor* (Fuckel) Tranzschel and M.A. Litz.] or bacterial leaf spot [*Xanthomonas arboricola* pv. *pruni*

(Smith) Vauterin et al.]. The moderately large leaves are lanceolate with crenulate margins and have two to four reniform petiolar glands.

Availability

Requests for budwood should be directed to Texas A&M University System’s Office

of Technology Commercialization. These cultivars are the subject of plant patent applications.

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