

5. Selection of a series of 'Montmorency' cherry strains, one of which, partly because of its red juice, is very promising for processing.

6. Selection of a 'Myrobalan' plum seedling rootstock which is very compatible with 'Stanley' prune, and

which will soon be commercially tested.

7. Testing, evaluation and introduction of the 'Spartlett' pear, a very promising Bartlett type seedling, discovered in Michigan.

A Description of *Vaccinium Vitis-Idaea*¹

JOHN E. BIERMANN²

Vaccinium Vitis-Idaea, commonly called lingonberry, cowberry or mountain cranberry, is a shrub inhabiting almost all northern regions of the world. It has more than 20 common names. It is a minor crop of Nova Scotia and Newfoundland and is grown on a wider scale in the Scandinavian countries. It has been shipped to the United States to be eaten raw or cooked. It may be commercially feasible to grow lingonberries in Minnesota, although little research has been done on them.

The purpose of this report is to give a taxonomic description of *V. Vitis-Idaea*, its range, habitat and economic importance.

TAXONOMY AND RANGE

Vaccinium Vitis-Idaea is in the family of *Ericaceae*, heath family. Gray's Manual of Botany (3) places the genus *Vaccinium* in the sub-family *Vaccinoideae* (whortleberry subfamily).

There are only two forms of the lingonberry. The normal sized or coarse form is supposedly found only in Europe and Asia but some sources indicate that it is also in North America. A dwarf form, *Vaccinium Vitis-*

Idaea var. *Minus*, is a botanical variety found in North America and Greenland (3).

Vaccinium Vitis-Idaea is a low creeping shrub (4, 5). The stems grow horizontally on the surface of the ground. In the coarse form, branches are erect and are from 10-25 cm in height. The dwarf form rises from 2-10 cm (3). Polunin (4) describes the plant as "a low softish sub-shrub with stems creeping and lithe."

The leaves are evergreen. They are dark green to green on top and a lighter green on the underside. The top of the leaf is shiny and the underside is "dotted with black, bristly points" (3). The most common leaf shape is obovate but it is sometimes oval or ovate. The leaf margins are usually smooth but occasionally have fine teeth pointing forward, i.e., away from the petiole (3, 4).

Gray (3) reports that the normal sized *V. Vitis-Idaea* has leaves 1.5-3 cm long and 7-16 mm broad. Leaves on the dwarf form are 5-18 mm long and 4-9 mm broad.

Lingonberries bloom in May and June. The corolla is bell shaped with four fused petals. The color of the coarse form is white or pink while the

¹1974 Recipient of the Bregger Essay Award of the American Pomological Society.

²Senior student, Department of Horticulture, University of Minnesota.

flowers of the dwarf are rose-pink to red (3). The flowers are four-merous with hairy filaments and awnless anthers (3). Polunin (4) reports that flowers are "in terminal and often nodding clusters." Flowers are self- or cross-pollinated. In glasshouse experiments, Beil and Hall (1) reported that cross-pollination resulted in a much better fruit set than self-pollinated flowers.

Vaccinium Vitis-Idaea bears small, dark, red berries which are usually about 6-10 mm in diameter (4). Fruits have a very acid taste, similar to cranberries. They may also be bitter, especially when unripe. They have been described as being "shaped like blueberries but acid like cranberries" (2).

Tap roots are common in *V. Vitis-Idaea*. Beil and Hall (1) report that "*V. Vitis-Idaea* var. *minus* revealed one predominant tap root that grew vertically in the soil and several rhizomes which grew out laterally from the crown." Other studies (5) have shown that the root system is variable depending on soil depth.

Vaccinium Vitis-Idaea has been reported to live above the Arctic Circle in Canada, Greenland, Europe and Asia (4). It exists as far south as the mountains of Maine, New Hampshire and Vermont and along the coast to Cape Ann, Massachusetts (3). Lingonberries are also found in Minnesota and Wisconsin. They are grown commercially in Nova Scotia, Newfoundland and the Scandinavian countries.

It has been reported to grow in a great variety of habitats, but often in rocky soil. Torrey (6) concluded that most lingonberries that he studied grew over bedrock from 6-24 inches below the soil surface. It has been reported in soil ranging from "dryish but luxuriant heathy (lowland and sandy) soils" to "fairly moist peaty soils" (4, 6). Gray (3) indicated that it was rarely found on wet moss.

ECONOMIC IMPORTANCE

Although lingonberries are a minor crop in North America, they are very popular in Scandinavia. Fernald, et al (2) state that "The mountain cranberry . . . needs no introduction to northern peoples, for it is one of the staple fruits of all northern lands. In fact, the Norwegians have so long depended upon this fruit that the Norwegian colonists who have settled in the Middle West (United States) import the berries in vast quantities from Norway and from Newfoundland, preferring them to the larger bog cranberries of the United States."

