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'Encore' Red Raspberry

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'Encore' is a new red raspberry developed by Cornell University at the New York State Agricultural Experiment Station in Geneva, New York. 'Encore' is outstanding for its consistent performance over many years of testing. 'Encore' is a late season red raspberry cultivar developed for growers interested in increasing their late season production. Specifically, it has excellent winter hardiness in zone 5, very good plant production and vigor, and commercial yields of large size fruit that peak in production late in the harvest season. 'Encore' is adapted to u-pick, retail, and wholesale markets. Its firm fruit withstand handling and packing to produce an attractive pack for resale. 'Encore' has potential to become a leading red raspberry cultivar in the East Coast and Great Lakes regions.

Extending the length of the harvest season for raspberries has been one of many goals in our raspberry breeding program. Summer red raspberry harvest generally peaks in mid-July creating a considerable gap prior to harvest of primocane fruiting raspberries in mid-August. 'Encore' is a unique red raspberry which matures a high percentage of fruit from late July to early August, extending the summer harvest season and decreasing the gap between the summer and fall harvest seasons. This cultivar release, combined with the new release 'Prelude' (which is roughly one week earlier than any other cultivar), significantly increases the red raspberry harvest season (See Figure 1).

ORIGIN

NY7 originated from the cross 'Canby' x 'Cherokee'. 'Canby' was selected from a cross of 'Viking' x 'Lloyd George' and was introduced in 1953 by the Oregon Agricultural Experiment Station. 'Cherokee' ['Hilton' x ('Taylor' x 'St. Regis')] was introduced in 1973 by Virginia Polytechnic Institute, Blacksburg, Virginia. The original cross was made in 1976 by the small fruit breeding program in Geneva, New York. 'Encore' was selected in 1980 from a seedling population of 206 progeny from this family. 'Encore' has undergone field test-



ing at five sites in Geneva since 1977. 'Encore' was previously known and tested as NY7.

DESCRIPTION

Canes of 'Encore' are nearly spineless, similar to its 'Canby' parent. Root suckering of 'Encore' is above average and plant vigor is average, when compared to other standard cultivars. Under heavy crop loads, 'Encore' produces adequate numbers of suckers to maintain high annual yields yet without need for heavy cane thinning during the dormant season. Canes are sturdy and do not require trellising, although canes are very productive and have long fruiting laterals which benefit from trellis support to improve harvest efficiency. 'Encore' has dark green foliage when mature and healthy. Actively growing terminals on primocanes have a characteristic light green color. Fruit are attractive, large in size with firm texture, and have a good balanced flavor. Fruit harvest very easily, are dry to the touch, handle easily, and are well suited for wholesale packaging and distribution. 'Encore' fruit mature in late season, with a very high percentage of large fruit harvested from late July to early August, making 'Encore' the latest cultivar adapted for this region (Figure 1). 'Encore' has not been noted to be par-

