

Evaluation of Fruit Characteristics of 20 Sweet Cherry Cultivars

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Abstract

Fruit characteristics of 20 sweet cherry cultivars were evaluated in Denmark. The early cultivars 'Karesova Rana', 'Ranna Cherna Edra' and 'Merpet' had a good fruit size for their season, but the fruits were soft. 'Adriana' was outstanding for low cracking susceptibility. 'Kristin', 'Oktavia' and 'Viola' are midseason cultivars with several good characteristics. The late cultivar 'Sunburst' was outstanding for good fruit size. 'Lapins' had an overall good quality. Of the white cherries 'Flamengo Srim' had the highest cracking resistance and it is suitable for mechanical harvest.

Introduction

Cultivars of sweet cherry are continuously collected for an evaluation of the commercial value. The cracking susceptibility the size and the firmness of the fruit together with its ripening season are considered being the decisive characteristics in an evaluation of the commercial value. In this preliminary evaluation with only a few trees of each cultivar, only a tendency of cropping potential can be estimated. In earlier reports 172 cultivars have been evaluated (28, 30, 31, 32).

Material

Propagation material was received from following institutes: *Canada*: Horticultural Experiment Station Summerland, British Columbia and Horticultural Research Institute of Ontario, Vineland, Ontario. *England*: National Fruit Trials, Faversham. *Germany*: Obstbauversuchsanstalt, Jork. *Italy*: Istituto Sperimentale di Frutticoltura, Verona and Piacenza. *Norway*: Agricultural Research Institute, Ullensvang. The trees were grafted on *Prunus avium* F 12/1 and 2-3 trees of each

cultivar were planted as maidens in spring 1984 on a distance of 6 x 4 m.

Methods

Records of date of flowering were made over an 8 year period and fruit characteristics over a 4 year period. Each year fruit size, cracking index and firmness were determined 3 times with 2 to 4 days intervals during the ripening season. For each of these determinations samples of the 50 well developed fruits were used. Date of ripening is an average of the 3 days of sampling. Tendency toward fruit cracking was determined as cracking index over a 6 hour period (30). An index of 100 indicates that all fruits cracked within 2 hours after immersion in distilled water and an index of zero means that no fruits cracked within 6 hours of immersion. Fruit firmness was assessed subjectively on a scale from 1 being very soft to 5 as very firm (table 1).

Results

Date of flowering

In most years, the flowering period was overlapped for all cultivars. However, the very early flowering cultivars 'Ranna Cherna Edra' and 'Lapins' may not be pollinated satisfactorily with the latest cultivars and vice versa.

Date of ripening

The order of ripening should be emphasized more than the actual dates which vary much among years and regions. The days of picking were judged visually from skin color and fruit size.

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Fruit size

Fruit size is a very important criteria for commercial market value. Most of the tested cultivars had a good fruit size. However, 'Sunburst' and 'Uriasa di Bistrita' were outstanding in this respect.

Cracking index

Most of the cultivars had a medium susceptibility to cracking. 'Adriana' was the most cracking resistant cultivar ever tested, but also 'Flamengo Srim' was very resistant.

Firmness of the fruit

Most of the late cultivars were judged as firm or very firm. The very early cultivars were softer.

Productivity of trees

A rating from 1-5 was given each year to indicate the order of magnitude of the cropping observed. This evaluation does not adequately estimate yield potential of the cultivars, more reliable results would need more trees. The rating indicate that the early cultivars were less productive. 'Lapins' and 'Merla' had a very high cropping potential.

Discussion

The most important characteristics of the cultivars are briefly described below. The origin, the parentage and the pollination group or important pollinators are given as far as they are known. Other references used in iden-

Table 1. Date of flowering, fruit characteristics and productivity of 20 sweet cherry cultivars (values are the average of 4 years).

