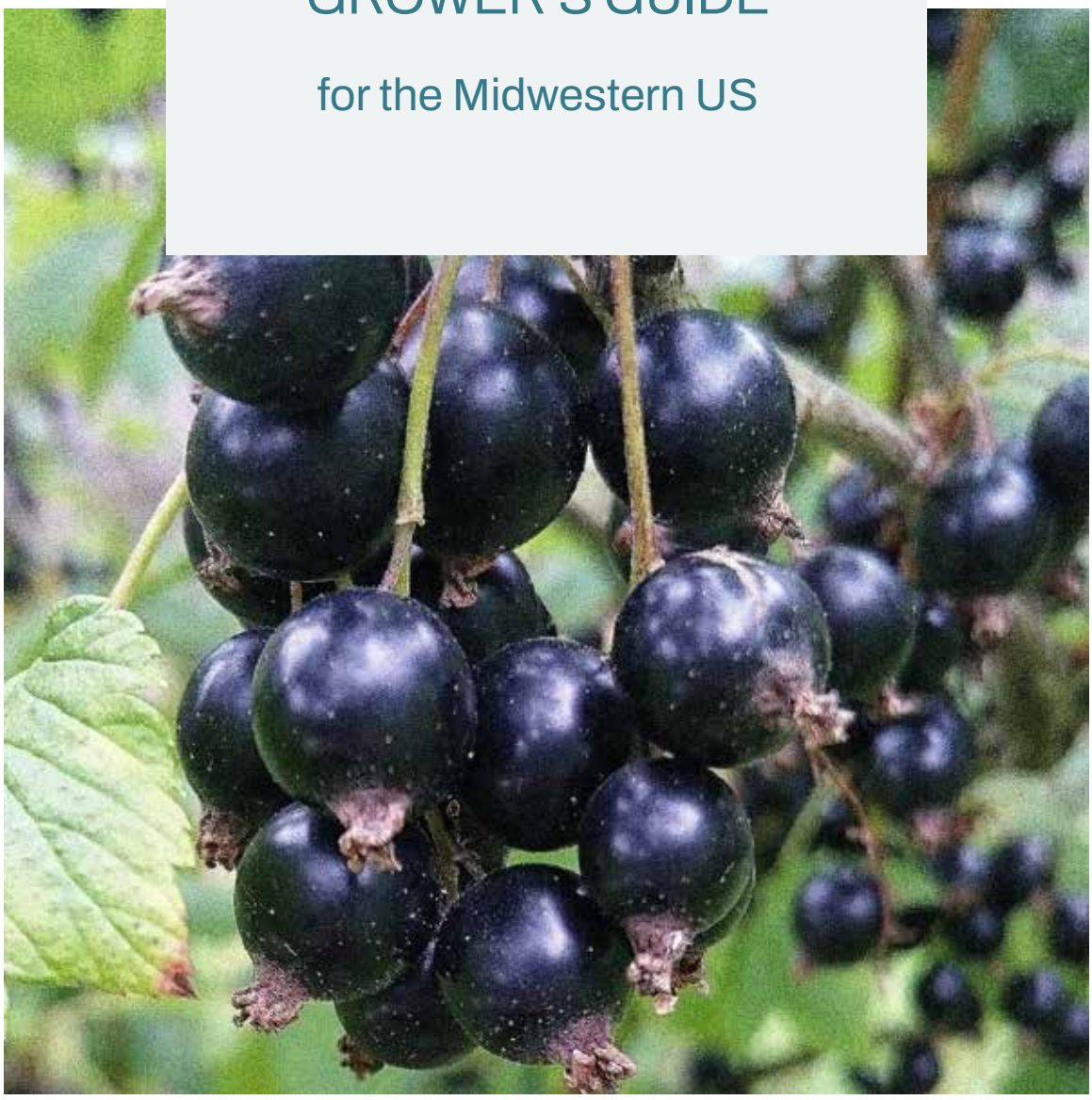
# BLACK CURRANT GROWER'S GUIDE

## for the Midwestern US



SAVANNA INSTITUTE


EST. 2013

HEADQUARTERS:
Spring Green, WI
Champaign, IL

MAILING ADDRESS:
2453 Atwood Ave.
Suite 209
Madison, WI 53704

608.448.6432
info@savannainstitute.org
www.savannainstitute.org

## ABOUT THE SAVANNA INSTITUTE

The Savanna Institute is a 501(c)(3) nonprofit research and education organization working to catalyze the development and adoption of resilient, scalable agroforestry in the Midwest U.S. We work in collaboration with farmers and scientists to develop perennial food and fodder crops within ecological, climate change-mitigating agricultural systems.


