

'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' Sweet Cherries

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'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' sweet cherries (*Prunus avium* L.) were released to provide a range of mid-season, high-quality sweet cherry cultivars ('Van' is considered mid-season.) 'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' sweet cherries mature ≈ 2, 3, and 7 d, respectively, after 'Van'. These cultivars were recommended for naming by our cooperators in Canada and around the world. They are attractive, large, firm, and have good flavor characteristics. 'Sumste Samba' and 'Sumleta Sonata' have two-part names because they were first registered in Europe as 'Sumste' and 'Sumleta' in 1995.

Origin

'Sumste Samba' originated at Summerland, B.C., from a cross between 2E-84-10 and Stella 16A-7 (Fig. 1) made in 1975 by W.D. Lane (WDL) and H. Schmid (HS). Some of the fields were renumbered in the early 1970s and 2E-84-10 became 2S-84-10. Stella 16A-7 arose from a bud that was irradiated in 1964 by K. Lapins (KL). 'Sumste Samba' was selected in 1983 by WDL and R. MacDonald (RM) and given the designation 13S-36-18. It was propagated on *P. avium* (mazzard) rootstock and planted in second test trials in 1985. Budwood was provided to cooperators in other parts of Canada, United States, South America, and Europe beginning in 1985. 'Sumste Samba' was named to provide a mid-season (ripens 2 d after 'Van') cultivar with very good fruit size and quality.

'Sandra Rose' resulted from a cross between 2C-61-18 x 'Sunburst' (Fig. 2) made in 1973 by KL and HS. In renumbering fields 2C-61-18 became 2N-61-18. It was planted into the seedling orchard in 1976, selected in 1980 by WDL and RM, receiving the designation 13S-10-40, and was propagated for second test on *P. avium* (F12/1) rootstock in 1984. Cooperators in Canada, the United States, and Europe received budwood for testing beginning in 1985. 'Sandra Rose' was released

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because of its season of ripening (ripens 3 d after 'Van') and consistently very good fruit quality, and productivity.

'Sumleta Sonata' was from a cross between 'Lapins' x 2N-39-5 (Fig. 3) made in 1976 by WDL and HS, was planted in the seedling orchard in the fall of 1978, and was selected in 1985 by WDL and RM and given the designation 13N-06-59. It was planted for

second test in 1987 using *P. avium* (F12/1) as the rootstock and has been distributed to cooperators for testing both locally and internationally since 1988. 'Sumleta Sonata' was released to provide a "late" mid-season cultivar with large fruit size, and good firmness and fruit quality.

In each year the number of trees sampled and the number of samples per selection varied. In the first years after finding the selection in the seedling row, only one tree was sampled, but as trees were propagated sample size increased. The following number of fruit per sample were used for each trait: average fruit weight, 100; total soluble solids concentration (SSC) (ABBE Mark II digital refractometer, AO Scientific Instruments, Keene, N.H.) 20 to 25; durometer firmness (Shore Instrument, Jamaica, N.Y.), 20 to 25; FirmTech firmness, (BioWorks, Stillwater, Okla.), 24; natural cracking, 100; and Cracking Index (CI), 50. The durometer provides a dimensionless measure of firmness, from 0 to 100 (the higher the number, the firmer the fruit), that is closely

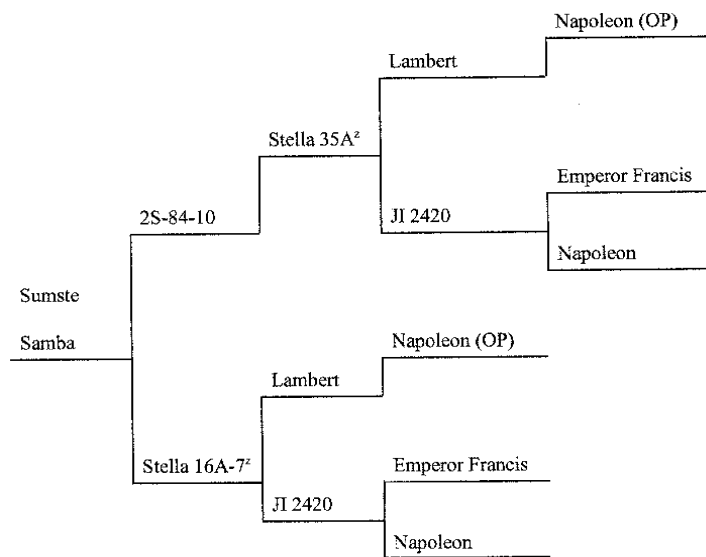


Fig. 1. Pedigree of 'Sumste Samba' sweet cherry. ^aA selection from irradiated 'Stella' buds.