	Date of flowering	Date of ripening	Size g/fruit	Cracking index ¹	Firmness 1-5 ²	Productivity of trees 1-5 ³
Karasova Rana	May 9	June 28	7.6	50	2	2
Ranna Cherna Edra	May 7	July 1	6.7	36	2	1
Adriana	May 9	July 8	7.2	4	4	2
Merpet	May 9	July 12	8.3	83	2	2
Kristin		July 14	8.2	41	4	4
Viscount	May 9	July 14	8.0	51	4	4
Starking	May 10	July 19	9.1	61	4	3
Stella	May 10	July 19	8.9	51	4	3
Van	May 10	July 19	7.9	68	5	5
Oktavia	May 12	July 20	8.9	45	4	4
Merton Marvel	May 13	July 22	7.6	47	4	3
Viola	May 13	July 22	9.0	53	4	4
Kozerska	May 12	July 23	9.4	36	4	4
Sunburst	May 12	July 24	11.9	57	3	4
Lapins	May 8	July 26	9.7	37	4	5
Uriasa di Bistrita	May 13	July 27	10.1	28	3	3
<i>White cherries</i>						
Merla	May 10	July 12	6.7	34	4	5
Boambe de Cotnari	May 10	July 18	9.1	48	5	4
Bianca di Verona	May 9	July 22	7.4	34	5	3
Flamengo Srim	July 13	July 29	7.1	16	5	4

¹100 = maximum susceptible to fruit cracking.

² 1 = very soft; 5 = very firm.

³ 1 = low yield; 5 = very high yield.

tification of the cultivars are affixed by numbers which refer to the list of references.

'*Adriana*.' Origin: Verona, Italy 1980. 'Mora di Cazzano' x 'ISF 123.' It is outstanding for its extremely high cracking resistance. It ripens about one week earlier than 'Van,' but is small for its season (6-7 g). The trees may be sensitive to spring frost. In Italy it has been very productive. Pollination: 'Van,' 'Vittoria.' References: 3, 19, 23, 24.

'*Karesova Ranà*.' Origin: Behimia, Czechoslovakia. Recommended in Czechoslovakia for its good quality in the early season. The fruit is large and of good quality. The productivity of the trees has been low. Pollination group: II. References: 12, 13, 15, 34.

'*Kozerska*.' Origin: Poland. In Polish literature it is considered synonymous to 'Schneiders Späte Knorpel.' Our observations confirm this except for cracking resistance. In 3 out of 4 years the cracking index was significantly lower. Reference: 6.

'*Kristin*.' Origin: Geneva, New York, USA. 1982. 'Emperor Francis' x 'Gil Peck.' Synonym: NY 1599. It was named after good results in Norway where it's recommended. It ripens a week earlier than 'Van.' The fruit is of good size for the season and of good quality, and the cracking resistance is good. Fruit yield is moderate to high. Pollination group: III. References: 25, 35, 36, 37.

'*Lapins*.' Origin: Summerland, British Columbia, Canada. 'Van x Stella.' 1984. Synonym: Tested as 2D(orS)-28-26. The cultivar has received international interest very quickly due to late ripening, large and firm fruits, high cracking resistance, as also found in this study. The tree blossoms early and is productive, but only little branching may give problems in shaping the tree. Pollination: Self fertile. References: 17, 19, 20, 22, 24.

'*Merpet*.' Origin: John Innes, Norwich, England. Open pollinated 'Merton Glory.' Synonym: J. I. 11253. Selected for resistance to bacterial canker. The fruit ripens early, has a good size. However, it is very susceptible to fruit cracking and is very soft. Pollination group: 0. Reference: 24.

'*Merton Marvel*.' Origin: John Innes Just, England. 1962. 'Nobel' x 'White Bigarreau.' A beautiful, glossy late ripening, firm fruit of moderate size, which is rather resistant to fruit cracking. The productivity of the trees may be too low. Pollination: Group III. References: 1, 14, 30.

'*Oktavia*.' Origin: Jork, Germany 'Schneiders' x 'Rube.' Synonym: Jork 57/35. It is a beautiful, shining, large fruit which ripens during the late season. It is firm and is rather resistant to fruit cracking. The yields tend to be only moderate. Pollination: 'Rube,' 'Annabella,' 'Allers Späte,' 'Bianca,' 'Schneiders.' Reference: 38.

