What is it?
System of Rice Intensification
History of SRI
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SRI was developed in Madagascar by Fr. Henri de Laulanié, S.J., who between 1961 and 1995 worked with Malagasy farmers and colleagues to improve the possibilities of rice production in this country.
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SRI begins with a philosophy, that rice plants are to be respected and supported as *living creatures* that have great potential. This potential will only be realized if we provide plants with the best conditions for their growth.
History of SRI

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Some of the things that have been done for hundreds of years by farmers in countries around the world to make rice plants grow have unfortunately reduced their natural potential.
SRI is all about

LEARNING & EXPERIMENTING

“Growing Rice in a new way!”
PRINCIPLES OF SRI
Early transplanting
PRINCIPLES OF SRI

- Early transplanting
- Plant single seedlings
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- Early transplanting
- Plant single seedlings
- Wide spacing
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- Early transplanting
- Plant single seedlings
- Wide spacing
- Careful transplanting
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- Careful transplating
- Moist but unflooded soil conditions
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- Plant single seedlings
- Wide spacing
- Careful transplating
- Moist but unflooded soil conditions
- Encouraging extensive root development
PRINCIPLES OF SRI

- Early transplanting
  - 2-leaf stage
  - Grain still attached
  - From 8 days after sowing
  - Latest by day 15
  - The earlier, the better
- Reason: *Early transplanting encourages maximum tillering*
PRINCIPLES OF SRI

- **Plant single seedlings**
  - Traditional practise is to plant 3-4 seedlings per hill
  - SRI: only 1 seedling per hill
  - Reason: *The rice plant to develop its full potential without competition*
PRINCIPLES OF SRI

Wide spacing

Reason: gives individual plant more room to spread and encourages good root development.

त्यसपछि रेखा अनुसार यसरी बेनां लगाउँछ । एस.आर.आईमा २० देखि ५० से.मिः बेनां लगाउँदा राम्रो हुनछ ।
PRINCIPLES OF SRI

- Careful transplanting
  - Reduce impact of transplanting shock
  - Within 30 minutes
  - Seedlings must be treated like Babies!
  - Reason: Only healthy seedlings will develop their full potential
Careful transplating

One idea from Nepal:
**PRINCIPLES OF SRI**

- **Careful transplanting**
  
  One idea from Nepal:
  - Taking patches of plants with soil from the nursery
  - These can be transported to field and divided in handy pieces for the planters
PRINCIPLES OF SRI

Moist but unflooded soil conditions

SRI will only be successful if you can drain off excessive water!
PRINCIPLES OF SRI

- Moist but unflooded soil conditions
  - SRI will only be successful if you can drain off excessive water!
  - During tillering and before flowering, the soil should be kept only moist, but not flooded!
PRINCIPLES OF SRI

Moist but unflooded soil conditions

- SRI will only be successful if you can drain off excessive water!
- During tillering and before flowering, the soil should be kept only moist, but not flooded!
- Allow the field to “dry” for 3-4 days every 2 weeks. It is no problem if “cracks” appear.
PRINCIPLES OF SRI

Moist but unflooded soil conditions

- SRI will only be successful if you can drain off excessive water!
- During tillering and before flowering, the soil should be kept only moist, but not flooded!
- Allow the field to “dry” for 3-4 days every 2 weeks. It is no problem if “cracks” appear.
- Once flowering begins, maintain a water level of 1-2 cm
PRINCIPLES OF SRI

Moist but unflooded soil conditions

Reason: *Oxygen supply to the soil must be maintained! This will maximise root development and tillering!*
Encouraging extensive root development

The following will encourage good root development:

- Organic fertiliser: compost, green manure (e.g. Dhaicha)
- Single transplants & wide spacing
- Mechanical weeding 2-4 times until canopy closes. Weeding airates soil.
PRINCIPLES OF SRI

See the difference between them (from Cuba)!
PRINCIPLES OF SRI

See the difference between them (from Nepal)
### Benefits of SRI

<table>
<thead>
<tr>
<th></th>
<th>Current Method</th>
<th>S.A.R.A.I. Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield per unit area (kg)</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Harvest index</td>
<td>8.6</td>
<td>5.5</td>
</tr>
<tr>
<td>Harvestable yield (kg)</td>
<td>114</td>
<td>189</td>
</tr>
<tr>
<td>Harvestable yield (ton)</td>
<td>824</td>
<td>5848</td>
</tr>
<tr>
<td>Crop (per hectare in tons)</td>
<td>2.0</td>
<td>3.6</td>
</tr>
</tbody>
</table>