Authors: Bill Davison, Eric Wolske
Website: savannainstitute.org/blackcurrants

# Table of Contents



# BLACK CURRANT

*Ribes spp.*

## Requirements:

**DRAINAGE:** Currants are very adaptable, but do not tolerate standing water or heavy clay soils

**PH:** 5.5–6.5

**LIGHT:** Full sun to partial shade

**ZONES:** 3–8 (although some varieties hardy to 2)

## Plant Selection:

Pure *Ribes nigrum* are susceptible to WPBR, so crosses were made with *Ribes ussuriense* to impart resistance, but early varieties had poor fruit quality (e.g. 'Consort', 'Cornet', 'Crusader'). Newer varieties show resistance to WPBR while retaining good quality and high yields (e.g. 'Titania', 'Blackcomb', 'Cheakamus', 'Stikine'). Although the federal ban has been lifted, some states still have laws on the books that may or may not be enforced, so consult local regulations and select only resistant varieties.

Currants are easily propagated by layering or cuttings if not protected by patent.

## Spacing:

**IN-ROW SPACING (FEET):** 2–3 feet

**BETWEEN ROW SPACING (FEET):** 12–14 feet

## Timing

**YEARS TO PARTIAL/FULL BEARING:** 3–5 years

**HARVEST SEASON:** June–August

**HARVEST HRS/ACRE**: 770 (hand), 12–65 hours (mechanical)

## Introduction

Black currants share the *Ribes* genus with over 150 different species, all small shrubs and bushes, including the cultivated red currant (*Ribes rubrum*). The ancestors of cultivated black and red currants originated mainly from Europe, Scandinavia, and Russia, whereas plants in the *Ribes* genus are found across the globe, with species of black currants found in South America, Asia, Northwest Africa, and North America. Black currants are a 4-6 foot tall shrub with aromatic leaves grown for their piquant berries. The leaves are lobed, up to 4 inches long and wide, and contain small yellow, sessile, aromatic glands underneath. Up to 10 white flowers are born on 4 inch drooping racemes that form shiny black fruit. Flowers are mainly pollinated by wild bees and bumble bees that are active in the early spring when the flowers bloom. However, honey bees have been recommended to help in pollination at a rate of 1 hive per acre.

Most black currant varieties are self-fertile, but yield and berry size are increased from cross-pollination. It's recommended that anywhere from 1-20% of the plants in an orchard be pollinator species for optimum yields. The cultivated black currant (*Ribes nigrum*) is most commonly grown on farms. There are other black currant species including the Russian *Ribes dikuscha*; the North American species *Ribes americanum, Ribes hudsonianum, Ribes petiolare*, and *Ribes bracteosum*; the east Asian species *Ribes ussuriense*; the east Siberian *Ribes pauciflorum*; and the Chilean species *Ribes valdivianum*. Many of these other black currant species have been used in breeding programs to increase pest and disease resistance; increase juice quality, polyphenols, and ascorbic acid; and reduce bloom freeze damage.

Black currants produce a dark-purple, medium-to-small-sized berry with a unique scent and flavor, high color pigments, high anthocyanins, and high vitamin C content. The vitamin C content has been reported as being 3-4 times as high as oranges and over 50 times as high as apples, with values ranging from 50 to 250 mg ascorbic acid per 100 grams fresh weight, with some wild species containing up to 800 mg per 100 grams fresh weight. The majority of black currants (roughly 80%) are cultivated for juice, while the remaining crop is used for fresh eating, jams and preserves, desserts and confectionery, teas, liqueurs and wine, yogurt and other dairy-products, and scented goods such as candles and perfumes.

In addition to the fruits, the aromatic black currant leaves are also harvested for tea, flavoring, and medicinal extracts. The buds can be harvested for their high polyphenol (antioxidant) content and can be found dried and ground and sold as health supplements, or the essential oils extracted for the perfume industry. Finally, the seeds leftover after juicing can be used for their oil, which contains a high content of gamma-linolenic acid (GLA), with up to 20% of the total fatty acid composition being GLA.

Currently, the largest producers of black currants are the Russian Federation and Poland, with Ukraine, France, the United Kingdom, Germany, Finland, Denmark, New Zealand, and Hungary also contributing as the top ten black currant producing countries. Black currants have been cultivated since the 1600s, originally regarded as a medicinal crop used by herbalists, and by the late 1800s were regarded as a food crop for its use in jellies.

