

Tapioca is used in the following conversion industries

1. Tapioca Chip Industry

The chips are made from fresh cassava roots which are sliced and sun dried on cement floors for a few days until they become dry. Processing chips can therefore be divided into the following stages:

- ❖ Wash the cassava roots to remove adhering dirt and particles.
- ❖ Put the clean roots in the feeding machine (in case that the feeding machine is available) or the root cutter. Slicing the roots by knife blades is also possible.
- ❖ Sun dry the sliced roots on the floor (drying areas) or other areas covered with a bamboo mat with loose weaves.
- ❖ During the drying period, the chips should be turned every 1-2 hours by harrow. They can be turned either by hand or by a tractor.

2. Tapioca Pellet Industry

Chips are transformed into pellets for convenient storage and low cost of transport. The method of processing pellets by using chips as a raw material is as follows:

- ❖ Sift the chips to remove adhering dirt and particles.
- ❖ Sort the chips of which the size exceeds the pelleting machine and feed them in the grinding machine to downsize them.
- ❖ The ground chips are sprayed by vapor or vegetable oil for possessing suitable moisture content.
- ❖ Feed the soggy chips in the pelleting machine.
- ❖ Since the new pellets are hot and soft, they must be ventilated to reduce high temperature and moisture by using the drum and the dryer.
- ❖ As the cool pellets harden, feed them into the sifter to screen the pellets. The wrong-sized pellets are carried to the repressing process.
- ❖ Use the dryer to blow the pellets with the right size and store them in a large container. The powered chips which fall down during the pelleting are re-pressed into pellets and the process is repeated.
- ❖ The hard pellets have a cylindrical shape. The cylinders are about 1 cm in diameter and about 2-3 cm long and are white in texture. For all these reasons, they are also called "tapioca sticks".

3. Tapioca Starch Industry

Fresh cassava roots have a typical composition of 20% starch. Tapioca starch which is extracted from cassava roots and is untreated is called "tapioca starch" or "native starch". The tapioca starch manufacturing process which large and medium-scaled mills are currently applying can be described as the following stages:

- ❖ Weigh and measure the percentage of starch content of the cassava roots.
- ❖ Feed the cassava roots in the sand removal drum.
- ❖ Feed them in the peeling machine & root washer.
- ❖ Feed the clean cassava roots in the root cutter and then the coarse extractor to separate the pulp from the flour milk. The residue pulp which is separated in the screening process is carried to the drying areas to be produced as pellets or fertilizer.

- ❖ Use sulfur water to purify the flour milk and to dispose gummy materials so that the white flour milk has a high degree of purity.
- ❖ Remove the flour milk from the starch by using the dewatering centrifugal.
- ❖ Dry the starch by the flash dryer with hot air from the burner.
- ❖ The dried starch is subject to the pulverizing process.
- ❖ Feed the completely dried and pulverized starch into the sifter to separate crude starch and the finished starch is packaged.

