The Current Status of Red Raspberry Cultivars in the United States and Canada

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The red raspberry is a unique fruit, with a distinctive flavor and dessert quality that has enabled it to maintain its position in the marketplace. Red raspberries can be found in nearly every State in the United States and Province in Canada. Although the total acreage over the past half century has declined, for example 12,000 acres in New York in 1900 to less than 2,000 in 1970 (8), the red raspberry has a brighter future. This future will be greatly determined by the new cultivars now being evaluated and by new cultivars yet to be released. Marketing by U-pick or local fresh sales has expanded greatly throughout the nation in the past 10 years and has resulted in expanded acreage. The mechanized harvest of the commercial red raspberry industry in the Pacific Northwest has stimulated interest in new cultivars and new plantings.

The wide geographic distribution of the red raspberry has led to the origination of a number of available cultivars for planting in these areas. The primary regions of production can be generally defined as follows (Fig. 1): 1) the Northeastern Region, which includes the Atlantic Provinces, the southern part of Quebec and south through Pennsylvania; 2) the Central Atlantic Region, Maryland to South Carolina, eastern Kentucky and Tennessee, north Georgia and Alabama; 3) the Central Great Lakes Region, including Michigan, southern Ontario, Indiana, Illinois, Ohio and probably extending to parts of Iowa, Missouri, western Kentucky and Tennessee; 4) the Prairie States Region, including Minnesota, southern Manitoba, eastern North and South Dakota and parts of Wisconsin; and 5) the Pacific Northwest Region, including southern British Columbia, western Washington and western Oregon. There are an estimated 200 acres in the Central Coast of California producing red raspberries as well as small areas in Colorado, Utah, Wyoming, Idaho and eastern Washington and Oregon.

No accurate estimate of the total acreage and production can be made because the plantings are small and widespread in these regions. The 1970 census (1) had 2,000 farms reporting a total of 6,900 acres and nearly an 8 million dollar crop for the United States. The 5 leading states in production in 1970 were Washington, Oregon, Minnesota, Michigan and New York. This has not changed except that Minnesota now has about 600 acres, nearly 2 times that reported in 1970. The value has changed considerably, as Washington and Oregon's combined 5,100 acres were worth 15 million dollars in 1978, and the price increase was reflected throughout the red raspberry industry.

Table 1 lists the cultivars, season, originator, place and date of origin that are mentioned in the text. They are listed alphabetically and no attempt was made to determine the most important because that is primarily determined by region and to a lesser extent by grower preference. Although introduction of a new raspberry cultivar has usually been preceded by long testing, 10 years or more, it takes a few years after this to find the re-

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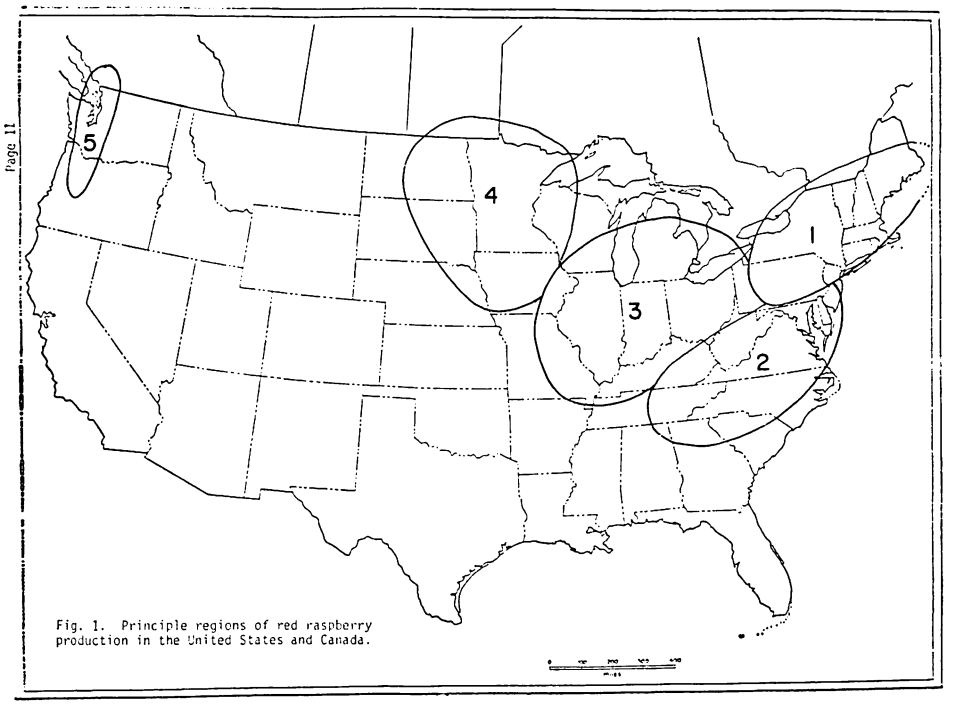

