SRI in the Dominican Republic: Focus on the Large-Sized Paddy Fields

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J-SRI Presentation
September 26, 2012

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Agricultural and Rural Development
- Indispensable and essential to national development (Todaro & Smith, 2003)

Income improvements for farmers:

- Low-Input Agriculture – an improvement strategy
**SRI: a low-input method of rice production**
- Collective application of various agronomic principles
- Ideally:

**Limitations of SRI**
- Labor-intensive
- Practice limited to **small-scale** farmers
- Potential merits are acknowledged, but is **not always successful**
This study aims to investigate the implementation of SRI by rice producers, whose scale of operation is larger than those currently practicing SRI, and whether it is appropriate as a mean of rural development.
Is a large-scale SRI necessary?
Necessary for who, and why?

Is a large-scale SRI possible?
What are the factors that would make it possible?

Could a large-scale SRI advance rural development?
Who are likely to benefit from large-scale SRI?
Latin American countries with SRI experience:

Costa Rica
Panama

Cuba
The Dominican Republic
Haiti

Brazil
Colombia
Ecuador
Peru

2011: SRI benefits have now been validated in 45 countries of Asia, Africa, and Latin America

Before 1999: Madagascar
1999/2000: China, Indonesia
2000/01: Bangladesh, Cuba, Laos, Cambodia, Nepal, India, Nepal, Myanmar, Philippines, Sierra Leone, Sri Lanka, Thailand
2002/03: Benin, Guinea, Mozambique, Peru
2004/05: Senegal, Pakistan, Vietnam
2006: Burkina Faso, Bhutan, Iran, Iraq, Zambia
2007: Afghanistan, Brazil, Mali
2008: Rwanda, Costa Rica, Ecuador, Egypt, Ghana, Japan
2009: Malaysia, Timor Leste
2010: Kenya, DPRK, Panama, Haiti
2011: Taiwan, Korea, Colombia, Tanzania
Case: The Dominican Republic

*Rferred to as “DR” hereafter

Rice essential to DR, new to SRI
Average size of a rice farm in DR: 4.3 ha
“Epitome and weathervane of events taking place” in Latin America (Gragson and Payton, 1997)

Rice fields in Bajo Yuna (photo by author, 2012)
Distribution of rice production areas in DR (Source: Contreras, 2012)
SRI Sites in DR

2012 trial examples:
- ITESIL: 0.2 ha
- Hacienda Estrella: 1.9 ha
- Bajo Yuna: 4.4 ha

Legend:
- Yellow: since 2011
- Orange: since 2012
- Cyan: small-scale
- Blue: mid-scale
- Dark Blue: large-scale
Rice Farmers in DR

3 Types – Small, Middle, and Large-Scale

- Small: Rain-fed paddy fields
  - Lack of access to resources, including animals

- Middle and Large:
  - Differences in size, but no clear numerical definition
  - Difference also includes access to machinery
Photos (Hacienda Estrella)
Photos (La Estancia)
Photos (Maizal)
Research Methodology

● Literature Research
  – Policies and management in agriculture
  – Current developments in SRI and its known impacts

● Field Research (Aug. 5 ~ 18, 2012)
  – IICA (Inter-American Institute for Cooperation in Agriculture)
  – Government Institutions
  – Farmers
The Role of IICA

- **Inter-American Institute of Cooperation in Agriculture**
  - Development Institution
  - Member States: Every Country in the North and South America except Cuba

- **IICA and SRI**
  - Central institution in dissemination of SRI
  - IICA works with SRI only in DR
  - **STRONG** interest in **ISEKI**
70% technical efficiency and 44% allocative efficiency on average among 60 farmers in Dajabon (Bravo-Ureta and Pinheiro, 1997)

Following key strategies identified to protect rice farmers from impacts of FTA in Monte Cristi (Marte et al. (2012)

(1) Land levelling
(2) Reduction of production costs
(3) Financing resources
(4) Expansion of farm sizes

Excessive fertilizer applications and soil erosion – impacts on fisheries, seagrass beds, and coral habitats in Bajo Yuna (Laba et al., 1997)

(Source: Contreras, 2012)
Findings from Personal Interview

<table>
<thead>
<tr>
<th>Region</th>
<th>NE</th>
<th>NW</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producers (kg/ha)</td>
<td>147</td>
<td>162</td>
<td>163</td>
</tr>
<tr>
<td>Recommended (kg/ha)</td>
<td>80-120</td>
<td>120-145</td>
<td>120-140</td>
</tr>
<tr>
<td>% beyond recommendation</td>
<td>22~49</td>
<td>11~35</td>
<td>16~37</td>
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- Fertilizers 25% of production cost
- Excessive application
- Clearly, large-scale SRI worth testing

(based on Contreras, 2012)
Analysis and organization of factors that would make SRI feasible in the DR into the following categories:

- TECHNICAL
  - Agronomic
  - Technological

- ENVIRONMENTAL

- SOCIO-POLITICAL
Obstacles for SRI in large-sized rice fields:
- Land levelling issues
- Irrigation and drainage
- Lack of uniformity in rice plant growth

Means to overcome the obstacles:
- Land levelling through laser technology
- Well-developed gravitational irrigation system
Environmental Obstacles

- **Fertilizer Issues**
  - Strong influence from fertilizer industry

- **Water Conservation**
  - Increasing scarcity and competition for water
  - Lack of willingness for conservation
From Field Research:
- Haitian migrant laborers do all work
- Differences in planting:
  - SRI: 1 seedling per hill at 30 x 30 cm spacings
  - Conventional: as high as 20 seedlings per hill at lesser spacings
• From Field Research:
  – Two problems:
    1) Haitians unhappy with seeding method
    2) Time-consuming ⇒ Area restricted with manual seeding

• Key solution: Mechanization
  – To what extent can the laborers be replaced?
  – Machines available and well-maintained in DR
  – Strong interest in Japanese machines
Key Questions

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Who are likely to benefit from large-scale SRI?
Future Tasks

October
- Continue literature research
- Finish assessing recorded interviews from August trip
- Start writing the thesis

November
- Investigate into the third research question
- 2nd research trip to DR (if necessary; November)

Contreras E., F. S. 2012. 50 años de investigación en el cultivo de arroz en Rep. Dominicana (60 years of research in rice cultivation in Dominican Republic). IDIAF Presentation.


Thank you for your attention!