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SOME COCOA BEANS POSTS-HARVESTS TREATMENTS

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Abstract

Some posts-harvests treatments of the cocoa tree (Theobroma cacao) fruit are presented here. The optimization of these posts-harvests treatments, including the method of fermentation, drying and good conditions of storage influence the nutritional quality of the product of cocoa beans and its derivatives include the chocolate.

Key words: cacao tree, Theobroma cacao, beans, fermentation, drying, storage.

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INTRODUCTION

Cocoa tree (Theobroma cacao) is a tropical plant. It bears fruit throughout the year **[1].** The cacao tree is native of South America, in the Amazonia and the Central America and its cultivation is widespread in Asia and in Africa only in the 20th century **[2]**. Today the cocoa tree grows in all tropical countries. Existing largest cocoa producers are Brazil and the Ivory Coast then the Ghana, the Nigeria and Cameroon **[3].** There are several varieties of cocoa trees (Forastero, Criollo, and Trinitario) which beans will be selected by the chocolate makers for their variable taste qualities according to the variety and production site. The Forastero (80-90% of world production), native of Amazonia but mainly cultivated in Africa, Brazil and Ecuador, the most rustic The Criollo (1-5% of world production) native of Venezuela, cultivated in Latin America (Caribbean, West Indies, Mexico, Venezuela, Colombia), finest and most aromatic, sweet and slightly bitter. The Trinitario (10-20 % of the world production), resulting from the crossing of both precedent, appeared to 18th century on the island Trinidad. Cultivated in Spanish-speaking America, Trinidad, in Africa mainly in Cameroon and in Asia, flavours fine but less intense than the Criollo. The national, the forastero produced in Ecuador, with flavours finer than a current Forastero. Our study is a technical sheet of a few primary post-harvest treatments of cocoa beans. **[3].**

Photo 1: Cocoa tree

MATERIAL AND METHODS

Material vegetable

Photo 2: Fruits on cocoa tree (Photo L B Koffi)

The fruits ripen throughout the year but the harvest takes place twice a year. When the fruit turns orange and cocoa makes a dull sound when tapped, it is ripe, harvesting can begin. The first step is to slowly twist the peduncle by hand for those who are accessible; others are cut with a knife attached to a long handle, very delicate operation if you do not want to damage the buds and flowers next harvest **[4].**

Photo 3: Harvesting of cocoa fruit **[3]**

METHODS

Photo 4: **Cocoa pods mature and ripe** **(Photo L B Koffi)**

Harvesting is done when the green pods are beautifully bright colors and you hear the beans rattle inside. The harvested fruits are gathered and opened Onsite or transported to treatment [4]

Photo 5: pod breaking (Photo L B Koffi)

Preserving the Quality

The opening of the pods, called "pod breaking". Open pod with a club within a maximum of six days after harvest. The first manipulation of the bean must be done with great care as it can affect the quality of the product

Photo 6: Fermentation of cocoa beans (Photo L B Koffi)

Optimization of post-harvest operations

Six days of fermentation with brewing, the second day and the fourth day. This fermentation process that kills the bean and rid of its mucilage causes swelling of the cotyledons and leads to profound changes in the chemical composition. Fermentation reduces the bitterness and astringency and above leads to the development of flavour precursors **[4].**

Photo 7: drying in thin layer on solar dryer or on racks (Photo L B Koffi)

Good conditions of drying

Drying in thin layer with frequent mixings and sorting. The drying operation aims to reduce the moisture content of fermented beans rate of 60% to about 6%. Above this limit, the product can be safely stored. This method of solar drying lasts from 8 to 15 days. It is from this moment that the seed is called cocoa bean [4].

Photo 8: conditioning and storage of the beans (Photo L B Koffi)

Conditioned in jute bags own

The cleaned beans put in bags of 60-90 kg are stored in large rooms where they await shipment. The dried beans producing countries are shipped to user countries. They undergo various operations to be made suitable for the manufacture of chocolate. Store the bags on pallets 30 to 50cm walls in a proper storage to store away from rewetting, contamination and pests. Transporting cocoa beans in an appropriate vehicle to protect from rewetting and contamination [4]

RESULTS AND DISCUSSION

The nutritional composition of cocoa beans and cocoa-based products is very complex; it changes throughout the life of the bean, and depends on the treatment it receives.

An analysis of the composition of the beans after fermentation and drying gives the following contents: Water: 3.2 to 6.6% Fat: 57 to 5.9% Ash: 4.2 to 20.7% Protein: 2.5 to 3.2% Carbohydrates: 9 to 5.2%, crude fiber: 3.2 to 19.2% [5]. But studies made on cocoa beans show that it brings vitamins A1, B1, C, D, E, iron and magnesium and polyphenols which possess antioxidant effects. The beans of the cocoa contain naturally important quantities of polyphenols [6].

The antioxidizing molecules oppose to oxidizing, aggressive substances for cells. Among the antioxidants of cocoa we distinguish ferulic acid at the origin of the wild and sweet aroma of cocoa flavonoids (catechin and epicatechin) [6]. The Cocoa beans are rich in starch, fat and alkaloids (theobromine and caffeine) [7] [8];

CONCLUSION

The quality of the chocolate, cocoa main product derived depends not only on the initial sanitary quality of the beans but also the quality of initial processing applied to them.

The adoption, the adaptation and the effective application of news and good agricultural practice, of best practice post-harvests allow to supply to the actors of the cocoa sector, trade and technological good quality beans

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