Neera – the Global Health drink

Coconut Development Board
(Ministry of Agriculture, Govt. of India)
www.coconutboard.gov.in
Contents

1. What is Neera
2. Nutritional composition of Neera
3. Preservation of Neera
4. Uses of Neera
5. Neera in Abkari Act – Need for Amendment
6. What if Amendment is delayed
7. Coconut Producers Societies, Federations and Companies –
8. Activities that can be taken up by CPS, CPF and CPC
9. Action Plan for immediate future and benefits to State’s GDP
10. International products and brands
1. What is Neera?

- **Sweet oyster white coloured juice obtained from the unopened coconut inflorescence**
- **Sugar containing delicious health drink with 0% alcohol**
- **Rich source of sugars, vitamins and minerals**
- **Rich in iron, phosphorus and ascorbic acid**
- **Low in Glycemic Index (GI 35)**
## 2. Nutritional Composition of Neera

<table>
<thead>
<tr>
<th>Nutritional Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total solids (g/ml)</td>
<td>15.2-19.7</td>
</tr>
<tr>
<td>pH</td>
<td>3.9-4.7</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.058-1.077</td>
</tr>
<tr>
<td>Total sugars (g/100 ml)</td>
<td>14.40</td>
</tr>
<tr>
<td>Total ash (g/100 ml)</td>
<td>0.11-0.41</td>
</tr>
<tr>
<td>Citric acid (g/100 ml)</td>
<td>0.50</td>
</tr>
<tr>
<td>Alcohol in %</td>
<td>Nil</td>
</tr>
<tr>
<td>Iron (mg/100 ml)</td>
<td>0.15</td>
</tr>
<tr>
<td>Phosphorus (mg/100 ml)</td>
<td>7.59</td>
</tr>
<tr>
<td>Ascorbic acid (mg/100 ml)</td>
<td>16-30</td>
</tr>
<tr>
<td>Total protein (g/100 ml)</td>
<td>0.23-0.32</td>
</tr>
<tr>
<td>Glycemic Index (GI)</td>
<td>35</td>
</tr>
</tbody>
</table>

Source: CFTRI
2. Nutritional Value of Coconut Neera

- **Food Energy**: 74.86 K.cal/100 ml
- **Protein**: 0.28%
- **Carbohydrates**: 17-18%
- **Fat**: 0.18%
- **Total Minerals**: 0.3%
- **Aminoacids**: 0.25%
- **Vitamins**: 0.08% (Vit A, B2, B3, B6 & C)
- **Glycemic Index**: Less than 50
Sugar Profile of Neera

- Glucose - 1.5 g/100 ml
- Fructose – 600 mg/100 ml
- Sucrose – 13.4 g/100 ml
- Other sugars - Arabinose, Rhamnose, Xylose, Ribose, Mannose, Galactose were found absent
Vitamin Profile of Neera

- Vitamin B2 – 15.4 µg / 100 ml
- Vitamin B3 – 210 µg / 100 ml
- Vitamin B6 – 30 µg / 100 ml
- Vitamin C – 65 mg / 100 ml
- Vitamin A (as retinol) – 459 µg / 100 ml (1529 IU)
Minerals of Neera

- Sodium (Na) – 31 mg/ 100 ml
- Potassium (K) – 198 mg/ 100 ml
- Iron – 0.36 mg/100 ml
- Zinc – 40 µg / 100 ml
- Phosphorous (8.5 mg/100 ml)
- Magnesium – 6 mg / 100 ml
- Calcium – 1.8 mg/ 100 ml
- Manganese – 10 µg / 100 ml
- Selenium – 10 µg / 100 ml
- Copper – 27 µg / 100 ml
Comparative GI’s of Sugars

Glycemic Index (GI) below 55 is considered low.

Source: FNRI GI Results (Trinidad, 2011)
IRON (Fe) AND ZINC (Zn)
CONTENT OF SUGARS*
(mg/100 g Sample)
Gandhiji as brand ambassador for Philippine coconut palm sugar

According to Gandhi, coconut blossom sugar provides a way to solve the world’s poverty, as an antidote against misery.

“The juice of the coconut tree can be transformed into a sugar as soft as honey... Nature created this product such that it could not be processed in factories. Palm sugar can only be produced in palm tree habitats. Local populations can easily turn the nectar into coconut blossom sugar. It is a way to solve the world’s poverty. It is also an antidote against misery.”

Mohan das K. Gandhi 3.5.1939

Mahatma Gandhi largely experimented with food; it was important to him. His personal diet was vegetarian and consisted of 1 litre of goat's milk; 150g wheat and rice; 75g leaf vegetables; 125g other vegetables; 25g lettuce; 40g ghee and 40-50g coconut blossom sugar.

Excerpts from Internet: http://www.noble-house.tk
3. MOVING FORWARD TO PRESERVED AND PACKED NEERA

1. Technology from CDB

Coconut Development Board Institute of Technology (CIT) has developed an Anti Fermentation Solution (AFS), which can arrest the fermentation of Neera and preserve the natural flavor of Neera for 2-3 weeks at room temperature.
CDB TECHNOLOGY ....

