

# How Cranberry Bogs Work

BY [RUSSEL AVERY](#)



Cranberries must be very hardy to thrive in a place as filthy as a bog. See more [pictures of fruit](#).

DARREN MCCOLLESTER/[GETTY IMAGES](#)

What is it about the [cranberry](#) that enables it to grow and thrive in a bog? Considering the berry's delicate nature and vibrant ruby red glow, it's hard to imagine that the ideal environment for its survival would be such an unusual and harsh place.

**Bogs** are one of North America's most distinctive types of [wetlands](#). They're strange ecosystems characterized by thick sphagnum moss, acidic [waters](#), peat deposits and a spongy, mat-like substance on the water's surface. Cranberries thrive best in **beds** within the bog, which consist of alternating layers of sand, peat, gravel and clay. Cranberry vines produce horizontal stems called **runners** that may grow up to six feet (1.82 meters) long and can spread profusely over the bog's floor.

Plants that grow in bogs have to contend with a host of unfavorable conditions, but the cranberry plant's durability allows it to survive in this habitat. For example, cranberries need fresh water to survive. Of course, the fact that bogs consist of mostly acidic water represents a challenge to the plant. Luckily, the fruit's woody stems are tough and their small leaves have a leather-like consistency. This enables the plant to retain as much fresh water as possible by restricting the amount of usable water that passes through [source: [Johnson](#)]. The plant's fine roots also absorb and use organic nitrogen to survive, despite the scarcity of nutrients in the bog's sterile soil [source: [Eck](#)]. What's more, cranberry vines are resilient -- an undamaged one can last indefinitely. In fact, some vines in the cranberry bogs of Massachusetts are more than 150 years old [source: [CCCGA](#)].

Cranberries have become a sought-after crop because they're versatile and packed with nutrients and [antioxidants](#). To meet the global demand, farmers must take extensive measures to keep their cranberry bogs in pristine condition to keep their crop strong. In this article, we'll explore farmers' efforts to keep their berries healthy all year long. We'll also see the fruits of the farmers' labor once the fall harvest season arrives.

On the next page, we'll take a closer look at these cranberry bogs and discuss the increasingly pivotal role that man plays in creating these environments.

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# What Are Bogs and Where Did They Come From?

Scientists discovered that bogs were made by glacial deposits thousands of years ago. Many bogs began as ponds and small lakes called **kettle holes** that were created when [glaciers](#) began to separate from one another. These glaciers became lodged in depressions in the land and had melted by the end of the [ice age](#). These kettle holes, lined with impermeable materials like clay, became filled with water and organic matter; soon after, unique plants like [cranberries](#) began to grow and thrive there. Present-day natural bogs, like the Tannersville Cranberry Bog in the Pennsylvania mountains, are believed to have been formed around 10,000 years ago.

Keep in mind that no two natural cranberry bogs are exactly alike. They may vary in consistency, shape, depth and size. A typical bog that might be found in a New England basin often appears as a circular pond with a floating mat of peat mosses or heath shrubs. The open water may be surrounded by sedges, dwarf shrubs and an enclosing forest of conifers. The kettle bogs can be relatively small -- or they can spread out over up to several hundred acres and measure up to 40 feet deep (12.2 km) [source: [Johnson](#)]

Many environmental factors can influence a bog's formation, but nothing's as important as a plentiful water supply. In Canada, the bog-like landscapes are vast and can spread for thousands of miles. Why? The bogs there have a nearly constantly available supply of water. On the other hand, in parts of the U.S., bogs have developed only in depressions where water collects in the basins or in low areas where drainage slows or stops completely [source: [Johnson](#)].

Interestingly, the bog's acidity, cold temperatures and lack of oxygen slows the biological activity of the bog itself. As dead matter decomposes within it, the bog becomes even more stagnant and oxygen deficient. Most bacteria and fungi cannot survive without oxygen; as a result, these agents of decay are no longer

present. When something dies in a bog, it will decompose at a much slower rate and therefore could be perfectly preserved for thousands of years [source: [Johnson](#). To put it plainly: If you're trying to dispose of something unsavory, you should look elsewhere.

Most of the bogs currently used for cranberry production are man-made. They were usually developed on natural wetlands or on uplands used to replicate the wetland environment. To thrive, each site must have an abundant supply of fresh water, access to a source of sand, the ability to hold flood water and level site topography. Environmental considerations must also be taken into account when selecting a bog site.

