TRADITIONAL FOODS FROM STARCHY STAPLES IN SAMOA (SOUTH PACIFIC)

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ABSTRACT

*Traditional foods need to be documented to develop a food processing database. A survey was conducted in Samoa to identify the various traditional food uses of taro (*Colocasia, Xanthosoma, Alocasia*), yam, cassava, and breadfruit. These were described using appropriate flow charts. There is a role for these foods in the Samoan food industry and they can contribute to the snack food sector and small-scale food processing.*

Keywords: *earth oven (*umu*), food processing,* masi

INTRODUCTION

The independent state of Samoa lies between latitude 30° and 15° South and 168° and 173° West close to the international dateline (DOS 1991). It consists of nine islands and it is located 4200 km South-East of Hawaii, 2900 km North-East of New Zealand and 4300 km East of Sydney, Australia. Out of a total land area of 2900 km^2, about 44% is either non-arable or unsuitable for cultivation due to volcanic activity (Fong 1991). Only 40% of the arable land is cultivated (Ekongocha 1990) with about half of this committed to starchy staples such as taro (*Colocasia, Xanthosoma* and *Alocasia*), cassava, yam, banana, and breadfruit. Agriculture is important in the Samoan economy and it contributes about 30% of the gross domestic product (ESCAP 1990).

The starchy staples are dominant in the country's agriculture and their production figures are quite impressive (FAO 1994). Taro *Colocasia* and banana are major export commodities (DOS 1993) but enough proportion of the harvest is available for local consumption. However, a surplus of these staples has been reported and pre- and post-harvest losses can be up to 65% (FAO 1982). Generally, the surplus can be processed to yield stable and convenient products and a direction in the processing strategy is to review the existing traditional uses that are deep-rooted in the Samoan culture. This is with a view to identifying the traditional foods that could be upgraded and improved to complement the conventional uses of the staples.

METHODOLOGY

A survey was conducted in Upolu and Savaii, the two main islands of Samoa. Farmers and housewives were randomly selected and interviewed. The interviewees were asked to describe as many traditional foods from the staples as they could remember. No questionnaire was prepared.

RESULTS AND DISCUSSION

The traditional foods that were obtained are described below. It is, however, recognised that there may be many more foods that were not described and the variation of a particular food. The following gives an idea of the diversity that is in existence.

Taro *Colocasia*

Taro (*Colocasia esculenta*) is the most preferred staple food with an avaeage consumption of 0.4 kg per person per day (Cable and Asghar 1984). It accounts for 39% of the diet in Upolu and 43% in Savaii (Clarke 1992). The production of taro *Colocasia* has been badly affected by the taro leaf blight disease since 1994. According to a market report (CBS 1993; 1994; 1995), about 18 tonnes of taro was available at the main (Fugalei) market in May 1993 but only 56 kg and 41 kg were available during the same month in 1994 and 1995 respectively.

Niue and *Manua* are the major cultivars of taro *Colocasia* in the country (Afutiti 1984) but *Niue* is the most preferred accounting for about 75% of the total production (Bradbury and Holloway 1988). Fig. 1 shows the traditional foods prepared from taro *Colocasia*. *Umu* is an earth oven in which stones supply the heat required for cooking. The earth oven is a widely used technique amongst the South

