'Prelude' Everbearing Raspberry

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Additional index words. *Rubus idaeus*, breeding, cultivar, variety, floricanes, primocane

'Prelude' is a new everbearing red raspberry, *Rubus idaeus* L., developed by Cornell University at the New York State Agricultural Experiment Station, Geneva, and was granted United States plant patent US PP11,747 on 23 Jan. 2001. 'Prelude' has a very early floricanes (summer) crop, peaking in production before other standard cultivars in New York. 'Prelude' also produces a significant primocane crop in the fall and can be managed as a floricanes, primocane, or everbearing cultivar. Yield as a floricanes or as a primocane cultivar are highest when managed as such, but maximum annual yield is reached when managed as an everbearing cultivar.

Most early maturing cultivars in the East Coast and Great Lakes growing regions ripen ≈10% to 15% of their crop by 10 July (Pritts and Handley, 1989). 'Prelude' ripens most of its fruit from late June to early July in Geneva thus expanding the raspberry season in these growing regions. Additionally, 'Prelude' is similar to other early fruiting cultivars in fruit size and yield even with this early harvest window. The fruit are firm and high quality with good flavor. 'Prelude' is suitable for wholesale shipping and direct retail sales.

Origin

'Prelude' originated from a cross of NY817 x 'Hilton' made in 1971 (Fig.1). It was the only selection from the 141 progeny and was tested as NY1009 at multiple sites in Geneva and with grower cooperators throughout New York. 'Prelude' is being grown commercially in many raspberry growing regions in the U.S. and is being tested in several European countries and in South Africa.

Description and Performance

'Prelude' is the earliest maturing floricanes (summer) raspberry cultivar available for production in the East Coast and Great Lakes growing regions. Half of the fruit are harvested

Received for publication 16 Apr. 2003. Accepted for publication 7 July 2003. We thankfully acknowledge Don Ourecky who made the original cross in 1971, which led to this release. We would like to thank the entire staff at Nourse Farms Inc. for donating their time and expertise in propagating virus free planting stock for advanced testing of 'Prelude'. The staff of the Field Research Unit in Geneva has been instrumental in supporting our research. 'Prelude' was developed in part with Federal formula funds pursuant to the Hatch Act and was part of Project 632-496.

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by 10 July in Geneva (Table 1). This compares with 20 July for 'Killarney' and 16 July for 'Canby' (Table 1), both of which are standard early cultivars for this region (Pritts and Handley, 1989). The average first floricanes harvest for 'Prelude' in Geneva from 1993–2000 was 28 June, with a range from 22 June to 5 July. 'Prelude' has good size for the early summer season, averaging 2.24 g/berry from 1995–97 (Table 2). Mean fruit weight and total yield of 'Prelude' were similar to the early and mid season cultivars 'Canby', 'Killarney', and 'Sentry' (Tables 2 and 3).

When managed and harvested as a primocane bearing (fall) cultivar, 'Prelude' performed similarly to other primocane bearing cultivars (Table 4) with slightly larger fruit than

Fig. 1. Pedigree of 'Prelude' raspberry.

Table 1. Mean 50%, first, and last harvest dates for three early season floricanes-fruiting raspberry cultivars in Geneva, N.Y., from 1995–97.

	Mean 50% Harvest date	Mean harvest season dates	
		First	Last
Prelude	July 10	June 29	July 26
Canby	July 16	July 10	July 30
Killarney	July 20	July 10	August 6

Table 2. Mean fruit weight for three summer seasons for four early season floricanes fruiting raspberry cultivars in Geneva, N.Y. All unblemished fruit was counted for mean weight calculation at each harvest date during each season.

Cultivar	Mean fruit wt (g)			
	1995	1996	1997	Mean ²
Prelude	2.02	2.28	2.43	2.24
Canby	2.20	2.15	1.98	2.11
Killarney	2.14	2.43	1.96	2.18
Sentry	2.18	2.13	1.93	2.08

²Mean fruit weight not significantly different at $P < 0.05$.

Table 3. Yield for four early season floricanes fruiting raspberry cultivars in Geneva, N.Y., over three summer seasons. Yields were extrapolated from 5-m plots in a completely randomized design with five replicates with 3-m row centers (1 ha = 3300 m of row at this spacing) and 1-m initial within-row plant spacing.

Cultivar	Total yield (kg·ha ⁻¹)			
	1995	1996	1997	Mean ²
Prelude	7,812	7,995	7,728	7,845
Canby	8,152	11,342	3,435	7,643
Killarney	7,267	7,814	8,244	7,775
Sentry	4,675	7,796	2,369	4,947

²Mean yield not significantly different in yield at $P < 0.05$.

'Heritage' (Table 5). When double cropped, using a summer management system with cane thinning, the yield was increased by an average of 22% over floricanes fruiting alone (Tables 3 and 4).