Fig. 1. Principle regions of red raspberry production in the United States and Canada.

gion of best adaptability and to complete an industry evaluation. The long life of a raspberry planting means new plantings are made infrequently. Therefore, many of the older cultivars now grown are still well known and have not been readily replaced by new ones. A brief but good review of the history of raspberry improvement and of modern breeding objectives has been presented by Ourecky (9).

Region 1, the Northeast, has been served by breeding programs for a number of years, especially that of the New York Agricultural Experiment Station (8). However, cultivars from programs in New Hampshire; Maryland; Virginia; Manitoba; Minnesota; and Nova Scotia have also contributed. The Northeast is an older raspberry-growing region and many cultivars have been in production there throughout the past century. At present the primary summer cropping ones are: Boyne, Carnival, Festival (5), Hilton, Latham, Matsqui, Newburgh, Taylor and Trent, not necessarily in that order. A few Canby, Pocahontas (7), Sentry and even Williamette are planted. Winter hardiness, virus tolerance, and better fruit quality are characters most in demand. Boyne has at least the first two of these.

Primocane fruiting (fall cropping) types have been widely planted, especially Heritage, a recent (1969) introduction from New York (2). Other primocane fruiting cultivars that have been planted are September, also from New York, Augustred and Fallred from New Hampshire and Scepter from Maryland. Heritage grows quite well and has good fruit quality, but ripens late, especially in the New England States and Atlantic Provinces. Scepter also grows well and has been

used in breeding (8), but is late ripening and the fruit does not have the quality of Heritage. Augustred is the earliest ripening for the region, but the fruit is soft and it is not as productive as Heritage.

The Northeastern Region has a great potential for marketing red raspberries because the large population centers are close, and the region does not produce nearly what it consumes. Production could be increased 4 to 5 times and still be less than demand, indicating there is a definite need for new cultivars adapted to local fresh-market use and shipping to nearby cities.

Region 2, the Central Atlantic, has the same market potential for increased red raspberry production that the Northeast possesses, created by high population centers and unfilled demand, and the acreage could easily be doubled. This region has always had a combination of northern and southern problems: fluctuation of winter temperatures, virus and foliage diseases, and occasionally extremely low temperatures. Breeding programs at Virginia, Maryland, and North Carolina originated cultivars more resistant to diseases and to fluctuating winter temperatures. Southland is one example, but at present it is in limited production.

Summer cropping cultivars such as Latham, Newburgh, Sentinel, Sentry, Citadel (2) and Pocahontas are planted in Maryland and Virginia. Small plantings of Southland are found in North and South Carolina and a few Dormanred (10) have been planted in the southern area of the region.

The main, primocane fruiting cultivar planted in the Atlantic region is Heritage. It ripens earlier than September, Scepter, Cherokee (red raspberry) (7) or Southland, which produces a fall crop in this area. Primocane fruiting types would be well suited to this region because the primocanes that have fruited may be destroyed during the winter after harvest and thus avoid the problem of fluctuating winter temperature injury that occurs with biennial canes. The cropping season for primocane fruiting could be quite long, giving a very high potential fall production.