## BOG PLANTS

Bogs can support a number of unique species of plants:

- The Northern Pitcher -- a carnivorous plant
- Cotton Grass -- sedge
- Blueberry -- shrub
- Labrador tea -- tree and heath
- Tamarack -- coniferous tree

## **Keeping Cranberries Healthy**



**Harvest at the Weston Cranberry Farm in Carver, Mass.**

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The [cranberry](#) growing season lasts from April to November; the fruiting buds mature during the winter dormancy period. During the dormant season, severe winter [weather](#) could harm or even kill cranberry vines, which is why farmers must take preventative measures to protect their crop. The farmers flood the cranberry bogs (which often freeze over) to protect the vines and buds from injuries associated with cold weather. Generally, the initial flood takes place in December and is held in the bogs until winter's end.

A practice called **sanding** is also crucial to the health of the cranberries and the bog itself. It's exactly what you think it is -- a layer of sand measuring 1/2 inch to 2 inches thick (1.27 to 5.08 centimeters) is applied to the surface of the cranberry bogs every few years to achieve a variety of positive effects. During the winter, growers may apply sand to the ice. After the spring thaw, the sand filters all the way down to the vines. This stimulates new growth because the sand covers the stems, which encourages rooting and enables the vines to become more productive. Sanding also reduces insect populations, suppresses disease, controls weeds and fungi and improves the bog's overall productivity. The sand actually buries weed seeds, fungal spores, insect eggs and living insects [source [CCGGA](#)].

As spring rolls in, the vines wake up from their long state of dormancy for the growing season. The growers remove the winter flood from the bogs as the warmer weather arrives. Even though the harsh winter months are behind them,

the farmers still face lingering threats that could potentially wipe out their entire harvest -- a hard frost, for example. As the growing season begins, farmers have to be on their toes and keep a watchful eye on the weather forecast. Workers may need to turn on the irrigation system at a moment's notice to keep water flowing over the vines in the bog if the berries are in danger of freezing.

Even bogs require a spring cleaning. This is when farmers control their weed populations and make necessary renovations to their cranberries' habitat. In some cases, replanting may be necessary. Preparation for planting new vines may require the use of heavy equipment to move the soil, level the bog and square off beds. Workers may also revamp the bog's [irrigation systems](#) if they need maintenance.

Sprinkler systems are needed to help cranberry crops contend with the summer heat. Cranberries can require up to a quarter of an inch (0.63 cm) of water per acre per day during the hottest and driest days [source: [CCCGA](#)]. Bees play a large role during the summer months as well due to pollination.

The fall harvest takes place every year from mid-September to early November. We'll see what all the excitement's about on the next page.

## **The Fall Cranberry Harvest**

When you see pictures of farmers who seem to be standing in the middle of a floating field of [cranberries](#), do you know exactly what's going on there? Simply put, harvest time has arrived.

The process of harvesting cranberries off the vine used to be labor-intensive and inefficient because the berries were hand-picked. Over the years, more effective methods have been implemented to harvest the cranberries.

Since the cranberry fruit has pockets of air inside of it, someone came up with the brilliant idea to flood the bogs with [water](#) to help remove the berries from the vines. The first successful **water harvesting** was in the 1960s; this is the predominant method of cranberry harvesting used today. Also known as **wet harvesting**, the dry bogs are flooded with up to 18 inches (45.7 centimeters) of water the night before the harvest. The following day, the farmers use water reels nicknamed **egg beaters** to dislodge the berries from the vines so they'll float to the water's surface. The farmers then wade through the bog and round up the fruit with large wooden or plastic brooms. This process is called **corralling**. Once the bobbing berries are gathered together, they're transferred to a loading area where they're lifted by conveyor belts. (Sometimes, a pump truck will suck the berries right off the bog.) The berries are then cleaned before processing. More than 85 percent of the crop is harvested in this manner; however, the use of the water reel to beat the berries off the vines is relatively harsh on the delicate fruit. Therefore, wet harvested cranberries are used mostly for juice drinks, sauces, or as ingredients in other products.

**Dry harvesting** is the best way for farmers to collect the freshest berries. This method of harvesting is used to supply the fresh fruit market. Growers walk with mechanical rakes trailing them. These rakes have metal prongs that are used to comb the berries off the vines. As the machine propels itself through the bog, the tines skim along the ground under the vines, stripping off the berries, which are then elevated into bags. Afterward, the fruit is taken from the bogs by vehicle (sometimes by [helicopter](#)) to protect the vines within the bog. The cranberries are then promptly delivered to receiving stations -- and then to your grocery store produce aisle.

## **Cranberry Farming and the Local Economy**

When you think of the cranberry industry, you may think of New England. It may surprise you to learn that the Midwestern state of Wisconsin actually provides nearly 60 percent of the U.S. supply of cranberries. In fact, Wisconsin produced a whopping 4.3 million barrels of the fruit in 2008 [source: [NASS](#)]. The cranberry industry contributes nearly \$350 million annually to Wisconsin's economy [source: [WSGA](#)]. To give you some perspective on the matter, one barrel of cranberries weighs exactly one hundred pounds; the entire U.S. produced 7.6 million barrels in 2008 [source: [NASS](#)].

