

# Engagement of the State in the Promotion of SRI: Understanding the Process

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*Presenting facts, experiences and lessons of a study conducted to assess the engagement of states in the SRI programme in Bihar, Chhattisgarh, Jharkhand and Odisha and the role played by various stakeholders including the government, CSOs and farmers*

The National Consortium of SRI (NCS) reviewed SRI research in India, in order to unravel the various phenomena related to farmer behaviour, productivity enhancement, water- and nutrient-use efficiency and a concept note on SRI and indigenous varieties. The objective of the study was to assess the initiative taken by the government, CSOs, research institutions and other stakeholders in four states—Bihar, Chhattisgarh, Jharkhand and Odisha. This research aimed at providing a detailed look at the performance of the SRI programme over the years, based on the experience of farmers, promoting agencies and the government in the respective states. Another objective was to study the adoption process, the innovations introduced and the modifications made over the years in these states. The factors that helped the programme, what the constraints in scaling up have been and what the lessons are for the future were also scrutinized.

This report presents the facts, experiences and learnings of the study conducted to assess the engagement of states in SRI programme in Bihar, Chhattisgarh, Jharkhand and Odisha. During our visit to all the states, we met government officials, agriculture universities, CSO's and farmers in the field to understand the status of the SRI programme.

The System of Rice Intensification (SRI) is now a decade-old practice within the farming community. Its benefits have received wide acceptance among various stakeholders, including the government. Civil Society Organizations (CSOs) have contributed in a big way to influence several state governments to create a conducive environment for the adoption of SRI on a large scale. In Bihar, the SRI programme began mainly because of the ground work of CSOs. Later on, the agriculture departments of state governments, the Jeevika programme and CSOs took it to a larger scale. In other states also, the SRI programme was started by CSOs, and the government response has been minimal. In states such as Jharkhand and Chhattisgarh, government support for the spread of SRI has been passive. In Odisha, the government has taken up line-sowing on a large scale. In Bihar, the synergy between PRADAN and Bihar Rural Livelihoods Promotion Society (BRLPS) made a great impact whereas, in Jharkhand, the synergy between NABARD and CSOs yielded positive results. In Chhattisgarh, paddy procurement, revamped by computerization, has resulted in very good market selling price (MSP) for farmers.

This is why paddy is considered to be a cash crop. The support of organizations such as NABARD and SDTT has given a boost to the SRI programme; however, somehow the state government's involvement has varied from one state to another. In all these states, CSOs are, at best, input distributors or programme implementers for the government.

## **BIHAR**

Paddy production and the area under cultivation has been almost constant in Bihar for the last ten years. The productivity of paddy has been in the range of 14 to 16 MT per hectare. In 2009–10 and in 2010–11, productivity decreased drastically. However, due to a good monsoon and a supporting agricultural environment, productivity has increased significantly in 2011–12 and 2012–13. Paddy, as a crop, is considered to be the lifeline of Bihar's agriculture. Earlier, agriculture used to be one of the most neglected sectors in Bihar; however, in the last three to four years, the government has taken several steps to improve the agricultural scenario of the state. Paddy cultivation has been made one of the main thrust areas while implementing schemes such as the National Food Security Mission, the Rashtriya Krishi Vikas Yojana (RKVY), National Rural Livelihood Mission (NRLM), Bringing/Extending Green Revolutions in Eastern India, Samekit Cereals Vikas Yojana Macro Management, etc. These initiatives have helped Bihar take big strides in the agriculture sector. Realizing the importance of agriculture in ensuring food sufficiency and understanding that the sector is one of the prime livelihood options for the people, the Department of Agriculture took a number of initiatives, both directly through its own departments and by collaborating with other support agencies such as the BRLPS and Agricultural Technology Management Agency (ATMA).

Due to the many initiatives of PRADAN, CSOs and BRLPS, several state- and district-level programmes were organized. From 2008 onwards, agencies such as Aga Khan Rural Support Programme (AKRSP) and BASIX gradually began promoting SRI in their area of work. These efforts helped in creating awareness at every level across the state. As there was a significant increase in productivity in the first year, the government decided to continue with SRI promotion under the Jeevika programme. In 2008–09, more farmers from Nalanda and Gaya districts participated under the PRADAN-Jeevika collaboration. In the same year, AKRSP and BASIX also continued their work in SRI. By 2009–10, SRI had spread to other districts through the joint efforts of CSOs, BRLPS and the Department of Agriculture. The government, through BRLPS and its Department of Agriculture, and the CSOs, with support from organizations such as NABARD and SDTT, have been involved in spreading SRI in Bihar.

### **Interventions by CSOs**

AKRSP started its work in SRI in 2005 in five districts of Gujarat. In 2007, AKRSP started its field operations in Bihar in Samastipur and Muzaffarpur districts in four blocks, with 24 households; the number crossed 500 by the end of the second year. At present, AKRSP is practising SRI with almost 2,000 farmers. AKRSP focuses on providing process support, as opposed to input support. The area where AKRSP started work was relatively advanced in agriculture. This helped in developing a pool of agricultural volunteers, to work at the ground level. The farmers were free to choose any variety of seeds, ranging from hybrid to local. Although, finally, it was proved that the yield under SRI was high, independent of the seed variety, it was the farmers' participation that made the process successful. Based on field level experiences, the package and

the practices suggested were changed. For example, the spacing was brought down to 10 inches from 12 inches. AKRSP also developed a pool of agricultural volunteers who worked directly with the farmers at the ground level. Marker usage and transportation of seedlings at the time of transplantation were the key challenges faced by AKRSP during implementation.

