

Cacao Theobroma L: Nacional / Fino de Aroma / Arriba

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Biography:

Historically and until the end of the 19th century, Ecuador was a leading cultivator and exporter of cacao to the rest of the world. It is believed by some biologists that the plant may be native to coastal Ecuador, specifically in the Manabi and Esmeraldas regions, and Peru. *Cacao Theobroma L* was first put into scientific textbooks around the time of the Spanish Inquisition. Its many names include Nacional (translation: national) because of its Ecuadorian origins, Arriba (translation: up, or above) because of it supposedly only grows above a river source known as the Guayas Rivers, and Fino de Aroma (translation: fine aroma) because of its particularly fine, sweet, and floral smell. In this document, it will be referred to as Nacional.

In general, the cacao cultivated in Ecuador can be divided into three genetic groups: Criollo, Forastero, and a mix between the two, known as the Trinitario. Since its initial discovery by the Spanish Conquistadors, Nacional was thought to be a part of the Forastero group because of its similar pod shape, but recent genetic and other morphological testing has caused many analysts to put it into a category of its own. Pure Nacional trees are essentially non-existent today because of disease, but its fruits have been grafted onto stronger trunks such as the Forastero.

Disease outbreaks such as Moniliasis, Mal de Machete (Machete Disease), and Witch? Broom have decimated cacao production in Latin America since the 1920s. Nonetheless, cacao is still a major agricultural crop in Ecuador and, thus, an essential contributor to employment and production. Demand worldwide for cacao is increasing at a rapid pace because of newly emerging economies in Asia and South America, and a demand for organic and fair-trade cocoa also exists in the United States. In addition, a high-quality grading system is being created, and connoisseurs/tasters are emerging - it is said that Nacional has over 400 different flavors (compare that to 14 in average wines). Nacional may be able to fulfill all of these needs, as most producers cultivate and grow cacao organically, but production needs to increase dramatically through more efficient water management systems and with the help of agricultural cooperatives.

Nacional: Characteristics

Trees

Nacional trees have rather large trunks and can grow to between 30 and 40 feet. This can be a problem for farmers, as it becomes difficult for them to cultivate its fruits, so proper maintenance is essential. The tree takes anywhere from 3 to 5 years to start producing pods covered in fungi (Spanish translation: mazorcas). Water is absolutely essential for all cacao trees (20 liters 3 to 5 times per week) in order to produce regularly. A healthy 3 year old tree can produce about 10-15 pods every few weeks.

To protect the trees from disease, it is very important to regularly prune dead or dying leaves and pods (by hand, not by machete, as this may cause Machete Disease). Witch? Broom can be spotted by a green stem with a few leaves growing in a broom-like shape from certain branches; cutting these stems off is essential for the trees to produce pods.

The average-sized farm has 5 hectares of planted cacao trees, and a hectare has anywhere from 800 - 1,000 healthy trees.

Pods

When pods are not fully mature, they are green in color. When they are ripe for picking, they turn yellow or beige. Other groups (forastero, criollo, or trinitario) are usually purple, red, or pink. Many varieties are mixed together with the other groups of cacao (some trees may even have several different groups of cacao on the same trunk), so some will have ridges of a different color (purple or green) with the yellow color of the Nacional in between the ridges. The purer the Nacional, the flatter the butt of the pod is.

Pods produce anywhere from 35 to 75 seeds *en babas*, meaning that they are covered in what looks like a white, translucent slime, which has a sweet taste. These seeds are collected by breaking the shell of the pod in half and picking out the seeds. The seed is then placed in a bag (saco) so that it is able to retain most of its moisture. The quantity produced depends on the size of the pod. The best seeds for planting are the ones located towards the middle of the pod. Seeds are planted with the umbilical cord facing down, about 3-4 inches under ground, in 5x10 inch bags filled with 50% black soil (tierra de monte), 25% compost, and 25% dry leaves.

Seeds

Seeds *en babas* can be sold directly to vendors or intermediaries for \$40-45 per quintal (100 lbs). This is the quickest way to make a buck for cacao farmers (cacaoteros), as the fermentation and drying take time, expertise, and larger financial investments. When buying cacao, most intermediaries and vendors do not distinguish between the different groups and provide a lump sum for all of the seeds *en babas* that are brought to their locations. Most of these businesses are located in bigger towns such as Pedernales, Jama, and Convento. Many businesses have a limit as to how much they can take in, as seeds *en babas* only take a few days to go bad and are very fragile, which is why already fermented and/or dried seeds can be sold at a much higher price (up to \$100 per quintal).

Reference points

-45-50 pods produce about 10 lbs of cacao en babas, which is a good harvest on one hectare of land. This means that a quintal of cacao en babas will require roughly 500 pods.

-2.5 lbs of cacao seeds en babas will eventually come out to 1 lb of fermented and dried beans.

