INTRODUCTION

- The lengthy gestation period of rubber is a matter of concern among the rubber farmers, especially smallholders.

- The organized research and development (R&D) efforts to reduce the gestation period of Hevea brasiliensis across the major producing countries during the past six decades have been primarily guided by the twin objectives of achieving an early farm income and savings in the development cost.
GESTATION PERIOD OF RUBBER

- Inherent clonal characteristics
- Type and quality of planting materials
- Edaphic and environmental factors
- Nature of agromanagement practices
- Biotic and abiotic stresses

REDUCTION IN IMMATURITY

SELECTION
- Suitable clone
- Uniform and vigorous advanced planting materials

ADOPTION
- Appropriate agromanagement techniques
- Disease and other stress management strategies
Objective

To develop an agronomic package to reduce the immaturity period of *Hevea*

Experiment details

- **Year of Commencement:** 2005
- **Clone:** RRII 105
- **Design:** RBD
- **Replications:** 3
- **Location:** Malankara Estate, Thodupuzha (Traditional rubber growing region)
PHYSICO-CHEMICAL PROPERTIES OF THE SOIL

Texture: Sandy clay loam
pH: 4.74
OC (%): 1.35
Av.P (mg/100g): 0.75
Av.K (mg/100g): 6.44

Treatments

1. Standard practice (SP) - Current recommendation

<table>
<thead>
<tr>
<th>Year of planting</th>
<th>N:P:K:Mg (kg/ha)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20:20:8:3</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>40:40:16:6</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>50:50:20:7.5</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>40:40:16:6</td>
<td>2</td>
</tr>
<tr>
<td>5th onwards</td>
<td>30:30:30</td>
<td>2</td>
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</tbody>
</table>

2. Enhanced nutrient application (ENA) (Per plant)
   - Application of 10 kg FYM
   - 500 g bonemeal
   - 500 g groundnut cake
   - 1.5 times the recommended dose of chemical fertilizers
3. Selective manuring (SM) +SP
   - Application of 1.5 times the recommended dose of chemical fertilizers in 3 splits

4. Conservation-orientied tillage (COT) +SP
   - Forking the plant basin
   - Mulching
   - Conservation pits @ 250 per ha

5. Irrigation (I) +SP
   - Irrigation during summer months at 50% of the water requirement for the initial three years

6. Irrigation+ Enhanced nutrient application (I +ENA)

7. Integrated management (IM)
   - A combination of enhanced nutrient application, selective manuring, irrigation and conservation-orientied tillage
Observations

- Growth
- Soil nutrient status
- Leaf nutrient status
- Soil moisture
- Leaf Area Index (LAI)
- Disease incidence

Results and Discussion
Effect of agromanagement practices on LAI (2008)

Canopy images in the centre of four plants

Current recommended practice
Integrated management
Canopy images in the middle of adjacent plants in a row

Current recommended practice

Integrated management

Effect of agromanagement practices on soil moisture status

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean soil moisture status (%)</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-20cm</td>
<td>20-40cm</td>
<td>0-20cm</td>
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<tr>
<td>Standard practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selective manuring</td>
<td></td>
<td>15.28</td>
<td>20.20</td>
<td>10.21</td>
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<tr>
<td>Enhanced nutrient application</td>
<td></td>
<td>15.77</td>
<td>19.72</td>
<td>10.01</td>
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<tr>
<td>Irrigation</td>
<td></td>
<td>16.06</td>
<td>20.96</td>
<td>10.37</td>
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<tr>
<td>Irrigation+ Enhanced nutrient application</td>
<td></td>
<td>20.53</td>
<td>22.53</td>
<td>10.99</td>
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<tr>
<td>Integrated management</td>
<td></td>
<td>19.46</td>
<td>20.03</td>
<td>10.01</td>
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<td></td>
<td></td>
<td>20.12</td>
<td>21.32</td>
<td>10.21</td>
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<tr>
<td>SE CD(P=0.05)</td>
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<tr>
<td></td>
<td></td>
<td>0.59</td>
<td>0.65</td>
<td>0.48</td>
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<tr>
<td></td>
<td></td>
<td>1.84</td>
<td>NS</td>
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</table>
Effect of agromanagement practices on soil nutrient status
Effect of agro management practices on leaf nutrient status

DISEASE SEVERITY

- Phytophthora leaf fall
- Phytophthora shoot rot
- Colletotrichum leaf disease

Mild to moderate
Effect of agromanagement practices on pink incidence

Disease incidence was not influenced by treatments

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<tr>
<td>Standard practice (SP)</td>
<td>13.15</td>
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<td>27.56</td>
<td>36.20</td>
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<td>Selective manuring + SP</td>
<td>13.73</td>
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<td>31.16</td>
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<td>14.66</td>
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<td>Conservation oriented tillage + SP</td>
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<td>24.28</td>
<td>31.37</td>
<td>42.59</td>
<td>45.84</td>
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<td>Irrigation + SP</td>
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<td>25.21</td>
<td>32.57</td>
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<td>46.20</td>
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<tr>
<td>Irrigation + Enhanced nutrient application</td>
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<td>47.04</td>
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<td>37.28</td>
<td>46.28</td>
<td>50.19</td>
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<td>0.79</td>
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<td>0.64</td>
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<tr>
<td>CD</td>
<td>0.95</td>
<td>1.51</td>
<td>2.43</td>
<td>1.75</td>
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Effect of agromanagement practices on growth of rubber
The experiment clearly indicates the feasibility of substantially reducing the immaturity period of rubber through the adoption of improved agromanagement techniques.
THANK YOU