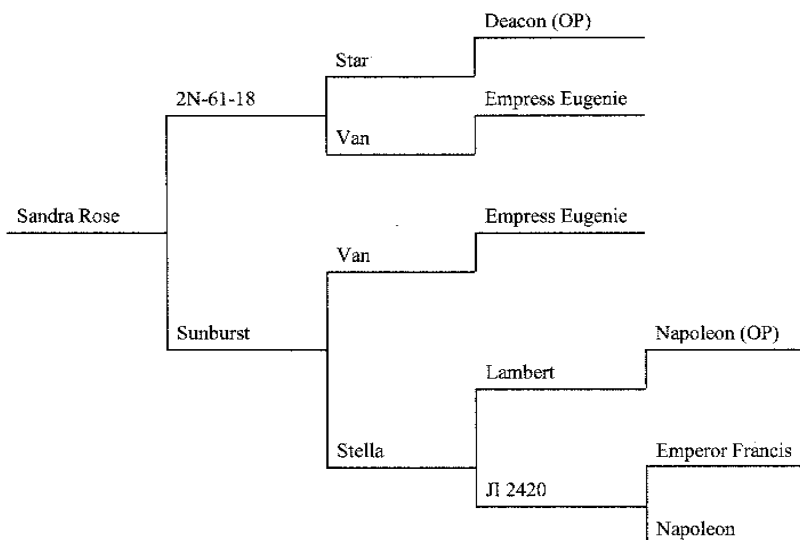


Fig. 2. Pedigree of 'Sandra Rose' sweet cherry.

related to people's perception of firmness (Kappel et al., 1996). A durometer measurement of 73 was determined to be "Just Right" (Kappel et al., 1996) on the Just Right scale (Meilgaard et al., 1991) used in determining the relationship between firmness and perception. The CI was calculated by storing fruit at room temperature overnight, then immersing them in distilled water at room temperature for 2 and 4 h and counting the number of cracked fruit. The following equation was then used: $CI = [(3a + b)/150] * 100$, where a and b = number of fruit split after 2 and 4 h, respectively. The lower the number, the more tolerant the fruit to cracking.

Description

Trees of 'Sumste Samba' are vigorous, with an upright growth habit. The leaves are medium to large, elliptical in shape, and have biserrate margins. The nectaries are kidney-shaped and yellow to red in color. 'Sandra Rose' trees are upright to spreading in growth habit; the elongated leaves are medium to large and have serrate leaf margins. There are two purple, kidney-shaped nectaries at the base of the leaf. Trees of 'Sumleta Sonata' are vigorous, with an upright growth habit. The leaves are medium to large and elliptical in shape. The leaf margins are serrate with shallow to medium indentations. There are two to four red, kidney-shaped nectaries at the base of the leaf.

The flower density of 'Sumste Samba' is low to medium compared with 'Van', which has a high flower density. The bloom period is very early, beginning ≈ 3 d before 'Van'. 'Sandra Rose' has a medium to high flower density with a mid-season bloom period, beginning ≈ 1 d after 'Van'. 'Sumleta Sonata' has a low to medium flower density, and the bloom period is mid-season, ≈ 1 d after 'Van'.

The fruit of 'Sumste Samba' are large, symmetrical, and kidney-shaped. The pedicels are medium to long whereas 'Van' is considered to have short pedicels. Skin color is mahogany with pink flecks. Fruit are firm, juicy, moderately sweet when mature, and of fair to good eating quality. It matures ≈ 2 d after 'Van'. For comparison, 'Van' is considered to be moderately large and juicy, with good fruit firmness and eating quality, intermediate to sweet in taste. The fruit of 'Sandra Rose' are large, symmetrical, and flat-round in shape with a moderately short pedicel. The skin color is mahogany to black with dark red juice and flesh. Fruit are moderately firm, juicy and very sweet, with good to very good eating quality. 'Sandra Rose' matures ≈ 3 d after 'Van'. The fruit of 'Sumleta Sonata' is large, symmetrical, and kidney-shaped and the pedicel is medium in length. The fruit has a pronounced dimple at the blossom end. The color of the skin is mahogany, the juice is dark red to black, and the flesh is dark red. The fruit are firm, juicy, and moderately sweet with good eating quality, and mature ≈ 7 d after 'Van'. Both 'Sumste Samba', and 'Sumleta Sonata' can have high acidity if picked before full maturity.

