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'Prelude' Red Raspberry

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'Prelude' is a new red raspberry developed by Cornell University at the New York State Agricultural Experiment Station in Geneva, New York. 'Prelude' is noted for having a very early summer crop, peaking in production well before all other standard varieties. 'Prelude' matures a high percentage of its fruit in late June and very early July. 'Prelude' plants are hardy and vigorous. Average fruit size and yield are similar to other early varieties. 'Prelude' fruit are attractive and easy to harvest. Fruit are high quality and firm, making them suitable for shipping and retail marketing. Early fruiting gives growers the advantages of premium first fruit prices and having fruit for sale over a longer season. 'Prelude', along with the release of 'Encore' (which extends the growing season approximately one week later), will significantly increase the raspberry harvest season.



ORIGIN

'Prelude' originated from a cross of NY817 [Hilton x NY600 (Durham x September)] x 'Hilton'. The original cross was made in 1971 and 'Prelude' was the only selection made from the 141 progeny of the seedling population. 'Prelude' was tested at six sites over many years in Geneva. 'Prelude' was previously known and tested as NY 1009.

DESCRIPTION

'Prelude' is the earliest maturing summer red raspberry cultivar available for production in the East Coast and Great Lakes regions. 'Prelude' canes have sparse but noticeable spines. 'Prelude' is winter hardy in zone 5 and plants are vigorous and sucker freely. Canes are average height compared to other early cultivars. Fruit are positioned openly with good placement and are very easy to harvest. 'Prelude' fruit are round-conic in shape and are coherent and uniform. 'Prelude' also bears fruit on primocanes in the fall. Plant vigor and fruit production has not declined when summer cropping annually, fruit production for years 6 to 8 have been both consistent and substantial (Table 2).

PERFORMANCE

The average date of first harvest for 'Prelude' in Geneva from 1993-1997 was July 1, ranging from June 26 to July 5. From 1994-1997, 'Prelude' on average matured 50% of its fruit by July 10, compared with 13% for 'Killarney' and 14% for 'Canby'. 'Killarney' and 'Canby' are standard early red raspberry cultivars for this region. 'Prelude' average fruit size from 1994-1997 was equal to 'Canby' and 'Killarney' at both the Darrow and Robbins trial locations (Table 1 and Table 2). 'Prelude' total summer fruit yield at the Robbins research farm from 1994-1997 was equal to Canby and Killarney (Table 2). 'Prelude' total summer fruit yield at the Darrow research farm was less than 'Killarney' and 'Canby' but similar to the average yield of other cultivars in the trial. 'Prelude' fruit have a mild and pleasant flavor. 'Prelude' juice soluble solids (sugars) is above average and total acidity is below average (Table 3). When double cropped (harvesting both the summer and fall crop in the same year), the combined yields were above average (Table 1 and Table 4), reflecting higher total yield potential. The main advantage of 'Prelude' is the high percentage of its fruit maturing in early season (Figure 1), which is unique

