



### Issues Surrounding Chocolate and ITOCHU's Role

Cacao is produced in equatorial regions far from Japan, so cacao production faces challenges common to agriculture in tropical regions: inconsistent harvests and quality due to irregular weather patterns, and crop damage due to pests and disease. As a result, cacao farmers often struggle to maintain a decent standard of living.

As a major supplier of cacao beans to the Japanese market, ITOCHU continuously visits cacao-producing countries to work with local suppliers in ensuring that consumers receive a stable source of high-quality cacao beans.

As a part of efforts to maintain the sustainability of cacao cultivation, we contribute to the KAOKA Fund in Ecuador to support the activities of local farmers involved in cultivating regional cacao varieties and help raise their standard of living.

#### KAOKA Fund and UNOCACE Initiatives



Cacao farmers. Farmers from various production regions gather for joint technical training run by the cooperative



Farmer undergoing training on grafting cacao trees



Confection created by Chef Toshi Yoroizuka

Chocolate is made from cacao beans, and the cultivation of these beans is highly dependent on small farmers in tropical regions. Likewise, Ecuador also depended on many small farmers for the cultivation of its highly aromatic cacao; however, after World War I, the country lost its means to export. As a result, the production balance greatly deteriorated and crop disease spread: these combined factors devastated the industry. Moreover, the international cacao market lacked stability and the situation gradually grew worse.

Given this background, the Union of the Ecuador National Cacao Producers (UNOCACE) was established in 1999 to support farmers and help raise crop quality.

KAOKA, a French manufacturer of organic chocolate, runs a project that involves returning a portion of sales proceeds to cacao production activities. Starting in 2002, KAOKA began supporting the UNOCACE through proceeds from its project fund. The fund primarily works to re-train farmers on the cultivation of regional domestic cacao, while also supporting the production techniques and livelihoods of small farmers by returning the added value gained from high-quality cacao to the farmers. The project has also received support from the chef Toshi Yoroizuka, who creates sweets with KAOKA products. The ITOCHU Group supports the project as well by donating to the fund and selling related products.

### Chocolate Starts as Tropical Fruit



Cacao flowers. Many, many extremely small flowers bloom on each tree, but only some bear fruit



Cacao pod. The seeds, which are used to make chocolate, are contained in the fruit's white pulp

Cacao is a tropical plant that grows mainly within 20 degrees latitude of the equator. Cacao trees are generally planted and cultivated between tall shade trees. The shade provided by the branches allows just the right amount of tropical sunlight to get through. Saplings are grown from seeds, and healthy saplings are then planted in the ground. Saplings are often grafted as a way to maintain high-quality, stable cacao cultivation. For example, in Ecuador, agricultural cooperatives use regional cacao varieties that are highly disease resistant as their crop foundation, which are then grafted to cacao branches that produce highly aromatic fruit: this enables production of a stable supply of high-quality cacao.

Cacao trees bloom with countless small flowers, but less than three percent of the flowers end up bearing fruit. Small insects serve as pollen go-betweens and once pollinated it takes about six months for the flowers to grow into fruit that can finally be harvested. The period from the start of cultivation to when the trees bear fruit is around three to six years. High-yield hybrid cacao varieties may bear fruit in less than two years. Cacao is a tropical fruit, so it can be eaten as a fruit. Regional Ecuadorian cacao varieties include fruit with a sweet, flower-like aroma. There are also hybrid varieties that produce fruit with a refreshing lemon-lime aroma.

Cacao seedpods (=fruit) contain seeds that are used to make chocolate. Once the pods are harvested they are split open and the fleshy pulp and seeds are removed as soon as possible. Farmers harvest the cacao pod and remove the pulp from the pods all by hand. The next step is fermentation.

