

Sweet potato

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The **sweet potato** (*Ipomoea batatas*) is a [dicotyledonous](#) plant that belongs to the bindweed or morning glory [family](#), [Convolvulaceae](#). Its large, [starchy](#), sweet-tasting, [tuberous roots](#) are a [root vegetable](#).^{[1][2]} The young leaves and shoots are sometimes eaten as [greens](#). The sweet potato is only distantly related to the [potato](#) (*Solanum tuberosum*) and does not belong to the [nightshade](#) family, [Solanaceae](#), but both families belong to the same taxonomic order, the [Solanales](#).

The plant is a [herbaceous perennial vine](#), bearing alternate heart-shaped or palmately lobed [leaves](#) and medium-sized [sympetalous flowers](#). The edible tuberous root is long and tapered, with a smooth skin whose color ranges between yellow, orange, red, brown, purple, and beige. Its flesh ranges from beige through white, red, pink, violet, yellow, orange, and purple. Sweet potato [cultivars](#) with white or pale yellow flesh are less sweet and moist than those with red, pink or orange flesh.^[3]

Ipomoea batatas is native to the tropical regions in the Americas.^{[4][5]} Of the approximately 50 [genera](#) and more than 1,000 species of Convolvulaceae, *I. batatas* is the only crop plant of major importance—some others are used locally (e.g. *I. aquatica* "kangkong"), but many are poisonous. The genus *Ipomoea* that contains the sweet potato also includes several garden flowers called [morning glories](#), though that term is not usually extended to *Ipomoea batatas*. Some [cultivars](#) of *Ipomoea batatas* are grown as ornamental plants under the name *tuberous morning glory*, used in a [horticultural](#) context.

Although the soft, orange sweet potato is often called a "yam" in parts of North America, the sweet potato is botanically very distinct from a genuine [yam](#) (*Dioscorea*), which is native to Africa and Asia and belongs to the [monocot](#) family [Dioscoreaceae](#). To add to the confusion, a different crop plant, the *oca* (*Oxalis tuberosa*, a species of wood sorrel), is called a "yam" in many parts of [Polynesia](#), including New Zealand.

Although the sweet potato is not closely related botanically to the common [potato](#), they have a shared etymology. The first Europeans to taste sweet potatoes were members of [Christopher Columbus](#)'s expedition in 1492. Later explorers found many cultivars under an assortment of local names, but the name which stayed was the indigenous [Taino](#) name of *batata*. The Spanish combined this with the [Quechua](#) word for potato, *papa*, to create the word *patata* for the common potato.

In [Argentina](#), [Venezuela](#), [Puerto Rico](#) and the [Dominican Republic](#) the sweet potato is called *batata*. In [Mexico](#), [Peru](#), [Chile](#), [Central America](#), and the [Philippines](#), the sweet potato is known as *camote* (alternatively spelled *kamote* in the Philippines), derived from the [Nahuatl](#) word *camotli*.^[6]

In Peru, the [Quechua](#) name for a type of sweet potato is *kumar*, strikingly similar to the Polynesian name *kumara* and its regional Oceanic cognates (*kumala*, *umala*, *'uala*, etc.), which has led some scholars to suspect an instance of [pre-Columbian trans-oceanic contact](#).

In [New Zealand](#), the most common cultivar is the red (purple) cultivar called *kumara*, a name derived from the Māori name *kūmara*, but orange ('Beauregard') and gold cultivars are also available.^[7] Kumara is particularly popular as a roasted food, or in contemporary cuisine as *kumara chips*, often served with [sour cream](#) and [sweet chili sauce](#). Occasionally, shops in Australia will label purple cultivars as "purple sweet potato" to denote the difference to the other cultivars. About 95% of Australia's production is of the orange cultivar named 'Beauregard', originally from North America, known simply as "sweet potato". A reddish-purple cultivar, 'Northern Star', is 4% of production and is sold as "kumara".