Region 3, the Central Great Lakes, may have the most diverse climate of all regions described. All cultivars from the other regions have been grown in this area and found to have certain shortcomings for winter hardiness or disease resistance. Latham is still widely planted from Kentucky to Michigan and west in Iowa and Missouri. Other cultivars grown are Canby, Hilton, and Newburgh in the north and Southland in the southern areas. Canby, from the Pacific Northwest, has been winter hardy in this region, probably due to its Viking parentage, but is quite susceptible to dying out in poorly drained soils. Liberty, a new cultivar from Iowa (3), has yet to be tested widely in the region.

Heritage is the most widely planted primocane fruiting type and has replaced September, Fallred and Scepter. The plantings of this region are small and are mainly for U-pick and local markets, although several large centers of population could provide quite an increase in market possibilities. There is a limited amount of red raspberries shipped fresh to this region and the acreage could be expanded at least 2 to 3 times.

Region 4, the Prairie States. also has been in raspberry production for many years, and the breeding programs at the University of Minnesota and Morden, Manitoba have provided the industry with the winter-hardy cultivars needed, not only for their region but for others as well. The introduction of Boyne in 1960 (2) has contributed to the doubled acreage in Minnesota. It has largely replaced Latham, which had long been the standard. Some

Table 1. Thirty-six red raspberry cultivars that have been grown or now grow in production in the United States and Canada with season, year of introduction, originator, and place or origin.

Cultivar	Season[1] S; PF	Year Introduced	Originator	Place of Origin
Augustred	PF	1973	Yeager	New Hampshire
Boyne	S	1960	Ure	Manitoba
Canby	S	1953	Waldo	Oregon
Carnival	S	1955	Hunter	Ontario
Chief	S	1930	Alderman	Minnesota
Cherokee	PF	1973	Oberle	Virginia
Chilcotin	S	1977	Daubeny	British Columbia
Citadel	S	1966	Haut	Maryland
Dormanred	S	1972	Overcash	Mississippi
Fairview	S	1961	Waldo	Oregon
Fallred	PF	1964	Yeager	New Hampshire
Festival	S	1971	Fejer	Ontario
Haida	S	1973	Daubeny	British Columbia
Heritage	PF	1969	Slate	New York
Hilton	S	1965	Slate	New York
Latham	S	1920	Alderman	Minnesota
Liberty	S	1976	Denisen	Iowa
Matsqui	S	1969	Daubeny	British Columbia
Meeker	S	1967	Schwartze	Washington
Newburgh	S	1929	Wellington	New York
Nootka	S	1977	Daubeny	British Columbia
Pathfinder	PF	1976	Howard	Wyoming
Pocahontas	S	1973	Oberle	Virginia
Puyallup	S	1953	Schwartze	Washington
Scepter	PF	1966	Haut	Maryland
Sentinel	S	1966	Haut	Maryland
September	PF	1947	Slate	New York
Skeena	S	1977	Daubeny	British Columbia
Southland	S	1968	Williams	North Carolina
Sumner	S	1956	Schwartze	Washington
Taylor	S	1935	Wellington	New York
Trailblazer	PF	1976	Howard	Wyoming
Trent	S	1943	Hunter	Ontario
Van Fleet	S	1924	Van Fleet	California
Willamette	S	1943	Waldo	Oregon

[1]S = Summer; PF = Primocane Fruiting

Newburgh and Chief plantings can still be found, as well as some Canby. Because the plantings in this region are small and mainly for U-pick and local fresh-market, primocane fruiting types are of interest. Heritage has become the most widely planted cultivar of this type. The red raspberry has a good depth of cold hardiness in its germplasm and there is no reason why the acreage in this area should not double in the next 10 years.

