

HIGHBUSH BLUEBERRIES

Beautiful & Flavorful

Formula Ready Blueberries



Super
Ingredient!

The Highbush Blueberry

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

Composition (1)

09054 Blueberries, frozen, unsweetened

Amount/100 g

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	mg	7.00
Choline, total	mg	5.10
Vitamin A	IU	46.00
Lutein + zeaxanthin	mg	68.00
Vitamin E (alpha-tocopherol)	mg	0.48
Vitamin K (phylloquinone)	mg	16.40

g=grams mg=milligrams kcal=kilocalories IU=International Units

Size Classification

Most blueberries are marketed as naturally sized. USDA's size classification (2) is based on the number of berries to fill one-cup (237 ml). According to the USDA Standards for Grades of Blueberries (3), "Because of the size differences between varieties and the difference in size preference in various markets, there are no size requirements in the grade." (3) Most manufacturers use berry count or a range per pound (lb.) or per 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

USDA reference 09054. Blueberries, frozen, unsweetened.(1):

1 cup blueberries, unthawed is equal to 155 g.

USDA reference 09050. Blueberries, raw. (1):

1 cup of raw blueberries is equal to 148 g.

Chemistry*

pH (7)	2.85 – 3.49
Titrateable acidity (% citric acid) (7)	0.40 - 1.31 %
Soluble solids/acid ratio (7)	11.2 - 14.3 %
Total Sugars (4)	
Fructose	49%
Glucose	48%
Sucrose	3%

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

Beautiful Blueberries



Flavonoids (1) (5) (6)

09054 Blueberries, frozen, unsweetened

Amount/100 g

Units

Anthocyanidins

Cyanidin	mg	4.36
Petunidin	mg	18.20
Delphinidin	mg	21.60
Malvidin	mg	49.60
Peonidin	mg	0.50

Flavones

Luteolin	mg	1.80
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Flavonols

Kaempferol	mg	1.10
Myricetin	mg	1.80
Quercetin	mg	4.60

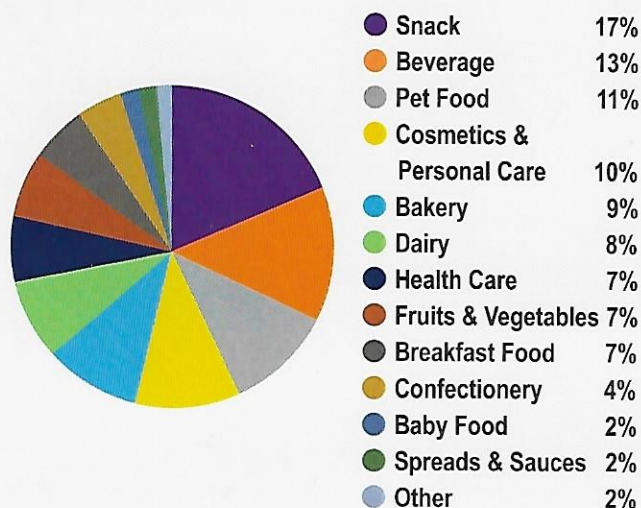
Proanthocyanidin

Proanthocyanidin dimers	mg	6.10
Proanthocyanidin trimers	mg	5.40
Proanthocyanidin 4-6mers	mg	18.70
Proanthocyanidin 7-10mers	mg	3.90

Specifications

Form	Usage	Rationale
Fresh	Baked goods; top finished products.	Consumers will pay more for fresh products.
Frozen	Baked goods, fillings, sauces, spreads, and dairy products. Available case frozen, individually quick frozen (IQF), straight pack to meet manufacturer needs.	Integrate directly into products.
Shelf Stable	Pie and pastry fillings. Look for products with substantial percentage of fruit.	Easy to buy, store and use.
Liquids (juice, concentrate, purée)	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	Low moisture benefits (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.	Natural source of color and fruit flavor. The low pH range provides tangy flavor and helps storage stability.

New Products with Blueberries ⁽⁹⁾



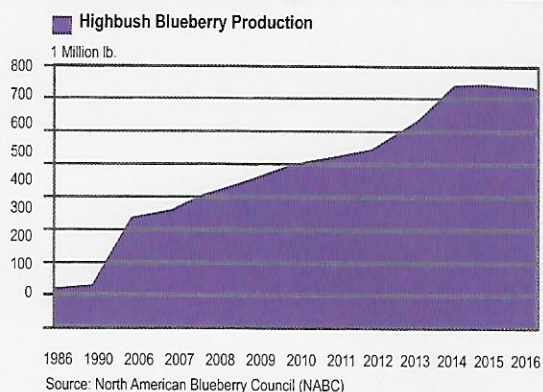
Consumption

In the last 20 years (1996-2016), US fresh and frozen blueberry consumption grew 655% and 173% according to the US Department of Agriculture. In 2016, per capita use of fresh blueberries reached 1.77 lb. (802.86 g.) and frozen per capita consumption was 0.64 lb. (290.3 g.) totaling 2.41 lb. (1.09 kg.) per person. ⁽¹⁰⁾