Origin, distribution and diversity^[edit]

The [origin](#) and domestication of sweet potato is thought to be in either Central America or [South America](#).^[8] In [Central America](#), sweet potatoes were domesticated at least 5,000 years ago.^[9] In South America, Peruvian sweet potato remnants dating as far back as 8000 BC have been found.

One author postulated that the origin of *I. batatas* was between the [Yucatán Peninsula](#) of Mexico and the mouth of the [Orinoco](#) River in [Venezuela](#).^[10] The [cultigen](#) had most likely been spread by local people to the [Caribbean](#) and South America by 2500 BC.^[11] Strong supporting evidence was provided that the geographical zone postulated by Austin is the primary center of diversity.^[10] The much lower molecular diversity found in [Peru–Ecuador](#) suggests this region should be considered as a secondary center of sweet potato diversity.

The sweet potato was grown in [Polynesia](#) before western exploration. Sweet potato has been [radiocarbon-dated](#) in the [Cook Islands](#) to 1000 AD, and current thinking is that it was brought to central Polynesia around 700 AD, possibly by Polynesians who had traveled to South America and back, and spread across Polynesia to [Hawaii](#) and New Zealand from there.^{[12][13]} It is possible, however, that South Americans brought it to the Pacific, although this is unlikely as it was the Polynesians who had a strong [maritime](#) tradition and not the [native South Americans](#). The theory that the plant could spread by floating seeds across the ocean is not supported by evidence. Another point is that the sweet potato in Polynesia is the cultivated *Ipomoea batatas*, which is generally spread by vine cuttings and not by seeds.^[14]

Sweet potatoes are cultivated throughout tropical and warm temperate regions wherever there is sufficient water to support their growth.^[15] Due to a major crop failure, sweet potatoes were introduced to [Fujian](#) province of China in about 1594 from [Luzon](#). The growing of sweet potatoes was encouraged by the Governor Chin Hsüeh-tseng (Jin Xuezheng).^{[16][17]} Sweet potatoes were introduced as a food crop in Japan, and by 1735 were planted in Shogun [Tokugawa Yoshimune](#)'s private garden.^[18] It was also introduced to [Korea](#) in 1764.^[19]

Sweet potatoes became popular very early in the [islands of the Pacific Ocean](#), spreading from Polynesia to Japan and the Philippines. One reason^[original research?] is that they were a reliable crop in cases of crop failure of other staple foods because of [typhoon](#) flooding. They are featured in many favorite dishes in Japan, Taiwan, the Philippines, and other island nations. Indonesia, Vietnam, India, and some other Asian countries are also large sweet potato growers. Sweet potato, also known as *kelang* in [Tulu](#), is part of [Udupi cuisine](#) in South India. [Uganda](#) (the second largest grower after China), Rwanda, and some other African countries also grow a large crop which is an important part of their peoples' diets. The [New World](#), the original home of the sweet potato, grows less than three percent (3%) of the world's supply. Europe has only a very small sweet potato production, mainly in [Portugal](#). In the Caribbean, a cultivar of the sweet potato called the *boniato* is popular. The flesh of the *boniato* is cream-colored, unlike the more popular orange hue seen in other cultivars. *Boniatos* are not as sweet and moist as other sweet potatoes, but many people prefer their fluffier consistency and more delicate flavor.

Sweet potatoes have been an important part of the diet in the United States for most of its history, especially in the Southeast. From the middle of the 20th century, however, they have become less popular. The average per capita consumption of sweet potatoes in the United States is only about 1.5–2 kg (3.3–4.4 lb) per year, down from 13 kg (29 lb) in 1920. Southerner Kent Wrench writes: "The Sweet Potato became associated with hard times in the minds of our ancestors and when they became affluent enough to change their menu, the potato was served less often."^[20]

Production

According to the [Food and Agriculture Organization](#) (FAO) statistics, world production in 2004 was 127 million tonnes.^[29] The majority comes from China, with a production of 105 million tonnes from 49,000 km² (19,000 sq mi). About half of the Chinese crop is used for livestock feed.^[9]

Per capita production is greatest in countries where sweet potatoes are a staple of human consumption, led by [Papua New Guinea](#) at about 500 kg (1,100 lb)^[30] per person per year, the [Solomon Islands](#) at 160 kg (350 lb), [Burundi](#) and [Rwanda](#)^[31] at 130 kg (290 lb) and [Uganda](#) at 100 kg (220 lb).