'*Ranna Cherna Edra*.' Origin: Bulgaria. The cultivar is of interest for its good size (6-7 g) in an early season, and its low cracking tendency. However, the fruit is soft and the trees' productivity has been low. References: 7, 8, 16.

'*Starking Hardy Giant*.' Origin: Wisconsin, USA. 1925. Synonym until 1948: 'Meyr.' The general experience in several countries is that it is a very productive, late cultivar, although it is very often seriously attacked by a virus. The fruit is firm, large and of good quality. Pollination: Group III. References: 23, 26, 27.

'*Stella*.' Origin: Summerland, B.C., Canada, 1968. 'Lambert' x 'J. I. Seedling 2420.' The dark red, large fruits ripen during late midseason. In this experiment the fruit cracking index was lower than in earlier results. The trees are early cropping and productive. Pollination: Self fertile. References: 18, 19, 32.

'**Sunburst**.' Origin: Summerland, B.C., Canada 1984. 'Van' x 'Stella.' The cultivar is outstanding for its very large fruits (10-12 g) of good eating quality. From several countries it has also been reported to be early cropping and productive. The fruits ripen a few days earlier and are more prone to fruit cracking than 'Lapins.' The trees tended to be more sensitive to *Monilia* than other cultivars, as also reported from France. Pollination: Self fertile. References: 17, 19, 20, 21, 22.

'**Uriase de Bistrita**.' Origin: Romania, 1968. 'Hedelfinger x Germansdorfer.' The very larger late ripening fruits are of good quality and have a low cracking index. However, the cropping of the trees has in this as in other studies been too low. References: 9, 10, 20.

'**Van**.' Origin: Summerland, B.C., Canada. 1944. In a survey in 1985 'Van' was mentioned as "one of the most important cultivars" in 10 European countries. It is outstanding for early and heavy cropping of big, firm fruits in the late midseason. It is sensitive to fruit cracking, *Monilia* and bacterial canker. Pollination: Group II. References: 19, 20, 33, 36, 37.

'**Viola**.' Origin: Jork, Germany, 1981. 'Schneiders Späte' x 'Rube.' Tested as Jork 57/188. A late, large and firm cultivar of good quality. Cropping has been moderate to good. The cultivar may be a good supplement to other big fruited cultivars in its season. Pollination: 'Schneiders Späte.' Reference: 38.

'**Viscount**.' Origin: Vineland, Ontario, Canada. 1983 (Hedelfinger x Bing) x (Hedelfinger x Bing). A midseason cultivar with mostly moderate characteristics. However, the trees have been very productive. As a midseason cultivar it may have some interest. Pollination: Group IX. Reference: 5.

White cherries

'**Bianca di Verona**.' Origin: Verona, Italy 1975. 'Dorona di Vignola' x 'Moretta Cazzano' (should not be confused with 'Bianca' from Jork, Germany). Selected for mechanical harvest. The fruit is of good size, firm, late ripening and has a low cracking index. At ripening time, abscission layer formation occurs between fruit and stem. It has moderate cropping. Pollination: 'Vittoria,' 'Durone del Marca.' References: 2, 20.

'**Boambe de Cotnari**.' Origin: Romania. Synonym: Pietrosa de Cotnari. A large fruit, firm and of good eating quality. The fruit is moderately prone to cracking and ripens in the midseason. The trees are very productive. Pollination: 'Ramon Oliva,' 'Germansdorfer.' References: 4, 9, 10, 11.

'**Flamengo Srim**.' Origin, Italy, 1973. 'Moretta di Cazzano' x 'Durona di Padova.' Selected for mechanical harvest. The fruit is very firm, medium and of good eating quality. It is one of the most cracking resistant cultivars ever tested and it has a good abscission between fruit and stem. The trees are productive. References: 20, 22.

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Thinning Effects from Various Sprayer Types

Work in Tasmania compared the effectiveness of high (HV), low (LV) and ultra low volume (ULV) sprays. All sprays removed significantly more fruit compared with unsprayed trees. There was no consistent or wide ranging differences in thinning effects between HV and LV or ULV sprays. From Oakford et al. 1994. *J. Hort. Sci.* 69:213-218.