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'Stevens' Cranberry

TERYL R. ROPER[1]

Cranberry (*Vaccinium macrocarpon* Ait.) is native to Northern areas of North America (Vander Kloet 1983). Cranberry cultivation began in Massachusetts in the 1700's as settlers began to manage native bogs to increase the productivity of the vines. As new production areas were established vines were selected from productive native stands and planted in new areas. 'Cultivars' as defined for cranberries were simply selections from the wild with various desirable traits. No systematic genetic improvement took place until the 20th century.

In 1929 the USDA, with the Massachusetts Cranberry Experiment Station and Rutgers University, established a cranberry breeding program. The primary aim of this program was the production of cranberry plants that were resistant to false blossom disease, which was particularly severe in eastern production areas. There was also interest in greater productivity, better fruit quality and improved storability (Eck 1990). The first crosses were made in 1934 and the seedlings were placed at Whitesbog, NJ. Through the 1930's and 40's thousands of seedlings were evaluated for fruit quality and attractiveness to the blunt nosed leafhopper that vectored false blossom disease. In 1940 a selection of 40 superior seedlings were made by breeders, growers and processors and these selections were placed in larger plots. The seedling that became 'Stevens' was designated number 33 (Chandler et. al. 1950).

'Stevens' was the result of a cross between 'McFarlin' (Massachusetts origin) and 'Potter' (Wisconsin origin) made by H. F. Bain. McFarlin was known to be less attractive to the blunt nosed leafhopper and Potter was known for vine vigor and productivity. 27 of these crosses were made. It was evaluated in the late 1940's and released in 1950 along with two other hybrids, Beckwith and Wilcox. 'Stevens' is named for Dr. Neil E. Stevens, plant pathologist with the USDA. He was co-author of a classic work *Fungous Diseases of the Cultivated Cranberry* (1931).

The combination of large fruit size, vigor and productivity made it attractive to the breeders and evaluators. 'Stevens' is an interesting combination of its parents. Potter has poor storability, but is productive and has an attractive fruit finish. McFarlin is less productive, but has good storability and is not attractive to blunt nosed leafhopper.

Cranberry growers did not embrace 'Stevens' immediately upon its introduction. Because the vines were vigorous and coarse they would catch in the tines of the rakes and raking machines being used to harvest the crop at the time. With the advent of water reel harvesting (Dale et al. 1994) the vigor and productivity of 'Stevens' could be exploited. Also, given the vegetative methods used to propagate cranberry it would take time to develop sufficient parent stock for large-scale plantings. (Roper and Planer 1993).

'Stevens' is currently preferred by growers because of its high productivity, large fruit size and good color. Berries will stay on the uprights and not shrivel while harvest is proceeding. 'Stevens' is less sensitive to overfertilization with nitrogen (Davenport 199_) so the level of management can be somewhat less stringent.

Cranberry acreage has expanded rapidly during the last 15 years, going from 22,900 acres in 1972 to 34,000 acres in 1996 (USDA data). Much of this increase is 'Stevens'. In a 1998 survey Roper found that 47.9% of cranberry

[1]Associate Professor, Dept. of Horticulture, University of Wisconsin-Madison, 1575 Linden Drive, Madison, WI 53706.

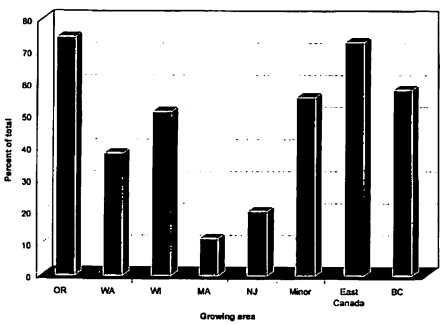

Figure 1. The percentage of cranberry acres planted to 'Stevens' in cranberry producing areas of North America.

acreage in North America was in 'Stevens'. The percentage ranges from 11.7% 'Stevens' in Massachusetts to 74.6% in Oregon (Fig. 1). This heavy reliance on 'Stevens' raises concerns about developing a cranberry monoculture.

Cranberry breeding beyond first generation crosses of selections from the wild continues at Rutgers University under the direction of Nick Vorsa and at the University of Wisconsin-Madison under the direction of Brent McCown. The New Jersey program is primarily breeding for field rot resistance along with productivity and fruit quality. The Wisconsin program is interested in color and regular bearing.

'Stevens' is really the first hybrid cranberry cultivar that has been widely planted by cranberry growers. Only three other hybrids, Crowley, Pilgrim and Bergman, have substantial planted acreage. The balance of North American cranberry plantings are simply selections from the wild. With such little breeding having been done with cranberries, much progress remains to be made. Current breeding programs have the potential to produce hybrids with far superior characteristics.

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Peach Tree Form and Density

Central leader and vase trained peaches at 740 and 370 trees/ha were compared. TCA was greatest for low-density and least for high density trees after 9 years. Annual yield/ha was 15 to 40% greater for high density with tree form having little influence on yield. Average fruit weight tended to be greater for low density but cumulative marketable yield was greatest for high density and lowest when every other tree was removed from the high density at 6 years of age. Income minus costs for 9 years was $4200/ha higher and net present value (NPV) was about $2200/ha higher for open vase than for central leader trees. Cumulative NPV was $2660/ha higher for high density. From Marini and Sowers. 2000. Hort. Science 35(5):837-842.