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



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Introduction

Agricultural and Rural Development

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

Income improvements for farmers:



• Low-Input Agriculture – an improvement strategy

System of Rice Intensification

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

Research Objective

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.

Key Questions

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 America & SRI

Latin American countries with SRI experience:

Costa Rica Panama

Brazil Colombia Ecuador Peru

Cuba The Dominican Republic Haiti

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



Before 999: Madagasco 1999/20 2: China, Ind esia 2000/01: valadesh cuba, Laos, Cambodia, Gan, 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*

*Referred 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)





SRI Sites in DR

Agrofrontera (Monte Cristi)

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

Bajo Yuna

Juma Hacienda Estrella Yamasa a Estancia

Legend: Yellow: since 2011 Orange: since 2012 Cyan: small-scale Blue: mid-scale Dark Blue: large-scale

Data SIO, NOAA, U.S. Navy, NGA, GEBCO Image © 2012 TerraMetrics © 2012 Cnes/Spot Image US Dept of State Geographer Google earth

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 (Bajo Yuna)





Photos (Maizal)



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 Coopeartion in Agriculture

- Development Institution
- Member States: Every Countries 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



Necessity (from Lit. Research)

• 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

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



Findings from Personal Interview

Prodcution Cost

		Region	NE	NW	SE
	Soil Prepara on Seed	Producers (kg/ha)	147	162	163
	Fertilizers	Recommended (kg/ha)	80- 120	120- 145	120- 140
	 Agrochemica s Others 	% beyond recommendation	22~49	11~35	16~37
	(Material) Labor Forces	 Fertilizers 25% of production cost Excessive application Clearly, large-scale SRI 			
	Harvest				
	 Others (Human) Interest and Insurance 				
(based on Contreras, 2012)			ig		

Large-Scale SRI: Possibility

 Analysis and organization of factors that would make SRI feasible in the DR into the following categories:



ENVIRONMENTAL

SOCIO-POLITICAL

Technical Obstacles

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

Socio-Political Obstacles

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





Obstacles (cont.)

From Field Research:

- Two problems:
 - 1) Haitians unhappy with seeding method
 - 2) Time-consuming \Rightarrow 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

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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)

References

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Thank you for your attention!