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Research Article

NEERA AND ITS IMPORTANCE- A REVIEW

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ABSTRACT

Coconut is a member of the palm family and the only living species of the genus *Cocos*. India is the major producer of the coconut and it stands number one in productivity among the member countries of the Asian and Pacific Coconut Community. Coconut is the one of the part of our daily diet. Beside that every part of this fruit is use in different works. NEERA is the one of the product obtained from the flower of the coconut. NEERA is the sap extracted from the unopened immature flower spike of coconut trees. It is a delicious drink with high nutritious value. It is the good source of vitamin and minerals. It is used also in connection with Ayurveda.

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INTRODUCTION

India is the largest producer of coconut having the third largest area under coconut and number one in productivity among the member countries of the Asian and Pacific Coconut Community (APCC). Coconut is cultivated in 16 states and in four union territories in the country widely acclaimed as the *Kalpavriksha* or *Gift from Heaven*, the Coconut palm provides food security and the livelihood opportunities to more than twenty million people across the globe and ten million people in India. World production of coconut as per APCC Statistical year book 2014 is 69836.36 million nuts from an area of 12.20 million ha. As per 2014 world statistical, India is the largest coconut producing country in the world, contributing for 31.02% of the world production. India, Indonesia and Philippines are leading coconut growing countries having 75.87% of the total area under coconut and contribute 75.48% of the coconut production in the world. Among the major coconut growing countries Ghana holds the highest yield of 14,008 nuts per hectare followed by Brazil with 11,630 nuts per hectare. When it comes to productivity India stands in the fourth position.

Tamil Nadu

Tamil Nadu turns out to be first in coconut production and third in area under coconut cultivation. Large coconut holdings, scientific management and plant protection, cultivation of hybrid variety at a comparatively higher level and availability of land is boosting the crop in the state.

Area, Production, Productivity of Coconut in India (2016-17)

	Area ('000 ha)	Production (million nuts)	Productivity (nuts/ha)
India	2082.11	23904.10	11,481
Tamil Nadu	461.06	6570.63	14,251

Coconut Development Board 2017

NEERA-The Health Drink

NEERA, is also called palm nectar, is a sweet, translucent drink that has been picking up ubiquity due to its high healthful esteem. It is mostly consumed in several nations all over the world like Africa, India, Sri Lanka, Indonesia, Malaysia, Thailand and Myanmar. It is one of the healthiest and non-alcoholic drinks delivered by tapping palmyra palm, coconut palm or different palms. It can be used in making of several produce such as jaggery, sweeteners, concentrated syrup etc.

Nutritional Value of NEERA

NEERA contains lots of Vitamin, Minerals and other components, from that, some of the vitamins that NEERA has are vitamin C and 12 of the essential B complex vitamins. NEERA also contains a good amount of minerals such as potassium, magnesium, iron, calcium, zinc and phosphorus. Neera or inflorescence sap of coconut and other sap yielding plants is a healthy nutritious drink. It is the phloem sap collected from the spadix of the coconut plant. As it is rich in

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sugars, minerals, proteins, vitamins, antioxidants, volatiles etc., if it is left exposed to atmosphere it undergoes both enzymatic and microbial fermentation and become unsuitable for health drink or for value added products. At CPCRI, Kasaragod a simple device is developed to collect unfermented fresh and hygienic NEERA from coconut tree. The NEERA so collected can be used either as ready to serve drink or can be used for the preparation of natural coconut honey, jaggery or coconut sugar without the addition of any chemicals. The sequential tapping & nut production (SCTNP) technology i.e., 3/4th of the same spadix is tapped for NEERA and later it is opened for nut production, will increase the farm income without sacrificing the nut production.

NEERA helps keeps your body hydrated while the supplements in it sustains your body and keeps you feeling vigorous and revived. Coconut Sap (Neera) Coconut sap or neera is one of the important products, is being traditionally tapped from coconut in an un-organized manner and consumed largely by rural population. It is reported to be a good digestive, facilitating clear urination and preventing jaundice. The sap or sugary solution is collected from the inflorescence of coconut. An adult coconut palm produces 12 to 14 inflorescences per year, one inflorescence every month. The inflorescence of coconut is compound spadix where the main axis of peduncle is elongated and branched. The peduncles are pipe like structure through which the sap oozes out from the cut end. In an unopened spadix, the peduncles are closely arranged without much inter-peduncle space. From outside, the peduncles are covered by boat shaped woody bracts called as spathe. The coconut spadix is quite large and reaches up to a length of 1 meter.

NEERA Collection

Tapping involves the extraction of exuded sap from the spadix that yields sweet sap. Generally, a healthy garden with adequate irrigation facility is chosen for tapping. The spadix is considered ready for tapping when it is 3/4th of its age and is sufficiently grown. The female flowers within the unopened spathe cause swelling at the base and its appearance is an indication of the appropriate stage for tapping.