Region 5, the Pacific Northwest, is still the region of greatest production, most of which goes into the processing market. There are about 6,500

acres in this region producing a crop that had a market value of more than 20 million dollars in 1978. It is a region where a few cultivars predominate, Willamette and Meeker being the leaders. Willamette, introduced in 1943, has some unique advantages. The cultivar is resistant to raspberry mosaic virus and has fruit suitable to the processing market (4). Meeker, introduced in 1967, has been widely planted and found to be a very good cultivar not only for processing but for fresh market as well. Other cultivars of limited acreage are Canby, Fairview, Puyallup and Sumner. New cultivars must be suitable for machine harvest because more than 50% of the growers now harvest red raspberries by machine for the processing market. At present over 200 machines in the Northwest harvest red raspberries, as well as other caneberries. New cultivars from the Agriculture Canada breeding program in British Columbia such as Haida, Chilcotin, Skeena, and Nootka (4) are being planted in the region and are being evaluated by the industry. The demand for processed red raspberries has stimulated additional plantings and the acreage should continue to expand by at least 20%.

Interest in local fresh market and U-pick has been stimulated by good prices the past few years. Chilcotin was introduced as a dual-purpose type for both processing and fresh market; it is firm and brightly colored, making it especially suited for shipping to distant markets. Firm, bright red, long-season cultivars will continue to be in demand for these markets. Heritage is the leading primocane fruiting type grown, replacing September, which ripens quite late. Even Heritage does not usually ripen early enough for maximum cropping production before the fall rains begin. Augustred has been planted for trial, but there continues to be a need for a primocane fruiting cultivar that ripens a firmer fruit in July for the Pacific Northwest.

Other areas growing raspberries are the Central Coast of California and parts of the Rocky Mountains. About 200 acres are grown at or near Watsonville, California, primarily for local fresh market and distant shipping. Willamette, Fairview, Heritage and some private selections are the main cultivars in production. Certain areas of Colorado, Utah, Wyoming and Idaho produce red raspberries for local use, mainly Newburgh and Canby. Two releases from the Cheyenne, Wyoming USDA station, Trailblazer and Pathfinder (6), are mainly for gardens of the High Plains. These are early ripening, primocane fruiting types whose fruiting canes can be mowed after harvest and thus be grown where extremely cold winters kill canes of summer-cropping cultivars.

The southern portions of the United States have not had suitable red raspberry cultivars, because of a lack of cold temperatures to fill the chilling needs of nearly all cultivars, and foliage diseases. One of the first bred for these areas was Van Fleet, released in 1924; the latest was Dormanred, from Mississippi. Dormanred (10) has *Rubus parvifolius* in its parentage, and the fruit and vegetative growth habit exhibit some of the *R. parvifolius* characters, especially in the flavor of the berry, and a trailing rather than upright habit.

The future of the red raspberry is promising. Local fresh-market, U-pick, distant shipping, machine harvest and the yogurt industry, have all combined to stimulate and expand the industry. Harvest mechanization has enabled the Pacific Northwest to remain competitive with the other countries producing raspberries for processing. New cultivars are needed to maintain this position and to satisfy the needs of other markets. Twenty-

four of the 36 cultivars listed in Table 1 have been introduced since 1960 and show that the breeders are at work attempting to help the red raspberry industry meet its production needs. However, it is interesting to note hat the cultivar Latham is still widely planted after 59 years and is only slowly being replaced.

Cultivars, after introduction, take many years to find their regions of best adaptability. Perhaps some of those now being planted will gradually become standards for their regions. In addition, greater emphasis should be placed on primocane fruiting. The success of Heritage is evidence that we have not begun to exploit the potential of the primocane fruiting habit.

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Yield and Harvest Season of Three Red Raspberry Cvs. in the Fall-Fruit-Only System of Management[1]

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Abstract

Three fall-bearing red raspberry cvs. were evaluated during their third growing season for yield and time of ripening in plots at the University of Maryland near College Park, Maryland. Heritage yielded 9.7 MT/ha, Scepter yielded 1.4 MT/ha, and Southland yielded less than 0.2 MT/ha. Half-harvest occurred more than one month earlier for Heritage than for either of the other cultivars.

Fall bearing red raspberry cultivars have been available for many years, but low yield potentials have prevented the fall-crop itself from gaining enthusiasm among commercial growers. Costs of producing and harvesting the fall-crop may be greatly reduced by use of the fall-fruit-only system of management (1) and the pick-your-own method of harvest. These cost reductions are irrelevant unless available cultivars will produce and ripen adequate quantities of fruit dur-

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