SRI SUCCESS STORY IN TRIPURA

The state of Tripura shares a border with Bangladesh on three sides and is the smallest of the North Eastern states. In April 2007 some of us visited two (West and South) of the four districts and had extensive discussions with farmers, field-level agriculture department officials, the Director of Agriculture and the Minister of Agriculture.

Though a small state (10,491 sq km) with a cropped area of 280 000 ha, the achievement with regard to SRI is considerable and provides hope and lessons to offer for the rest of the country. An estimated 14,000 ha of rice in 2006-07 is under SRI that is nearly 8% of the total land area under paddy. The plan objective for 2007-08 is 30,000 ha.

Two striking features of SRI (System of Rice Intensification) in Tripura is the scale of operations with large stretches of contiguous SRI plots of 30-50 ha and the strong policy and field support of the Department of Agriculture. Though a small state (10,491 sq km) with a cropped area of 280 000 ha, the achievement with regard to SRI is considerable and provides hope and lessons to offer for the rest of the country. An estimated 14,000 ha of rice in 2006-07 is under SRI that is nearly 8% of the total land area under paddy. The plan objective for 2007-08 is 30,000 ha. States such as Tamil Nadu and Andhra Pradesh might have greater area under SRI; SRI's share of their total rice production is much lower.

The achievement of Tripura has been due to the work of a dynamic agricultural officer, Baharul Mazumder, who was responsible for introducing SRI and systematically working towards overcoming its technical hitches before arguing the case with his peers and creating a positive environment for SRI. Tripura has been able to provide institutional support to its farmers in enabling them making the transition. It is the combination of the social entrepreneurial skills of Baharul and the policy support of the state government that is responsible for this transition. The Tripura story is remarkable for the achievement has been without any outside financial support either from the centre or any donor agencies though they would indeed like to support the successful initiative.

The story of SRI in Tripura dates back to 1999 when Baharul Mazumder first heard of SRI from people in Calcutta. On his return to Tripura Baharul decided to try out SRI based on the information he had. He first tried out single seedling and young age seedlings (10 days, 15 days, 20 days). His initial attempts to speak to farmers and agricultural officers were met with great skepticism. He then decided to try things out by himself in an area where he had worked, East Charakbai / Baikhora in South Tripura district. Dr Norman Uphoff at Cornell when contacted, gave Baharul a lot of information and asked him to get in touch with Dr Alapati Satyanarayana who was doing SRI work in Andhra Pradesh.

Baharul received valuable inputs from Uphoff and Satyanarayana. By 2002 SRI was being practiced by 22 farmers in first time use. Rice in Tripura is grown in three seasons – Aush, Aman (winter) and Boro (summer). Apart from these many parts of Tripura follow shifting agriculture or Jhum.

To achieve Tripura's main goal of food self sufficiency by 2010 SRI emerged as an alternative based on Baharul's initial experiments in South Tripura. In a review meeting in 2002, the then Commissioner of Agriculture, Dr GSG Iyengar, was asking the Department officials as to what were the new things that were happening in their area. When the Deputy Director of Agriculture mentioned about SRI being practiced, the Commissioner who has an agricultural doctorate, closed the meeting and expressed interest in visiting the rice field. Later in the evening, he spoke to Baharul and commended him for the effort and discussions for scaling-up began. Demonstration plots of SRI were planned in 400 places across the state in 2004, up from 88 in 2003.

Demonstration plots of SRI were planned in 400 places across the state in 2004, up from 88 in 2003. The Chief Minister instructed every village pradhan to visit the demonstration plot and explore how it could be taken up in their village.

The Chief Minister instructed every village pradhan or panchayat head to visit the demonstration plot and explore how it could be taken up in their village. The active involvement of the Agriculture Department officials at all levels and the village-level functionaries of the Panchayat Department in 2005-06 ensured that a plan was in place for 2006-07 for 16,000 ha under SRI.

Our field visit coincided with the Boro season crop. Many parts of the state were short of water and even though there were extensive lift irrigation schemes, the rivulets had dried up in many places creating dry field conditions. On the night of our arrival on 22nd April there were heavy showers which were a big relief to farmers and they were active in their fields when we visited them.

Our first halt was in the village Dudhpatil in E Nuagaon, Jirania block. It was our first sight of contiguous SRI plots as far as we could see. On Baharul's advise the field boundaries were demarcated using colored flags that were yellow in color (pink and blue were used in other areas) with SRI written on them.