## History

The first note of black currant introduction in the United States was on the 16th of March, 1629 in Massachusetts. In 1770, black currants were being sold by Prince Nurseries in Flushing, New York along with red and white currants. In 1826, there were five black currant cultivars listed as being horticulturally significant in the US. By the mid 1850s, 25 different cultivars of European currants were described and available for purchase, and in 1925, 109 cultivars were available in North America. By the early 1900s there were 7000 acres of currants cultivated in the United States, However, during this same period the fungal disease white pine blister rust (WPBR) was introduced to North America on imported white pine and currant plants. While it was a relatively mild disease for currants, WPBR was lethal to the important white pine trees, killing many of the stands the lumber industry relied on. By the 1910s, a series of federal and state laws banned currant production in the United States and initiated eradication programs for wild and cultivated currants.

In the 1940s and 1950s, Canadian researcher A.W. Hunter crossed the European black currant variety 'Kerry' with native black currants (*Ribes ussuriense*) with a Cr gene for rust immunity, eventually breeding the cultivars 'Consort', 'Crusader', and 'Coronet'. While these varieties were found to be resistant to the white pine blister rust, they were still highly susceptible to powdery mildew and low yields, and were considered unsuitable for the European juice market. Interestingly enough, the 'Consort' still remains one of the most antioxidant-rich of the modern black currant varieties, with the highest reported levels of total phenolics and total anthocyanins. In 1966, the federal law banning currant production in the United States was rescinded. However, in many states and counties, the ban was still in effect. By 1986, the white pine blister rust control efforts were considered a success and no longer a constraint in proper white pine silviculture.

## Superfood

Many studies have been conducted examining the chemical composition of black currant fruits, leaves, buds, and seeds. The original use of black currant berries in the 1600s was as a medicine before becoming a common food item. In modern times, the research focus has shifted to the quality, health, and nutrition of black currant berries grown in a wide range of geographic locations across many years and cultivation techniques, across many years, cultivation techniques, and various cultivars. Compared to other fruits, black currants continue to be regarded as one of the best berries for overall human health, with the polyphenol content among the highest in over 143 common fruits and vegetables. Mineral nutrients in black currants are especially good sources of calcium, potassium, magnesium, and iron. Compared to blueberries, grapes, cranberries, and oranges, black currants have the highest level of calcium, iron, magnesium, phosphorus, potassium, zinc, and vitamin C.

The vitamin C (ascorbic acid) content of black currants is 3 times as high as oranges, the antioxidant potential is greater than blueberries, and the potassium content is similar to bananas. Additionally, due to the high levels of antioxidants, the ascorbic acid in black currants appears to be more stable than in other fruits. In a study comparing the health quality of black currants, blueberries (*Vaccinium corymbosum*), raspberries (Rubus idaeus), red currants (*Ribes rubrum*), and cranberries (*Vaccinium oxycoccos*), black currants had the highest antioxidant capacity and the highest levels of anthocyanins and ascorbic acid. Black currants had higher total polyphenols and total anthocyanins than blackberries (*Rubus fruticosus*), raspberries, and red currants, but the content was lower than aronia berries (*Aronia melanocarpa*). The ascorbic acid content, however, was the highest among all the berries tested.

Black currant extracts from leaves, buds, and fruits have shown strong antioxidant activities. The antioxidant effect is strongest from leaves and buds due to the correlation with total polyphenolic content of the extracts compared to fruit extracts. Black currants are a rich source of biologically active compounds as well as ascorbic acid, which all contribute to the inhibition of certain cancers, and the inhibition of cardiovascular- and inflammation-related diseases.

Several studies have demonstrated that black currant juice can prevent inflammation in obese individuals, but this effect is less strong than in lingonberry or cranberry juice.

The potential role of black currant juice for brain health has also been studied. The findings show that anthocyanins are considered the most potent neuroprotective compound in soft fruits, of which black currants have some of the highest values. Additionally, many flavonols, particularly quercetin, are responsible for the inhibition of reactive oxygen species formed by beta-amyloid proteins, thus reducing oxidative stress-induced neuronal cell membrane damage. Quercetin, along with isorhamnetin and anthocyanins, is known to reduce blood pressure and improve blood flow, suggesting a potential protective function against the development of vascular types of dementia. The very high potassium to sodium ratio in the berries and the leaves is beneficial for human health and is related to lower incidences of hypertension and is partly responsible for the high levels of electrolytes found in black currant juice.

## Site Suitability and Preparation

Black currant production requires between 800 to 1600 hours below 44 degrees F to remove the bud dormancy, which makes cultivation possible in all states except Florida, Louisiana, and Hawaii. Inadequate chilling results in uneven bud break and poor fruit quality. Black currants perform best in well-drained soil with high organic matter and a slightly acidic pH between 5.5 and 7.0, with raised bed plantings sometimes effective on poorly-drained soil.

