

# SAP HARVESTING DURING REPLANTING

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**S**ap or fresh juice can be harvested in order to manufacture value-added products from oil palm biomass. The sap was harvested from a palm tree by stimulating its flow from the apical meristematic tissue after the palm was felled down. The sap contained sugar in the range of 10% to 12%. In America and Africa, palm sap has been exclusively used for wine production, whereas in Asia the sap is used either as fresh juice or processed into a large array of products (wine, *arak*, sugar, vinegar, etc.).

In our country, tapping of the oil palm tree mainly for sap has not been practiced; therefore, the objectives of this paper were:

- To develop a suitable method for the collection of sap; and
- To produce value-added products from the sap.

## HARVESTING OF SAP

Sap was harvested from felled palms as follows:

- Felling the palm;
- Making a cavity at the apical meristematic tissue;
- Slicing the meristematic tissue at a certain period of time; and
- Collecting the dripping sap.

The amount of sap collected per palm was in the range of 40 to 50 litres as shown in Figure 1.

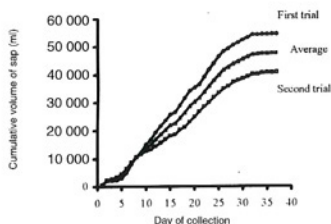


Figure 1. Cumulative volume of sap harvested per day.

The fresh sap is brown in colour, but when it was left standing for a few hours, the colour changed to white due to fermentation by bacteria or yeast (Figure 2).

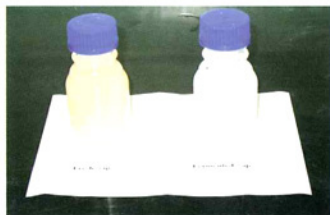


Figure 2. Fresh and fermented sap.

The sap contained:

- Sugars (glucose, sucrose, etc.);
- Vitamins (B1, B2, vitamin C, etc.);
- Minerals (potassium, sodium, etc.); and
- etc.

The sap characteristics are shown in Table 1.

TABLE 1. CHARACTERISTIC OF SAP

Sample	Sugars (%)			Minerals (mg 100 ml <sup>-1</sup> )			Vitamins (mg 100 ml <sup>-1</sup> )		
	1	2	Av.	1	2	Av.	1	2	Av.
Fresh sap	23.1	23.5	23.9	424.6	422.5	423.5	2.7	3.2	2.8
Fermented sap	12.7	11.9	12.3	332.7	330.6	331.7	1.9	2.2	2.1

Sap that was fermented is not suitable for the production of good quality sugar and this usually limits the expansion of palm sugar or fresh products making. However, in our study, some consumable preservatives (food additives) were added in order to get the fresh sap.

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## USES OF SAP

Different products are industrially processed from sap, such as soft drinks (600 000 bottles in 1982-1983 in Madras), chocolate bars, candies, jam, mixed fruit jam and palm syrup.

In our study, the sap could be converted to sugar syrup (which has an indigenous sweetness), concentrated sugar (Figure 3), drinks (refreshing) or nutritive drinks after adding some value to it.

## SOCIO-ECONOMIC ASPECTS OF HARVESTING SAP

Sap can be collected by smallholders (to improve their income) and also by the industry.



Figure 3. Concentrated sugar from sap.

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