Sustainable Pulpwood Supply in India

Farm Forestry and Social Forestry Initiatives

By
Sanjay Singh, CEO, ITC-PSPD
Presentation Outline

- India-Wood supply scenario
- Paper Industry in India
- Tree Improvement Program
- Eucalyptus Clonal Development
- Social & Farm Forestry Initiatives
- Wider spacing agroforestry models
- Adoption by farmers.
- Sustainable plantation and sourcing of raw material
India: Geographical area-328 million ha, forests-70 million ha, plantations outside forests-9 million ha

Annual industrial wood requirement-56 million cum; sourcing from forests-5%, plantations outside forests-83% and imports-12%

Forests management-conservation oriented

National Forest Policy 1988- stipulates that industry has to meet its requirement from sources outside forests, by developing plantations under farm forestry and social forestry
• The papermaking in India is almost 2 centuries old
• Indian Paper & Pulp Industry occupies 15th position in the world
• Today, there are 759 Pulp & Paper mills producing 10.11 million tons of paper and paperboards which is 2.52% of the total World production
• Per capita consumption of paper in India is 9.3 kg as against 42 kg in China, 22 kg in Indonesia, 25 kg in Malaysia, 250 kg in Japan, 325 kg in USA and the world average of 56.7 kg
• By 2020, it is contemplated that the per capita consumption of paper will be 13 kg in India, backed by greater emphasis on education by Government, organized retail, e-commerce etc
• About 2 million TPA of integrated pulp, paper and paperboard capacity needs to be created by 2020, to meet growing demand

• Strong backward linkages with farming communities/farm forestry, for growing pulpwood plantations, is the way forward to get key raw material/wood fiber for pulp production

• Well managed farm forestry plantations provide multiple benefits-livelihood, employment in rural areas, green cover, carbon sequestration etc
Indian Paper Industry-Wood Requirement

- Indian Paper Industry consumes 8 million MT/annum of wood (~13 million cum/annum), and 90% requirement met through farm level plantations

- ITC Mill at Bhadrachalam consumes 1.3 million tons of wood annually to produce 3.5 lac tons of pulp

- ITC Wood Sourcing Policy:
  - Develop sustainable source of raw material
  - Focus in core area & reduce mill landed cost
  - Raise plantations more than the wood consumption
  - Livelihood to small & marginal farmers
  - Environment protection / Carbon sequestration
ITC Wood Sourcing Strategy

Leverage need of wood fiber through:

✓ Tree Improvement Programme (TIP)
✓ Developing Sustainable social, farm and agro-forestry based plantations

❖ **Social Forestry** - Economically backward wasteland owners (Tribals < 1.0 ha land)
❖ **Farm Forestry** – Larger land holding resourceful farmers
❖ **Agro Forestry** – Suitable agriculture crops mixed in wide spacing farm/social forestry plantation, to ensure wood and food security
• ITC initiated pulpwood TIP in 1989

• Main focus was on genetic improvement of planting stock and improvement of package of practices

• Development of site specific, high productive and disease resistant clones of Euca, Subabul and Casuarina
• Seeds imported from CSIRO, Australia & USAID, Hawaii for trials
• More than 1,000 Clonal Plus Trees (CPTs) of Eucalyptus, 240 CPTs of Casuarina & 241 CPTs of Leucaena were selected and cloned
• CPTs were tested in 159 multi locational trials (Clonal Trial Areas), spread over 36 ha area.
• Promising clones 107 for Eucalyptus, 15 for Casuarina & 12 for Subabul (Leucaena spp) short listed for mass multiplication and planting
Tree Improvement Program (TIP)-
achievements

- Increased productivity (6 MT/ha/annum to ~40 MT/ha/annum)
- Reduced rotation age (7 to 4 years)
- Development of disease resistant, wind & drought tolerant clones
- Development of site specific clones
- Improved package of practices
- Development of models & packages to take TIP research to the field
- Resulting in Euca, Subabul & Casuarina farming – viable and farmer friendly
CLONAL PRODUCTION CENTRE
AERIAL VIEW
State of the Art – New Facility

Commissioned in 2013
Capacity - 25 Million / Annum
High Quality & Disease Resistant Clones
Plants Quality Improvement – Controlled Conditions

- Mini Cuttings Production in sand beds with drip fertigation.
- Installed capacity of mother plants is 1.2 Lacs.
- Production capacity of approx. 10 Lac cuttings per month.
Plants Quality Improvement – Field HDCMA

“Paired Row Design”