-It takes 20-30 pods to produce 1 kg of dried and fermented beans, so 100 kg will take 2,000-3,000 pods.

-Beans en babas are only viable for 3-4 days if not properly fermented and dried.

Fermenting and Drying

Fermenting and drying the beans is more of an art than science; it's possible to write a PhD thesis arguing different ways to ferment or dry the bean. It can be difficult and requires a lot of maintenance, which is why cacaoeros usually do not undertake these tasks and sell directly to the intermediaries. Many factors affect each step, including disease control, climate, and weather. Still, some good practices have been established.

Beans should be fermented and dried based on the color and taste of the bean, not time or length specifically. Cutting the bean open and/or tasting it is the best way to see whether it is ready for the next step. If the bean is not ready, it will look purple. The bean should be a dark beige color, much like a milk chocolate seen in stores. Upon tasting, a floral / fruit taste should be apparent, and the bean itself should smell like a flower.

There are several ways to ferment the beans. Some ferment the beans in large, dark sacks, while others put them in large wooden (clean) boxes and cover them up with leaves from a banana tree in order to keep in the moisture. Either way, it's important to keep the beans out of direct sunlight and rain during this process and away from walls that carry many diseases and pests (in fact, this is important throughout the value chain, ie transport, drying, storage). The cacao should be stirred every 24 hours in order to ensure that the beans are evenly fermenting. The temperature of the beans will increase to over 100°F during this process, and it usually takes anywhere from 3-5 days, depending on the climate, altitude, and weather.

Drying can take 2-3 days. Most do this by laying out the beans on a concrete floor (bad), large, flattened sacks (better), or wooden floors that are up off of the ground (best). These require a lot of space, as each bean needs to be laying flat and soaking up the sun. A wooden rake is used to turn the beans every few hours in order to ensure that the beans are drying evenly. It's important to keep the beans away from anything carrying disease (walls, concrete); otherwise, some of the taste will be lost. In some very humid zones without much sunlight, it may be necessary to purchase a dryer (usually gas) specifically designed for this process, but this environment is not ideal.

Since Bios will be toasting and producing the chocolate, this document will not focus on those processes.

Cacao Nacional in Manabi

Although Manabi was historically a bigger producer of cacao, numbers have gone down steadily as diseases and other economic factors have pushed farmers into other crops and ventures (shrimp farming, cattle-ranching, etc...). Esmeraldas, the province to the North and Las Guayas, still produce a good amount of cacao. Nonetheless, some Nacional hotspots exist in Manabi, such as inland from the city of Jama, starting from the village of Colorado all the way to Convento (about 90 minutes from Jama). In addition, much more Nacional is produced during the wet season in coastal Manabi because irrigation is no longer an issue. Nacional peaks in production from the months of April to August. This would probably be the best time to purchase cacao en babas from producers at the lowest price.

In Camarones, only a few small farmers produce cacao, although that may be subject to change thanks to a coffee/cacao cooperative project run by a private enterprise called Ideas Gerenciales, in partnership with Comunidad Andina and financed by the EU. Tabuga, a neighboring town along the coastal highway, produces about 50 hectares of Nacional, 80% of which is organic. Most farmers are not able to irrigate their own farms, so the trees do not produce well during the summer months (September through March).

Next Steps

What to do with this information? Since Bios factory is partnership with 3MA to produce chocolate for export, 3MA needs to provide fermented and dried cacao beans in bulk to Quito. The first objective should be a pilot run (100 kg of fermented dry beans), but a few items need to be put in place in order to accomplish this goal, including setting up a fermenting and drying station in Camarones, lining up the farmers, and finding out best transportation and storage methods.

First, finding a good place to set up the fermentation and drying station is key this may be something that is able to be coordinated with the help of Ideas Gerenciales, as they have experience in setting up such facilities. The community center plot could be a potential area, as it is close enough to the main highway and is an easy spot to get to from the reserve and the rest of the community, as it is located in the middle neighborhood (medio barrio). Other potential areas could involve Don Lalo's farm or Lalo Loor Reserve. At least 1000 square feet of flat surface is needed for efficiency and manageability.

The wooden boxes would have to be at least 5Lx5l x3h feet, depending on the scale of the eventual production, made entirely of wooden slats (type of wood should be thick and heavy, not bamboo, for example). Do not forget to line the boxes with banana leaves for proper fermentation! The boxes could be either be separate within an even larger rectangular container. Large sacks are also a possibility, but more difficult to manage. Otherwise, a black plastic container could work.

Drying would take place on a clean, hopefully wooden, floor, in more direct sunlight. The beans would be spread out onto large sacks or quickly drying cloth. This is the part that requires the most space. Storing the dried and fermented beans would require more large sacks. The beans would need to be kept away from walls as much as possible. Transportation by fleet or truck (flete) would be ideal, as bus has varying factors that may affect the quality of the bean. These steps would need to happen before collecting the beans en babas, as the quality of the bean diminishes over time (it goes bad within 3-4 days), so if a shipment is received at the station, the fermentation and drying process needs to be ready to go within a few hours.