Massachusetts is the largest cranberry producer in the U.S. after Wisconsin, boasting about 30 percent of the nation's cranberry production in 2008 -- the state's largest cranberry crop in history. (The other three major cranberry producing states are New Jersey, Oregon, and Washington.) Due to favorable weather conditions in key areas, cranberry production in the two biggest cranberry producing states rose in 2008, which created an overall 16 percent domestic gain from a somewhat disappointing 2007 [source: [NASS](#)].

When you explore the cranberry farming industry, you'll find many small multi-generational family-run farms with less than twenty acres of bog. The fall harvest has become quite a tourist attraction in many areas; cranberry festivals and events in towns from Cape Cod to the Pacific Northwest pump substantial dollars into the local economy every year [source: [Greenfield](#)]. For example, an announced 5,000-acre expansion of cranberry beds in the small town of Cranmoor, Wis., could lead to the creation of more than 1,000 jobs [source: [Shuda](#)]. Recently, the town of Whitefish Point, Mich., was named the cranberry capital of Michigan. The award and recognition could bring a boost to the local economy by attracting more interest to the industry [source: [CC](#)].

Despite the popularity of the American cranberry industry, there are other countries that are pretty serious about their cranberries as well. The United States and Canada combined cultivate most of the world's cranberries on approximately 48,000 acres (194.25 square kilometers) of cranberry bogs. The Canadian provinces of British Columbia and Quebec occupy approximately 8,000 of these acres; Chile has around 1,000 acres (4.05 square kilometers) of its own cranberry

bogs [source: [CCGA](#)]. Currently, British Columbia is responsible for more than 80 percent of all production in Canada and can produce more than 750,000 barrels of cranberries per year. That total represents almost 10 percent of the annual North American cranberry production [source: [BCCGA](#)].

## CRANBERRY GROWING LOCATIONS

Locations other than New England where cranberries are commercially grown:

- In the United States: New Jersey, Oregon, Washington, Wisconsin, Michigan and Minnesota
- In Canada: British Columbia, Quebec, New Brunswick, Nova Scotia, Ontario and Prince Edward Island
- In South America: Chile

## Environmental Effects of a Cranberry Bog



**Many farmers have implemented eco-friendly crop cultivation methods.**

DARREN MCCOLLESTER/[GETTY IMAGES](#)

Commercially grown [cranberries](#) can negatively impact the environment, but if you look at the situation closely, you'll notice something of a trade-off taking place. As we've learned, fresh [water](#) is crucial to a bog's survival, but local streams and rivers can be harmed by the pesticides and fertilizers often used in a cranberry bog. This pollution of the waterways can hurt fish and other aquatic life. Another threat is the potential for increased water temperature in waters downstream from the bog site. The increase in water temperature can result from the erection of dams in streams to create water-supply ponds or diverting water in streams for their bogs. The warmer water has been shown to have a damaging effect on the trout's habitat. In addition, cranberry cultivation has accounted for a significant portion of [wetland](#) losses; the result of converting a natural wetland into a bog is a loss of wildlife and biodiversity [source: [Watson](#)].

There is a silver lining to all of this, however: Growing cranberries commercially requires a substantial support network which can comprise many acres of undeveloped fields, forests, streams and ponds. These support lands provide valuable habitats for wildlife. Cranberry farms can also serve as a barrier to [urban sprawl](#): By initiating the best management practices possible, farmers are also taking more eco-friendly approaches to crop cultivation [source: [Watson](#)]. For example, they've reduced the amounts of pesticides they use by establishing Integrated Pest Management Programs (IPM). IPM is an initiative of the [Environmental Protection Agency](#) (EPA) that aims to protect public health, diminish pollution in ecologically sensitive areas and reduce farm workers' exposure to pesticides by reducing their use on crops. The initiative accomplishes this by carefully monitoring the way pests interact with their environment and using this information in tandem with pest control methods that benefit the environment [source: [Cahill](#)]. The cranberry industry has also been actively developing practices that encourage the protection of water quality and the wetlands [source: [Watson](#)].

As we've seen, North America supports a robust cranberry industry. Cultivating this crop from the cranberry bogs we've just learned about has had some effect on the environment. Whether this effect is negative or positive just depends on your point of view.

Take a look at the links on the next page for lots more information on cranberry bogs and the cultivation of the cranberry plant.

## **Lots More Information**

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