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Performance in Denmark of 20 Summerland Selections of Sweet Cherry

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Abstract

Fruit characteristics and productivity of 20 Summerland cultivars were evaluated during the years 1994-1996 in Denmark. High resistance to fruit cracking and large fruits are the most important quality characteristics under the Danish conditions. In order of ripening the following selections seem to be of greatest interest: *'Newstar'* is unique for good fruit size and firm fruits in the earlier part of the season and it is self fertile. A weakness might be its cracking suceptibility. In almost the same season. *'Celeste'*, *'Van'*, *'Sunburst'* and *13S-21-7* may be of interest for good firmness combined with high productivity. Each one having shortcomings and advantages. *'Lapins'* is an established cultivar in many regions for its late ripening and firm fruits. *'Sweetheart'* is of interest in being even later than 'Lapins' and may have slightly bigger fruits. In our test the selections *'11W-20-42'*, *'13S-27-17'* and *'13S-43-48'* were very promising in the very late season due to the same good qualities as 'Sweetheart' combined with good precosity and good productivity.

Introduction

Summerland Research Centre, British Columbia, Canada has a long tradition for breeding sweet cherries. Several of their earlier cultivars, such as 'Van,' 'Sam' and 'Stella' have received worldwide attention. On this background it was found promising to evaluate a number of unnamed selections.

For this purpose graftwood of 16 selections was received in 1990 for an evaluation in Denmark. The cracking susceptibility, and the size of the fruit together with its ripening season are considered as the decisive characteristics in an evaluation of the potential commercial value. In this preliminary evaluation with only a few trees of each cultivar, a tendency of cropping can only be estimated.

Material

The propagation material received in February 1990, was grafted on *'Colt'* rootstocks. In the fall of 1990 three trees of each cultivar were planted at a spacing of 5 x 3,5 m in a screening trial for a preliminary evaluation of the fruit quality and yield potential.

Methods

Date of flowering was recorded over a 5 year period and fruit related characteristics over the 3 years 1994-1996 (4th-6th leaf). Date of flowering was determined when 90% of flowers were open. Each year fruit size (measured as an average fruit weight), cracking index and firmness were determined 3 times with 2 to 4 days interval during the ripening season. For each of these determinations a sample of 50 well developed fruits were used The annual date of ripening is an average of the 3 dates of sampling. Tendency toward fruit cracking was determined as cracking index over a 6 hour period. 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). Productivity of trees was rated 1-9 (1 = no or single fruits; 9 = very heavy crop) the last 4 years. All results are shown in Table 1 in descending order from earliest ripening cultivar to latest.

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Results

Date of flowering

In all years, the flowering period overlapped for at least five days for all cultivars. However, the earliest blooming cultivars, such as 'Lapins,' may not be pollinated satisfactorily with the latest and vice versa.

The annual variation in the date for full bloom between earliest and latest cultivar was from one to seven days. The whole flowering period was for all cultivars 14 days ∓ 1 day.

Date of ripening

The date of ripening in each year is an average of three pickings, the days judged visually from skin colour and fruit size. The whole ripening period covered about one month with 'Newstar' as an early midseason cultivar and 'Sweetheart' as an extremely late cultivar.

Fruit Size

Fruit size is a very important quality characteristic. Cultivars with fruits smaller than 7.5g will not be accepted in Denmark for a potential commercial cultivar. Almost all the Summerland selections had very good fruit size. Exceptions were '11W 18-32' and '11W 21-27', which were too small. In fruit size 'Sunburst' did not have any competitors in this collection.

Cracking index

The Summerland selections varied greatly in their cracking susceptibility. 11W-18-32, 'Sweetheart,' 'Lapins,' 13S-43-48, 'Celeste' and 11W-27-7 were the most resistant.

Firmness of the fruit

A rating of 4 is considered as a satisfactory, good firmness. Many of the selections fulfill this requirement.

In contrast to Northwest American experience 'Van' is always very firm under Danish conditions. 'Sunburst,' 11W-27-7, 11W-16-50, 13S-27-17 and 2C-61-22 were not satisfactory in this respect.

Table 1. Date of flowering, fruit characteristics and productivity, 1994-96 (Values are average of 3 years).