*Joel Libarison 1998*
BENEFITS OF SRI

- Raise *rice yields* to 6-8 t/ha
- Increase the *factor productivity* of land, labor, water and capital, all at the same time
- Make *agrochemical inputs* unnecessary

- Reduce *water requirements* for irrigated production by about half
- Lower *costs of production* -- making rice production more profitable for farmers
- Only 10% of *seeds* needed
Taruwa, Bardiya SRI Trial

Nursery Management
Taruwa, Bardiya SRI Trial

24 hours pre-germinated seeds
Taruwa, Bardiya SRI Trial

Sowing in dry-nursery
Taruwa, Bardiya SRI Trial

Mulching & irrigating with watering can and “nali”
Taruwa, Bardiya SRI Trial

Dry-nursery
Taruwa, Bardiya SRI Trial

After 11 days
Taruwa, Bardiya SRI Trial

Comparison: Wet vs. Dry nursery
Taruwa, Bardiya SRI Trial

Comparison of field cover over time
Taruwa, Bardiya SRI Trial

Day 15
27 June
Taruwa, Bardiya SRI Trial

Day 15  
27 June

Day 22  
4 July
Taruwa, Bardiya SRI Trial

Day 15
27 June

Day 22
4 July

Day 32
14 July
Taruwa, Bardiya SRI Trial

Day 15
27 June

Day 22
4 July

Day 32
14 July

Day 122
12 October
Taruwa, Bardiya SRI Trial

Development of the single rice plant Closeup
Taruwa, Bardiya SRI Trial

Day 22
27 June
Taruwa, Bardiya SRI Trial

Day 22
27 June

Day 32
4 July
Taruwa, Bardiya SRI Trial

Day 22
27 June

Day 32
4 July

Day 63
14 July
Taruwa, Bardiya SRI Trial

Day 22
27 June

Day 32
4 July

Day 63
14 July

Day 122
12 October
## Results and Comparison

<table>
<thead>
<tr>
<th>Location:</th>
<th>Taruwa, Bardiya</th>
<th>SRI I</th>
<th>SRI II</th>
<th>RARS, Bhairahawa</th>
<th>Sunsari-Morang Irrigation System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2003</td>
<td>2003</td>
<td>2001-02</td>
<td>2002</td>
</tr>
<tr>
<td>Variety:</td>
<td>PL 84</td>
<td>PL 84</td>
<td>R. Masuli</td>
<td></td>
<td></td>
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<tr>
<td>Area (ha):</td>
<td>0,0580</td>
<td>0,0542</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Productive Tillers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average:</td>
<td>18</td>
<td>16</td>
<td></td>
<td></td>
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<tr>
<td>Minimum:</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum:</td>
<td>40</td>
<td>31</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N of samples:</td>
<td>72</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yield:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total kg:</td>
<td>252</td>
<td>264</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t/ha:</td>
<td>4,35</td>
<td>4,87</td>
<td>6,19</td>
<td>8,00</td>
<td></td>
</tr>
<tr>
<td>Total Grain Weight</td>
<td>32 gr</td>
<td>31 gr</td>
<td>18.5 gr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TREATMENTS

<table>
<thead>
<tr>
<th>Planting distance:</th>
<th>30 cm</th>
<th>15-20 cm</th>
<th>30 cm</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1 per hil</td>
<td>1-3 per hill</td>
<td></td>
</tr>
<tr>
<td>Fertiliser:</td>
<td>compost:</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Urea:</td>
<td>1 td</td>
<td>2 td</td>
</tr>
<tr>
<td>Transplanting age (days):</td>
<td>15</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Nursery type:</td>
<td>dry</td>
<td>Wet</td>
<td></td>
</tr>
</tbody>
</table>
Results and Comparison

OBSERVATIONS:

- SRI II performed slightly better than SRI I.
- Water control was impossible. Plots were flooded from around day 30.
- That resulted in less tillering and poor root development.
- Due to these reasons SRI II with higher planting density performed better.
- Still, the result is quite good without the use of inputs.
Results and Comparison

IDEAS FOR IMPROVEMENTS:

- Use of compost and good land preparation.
- Growing Dhaicha as GM beforehand.
- Early sowing of a longer duration variety.
- Transplanting between day 8-10.
- Drain field before transplanting to get thicker mud.
- Experiment with different planting distances.
- Mechanical weeding for soil aeration.
- Better water management.
Join the SRI-Nepal Network

To subscribe to the email list:
sri-nepal-subscribe@yahoogroups.com