Classifications

All blueberries are of the genus *Vaccinium*. In North America, two main types of blueberries are grown commercially: the highbush and the lowbush. Highbush blueberries comprise 88% of all blueberries grown in the United States and 63% of the North American blueberry crop. The US highbush crop is divided into two main categories: fresh (59%) and processed (41%). Processed highbush blueberries are available: frozen, dried, liquid, and in other formats to meet manufacturer specifications. ⁽⁸⁾

North America Production

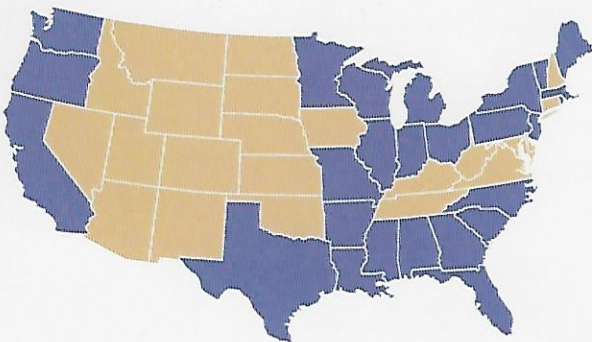




USA Blueberries: 100+ Years of Commercial Production

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.

Photo courtesy of Whitesbog Trust, New Jersey



Major Production States in Blue (8)

US highbush blueberries continue to thrive with production acres, farming and processing efficiencies. In the USA fresh blueberry production begins in February in Florida and California, and ends in October in the Northwest. The peak of North American frozen fruit production is from June through August.

The highbush blueberry is produced in 33 states, two Canadian provinces, and Mexico. North America (USA, Canada and Mexico) produce 956.7 million lb. (433,952 mt.) of blueberries annually. The 2017 preliminary highbush crop estimate for North America is 656.7 million lb. (297,874 mt.). Fresh market share is 400.4 million lb. (181,618 mt.) and frozen is 256.3 million lb. (116,255 mt.). USA highbush total production is 473.7 million lb. (214,866 mt.). (8)

Real Blueberries™ Seal: Real Opportunity

The US Highbush Blueberry Council awards the Real Blueberries™ Seal to products containing favorable amounts of real highbush blueberries. Companies utilizing the seal on their packaging identify to consumers that their products are blueberry authentic. Let customers know that blueberry identified products contain Real Blueberries Inside™ and support America's 2,437 highbush blueberry growers. Say yes to real blueberries in products. Companies benefit from increased awareness generated by USHBC consumer publicity and market development activities.

For information and to sign up please visit www.realblueberries.org.

*Our blueberry growers
thank you for the support!*



US Highbush Blueberry Council (USHBC)

USHBC actively promotes the consumption of highbush blueberries in the United States (USA) and abroad. The Council represents highbush blueberry producers, handlers, importers and exporters of highbush blueberries. Activities are funded by an assessment from blueberries grown in the USA and those imported into the USA.

For web and technical information about highbush blueberries please contact:

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www.realblueberries.org
www.blueberrytech.org



References:

- (1) National Nutrient Database for Standard Reference Release 28 slightly revised May, 2016 Software v.2.6.1. The National Agricultural Library
- (2) USDA. United States Standards for Grades of Blueberries. Size classification 51.3477. Effective March 29, 1995. Reprinted January 1997.
- (3) USDA-AMS. Blueberries Grade and Standards. <https://www.ams.usda.gov/grades-standards/blueberries-grade-and-standards>. Section §51.3475 (b).
- (4) USDA. Sugar Content of Selected Foods. (Current USDA nutrient database provides total sugars only. This composition classic identifies types of sugars and percentages.)
- (5) Baghwat, S. and Haytowitz, D. USDA Database for the Flavonoid Content of Selected Foods. Release 3.2. 2015. <https://www.ars.usda.gov/ARUserFiles/80400525/Data/Flav/Flav3.2.pdf>
- (6) Baghwat, S. and Haytowitz, D. USDA Database for the Proanthocyanidin Content of Selected Foods. Release 2. Sept. 2015, slightly rev. Dec. 2015. USDA-SRS Nutrient Data Laboratory. <https://www.ars.usda.gov/ARUserFiles/80400525/Data/PA/PA02.pdf>
- (7) J. Amer Soc Hort Sci. 109 (1):1105-111, 1984.
- (8) North American Blueberry Council. 2017 Crop Report as of October 2017.
- (9) Mintel New Product data. 2016.
- (10) USDA-ERS. Fruit and Tree Nut Yearbook 2017. Oct. 28, 2017. Tables G-5, G-38.