

Back to Office Report on SRI Study Tour to India and Nepal 11-19 October, 2009

1. Background

1.1 Purpose of the study tour:

The Ministry of Agriculture, Royal Government of Bhutan, is trying to promote System of Rice Intensification (SRI) method of rice growing for better yield and production. From our research evaluations, the method proves to be very promising, and efforts are underway to promote wide-scale adoption. But our extension staff have limited technical expertise and confidence. The visit was organized to provide a good opportunity for the participants to develop their skills and enhance their knowledge in SRI method of rice production.

1.2 Location of study tour:

Twelve (12) SRI sites were visited in two districts (West and South) in Tripura State of India; three (3) sites in East Garo Hills, Meghalaya State, India; five (5) SRI sites in Morang District, Nepal; as well as IFAD activities in Meghalaya carried out under Meghalaya Rural Development Society (MRDS).

1.3 How the knowledge, skills and exposure gained will be utilized:

The visit was a great learning experience for the team. In brief, the knowledge and skills gained from the trip are summarized in this short clip:

<http://videosfromindia.smashits.com/view/9964/bhutan-agriculture-scientists-learn-paddy-cultivation-technique>.

Further, there are several lessons concerning social organisation, role of dedicated government officials, and policy support and systems that practitioners and policy makers in Bhutan could learn from the Tripura, Meghalaya and Nepal experiences which could be replicated here in this country.

2. Main observations and findings from the study tours:

Tripura State:

1. SRI methods of rice cultivation were tried first from 1999-2002 based in research stations in three districts of Tripura.
2. Since 2002, about 60,000 hectares of rice is under SRI, short by 10,000 hectares of the targeted area.
3. SRI fields are easily recognized by the yellow triangular flags put up in these fields.
4. Farmers have taken up SRI in a large scale and have genuine interest to take up and promote SRI.

5. The number of SRI farmers has increased from just 44 in 2002 to now over 200,000 in 2009.
6. There are now many registered SRI paddy seed growers who supply seed to the Government and farmers as well.
7. Rice is grown in three seasons in Tripura: 1st Kharif (*Aus*), 2nd Kharif (*Aman*) and Rabi (*Boro*).
8. MTU 7029 (*Swarna*) is the most popular rice variety among the farmers.
9. SRI fields have shallow but distinct drains across them after every 9 – 12 rows to remove any excess water during the rainy season and to provide water through seepage from the drains to the plants when there is no rain.
10. 25 cm spacing plant-to-plant and row-to-row was the standard practice used.
11. Tillering, stand establishment, and phenotypic appearance were observed to be better in SRI plots.
12. All rice varieties have responded well to SRI, but improved varieties are found to be performing better.
13. Yield increase of 40% with SRI has been observed on average compared to conventional practice.
14. Length of panicle was observed to be longer with more grain filling in SRI plots compared to conventional method.
15. Seed requirement is reduced about 85% compared to conventional practice.
16. Farmers have seen an improvement in soil health as well as higher microbial activity in SRI plots.
17. Infestation by insects was observed to be less in SRI plots which is attributed to line planting and drains.
18. Use of fire trap to control insects was observed in the field.
19. Resting places made of bamboo poles for predators (hawks, owls) were observed in the fields and are kept until the flowering stage.
20. Reduction of water use with SRI method was observed reducing the cost of water pumping by 50% for rural farmers.
21. No use of weedicide of any kind was observed in the field.
22. Application of 20:10:10 complex fertilizer is made as basal dose, but also use of bio-fertilizers (a combination of azotobacter and phosphorus-solubilizing bacteria, PSB) is very critical for SRI as this enhances the use of FYM as its substrate after the first weeding.
23. There is a strong support and systematic monitoring provided from the state government to implement SRI program.
24. A sum of Rs. 4,000 per hectare is given as a support from the government to SRI farmers to meet their expenses.
25. Trainings on SRI methods are being provided to various categories of field staff as well as to village-level workers by the Department.

East Garo Hills, Meghalaya:

1. SRI demonstration plots were observed in farmers' field initiated by the project staff of Meghalaya Rural Development Society (MRDS), which are being supervised by a cluster supervisor employed by the MRDS.

2. This is the third year of demonstration to the farmers.
3. SRI method of rice cultivation is still not known to many farmers, and those farmers who are aware of SRI have understood its potential benefits.
4. Farmers need support in terms of irrigation and training to implement the SRI program.
5. We visited the following IFAD project activities: Local herbal hospital, aloe vera processing unit, submersible bridge, tea factory, hort-hub, and fish sanctuary which are being managed by the local communities. The major portions of the investment for these activities are made by farmers themselves, while some resources are contributed by Government and IFAD project. Thus, there is a great sense of ownership for these projects among the farmers which can be one of the contributing factors for the success of these activities.

Local Herbal Hospital: The herbal medicine hospital started recently has brought together about 50 practitioners with diverse indigenous knowledge and experiences to standardize the treatment methods and practices. Herbal medicines of diverse uses are being processed and made there. They are also responsible in passing this age-old culture on to the younger generation by providing training and documentation of the practices. The hospital was built with contributions from the farmer's group and a loan from the bank as well as partial support from Government.

Aloe Vera Processing Unit: This unit was built with contributions from the federation of farmers and a loan from the government. The federation is comprised of farmers who grow aloe vera for the unit. The unit started this year and some of its products like soap, juice and gel are being sold in local market.

Submersible Bridge: This is unique bridge which allows water (stream or river having high volume fluctuation during the rainy season) to pass through without it being washed away. It was built with technical support from MRDS and financed by the farmers with some contribution from government. It has benefited rural communities to cross both with or without vehicles.

Tea Factory: Durama tea factory is operated by the West Garo Hills farmers' tea federation, started 8 years ago with 500 tea growers who are its members. The processed tea is sold in Guwahati, and only a certain percentage is packaged and sold in the local market.

Hort-Hub: This is an initiative of the Department of Agriculture, Meghalaya, to bring public- private partnership in commercialization of horticultural crops. Citrus, capsicum, aromatic plants and flowers were being grown in it.

Fish Sanctuary: This is a community-based cold water fish sanctuary managed by a farmer's group for eco-tourism. It has given opportunity for farmers to sell their produce and products in this touristic spot.

Morang District, Nepal:

1. Farmers have good knowledge on the SRI method of rice cultivation as well its potential benefits for reducing seed, water and production costs as well as improving the environment.
2. Farmers who have adopted SRI methods are benefited in terms of yield and food sufficiency.
3. SRI methods are adopted by farmers in a large scale.
4. Unlike farmers of Tripura, farmers in Nepal have tailored some of practices of SRI to suit their growing conditions and farming practices, such as following standard spacing row-to-row but not plant-to-plant and use of locally-made weeders. Other practices like young single seedlings, controlled water management, and application of organic material are being widely followed.
5. Increased use of organic manure or vermi-compost has improved the soil health and also reduced the use of inorganic fertilizers.
6. Unlike Tripura farmers, Nepalese farmers make use of urea to top dress the crop after the first weeding which may be the reason for some lodging of plants.
7. All the SRI farmers have cultured vermi-compost which is also a source of income for the family.
8. Water-sharing conflicts among farmers have reduced due to alternate wetting and drying method practiced in SRI.
9. Farmers' federations are in the process of practicing mechanized land preparation, transplanting, and harvesting using tractors and large combines.
10. Like in Tripura, some forms of support in terms of training and distribution of seeds and fertilizers are being provided to SRI farmers from the Government.

3. List of contacts for training/study tour/workshops/meetings:

Agartala, Tripura

The Director, Department of Agriculture
Government of Tripura, Agartala, Tripura, India
Fax: +91381 232 3778

Dr. Baharul Islam Majumdar, Senior Agronomist,
Department of Agriculture, Govt. of Tripura.
Email address: imbaharul@gmail.com

Meghalaya, East Garo Hills

The Project Director
Meghalaya Rural Development Society (MRDS)
Government of Meghalaya
Meghalaya, India
Fax: +913642506383 Office: +91 364 2506383
Email Address: danieljingty@yahoo.com

Nepal

The Director, Department of Agriculture
Government of Nepal
Morang District
Nepal
Fax: 021 526568

Mr. Rajendra Uprety, District Agricultural Development Office,
Morang District.
Email address: rajendrauprety@hotmail.com; upretyr@yahoo.com

4. Relevant materials collected along with copies:

More Rice with Less Water: SRI – System of Rice Intensification, produced and published by the WWF Dialogue Project on Water, Food and Environment, Patancheru, A.P., India, 2007.

SRI in Tripura: Retrospect and Prospect, written by Tripura Department of Agriculture and published by WWF for 2nd National SRI Symposium, Agartala, 2007.

More Rice, Less Water: Small State, Big Results – Experience of SRI in Tripura, India, published by WWF with Tripura Department of Agriculture, Agartala, 2007.

An Introduction to Biofertilizer, Regional Biofertilizer Production Centre, RCD Farm, Department of Agriculture, Agartala, 20 pg.

5. Key recommendations to apply under Bhutanese context:

- a. Number of leaves (2-3) in young seedlings should be considered for timing of transplanting young seedlings, instead of number of days (seedling age).
- b. Water management will be easier if contiguous fields are used for SRI method of rice cultivation by farmers.
- c. Spacing can be reducing by looking into the soil fertility: closer spacing is better for soil with poor fertility; wider spacing is for better fertility.
- d. Farmers should be given the option to use some amount of inorganic fertilizers in their field if fertility is not adequate.
- e. The use and benefits of bio-fertilizers may be explored.

- f. See the additional advantage of SRI practices against *shochum* weed control in rice-growing areas.
6. Proposed plan of action for immediate follow up:
- a. Action research on SRI methods of rice cultivation at different altitudes and in different soil conditions should be taken up in 2010 season.
 - b. Conduct well-coordinated, on-farm demonstrations at designated locations.
 - c. Conduct training on this method for field staff at *geog* and *dzongkhag* levels.
 - d. Arrange some kind of compensation for farmers if SRI methods fail for them. This is to gain confidence among the farmers and the researchers.
 - e. Develop and share extension materials on SRI methods of rice cultivation.
 - f. Cost-benefit analysis on SRI method to be done in research station.
7. Other information: below are some of the flash backs of the visits.



Welcoming the Bhutanese team



Visit to SRI field and interacting with farmers



Inside the Hort-Hub and submersible bridge, Meghalaya



Herbal Hospital, Meghalaya and SRI field, Nepal

Names of Participants and Respective Agencies:

1. Mr. Sangay Duba, Program Director, Renewable Natural Resources Research Centre (RNRRC), Bajo
2. Mr. Karma Lhendup, Lecturer, College of Natural Resources, Royal University of Bhutan, Lobesa
3. Mr. Padam Lal Giri, Research Asssistant, RNRRC Yusipang
4. Mr. Yonten Jamtsho, District Agriculture Officer, Punakha District
5. Mr. H.P. Adhikari, District Agriculture Officer, Wangduephodrang District
6. Mr. Choeda, Asst. District Agriculture Officer, Tsirang District
7. Mr. Kinley Namgyel, Asst. District Agriculture Officer, Sarpang District

Date submitted: 03.11.2009

Karma Lhendup