• The AFS is put into the vessel collecting Neera at the tree top at the time of tapping itself.
• Once the vessel containing Neera is removed from the inflorescence, Neera is immediately transferred to ice boxes and is transported to the Neera Processing Plant, which is to be established by a “Coconut Producer Company”.
• In the Neera Processing Plant, Neera is subjected to the following processes under hygienic conditions:
  • *High speed centrifugation*
  • *Micro filtration* and
  • *Pasteurization*
• The above three processes ensures that the final product will be a nutritious beverage which retains the vitamins, sugars and other nutrients beneficial for health with a proven shelf life of minimum six months under ambient conditions.

• The pasteurized Neera is packed in sealed bottles / containers for sales. The process is tested, piloted and commercialized in Kerala now.
Processing and Preservation of Coconut Neera – CDB Technology

Neera Collection

Neera transportation in insulated boxes

neera transportation in insulated boxes

centrifugation

Neera storage in chillers

Neera the Global Health Drink
Processing and Preservation of Coconut Neera – CDB Technology

Pasteurization

Storage Tank

Automatic filling machines
Processing and Preservation of Coconut Neera – CDB Technology

Vacuum evaporation of Neera
4. Uses of Neera

- Wholesome, cool and good for improving the general health
- Supplement for iron and vitamin deficiency
- Clinical studies indicate medical applications for asthma, tuberculosis, bronchial suffocation and piles
- Believed to facilitate clear urination and prevent jaundice.
- High amount of glutamic acid which is the amino acid used by the body to build proteins
- High in inositol which is beneficial for the treatment of eye abnormalities, eczema etc
VALUE ADDED PRODUCTS FROM NEERA

Coconut palm syrup

Coconut palm jaggery

Coconut palm sugar
5. Neera in Abkari Act

The Kerala Abkari Act (Act 10 of 1967) adapted from Cochin Abkari Act (Act 1 of 1077 Malayalam era ie., AD 1902) defines

Section 3(8)
• “Toddy means fermented or unfermented juice drawn from a coconut, palmyra, date or any other kind of palm tree”.

Section 3(10)
• “Liquor includes spirits of wine, arrack, spirits, wine, toddy, beer and all liquid consisting or containing alcohol.”

Section 3(12)
• “Country Liquor means toddy or arrack”
Illogical and irrational inclusion of Neera in Abkari Act

- As per Section 3(8) Neera, which does not contain alcohol, included as Toddy.
- As per Section 3(8) plus 3(10) Neera is classified as “Toddy” and thus as “Liquor.”
- As per Section 3(8) plus 3(12) Neera is classified as “Toddy” and thus as “Country Liquor”

In order to remove anomalies and bring about justice, Amendment in Abkari act to exclude Neera from its definition is the need of the hour. CDB strongly recommends this to State Government.
6. If amendment is delayed

• **Separate definition may be made for Neera as a “nutritious health drink”**

• **Separate Rules for production of Neera as a “nutritious health drink” and for further processing in to Jaggery, Syrup and Sugar.**

• **The ceiling fixed in the rules on number of palms that can be tapped may be removed. (at present only 5 palms per individual are allowed)**
If amendment is delayed

Suggestions of CDB are:

• **Issue permission to Federated Coconut Producers Societies (CPS) registered with CDB to tap Neera.**

• **Federated CPSs can produce Neera and Producer Companies can process and market Neera as a nutritious health drink**

• **Conversion of Neera for value added products like palm syrup, coconut palm jaggery and coconut palm sugar can be taken up by Producer Companies**

• **The ceiling fixed in the Act on number of palms that can be tapped may be removed from the existing provisions (at present only 5 palms per individual).**
7. Collectives of farmers – the Coconut Producer Societies (CPS)

Board has facilitated the formation of Coconut Producer Societies (CPS) by associating 40-100 coconut growers in a contiguous area with a consolidated minimum of 4000-6000 palms.

Objective is socio economic upliftment of the farmers through productivity improvement, cost reduction, efficient collective marketing, processing and product diversification.

It is planned to form 10,000 societies in a span of three years of which 3000 have already been formed.
**Forward integration**

**Coconut Producer Company**
- 10 federations

**Federation of CPS**
- 15-25 CPS

**Coconut Producer Society (CPS)**
- 40-100 farmers
- 4000-6000 coconut palms

**Coconut Producer Society (CPS)**
- 40-100 farmers
- 4000-6000 coconut palms
CPS – Federation – Producer Company

- Coconut Producers’ Society (CPS) – (40 – 100 farmers) (4000 – 6000 yielding palms) (average 5000 yielding palms).

