EVALUATION AND UTILIZATION OF DIOSCOREA YAMS

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1. *Introduction*

There are four wide spread species of the genus Dioscorea, namely (1) D. alata, (2) D. rotundata (3) D. esculenta and (4) D. bulbifera. In some African countries, these yams are dietary staples and in West Africa, it is a "status" food and preferred over less expensive Cassava and Tannia (Martin 1972).

In Sri Lanka it is mostly grown as a back-yard crop. Usually it is not cultivated in the dry zone except in Jaffna, where it is grown with the addition of abundant quantities of organic manure. Under such hot and dry conditions, mulching is essential for the retention of moisture and maintenance of a low soil temperature, for the successful cultivation of these yams. But such care is not required in the humid wet zone where it thrives well. The Dioscorea yam has a bright future in the wet zone whereever subsistence agriculture is practiced.

Although it is not a staple diet most Sri Lankans are familiar with at least some of it's uses. Consumption of these yams, even rarely as a substitute for rice is limited to some rural areas. They are fairly expensive in urban areas and hence mostly used as a curry. Literature pertaining to investigations conducted in Sri Lanka on evaluation and utilization of Dioscorea yams is almost non-existent.

The yield of Dioscorea yams is rated as "high" compared to rice , (Martin 1972) Average yield of these yams is about 38 metric tons per hectare but yields as high as 67 metric tons per hectare are also reported. Hence it has a high potential as a useful starchy staple for developing countries.

USES OF DEHYDRATED YAMS:

Curries and"Mallum". The dried yam slices were found to be better when prepared as a "Mallum" than curry. But 3 varieties namely 1. Okumado, 2. Esuma, and 3. Angili ala were found to be equally good as a curry or as a "Mallum.

As breakfast food. It was found that, boiled dehydrated yams and grated coconuts were satisfactory as a breakfast food. Soaking them in water for at least 2 hours before boiling considerably reduced boilding time. The loss of nutrients due to the draining out of excess liquid could be prevented by using just sufficient water for boiling. The ratio of yams to water for boiling was found to be 1:6 (by weight).

Yam Flour: Yam flour could be prepared by using simple kitchen utensils found in any rural home. The flour obtained by employing the micropulverizer was so fine that seiving was unnecessary. Hence any mill designed to grind chillies, coffee,cereals etc. can be used to grind yams, provided that the particle size is sufficiently reduced before feeding into the mill. Yam flour has a characteristic pleasant aroma.

Martin (1976) observed that in contrast to flours of other farinaceous roots and tubers, yam flour could be substituted for wheat flour at a higher percentage, perhaps as much as 60%. The success of this substitution possibly is related to the high protein content of yams or perhaps due to it's mucilaginous character. Further the relatively high lysine content of yam flour with the methionine in wheat flour gives a mixture of enhanced nutritional value. It will be of great interest to conduct investigations in baking bread by incorporating yam flour with wheat flour, under the prevailing conditions in Sri Lanka.

Roti and Pittu:

Although yam flour alone could be used to prepare roti (same as kurakkan flour) the addition of wheat flour greatly improved the elasticity of the

dough and therefore the moulding and handling. Roti prepared with wheat and yam flour blends tasted better than either of them used alone. At least 10% wheat flour was required to significantly improve the blend. A mixture of 50% yam flour and 50% wheat flour was found to be the best.

It was also observed that the incorporation of the flour of rotundata species developed a bitter taste in roti. The bitter taste was noticeable only when the dough was strongly heated. This needs further investigations.

A blend of 10% wheat flour and 90% yam flour was found to be the best for making pittu. The bitter taste of rotundata flour was not noticeable when incorporated into the pittu preparation. It may be due to the maintainance of a comparatively lower temperature in making pittu than in making roti.

Puddings:

The purple varieties, Jaffna purple and Raja valli (fresh yams) are well known as yams suitable for making puddings, because of their attractive colour and slight sweetness. A convenient method of pudding preparation was found to be the use of yam flour. Both varieties retained their original colour in the blanched samples. The flour of the variety Iniala was also suitable because of it's light brown colour and characteristic pleasant aroma. The following recipe for making puddings was found satisfactory.

Ingredients:-

115 g. yam flour
500 ml. water
175 g. sugar
Milk extracted from 1/2 an average coconut.
1 pinch salt
Vanilla or suitable essence.

Method: Stir the yam flour slowly in the 500 ml. water with care to prevent the formation of lumps. Boil till the flour is completely gelatinized. Add coconut milk sugar and salt. Mix well. Boil slowly on a low fire and continue boiling till the mixture flows down slowly like a sheet from the spoon. Remove from the fire and allow it to cool. Add essence, mix well and allow to set. 10 servings.

COLOUR, TEXTURE AND TASTE OF BOILED YAMS

	Variety	Colour	Texture	Taste
1.	Raja Ala	Buff	Slightly Coarse	N.S.
2.	Raja Valli	Purplish Grey	Coarse	S
3.	Hingurala	Buff	Slightly coarse	S
4.	Okumado	Pale Yellow	Smooth	G
5.	Esuma	Pale Yellow	Slightly Coarse	V.G.S.
6.	Jaffna Purple	Purple	Coarse	S
7.	Borki	Grey	Coarse	S
8.	Iniala	Greyish Pink	Coarse	S
9.	Jamburala	Pale Yellow	Coarse	N.S.
10.	Kukulala	White	Smooth	S
11.	Angili Ala	White	Smooth	E

N.S.- Not Satisfactory, S. Satisfactory,

G. Good, V.G. Very Good, E - Excellent.