

The Biology of Musa spp.

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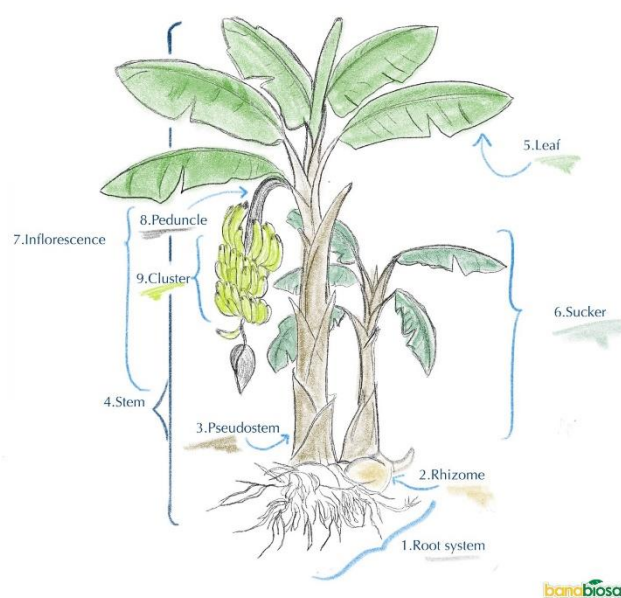
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Introduction

The plantain, often known as the banana, is a large herbaceous plant native to the South Pacific. The plant itself has a slightly confusing taxonomic classification. In general, "banana" refers to plants that produce a sweeter variety of fruit commonly consumed raw, such as the "desert bananas" which account for most of the fruits consumed in the United States or Europe. In contrast, "plantain" commonly refers to starchier fruits that need to be cooked before eating. Plantains account for the majority of bananas consumed as a staple food. There are approximately fifty recognized banana species, all belonging to the genus *Musa*, but given the long history of banana hybridization and the creation of plants with two or three sets of chromosomes (diploid and triploid), it can be difficult for the casual observer to differentiate between banana varieties. The most common classification of the fruit is distinguishing between cultivated and wild species.





Southeast Asia is home to wild-type bananas; however, they are typically not edible to people. Wild types produce less edible due to the hard seeds scattered throughout the fruit, making them largely unwanted for their fruit. However, occasionally, wild-type bananas gave rise to mutant offspring that fruit without seeds. Early people selectively bred the fruit through root offshoots, or "suckers," which emerge at the base of the plants, resulting in seedless mutants, which later became the ancestors of domesticated bananas. Bananas have been produced from suckers "vegetatively" or by cutting the offshoot from the mother pseudostem and transplanting it as a different plant. As a result, domestic bananas were multiplied to produce genetically identical plants that were all of the edible, seedless variety.



The fruit eventually develops into a single banana called a "finger." Fingers can grow in clusters of up to twenty, called "hands," and numerous hands come together to create a "bunch" or "banana stem." Each finger has an edible pulp encased in an epidermis that protects the fruit. Ripe desert bananas are frequently peeled and eaten raw, although plantains and unripe bananas are occasionally cooked and eaten peel and all. The epidermis, or "peel," is also edible. The fruit stores itself in the skin, and even if the environment has tainted the outer peel, the inside pulp is frequently edible. The fruit is thus protected from undesirable elements outside of the peel, but the plant is quite vulnerable to disease. Plantain producers must maintain a constant replanting cycle to sustain consistent crop yields. Replanting suckers after a series of fruiting cycles is crucial because the disease often accumulates over time and drastically reduces the amount of fruit produced by the plant. Because cultivated bananas lack genetic diversity, the plants are especially susceptible to diseases such as Panama Disease, Black Sigatoka, and Banana Bunchy Top Virus etc. When such diseases are contacted, they can be destructive to both individual plants and entire banana plantations. Indeed, due to Panama Disease, the Gros Michel banana became economically extinct by the 1950s.





Nutritional benefits of Banana

Domestic bananas gave a significant nutritional benefit to early farmers. Bananas were available year-round as a non-seasonal crop and became a staple food for many tropical cultures. People in Africa, Asia, the Pacific Islands, and South and Central America depend largely on bananas and plantains for calories. Though it varies by variety, a cooked banana is calorically and nutritionally equivalent to a potato. Bananas are rich in simple and complex carbohydrates and vitamins such as ascorbic acid, B6, carotene, niacin, riboflavin, and thiamin. They are also quite high in potassium. Furthermore, bananas are quickly digested, providing faster access to food energy than apples, milk, oranges, and meats. Bananas have been a staple food for many populations for thousands of years despite being low in protein and fat, and hence, they need to be supplemented in a diet.



Consumption of bananas doesn't have any limits to fruit. Bananas or their derivatives are also used to make various foods such as banana flour, banana chips, and, in some places, banana beer. The banana plant's heart can also be taken to make specific meals or juiced for its fluids. Banana leaves, whether freshly picked or dried, give valuable household components apart from food. Fresh banana leaves can be used as plates or wrapped as cooking pots. When the fronds have dried, they are covered in roofing materials or other fabrics. Since the 1200s, the Japanese have used fibres from the banana plant to manufacture materials for textiles, including garments. Bananas can also be used to make paper. Finally, banana plants are also becoming more common in urban gardens, giving some backyard plots variations of an attractive form.



Plantains are consumed not only for their material value but also for their cultural significance. Bananas serve as sources of popular culture, including religious traditions, musical inspiration or



allusion, and as symbols of sex, race, and class. The historical importance of bananas to culture is continuously being rediscovered, as in the case of the banana's role in the academic disciplines of archaeology and history. Indeed, contemporary techniques for archaeological exploration are being developed around the physical and historical properties of the banana. Fossilized banana silica, known as phytoliths, is used by present-day archaeologists and historians to "date" and determine the presence of the ancient human societies of Polynesia and Southeast Asia. Thus, the banana's cultural and material significance has become fused in current archaeological investigations.

Bananas, in addition to being a staple food source for millions of people, developed into a significant cash and variety crop for Americans and Europeans by the mid-nineteenth century. Desert bananas are among the most popular fruits in the United States and Europe, becoming one of world trade's most important agricultural products, perhaps second only to coffee. Although banana exports serve for only 15% of global plantain output, the economy of many Central American, South American, and Caribbean countries rely significantly on desert banana production and commerce to the West.

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