The village was using breeder seed of the Satabdi variety and farmers expressed satisfaction with SRI. Farmers involved in breeder seeds multiplication are often the first adaptors of SRI. These farmers are used to treating seed with greater care and success in their fields often acts as motivation for other farmers in the region. We interviewed Karanjit Choudhury who tried SRI in 2.2 ha. Karanjit had done transplantation in a week with staggering and used 14 labourers during transplantation. He heard about SRI first through a panchayat meeting and had received training from the Agriculture Department. He also saw the demonstration plot. To him SRI would increase yield and reduce cost of cultivation. His average productivity was 4.5 to 5 T per ha, and he expected SRI yields to be closer to 7.2 to 7.5 T per ha. The agricultural officer estimated an even higher yield.

The slogan used in Tripura went something like this 'Beej kam, saar kam, jal kam, aushadh kam, kharcha kam, phalan bishi, aay bishi'. The slogan is similar to the main theme of 'more from less' in SRI and indicates lesser inputs in seed, fertiliser, pesticides, water and costs, with increased output and incomes.

We also spoke to a sharecropper Prabhat Baishnab who tried out SRI in 0.8 acres own and 0.5 acres sharecropping. He felt SRI involved less fertilizer and inputs. He heard about SRI through local Village Agricultural Officer and had also seen other plots of relatives in S Tripura district and then he decided to have SRI in all his 1.3 acres. He has tried short duration paddy and medium duration in his plot. We asked him about water management and weeding problems and if he thought anything was necessary to improve agriculture in the region. He was wondering if there could be some equipment that could undertake the transplantation. He was more worried that labourers were sometimes planting too deep or too shallow. A transplanter might solve the problem.

Most SRI areas had a simple board that indicated the by-line 'Sri Paddothithe Dhaan Chaas' in Bengali -- or 'Better cultivation through SRI'. These posters had a farmer in the background doing weeding operation.

We enquired about how was it that 44 farmers had agreed to take on SRI in the village. They mentioned the existence of an informal group of farmers already involved in managing water through the lift irrigation scheme, support from the department, and the visit to the demonstration plot. Dinesh Debnath was the first farmer to take up SRI in 2005. We learned about a government incentive for SRI that amounted to a total of Rs 4500 per ha. Of this, most was in-kind and Rs 500 in cash -- Rs 400 was for procuring organic matter for composting and Rs 100 for nursery management. The department supplied azotobacter and recommended doses of fertiliser and pesticide if required. The discussions later revealed that democratic decentralization through the Panchayati Raj system was an important factor in the success of SRI. These officials were the best motivators for the farmers.

Our next halt was E. Hawaibari in Teliamura block. The lift irrigation system in the village had gone out of order here, and there was a dry spell. Timely rains and the SRI system saved their crop. We had a good chance to look at the implements here, and there was some discussion on the weeders being used. These weeders were brought in several years back with a view to popularize the line planting system of the Japanese. The designs were given to local welders who replicated them. The weeders are supplied by the Department and do not form part of the subsidy package of Rs 4500 per ha.

Farmers' plot sizes in Havaibari were a bit lower with nearly 70 farmers practicing SRI in 35 ha. We had interactions with Dwijendra Das in Havaibari, a farmer who took to SRI and is now practicing it in two ha. Birendra Sarcar, another farmer, mentioned that he expected 5.5 T per ha yield, up from the current 2.8 T.

At N. Krishnapur we saw profuse tillering in the fields and had discussions on the methods used by the Agriculture Department to take forward SRI.

Bharat Sircar's plot had vigorous tillering, and he counted 87 tillers from one plant in his field. He cultivated SRI in 0.5 ha and expects about 4.8 T yield. We tried engaging with farmers on questions of their perceptions on yields, water requirements, etc. and what could be done to improve SRI? This was more to encourage critical thinking among the farmers, and in few places we did get some ideas. We noticed that many farmers were trying out SRI with local varieties. We rushed back to Tripura for an appointment with the Director of Agriculture. Our brief conversation with Amar Das, Director of Agriculture, was more in the nature of exchanging our immediate impressions about SRI.

When we expressed our amazement at the extent of the operation, he seemed pleased and even tried requesting the Minister to see if we could meet him briefly.