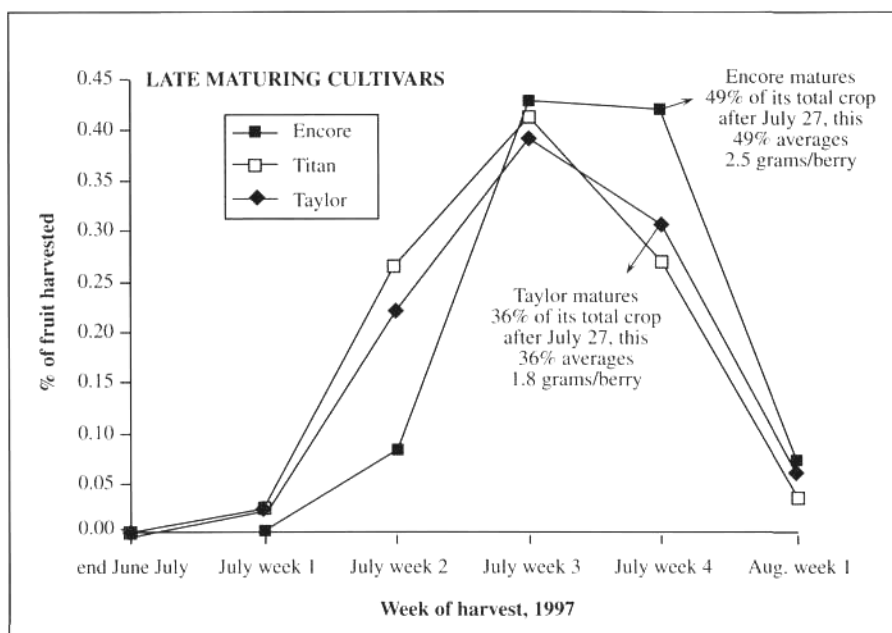
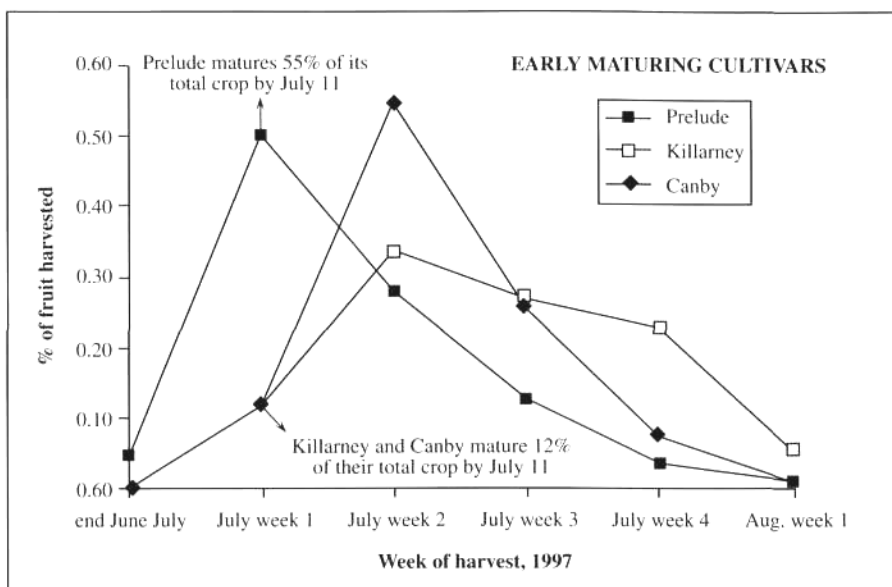
and creates an extended early harvest. It is advantageous to have this concentrated early production, as early fruit receives a premium price in the marketplace, and growers have the marketing advantage of a longer sales season.

'Prelude' performs very well when grown under an annual production system, harvesting the fall crop only. In comparison to Heritage, 'Prelude' produces slightly larger average fruit size and slightly lower fruit yields (Table 4). The maturity of 'Prelude' is generally the same as Heritage. Fall fruit of 'Prelude' are attractive, coherent, are medium size and have good quality. Canes are sturdy and fruit are openly displayed.

CULTURE

Raspberry canes which emerge from the soil surface and grow one season are called "primocanes". Varieties which are fall-bearing produce fruit on the tips of primocanes in the fall. One major advantage of fall-bearing varieties is that they can be mechanically pruned by mowing during the dormant season. Canes which over-winter, break bud in the spring, and produce fruit in the summer on lateral branches are called "floricanes". All fall-bearers have the potential to have a summer crop, but generally the summer crop for fall-bearers is too low-yielding and small fruited to justify harvesting. 'Prelude' is unique in its ability to produce a competitive summer crop, in terms of fruit quality and yield, and also produce a fall crop. Alternate year mowing may be a useful cultural practice for 'Prelude', reducing the amount of hand-pruning, while still harvesting three crops (fall, summer, *figure 1.* and fall), every two years. We have been able to maintain high summer yields in mature plantings of 'Prelude' (see Table 2 for fruit yields in years 6 to 8).

'Prelude' canes are vigorous and sucker freely, making dormant pruning desirable for maintaining proper cane densities for fruit production. When dormant pruning, it is important to cut back the tip of canes to just below the last node which produced flowers the previous fall ('Prelude' primocanes are fall-bearing). 'Prelude' does not require trellis support; canes are sturdy and are able to display ripe fruit without sprawling. It is beneficial to remove fruiting canes in the summer after harvest if you plan to harvest fruit again from the primocanes in the fall. When double-cropping 'Prelude', it is essential to maintain a fertilizer program for both the summer and fall crops.



'Prelude' has not been noted to be particularly resistant or susceptible to any raspberry pests in the Northeast.

The ability of 'Prelude' to produce commercial crops in either season gives growers a variety of options. The grower can now mow off canes in the dormant season and just harvest the fall crop—as is usual for a fall-bearer. Alternatively, the grower can prune normally, and maximize yields by harvesting both the summer and fall crops. Lastly, growers can use cultural practices aimed at maximizing the summer crop. Given the premium associated with early summer fruit combined with 'Prelude's' uniquely early season, we expect most growers will choose this option. We expect 'Prelude's' primary niche will be as the standard "first-to-fruit" cultivar.

