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Fruit Varieties Journal 48(3):182-184 1994

'Splendor' and 'Regal' Lingonberry— New Cultivars for a Developing Industry

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Abstract

'Splendor' and 'Regal' lingonberry are named and released by the University of Wisconsin-Madison for use in breeding programs or for commercial production. Both are derived as selections from open pollinated seed obtained from southwest Finland. 'Splendor' and 'Regal' are precocious, moderately vigorous with some frost tolerance displayed in fruit buds and flowers. Fruits are medium to large in size, high in anthocyanin pigment and are comparable to other lingonberry genotypes in ascorbic acid content and juice pH.

Introduction

The lingonberry, *Vaccinium vitis-idaea* L. is a woody, evergreen, low growing shrub of the Ericaceae, widely distributed in temperate, boreal and arctic regions of the northern hemisphere. Fernald (1) described the species as consisting of two botanical varieties including the larger European plant *V.* var. *vitis-idaea* L. and the more diminutive North American type *V.* var. *minus* Lodd. The lingonberry fruit, a small red berry up to 1.2 cm in diameter is widely consumed in Northern Europe, Asia and Canada. Principal uses include sauce, juice, jams, wines or liqueurs and as a component of baked dessert products. Until recently, fruits were solely obtained from the wild. Limited areas of commercial plantings have been established within the past decade in Germany and Sweden.

In 1987, under the auspices of a Fulbright research grant, extensive collections of lingonberry germplasm including seed and plants were made in Finland by the senior author. In 1988, a project was initiated at the University of Wisconsin-Madison to assess the adaptability of lingonberry to northern U.S. conditions and to determine fundamental cultural management requirements of this potential new crop (2).

One of the objectives of this project is the testing and release of germplasm adapted for commercial production. 'Splendor' and 'Regal' are the first of a potential series of lingonberry cultivar releases from this program.

Origin

'Splendor' (WI102) and 'Regal' (WI-108) originated from open-pollinated seed collected in August, 1987 from different lingonberry clones growing in the wild near the village of Lieto in southwest Finland. Plants from seed were planted at the Hancock Experiment Station, Hancock, Wisconsin in the spring of 1988. Initial plant se-

Research supported in part by a Fulbright Research Grant and by the College of Agricultural and Life Sciences, University of Wisconsin-Madison, Wisconsin Hatch Project No. 3215.
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Table 1. Plant growth, flowering and fruiting characteristics of 'Splendor' and 'Regal,' 'Koralle' and 'Erntedank' lingonberries 1993.

Cultivar	Plant spread (vigor) rating[2]	Plant height (cm)	Fruit yield per plant (g)	Berry Weight (g)	Blossom frost tolerance rating[3]
Splendor	3.5 bc	15 - 19	25.1 b	0.41 bc	0.9
Regal	3.0 b	18 - 22	29.3 b	0.36 b	0.8
Koralle	2.2 a	9 - 15	30.3 b	0.29 ab	1.3
Erntedank	2.9 b	15 - 18	6.3 a	0.26 a	1.4
					n.s.

[1]Means separated by Duncan's Multiple Range Test, p = .05, N.S.—non significant differences.
[2]Rating scale: 1 = negligible, 2 = light, 3 = moderate, 4 = vigorous, 5 = extensive plant spread (rhizome production).
[3]Rating scale: 0 = no frost, 1 = light, 2 = moderate, 3 = severe frost damage to flower buds or blossoms.

lections from a population of 3,000 seedlings were made in 1990. Nine outstanding selections were identified including WI102 and WI108, based on precocity, plant vigor, apparent cold tolerance and freedom from visible leaf diseases. The selections were subsequently propagated in 1990 for testing along with two named cultivars, 'Koralle' and 'Erntedank' in a trial planting with five replicates of each cultivar at the Hancock location.

Description

'Splendor.' Identified as WI102, 'Splendor' is vigorous growing with moderate plant spread (rhizome production) and plant height (15-19 cm) at maturity. Plants are precocious, blooming moderately in the second year and profusely in the third growing season after planting. Fruits are medium to larger up to 10 mm in diameter (0.41g) (Table 1), brilliant carmine red color ripening in mid to late September. Berries hang readily on the plant, with minimal fruit drop before harvest. Average first bloom date in central Wisconsin is May 15-20. As with most other clones of European origin 'Splendor' has a second, more profuse bloom period about June 20-July 1 in Wisconsin. Berries from the first bloom mature about August 10 but are generally disregarded since the potential yield is light. Greater yield is obtained at the second harvest in fall.