The Minister was kind enough to agree to meet us the following day. Mr. Das mentioned that if we were so excited about West Tripura, we would probably be doubly excited after visiting South Tripura the next day.

South Tripura We started early and went to S. Bagma and Matabadhi block in South Tripura district. SRI was being practiced in 42 ha with 128 farmers. Irrigation for 30 ha was by lift irrigation and 12 ha by deep tubewell. They have been having a dry spell due to decreased inflow into the river Gumti for the past month. The rains of the previous two days led to a flurry of activity on the field with farmers busy with the weeding operations.

There is a govt incentive for SRI that amounts to a total of Rs 4500 per ha. Of this, most is in-kind and Rs 500 in cash -- Rs 400 for procuring organic matter for composting and Rs 100 for nursery management. The democratic decentralization through the Panchayati Raj system was an important factor in the success of SRI.

We had discussions on the weeders with the Agriculture Department officials. The subsidy on weeders is 75%, and they currently cost Rs 625 with Rs 156 contributed by the farmers. We examined the weeders quite closely and found that modifications are being tried out with wooden and steel frames. However, servicing of the weeders is likely to become a major issue, and it appears that there is a lot of scope for design intervention.

We had an idea of the spread effect of SRI. Many farmers have taken to SRI even without the package scheme and hope to benefit from the package in the coming financial year. This led to discussions on what if the government withdraws the package; farmers were confident that they could manage in a few years by themselves. They also mentioned that they would have perhaps lost the crop due to the dry spell but for SRI.

We shared with the minister some observations on the spread of SRI in the state, the rough calculation on the return on investment that the govt was getting through its policy support of Rs 4500 per ha in terms of improved productivity alone, the returns were perhaps three times. Finance Commissioner Roy concurred with us, and it was interesting to find synergy amongst the policy actors from agriculture and finance.

Our next halt was Barobhaia, a small (by Tripura standards) extent of 7 ha of SRI plot. We met Santosh Pal, who had tried out SRI in 1.6 acres. He counted 36 tillers in the middle and 40 in the end (edge effect).

Santosh was a third-time SRI farmer who had tried out SRI in last Boro, this Aman (Kharif), and now this Boro as well. His first exposure to SRI was through the demonstration plot a kilometer away in 2005.

At our next halt, we also met with Babul Dutta, a farmer who tried out the Bangladeshi variety in E Kaphilong. Babul had got this variety from his relatives in Bangladesh, and the variety is quite popular across the border and even in Tripura. Later we saw the border fenced with thick barbed wire and reflected on the implications of the divides in these border areas. BR 29 has not been recommended by the Agriculture Department as no trials have been done. In fact, we learned that insurance companies have been instructed to not entertain any claims on BR 29.

However, farmers had their own knowledge that spread across the border. It would be really interesting if some agency could sponsor an SRI exchange between Bangladeshi and Tripura farmers. With similar agro ecological conditions but different institutional structures, such a facilitated exchange can lead to interesting knowledge flows.

We proceeded to the Mirza block of the district. Like its famous counterpart in Rajasthan, this town also had its fort and lake. At East Mirza, SRI is being practiced in 30 ha of a total of 150 ha. There are 200 farmers, and 53 ha is covered by the LI scheme. We spoke with Sanjit Mazumdar a three-time SRI farmer who was trying out SRI in 1 ha, having started with 1 acre crop in Boro 2006, with a yield of 50 mounds , Pooja variety (23.5 maunds in 2 acres) and Krishnahamsa (25 maunds in 2.6 acres). When asked about any problems with SRI, they referred to water management being an important issue. They also referred to labour problems during transplantation.

Farmers want to take up SRI in Aush as well but cannot due to lack of water. Sultan Mai was one of the farmers with the largest landholding that we met. He had 4.32 ha. The discussions at East Mirza were quite animated, with the local farmers' club leader Jiten Mazumdar joining actively in the discussions. Jiten and others mentioned that the awareness of the labourers was the big issue. The fields had plants with 65-75 tillers. Greater spread was not possible in the region due to waterlogged areas.

Our next halt was SRI fields 1 km away from Shamukchura where we met Manoranjan Das. Das had experimented a bit with his SRI fields, trying single seedlings in 1.4 acres, 2 seedlings in 0.2 acre, and 3 seedlings in another 0.2 acre.