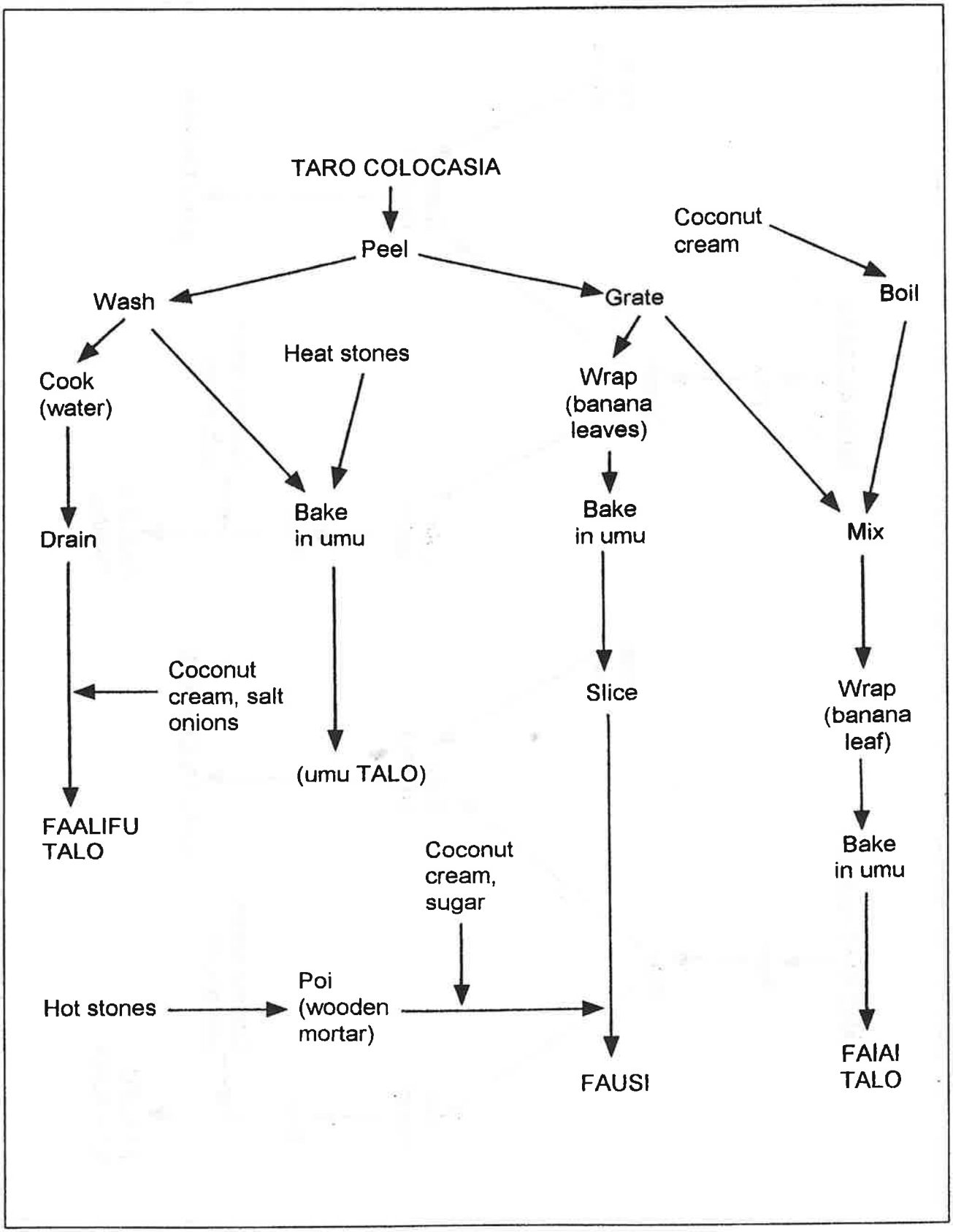

Figure 1. **Traditional foods prepared from tarp, *Colocasia*.**

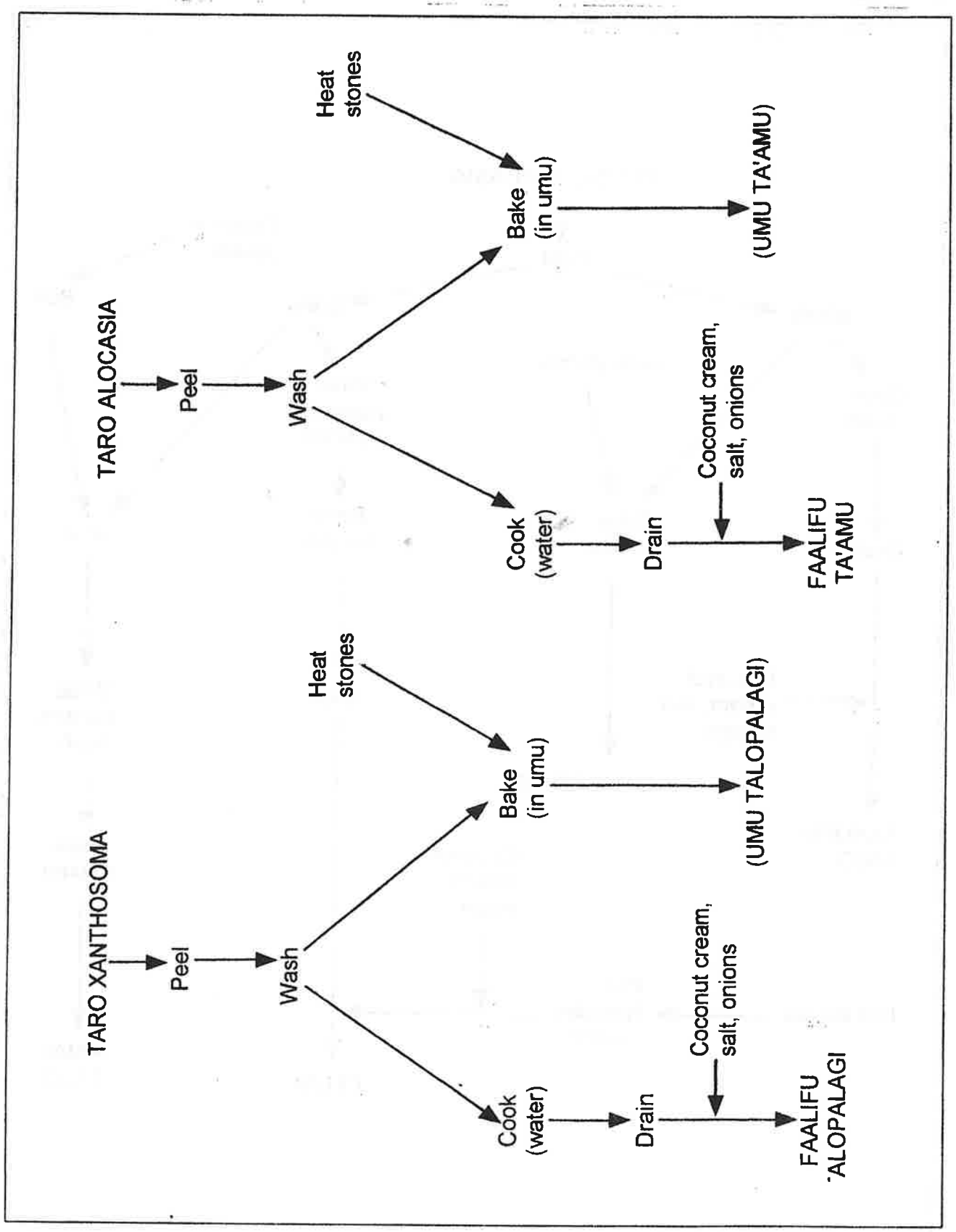

Figure 2. **Traditional foods prepared from taro *Xanthosoma* and *Alocasia*.**

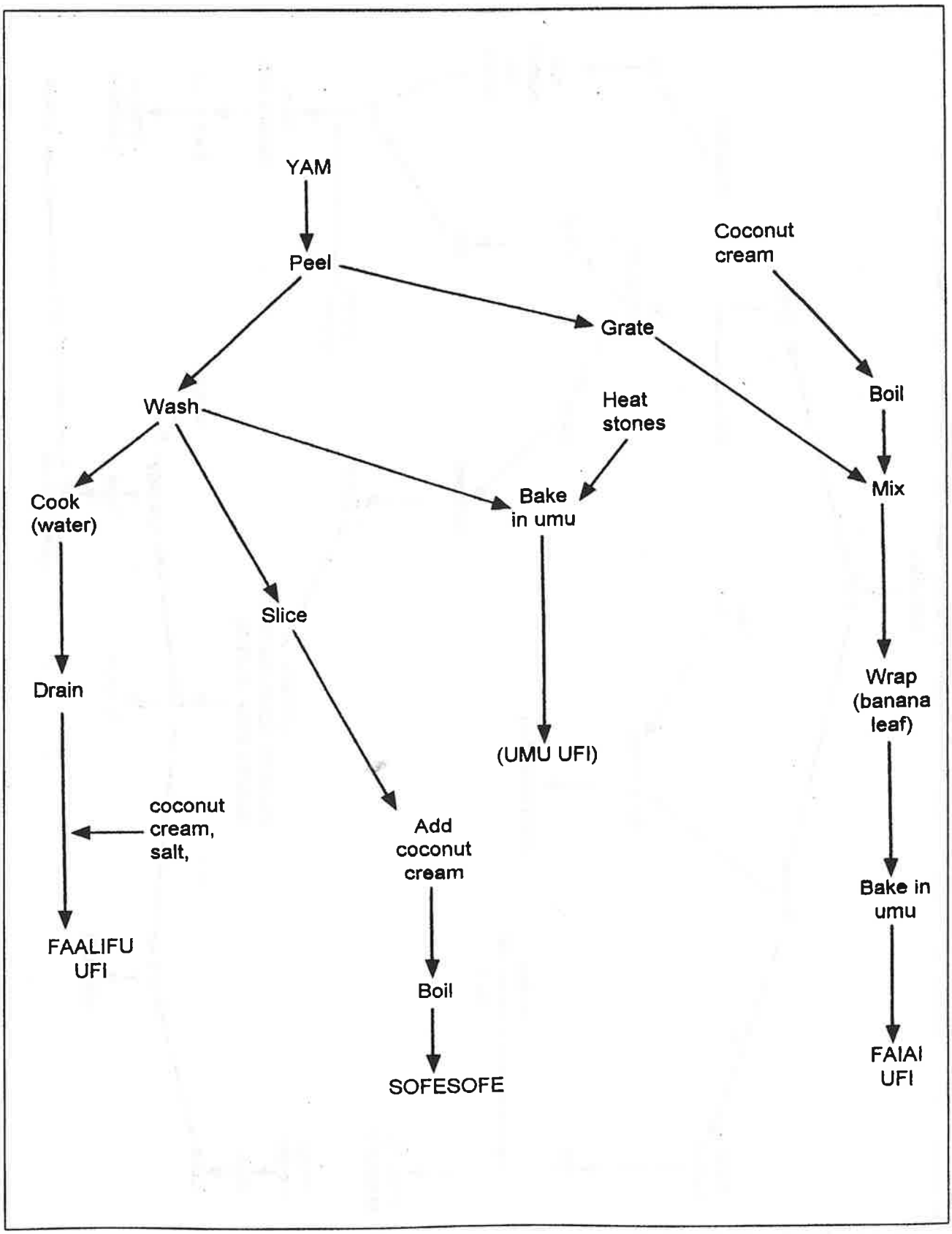

Figure 3. **Traditional foods prepared from yam.**