On the other hand, the strategy BASIX used for implementation was designed around SHG federations promoted by Women Development Corporation (WDC). In this intervention, SHG-based federations were very actively involved right from the stage of concept-sharing to preparing the list of interested farmers. Because most of the farmers were already members of the SHGs, it resulted in the smooth implementation of the process. The other uniqueness in the BASIX model was that it was a fee-based model. The farmers paid a small fee to receive extension services. This was designed with the objective of making the programme sustainable as well of developing ownership amongst the farmers. Village Resource Persons (VRPs) were identified and selected by SHG members and these VRPs took responsibility for smooth implementation of the programme. BASIX took the responsibility of training, hand-holding, providing technical support and linkages and motivating the farmers whereas the SHG federations took care of implementation-related tasks such as registration of farmers, identification and selection of the VRPs, implementation of Package of Practices (POP), facilitation of the community nursery and production of vermi-compost.

PRADAN and BRLPS jointly started the pilot project in 2007–08. At the field level, the

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pilot project yielded wonderful results. Almost all the farmers recorded a very significant incremental yield and, hence, it was decided to introduce SRI at a much larger level. A cadre of village level staff was selected and trained to provide rigorous extension services. Eighty-one

VRPs were identified that year and given four rounds of training by PRADAN on various aspects of SRI. Communication media such as audio-visuals, flex charts and boards were used by experienced SRI farmers. Based on their skills and abilities, VRPs were given the responsibility of providing services to 30 to 120 farmers.

Through a differential payment structure, VRPs were encouraged, through special incentives to include more farmers belonging to the Scheduled Castes (SCs), the Scheduled Tribes (STs) the landless and the marginal farmers. The incentive for bringing in farmers from the general category was Rs 20 per month per household; from the backward castes it was Rs 25 and from the socially disadvantaged sections it was Rs 35. Almost 5,146 farmers practised SRI in their fields, covering a total of 544 ha.

Unfortunately, there was a 45-day-long spell of drought during the critical panicle stage of paddy cultivation in Gaya. In spite of this, the average yield through SRI was recorded as high as 7–10 tonnes per ha. The highest yield recorded was 19.25 tonnes per ha.

This year, another action research and study was initiated on wheat productivity enhancement through the System of Wheat Intensification with around 400 farmers in Nalanda, Gaya and Purulia. To increase awareness, three cluster *adhiveshans* were organized in Chero, Dobhi and Jhikatiya in

Gaya district in which more than 500 SRI farmers participated. The farmers with the highest productivity were awarded certificates. Events such as these resulted in increasing awareness about SRI. The Project Director, ATMA, and the Block Agriculture Officer also participated in these *adhiveshans*. To create further awareness about the SRI methodology, wall writing was carried out in 40 villages of these clusters. This also resulted in a demand from other BRLPS districts such as Muzaffarpur and Madhubani. The foundation work for the intervention in newer districts started this year, in 2013, and the process of identification and training of VRPs has begun.

The last three years have been very successful in creating awareness and a positive impact at all levels in the state. Besides the farmers, other stakeholders such as agriculture scientists, research organizations, policy makers and the government machinery are all convinced and confident of taking SRI forward in a big way. BRLPS, the agriculture department, CSOs such as Action for Social Advancement (ASA), and PRADAN all took a big jump in up-scaling SRI. Three districts under Kosi region were also included in the programme. Table 1 explains the growth in the scale of SRI cultivation into other pockets of Bihar. The number of households could have easily crossed 1,30,000 and the area could have been more than 12,000 ha had it been a normal rainfall year. Due to the deviation in rainfall, especially at the time of nursery preparation and transplantation, some of the members who had initially shown interest, at the time of micro-planning, dropped out.

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## **Interventions by the State Agricultural Department**

Till 2010–11, the government supported the various SRI-based interventions initiated by BRLPS in Bihar through the Agriculture department. In 2011–12, the government decided to engage the Agriculture department directly in SRI promotion by engaging district- and block-level officials to take up SRI in 3.50 lakh ha in Bihar, which was roughly 10 per cent of the area under paddy cultivation. SRI, as

a tool of improved paddy cultivation, became one of the favourite projects of Chief Minister Nitish Kumar and he took a very keen interest in spreading it. He launched the SRI Kranti on 27 January 2011. It was also decided to use SRI cultivation in 10 per cent area of the paddy cultivated and to engage agencies such as Krishi Vigyan Kendra (KVK), ATMA and BRLPS in the best possible way. One of the major components under this project was the formation of demonstration fields by providing 100 per cent subsidy to the farmers for one acre of land under SRI cultivation. Each of the farmers participating under this programme was provided Rs 3,000 to take care of expenses for seeds, fertilizers and other necessary inputs (Rs 1,200), to purchase organic manure (Rs 1,200), while the rest was fixed for irrigation support. To ensure that the input delivery was made on time, Block Agriculture Officers were asked to organize block-level events in which farmers would be able to purchase the inputs against reimbursements that were made to them directly.