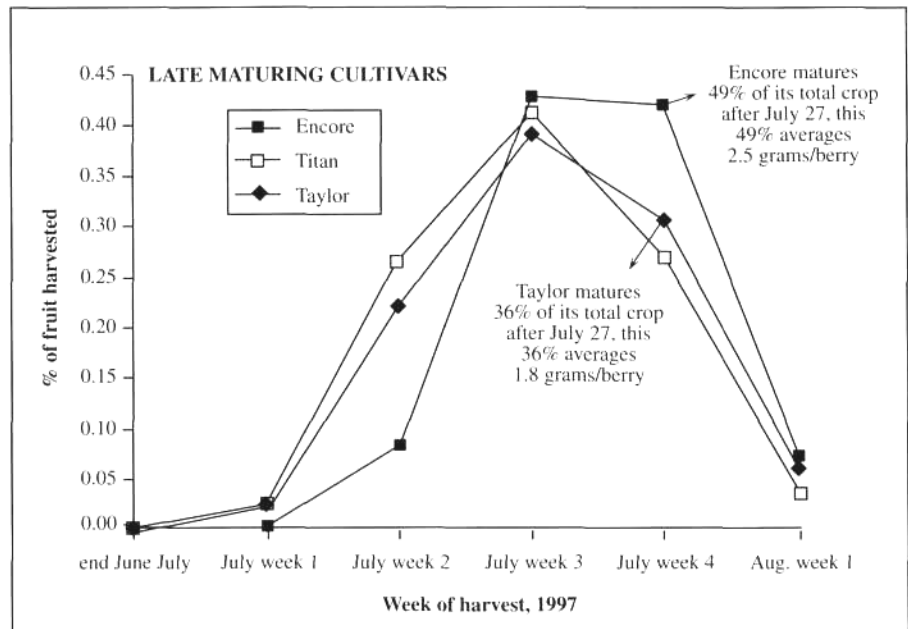
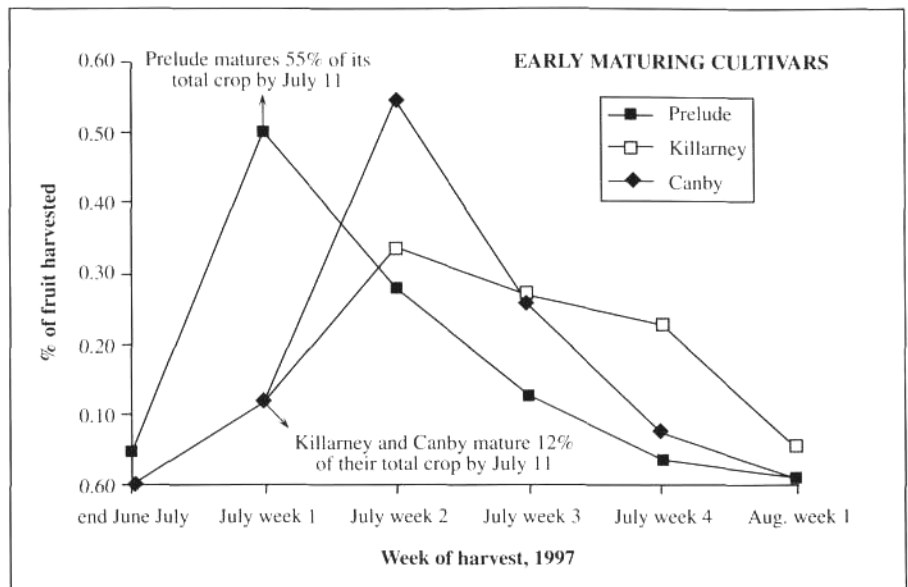
ticularly resistant or susceptible to any raspberry pests in the Northeast.

PERFORMANCE

'Encore' has been evaluated at five sites in Geneva since 1977. This new cultivar has consistently expressed good winter hardiness, optimum vigor, and superior fruit size and fruit yields on an annual basis. 'Encore' has very large fruit size averaging 2.9 grams per berry over the entire season from 1994-1997 at our Robbins farm site (Table 2) and 2.9 grams per berry at our Darrow farm site from 1996-1997 (Table 1). The average size of 'Encore' is much greater than 'Canby', 'Killarney', and 'Taylor', and only slightly less than 'Titan' ('Titan' has the largest fruit size potential of all cultivars adapted for this region). 'Encore' is outstanding for its ability to maintain large fruit size over the entire harvest season.

Replicated yield trials were conducted in 1996-1997 at the Darrow research farm and at the Robbins research farm from 1994-1997. It is useful to contrast 'Encore' to 'Taylor' (the traditional late cultivar), and 'Titan' (the leading large-fruited cultivar, which is also late). The average total fruit yield of 'Encore' at the Darrow farm trial in 1996-97 was greater than 'Taylor', but less than 'Titan', and was greater than the combined average yield of 11 other advanced selections and cultivars in this trial (Table 1). The average total fruit yield of 'Encore' at the Robbins Farm from 1994-1997 was