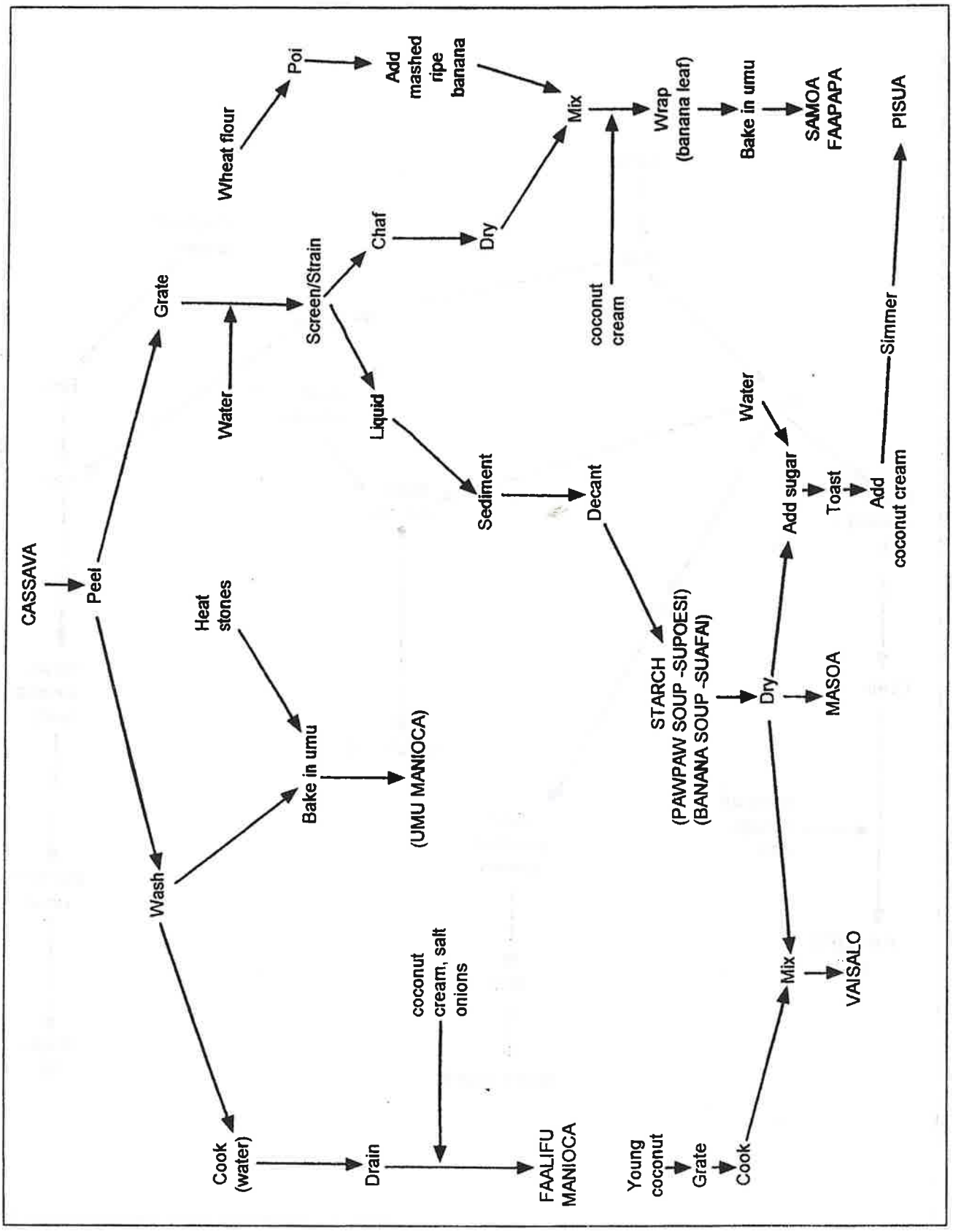

Figure 4. **Traditional foods prepared from cassava.**

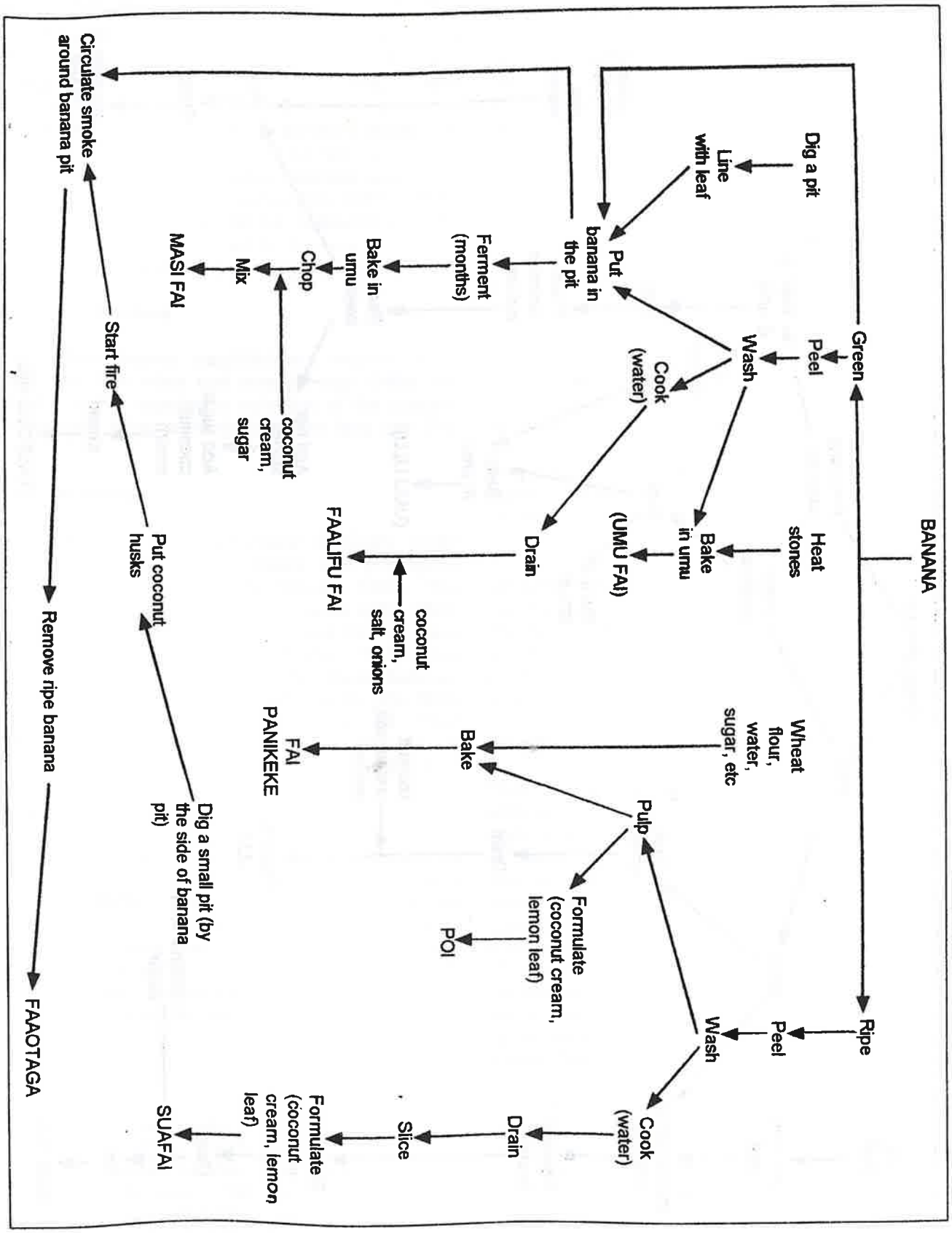

Figure 5. **Traditional foods prepared from banana.**

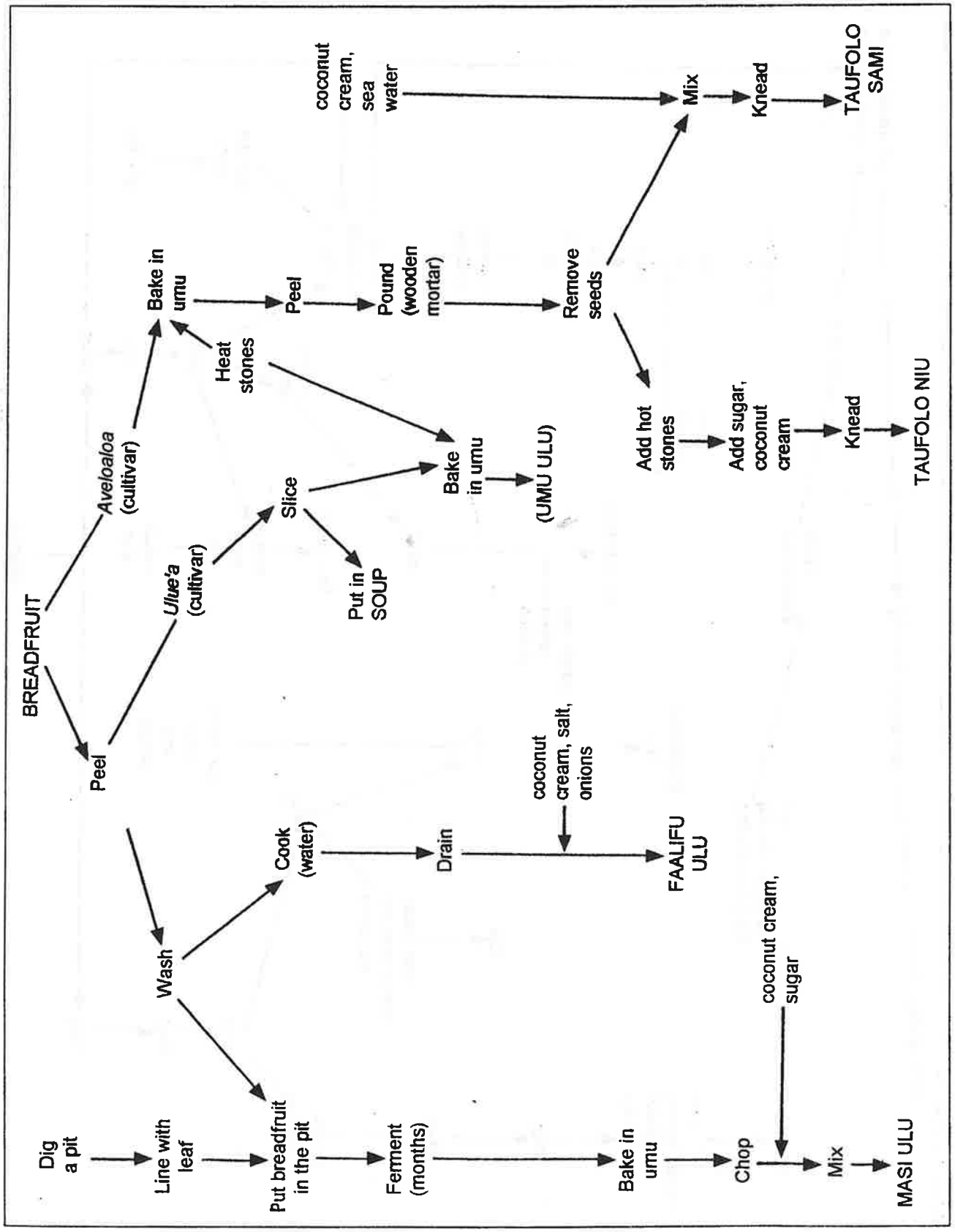

Figure 6. **Traditional foods prepared from breadfruit.**