'Prelude' fruit is round with a slight conical shape, coherent, and uniform. It has a firm texture and a mild, pleasant flavor. Total soluble solids (sugars) for 'Prelude' were higher than in the cultivars 'Killarney' and 'Titan' and lower than in 'Canby' and 'Taylor' (Table 6). Titratable acidity of the juice was higher than 'Canby' and lower than 'Killarney', 'Taylor', and 'Titan' (Table 6). Juice pH for 'Prelude' was equal to 'Canby' and higher than 'Killarney', 'Taylor', and 'Titan' (Table 6). 'Prelude' canes are highly branched with fruit openly positioned making harvest more efficient. The high quality fruit handles well and is suitable for wholesale shipping and direct retail sales.

'Prelude' suckers freely with an average of 34 canes/m² in a mature planting, which is adequate for floricanes or primocane production (Pritts and Handley, 1989). Canes are vigorous and sturdy and generally do not need trellis support. The floricanes average just over 1 m in height, similar to other early summer bearing cultivars. Spines are sparse but noticeable. Winter hardiness has been good with no documented damage at Geneva, which is in USDA Zone 5.

The leaves on 'Prelude' are primarily trifoliate with no petiolules on the lateral leaflets. The cross section of the leaf is generally concave and two straight stipules are present at the petiole base. The leaflets have a rounded base with doubly serrate margins.

Area of Adaptation and Uses

Grower and researcher comments indicate that 'Prelude' performs well throughout the northeastern and central U.S., Oregon, Washington, northern California, and southeastern Canada. It is recommended for all raspberry

CULTIVAR AND GERMPLASM RELEASES

Table 4. Yield for five primocane fruiting raspberry cultivars in Geneva, N.Y., over three seasons. Yields were extrapolated from 5-m plots in a completely randomized design with five replications with 3-m row centers (1 ha = 3300 m of row at this spacing) and 1-m initial within-row plant spacing.

Cultivar	Total yield (kg·ha ⁻¹)			
	1995	1996	1997	Mean ^z
Prelude (1x) ^y	3,940	2,035	4,044	3,340 cd
Prelude (2x) ^x	---	1,353	1,382	1,368
Prelude Combined ^w	---	6,805	12,429	9,617
Anne ^y	2,584	2,025	3,400	2,670 d
Autumn Bliss ^y	3,443	7,948	9,198	6,863 a
Heritage ^y	5,326	4,797	3,951	4,691 b
Ruby ^y	4,425	4,433	4,304	4,387 bc

^zAn ANOVA showed a significant difference in yield at $P < 0.05$. Numbers followed by the same letter are not significantly different at $P < 0.05$ according to Duncan's multiple range test. The everbearing yield data was from a different trial and was not included in the analysis.

^yManaged as a primocane fruiting cultivar.

^xPrimocane yield in a double cropping system

^wTotal yield in a double cropping system.

Table 5. Mean fruit weight for five primocane fruiting raspberry cultivars in Geneva, N.Y., over three fall seasons. All unblemished fruit was counted for mean calculation at each harvest date during each season.

Cultivar	Mean fruit wt (g)			
	1995	1996	1997	Mean
Prelude	1.62	1.77	1.77	1.75 bc
Anne	1.49	2.40	2.23	2.10 ab
Autumn Bliss	1.70	2.64	2.20	2.17 a
Heritage	1.70	1.40	1.54	1.52 c
Ruby	1.63	2.10	2.20	1.98 ab

^zAn ANOVA showed a significant difference mean fruit weight at $P < 0.05$. Numbers followed by the same letter are not significantly different at $P < 0.05$ according to Duncan's multiple range test.

Table 6. Juice soluble solids (TSS), titratable acidity (TA), and pH of the juice of five floricane fruiting raspberry cultivars from 1995–97 in Geneva, N.Y. Five samples of ten fruit were analyzed during the harvest season for each cultivar.

Cultivar	TSS (%)			TA (% citric acid)			pH		
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Prelude	10.6	9.0	11.6	1.54	1.49	1.59	3.28	3.25	3.30
Canby	11.5	10.1	13.8	1.38	1.09	1.75	3.28	3.10	3.40
Killarney	9.4	9.0	12.2	2.12	1.92	2.43	3.12	3.00	3.20
Taylor	11.0	10.0	14.4	2.08	1.91	2.36	3.10	3.00	3.30
Titan	9.0	7.8	10.6	1.92	1.69	2.40	3.20	3.15	3.30

growing regions that have a similar climate to central New York and is widely adapted to various soil types and climactic conditions and has shown no susceptibility to any raspberry disease or insect pests in Geneva.

cornell.edu/nursery/). Nonexclusive licensing arrangements can be made through the Cornell Research Foundation, Inc., 20 Thornwood Drive, Suite 105, Ithaca, New York 14850.

Literature Cited

- Availability**
- 'Prelude' has been licensed to commercial nurseries in North America. These are listed on the Cornell Fruit Web page(<http://www.hort.cornell.edu/nursery/>).
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