Black currants are typically planted in the spring as soon as the ground can be worked, as the leaves can withstand temperatures down to 20 degrees F. They can also be planted in the early fall to allow root formation and plant establishment before winter, but mulching should be done to reduce winter frost heaving effects. Black currants are typically propagated with 6-10 inch hardwood cuttings taken from dormant plants in the late fall through late winter. At planting, it is best to soak the roots for 1-2 hours before planting and to prune damaged and inappropriate roots. When placing the plants in the ground, burying 1-3 buds will help encourage root growth and stem rejuvenation. Shoot pruning down to 6-10 inches after planting in the spring can also help encourage new stem development.

Flowers and fruit set should be removed in the first year or two of planting. Black currants are typically harvested in the third year, with full production typically being reached in the fourth or fifth year. The majority of the fruit is harvested from one and two year old wood. Black currants are grown both as an individual bush and in closer spacing as a hedgerow. When grown individually, spacing is typically 3-5 feet within row, with pruning to keep the number of stems down to 10 to 15 and to maintain a cup shape for optimal light penetration, airflow, and harvesting ease. Roughly 4 strong, one-year old stems are selected every year; the remaining one year old stems and any stems over three years old are removed.

For mechanical harvest, a hedgerow system is preferred, with black currant varieties preferentially selected for compact growth. In these systems, the spacing is 12-15 inches apart within rows and 10 feet apart between rows with pruning reduced to outward branching. Orchards are then coppiced, or cut to the ground, every 2 to 3 years up to every 5 to 10 years and allowed to rejuvenate. As the plant density increases, vegetative growth per plant decreases. In the first few harvests, yield per plant remains the same, thus higher density plantings show greater yield per acre. As the plants mature and gain in size, the yield per bush increases with plant spacing and thus the yield per acre is lowest at medium density plantings.

Some researchers have proposed a high-density, biennial production system where the black currants are harvested with a combine-style harvester that removes berries and cuts the stems to the ground in the third year after planting. They are then allowed to grow vegetatively in the fourth year and the process repeats itself in the fifth year. Another advantage to this method is the removal of the woody stems, which could be used for mulching or as a fuel source. The multi-stem black currant shrubs have a higher proportion of bark with a higher nitrogen content (1.25%) than most wood chips and a higher heating value (19.41 MJ/kg) comparable to other wood chips. In hot and dry climates, partial shade, soil mulch, and adequate irrigation are essential for black currant production. In these environments and in most environments in North America, black currants grow exceptionally well on the cooler north and northeast slope exposures. The northern slopes and shaded environments also help reduce risk of frost by delaying early spring bloom.

Adequate water is needed for black currants to flower and yield properly, with roughly 1 inch per week needed from bloom until harvest and periodically after harvest during periods of drought. Irrigation is most important from flowering until harvest, particularly during dry periods when rainfall is not adequate. However, maintaining adequate moisture in the fall during floral and leaf initiation is also important for keeping an optimal number of strigs and flowers per node. Soil moisture is best maintained at 15-20% on a stony silt loam, particularly in the establishment years and early years. Under 15% soil moisture, berry yield begins to drop, while maintaining soil moisture above 20% can be difficult and expensive. Irrigation does little to reduce soluble solids and only affects berry weight in the first few years after planting.

Drought tolerance among black currants is variety dependent. Mulching can also be used to help maintain proper soil moisture by reducing water loss. Mulching increases root and shoot growth and helps encourage roots near the soil surface while maintaining roots deeper in the soil. Mulching can also be useful in increasing plant yield and black plastic can be an effective mulch. Wood chips can be used, but care should be taken to ensure proper nitrogen is added to the wood chips to prevent nitrogen deficiency and to reduce nitrogen immobilization. Woodchip and other organic mulches can be effective in reducing soil temperature, maintaining soil moisture, and suppressing weeds when 2-4 inches is added around the base of the black currant or within rows out to the dripline.

While mulches can be used to prevent weeds, herbicides are typically used to maintain a weed-free strip under the black currants out to the dripline. Mechanical cultivation can also be used but care must be taken to keep cultivation no deeper than 2 inches to prevent root damage in the shallow-rooted black currants. The critical weed-free period for currants is from the beginning of vegetation in the spring until the shoots stop growing in late July. In between rows, cover crops are typically grown for ease of maintenance with little impact on the black currants' growth, as long as the cover crops are kept at least a foot outside the black currant dripline, with no difference found between the type of cover crop grown. The use of clovers as inter-row cover crops can lead to untimely nitrogen release in the late fall as the clovers senesce. Different weed species growing under the dripline have varying impacts on fruit quality, brix, pH, sugars, ascorbic acid, and anthocyanins.