- Federation - 15 – 25 CPSs (average 20 CPSs) (average 1 lakh palms)

- Producer Company – Average 10 Fedns (10 lakhs palms)
### Status of Palms, CPS and CPF In Kerala

<table>
<thead>
<tr>
<th>District</th>
<th>Area (ha)</th>
<th>Production (in lakh nuts)</th>
<th>No. of palms (in lakh nuts)</th>
<th>CPS</th>
<th>CPF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasargode</td>
<td>56174</td>
<td>4180</td>
<td>1,31,44,716</td>
<td>317</td>
<td>9</td>
</tr>
<tr>
<td>Kannur</td>
<td>76917</td>
<td>5290</td>
<td>1,79,98,578</td>
<td>282</td>
<td>7</td>
</tr>
<tr>
<td>Kozhikode</td>
<td>121688</td>
<td>7700</td>
<td>2,84,74,992</td>
<td>364</td>
<td>17</td>
</tr>
<tr>
<td>Wayanad</td>
<td>10043</td>
<td>510</td>
<td>23,50,062</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Malappuram</td>
<td>104178</td>
<td>9160</td>
<td>2,43,77,652</td>
<td>312</td>
<td>15</td>
</tr>
<tr>
<td>Palakkad</td>
<td>57094</td>
<td>4080</td>
<td>1,33,59,996</td>
<td>223</td>
<td>9</td>
</tr>
<tr>
<td>Thrissur</td>
<td>75364</td>
<td>4930</td>
<td>1,76,35,176</td>
<td>364</td>
<td>16</td>
</tr>
<tr>
<td>Ernakulam</td>
<td>42894</td>
<td>2210</td>
<td>1,00,37,196</td>
<td>113</td>
<td>4</td>
</tr>
<tr>
<td>Idukki</td>
<td>17012</td>
<td>800</td>
<td>39,80,808</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>Kottayam</td>
<td>28410</td>
<td>1480</td>
<td>66,47,940</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Alappuzha</td>
<td>39344</td>
<td>2640</td>
<td>92,06,496</td>
<td>326</td>
<td>14</td>
</tr>
<tr>
<td>Pathanamthita</td>
<td>15627</td>
<td>1120</td>
<td>36,56,718</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Kollam</td>
<td>56060</td>
<td>3780</td>
<td>1,31,18,040</td>
<td>336</td>
<td>9</td>
</tr>
<tr>
<td>Trivandrum</td>
<td>69668</td>
<td>4990</td>
<td>1,63,02,312</td>
<td>332</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7,70,473</td>
<td>52870</td>
<td>18,02,90,682</td>
<td>3013</td>
<td>106</td>
</tr>
</tbody>
</table>
Coconut Producer Companies

- Two Coconut Producer Companies formed in Kannur and Palakkad

- 3 Producer Companies in Malappuram, 3 in Kozhikode, 1 in Alappuzha and 1 in Thrissur are in the final stage of registration.
8. Activities suggested for CPS, CPF and CPC

CPS

- Primary production of Neera and Jaggery

CPF

- Transportation of neera from CPS to CPF
- Processing
- Packaging
- Production of Jaggery, Syrup, Sugar and marketing
- Marketing of packed Neera as Health Drink within Kerala

Producers Companies

- Manufacturing, Packaging, Branding and Marketing of the above products at bigger scales – outside Kerala and for Exports

- **Training of Neera Technicians**
- **Identifying coconut palms suitable for Neera tapping**
- **Out of the 18 crores coconut palms in Kerala initially 1% may be set apart for Neera tapping.**
- **18 lakh palms if tapped would generate additional revenue of Rs.5400 crores in a year (300 days).**

<table>
<thead>
<tr>
<th>Palms tapped</th>
<th>Neera production in 300 days</th>
<th>Revenue from sale of Neera</th>
<th>Revenue to coconut farmer</th>
<th>Revenue to Neera technician</th>
<th>Revenue generation to state by increased purchasing power</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>No. (lakhs)</td>
<td>(MT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>18</td>
<td>5,40,000</td>
<td>5,400</td>
<td>2,700</td>
<td>1,350</td>
</tr>
<tr>
<td>5</td>
<td>90</td>
<td>27,00,000</td>
<td>27,000</td>
<td>13,500</td>
<td>6,750</td>
</tr>
<tr>
<td>10</td>
<td>180</td>
<td>54,00,000</td>
<td>54,000</td>
<td>27,000</td>
<td>13,500</td>
</tr>
</tbody>
</table>
Facilitation by Coconut Dev. Board

1. **Formation of CPS, CPF and CPCs.**
   (Already done and continuing)

2. **Submission of detailed project proposals from selected Federated Societies.**

3. **Training of skilled Neera Technicians.**

4. **Financial support for enterprises under Technology Mission on Coconut**
Traditional Neera tapping
Neera technicians - a green collar job envisaged by CDB
Packed Neera

by KAU

by CFTRI
Packed Neera in Karnataka
10. International products and brands
Coconut flower syrup in Phillippines
COCONUT SAP SUGAR PRODUCTION

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

STEP 6

Neera the Global Health Drink
Neera the Global Health Drink

Coconut nectar

Coconut sugar
Coconut sap drink in Philippines
Neera in Thailand
Coconut sugar

Coconut nectar and syrup
Organic coconut sugar
Neera the Global Health Drink

Coconut sugar in sachets

Coconut syrup

Coconut nectar

Coconut sugar
Coconut palm sugar
DIFFERENT BRANDS OF COCONUT SUGAR
If licence is given for Neera production

- Branded retail packs of Neera and its value added products in domestic and export market
Neera the Global Health Drink
Neera the Global Health Drink
Thank you