# CURCUMA

Food and Agriculture Organization of the United Nations

Spices Processing Toolkit

# CURCUMA

## 1.- Curcuma General Information

The curcuma processing is aimed to the production of either curcuma powder and the secondary dehydrated rhizomes. The post-harvesting treatments and the different processings are targeted to the increase of the rhizome conservation, besides aggregating value to the products.

**The primary processing** involves several different stages, that are designed to sorting and removing the inedible fractions from the vegetables and cleaning.

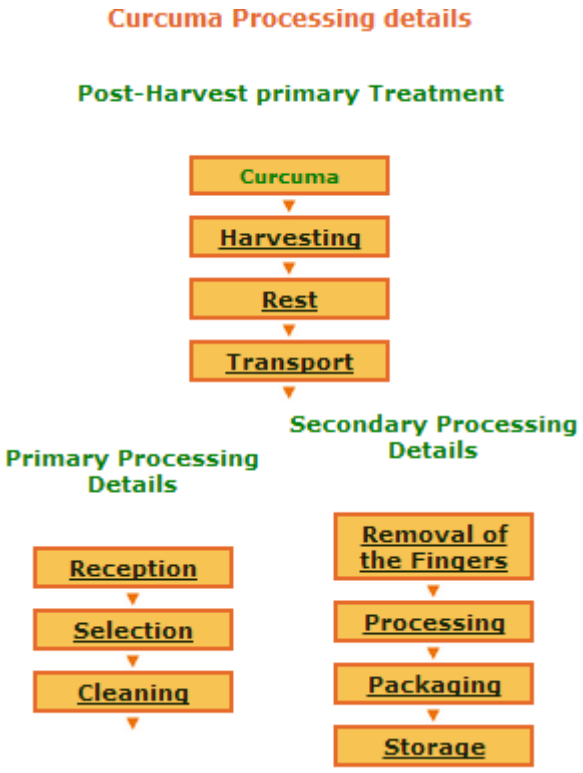
**The primary processing** involves several different processes, that are designed to sorting and removing inedible fractions from the vegetables and clean. The primary processing is responsible for the elimination of either polluted grains and polluting matters.

**The secondary processing** consists of using the primary products (cleaned curcuma) in order to make them interesting, as well as to add value to the products .

Projects and small businesses may involve only one or several of the activities in the total chain, from the growing of crops through to the production of edible products.

Some small businesses are set up to clean, cut and package spices. These businesses can be successful as there is very little need for equipment. However, as with all businesses, there must be a rigorous quality control and there must be a clear demand for the product, too.

## 2.- Curcuma Post-Harvest primary Treatment




## 2.1.- Curcuma Post-Harvest primary Treatment




### A.-Harvesting

The harvesting of the curcuma rhizomes is manual or mechanically performed, when the aerial part of the plant begins to dry, which usually occurs from 7 to 8 months after planting. After cutting the leaves and stem, the rhizomes are removed from the earth.

### B.-Rest

Just after harvesting, the curcuma should be deposited in unlighted area. That resting period, that precedes transportation, should last two hours on average and is useful for the stabilization of moisture.

### C.-Transport

The transport from the field to the plant must be made as fast as possible, in order to minimize the losses due to the deterioration caused by high temperatures, such as excessive water loss and increased metabolic activity.

The transport of perishable products may cause several problems related to the quality of raw material, such as: injuries by squashing (compression of the first layers or piling up the boxes with content above their capacity); hurts by abrasion with rough surfaces or mechanical shocks against the surface.

The following cares should be taken: to avoid abrupt movements and box falls; to use suspension systems; to avoid highways under bad conditions; and to evaluate the surfaces of the containers and to guarantee their cleaning. The transportation should be accomplished during those fresher periods in the day.

## 2.2.- Curcuma Primary Processing Details

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### A.-Reception

When arriving to the processing plant, the rhizomes are weighed. The unloading of the products should be preferably accomplished on rolling mats with water sprinkling nozzles.

### B.-Selection

The objective is to classify the raw material according to its quality, by separating the rhizomes adapted to processing from others that will not be useful for this purpose. Either the primary rhizomes and the secondary ones (fingers) will be used in processing. Those rhizomes that are immature, deteriorated, squeezed, with mechanical injuries and/or polluted must be eliminated.

### C.-Cleaning

The washing associated to sanitizing are extremely important in the vegetable processing. This process should be accomplished in three stages in order to remove the earth particles and other impurities from the raw material, besides reducing the microbial load.

Immersion washing: the immersion is not an efficient way to removing the impurities, but it is useful as a preliminary treatment. If this is the only medium of washing adopted, it is important to be accomplished at least into three stages. The change of water should be frequently accomplished, otherwise the tanks will become contamination focus.

TWashing by agitation into water: the efficiency of this process is relatively high if it be preceded by the immersion process. The agitation can be made by simple agitators, by compressed air, through pumps or through helixes that are isolated from the product by a resistant-screened box.

Washing by aspersion: this is the most efficient method. It should be combined with an immersion stage before passing by the shower, in order to promote the softening of the dirtiness adhered to the food. It is important that the whole surface of the material to be reached by the water jets, located above and below the perforated belt that transports the raw material, otherwise perforated rotary drums should be used on a lightly sloping way and with spraying nozzles.

## 2.3.-Curcuma Secondary Processing Details

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### A.-Removal of the Fingers

The removal of the curcuma fingers consists into separation of the primary rhizome from the secondary rhizome. This separation can be manually accomplished by simple cutting instruments such as knives.

## B.-Processing

The process that will transform the raw material into product happens at this stage. In other words, the raw material will be transformed into dehydrated fingers or curcuma powder. See in Dried Fingers or Dried Curcuma.

## C.-Packaging

The curcuma products must be packaged into polypropylene bags or flasks or into glass flasks. All packagings must be hermetically sealed to avoid either loss of product mass or modifications into moisture content. Care should be taken when removing the air from the packaging before sealing.

The wavy cardboard boxes are recommended for secondary packaging. In these containers, it is common to introduce silica-gel that is a chemical product able to absorbing the air humidity, therefore prolonging the storage time.

## D.- Storage

The products should be stored in fresh places that are protected from both light and moisture. The light changes the color, whereas heat reduces the life time e of the product.