## Fermentation / Drying

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### From Seed to Cacao Bean



Cacao pulp and seeds at the start of fermentation. Surface covered with banana leaves



Fermentation in progress. Color gradually turns brown

Pulp and seeds taken from cacao pods are fermented for several days. Yeast, acetic bacteria and other microorganisms activate various chemical reactions during the process of fermentation, which creates the basis of the chocolate aroma and foundation of its flavor. White pulp containing the seeds is gradually reduced during fermentation, eventually leaving only the seeds, which turn brown.

For agricultural cooperatives and export companies with well-established quality control systems in place, the entire harvest to fermentation process is managed by co-op farmers, contracted farmers, or directly owned farms from various regions; furthermore, the entire process until the start of fermentation is completed in the same day. It is also common for farmers not affiliated with any cooperative or organization to sell to brokers after individually conducting fermentation and drying. Even within the same country, there are various routes for the harvest to fermentation process.

After being fermented cacao seeds (cacao beans) contain water, so they are dried until the remaining water content is only 7% to 8%. There are several drying methods, including drying the beans under the sun or drying them with a mechanical dryer that uses gas heat. Since the climate is tropical, with high humidity and a rainy season, organizations like agricultural cooperatives and export companies that consolidate and process cacao in large quantities tend to use both sunlight and mechanical drying methods.

### Careful Inspection of Cacao Beans

Cacao beans are not shipped for export until they pass quality inspections for aroma, flavor, water content and other characteristics. If the water content is high, it is adjusted again before shipping. Cacao beans are also split open to inspect for mold and insect damage. Cacao beans produced in various regions are consolidated and exported to Japan, but prior to export the traceability of the beans is verified.



Pulp and seeds harvested by farmers are transported to fermentation facilities. They are carried by donkey on mountain paths



Cacao beans before export



## Chocolate processing

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### From Cacao Beans to Chocolate



Chocolate imported into Japan goes to chocolate manufacturing facilities after passing through quarantine for residual agricultural chemicals and other quality and health inspections. Pebbles, cacao branches and other foreign substances are removed in the cleaning process and the beans are then roasted. Roasting is a major factor determining chocolate quality, as is the blend of cacao beans that is used. The roasted beans are crushed and the shell removed and then pulverized in a grinder to make a paste called cacao mass. Chocolate dough is made by adding sugar and cocoa butter to the cacao mass. For milk chocolate, milk powder is also added. Fine particles of cacao, sugar and other ingredients are ground with a precision-crafted metal roll refiner to create smoothly textured chocolate flakes. Next the flakes are processed for an extended period of time in a machine called a conche to complete the process. Chocolate made through this process is then tempered, put into containers, cooled and hardened or is transported to confectionary manufacturers in melted form via tanker trucks. Confectionary manufacturers process the chocolate into various sweets and candies and deliver them to consumers through retail outlets.

### Confectionary manufacturers: Everyday Chocolate Candies

Chocolate mass is processed into chocolate candies by confectionary manufacturers. Some companies create chocolate by roasting the cacao beans themselves.



### Specialty shops: Professional Chocolate

Some cacao beans with distinctive aroma and flavor, like regional Ecuadorian cacao, are processed into chocolate for specialty shops. The chocolatiers at such shops create chocolate sweets that bring out the characteristics of this type of chocolate.



### Reflections on the inspection visits



café-CACAO Representative  
Cacao Hunter®  
Mayumi Ogata

Everyone is familiar with sweet, delicious chocolate, but what people are less familiar with is what chocolate is made from, the cacao bean, and where and how it is grown. Most cacao beans are cultivated in agricultural areas far from urban centers in countries near the equator. Cacao beans are produced on the other side of the world, in places like Ecuador, where this inspection was conducted. Cacao beans are able to reach the Japanese market safely and securely, only through the efforts, trust and cooperation of producers and exporters.

What is important in the cacao supply chain is that ITOCHU serves as a bridge between cacao producers and chocolate consumers, who are far removed from one another, and link all the steps on the path from cacao tree to chocolate.