Hopefully, this can be accomplished before the peak season arrives (April), while

aligning the farmers in and around Tabuga. In order to produce 100 kg of fermented dry beans, it will require up to 3,000 mazorcas. This should not be a problem during the peak season, but, if it is, the area around Colorado should be able to make up the difference. The reason it will be better to collect the cacao from surrounding communities of Camarones is the transportation is more reliable and a shorter distance.

February would be an ideal time to line up and negotiate buying the cacao en babas. It might be reasonable to offer slightly higher than market value prices at first (perhaps 45 or 50 cents per pound, as prices offered to farmers have gone down recently; this is something to monitor over time), at least until a relationship is established. Another fair trade way to set up the business relationship would be to divide the dividends between the farmers. Transportation costs to Camarones, located in the middle between Jama and Pedernales, should be minimized, so it should not be difficult to convince the farmers to sell their produce to 3MA, especially if bought in bulk at regular intervals. The best way to contact the farmers would be through local experts, such as Ingeniero Martinez or Luis Cevallos Zambrano.

Staff would need to be present to receive shipments and/or perhaps train teenagers to take care of the cacao en babas. Perhaps Ideas Gerenciales could be part of this effort, or Alessandro of Il Peperoncino Organic Farm, if interested.

Contacts

Name: ?Ingeniero? Martinez

Location: Tabuga, next door to the Tabuga high school

Reason: Ing. Martinez has a degree in cacao extension and is a very knowledgeable and approachable person. He is very interested in helping out, works with the cacao plot in the high school and manages several cacao farms in and around Tabuga.

Best way to contact: by phone or just showing up to his house to see if he is around. His phone number is 0982796155.

Name: Don Luis ?Mambo? Cevallos Zambrano

Location: Jama, on the main square. He owns a store (tienda).

Reason: Don Luis is very knowledgeable and willing to take the time to talk about and show the cacao value chain. A little rough around the edges, but also very charismatic. He also has a lot of family that produces cacao near Colorado and Convento. He also has a lot of contacts and buys and sells dry beans (usually unfermented).

Best way to contact: by phone or just showing up to his house/tienda. His phone number is 0991815907.

Name: Servio Pachard

Location: Finca Sarita, 20 minutes outside of Calceta in a community called Sarampion (means Chicken Pox)

Reason: Servio is a wonderfully charismatic person who sold 3MA the 387 Nacional cacao. He is an extension agent and is always willing to answer questions.

Best way to contact: by phone or by e-mail (try phone first). His phone number is 0983179771. His e-mail is serviodecalceta@yahoo.es. His friend Paul Cedeno Guzman is also very helpful and knowledgeable, perhaps more of an expert in cacao. His e-mail is paulagn@yahoo.es and his phone number is 0989668373.

Names and Titles: INIAP Portoviejo Director Ing. Marat Rodriguez, Agroforestry Expert Ing. Ricardo Limongi, Cacao Expert Guido Solorzano

Location: INIAP Portoviejo

Reason: Researchers in cacao related issues, experts, and seed sellers.

Best way to contact: by e-mail or phone. Marat.rodriquez@iniap.gob.ec 052420556 or 2420317, ext 112 or 113. ricardo.limongi@iniap.gob.ec or 0995849151. guido.solorzano@iniap.gob.ec

Name: Alessandro

Location: Finca Organica Il Peperoncino, Tabuga, right side of the main highway leaving Tabuga, headed north

Reason: Has a lot of cacao Nacional, knows how to ferment and dry, and does tours of his farm. Kind of a character.

Best way to contact: Showing up to his farm. He is usually around.

Names: Manuel Canisares (biggest producer but may not be organic), Eduardo Zambrano, Humberto Bone, Pasqualdite Vite, Marilyn Martinez, Glandis Copiano

Location: Tabuga

Reason: Cacao Nacional producers.

Best way to contact: Through Ingeniero Martinez.

Name: Dr. Amy Rogers

Location: Pinchot Institute for Conservation, based Mompiche, Esmeraldas, two doors down from La Facha Hostel.

Reason: Directing a very similar project in a Reserve in Esmeraldas with a team of 5. Very approachable and willing to share information.

Best way to contact: e-mail. arogers@pinchot.org

Name: Alejandro Barrillo, Ideas Gerenciales

Location: Unknown

Reason: Working to set up a cacao cooperative in Camarones with a team of engineers. Is apparently working with Comunidad Andina on a project financed by the EU for \$150,000 to do just that. In the second phase of the project, called CESCAN II. Project goals include agroforestry, agrotourism, fino de aroma cacao production. *Warning:* This company sounds either very disorganized, not very engaging with the community, or has ulterior motives.