



Ethnobotanical Leaflets



The Chocolate Tree

By Obeckyo S. Mims

Fossil records are unable to provide information of on the center of origins of the cacao tree. The cacao tree is in the Sterculiaceae family. The first growers of the cacao pods were probably the people who entered the lowland rain forests of the Amazon Basin between 10,000 and 200 B.P. The full name of the cacao tree is *Theobroma cacao*. Most of the information of the cacao have been derived from the cultivated crop. The life and reproduction life cycle of *Theobroma cacao* is identical to a tropical rain forest tree species. Cacao grows optimally in minimal moisture and shade. Cacao is dispersed in small, medium and large areas. This is probably the result of animal dropping the seeds after eating the tasty inside of the pods. Cacao pods are very diverse in morphology. These morphological difference suggests genetic differentiation. The Amazon region is considered the birthplace of the wild cacao tree. *T. cacao* appeared with the arrival of human species in South American. It have been suggested that *T. cacao* is the result of a cross between *T. pentagona* and *T. leiocarpa*. Cacao was not been selected for its seeds, but instead for the pulp surrounding them. Selection for the seeds begin in Mesoamerica. The seed pulp was used as a beverage. Cacao cultivation by the Indians, notably the Aztecs of Mexico and Mayas in Central America was established before the New World was discovered. The next question would have to be how did the cacao tree cross the sea. Christopher Columbus brought a cacao beans back to Europe from the Gulf of Honduras. This cargo of cacao beans were the first specimens to enter Europe. The Aztecs settled in Mexico two hundred years before Cortes conquest of Mexico. When the Spaniards invaded the palaces of Montezuma they found a large number of cacao beans. The cacao beans were used in a drink called chocolatl. The was typically the drink for the most elite in the society. This is the treatment that was done on the cacao prior to storage. Sun dried beans that had been roast in pots. The husk were removed, the nibs were placed on flat or concave stone, then ground and shaped with a roller. The fluid mass is then mixed with corn and spices and made into cakes. The chocolatl drink is made from a piece of the cake mixed with water and mixed with a molinet. The molinet is like a whisk. This drink was flavored with vanilla and other spices. Chocolatl was the drink of the ruler. He had it made for himself and his house everyday. Poor people also used cacao bean but not as a drink but as a flavoring additive. This was a additive for a dish called atolle which is prepared with corn meal. The Spaniards found this drink very bitter. This was probably do to the fact that the Spaniards were only familiar with sweeten drinks. These drink were sweeten with sugar cane which had not been introduced to the Aztecs. The Aztecs were using the sugar of maize or corn for a sweeter. The cacao bean were used as a form of

exchange or money. Slaves would sell for one hundred cacao beans. This bean was highly valued if a soul could be purchased by mere beans. The Spanish used a variety of additive to improve the bitter taste of the cacao bean. These additives were chile peppers, anise, achiote, sugar vanilla, cinnamon, almonds and hazelnuts, pod of campeche, ambergis and a host of others. One particularly important one was orange water. Orange water was added to the drink and in turn became the first nonalcoholic stimulant drink on the continent. This drink was a hit in Europe. Coffee was introduced after 1615. The benefits and rewards from this tree were left a secret for almost a century. This was a way to acquire power and control of this cacao bean. It was not until after Spain lost their control of this commodity that it was really seen in other places. The loss of control of this commodity was the result of a royal marriage between Marie Therese of Spain and Louis XIV of France in 1660. This helped spread the development and popularity of chocolate. The demand for chocolate increased in different parts of the world. In the seventeenth and eighteenth centuries chocolate was thought to cure illnesses. People today for that chocolate give them a sense of well being. This could be true because chocolate is a stimulant. The wealthy were the ones able to afford the highly taxed product. Chocolate also became a hot drink. It was not until 1779 that chocolate entered the Americas. In 1879 the first cacao was planted in the Gold Coast, an island off the coast of Nigeria in the Gulf of Guinea. It was introduced in the Philippine Islands in 1800. All the members of the genus *Theobroma* are woody plants, shrubs and small trees. They are in the subfamily Buettneriaceae of the order Sterculiales. The only member in the Sterculiales family that is highly cultivated for consumption are the Kolas and varieties of *Theobroma* whose seeds are known as cacao beans. These beans are the basic ingredient in cocoa and chocolate and a host of other products. With increased demands for the cacao bean products there arose a need to learn about its structure and life cycle especially reproductive. People also wanted to improve the bitter taste as well. The cacao tree attains full height in ten years, with an average height of 15 to 25 feet tall. The main stem of a young cacao plant may grow to three or five feet in height before branching. Young cacao leaves vary in color according to the type. The colors are as follows: pale green or pink to dark red. Flowers are seen on the cacao tree throughout the year. The fruits or pods are about six to eight inches long when ripe and then yellow, red, or maroon color. They weigh about one pound and have twenty five to forty seeds inside. These trees are self-pollinating by pollen from their own flowers. All cacao are interfertile and show a high rate of cross-pollination. The *Furciproxymia* is the main insect that cross-pollinates this crop. The fruit is composed of a fairly thick husk and seeds. Criollo, forastero, and trinitario are the main types of *T. cacao* used commercially. Criollos were domesticated in Mesoamerica and have red or yellow pointed pods when ripe with thin husks. The seeds are thick and have white or pale purple cotyledons and a very fine flavor. Central America criollo, the oldest kind cultivated in Central America. Their seeds require very little fermentation to produce chocolate. Forasteros have thick pod husks and generally flat, dark purple seeds possessing a high astringency. Amelonados are the most widely spread cultivated types of cacao in the world today. Trinitarios are intermediate types between criollo and forastero. The production of chocolate in the United States only comprises twenty percent of total production of cacao from large-scale modern plantations. The Mars Company of New Jersey operates the Almirante Cacao Research Center in Bahia, Brazil. The world's Finest Chocolate Company of Chicago operates the Union Vale Cocoa Estate, a 238-acre cacao plantation on Saint Lucia. Cacao farming is costly typically start-up costs of three thousand or four thousand dollars an acre. The vast bulk of the world's cacao is produced by small farmers. The process of growing cacao is slow and laborious. A worker sits on a crate in the shade and cracks open the tough pods with a sharp cutting tool or machete.