## Understory Niche

Black currants are shade-tolerant and can be grown under tree crops. The understory has some benefits as well as set-backs for the plants growing in these environments. The understory tends to have cooler temperatures in the daytime and warmer temperatures at night due to the overstory's obstruction of convective and radiative heat loss and canopy penetration.

Some other benefits of a proper overstory include improved soil fertility, reduced soil erosion, increased soil water content from reduced evaporation, increased water infiltration rates, and groundwater lift and distribution through root systems. Soil moisture also tends to be higher overall due to reduced evaporation, but the canopy can intercept 10-30% of the precipitation, particularly during light rain, fog and dew. Additionally, in dry years, the effect of increased root competition can lead to drier soil conditions in the understory.

A major issue with the understory environment is higher air humidity and reduced light infiltration through the canopy, increasing the risk of fungi and herbivory damage, which can further reduce the amount of light the plant receives. Shade tolerance involves maximizing net carbon gain through photosynthetic efficiencies and leaf plasticity, and enhanced persistence and investments in storage and defense. This typically involves leaves spreading out to increase leaf area while reducing leaf density; larger, richer chloroplasts with a higher ratio of chlorophyll b to chlorophyll a; and a reduced apical dominance with lower stem elongation. Overall, greater plant plasticity is found in shade-intolerant plant species that adapt their growth quickly to avoid the shaded conditions, while shade-tolerant plants tend to be more plastic in morphological adaptations for light capture optimization.

One particular benefit of increased biodiversity at the farm scale level is an increase in pollination and pest management. Approximately 99% of all pests are naturally controlled by native enemy species, with the average pest species having 10-15 natural enemies. Habitat loss and fragmentation has led to a reduction of beneficial insects and pollinators.

## Fertilization

Black currants require fertilization, but the rates required are best determined on a site-by-site basis. In some areas, fertilizer is best applied in a single application in the spring. Mature currants typically require around 90 lbs nitrogen per acre, 18 lbs of phosphorus, and 36 pounds of potassium per acre. To properly determine nutrient levels on individual sites, leaf samples should be collected in early August, after shoot growth has ceased, and tested for foliar nutrients. Fruiting requires between 120-140 frost-free days, which results in black currants being harvested between mid-to-late June to late July for black currants grown in North America. Black currants ripen over a range of 1-2 weeks. For machine harvest, ethephon is sometimes applied to the crops 1-2 weeks before harvest to ensure ease and maximum yield at harvest. Harvesting is responsible for 60-70% of the labor needs in commercial operation.

Black currants are tolerant of spring frosts, a trait that could be further improved through breeding. The shrubs are hardy to between -40° F and -76° F with some varieties cold hardy up to USDA Zone 2. The early bloom of black currants, however, is not immune to the cold and spring frosts, with temperatures less than 28° F damaging the blooms. High solar irradiation can cause leaf sunburn while temperatures above 86° F can cause leaf flagging, and temperatures above 95° F for 3 or more days can cause fruit drop, particularly near ripening.

Black currant berries are well suited to storage with tougher, thicker skin than most berries, maintaining good quality for 1-2 weeks in refrigerated environments and up to a year while frozen. While frozen, black currant polyphenols have shown to remain stable with no significant decrease in flavonoids, procyanidins, or antioxidant potential for up to 9 months. In fact, freezing has been shown to increase anthocyanin levels in the pressed juice as the freezing process helps break down cell walls in the skins for optimal extraction. Freeze-drying black currant leaves and buds is an effective method for plant tissue storage, with little effect on antioxidant capacity when dried products are stored at room temperature.

# Insects

**CURRANT APHID** The currant aphid, *Cryptomyzus ribis (L.),* overwinters as eggs on plant stems. The insects feed by sucking plant juices, which results in stunted new growth. Aphids are small (2 millimeter), green, and typically found in colonies.

Predators often keep aphids under control. Dormant sprays are also effective, as are summer horticultural oil or insecticidal soap if applied when the aphids are first seen.

**CURRANT BORER** The currant borer, *Synanthedon tipuliformis* (Clerk), is a yellow worm-like larva that tunnels through the pith of the cane. A member of the clear-winged moth family, the wasp-like adult lays its eggs on the canes in early June. After hatching, the worm enters the cane and feeds all season.When an injured shoot is cut, a dark hole can be seen where the larva has tunneled in the pith. The yellowish-white larvae, which are about 12 mm (½ inch) long, may also be present. It overwinters in the larval stage in the cane, emerging as the adult moth the following spring. Feeding damage will kill the cane; the first symptom is yellowing foliage on individual canes in late spring.

