Introduction

Drying of sweetpotato roots is the cheapest method of preserving that food over a long period, in E. Africa, up to 6 months. The aim of these operations is to remove soil and other foreign material from the surface of sweetpotato roots, portions damaged by weevils or other pests, and any other unwanted parts. Damaged portions tend to brown during the course of drying and flour processing. Cleaning and trimming are usually done manually with knives. Cleaning, trimming, and milling activities are the first to benefit from the improvement. Cheap and simple improvements are suggested.

Cleaning and Trimming

The process of removing soil and other impurities from the surface of sweetpotato roots is called cleaning. Cleaning and trimming are usually done manually with knives. Our experiments with sweetpotato roots have shown that there is no need of peeling since the root skin is extremely thin and has a very minor influence on the color and final composition of the product.

Cleaning and Trimming

Washing and brushing steps are the most critical in the production of high quality clean sweetpotato flour, and should be done as exhaustively as possible. The quality of the end product flour depends on how the washing has been conducted. The washing reinforces the removal of the soil and important portion of the skin, especially when red skin coloured sweetpotato roots are being processed into flour. It has been noted that the skin has a protective effect on the diffusion of water from the roots towards the surface, and consequently slices having a portion of the skin take a long time to dry and their structure becomes harder and less breakable. Brushing weakens the protective role of the peel against capillary water diffusion to the surface. At least, three batches of water are required to wash roots:

• The first for pre-washing when soil and other impurities are being removed. Roots are submerged in water to free up impurities adhering to the skin.
• The second is for cleaning and brushing concomitantly with removal of possible damaged portions of the roots escaped during the previous step.
• The third is for fine cleaning with clean water. Pre-drying of wet and clean roots is desirable. This reduces the moisture at the surface of the roots and improves the quality and cleanliness of the end product.

Washing and Brushing

Slicing

Slicing divides roots into small physical sizes and increases the drying surface. Traditional slicing is done manually using knives, and is a very tedious exercise. The improved slicer is recommended. Slicing or chipping is better for the final color of sweetpotato flour. Grating induces a lot of enzymatic browning reactions and fresh grated product is quickly subjected to undesirable spontaneous fermentation. Sweetpotato balanced chemical composition makes it quite suitable for sweetpotato. Chips are directly exposed to the rays of the sun on a drying surface (a clean rock or a mat), and water is capillarily transported to the surface of the slice, where it vaporises. So, thin slices will dry very fast. However, thick slices keeps better the beta-carotene in dried products. Sun drying presents certain difficulties such as: too much water dependence on climatic conditions (it is sometimes necessary to gather up the produce in case of rain). There is a need for manual labour to move the product during the daytime, and there is difficulty in maintaining the product sanitation. Drying should preferably be done during the dry season to avoid moving of the product as much as possible for the first drying day. The second drying day, chips should be moved at least twice a day until they are completely dried. The approximate drying time of sweetpotato chips is from two to four days and the residual humidity should be between 10 and 12%. Dried chips should be breakable, with a whitish or yellowish color. We recommended to pack the dried sweetpotato chips immediately after the drying to avoid any risk of rehydration.

Drying

Milling

Any hammer mill can be used for grinding. It is desirable to pass twice the dried material in the mill, so that flour will be desired. Over drying produces too much dust and a significant loss of material and yield during the milling. We recommend to store chips and grind them when needed. Flour from sweetpotato can have different colors depending on the flesh color of the roots. After the grinding, pack and store immediately to avoid hydration and insect infestation. With little permeability to water vapor, such as cellophane, polyethylene or polypropylene should be used. The choice of packaging material is based on transportation requirements and storage time. As soon as the product is placed in its package, it should be sealed immediately, removing as much air as possible from inside the package. This is to avoid direct exposition of the product to the surrounding air and to minimize any insect attack. The packed products should be stored in a dry, and preferably dark place until use. Different products can be made from sweetpotato flour.

Packaging, Storage and Utilization

After the grinding, pack and seal immediately to avoid rehydration and insect infestation. Materials with little permeability to water vapor, such as cellophane, polyethylene or polypropylene should be used. The choice of packaging material is based on transportation requirements and storage time. As soon as the product is placed in its package, it should be sealed immediately, removing as much air as possible from inside the package. This is to avoid direct exposition of the product to the surrounding air and to minimize any insect attack. The packed products should be stored in a dry, and preferably dark place until use. Different products can be made from sweetpotato flour.

Produced by the International Potato Center(CIP), P.O. Box 7065, Kampala, Uganda. Contact: Vital Hagenimana.