About 20,000 tonnes of sweet potatoes are produced annually in New Zealand, where sweet potato is known by its [Māori](#) name, *kūmara*. It was a staple food for Māori before European contact.^[32]

In the United States, [North Carolina](#), the leading state in sweet potato production, provided 38.5% of the 2007 U.S. production of sweet potatoes. In 2007, California produced 23%, Louisiana 15.9%, and Mississippi 19% of the U.S. total.^{[33][34]}

[Mississippi](#) has about 150 farmers growing sweet potatoes on about 8,200 acres (30 km²), contributing \$19 million to the state's economy. Mississippi's top five sweet-potato-producing counties are [Calhoun](#), [Chickasaw](#), [Pontotoc](#), [Yalobusha](#), and [Panola](#). The National Sweet Potato Festival is held annually the entire first week in November in [Vardaman](#) (Calhoun County), which proclaims itself as "The Sweet Potato Capital".

Nutrient content^[edit]

Besides simple starches, raw sweet potatoes are rich in [complex carbohydrates](#), [dietary fiber](#) and [beta-carotene](#) (a [provitamin A carotenoid](#)), while having moderate contents of other [micronutrients](#), including [vitamin B₅](#), [vitamin B₆](#) and [manganese](#) (table).^[35] When cooked by [baking](#), small variable changes in micronutrient density occur to include a higher content of [vitamin C](#) at 24% of the [Daily Value](#) per 100 g serving (right table).^{[36][37]}

The [Center for Science in the Public Interest](#) ranked the nutritional value of sweet potatoes as highest among several other foods.^[38]

Sweet potato cultivars with dark orange flesh have more beta-carotene than those with light-colored flesh, and their increased cultivation is being encouraged in Africa where vitamin A deficiency is a serious health problem. A 2012 study of 10,000 households in [Uganda](#) found that children eating beta-carotene enriched sweet potatoes suffered less vitamin A deficiency than those not consuming as much beta-carotene.^[39]

Comparison to other food staples^[edit]

The table below presents the relative performance of sweet potato to other [staple foods](#). While sweet potato provides less edible energy and protein per unit weight than cereals, it has higher nutrient density than cereals.^[40] According to a study by the [United Nations Food and Agriculture Organization](#), sweet potatoes are the most efficient staple food to grow in terms of farmland, yielding approximately 70,000 [kcal/ha d](#).^[41]

Nutrient content of major staple foods per 100 g portion^[42]

Nutrient component:	<u>Maize / Corn</u> ^[A] ₁	<u>Rice (white)</u> ^[B]	<u>Rice (brown)</u> ^[C] ₂	<u>Wheat</u> ^[C]	<u>Potato</u> ^[D]	<u>Cassava</u> ^[E]	<u>Soybean(Green)</u> ^[F]	<u>Sweet potato</u> ^[G]	<u>Yam</u> ^[Y]	<u>Sorghum</u> ^[H]	<u>Plantain</u> ^[Z]	<u>RDA</u>
Water (g)	10	12	10	13	79	60	68	77	70	9	65	3000
Energy (kJ)	1528	1528	1549	1369	322	670	615	360	494	1419	511	8368 – 10,460
<u>Protein</u> (g)	9.4	7.1	7.9	12.6	2.0	1.4	13.0	1.6	1.5	11.3	1.3	50
<u>Fat</u> (g)	4.74	0.66	2.92	1.54	0.09	0.28	6.8	0.05	0.17	3.3	0.37	
<u>Carbohydrates</u> (g)	74	80	77	71	17	38	11	20	28	75	32	130
<u>Fiber</u> (g)	7.3	1.3	3.5	12.2	2.2	1.8	4.2	3	4.1	6.3	2.3	30
<u>Sugar</u> (g)	0.64	0.12	0.85	0.41	0.78	1.7	0	4.18	0.5	0	15	