The spadix to be tapped requires certain preparations before it is being tapped. It is tied with coir/plastic rope from base to 3/4th of tip to prevent it from opening. A thin slice is cut off from the top end of the unopened spadix. Daily in the morning and evening the spadix is stroked with a mallet. After 8 to 10 days the sap starts oozing out from the peduncles, which is collected in an open earthen pot or bamboo sacs.

In coconut the spadix is at an angle of 20° to 45° to the main axis. Hence, the sap oozed from the cut end sometimes flow through the inter-peduncle spaces, the space between peduncles and spathe or drain along the surface of spathe. To avoid this internal seepage, in the traditional method a type of clay soil, a gummy material or leaf extract is pasted on the surface and sides of the cut end. To prevent the movement of sap along the outer surface of spathe, a coconut lamina is tied along the circumference of the cut end through which the sap trickles down to an open earthen pot or bamboo sac. In order to prevent the fermentation, lime is coated from inside the pot. In the above traditional method, in addition to the contamination of sap by chemical and clay, the sap quite often gets contaminated

by insects, ants and dust particles and aid in faster fermentation of neera.

In order to collect the sap clean and fresh, a simple device is developed at CPCRI, Kasaragod. It is a hollow pipe of different sizes to fit the inflorescence diameter. One end of it is closed while in the other end grooves are made, so as to fit it tightly to the cut side of the inflorescence. The adapter is tightly connected so that there was no inter-peduncle space left and hence there was no seepage of sap as in traditional method. A pipe is connected to the lower side of the connector, while the other end of the pipe is connected to a container. The sap which is oozed out from the cut end of the inflorescence freely flows through the connector to the pipe and into the container. The NEERA collection container is placed in an ice box with ice, as shown in figure 2b. The whole of this system from the cut end of inflorescence to the NEERA container is completely closed and hence, free from contaminants. Since, it is kept in cold condition there is no fermentation and hence no coating of lime. Thus, the NEERA collected is fresh and hygienic and can be used either as ready to serve drink or can be used for the preparation of natural coconut honey, Jaggery or coconut sugar without the addition of any chemicals. The device is filed for patenting (2425/Che/2013 dated 31/6/2013).

Tapping is done twice a day in the morning and evening. Sap yield is highly variable and it varies from day to day, season to season, spadix to spadix and tree to tree. A healthy tree can produce 1.5 to 2.5 litre of sap in a day. Sequential neera & nut production (SCTNP) technology i.e., 3/4th of the same neera and later it is opened for nut production, will allow increase in farm income without sacrificing the nut products.

Health Benefits of NEERA

NEERA Helps to Improve the Immune System

NEERA contains high measures of glutamic acid, which is an amino acid utilized by your body to fabricate proteins. The drink contains high measures of vitamins and minerals that lift resistant framework and enables your body to battle against different illnesses.

NEERA Helps to Prevent Cancer

Due to the high amount of phytochemicals and antioxidants, such as Vitamin C present in NEERA, it is very useful for our overall health and also helps to prevent various types of cancer in our body, such as lung cancer, oral cavity cancer and colon cancer, etc.

NEERA Helps to Reduce Blood Pressure

NEERA are highly rich in potassium, which is very good for our circulation of blood in our body.

NEERA Improves Skin Health

Due to the high amount of anti-bacterial and anti-oxidant properties present in NEERA it can help in reducing the various kinds of skin related issues. Regular consumption of NEERA help to protect our skin from oxidative damage caused by free radicals.

NEERA Improves Eye Health

Due to the presence of Vitamin C in NEERA, it is very beneficial for our eyes health and also helps to improve the eye vision.

NEERA is Ideal for Diabetic Patients

NEERA has a low glycemic list and is hence viewed as a protected and solid drink for individuals experiencing diabetes.

NEERA Helps to Cure Liver Diseases

As per the different studies, NEERA is viable in curing liver infections, particularly the liver issues caused because of extreme liquor consumption. NEERA can dispose of acetaldehyde, which is the poisonous metabolic result of liquor that causes liver harm. NEERA Improves Bone Health. Due to the high amount of calcium found in NEERA, it is very beneficial for our bone health and protects our bone from disease, such as osteoporosis.

NEERA Prevents the Risk of Anemia

Due to the high amount of vitamin K and iron present in NEERA, it is very good for our overall health and helps to prevent the risk of anemia. Consuming of iron rich food, such as NEERA can improve the iron level in our body.

NEERA Improves Respiratory Health

Due to the high amount of antibacterial and antiviral properties found in NEERA, it is very beneficial to our respiratory health.

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