COCONUT INFLORESCENCE SAP PRODUCTS
NEERA (Keramritham)
PALM JAGGERY (Kerachakkara)

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IMPORTANCE OF COCONUT

India – 3rd largest producer
Total production - 15,730 million nuts from nearly 1.9 mha
-(C DB 2007)

The productivity of the crop is highest in India with 8303 nuts/ha.
Four states contribute - 92% of production

1. (Kerala (45.2%)),
2. Tamil Nadu (26.6%),
3. Karnataka (10.8%)
4. Andhra Pradesh (8.9%) and
5. other states contribute 8%.
- Kalpa vrisha of kerala
- MEETS FOOD AND HOUSING FOR MANY PEOPLE
- CULTIVATED OVER 93 NATIONS
- CAN MAKE MORE THAN 300 PRODUCT
- AS A FOOD ITEM PROVIDE ENERY, PROTEINS FAT, DIETARY FIBRE, VITAMINS AND MINERALS
Cultivated over 7.7 lakh ha
- Small and marginal farmers
- Low price of produce
- Pest and disease problems
- Farmers move away from coconut sector
- Thrives on oil based products
Prospects of Coconut inflorescence sap and its products

- Coconut used for culinary purpose (30%) and 70% for copra (85% oil & 15% ball copra)
- Only 2% for tender nut water
- Pressure from cheaper oil sources like Palm oil and sunflower oil
- Rich source of Lauric acid and myristic acid - Premium price – industrial use- availability of substitutes
- Sustainability of coconut sector – through value addition, product diversification, improving farm level processing, increasing byproduct utilization
Task force/ technical committee:

- Dr. B. Jayaprakash Naik.
  Associate Director of Research, Coconut Mission
- Dr. P.R. Suresh,
  Professor, CoA, Padannakkad
- Dr. P.C. Balakrishnan,
  Associate Director, Rtd
- Dr. Madhu Subramanian,
  Assistant Professor, COH, Vellanikkara
- Dr. Meera Manjusha,
  Assistant Professor, RARS Pilicode
Prospects - inflorescence sap and its products

- Rich in Vit c and phenols decelerates aging
- Rich in K and low in Na pr helps in fluid balance
- Rich in sugar Ferments fast and forms toddy (8% alcohol)
- Storing as unfermented neera – a challenge
- Tender nut water yield is low : approx. 2 L/bunch whereas inflo sap yield is 60 – 75L
- Daily production
- More economical and remunerative than tender nut
BRIEF HISTORY

- Practice of toddy tapping is as old as coconut cultivation
- Very popular among ethnic communities
- Preferred beverage and sugar source in islands
- In Kerala the practice is supposed to came from Sree Lanka
- Mentions made as energy rich relaxing beverage
- Very popular in coastal Kerala
Production of Neera (Keramritham) from Coconut inflorescence sap

Extraction of sap from the inflorescence by indigenous methods

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Sap flow during the overnight period collected in clean and hot water washed specially made earthen pots (mattoms) in a slaked lime solution

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Collection of the overnight sap from the palms in early morning hours

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Bulking the sap collected from different palms

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Refrigeration

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contd...
Addition of class II preservatives and dilution to desirable concentration/strength

Transferring to clean bottles

Carbonation

Sealing

Storing under refrigeration

Serve chilled
Tapping needs lots of technical skill
pH stabilization
Centrifuging
QUALITY ASSURANCE
FILTRATION AND CARBONATION
KEERAMRUTHAM IN PURE FORM
KEERAMRUTHAM
Nutritional qualities of Neera

- Total sugar: 18 - 20%
- Vitamin C: 1.3mg/100ml
- pH: 6.8
- Acidity: 10.0 m eq/l
- Phenols: 8.0mg/100ml
- Minerals
  - K: 90.5ppm
  - Ca: 60.0ppm
  - P: 15.0ppm
  - Fe: 45.0ppm
  - Na: 9.5ppm
Prospects

Can be promoted as a Health drink:

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Neera</th>
<th>Tender nut water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sugar</td>
<td>18 - 20%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>1.3mg/100ml</td>
<td></td>
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<tr>
<td>pH</td>
<td>6.8</td>
<td>4.7</td>
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<tr>
<td>Acidity</td>
<td>10.0 m eq/l</td>
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</tr>
<tr>
<td>Phenols</td>
<td>8.0mg/100ml</td>
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</tr>
<tr>
<td>Minerals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>90.5ppm</td>
<td>53.2ppm</td>
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<tr>
<td>Ca</td>
<td>60.0ppm</td>
<td>5.78ppm</td>
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<tr>
<td>P</td>
<td>15.0ppm</td>
<td>11.8ppm</td>
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<tr>
<td>Fe</td>
<td>45.0ppm</td>
<td>1.54ppm</td>
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<tr>
<td>Na</td>
<td>9.5ppm</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Number of palms tapped by a taper a day</td>
<td>12 palms</td>
<td></td>
</tr>
<tr>
<td>Sap yield/day (Average 1.5L/palm/day)</td>
<td>12X15=18 litres</td>
<td></td>
</tr>
<tr>
<td>Sap yield/month</td>
<td>18X30=540 litres</td>
<td></td>
</tr>
<tr>
<td>Quantity of sap used for making soft drinks (2/3 of the total volume)</td>
<td>540X2/3=360 litres</td>
<td></td>
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<tr>
<td>Quantity of sap after processing (Recovery 75%)</td>
<td>350 litres</td>
<td></td>
</tr>
<tr>
<td>Volume of sap/bottle</td>
<td>250ml</td>
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</tr>
<tr>
<td>Total number of bottles</td>
<td>1400</td>
<td></td>
</tr>
<tr>
<td>Monthly income (Rs.25/bottle)</td>
<td>35,000</td>
<td></td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>23000</td>
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<tr>
<td><strong>Profit</strong></td>
<td>12000</td>
<td></td>
</tr>
</tbody>
</table>

Income from single palm: **Rs.1000/month**
Preparation of Palm Jaggery (Kerachakkara) From coconut inflorescence sap

Extraction sap from coconut inflorescence by indigenous methods

Collection of overnight sap flow in specially made clean earthen vessels (Mattoms) in a medium of slaked lime solution

Collection of sap from the palms during the early morning hours

Bulking

Concentrating in open pan over fire

Transferring to the solidifying trays

Packing and Storing in air tight containers
Palm sugar/ ghur
Palm jaggery
Vital links

- Farmers
- Tapping technicians
- Technology
- Food processing industry
- Marketing
THANK YOU