Performance

'Sumste Samba' is a large cherry with an average fruit weight of 11.5 g (Table 1). Average fruit weight in European cooperators' plots was slightly lower than at Summerland (Table 2). The protocol at Summerland was to harvest the fruit at a more mature stage, (i.e., the fruit are darker than the fruit of the European cooperators), which may account for some of the difference in fruit size. Total SSC was similar to the mid-season sweet cherries 'Van' and 'Bing' at Summerland (Table 1). Durometer readings indicated that firmness was highly acceptable. The durometer reading for 'Sumste Samba' was 78. FirmTech firmness measurements also indicated 'Sumste Samba' has good firmness in comparison with the standards. In previous sensory evaluation work, 'Sumste Samba' scored high for firmness (Dever et al., 1996). The tolerance of 'Sumste Samba' to rain-induced cracking appeared to be better than that of the standard cultivars (Table 1)

according to the incidence of natural cracking, but the CI (Christensen, 1996) was similar to that of 'Van' (Table 1). Our results were similar to those of our cooperators for sensitivity to cracking. In Belgium (Druart, 1996) cracking of 'Sumste Samba' was less than that of 'Van', and in France (Edin, et al., 1997) 'Sumste Samba' was rated not sensitive. Productivity under conditions at Summerland (subjective assessment) has been low to medium and the trees have not been precocious. For comparison, the cropping of 'Van' is considered to be good to very good. The assessment of productivity differs between the Belgian (Druart, 1996) and French (Edin et al., 1997) testers. The former rated the productivity as good to very good whereas the later rated it low to medium. Both testers rated the productivity of 'Van' as very good.

'Sandra Rose' has good fruit size as measured by average fruit weight (11.3 g) (Table 1). We consider the fruit large, whereas 'Van' is rated as moderately large. Testers in Bel-

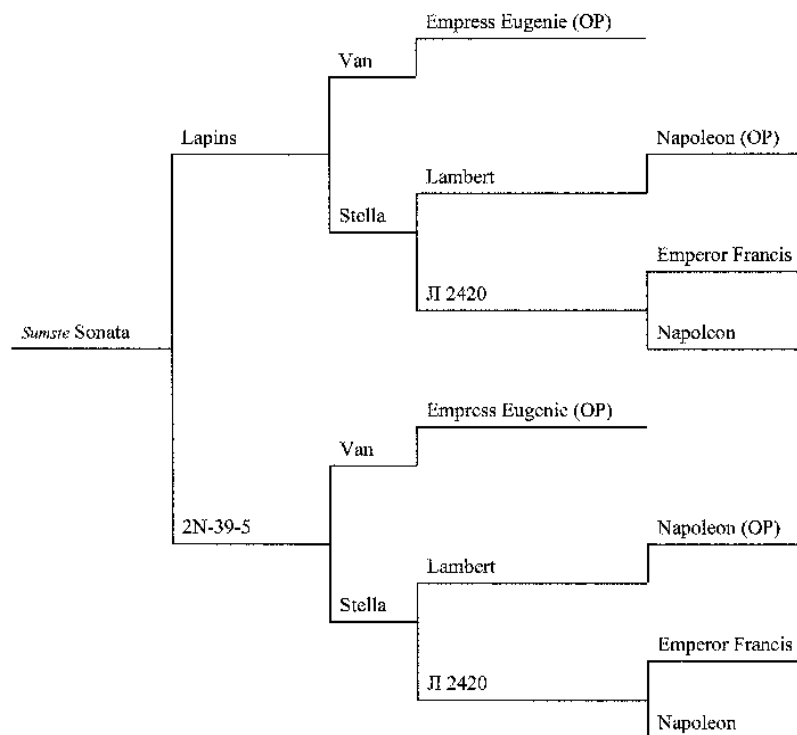


Fig. 3. Pedigree of 'Sumleta Sonata' sweet cherry.

Table 1. Fruit characteristics of 'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' sweet cherry cultivars compared with those of the standards 'Van' and 'Bing' at Summerland, B.C.

Cultivar	Wt per fruit (g)	Total soluble solids (%)	Fruit firmness		Natural cracking (%)	Cracking Index ^x
			Durometer ^y	FirmTech ^z (g/mm)		
Sumste Samba	11.5 (12) ^w	18.5 (10)	78 (4)	234(1)	18 (9)	42 (3)
Sandra Rose	11.3 (17)	19.7 (15)	72 (5)	117(1)	22 (16)	18 (3)
Sumleta Sonata	12.6 (12)	19.1 (12)	78 (5)	224(1)	37 (10)	35 (3)
Van	9.8 (15)	18.4 (13)	79 (4)	225(1)	37 (13)	42 (3)
Bing	9.6 (8)	18.6 (7)	71 (3)	157(1)	40 (8)	66 (2)

^zFirmTech measures the amount of force required to compress the fruit a constant distance. A 24-fruit sample was used.

^yDurometer provides a dimensionless reading from 0 to 100; the higher the number the firmer the fruit.

