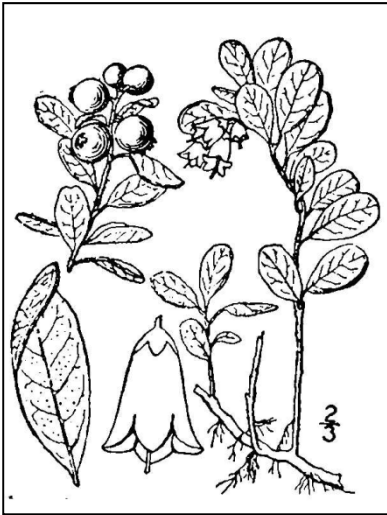




## THE LOWDOWN ON LINGONBERRIES

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Several inquiries have come in about lingonberries and their potential as a new NY small fruit crop. What follows is an overview of lingonberries and their commercial production.

Lingonberry, a member of the blueberry and cranberry plant family (Ericaceae), is a low-growing, perennial semi-evergreen woody shrub with relatively small berries. This native to arctic and subarctic regions of the world is widely distributed across cold climates of Northern hemisphere including the Canadian Pacific Northwest, Northeastern Canada, the Northern US (Alaska, Washington, Oregon), Greenland, northern Europe, Germany, and Scandinavia. It is also found in mountainous regions of central and southern Europe and Asia. Lingonberry's natural habitat includes densely wooded areas, heath, grass moorland, raised bogs, rocky exposed cliffs, and mountain peaks.

*Vaccinium vitis-idaea* or lingonberry is known by several other common names including partridgeberry, foxberry, northern mountain cranberry, cowberry, wolf-berry, dry ground cranberry, rock cranberry, and ling berry among others. In parts of Scandinavia it's also known as "tyttebaer".

There are two types of lingonberry: the wild or American lingonberry, and its cultivated cousin the European lingonberry. The American or wild lingonberry (*Vaccinium vitis-idaea* var. *minus*) generally produces one crop per year in summer. These plants tend to be short (7 inches or less) and have single blooms. The European or cultivated lingonberry (*V. vitis-idaea*) produces 2 crops per year, summer (August) and fall (late October – mid-November). These plants range from 2 to 16 inches in height with branches 3 -4 inches long. Leaves are bright green, oval and alternate. Lower leaf surfaces are matt below and covered with small black dots. New growth is covered with fine hairs. Plants may spread 3 feet in width, forming dense mats.



Lingonberry flowers on the previous year's growth. Flowers are similar in shape to those of blueberry and may be white or pink in color. Lingonberries ( $\frac{1}{4}$  to  $\frac{1}{2}$ " in diameter) are bright to dark red in color. They are considered highly flavored but not as tart as cranberries.

Their high benzoic acid content gives them a long shelf life; 8 – 12 weeks in the refrigerator, and several years in the freezer. Unpicked ripe fruit may persist on plants into spring, birds permitting.

### **Commercial production**

*Harvest of wild populations* - Approx. 10% of the wild crop is harvested annually. Newfoundland wild populations are harvested commercially as wild partridgeberries (212,750 lb/year). Harvest of wild fruit can no longer keep up with demand.

*Europe* - Commercial production of lingonberries is well-established in Sweden, Finland, Germany, Austria, and Switzerland. Additional acreage is now being planted in Latvia, Lithuania, parts of former Soviet Union, Bulgaria, and Poland. Yield in Europe is approximately 80 million pounds per year.

*North America* – Commercial planting of this small fruit crop essentially got its start in Wisconsin during the 1990s through the efforts of Dr. Elden Stang of University of Wisconsin. Its production is expanding into the colder areas of Canada and the US.

### **Site selection and preparation**

Lingonberries prefer light, well drained soils such as sand or silt loams with 2 to 6% organic matter and a pH range between 4.3 and 5.5. As with blueberries, high soil calcium content may have a toxic effect on plants. Avoid soils with high salt content, especially sodium and chloride.

If soil pH needs adjustment, begin lowering it the fall prior to planting by applying elemental sulfur. If planting on heavier soils or soils lacking in organic matter, also incorporate peat, leaf mold, sawdust, or finely shredded pine bark before planting at a rate of approximately 10 tons (4 inches) per acre. Organic matter should be incorporated into the top 3 to 4 inches of soil.



Select a site in full sun with good air and soil drainage. Tile installation or soil ripping may be needed to improve drainage prior to planting on wetter soils. Plantings may also be made on raised beds to improve drainage. Raised beds should be 4 to 8 inches high and 2 to 3 ft wide.

Lingonberries are noted for surviving winter cold, summer heat, and windy exposures. Winter snow cover, however, is preferable. Plants in Wisconsin have survived winter temperatures as low as 2 °F. In areas where winter temperatures drop below 10 °F and snow cover is marginal, protect plants with straw mulch, floating row cover or overhead irrigation. Spring frost protection using floating row cover or overhead irrigation may also be needed.



Test irrigation water also for pH, chloride, sodium, and calcium. Trickle irrigation is recommended. Bury drip lines in raised beds before planting.

### **Plant Selection**

For best berry size and yield, interplant desirable varieties with pollinizer cultivars such as ‘Red Pearl’ or ‘Sussi’. These pollinator cultivars, although somewhat lower yielding, should make up 10% of each planting to obtain good fruit size and yield. Pollination is done by honey and bumblebees.

#### *Varieties*

‘Koralle’ (1969) First released in Holland as an ornamental ground cover, then later cultivated for its fruit. Now a popular Dutch cultivar making up almost all of European production. Upright, strongly branched, vigorous. Uprights 12 inches. Produces light red to dark red somewhat tart, highly flavored fruit at a young age. Fruit may remain on the vines for several weeks without deteriorating.

