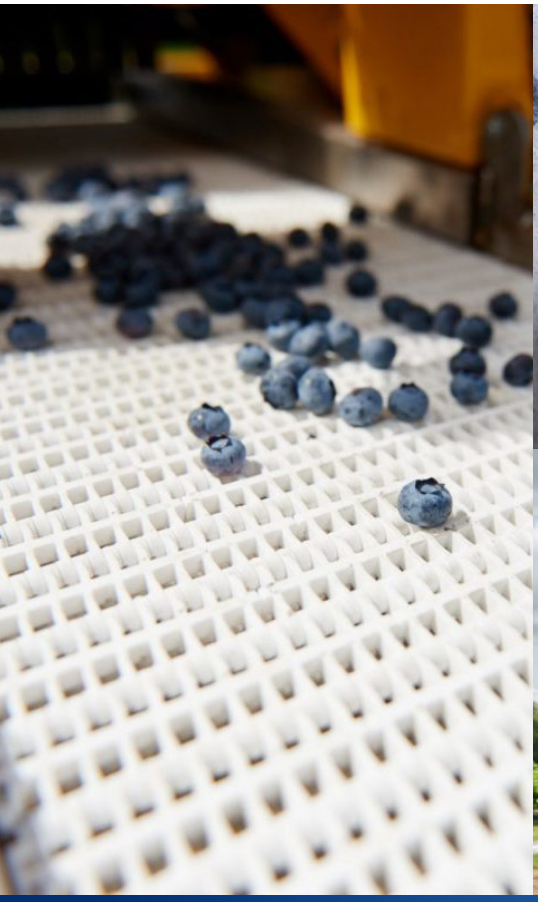
blueberries
Inspiring Possibilities™
U.S. Highbush Blueberry Council



Inspiring Possibilities
with Highbush Blueberries

The Highbush Blueberry[1]

Genus: *Vaccinium corymbosum* L. (Northern highbush), *Vaccinium ashei* or V. *virgatum Aiton* (Southern blueberry), and hybrids of these species.

All blueberries are of the genus *Vaccinium*. In North America, two main types of blueberries are grown commercially: the highbush and the lowbush. Across North America, Chile and Peru, highbush blueberries comprised 85.1% of total blueberry production and lowbush blueberries accounted for 14.9% in 2020.

Blueberry Production in North America, Chile and Peru

85.1%
Highbush Blueberries

14.9%
Lowbush Blueberries

Ingredient Formats[1]

The U.S. highbush crop is divided into two main categories:

Fresh 52.3%

Processed 47.7%

Highbush blueberries in the U.S. accounted for

99.5%
of fresh blueberries produced in 2020 and

66.3%
total processed blueberries.

Lowbush blueberries accounted for the remainder of U.S. blueberry production in 2020.[1,2]

Processed highbush blueberries are available in frozen, dried, liquid and other formats to meet manufacturer specifications.

Composition[3]

09054 Blueberries, frozen, unsweetened

Amount 100g		Units
Water	g	86.59
Energy	Kcal	51
Protein	g	0.42
Total lipid, fat	g	0.64
Carbohydrates	g	12.17
Sugars, total	g	8.45
Fiber, total dietary	g	2.70
Calcium, Ca	mg	8.00
Iron, Fe	mg	0.18
Magnesium, Mg	mg	5.00
Phosphorous P	mg	11.00
Potassium, K	mg	54.00
Sodium, Na	mg	1.00
Vitamin C	mg	2.50
Folate, total	ug	7.00
Choline, total	mg	5.10
Vitamin A, RAE	ug	2.00
Lutein + zeaxanthin	ug	68.00
Vitamin E (alpha-tocopherol)	mg	0.48
Vitamin K (phylloquinone)	ug	16.40

G = grams, mg = miligrams, ug = microgram, Kcal = kilocalories

Size Classification

Most blueberries are marketed as naturally sized. USDA's size classification[4] is based on the number of berries to fill one cup (237 ml). According to the USDA Standards for Grades of Blueberries,[5] "Because of the size differences between varieties and the difference in size preference in various markets, there are no size requirements in the grade."[5] Most manufacturers use berry count or range per pound (lb.) or kilogram (kg.). Manufacturers should communicate requirements to suppliers.