Growth at 3 Years old age

Productivity 25-30 Lac Cuttings/Acre/Annum

1. Efficient water & nutrient management
2. Mechanized inter-culture operations
3. Better weed control practices
4. Minimum manual requirement
5. Vigorous planting material
6. Higher multiplication rate.
Promotion of Social, Farm and Agroforestry

- Areas covered under private and community lands
- Focus on highly productive, disease resistant and site specific clones-to maximize income to farmers
- Differentiated models implemented for bottom of pyramid/small farmers, and large farmers
- Differentiated models for block plantations (mainly large farmers) as well as agro-forestry plantations-trees mixed with agri/cash crops
- Sustainable models for subabul clones- in terms of fodder production and soil nutrient enrichment (Nitrogen fixation)
ITC: For 2015-16 Annual Co2 offset = 512,18,55 Tons; Co2 Emission =239,19,57 Tons, Carbon positive status (%) = 214.13; 101 million mandays generated

- Indian Paper industry wide farm forestry plantations in India ~ 900,000 ha
### Agronomic Practices - Planting Geometry

<table>
<thead>
<tr>
<th>Age of Harvesting</th>
<th>Spacing</th>
<th>No of Trees/Ha</th>
<th>Trees / Acre</th>
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<tbody>
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<td>1) 9-10 Year</td>
<td>3m X 3m</td>
<td>1111</td>
<td>444</td>
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<td>2) 7 Years</td>
<td>3m X 2m</td>
<td>1667</td>
<td>666</td>
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<td>3) 4 Years</td>
<td>3m X 1.5m</td>
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**Farm Forestry & Social Forestry**
A New Concept: Paired Row Design

Developing Sustainable Agro Forestry Model

Pulpwood Tree Plantation

Agric Crop Area

8.5M

1.5M

8.5M

1M

Design: 8.5m + 1.5m / 2 X 1.0m = 5sq.m (2000 Trees/Ha)

Land Allocation: 75% - Agriculture & 25% - Forestry
What is Novelty ???

1. Planting Eucalyptus in Paired Row Design
2. Accommodating 2000 Trees/Ha in 2500sq.m.
3. Getting same wood yield as in block plantation
4. Natural resource utilization round the year
5. Leaving 7500sq.m land for agriculture crop
6. In a cycle of 4 years, 25% agriculture crop replaced by plantation, can increase farm profitability by 80% and will serve as fixed deposit

Earlier Concept      : Agri Crops in Plantations
Recent Approach      : Plantations in Agri Crops
Benefits of Agro Forestry Model

- Improving the productivity & profitability of farm lands where one crop is grown in a year
- Contributing to the food security by restoring farm soil fertility for food crops
- Reducing deforestation and pressure on natural forests by providing pulpwood grown on farm lands
- Increasing diversity of farm lands by growing trees along with agriculture crops
- Trees act as wind and insect barriers
- Higher carbon sequestration will help in mitigating the global climate change
- Reduces the risk to rain-fed agriculture
- Best suited for small & medium farmers
Sustainable Agro Forestry Model

Eucalyptus + Cotton
Sustainable Agro Forestry Model

Eucalyptus + Maize
Sustainable Agro Forestry Model

Eucalyptus with Brinjal

Eucalyptus with Paddy
Sustainable Agro Forestry Model

Eucalyptus at 2.5 Years Old in West Godavari, AP
Sustainable Agro Forestry Model

Eucalyptus + Banana
Growing Eucalyptus trees on farm lands doesn’t affect the productivity of agricultural crops provided managed properly.
Sustainable Agro Forestry (AF) Model

Total Area covered under AF is 22,000 ha.
Biodiversity Conservation Plots (BCPs)

- 18 Biodiversity Conservation Plots (BCPs) established in private lands under community development program.

- This is a unique effort of watershed program coupled with biodiversity conservation.

- Total area = 150 ha

- This site was visited by Rain Forest Alliance auditors and they appreciated the efforts which lead to FSC FM certification of farm forestry plantations
FSC is an international certification system that promotes environmentally appropriate, socially beneficial, and economically viable management of forests and plantations.

- ITC FSC (FM) certified plantations—30,000 ha
- Individual FMUs/beneficiaries-28,000
- All wood procurement sources of ITC are FSC-CW (controlled Wood) certified
- FSC-FM wood procurement in 2015-16 has been 31000 MT
- It is a tool for farmer level connect and technical guidance for sustainable management of plantations
Distributed Rs 14.1 Lac as FSC wood premium to beneficiaries during 2014-15, for 29000 MT FSC wood procured from farmers
In India, Farm forestry and Social Forestry Initiatives, leading to social and economic development

Wood to Paperboard
Thank you