slightly higher when compared with Figure 1. 'Killarney' and 'Canby' (Table 2). The average harvest period over 4 years at the Robbins research farm was July 13 to August 6. During these years 'Encore' on average matured 46% of its crop after July 23. The average fruit size of 'Encore' after July 23 was 2.9 grams per berry. At the Robbins Farm in 1997, 'Taylor' had similar maturity compared with 'Encore' but had 53% lower yields and the average berry size was 88% smaller. The average harvest season for 'Encore' at the Darrow research farm was from July 11 to August 7, over 2 years. During this time, 'Encore' matured 52% of its crop after July 23 and the average fruit size after July 23 was 2.9 grams per berry. At the Darrow Farm, 'Taylor' matured 47% of its crop after July 23, the average fruit size after July 23 was only 1.9 grams per berry, and the total fruit yield was 12% less than 'Encore'. It is evident from these trials that 'Encore' is more productive, is larger fruited, and is later



maturing than 'Taylor'. 'Titan' is popular for its large fruit size and high productivity, despite being highly susceptible to *Phytophthora* root rot. 'Encore' is distinctly later maturing, has similar fruit size, is only slightly less productive, and is less susceptible to *Phytophthora*, compared with 'Titan'. 'Encore' fruit are more attractive and better flavored than 'Titan'. Overall, 'Encore' has been adapted to a wide range of sites and its performance has been outstanding.

'Encore' has soluble solids levels (sugars) higher than 'Titan', 'Killarney' and 'Latham', and lower than 'Taylor' and 'Canby'. Total acidity of 'Encore' is higher than 'Titan' and 'Canby', but lower than 'Killarney' and 'Taylor' (Table 3). 'Encore' has a pleasant, mild, and well-balanced flavor.

CULTURE

Purchasing virus free planting stock is essential for optimum production and longevity of any raspberry planting. Site selection is equally important to maximize productivity and

longevity of the planting. Coarse, well drained soils not previously planted with Rubus are best. Sites with properly managed crop rotations and weed control practices prior to planting provide better conditions for plant establishment. Heavy/fine textured soils with poor drainage are not recommended

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
Titan Encore	13,447	7,971	10,709	3.11	2.78	2.95
Taylor	6,541	10,097	8,319	3.03	2.80	2.92
Average of 11 other cultivars ^c	6,234	8,658	7,446	2.07	1.96	2.02
	7,957	8,023	7,990	2.72	2.13	2.43

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 Farm is located on Gates Rd., Geneva, New York.

^c 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)	2.78W)	2.960)	2.80(3)	2.91	6,450*2)	7,891(< ⁴)	8,256(3)	6,627(3)	7,306
Prelude	-	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.

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.
Encore	9.9	9.0	13.4	2.05	1.55	2.30	3.13	2.95	3.35
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	3.23	3.15	3.30
All others	10.1 ^z	7.2	14.0	1.86 _y	1.09	2.43	3.19 _J	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.

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

Mean of 13 other cultivars tested from 1995-1997

for raspberry production. 'Encore' is vigorous and productive on an annual basis as long as weed control and plant nutrition are adequate for optimum plant health. 'Encore' is intermediate in its susceptibility to Phytophthora root rot (*P. fragariae* var. *rubi*). 'Encore' is more resistant to *Phytophthora* than 'Titan', but less resistant than 'Latham'. Proper site selection and use of clean planting stock will help to prevent introduction of the disease. Amending the soil with Calcium sulfate prior to planting and/or utilizing raised bed culture can help to minimize the buildup of disease.

AVAILABILITY

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

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LITERATURE CITED

- Maloney, K.E., M.P. Pritts, W. F. Wilcox, and M.E. Sorrells. 1997. Preplant Soil Amendments Influence the Incidence of Phytophthora Root Rot in 'Heritage' Red Raspberry. *Hort Science* 32(3):468.
- Maloney, K.E., W.F. Wilcox, and J.C. Sanford. 1993. Raised Beds and Metalaxyl for Controlling Root Rot of Raspberry. *HortScience* 28(11): 1106-1108.
- Sanford, J.C, D.K. Ourecky, and J.E. Reich. 1985. 'Titan' Red Raspberry. *HortScience* 20(6): 1133-1134.

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