Cut out and destroy infested canes as early as possible. Once the larvae bore into canes, chemical control is not possible. It may be possible to disrupt the clearwing moth using pheromone stations.

**IMPORTED CURRANT WORM** The imported currant worm, *Nematis ribesii (Scopoli)*, is the most serious insect pest of currants and gooseberries, with the latter being the favored host. Foliage is consumed by several small, spotted, caterpillar-like larvae. The adults are sawflies about the size of a housefly. Two generations hatch each year, causing damage in the spring and again in late summer.

*Bacillus thuringiensis*-based products and/or a broad-spectrum insecticide should control this insect. Start looking for damage shortly after the leaves have fully expanded. The second generation usually is less severe than the first and does not require treatment.

**CURRANT STEM GIRDLER, CURRANT SAWFLY** Adult sawflies, *Janus integer (Norton),* make numerous punctures in canes during egg laying in spring, resulting in drooping and wilting of new shoots in late spring. The best sign of infestation is tiny pinholes that can be seen from the upper leaf surface. Further damage occurs as the larvae tunnel through the canes. This insect also attacks poplar and willow trees, and damage usually is more severe near stands of these trees. Removing and destroying infested canes at the first sign of wilting is the best control.

**FOURLINED PLANT BUG** The fourlined plant bug, *Poecilocapsus lineatus (Fabricus),* is yellowish green with four dark stripes on its back. It is quite active and runs and flies readily. It sucks plant juices from leaves and young stem growth, causing deformed and brown foliage. Older leaves will be spotted with many tiny, light spots. This insect feeds on numerous wild hosts, and damage occurs most frequently when such plants are allowed to grow near currants and gooseberries.

In areas where plant bugs have been a problem, they can be controlled by an early season application of pyrethrum-based or pyrethroid compounds.

**GOOSEBERRY FRUITWORM** The larval stage of the gooseberry fruitworm, *Zophodia convolutella (Hübier),* is a greenish worm with darker stripes along the sides. The worms feed by hollowing out the insides of the fruit of both currants and gooseberries; each worm consumes several berries. The adult is a moth.Bacillus thuringiensis-based products and/or a broad-spectrum insecticide should control this insect. Make two applications 10 days apart, starting at early fruit development.

**CURRANT FRUIT FLY** Fruits infested by the currant fruit fly, *Epochra canadensis (Loew)*, drop early and have dark spots surrounded by a red area. Small, white maggots will be found in such fruit. Late-maturing varieties are preferred by this insect.

The removal and burial or the destruction of dropped fruit will keep populations from building. The insecticide program for gooseberry fruitworm also will control fruit flies.

**SAN JOSE SCALE** The adult San Jose scale, *Quadraspidiotus pernicious (Comstock),* is a small, grayish, disk-shaped speck about 2 millimeters across with a raised spot in the center. It is found most frequently on the canes. For most of its life, the scale insect is incapable of movement and merely sits and sucks out the plant juices. Heavily infested plants will have canes encrusted with scales. In such cases, single canes or even entire plants will be killed.

Dormant sprays of lime sulfur or superior oil will control San Jose scale.

**EARWIGS** Earwigs have also presented a problem in some black currant plantings. The common earwig is omnivorous, eating other insects, plants, and ripe fruit. To a large extent, this species is also a scavenger, feeding on decaying plant and animal matter if given the chance. This insect is a nuisance in currant production because it burrows into the fruit, thus making it unusable. There are several methods of controlling earwigs. Dampen rolled-up newspapers and place in the production area in the evening. Generally earwigs feed at night and seek out a damp, sheltered spot during warm dry days. In the morning you can gather a good number for disposal. Shallow cans, such as cat food or tuna cans, with a little bit of vegetable oil can also be placed around the plants as traps. Because earwigs crawl, sticky tape or petroleum jelly can be placed around the base of the currant bush to catch them. Diatomaceous earth also seems to deter them and should be applied to the soil and reapplied, if required, in one week.

Adapted from *The University of Wisconsin and the Organic Black Currant Production Manual*, published by Anne's Prince Edward Island (PEI) Farm and The PEI Horticulture Association.

## Disease

The main disease of black currants in North America is powdery mildew, called American gooseberry mildew in Europe, with leaf spot and white pine blister rust causing minimal damage. Powdery mildew is most commonly controlled with applications of horticultural mineral oil  bud break through pre-harvest every 2 weeks. Other control options are to remove diseased and damaged shoot tips in late fall. Proper disease control can help optimize juice phytochemistry and quality.