Cultivars	Date of flowering	Date of ripening	Size g/fruit	Cracking index 1-100[1]	Firmness 1-5[2]	Productivity 1-9[3]
13N-5-33	May 7	July 18	9.4	71	4.7	3.6
13N-5-23	May 10	July 21	9.1	80	4.6	2.5
Newstar	May 7	July 22	8.9	44	4.9	4.7
11W-18-32	May 8	July 22	7.2	15	4.3	3.4
13N-6-49	May 7	July 23	8.7	30	4.6	2.7
2C-61-22	May 8	July 24	7.5	32	3.6	4.6
13S-10-23	May 8	July 24	8.2	60	4.4	3.4
11W-16-50	May 7	July 25	8.4	41	3.0	4.6
11W-27-7	May 8	July 25	8.9	26	2.8	2.3
Celeste	May 9	July 25	8.2	21	3.9	4.3
13S-21-7	May 8	July 28	10.4	34	2.2	5.2
Sunburst	May 9	July 28	10.4	34	2.2	5.2
Van	May 7	July 30	8.1	37	4.9	7.1
11W-21-27	May 9	July 30	6.9	42	4.1	3.8
11W-19-23	May 7	July 31	8.4	65	4.7	2.0
13S-27-17	May 10	Aug. 4	8.4	36	3.1	5.8
11W-20-42	May 7	Aug. 6	8.5	40	3.9	4.6
13S-43-48	May 7	Aug. 6	7.8	23	4.7	5.5
Lapins	May 6	Aug. 8	7.9	19	4.1	5.1
Sweetheart	May 8	Aug. 12	8.8	17	4.3	5.0
13S-54-14	May 8	—	—	—	—	1.5
LSD (5%)	2 days	3 days	0.4	12	0.5	

[1] 100 = maximum susceptibility to rain cracking.
[2] 1 = very soft; 5 = very firm.
[3] 1 = low or no yield; 9 = very high yield.

Productivity of the trees

This evaluation does not adequately estimate yield potential of the cultivars, more reliable results would need more trees and years. However, the named Summerland cultivars seem satisfactory in this respect, but several of the unnamed selections were too low yielding to have any future under Danish conditions.

Discussion

The most important characteristics of the cultivars are briefly discussed. The parentage and pollination are given as far as they are known.

'Celeste.' Tested as 13S-24-28. Origin: 'Van' x 'Newstar,' 1976. The fruits are of good size and ripen during the same days as 'Van' in the midseason. However, it may be a good substitute for 'Van' due to a very low cracking susceptibility here, as also found in Italy and Summerland. An uncertainty is its productivity on the compact, upright growing trees. It has to date been clearly lower than 'Van.' Pollination: Self fertile. References: 4, 7, 12.

'Lapins.' Origin: 'Van' x 'Stella,' named 1984. Tested as 2S-28-26. In 1995 it was considered as the best cultivar at Summerland. In Denmark, Holland and Belgium it is recommended as a major cultivar. It has been tested in several European countries with varying results in fruit size, cracking resistance and productivity. The present results confirm earlier Danish tests that the fruits are late ripening, of medium to good size, firm and have a low cracking susceptibility. The trees are productive, upright and only little branching. It is self fertile but flowers too early to pollinate the latest cultivars. References: 2, 6, 8, 11, 12, 13, 14, 18, 21.

'Newstar.' Tested as 2S-28-28. Origin 'Van' x 'Stella' A very promising cultivar for the early midseason. As in observations in France and Italy the fruit was large and very firm, but susceptible to cracking. The trees were productive. Expected to become a major cultivar in Denmark. Pollination: Self fertile. References: 7, 9, 10, 11, 15.

'Sunburst.' Tested as 2S-28-37. Origin: 'Van' x 'Stella', 1965. It is unique for large fruit size. In experiments in several countries, it always had the largest fruit. It ripens in the late midseason, the cracking tolerance is medium. The major weakness of the cultivar is the soft fruits. The productivity is reported from medium to very productive. Due to the very large fruits it is of considerable interest. Pollination: Self fertile. References: 6, 8, 10, 11, 12, 14, 15, 18, 21.

'Sweetheart'. Tested as 13S-22-8. Origin: 'Van' x 'Newstar'. The latest of known cultivars. The fruits are large and firm. In accordance with Italian results, but in contrast to Summerland observation, the fruits were found very resistant to cracking. Expected to become a major cultivar in Denmark. Pollination: Self fertile. References: 4, 7, 12, 15.

'Van'. Origin: Summerland, B.C., Canada. 1944. Open pollinated 'Empress Eugenie'. It is an important variety in some countries in Europe. It is outstanding for early and heavy cropping of large fruits in the late mid-season. In contrast to experience in USA the fruit is very firm under our conditions. Reference: 21.

'11W-16-50'. Origin: ('Star' x open pollinated) x ('Van' x 'Stella'). A mid-season cultivar with large fruit. They had a medium cracking tendency, and the fruit were softer than 'Newstar'. Reference: 7.

