Production of Neera

Sunil A. Nair*, Mejosh Jose, Regi J. Thomas, R.V. Nair

Central Plantation Crops Research Institute, Regional Station, Kayamkulam, Krishnapuram P.O., Kerala State

Amongst the 2,000 odd palm species in the world, only nine species yield inflorescence sap (neera) / sweet juice and of these only four general species are found in India viz., coconut palm, date palm, palmyrah palm and sago palm. The coconut palm, popularly known as 'tree of life', is characteristically a food supplier from its fruit, inflorescence and other edible products. India ranks first in the world in coconut production with a production of 10840 metric tonnes nuts from 1.89 million hectares; of these Kerala has around 18 crore coconut palms and about 25 % of the palms could be spared for neera tapping.

Neera is a sweet juice or sap, obtained by tapping the unopened inflorescence/spadix of the coconut palm. The inflorescence of this palm is a source of many food products. Its unopened spathe can be tapped to produce inflorescence sap, while its fertilized flowers or fruits can be processed to produce coconut meat, milk, cream, oil, water, flour, desiccated coconut, chips and nata de coco. The sap can be processed into sap juice / drink, syrup or honey, crude sugar or granulated brown sugar etc. In Philippines it is also marketed as an alcoholic drink (4.0-6.0% alcohol) or as 'lambong' or distilled wine (24.0-45.0% alcohol).

Season and stage for tapping

Tapping for extraction of neera is mostly done in the dry season extending from November to March and in wet weather period from April to October. Dry weather tapping is done mostly in the low lying lands where palms do not suffer due to moisture stress during drought period. The spathe is considered ready for tapping when the inflorescence opens or is just about to burst. The female flower within the unopened spadix causes a swelling at the base and this indicates the appropriate stage for tapping. Since coconut produces inflorescence regularly in the successive leaf axils, tapping can be done throughout the year. Neera can be extracted from Tall palms, Dwarf palms and the hybrids and out of these the hybrids followed by Talls are found to be high yielders and most preferred.

Tapping technique and collection of sap

The selected unopened spadix is wrapped with fibrous chord of coconut leaf petiole along its length to prevent it from splitting. Inflorescence suitable for tapping is trained and it consists of gentle uniform beating all over the surface using a hardwood mallet twice daily so as to carefully bruise and rapture the tender tissues of the floral branch. Approximately seven to ten centimeter of the tip of the spathe is cut off. After three days the surface appears moist due to oozing of juice. An earthen pot is just hung around the spadix to collect the oozing juice. The tip of the spaidx is tied down with a string to a nearby petiole or leaf. The daily slicing of the tip of the spadix allows the sap to flow continuously and slicing is done once in the morning and evening. The finer the slice, the

longer is the life of the spadix. The mouth of the receptacle is covered with a net to prevent the entry of insects, mice and lizards. The collected inflorescence sap is filtered through a sieve to remove the foreign particles.

The yield of sap gradually increases and when it reaches the maximum, the collection is made twice in a day. The flow of the sap from the inflorescence continues for about one month or even more. During this period, the second spathe is also brought into production.Tapping is usually continued for a period of six months with a possibility of three spathes on the same tree being tapped at the same time. The maximum yield of neera is usually obtained during the third month after commencement of tapping. On an average a palm yields about 1.8-2.4 litres of neera.

In Philippines tapping is done twice a day. Harvesting of inflorescence sap can be done in the morning (taken before 8 am) for production of vinegar and in the afternoon (not later than 3 pm) for the production of sap juice, honey and sugar since sap produced in the afternoon is sweeter than in the morning. To produce sweet inflorescence sap, it is necessary that all tools and containers used should always be clean.

Preservation of the collected neera (inflorescence sap)

Neera undergoes fermentation when exposed to sunlight. It first undergoes alcoholic and then acetic acid fermentation through microbial action. As the sap is highly perishable due to the natural yeast micro flora, the harvested sap should be immediately processed by pasteurizing for 10 minutes at 65° C in a large cast iron pan. This prevents the fermentation of the sap. Such hygienically prepared sap can be stored upto three days without any change in its quality. The commercial neera available in the market has an undesirable odour. Numerous methods are available for removing the odour, improving quality and shelf life of the extracted neera.

According to the method developed by DRDO, thermal processing of neera at a temperature of more than 95° C and reduction of thermal stress by addition of bio-preservative 'nisin' at a concentration of 10 ppm was found to enhance shelf life of neera. A foil based multilayer packaging material such as PET (Polyethylene Terephtalate) / aluminium foil was found suitable to prevent adverse light. In order to increase the product appeal, the suspended particles in neera were removed by centrifugation at 4000 rpm for 10 min. The product as such without any additive treatment as well as heat processing was stable up to 72 hr. When the product was processed either by in-pack pasteurization or through retort pouch processing, the shelf life was about one year under refrigerated condition and 30 days under ambient conditions.

Taking into account the vast market potential of 'neera' (unfermented inflorescence sap), Government should take measures to accede to farmer's demand for their right to tap and market neera. A favourable decision in this regard will definitely benefit the coconut farmers and make coconut farming more competitive, which is otherwise losing its market to cheaper oils.

In Karnataka, Khadi Village Industries Commission (KVIC) has a demonstration unit for promoting Neera as a health drink. The central government is trying to develop Neera clusters under the scheme of Fund for Regeneration of Traditional Industrial (SFURTI). This will undertake programmes to help those who tap the Coconut trees and has under its wings 50 co-operative societies and institutions throughout the Gramodyog Sangham. The implementation of this scheme is as part of the increasing availability of the drink, with the aim of generating more employment opportunities for the Tappers.

The Neera Board constituted in Karnataka to market the value added products made from neera consists of representatives from the neera industry, i.e farmers, state government officials and neera training institute. The key objective of the Board is to inspect and control the quality of neera and its products, give approval to labels and come out with various schemes for the sale of neera and it's by products in the international market.