## Food Safety

Growers need to be diligent about the US Food Safety Modernization Act and the Produce Food Safety Rule. Much will depend on the requirements of the market and customer. State regulations and requirements can differ. Thorough record keeping and often a water test are required.  When in doubt, contact your state department of agriculture.  It is also important to remember that even if a customer and market are not requiring an audit and a paper trail, the intent still holds true—be careful to keep livestock and the harvestable berries separate. Maintain sanitary conditions in the washing and processing areas. Have an approved sanitization step in the washing process. Have everyone in contact with the berries, from harvest to pack off, wash hands prior to handling the berries.

# Plant Material/Varieties

**Spread of seasonal harvest: Black currants are typically harvested in July in the Midwest.**

| CULTIVAR | YIELD (LBS) | HEIGHT (FT) | WIDTH (FT) | GROWTH HABIT (H:W; LOWER THE NUMBER THE MORE SPREADING THE PLANT) | LEAF OUT | FLOWERING | HARVEST | WPBR SUSCEPTIBILITY | DIEBACK SUSCEPTIBILITY |
|---|---|---|---|---|---|---|---|---|---|
| BEN LOMOND | 1 | 4.2 | 5.5 | 0.87 | MARCH 26TH | APRIL 21ST | JULY 8TH | HIGH | LOW |
| BEN SAREK | 0.7 | 2.5 | 2.9 | 0.89 | MARCH 27TH | APRIL 22ND | JULY 3RD | LOW | LOW |
| BLACKCOMB | 3 | 3.8 | 5.2 | 0.87 | MARCH 28TH | APRIL 24TH | JULY 13TH | RESISTANT | LOW |
| CHEAKAMUS | 3 | 4.1 | 6.1 | 0.77 | MARCH 28TH | APRIL 21ST | JULY 6TH | RESISTANT | MEDIUM |
| CONSORT | 0.3 | 3.9 | 4.4 | 0.98 | MARCH 29TH | APRIL 23RD | JULY 3RD | RESISTANT | LOW |
| CORONET | 0.9 | 4.5 | 6.2 | 0.83 | MARCH 28TH | APRIL 22ND | JULY 3RD | RESISTANT | LOW |
| NICOLA | 2.3 | 4.4 | 5.2 | 1.01 | MARCH 28TH | APRIL 21ST | JULY 1ST | RESISTANT | MEDIUM |
| STIKINE | 0.9 | 4.3 | 5.2 | 0.97 | MARCH 29TH | APRIL 21ST | JULY 3RD | RESISTANT | HIGH |
| TAHSIS | 1.1 | 3.6 | 5.6 | 0.74 | APRIL 2ND | APRIL 24TH | JULY 3RD | RESISTANT | MEDIUM |
| TIBEN | 3 | 3.5 | 4.9 | 0.86 | MARCH 29TH | APRIL 23RD | JULY 12TH | MEDIUM | LOW |
| TITANIA | 1 | 4.3 | 6.6 | 0.76 | MARCH 30TH | APRIL 23RD | JULY 5TH | RESISTANT | LOW |
| TOFINO | 0.3 | 3.6 | 4.3 | 0.92 | APRIL 8TH | MAY 3RD | JULY 24TH | RESISTANT | LOW |
| WHISTLER | 1.3 | 3.3 | 4.5 | 0.83 | APRIL 1ST | APRIL 24TH | JULY 7TH | RESISTANT | MEDIUM |

Cultivar selection is critical to successful black currant production. New cultivars combine consistent high yields with increased resistance to pests, disease, and late spring frosts. Factors to consider when choosing cultivars include climate, pest, and disease pressure along with harvesting methods and markets. Black currant cultivars vary widely in their flavor profile, sweetness, hang time, growth form, and subsequent suitability for machine harvest. Producing a consistent high-quality product is important for all markets, but access to larger scale markets is highly dependent on the ability to deliver large quantities of berries with consistent qualities.

SOURCING PLANTS OR PLANT MATERIAL: The US Department of Agriculture, Forest Service Directory provides a list of sources for black currants. *https://rngr.net/resources/directory*