'11W-18-32'. Origin: 'Van' x 'Sunburst'. Small to medium sized, firm fruits with very low cracking tendency. The trees had medium productivity. In spite of several good characteristics, the small fruits reduce its value. Reference: 7.

'11W-19-23'. Origin: 'Van' x 'Sunburst'. A late cultivar with large, firm fruits. The cracking index was higher and the trees were less productive than most of the other selections. Reference: 7.

'11W-20-42'. Origin: ('Van' x 'Bing') x ('Compact Lambert' x 'Stella'). The fruit is of good size, firm and ripens late in the season, a few days before 'Lapins'. The trees were roundish, well shaped and were productive. The selection deserves

further testing. Reference: 7.

'11W-21-27'. Origin: ('Van' x 'Bing') x ('Compact Lambert' x 'Stella'). The fruit is ov good size, firm and ripens late in the season, a few days before 'Lapins.' The trees were roundish, well shaped and were productive. The selection deserves further testing. Reference: 7.

'11W-21-07'. Origin: 'Star' x '02S-41-27'. This selection is interesting for good fruit size and a low cracking tendency. However, the fruit was rather soft and the trees were slow to come into production. Reference 7.

'13S-10-23'. Origin: '02N-61-18' x 'Sunburst'. A late midseason cherry with big, firm fruits with a high cracking tendency. Other selections are found more promising in its season. Reference: 7

'13S-21-7'. Origin: 'Van' x 'Newstar'. The fruits are firm and ripen in the late midseason. In contrast to Italian results, it was among the most productive of the selections. Deserves further interest, although the fruits are only medium in size. References: 4, 7, 12.

'13S-27-17'. Origin: 'Bing' x '2S-23-10'. A very late ripening selection, almost with 'Lapins'. The fruits are large and rather soft with a medium to low cracking tendency. They had a good storage life. In accordance with the Summerland results and in contrast to Italian findings the trees were very productive. References: 4, 7, 12.

'13S-43-48'. Origin: ('Bing' x 'Stella') x ('Van' x 'Stella'). A very late selection with very firm fruits with high cracking resistance. In contrast to Ialian results the open, upright trees have been between the most productive with fruits well scattered on all branches. Regarded as promising. References: 4, 7, 12.

'13S-54-14'. Origin: 'Compact Lambert' x ('Stella' x '05G-03-07'). The yield on the young trees was so extremely low that fruit characteristics could be evaluated only one year. Reference: 7.

'13N-5-23'. The fruits ripen in the late midseason, are very large and very firm. The cracking susceptibility was the highest measured in this collection. The trees flower very late and the trees have had very low yields.

'13N-5-33'. Origin: 'Sam' x 'Salmo'. It ripens a few days earlier than 13N-5-23, but all other fruit characteristics are similar to 13N-5-23. Reference: 7.

'13N-6-49'. Origin: 'Lapins' x ('Van' x 'Stella'). The fruits ripen about a week before 'Van', are large and very firm. They also had a rather low cracking tendency. However, the productivity on the young trees has been very low. Pollination: Self fertile. Reference: 5.

'2C-61-22'. Origin: 'Star' x 'Van'. A midseason selection with mostly medium qualities. It was selected as unique for picking without stems. References: 4, 7, 12.

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Fruit Characteristics of Asian Peaches Grown Under New Zealand Conditions

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Abstract

The physical properties of the fruit of 14 Asian peach cultivars were measured at eating maturity and compared with 4 commercial American cultivars. Asian peaches had lower percent overcolour and lower pH values. Differences in texture and firmness were found for the Asian cultivars. Sugar levels as measured by soluble solids ranged between 9 and 14% and were similar to the American cultivars.

Introduction

Approximately 30 white fleshed peaches have been introduced into New Zealand from Japan, Korea and China. Several of these cultivars have been evaluated for their potential for the New Zealand summerfruit industry. Some characteristics of these cultivars growing under New Zealand conditions have been described previously (1,2,4). Major differences between the appearance of white-fleshed peaches from Asia and those from America peaches were noted, with Asian peaches being typically large with a bright red blush and having very low pH values. Flesh texture was fine and melting.

A list of these peaches and their attributes when grown under New Zealand conditions has not been previously published. In this article, measurements of the physical properties of 14 Asian peach cultivars grown under New Zealand conditions are presented and compared with 4 commercial yellow-fleshed and white-fleshed cultivars originating in California, U.S.A.

Materials and Methods

Observations of 18 peach cultivars listed in Table 1 were made on 5 year old trees growing on Hastings silt loam at the Havelock North Research Centre orchard during the 1992/93 growing sea-

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