Table 1. 1996-97 Floricane Yield from the Darrow Farm

cultivar	Total fruit yield lbs./acre			Average fruit size in grams		
	1996	1997	average	1996	1997	average
Killarney ^z	14,927	11,741	13,334	2.55	2.10	2.33
Canby	9,832	9,276	9,554	2.10	1.75	1.93
Preludey	4,868	9,864	7,366	2.40	2.00	2.20
Average of 11 other cultivars ^x	7,647	7,645	7,646	2.83	2.29	2.56

This third test trial was established in 1994 using a randomized complete block design. There are five replicates per cultivar. Above data are means of five replicates. The Darrow A Farm is located on Gates Rd., Geneva, New York.

^z 'Killarney' produced astounding total yields in this trial, which is associated with its fruit ripening through the entire season (figure 1). The average fruit size of 'Killarney' is acceptable in early season, but is substantially smaller when compared to other mid and late season varieties.

^x Does not include the fall crop yield totals (Table 4).

^y Yield and fruit size data, the average of 11 other cultivars in the trial.

Table 2. 1994-97 Floricane Yield - Robbins Farm

Cultivar	Average Fruit Size in Grams					Total Yield lbs./acre				
	1994	1995	1996	1997	94-97 Average	1994	1995	1996	1997	94-97 Average
Encore	3.10(2)	2.78(4)	2.96(3)	2.80(3)	2.91	6,450(2)	7,891(4)	8,256(3)	6,627(3)	7,306
Prelude ²	-	2.02	2.28	2.43	2.24	-	6,975	7,138	6,900	7,004
Killarney	-	2.14	2.43	1.96	2.18	-	6,488	6,977	7,361	6,942
Canby	-	2.20(2)	2.15	1.98	2.11	-	7,279(2)	10,127	3,067	6,824
Sentry	2.31	2.18	2.13	1.93	2.14	3,670	4,174	6,961	2,115	4,230

This second test trial was planted in 1990 at our Robbins research farm, Sutton Rd., Geneva, New York. Data listed in this table are from individual plots unless noted by (-), indicating the number of replicates analyzed that year.

¹ Does not include fall-season yields.

Table 3. 1995-1997 Juice soluble solids, total acidity, and pH

Cultivar	Soluble Solids (°Brix)			% Total acidity			pH		
	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.	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
All others	10.1 ²	7.2	14.4	1.94 ^y	1.49	2.43	3.19 ^y	2.85	3.70

Average soluble solids, total acidity, and pH values are from the average of 3 years (1995-1997). Minimum and maximum scores are from 1995-1997, and are not averages.

² Mean of 25 other cultivars tested from 1995-1997. ^y

Mean of 13 other cultivars tested from 1995-1997.

Table 4. 1995-97 Primocane Yield, Darrow Farm

Cultivar	Total yield lbs./acre				Average fruit size in grams			
	1995	1996	1997	Average	1995	1996	1997	Average
Autumn Bliss	2,784	5,914	8,212	5,637	1.6	2.6	2.2	2.2
Ruby	4,366	3,299	3,843	3,825	1.9	2.1	2.2	2.1
Heritage	4,013	3,569	3,528	3,703	1.5	1.4	1.5	1.5
Amity	2,369	2,374	4,720	3,154	1.6	1.9	1.7	1.7
Prelude ²	3,952	1,514	3,611	3,026	1.7	1.8	1.8	1.8
Preludey	-	1,208	1,234	1,221	-	1.7	1.9	1.8

This third test trial was established in 1994 using a randomized complete block design. There are live replicates per cultivar. Above data are means of five replicates. The Darrow Farm is located on Gates Rd., Geneva, New York.

² NY1009 primocane fruit yield only, plants grown in an annual fall cropping system.

³ NY1009 primocane fruit yield from plots where floricanes were harvested the same season, plants were double cropped. These plots were grown in an adjacent trial where typical cultural practices for summer fruit production were utilized.

AVAILABILITY

A limited supply of plants will be available from nurseries in 1998. Larger commercial quantities will be available in 1999 and beyond. Cornell University has applied for a plant patent on 'Prelude'. Non-exclusive licensing arrangements with nurseries can be made through the Cornell Research Foundation, Inc., 20 Thornwood Drive, Suite 105, Ithaca, New York 14850. The New York State Fruit Testing Association Nursery is no longer in service.

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