<u>Calcium</u> (mg)	7	28	23	29	12	16	197	30	17	28	3	1000
<u>Iron</u> (mg)	2.71	0.8	1.47	3.19	0.78	0.27	3.55	0.61	0.54	4.4	0.6	8
<u>Magnesium</u> (mg)	127	25	143	126	23	21	65	25	21	0	37	400
<u>Phosphorus</u> (mg)	210	115	333	288	57	27	194	47	55	287	34	700
<u>Potassium</u> (mg)	287	115	223	363	421	271	620	337	816	350	499	4700
<u>Sodium</u> (mg)	35	5	7	2	6	14	15	55	9	6	4	1500
<u>Zinc</u> (mg)	2.21	1.09	2.02	2.65	0.29	0.34	0.99	0.3	0.24	0	0.14	11
<u>Copper</u> (mg)	0.31	0.22		0.43	0.11	0.10	0.13	0.15	0.18	-	0.08	0.9
<u>Manganese</u> (mg)	0.49	1.09	3.74	3.99	0.15	0.38	0.55	0.26	0.40	-	-	2.3
<u>Selenium</u> (µg)	15.5	15.1		70.7	0.3	0.7	1.5	0.6	0.7	0	1.5	55
<u>Vitamin C</u> (mg)	0	0	0	0	19.7	20.6	29	2.4	17.1	0	18.4	90

<u>Thiamin</u> (B1)(mg)	0.39	0.07	0.40	0.30	0.08	0.09	0.44	0.08	0.11	0.24	0.05	1.2
<u>Riboflavin</u> (B2)(mg)	0.20	0.05	0.09	0.12	0.03	0.05	0.18	0.06	0.03	0.14	0.05	1.3
<u>Niacin</u> (B3) (mg)	3.63	1.6	5.09	5.46	1.05	0.85	1.65	0.56	0.55	2.93	0.69	16
<u>Pantothenic acid</u> (B5) (mg)	0.42	1.01	1.49	0.95	0.30	0.11	0.15	0.80	0.31	-	0.26	5
<u>Vitamin B6</u> (mg)	0.62	0.16	0.51	0.3	0.30	0.09	0.07	0.21	0.29	-	0.30	1.3
<u>Folate</u> Total (B9) (µg)	19	8	20	38	16	27	165	11	23	0	22	400
<u>Vitamin A</u> (IU)	214	0	0	9	2	13	180	14187	138	0	1127	5000
<u>Vitamin E</u> , alpha-tocopherol (mg)	0.49	0.11	0.59	1.01	0.01	0.19	0	0.26	0.39	0	0.14	15
<u>Vitamin K1</u> (µg)	0.3	0.1	1.9	1.9	1.9	1.9	0	1.8	2.6	0	0.7	120
<u>Beta-carotene</u> (µg)	97	0		5	1	8	0	8509	83	0	457	10,500

<u>Lutein+zeaxanthin</u> (µg)	1355	0		220	8	0	0	0	0	0	30	
<u>Saturated fatty acids</u> (g)	0.67	0.18	0.58	0.26	0.03	0.07	0.79	0.02	0.04	0.46	0.14	
<u>Monounsaturated fatty acids</u> (g)	1.25	0.21	1.05	0.2	0.00	0.08	1.28	0.00	0.01	0.99	0.03	
<u>Polyunsaturated fatty acids</u> (g)	2.16	0.18	1.04	0.63	0.04	0.05	3.20	0.01	0.08	1.37	0.07	

▲ yellow corn

◐ hard red winter wheat

◑ raw cassava

◒ raw sweet potato

⚣ raw yam

! raw long-grain brown rice

◑ raw unenriched long-grain white rice

◒ raw potato with flesh and skin

◑ raw green soybeans

⚣ raw sorghum

⚣ raw plantains

References

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