PREVENTING SEASONAL SHORTAGES OF ROOT CROPS

By Beka F. Siki, Formerly, Horticulturalist
Highlands Agricultural Experiment Station, Aiyura

INTRODUCTION

Papua New Guinea depends largely on root crops as a staple food. The main root crops, in order of importance, are sweet potato *Impomoea batatas*, taro *Colocasia esculenta* , yams *Dioscorea alata*, Chinese taro *Xanthosoma sagittifolium* and cassava *Manihot esculenta*. Other staple foods include sago and bananas.

Increasing urban migration and other social changes mean that methods of cultivation, processing and marketing of traditional crops will have to improve if food production is to keep up with demand.

One of the important things about food supply is that it must be kept at about the same level all year round. There must not be big shortages of food at certain times of the year. This article describes some of the methods used to keep supplies of root crops constant throughout the year.

AGRICULTURAL TECHNIQUES

In the rural areas, the people have developed agricultural methods which generally ensure a constant supply of fresh root crops all the year round. These methods include:-

1. Regular planting in different gardens. Several gardens are used, each being planted at a different time. This means that there is always a crop ready for harvest in one of the gardens.

Taro

2. Progressive planting in one garden. This means planting only small areas of a garden at a time, for example, at one or two-monthly intervals, so that harvesting is spread throughout the year.

3. Using more than one staple crop. Crops which take different lengths of time to mature are grown together so that the harvest is spread out over a

longer period than for just one crop. The crops may be planted in separate gardens or in one garden using a mixed cropping pattern.

4. Using more than one variety of the staple crop. Different varieties of the same crop also take different lengths of time to mature. Planting a mixture of carefully chosen varieties is another way of lengthening the harvesting period.

The first two (1 & 2) of these methods can only be used where rainfall is fairly evenly distributed throughout the year. The last two (3 & 4) are used where there are pronounced wet and dry seasons which prevent all year round planting.

STORAGE

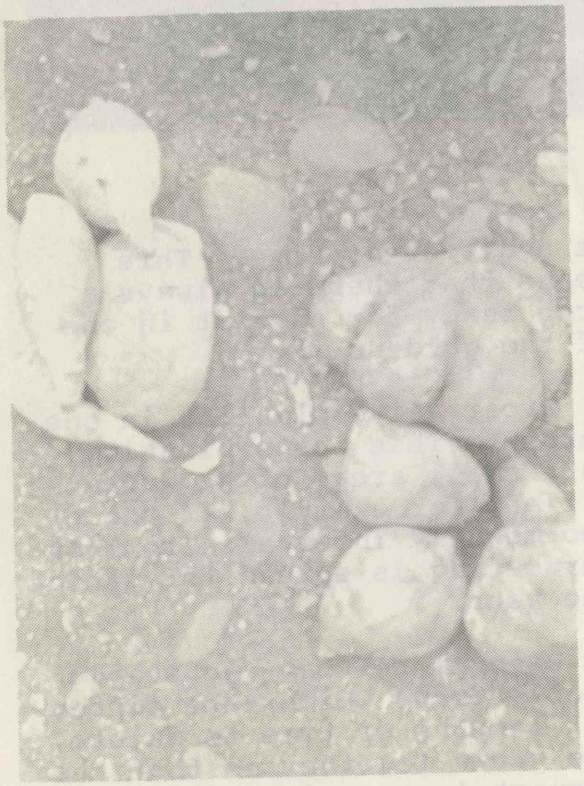
Another way of spreading the food supply evenly over the year is by storing food. This can be done either before harvest when it is called pre-harvest storage or after harvest when it is called post-harvest storage.

PRE-HARVEST STORAGE

In pre-harvest storage, the food is left in the garden and harvested as it is needed. There are three main ways of storing root crops pre-harvest.

1. Progressive harvesting of individual plants. This is very common in the highlands especially for sweet potato. Only the mature tubers are harvested from each plant. The immature tubers are left in the soil to be harvested later when they have grown bigger.

2. Progressive harvesting of a crop. This is very common in the lowlands. Only a very small area of the garden is harvested at one time. It is known that in most varieties of sweet potato, the tubers do not go bad for at least two months after maturity. This means



Sweet potatoes

Chinese taro

that the crop can be harvested as needed.

3. Use of species with no definite harvest date. These crops include swamp taro *Cyrtosperma chamissionis*, Chinese taro and cassava. They can be harvested at any time, as they are needed.

POST-HARVEST STORAGE

There are four traditional methods of post-harvest root crop storage. These are:-

1. Storing in the house which the people live in. This is a very common method of storing food for short periods. It is especially common in the Highlands where the fire inside the house may help to preserve the tubers. Sweet potato can be stored like this for up to four weeks and taro for up to two weeks. Yams will keep for many months.

2. Storing in special storehouses. An example of this method is seen in the Trobriands and other areas where yams are the main staple crop. Special houses are built to store the yams in these areas.

3. Storing in pits or holes in the ground. In this method, root crops are buried in a pit lined with dried leaves and grasses. Sometimes, dried grasses are also put between the layers of tubers. Sweet potatoes can be stored like this for three weeks but taro and yam will keep for much longer periods. This method is also used by fishermen and hunters visiting remote islands and villages.

4. Storing on platforms. This type of storage is used for short periods only. For example, when taro is prepared for a feast. In this case, the platform is used as much for

Yams

displaying the taro as for storing it. Taro will keep well on the platform until two weeks after harvest.

In another method, the crops are stored in clamps (mounds). This is not a traditional method but was developed overseas. It was investigated by agriculturalists at Kandep and Kuk in the Highlands, and at Keravat in the Lowlands.

Using this method, the tubers are piled up in a mound and are covered over with a layer of dried grass followed by a layer of soil. Sweet potatoes were found to store well like this for up to 50 days at Kandep, 40 days at Kuk and 30 days at Keravat.

The differences in the lengths of time the tubers could be kept in these places was probably due to differences in temperature between them. In Kan-

dep, the temperature is 12-15°C which is close to the best temperature for storage. Both Kuk and Keravat are warmer than this. At Keravat the tubers will keep just as well in a house as in a clamp and so there is no point in building a clamp.

FOOD PROCESSING

Processing increases the storage life of food by changing it into another form which keeps better than the fresh product. Methods of food processing include drying, salting pickling and freezing.

Food processing, particularly of root crops, is an area which had received little attention in Papua New Guinea, until quite recently. All major subsistence crops are consumed without processing.

Recently, the government has become interested in developing crop processing techniques in Papua New Guinea and a research unit is being formed by D.P.I. and the P.N.G. University of Technology in Lae to look into this.

CONCLUSION

The agricultural techniques, storage methods and processing research described in this article are some of the ways in which we can make sure enough home produced food is available all the year round. This is clearly very important to Papua New Guinea's move towards self sufficiency and forms an increasingly important part of the country's agricultural research policy.

Photographs in this article by J.W.J. Wankowski