'Regal'. 'Regal', selection WI108 is highly vigorous, moderately spreading (rhizoming) comparable to 'Erntedank.' Plant height ranges from 18-22 cm at maturity. Like 'Splendor,' 'Regal' is precocious in fruiting in the third season following planting. Berries are slightly smaller than those of 'Splendor' averaging 8.5 mm (0.33g) in diameter (Table 1). Fruit color at maturity is bright red, slightly darker in hue than fruit of 'Splendor.' As with 'Splendor,' 'Regal' has two blossoming periods, typically 4 to 6 days later than 'Splendor.' Maximum berry production similarly occurs at the second harvest in late September. Differences in ripening dates for 'Splendor' and 'Regal' are negligible.

Table 2. Lingonberry fruit chemical constituents, 1992.

Cultivar	Anthocyanin (mg/100g)	Soluble solids (%)	Ascorbic acid (mg/100g)	Sucrose (Percent dry weight)	Juice pH
Splendor	50.8 c[z]	14.3	24.3	1.39	2.9
Regal	43.2 b	14.1	21.8	1.66	3.1
Koralle	32.0 a	14.4	20.4	1.94	3.0
Erntedank	34.7 ab	11.9	28.0	1.94	3.0
		n.s.	n.s.	n.s.	n.s.

[1]Means separated by Duncan's Multiple Range, p = .05, n.s.—non significant differences.

Although 'Regal' and 'Splendor' did not differ in initial frost tolerance ratings compared to 'Koralle' and 'Erntedank,' subsequent field observations suggest the clones of Finnish origin including 'Regal' and 'Splendor' are noticeably more frost tolerant with less injury to fruit buds and blossom before and during bloom than the few other lingonberry cultivars presently available for cultivation.

Anthocyanin pigment in fruit of 'Regal' and 'Splendor' is comparable to that for 'Erntedank' and much higher than for 'Koralle' (Table 2). Fruit quality constituents including ascorbic acid for these clones are typical of other lingonberry cultivars presently available.

'Regal' and 'Splendor' are released for potential use in breeding programs and to provide additional adapted and productive lingonberry germplasm for potential producers in North America. These clones are the first named cultivars of Finnish origin presently available in North America. Among the limited lingonberry germplasm currently available, 'Regal' and 'Splendor' appear to provide superior fruit size and quality, productivity and adaptability to North American climatic conditions.

Availability

'Splendor' and 'Regal' are propagated under an exclusive royalty agreement with DeGrandchamp's Blueberry Farm, 15575 77th Street, South Haven, MI 49090. Interested nurseries and individuals should contact DeGrandchamp's directly concerning availability.

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Fruit Varieties Journal 48(3):184-185 1994

Early Redhaven Peach, A Host of Cherry Short Stem Virus

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Abstract

Cherry Short Stem virus (SSV) was bud grafted onto peach cultivars 'Early Redhaven' and 'Fairhaven.' There were no leaf symptoms on either cultivar. 'Early Redhaven' fruits showed uneven bumpy surfaces with mosaic coloration, and the texture of the fruits was harder than normal. There were no visible fruit symptoms on 'Fairhaven.' Back check on woody indicator sweet cherry cv. 'Bing' confirmed that the fruit symptoms on 'Early Redhaven' were caused by SSV, and that 'Fairhaven' is a symptomless carrier. Both Cherry Necrotic Ring Spot virus (NRSV) and Prune Dwarf virus (PDV) failed to produce any fruit symptoms on either peach cultivar.

Introduction

Cherry Short Stem virus (SSV) was discovered in Montana in 1958 (6), and later was identified by Afanasiev (1) and Afanasiev and Mills (3). The symptoms on cv. 'Bing' occur on leaves, fruit and fruit stems. Leaf midrib curl downward from the tip, resembling the effects of aphid feeding. The fruits are misshapen, sometimes dappled and bumpy (2). The most characteristic symptoms of this virus are shortened fruit stems (5, 6), about 1-2 cm in

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