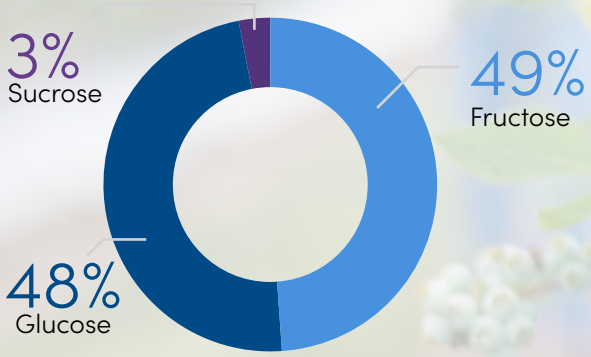
Extra Large	<90 berries per cup*
Large	90-129 berries per cup*
Medium	130-189 berries per cup*
Small	190-250 berries per cup*

**1 cup fresh, raw blueberries = 148 g and*
**1 cup frozen unsweetened blueberries =155 g[3]*

Chemistry[6]

pH	**2.85 - 3.49**
Titratable acidity (% citric acid)	**0.40 -1.31 %**
Soluble solids /acid ratio	**11.2 - 14.3 %**

Total Sugars[7]



**Fruit maturity at harvest, growing conditions and other variables affect fruit chemistry. Substances and amounts shown are for general information purposes only.*

Flavonoids[8-9]

09054 Blueberries, frozen, unsweetened

Mean Amount/100 g	Units
Anthocyanidins	
Cyanidin	4.36 mg
Petunidin	18.16 mg
Delphinidin	21.59 mg
Malvidin	49.65 mg
Peonidin	0.47 mg
Flavones	
Luteolin	1.80 mg
Flavanols	
Kaempferol	1.10 mg
Myricetin	1.76 mg
Quercetin	4.64 mg
Proanthocyanidin	
Proanthocyanidin dimers	6.07 mg
Proanthocyanidin trimers	5.37 mg
Proanthocyanidin 4-6mers	18.70 mg
Proanthocyanidin 7-10mers	3.85 mg

Specifications

Form	Usage	Benefits
Fresh	Baked goods, top finished products.	Consumers will pay more for fresh products.
Frozen	Baked goods, fillings, sauces, spreads and dairy products. Available in case frozen, individually quick frozen (IQF) and straight pack to meet manufacturer needs.	Integrate directly into products.
Shelf Stable	Pie and pastry fillings. Products with a range of fruit percentages available.	Easy to buy, store and use.
Liquids (juice, concentrate, puree)	Beverages, fillings, sauces, dressings, syrups, marinades, frozen desserts, baby foods, ice creams and yogurts. Range of consistencies available.	Natural source of color and fruit flavor. The low pH range provides tangy flavor and helps storage stability.
Dried	Cereals, cookies, dry snack mixes. Smaller fruit size for individual piece identity. Infused formats give chewy mouthfeel. Coatings minimize stickiness. Whole, sliced and diced; powder and fiber available in various sieve sizes. Freeze dried and microwave dried have crisp flavor notes. Powders used in coatings, health bars. Fiber used in biscuits, pet foods, cosmetics.	Low moisture benefits. Natural source of color and fruit flavor. The low pH range provides tangy flavor and helps storage stability.

New Products with Blueberries[10]

Consumers today are looking for products that deliver on taste *and* health. With blueberries delivering on both, it's no wonder that food manufacturers are using one of consumers' favorite fruits in product applications across the board, from snacks, to baby food and more. Due to their diverse format options, blueberries offer a wide range of product application opportunities to manufacturers.

Category	Total Sample
Snacks	19.70%
Bakery	14.30%
Dairy	14.10%
Breakfast Cereals	10.30%
Fruit & Vegetables	8.50%
Baby Food	7.10%
Nutritional Drinks & Other Beverages	5.80%
Juice Drinks	3.90%
Desserts & Ice Cream	3.40%
Sweet Spreads	3.00%
Chocolate Confectionery	2.10%
Sugar & Gum Confectionery	1.90%
Sauces & Seasonings	1.30%
Meals & Meal Centers	0.97%
Hot Beverages	0.97%
Carbonated Soft Drinks	0.65%

Consumption[11-14]