‘Red Pearl’ (1981) Dutch cultivar. Fast-growing, wide, bushy, upright plant. Uprights to 13 inches. Dark red, round fruit larger (1/3 inch diameter) and more mildly flavored than ‘Koralle’. Most tolerant of less than ideal soil conditions. Two flower periods.

‘Suissi’ (1985) Swedish cultivar producing abundant large globular dark red fruit. Spreading but short uprights 6 – 7 inches. Heavy yields of medium to large berries.

‘Erntedank’, ‘Erntekrone’, ‘Erntesegen’ – three German cultivars found by Albert Zimmer on a German heathland, vigorous growers, mild-flavored fruit.

‘Scarlet’ – Norwegian cultivar, produces some fruit. Best used as pollinator for ‘Koralle’.

‘Ida’ (1997) Vigorous, upright Swedish cultivar with large red berries (to 1 ¾ oz).

'Linnea' (1997) A smaller berried Swedish variety than 'Ida'. Vigorous, upright, heavy cropper.

'Regal' (1994) first of 2 introductions from University of Wisconsin-Madison from seed collected in Finland. Uprights 7-8 inches. Berries 1/3 inch in diameter, 1 1/3 oz. Two bloom periods.

'Sanna' (1988) Swedish cultivar with uprights to 12 inches. Heavy cropper, excellent berry quality. Recorded yields 1 1/4 lb/bush or 6 tons/acre.

'Splendor' (1994). University of Wisconsin-Madison. From the same seed source as 'Regale'. Vigorous, modest spread, uprights 6 – 8 inches. Matures in 2<sup>nd</sup> year, often producing a crop. Brilliant red fruit 1/3 inch diameter, 1 1/2 oz.

### Propagation

Lingonberries reproduce by seed or underground rhizomes. Commercial methods include tissue culture or stem cuttings. Cuttings are taken in late summer from the current year's growth and rooted in a 1:1 mix of moistened peat and sand. Raised polyethylene covers or overhead mist is needed to maintain high humidity. Cuttings may also be propagated much like cranberries. Runners sliced off during bed narrowing are gathered and incorporated into soil using agricultural discs. Overhead irrigation is needed for this method to allow for good root development and establishment.

### Plant Establishment

*Planting* - Planting is generally done in spring or fall with one year rooted cuttings or plugs. Suggested spacing is 4 to 5 ft between rows and 12 to 18 inches between plants in-row. Recommended plant density is 8,700 plants per acre. Plants will fill in rows much liked matted row strawberry plantings.

*Mulching* - Mulch plants after planting with a 4 to 6 inch layer of peat or other organic matter to encourage root growth and promote higher harvest yields. Reapply mulch every 3 to 6 years as needed.

*Irrigation* – Irrigate through the first summer to help plants establish and reduce sunburn at a rate of 1/2 to 3/4 of an inch of water per week. Do not allow soil to dry out between waterings. Avoid overwatering on heavier soils which increases risk of Pythium or Phytophthora root rot development.

*Fertilizer* - Nitrogen should be applied in the ammonium form as urea or ammonium sulfate (Table 1).

**Table 1. Recommended fertilization rates for lingonberries**

Plant age (years)	Actual N (lb/A)	Nitrogen Source	Comments
1 to 6	20 – 40	Urea Ammonium nitrate	Use only chloride free fertilizers.  If pH is high, use ammonium sulfate.
6+	40 lb	Urea Ammonium nitrate	Nitrogen rates above 60 lb/A actual N can cause excessive

*Pruning* – No pruning is needed until plants reach 5 years of age or older. Then mow alternate rows every 3 to 6 years to increase shoot density and stimulate 1 year old growth.

## **Pest Management**

*Weeds* - Relatively few pest or weed management products have been labeled for lingonberries as they are still a relatively new minor crop. This makes it imperative to establish new plantings in “clean” soils – those where preplant perennial and annual weed management has been thoroughly done prior to plant establishment.

Good weed management is critical during plantings years 1 through 3. Management methods include in-row hand weeding, and mechanical cultivation. Cultivation needs to be shallow and done with extreme care to avoid damaging roots. Plant grass sod between rows to help minimize weeds. Mow to keep grasses from seeding.

## **Harvest**

Smaller summer crops are generally not harvested in favor of heavier fall crops. Berries are said to be best picked after a sharp frost. Harvesting may be done much like lowbush blueberry or cranberry using hand-held scoops. Machine harvest is also possible using mechanical harvesters similar to those used for dry harvesting cranberries. Plants reach full production 4 to 5 years after planting. Yield is approximately 10 lb fruit per square yard of row. Average yield per acre is 4-5 tons. Newer varieties have the potential to produce up to 10 tons/acre.

## **Marketing**

Portions of the harvested lingonberry acreage are direct marketed as fresh fruit to consumers. That said, lingonberries, like their cranberry cousins, are mainly marketed for their use in valued-added products such as sauces and juices. Other value-added lingonberry products include wines, liqueurs, syrups, jams, jellies, trifle, cheesecake, cocktail, soufflé, sherbet, ice cream, candies, and pickles. They are also used as an ornamental ground cover in landscape gardens.

Lingonberries are rich in antioxidants, containing high levels of benzoic acid, vitamins A and C, and magnesium. Lingonberry extracts have several medicinal uses such as a component for cough syrups. They are also used for treatment of blood disorders and urinary tract infections.

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(All photos courtesy [Dr. Marvin Pritts](#), Cornell University. Drawing courtesy [USDA, NRCS Plants Database](#); original illustration found in: Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 2: 697.)

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