Production figures on lingonberries are scarce. Beil and Hall (1) state that the lingonberry crop is of much greater importance in Newfoundland than in Nova Scotia where production "did not exceed 4,500 kg (10,000 lb), whereas in Newfoundland 154,000 kg (340,000 lb) were harvested."

Areas in the United States with high concentrations of Scandinavians use nearly the entire bulk of imported lingonberries. "Export of the partridge berries from Newfoundland alone to Minneapolis and neighboring markets has sometimes reached the annual total of more than 8600 barrels, valued at \$40,000 (in 1958) (2).

Lingonberries may be eaten raw or cooked, usually made into a sauce. Eaten raw, they have a strong, acid taste which is sometimes bitter. Fernald (2) states that lingonberries are commonly picked too soon and that frost will mellow the taste of the fruit. Polunin (4) states that the "berries are edible chiefly after overwintering."

Literature Cited

1. Beil, C. E. and Hall, I. V. 1970. Seed germination, pollination and growth of *Vaccinium Vitis-Idaea* var. *minus* Lodd. *Can. J. Plant Sci.* 50:731-732.
2. Fernald, M. L., Kinsey, A. C. and Rollins, R. C. 1958. *Edible Wild Plants*

- of *Eastern North America*. New York, Harper and Row Publishers.
3. Gray, A. 1908. *Gray's New Manual of Botany—a Handbook of Flowering Plants and Trees*. 7th ed. Ed. Robinson, B. L. and Fernald, M. L., New York: American Book Company.
 4. Polunin, N. 1959. *Circumpolar Arctic Flora*. Clarendon Press, Oxford, England. of *Vaccinium* species in Alberta. *Can. J. Plant Sci.* 42:82-90.
 6. Torrey, G. S. 1914. *The Partridge Berry*. Dept. of Agr. and Mines, St. John's, Newfoundland.

'Vista Bella' — A Red, Summer Dessert Apple from New Jersey

L. FREDRIC HOUGH AND CATHERINE H. BAILEY¹

'Vista Bella' is being introduced as a good quality, very early, red apple for fresh market. It ripens about with 'Melba', 'Julyred' and 'Quinte'. Experience to date suggests that 'Vista Bella' should replace these 3 early red cultivars.

Origin

The parentage of 'Vista Bella' is:

Vista Bella = 77349 × Julyred	cross made in 1956
77349 = 67634 × 122137	cross made in 1949
67634 = Melba × Sonora	cross made in 1934
122137 = NJ53 × USDA34	cross made in 1937
NJ53 = Williams × Starr	cross made in 1925
Julyred = NJ8 × 110037	cross made in 1949
NJ8 = Petrel × Early McIntosh	cross made in 1937
110037 = Melba × NJ53	cross made in 1937

Four generations of crossing and two generations of breeders were necessary for the development of 'Vista Bella'. Such genetic engineering has gone into the development of all the early apples introduced from this program (1, 2, 3). 'Vista Bella' was first selected in July 1962 and a few scions were distributed under the seedling number 117656. It was given the introduction number NJ36 in the fall of 1963 and was distributed widely for test that winter.

Fruit Characteristics

The fruit is similar to 'Julyred' in

appearance. The fruit is medium large, round and slightly oblate. When it is well grown it has up to $\frac{3}{4}$ medium red blush on a light yellow-green ground. At its best it has crisp, creamy white flesh with better firmness and shelf life than any other apple of its season. It has good dessert quality. Under high nitrogen conditions the red overcolor will be darker and duller, and the ground color will stay green. The fruit will be less firm, more acid, and will not hold up as well.

Tree Characteristics

The tree is a vigorous grower with large leaves. This is especially noticeable in the nursery row. Most of the crop can be harvested in two pickings. It does not drop excessively. Limited production experience suggests that 'Vista Bella' is more difficult to thin with chemicals than are other early apples. The same experience has indicated that, if allowed to set heavily, 'Vista Bella' will bear small fruit of mediocre quality and the tree may be thrown into biennial bearing. 'Vista Bella' has been used widely in the hybridization program as a female and as a pollen parent. It is completely fertile and its pollen is compatible

¹Paper of the Journal Series of the New Jersey Agricultural Experiment Station, Department of Horticulture and Forestry, Cook College, Rutgers University—the State University of New Jersey, New Brunswick 08903. This research was supported in part by Hatch Funds.

The Parentage of 'Vista Bella' is: