

# **System of Rice Intensification (SRI)**

## **Proceedings of the Experience-Sharing National Workshop: Fifth National SRI Workshop**

VIP Conference Room  
**Bangladesh Rice Research Institute**  
Gazipur, Bangladesh  
28 April 2010

Organized by  
**SRI National Network and BRRI**

Co-Sponsored by  
**Padakhep Manabik Unnayan Kendra**  
A Centre for Sustained Human Development

### **Introduction and Background**

The System of Rice Intensification (SRI) follows a set of principles in rice production management for a more efficient interaction between plants, soil, water and nutrients; creating a congenial environment for the healthy growth of plants and realizing their best potential productive capacity. In brief, SRI involves:

- Carefully planting single, young seedlings at optimally wide spacing
- Keeping soil moist but well-drained and aerated
- Adding compost or other organic materials to the soil when possible.<sup>1</sup>

These practices not only increase rice yield significantly, but also help to save our soil and environment, and ensure a more sustainable production system.

SRI was first evolved in Madagascar in the early nineteen eighties. Trials were initiated in other countries after the Bellagio conference held in 1999. Today, this system is being tried in more than 40 rice-producing countries including China, India, Indonesia, and other countries in Asia, Africa and Latin America. In many of these countries, the government and its research and extension organs are now actively engaged in promoting SRI together with NGOs, universities, local bodies, and individuals.

SRI was introduced in Bangladesh a decade ago with the initial SRI trials undertaken by the Department of Agriculture (DAE) in Kishoregonj<sup>2</sup> and CARE Bangladesh in Rajshahi and Mymensingh, followed by a number of organizations such as Bangladesh Rice Research Institute (BRRI) and BRAC. In January 2002, in a workshop where among other representatives from different organisations, Prof. Norman Uphoff of Cornell University and Dr. Noel Magor of the IRR/PETTRA project were present, “a Steering Committee was formed for organising a working group of all interested institutions, and to coordinate, facilitate and strengthen future SRI programmes in the country”<sup>3</sup>.

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<sup>1</sup> SRI website: <http://sri.ciifad.cornell.edu>

<sup>2</sup> Kbd. M. Wasiuzzaman, then Deputy Director (DD) of DAE, initiated SRI trials in Kishoregonj.

<sup>3</sup> Final Evaluation Report of SP 36 02 submitted to PETTRA, June 2004 (p. 1).

This committee developed into the SRI National Network in Bangladesh (SRI-NNB). Under the PETRRA project, trials were conducted in 12 Upazillas of six districts in the country by Bangladesh Rice Research Institute (BRRI), BRAC, CARE/POSD, and Syngenta (BD) during two consecutive *Boro* seasons, 2002-03 and 2003-04. The overall results were satisfactory and encouraging.

Under the FoSHoL project of ActionAid Bangladesh, more SRI trials were conducted in selected areas of five districts during two consecutive *Boro* seasons, 2005-06 and 2006-07. The results were highly encouraging, especially the community/block approach tried during the second year. Oxfam GB, Bangladesh, started SRI trials during the 2005-06 season<sup>4</sup> and has been continuing in the same extended areas since then. The SRI NNB initially facilitated the trials by providing technical assistance through training, monitoring and evaluation.

In spite of favourable responses from the farmers, however, progress in the dissemination of SRI has so far been restricted, due to lack of a coordinated and systematic approach for its promotion, including lack of policy directives and active support from the government and its research arm. The attitude of the Extension arm of the Ministry of Agriculture has been favourable, but due to lack of budget provision, its role has so far been limited to providing some technical support to the SRI farmers in different localities. Nothing systematic has been undertaken.

Initial trials have been so far sporadic, and conducted mostly in an unorganised manner, in scattered small plots of marginal farmers within the command area of STWs, where most farmers follow an irrigation method that seriously hampers the application of 'alternative wetting and drying (AWD) method' of irrigation and other SRI principles. Results, therefore, could not be as expected<sup>5</sup>.

Action-Aid trials have clearly showed the necessity of adopting a block/community approach in SRI production so that all the SRI principles could be followed, paving the way to effective irrigation management, ensuring reduction in costs, and significantly raising output and profitability. Among other problems faced was the adverse effect of cold wave in northern areas of the country on transplanting young seedlings (10 to 15 days old) during the winter (*Boro*) season. Practising farmers suggested transplanting of three-week old seedlings to tackle the seedling mortality problem<sup>6</sup>.

Another problem faced has been to ensure enough organic manure for SRI fields, including compost. Due to easy availability of chemical fertilisers and their subsidized price, farmers now tend to use only inorganic fertilisers and in an unbalanced manner, resulting in increasing loss of soil fertility. Every farmer should be motivated to have at least one compost pit in the homestead since organic soil amendments enhance the productivity of chemical fertilizers used because organic matter promotes more life in the soil.

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<sup>4</sup> The trials were conducted in its River Basin Project (RBP) areas in the northern Char areas to improve food security of poor farmers.

<sup>5</sup> A scientific paper presented by Prof. Najrul Islam from BAU in this workshop has amply reconfirmed this view. He asserts from his research findings that following all the principles of SRI results in realizing the highest yield. The paper is enclosed in the Annex of this report.

<sup>6</sup> Scientific reason for using young seedlings is to allow maximum effective tillering, which occurs before they reach the fourth phylochron stage. Three weeks old seedlings in the cold wave area may not reach this stage in three weeks since growth under such an adverse condition is usually stunted. Research is needed to find an answer to this problem.

## **The Experience-Sharing Workshop**

The fifth SRI national workshop titled ‘SRI Experience-Sharing Workshop’ was hosted by Bangladesh Rice Research Institute (BRRI) at Gazipur, Bangladesh. The workshop was jointly organised by SRI National Network and BRRI, and was co-sponsored by Padakhep Manabik Unnayan Kendra (A Centre for Sustained Human Development). It was held in the VIP Conference Room of BRRI on 28 April 2010. Policy makers, researchers, practitioners including field workers, and senior scientists from BRRI, BARC, IRRI, and BAU participated along with representatives from Padakhep, a partner organisation of Oxfam GB, the Department of Agricultural Extension (DAE), Bangladesh Krishibid Samity, Bangladesh Rice Foundation (BRF), and SAFE Development Group, IFDC, FAO, ADRA Bangladesh, CRWRC, and other members of SRI-NNB. A list of participants is provided in Annex A.

The main objective of the workshop was to bring together policy makers, scientists, extension specialists, and practitioners on SRI:

- To share the experiences on SRI from recent research studies and field trials, both by scientists and farmers in the country, including its achievements and limitations;
- To review and discuss progress in the spread and adoption of SRI practices in other rice-producing countries with special reference to our neighbouring country India; and
- To come to a consensus on the need and potentialities of SRI in the country, and to recommend measures to be undertaken on the promotion of SRI and overcoming its limitations by collaborative efforts of the Government’s research and extension organs and the NGO community, universities, local bodies and interested individuals for promotion of sustainable increase yield in rice and help improve food security in Bangladesh.

***SRI Field visit:*** Before starting the workshop deliberations, a field visit was arranged to the experimental plots of Abu Bakar Siddique Sarker, SSO, Agronomy Division of BRRI and a Ph.D. student carrying out field experiment on different aspects of SRI practice as part of his doctoral dissertation for NAU. The Chief Guest accompanied by participants of the workshop visited the field to have a view/visual observation on the SRI practices. Mr. Sarker explained different aspects of the practices and the special features and advantages of SRI over the conventional method. The crop was almost ready for harvest. This was the concluding year of the three-year experiment undertaken by him. He reported in the workshop on his findings so far.

The workshop was graced by the presence of the Hon. Minister for Agriculture, Begum Matia Chowdhury MP, who was the Chief Guest. Kbd Dr. Wais Kabir, Executive Chairman of BARC, chaired the workshop. After recitation from the Holy Quran, the welcome address was delivered by Dr. M. Abdul Mannan, the Director General of BRRI.

### **Welcome address**

Dr. Mannan welcomed all the participants. He specially thanked Begum Matia Chowdhury M. P., the Honourable Minister for Agriculture, for kindly accepting the invitation to join the Workshop as Chief Guest. In his address, he briefly narrated the valuable contribution of BRRI scientists in evolving many new rice varieties that have contributed to significantly increasing rice production in the country. BRRI has also evolved a number of modern equipments for improving rice farming practices. The scientists are now engaged in evolving

improved salt-tolerant rice varieties for the coastal areas, and also submergence-tolerant varieties for the low-lying areas, which will be released soon.

The DG said that BRRI is aware about the needs of the farmers in the country, and is taking steps to do the needful. A number of super-rice varieties have been collected from China, and work is going on, especially to evolve suitable high-yielding short-duration varieties for the Boro season. He mentioned that BRRI was co-sponsoring the SRI workshop. Currently, research work is being conducted on SRI method by one of its scientists. If the results are favourable, BRRI will hopefully go ahead with further studies on the method. He hoped that the active participation of all the invited guests would contribute to the success of the workshop.

***Message from Prof. Norman Uphoff, Program Leader for Sustainable Rice Systems, Cornell International Institute for Food, Agriculture and Development, and Global Coordinator of SRI***

Prof. Muazzam Husain, Coordinator, SRI NNB welcomed the guests and participants on behalf of the Organising Committee of the Workshop. He read out a message from Prof. Norman Uphoff.<sup>7</sup> In his message, Prof. Uphoff congratulated the organisers of the workshop, thanked the BRRI for hosting and co-organising the workshop, and greatly appreciated the interest and support of Begum Matia Chowdhury to the workshop for agreeing to attend as the Chief Guest.

## **Experience Sharing**

### ***3.1 SRI in Tripura, India***

Prof. Muazzam Husain briefly narrated the promotion of SRI in Tripura, India. A rice specialist in the Ministry of Agriculture of the State Government of Tripura took the initiative in 1999 *Boro* season to start some trials of SRI in the State. The results of these trials at the State Agriculture Research Station were encouraging, and the further trials were started to evaluate and fine-tune SRI practice for local conditions on farmers' field from 2001-02 to 2004-05, expanding in number from 44 to 880 in this time. The success of these field demonstrations led to initiation of planned expansion throughout the State to cover 75,000 hectares of land by 2009-10. The first year of the expansion (2005-06), the number of farmers using the new methods went from 880 to 32,000, and it is now over 200,000.

Participating farmers were provided Rs. 4,500/- per hectare for popularising SRI, covering mostly costs of land preparation and organic inputs such as biofertilizers. The three-tier *Panchayati Raj* institutions (PRIs) were also actively involved, which helped in extending the SRI area within a short period of time. Local government bodies too an active interest in SRI, reflecting farmers' enthusiasm for the new methods when tried and in turn building more farmer acceptance.

The State government has actively accepted SRI methods as a strategy to increase the state's rice production and attain self-sufficiency in food grains in the State. Bangladesh shares close similarities in topography, soil composition, and rice-cultivation tradition with Tripura. Therefore, much of its experience would be relevant in Bangladesh.

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<sup>7</sup> The full text of the message is reproduced in Annex...

*Papers of Dr. Baharul Islam Majumdar,  
Sr. Agronomist, Dept. of Agriculture, Tripura:*

Dr. Baharul Islam Majumder, the rice specialist who gave state-wide leadership for SRI evaluation and extension in Tripura, had agreed to present the keynote in this year's SRI Experience-Sharing Workshop. However, due to some unforeseen problems faced in obtaining a visa in time, he could not attend the workshop. Dr. Majumder sent a message to the participants and a paper for presentation. Another paper on SRI progress in Tripura was also received. Dr. Muazzam Husain, SRI National Coordinator, briefly shared with the workshop participants his message and the contents of his papers.

Adoption rate of SRI in Agartala, Tripura was highly encouraging. In 2002-2003, the initial year of SRI replication at farmer level, only 44 farmers participated. In the year 2007-2008 162,485 farmers practiced SRI in 32,497 hectares of land covering 13.77% of the rice cultivated area. In 2008-2009 kharif season alone, the number of SRI practitioners increased to 123,910 farmers. The farmers reported that their costs of rice cultivation had slightly reduced while a significant increase of their rice yield was attained.

Dr. Majumdar also shared information from Tamil Nadu state of India where 27% rice cultivation area (538,000 hectares of land) of the state has been brought under SRI. In three years, the number of farmers practicing SRI increased from only 880 to 197,450 and it is still rising.

The large-scale expansion of SRI in Tripura was possible due the mass movement that emerged to support SRI by the State Government and Panchayati Raj institutions with active farmer support. For promotion of SRI, the state government has contributed a little less than 50% of the cost in the demonstration plots.

In the introductory part of his paper, Dr. Majumder presented how better rice cultivation has evolved through relentless efforts of farmers just through their observations and experimentation. He lamented that "contemporary irrigated rice cultivation has become quite uniform with a standard set of practices," preferred by scientists who were pleased with high external inputs. But in recent years there has been a diminished yield growth rate reaching a plateau.

Seeing this decreasing yield rate and plateau for further increases underscores the importance of SRI at the moment. With all good intentions and satisfied with a few decades of increase in yield, the Green Revolution has ignored indigenous rice varieties, has increased external input use and farmers' financial dependence, and all this has affected bio-diversity and is contributing to adverse climate change impacts.

Dr. Majumder pointed out that "SRI is quite different from the approach of the Green Revolution in that: a) it is not a seed-based approach, b) it makes reductions in inputs – seeds, water, fertilizers, and labour – yet gives more yield, and c) it originated outside of the established scientific institutions." Farmers' experience has proven that SRI brings in higher resource-efficient productivity, which is good for the farmers, the soil and the rice plant itself. All the participants were impressed and regretted his absence because they would have liked further clarifications from him on SRI success in Tripura State.

### ***3.2 A.B.S. Sarker's Study at BRRI***

Abu Bakar Siddique Sarker, a Senior Scientific Officer of BRRI, briefly narrated preliminary findings from his Ph.D. research study conducted on SRI production and management practices during three consecutive *Boro* seasons.

The study is finding that SRI methods result in a proven increase in rice yield. The study has indicated that any short-term project of SRI is not effective. Changes in age-old traditions in rice cultivation, for that matter bringing about any change in farmer practice, requires a reasonable time span. All stakeholders here need to be addressed to facilitate them comprehending and adopting SRI techniques.

### ***3.3 BRRI study on Perception of Farmers on SRI in Satkhira***

Dr. Rafiqul Islam, Senior Scientific Officer, Agriculture Economics Division, BRRI, mentioned in his presentation that the farmers who had received support from IRRI/PETTRA project in Tala Upazila of Satkhira district during 2003-2004 are still continuing SRI method of rice cultivation. The farmers have adopted the principles of SRI according to their farm and social conditions.

In his study it was found that farmers have received 30% higher yield than that from conventional methods during the 2009 *Boro* season. The farmers transplanted tender-aged seedling in wider spacing and also used manure during land preparation, which are key principles of SRI. Dr. Islam also stated that the production cost of rice has been reduced by 20% due to savings of seed, chemical fertilizer, and other costs. Although, according to them, the labour cost was a little higher in the SRI plots compared to the conventional method, the higher level of yield generated more income for the farmers.

Forty percent of *Boro* land in the village is now under SRI management, and all farmers present at a village meeting expressed their support for the SRI method as superior to the conventional method. He stressed that SRI approach should be promoted with dynamic initiative and a more appropriate way to increase rice production in an environment-friendly method.

### ***3.4 BAU Research Sharing***

A scientific study on performance of SRI was conducted by a Ph D student of BAU under the supervision of Dr. Najrul Islam of BAU. The study consisted to 59 trial plots. The factorial trials consisted of single SRI practices to using all practices on different plots. The study found that when all the recommended practices of SRI were followed in the field the highest record of yield was achieved. He concluded that SRI was superior to the conventional method of rice production; and adoption of SRI requires good understanding of its component technologies.

Dr. Islam recommended that research and trials should be conducted in different agro-climatic zones of the country involving varieties and for fine-tuning of component technologies, which will create more awareness among farmers, scientists and other stakeholders. Under existing soil and environmental conditions in Bangladesh, integration of organic manure and chemical fertiliser will be conducive. Adoption of AWD technology of

IRRI would be more efficient in water management under SRI. Appropriate institutional support is needed to promote research and adoption of SRI across Bangladesh.

He mentioned that SRI method of rice production should be promoted to the farmers with government and non-government initiative to improve food security situation of the country. A joint programme with all concerned government and non-government agencies might make a larger impact of SRI to boost up rice production in the country.

### ***3.5 Padakhep – Oxfam GB: Farmer-Level Experience-Sharing***

Mr. Kazi Monir Mosharof, Program Coordinator, Padakhep, presented the findings on SRI trials sponsored and supported by Oxfam GB, Bangladesh, and implemented by Padakhep through nine associate organisations in five districts of Gaibandha, Kurigram, Lalmonirhat, Jamalpur and Shariatpur, in the River Basin Programme areas of Oxfam GB.

The key findings show gradual increase in number of farmers and area under SRI, higher yields, lower costs, and higher profitability of SRI than under farmers' normal practice. Among the limitations of SRI were mentioned: problems in transplanting young seedlings, especially due to cold waves during the *Boro* season; and problems in practicing recommended practices in irrigation. Recommendations included: adoption of a community or block approach, mainly for efficient irrigation management; development of suitable transplantation implements and tools; and adjusting transplanting time for escaping cold injury during seedling and early plant growth periods in coldwave-prone areas.

### **Discussion**

After presentation of experiences and findings of different organizations and scientists, open discussion was conducted. The open discussion was facilitated by DG DAE.

#### ***4.1 Kbd. M. Wasiuzzaman, President of Bangladesh Krishibid Samity***

SRI is a proven technology on which much research has been done, and over 40 countries have adopted it. Therefore, effort must be given for its extension in Bangladesh. It is unfortunate that BRRI has not yet accepted SRI for increasing rice yield.

"Let us all (government and non-government agencies) work together for SRI extension. There are projects on granular urea extension, leaf-colour-chart extension, and on drumseeder extension. Why cannot we have a project on SRI?"

#### ***4.2 Dr. A.B. Siddiqui, ED, BRF***

He mentioned that SRI is a system of rice production management, and all its components need to be tried in an integrated manner. He also said that for better success a block/community approach is necessary; and that joint efforts should be undertaken for further research and trials for promotion of SRI in Bangladesh.

#### ***4.3 Dr. M. A. Hamid Mia, IRRI Liaison Scientist, Bangladesh***

Dr. Hamid Mia stated that SRI increases yield, but so far we could not consistently disseminate its benefits to farmers. He also believed that some practices associated with SRI

are very difficult for the farmers to practice such as land levelling and transplanting young seedlings.

He suggested that comparative cost analysis of SRI and farmers' current practice may be re-examined, and all stakeholders should jointly go for research. He also asserted that SRI is location-specific method. It is also necessary to identify appropriate farmers for SRI. He believed that we must adopt a demand-driven approach for SRI dissemination and in providing SRI services: 'It must be a menu and not a recipe'. According to him, SRI suggests transplanting 8 day-old seedlings<sup>8</sup> but farmers could not practice this. They transplant 21 to 22-day seedlings.

#### ***4.4 Mr. Alamin from Bhanga Upazila***

One participant, Mr. Alamin from Bhanga under Faridpur District, Bangladesh, narrated his short experience on SRI practice. He partially adopted the SRI practice by following only two factors. These were transplanting single seedling and use of 15-day-old seedlings. However, he did not follow the other essential components of the practice such as wider spacing, the alternate wetting and drying method of irrigation, weeding by using a rotary weeder, and using more organic fertiliser for improving soil quality. As a result, no significant increase in yield was found in his trial. It may be noted here that to obtain best result, these other factors also must be followed.

#### **Designated Speakers:**

##### ***5.1 Speech by Kbd. M. Sayeed Ali, Director-General of Department of Agriculture Extension, Bangladesh***

FAO awarded in 2000 the then (also now the current) Prime Minister Sheikh Hasina for her achievement of food grain sufficiency. In her second term at present her government has brought grain production, mainly rice, to a break-even-point. However, rice production should be further increased. SRI has proven its potentiality to contribute towards a sustainable increase in rice production. There are other technologies that also increase yield. Nevertheless, research on SRI adoption and expansion should be conducted. SRI is location-specific. Therefore, research may also include determination of areas suitable for SRI in different parts of Bangladesh.

He said information from Agartala, Tripura, is encouraging. Rice cultivated areas in Bangladesh and Tripura have reasonably similar characteristics. It would have been nice to have Dr. Baharul Islam Majumdar presenting his keynote paper. Although Dr. Muazzam Husain presented the paper very well, some of the questions participants had would have been better posed to him for good understanding. However, the result of SRI in terms of

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<sup>8</sup> Although Dr. Mia mentioned 8 day-old seedlings, the SRI manual published by SRI NNB suggests that only during the *Aman* season 8 day-old seedlings may be transplanted. The manual suggests that during the *Boro* season, due to cold weather, two-week old seedlings may be transplanted. Our subsequent experience shows that early transplantation may be avoided or delayed in areas during the period when they suffer from cold wave. It is enough that transplantation is done before the initiation of the fourth phylochron stage of the plant. Further research is suggested on this aspect.

increase in yield, decrease in cost, and rapid expansion among the farmers is rewarding. We have much to learn from the Agartala experience.

He concluded saying there is no doubt that SRI showed significant increase in rice yield. There is gap in understanding of SRI, proper experimentation in the field, and recognition of SRI by the scientific community. We can expect that joint ventures among different interested parties that include government departments, NGOs and the farmers. We must opt for coordinated programmes to better understand SRI and take advantage of SRI for optimization of rice yield.

### ***5.2 Speech by Honourable Minister for Agriculture, Government of the People's Republic of Bangladesh***

With greetings to all participants from government, NGO and the farmers, Honourable Minister for Agriculture, Begum Matia Chowdhury MP, began with the concern of her Ministry on food security. She said that population was increasing gradually. At the same time, land area under cultivation was decreasing due to expansion of industries, housing and other non-farming activities. To feed the increasing population of the country, therefore, any technology that can increase yield is welcome. It has been observed that both the farmers and supporting agencies from government and non-government sphere are convinced of SRI to be a yield increasing technology. Many new technologies have been in practice since long. Nevertheless, SRI in combination with many of these practices appears to have proven to be a successful method of rice cultivation in many countries. Some principles of the SRI method are already being practiced by many farmers in Bangladesh.

For effective replication of any new technology or practice in agriculture, the current policy of taking up more and more short-term 'projects' should not continue to be a primary focus. In the case of SRI, the Agriculture Ministry of the present government would support undertaking SRI demonstration and extension activities as part of a regular programme of the Department of Agricultural Extension that will be sustainable. She observed that it has become a practice that while a project runs, some changes are visible, but after the end of the project, no follow-up activities are undertaken to sustain the impact of the project.

She said that labour is a big concern of farmers of Bangladesh, and it is often believed that SRI is labour-intensive. Labour is becoming scarce in rural area. Therefore, the SRI promoters should take into account that intensifying labour requirement may be a burden to marginal farmers.

She informed further that *Boro* rice cultivation has been gaining in popularity over other rice seasons on the ground that it is environmentally relatively less hazardous. In the Haor area, we need to go for short-duration rice varieties. She feels, however, that if all efforts are given over to rice cultivation in *Boro* season throughout the country, it may lead to overtaxing of farmers' time and resources. Cost of production is very high during the *Boro* season. *Aman* rice cultivation is being neglected. If everybody concentrates on *Boro*, it would not be a reasonable approach to promoting agriculture in Bangladesh. She agreed that *Boro* yield is increased, but she pondered, at what cost? Does cost-benefit analysis indicate it to be comparatively most profitable?

She called the attention of all concerned to the focus on issues of northern Bangladesh, which is being over-studied. She insisted that scientists and other stakeholders concentrate also in

other parts of the country. All parts of Bangladesh should be supported and taken advantage of, in an equitable manner.

She cited the present disaster in the *Haor* due to early flash flood that inundated nearly 50,000 hectares of standing rice. Prevention of such a disaster could only be addressed by the joint efforts of the Water Board, and agricultural research and agricultural extension. Scientists did not disseminate proper knowledge to *Haor* farmers on the unsuitability of BR 29, a long-duration variety. She claimed that information from the media suggests that BR 28 which would have been more appropriate to the *Haor* area was not promoted; rather BR 29 was promoted for the ulterior benefit of traders.

The Ministry of Agriculture welcomes more research. She said research on increase of yield is given priority. Further research on SRI can be undertaken to check the hurdles remaining and on things that are hampering the expansion of SRI. Our main focus in looking at any technology should be: whether it benefits the farmers economically and contributes to better food security.

She emphasized that research results must be sustainable. Scientists and activists should take all measures that farmers are able to sustain the benefit of the research. They should see that the farmers are able to grasp the knowledge and skill to keep up with the technology and gain from practicing what they suggest. We welcome technology / knowledge that increase yield, she added. Agriculture farming is conducted by the private sector, and therefore arbitrators are the farmers – farmers will take the final decision on whether to accept or reject any technology. She suggested that scientists and NGOs work in close collaboration and in consultation with farmers. Improved and appropriate crop management practices must be taken to the farmers' field to derive best results. Keeping them in the researchers' field is not enough.

The Ministry of Agriculture of Bangladesh has its door open to all initiatives and programmes that benefits the farmers, she reiterated. At the end she wished all the best to the effort taken by SRI Network Bangladesh and its collaborating institutions; and underlined the issue that they should all take measures to increase yield.

### ***5.3 Concluding Speech by the Chairperson, Dr. Wais Kabir, Executive Chairman, BARC***

He said that no technology is panacea. We try to accept any technology that increases yield. Now we need a technology that reduces water requirement; and a technology that reduces labour, besides increasing yield. As Dr. Hamid said, we do need joint and collaborative work on SRI so that we can accept SRI, if necessary even in a modified form. We should remember that in Bangladesh, agriculture is location-sensitive.

Dr. Kabir asserted that short-lived projects do not sustain. Instead of a 'project,' we need a 'program' approach on SRI, and it will then be sustainable. Agricultural extension and research in Bangladesh have earned a good reputation in the world, showing commendable success. So let us all give SRI an opportunity to prove its potential in Bangladesh.

## **6. Recommendations**

- The workshop recommended an integrated and coordinated programme approach by government (research and extension) and non-governmental organisations (national and

international) for promotion of SRI in a planned manner. The DAE would support extension/promotion of SRI as a regular programme, and BRRI should conduct research on overcoming various constraints that the farmers face in specific areas.

- More research is necessary for a planned and systematic expansion of SRI in Bangladesh. The concurrent recommendation was to carry out coordinated research on SRI, especially multidisciplinary action research. This has been recommended to be carried out by government and other organizations working at the field level. At the same time, SRI practices by farmers shall also be nurtured by organizations working directly with farmers.
- Action research by practitioners on identified impediments related to water management, transplantation of young seedlings during winter coldwaves, labour and weeding may be given priority. Studies on identifying areas most suitable for SRI should be one of the research activities, including finding out better combination of SRI practices appropriate for different agro-ecological zones in Bangladesh. Social, environmental and ecological studies may also be undertaken to better reflect the benefits of SRI. In particular, studies may be conducted on how SRI can better address a number of negative ecological impacts that affect the environment, bio-diversity and climate change.
- In pursuance of the above, it was also recommended that:
  - a. Collaborative joint venture should be undertaken by government and non-government organisations; and
  - b. SRI NNB would play a coordinating role in this respect.
- It was also suggested by the Chief Guest to convene such national workshops in the capital city to reduce time wasted on the road. This would allow spending longer time to presenters and the discussants.