Pacific islanders and it is called *mumu* in Papua New Guinea, *ahimaa* in Tahiti, *lovo* in Fiji, and *hangi* in New Zealand Sopade *et al.* 1994). There is a variation between islands and within an island in the way it is done and its temperature distribution. From a study of the Papua New Guinean *mumu* (Sopade *et al.* 1994), a typical Samoan *umu* could give a temperature that is higher than 200°C around the food. Baking would be predominant and steaming may be restricted to the available water from the food and the packaging leaves.

Taro *Xanthosoma*

Taro (*Xanthosoma sagittifolium*), locally called *talopalagi*, is a minor root crop although Cable and Asghar (1984) reported a collection of five cultivars in Samoa. It has a relatively limited food use (Fig. 2).

Taro *Alocasia*

Giant taro (*Alocasia microrrhiza*) is locally called *ta'amu* and it is a major staple and prestigious food in Samoa (Bradbury and Holloway 1988). The production of taro *Alocasia* has increased (CBS 1995) possibly in response to the scarcity of taro *Colocasia.* Bradbury and Holloway (1988) have discussed the composition of eight popular Samoan cultivars. *Toga* and *Niukini* cultivars are the most widely cultivated but the latter is the most predominant cultivar. Traditionally, taro *Alocasia* is either boiled in water or baked in *umu* (Fig. 2).