From 2000-2002 to 2017-2019, U.S. fresh blueberry consumption grew over 510%, according to the U.S. Department of Agriculture.[11] In 2019, per capita use of fresh blueberries reached 2.33 lb. (1,056.87 g.) and frozen per capita consumption was 0.32 lb (145.15 g.) totaling 2.65 lb. (1,202.02 g.).[12]

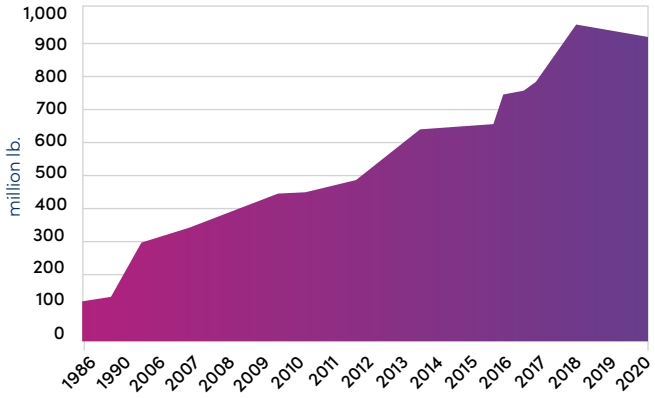
+510% Growth of fresh U.S. blueberry consumption per capita

+8% Retail dollar sales growth of fresh blueberries in 2019[13]

2x the growth rate of the overall berry category in dollars[13]

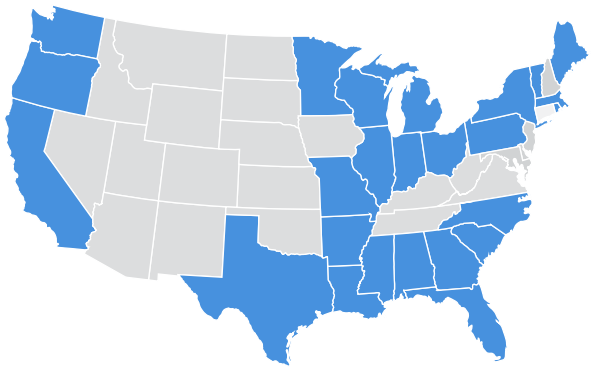
30% The average amount more that consumers routinely pay for blueberries compared to other berries[14]

North American Production in Canada, Mexico and the U.S. [1-2, 15]



Major Production States in Blue[1]

U.S. highbush blueberries continue to thrive with production acres, farming and processing efficiencies.



In the U.S., fresh blueberry production begins in February in Florida and California, and ends in October in the Pacific Northwest.

The peak of North American frozen fruit production is from June through August.

While the highbush blueberry is now produced throughout the world, the highbush blueberry is primarily produced in 48 states, two Canadian provinces, Chile, Peru and Mexico, with a combined projected production of 1,241.1 million lb. in 2020. North America's (U.S., Canada and Mexico) projected production in 2020 is 895.1 million lb. of highbush blueberries. The estimated total for U.S. highbush production in 2020 was 630.1 million lb.[1] The 2020 projected fresh highbush crop estimate for North America was 504.8 million lb. (228,973 metric tons.) and processed was 390.8 million lb. (177,263 metric tons.)

U.S. Blueberries: 100+ Years of Commercial Production

The commercial propagation of forest blueberries came about when farmer Elizabeth White and USDA scientist Frederick Coville joined forces. They recruited local woodsmen to track down native highbush blueberries with large, sweet fruit growing abundantly in New Jersey's Pinelands. They made cuttings from the most promising bushes and planted thousands of seedlings, identifying the best qualities for commercial viability – flavorful, well-sized berries with good texture. The first commercial crop went to market in 1916.

U.S. Highbush Blueberry Council

The U.S. Highbush Blueberry Council (USHBC) actively promotes the consumption of highbush blueberries in the United States and abroad. The Council represents highbush blueberry producers, handlers, importers and exporters of highbush blueberries. Activities are funded by an assessment from blueberries grown and imported into the U.S. For more information about highbush blueberries, visit foodprofessionals.blueberry.org/for-food-manufacturers

Sources

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[13] 2019 Total U.S. Retail Blueberry Performance, Category Partners, March 3, 2020
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