^xCracking Index (CI) = $[(3a + b)/150] * 100$, where a and b = number of fruit split after being immersed in distilled water at room temperature for 2 and 4 h, respectively. A 50-fruit sample was used for the CI determinations.

^wThe number in parentheses indicates the number of years the trait was measured.

Table 2. Characteristics of 'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' sweet cherry cultivars compared with those of a standard cultivar ('Van') as reported in Belgium^z and France^y.

Cultivars	Wt per fruit (g)		Fruit firmness		Sensitivity to cracking		Productivity	
	Belgium	France	Belgium	France	Belgium	France	Belgium	France
Sumste Samba	9.6	8.5 to 9.5	12.3 ^x	Firm	29% ^w	Not sensitive	Good to v. good	Low to medium
Sandra Rose	9.9	9.5 to 10.5	16	Medium	44%	Sensitive	Good	Good
Sumleta Sonata	---	9 to 11	---	V. firm	---	Sensitive	---	Medium to good
Van	8.7	7.5 to 9	15	Firm	53%	Medium	V. good	V. good

^zDruart, 1996.

^yEdin et al., 1997.

^xFirmness class developed based on resistance to compression by a Stanhope-Seta penetrometer. The smaller the number the firmer the fruit.

^wAn average of cracking over 3 years.

gium (Druart, 1996) and France (Edin et al., 1997) also reported that fruit size was larger than 'Van' (Table 2). Total SSC was similar or slightly higher than that of the mid-season standard cultivars. The fruit firmness of 'Sandra Rose', as measured by the durometer, was similar to that of 'Bing'; however, it was less than that of 'Bing' when measured by the FirmTech instrument (Table 1). In Europe, firmness ratings have been in the medium range (Table 2). Sensory panels rated the firmness of 'Sandra Rose' lower than that of 'Bing' (Dever et al., 1996). At Summerland, 'Sandra Rose' is considered to be tolerant to cracking. We have observed low cracking in the field and CI has also been low. 'Sandra Rose' was comparable to 'Van' in Belgium (Druart, 1996) (Table 2) but sensitive to rain-induced cracking in France (Edin et al., 1997). The productivity under our conditions has been very good (subjective assessments). In both Belgium (Druart, 1996) and France (Edin et al., 1997) productivity was rated as good.

Fruit size of 'Sumleta Sonata' was very large (12.6 g) at Summerland (Table 1) and larger than that of 'Van' in France (Table 2).

Total SSC was similar to or slightly above values for the standard cultivars at Summerland. Fruit firmness was good both at Summerland (Table 1) and in France (Table 2). Sensitivity to rain-induced cracking was similar to that of 'Van' and 'Bing' at Summerland (Table 1), but in France 'Sumleta Sonata' was considered to be sensitive (Table 2). It may be prone to cracking in the blossom end of the fruit. Tree productivity at Summerland, based on subjective assessments, was considered good; this productivity was confirmed by the ratings given by the French testers (Table 2).

Sensory evaluation work reported by Dever et al. (1996) suggested that the juiciness, sweetness, sourness, and cherry flavor ratings of 'Sumste Samba', 'Sandra Rose', and 'Sumleta Sonata' are similar to those of 'Bing' when harvested at commercial maturity.

Availability

The Okanagan Plant Improvement Co. (PICO), 4200 Highway 7, P.O. Box 6000, Summerland, B.C. V0H 1Z0, is the agent for these cultivars. 'Sandra Rose' and 'Sumleta

Sonata' were granted Plant Breeders' Rights in Canada in 1997 (certificate nos. 0320 and 0317, respectively). Application for Plant Breeders' Rights in Canada for 'Sumste Samba' will be submitted.

Literature Cited

- Christensen, J.V. 1996. Rain-induced cracking of sweet cherries: Its causes and prevention, p. 297-327. In: A.D. Webster and N.E. Looney (eds.). Cherries: Crop physiology, production and uses. CAB International, Wallingford, U.K.
- Dever, M.C., R.A. MacDonald, M.A. Cliff, and W.D. Lane. 1996. Sensory evaluation of sweet cherry cultivars. *HortScience* 31:150-153.
- Druart, P. 1996. La cerise, en verger intensif. Centre de Recherches Agron. de Gembloux, Gembloux, Belgium.
- Edin, M., J. Lichou, and R. Saunier. 1997. Cerise, les variétés et leur conduite. Centre technique interprofessionnel des fruits et légumes, Paris.
- Kappel, F., R. Fisher-Fleming, and E. Hogue. 1996. Fruit characteristics and sensory attributes of an ideal sweet cherry. *HortScience* 31:443-446.
- Meilgaard, M., G.V. Civille, and B.T. Carr. 1991. Sensory evaluation techniques. 2nd ed. CRC Press, Boca Raton, Fla.