Budhi Ram Naotia, a tribal farmer, came over to Das's fields, and we had a brief interaction with him. Much of the success in S Tripura seems to have been with tribal farmers although we did not get an opportunity to visit their fields. Budhi Ram had started SRI with 0.2 acres in Aman last season and got 12 maunds (480 kgs) under rainfed conditions. The tribal farmers do not use weeders and do manual weeding. There are currently 25 farmers in Shamukchura trying out SRI. Naotia is doing it in 1 acre.

Our last halt in farmers' fields was in Laksmipur in Rajnagar block. Farmers were practicing SRI in 30 ha. We spoke to Kumod Debrath, a sharecropper who tried SRI in 1.2 acres. Debrath is a first-time SRI farmer and had heard about SRI from the Panchayat. He has not undergone training. He tried SRI with BR 29 from Bangladesh and had got the seeds from his father-in-law. Transplantation was done between 12-16 days and was spread over four days. When asked about the differences in yields based on the physical look of the fields transplanted differently, Debrath mentioned that during winter, SRI transplantation should be between 15-20 days whereas in summer 8-10 days is enough. There are about 100 farmers operating the 30 ha SRI plot. We counted the grains per panicle in the fields, and they were quite healthy and averaged around 220.

The Tripura Chief Minister Mr Manik Sarkar in his speech at the National Development Council Meeting held in New Delhi on May 29, 2007 said, "Adoption of the System of Rice Intensification technology for paddy cultivation has increased productivity of rice from 2.5 T per ha to about 3.5 T per ha."

We were to see many more SRI fields at Dimatali, Satpara, etc. but had to rush, hoping to keep the appointment with the Minister of Agriculture.

Policy Support for SRI in Tripura We met the Agriculture Minister in the evening. He was just reviewing the plan for the year. The Finance Secretary and Commissioner Mr. S. K. Roy were there along with Amar Das, the Director. The Minister Tapan Choudhury first asked us about our impressions of SRI work.

We shared with him some observations on the spread of SRI in the state, the rough calculation on the return on investment that the government was getting through its policy support of Rs 4500 per ha in terms of improved productivity alone, the returns were perhaps three times.

We also shared with him our pleasure at seeing such large areas of contiguous patches under SRI, something unique to Tripura, and the excellent coordination between the Agriculture Department and the Panchayat officials. We mentioned that the rest of the country has much to learn from Tripura. We also mentioned that many farmers were feeling the need for better water management, and he wondered if it was possible for the communities to have a standby for some of the motors in the LI scheme that were going bad. The Minister mentioned that there is a plan to devolve responsibilities for maintenance to the communities from the coming financial plan and discussions were on with the Water Resources Department. The Minister was very modest about the achievements and kept referring to Tripura as a small state. He also mentioned that the target for the current year is 30,000 ha, almost double the previous years.

Baharul later mentioned that the investment would also be increased from 4500 per ha to Rs 5000. S. K. Roy was wondering if more resources could be mobilized to take some of the activities under SRI, and we expressed that it should be possible given the solid work and systems being put in place in Tripura. We also mentioned that apart from financial support there can be other ways of collaboration that included research and documentation. Tripura presents several sites where detailed water estimates in SRI can be worked out.

The state average in Aman (Kharif 2006) under SRI from the 17 agricultural subdivisions works out to 3,519 kg/ ha, with the five-year average without SRI ending 2005 working out to be 2,618 Kg/ha, indicating a 34% increase. In several areas where SRI worked without too much water where a conventional crop might have failed.

Workshops on weeders and markers as well as organic practices in SRI are other issues that can be worked on. Some of the more detailed research experiments on spacing etc. that is currently being done in other places in India can be replicated in Tripura on farmers' fields with more authentic results.

Baharul Mazumder did share with us some basic information on SRI in Tripura. The state average in Aman (Kharif 2006) under SRI from the 17 agricultural subdivisions works out to 3,519 kg/ ha, with the five-year
average without SRI ending 2005 working out to be 2,618 Kg/ha, indicating a 34% increase. In several areas where SRI worked without too much water where a conventional crop might have failed. SRI in 2006-07 covered 5,965 ha in Kharif and 8,176 in Boro.

C. Shambu Prasad (shambu@ximb.ac.in)