Yam

The main species of yam in Samoa is *Dioscorea alata*, which is locally called *ufi tau* (Wilson and Hamilton 1988). Others are *D. nummularia, ufi palai* and *D. esiculenta, ufi lei. D. nummularia* is of a harder texture than *D. alata* (Cable and Wilson 1983) and it is preferred by young Samoans. FAO (1994) put yam production in the country at 1,000 t and the four popular traditional foods are described in Fig. 3.

Cassava

Cassava, *Manihot esculenta,* is an important source of revenue (Tofinga 1991) and because of the favourable Samoan weather, there is no pronounced seasonality (Ekongocha 1990) in it availability. A major nutritional limitation of cassava is its cyanogens, which are lethal for humans upon an oral dose of 0.5-3.5 mg HCN per kg body weight (Onwueme and Charles 1994). Incidentally, cassava cultivars from South Pacific (Bradbury and Holloway 1988) are low in cyanogens and cassava-related nutritional problems are relatively unknown. From Fig. 4, cassava tubers are either cooked in water or baked in *umu*, both treatments should be enough to detoxify the cassava (Onwueme and Charles 1994) prior to consumption. Cassava starch is used for making various foods (*vai salo, pisua, supoesi,* and *suafai*) while the chaff from cassava starch manufacture is valuable for *samoa faapapa.*

Banana

This is an important starchy staple with about 10,000 ha under cultivation yielding 10,000 t (FAO 1994). The species in Samoa (Asghar and Wendt 1980) include *Musa* textilis Nee, *M. paradisiaca, M. nana,* and a hybrid of *M. acuminata* Colla x *M. balbisiana* Colla. Banana is locally called *fai* and the specific names for the various cultivars are available elsewhere (Daniells 1990). The various traditional products from banana are given in Fig. 5.

A notable traditional food is *masi fai,* which is a product of pit fermentation, and lactic-acid bacteria (Aaslbersberg 1988) are the dominant organisms. The fermented pulp has to be harvested at optimum quality to prevent the development of objectionable ("rotten") odours, which adversely affect the acceptability of *masi.*

Breadfruit

There are two main species of breadfruit, *Artocarpus altilis* and *A. mariannensis* (Ragone 1988) but *A. altilis* is the most widely distributed. The fruit can be seeded or seedless and its shape ranges from oval to oblong (SPC 1983). There are many varieties but *puou* has been recommended for large-scale production (Ragone 1988) possibly because it is low-bearing and easily pruned. The total number of breadfruit trees in Samoa was put between 270,000 and 290,000 (van Dissen 1978). However, the country had experienced cyclones which reportedly blew over 50-90% of the breadfruit trees (Clarke 1992).

Breadfruit is an energy food that is rich in fibre and contains a fair amount of vitamin C (SPC 1983). Breadfruit is used for a variety of products (Fig. 6) and Ragone (1988) noted that when compared to cooked unpolished white rice and enriched wheat flour, breadfruit is a better source of calcium, riboflavin, niacin, phosphorus, and niacin.

Generally, it can be observed that there are many

traditional products from the starchy staples discussed in this paper. Ironically, they are less emphasised in the Samoan food industry and are being replaced by high-fat, -sugar and -salt (snack) foods with their attendant nutritional problems. This has altered the feeding habits of the Samoan people and the health concern has been discussed elsewhere (Quested *et al.* 1992). While not the only option, certain traditional foods can be upgraded to form the basis of small-scale food processing in the country but appropriate processing parameters must be established up front.

CONCLUSION

Taro, cassava, yam, banana and breadfruit are notable carbohydrate foods in Samoa. To increase their utilisation, they are converted into different products following traditional procedures. The products are diverse and their processing can be carefully studied with a view to applying existing techno-scientific knowledge for quality and efficiency. There is a potential for traditional foods in the Samoan food industry and their relationship to people's culture might help their acceptability amongst consumers. Their documentation should awaken a processing interest.

ACKNOWLEDGEMENTS

The study, of which this report is a part, was supported by the South Pacific Commission. Authour PAS gratefully acknowledges this and the assistance of Mr. Seve Imo of the Ministry of Agriculture, Fisheries, Foresty and Meteorology, Apia, Samoa.

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