## Juice evaluation and flavor notes for select cultivars of black currants

| CULTIVAR | BRIX | PH | CA (G/100G) | COLOR (1-5) | TASTE (1-5) | DESCRIPTION |
|---|---|---|---|---|---|---|
| CHEAKAMUS | 12.7 | 2.941 | 3.4917 | 4.66 | 4.17 | Smooth. Fuller Flavor. Well-rounded flavor. Mild flavor but still tart. Bright flavor. Notes of prune/apricot. Mild and not tannic. Strong berry aroma. Muted nose and taste. Concord grape, blackberry, low acidity. Not astringent. Velvety mouthfeel. Rich. |
| CORONET | 12.1 | 2.997 | 3.4456 | 3.97 | 3.1 | Tart, weird aftertaste. Feral bitter. Sharp acidic savory. Sharp and astringent. Citrus tangy. Cattier than currants. Thin and tart. Grape notes. Good nose but sour overpowers sweetness. Grassy. Bitterness means it's better for color than juice. Very sour. Complex and earthy. |
| TAHSIS | 12.9 | 3.003 | 2.9271 | 4.37 | 4.2 | Mango/guava infusion. Intense flavor. Nice acidity and back of tongue brightness. Red, pine, light. Mellow. Silky smooth. Great fruity flavor. Well-rounded flavor. Slightly spicy and intriguing. Great juice. Good nose and aroma. Earthy and sweet. |
| STIKINE | 12.2 | 2.959 | 3.512 | 4.45 | 3.63 | Grape notes. Sweeter. Sour and tangy. Smooth and balanced. Spicy, sweet, but something left to be desired. Less flavorful than other currants. Leafy/vegetative undertone. Great aroma. Citrusy. Floral notes. |
| BLACKCOMB | 12.2 | 2.918 | 4.2411 | 4.04 | 3.69 | Mango infused. Full-bodied. Piney and bright. Lighter mouthfeel. Musty. Balanced fruity acid. Apricot and prune notes. Classic Ribes/catty aroma. Moderate aroma. Earthy, mild acidic, slightly tannic. |
| TIBEN | 13.7 | 2.942 | 3.6554 | 4.73 | 4.1 | Best color. Deep color. Tart, floral, notes of tropical fruit. Bright flavor. Cherry notes. Dark plum. Some pine. Thick and heavy mouthfeel. Syrupy. |
| TITANIA | 12.5 | 2.929 | 4.0585 | 3.79 | 3.39 | Grapefruit. Like a Christmas beverage. Simple flavor. Not as flavorful but still tart. Light flavor. Less complex. Raspberry and strawberry. Very tart. |


## Markets

There are numerous options for marketing black currants, and like most crops, the best option will depend on individual circumstances, scale, and marketing practices for other crops grown on the farm.

Black currants are grown as a component of U-pick operations on farms with other berry crops like blueberries.

Other direct marketing options (farmers markets, direct to consumer, direct to retail) can provide additional value to growers. Making syrups, jellies or jams and wines can be a path to making unique and valuable products. Black currants can also be used as an ingredient in beer, mead, and cider. Always be sure that any requirements are met for food safety and good manufacturing processes, in order to assure both compliance with state and federal regulations, but also to ensure customer well being.

## Conclusion

Black currants are one of the few agroforestry crops that can produce well in full sun and partial shade. This flexibility, combined with their nutrient density, machine harvestability, pest and disease resistance, ability to grow in diverse soil types, relative immunity to browing by deer, and long storage life for the berries make them a crop primed for development.

The primary factor limiting their growth is the availability of consistent large scale markets that pay fair prices to farmers. Large well established markets for black currants exist in Europe and several pioneering farmers on the east coast of the US have been growing and marketing black currants for decades.

Realizing the potential of black currants in the Midwest will require diverse collaborative partnerships across the full value chain. Key relationships, infrastructure and expertise are being developed. Coordinating this development to empower high functioning teams of people is the next step.

## Grower Profile

# ELDERBERRIES AT BLUE FRUIT FARM

*By Jim Riddle*

Blue Fruit Farm (BFF) is a certified organic perennial fruit operation in southeast Minnesota. The land has been managed organically since the 1970s, and the Blue Fruit orchard is surrounded by fields of native plants, with no conventional crops within a mile. The farm is located on ridge land about 12 miles south of Winona, MN.

The 5-acre fruit field was converted from organic vegetable production to fruits between 2008-2010 by planting the entire field to cover crops of oats, wheat, and clovers for one year. During the second year, beds were established with 10 feet of grass and clover cover between rows. During the second year, the beds were planted to cover crops of buckwheat and sorghum-sudangrass to build fertility and break weed cycles prior to planting fruit bushes and trees.

BFF grows a variety of fruits, including aronia, blueberries, honeyberries, elderberries, juneberries, and plums. They grow Titania, Minage Spireux, and Crusader black currants. They have a u-pick operation and sell directly to consumers and breweries. They remove $^{2}/_{3}$ of canes every year to remove 4-year-old canes. Consort plants got powdery mildew. Current stem borers have been a problem in some years. Can be treated with BT (Dipel) to control borers. If canes wilt it may be due to borers.

SAVANNA INSTITUTE