A crosswise cut is made into the pod and it is then broken apart. The seeds get scooped out of the pod and dumped into a deep wooden box. The empty pods are tossed into a pile to rot. The seeds are then taken from different parts of the world. The cacao beans undergo several days of fermentation in which anaerobic microbes feed on the energy-rich mucilaginous pulp coating the seeds, converting the pulp to alcohol. During fermentation, polyphenols in the seeds are converted into the chemical precursors of the coveted chocolate flavor. The outer seed color changes from reddish tan to purplish. Fermentation kills the cacao embryos while microbial liquefies the pulp which surrounds the seeds. The chocolate flavor is enhanced by this process. A second fermentation process is done. The beans change from purple to dark brown, water loss shrinks the seeds from inside the seed coats. The beans are then sun dried. Before shipping the beans are checked for mold or fungal infestations, flavor, aroma and size. The end product of this process is in a raw state, it is still bitter and oily. The processing plant where the beans are sent first clean the seeds to remove any foreign particles. The seeds are then roasted in 121 degree ovens. Beans that are going to be used for chocolate will be roasted at a higher temperature. The roasting process removes water and acids, leaving only the chocolate flavor. Roasted seeds are cracked open to remove large cotyledons and the husk or shells. The shells are used for fragrant garden mulch or used for cocoa butter. It is sometimes also used for animal feed. Husks may be used to extract the theobromine which is able to be chemically converted into caffeine for use in beverages and medicines. The separated cotyledons are called the nibs. This material is used to make chocolate. Grinding the roasted nibs produces chocolate "liquor", which has a fat content of fifty-five to fifty-eight percent. The liquor can be molded into baking chocolate. To make the chocolate in the form we so love further processing is required. Chocolate liquor is processed in hydraulic presses to remove some of the fat, resulting in a cocoa powder with twenty to twenty-three percent fat content. Further pressing further reduces fat content. The high-fat cocoa powders are used to make drinks: the low fat powder contains ten to thirteen percent fat is used in cakes, ice cream and other tasty products. Plain chocolate is made by adding sugar and enough cocoa butter to mold the chocolate into bars. The actual chocolate flavor has unsuccessfully tried to be duplicated artificially. Food products made from cocoa beans consist, of candy and used to make beverages and as flavoring ingredients or coatings for various confections and bakery products. Rich in carbohydrates it is an excellent source of quick energy. Cocoa butter also called Theobroma oil, pale yellow, is an edible vegetable fat obtained from cocoa beans. It has a mild chocolate flavor and aroma, and is used in the manufacture of chocolate confections, pharmaceutical ointments, and toiletries. Milton Snavely Hershey was one of the reasons chocolate is so popular. For he was instrumental in popularizing chocolate candy throughout much of the world. So the next time you bite that dark tasty chocolate bar remember that it took a lot of time and effort of many people but particularly the Indians to give you this wonderful product. Reference Page 1. Chatt M. Eileen "Cocoa" 1954: Interscience Publishers, INC. 2. Young M. Allen "A Nature History Of Cacao" 1994 : The Smithsonian Institution. 3. Bandrapalli Suman "Where Does A Candy Bar Come From?" May 20, 1997 : Christian Science Monitor (start page 16:1).

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