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and the farmers had a record yield. Paddy production increased significantly and it was probably the first time that Bihar achieved recognition in paddy-based interventions among the major paddy producing states of India. All these factors resulted in building the confidence of the state government in SRI and it decided to continue with SRI for one more year. Though the final data has not been gathered, roughly another 3.5 lakh ha were brought under SRI this year. A couple of new interventions such

as block-level workshops, training of farmers and staff and separate training for *ropenhars* (labourers who work during transplantation) were also organized to make SRI more effective. Notable in government interventions has been that its role has shifted from being an input provider agency to an agriculture extension management agency. For managing such a large area of extension mechanism at the ground level, qualified agriculture professionals or subject matter specialists, have been placed at block and sub-block levels, and *kisan salahakars* at *panchayat* and village levels. These people have taken on the responsibility of input distribution and providing other operational support during the programme.

## CONCLUSIONS

In a state like Bihar, where there have been very few success stories in agricultural promotion, SRI promotion has been a very successful project. The government, NGOs and agriculture research and support institutes such as ATMA, KVK and Rajendra Agricultural University (RAU) shared and learned from each others' experience, making the programme successful. It would have been difficult to

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implement the whole project in the absence of organizations such as PRADAN and ASA, which did extensive work at the grass roots to mobilize the community and ensured proper extension support in the initial two years. The successful implementation of the SRI programme in their project districts paved the way for large-scale up-scaling. A very serious commitment and belief in the SRI technology from the government ensured a high level of up-scaling. There may be doubts or conflicts about

the level of adoption or adherence to the designed six critical practices of SRI, however, using SRI in 20 per cent of the cultivated area and making SRI a familiar word across all the districts and *panchayats* has, in itself, been a great achievement.

The importance of grass roots-based institutions: It would have been impossible to implement the project on such a large scale in the absence of community based institutions, developed as one of the key components of this project. These institutions became catalysts, and ensured inclusiveness in the project. In fact, when implementing livelihoods-based programmes of such a wide ranging level, the parallel creation of grass roots-based institutions is a pre-requisite.

The extension mechanism can also be developed from the community: Community based resource persons play the role of catalysts in ensuring the successful implementation of the project. Since its inception, the focus of the programme was to develop resource persons from the community, who were also farmers, This increased the confidence level of the farmers, who were initially hesitant to participate in the programme. Apart from being

able to communicate more effectively because they belonged to the same community, the commitment level of these resource persons was of a higher degree.

Hand-holding at every level is a must: One of the most important features of this project was the end-to-end hand-holding of farmers. Members from BRLPS were involved in the process from the stages of demand generation to the yield measurement. Even in times of adverse agro-climatic conditions, the presence of BRLPS yielded better results.

Small and marginal farmers can also be leaders: Usually, it is assumed that big and advanced farmers are the early adopters, and small and marginal farmers are followers of any new agricultural practice. The successful intervention of this model changed this perception.

Innovations are the key: Under this model, there were innovations such as paying more incentives to VRPs for covering farmers from the marginal sections; the involvement of women in all the processes; supplementing households through a range of services that have been instrumental in the great success of this project.

Non-input driven interventions can also be successful: Input distribution is one of the key components in most of the government-driven agriculture programmes. Though input subsidy was an important component under the Agriculture department's SRI promotion programme, in other models such as the one promoted by PRADAN/BRLPS, input distribution was at never in focus at any stage; yet, there have been very positive results. The entire focus of the project was on process improvement than on input improvement.

Communication is must: During the whole intervention process, the traditional medium of communication such as wall paintings

and posters at critical locations was used, with a special focus on the improvement of practices. Exposure visits and the concept of demonstration plots were also used extensively. In addition to these, novel concepts such as SRI *jhankis*, SRI songs, and SRI sarees contributed to creating awareness and encouraging participation. The events related to SRI helped in making SRI a very popular name among the farmers. In fact, it can be inferred that irrespective of the number of farmers and area under cultivation, SRI, as a process of paddy cultivation, has received high visibility. To summarize, therefore, SRI has become a successful methodology in Bihar and it needs to be maintained and made stronger through conscious efforts.

## LIMITATIONS AND CHALLENGES

The journey of SRI in Bihar, beginning 2007, can be considered to be fairly successful in terms of scale; however, there are many areas which require improvement, in order to bring about greater impact and meaning for the larger populace of the state. Mentioned here are a few limitations of SRI intervention by different agencies.

Making SRI all-inclusive: The SRI programme, implemented by the Agriculture department, seems to be biased towards big farmers. The selection criteria, in terms of location and size of land, were designed in such a way that small and marginal farmers were neglected and excluded. Though there was reservation for the socially backward communities, women, etc., in the programme design at the ground level, the beneficiaries were only from those groups that had certain access to block and other government offices.

No focus on share croppers: Most of the farmers, currently cultivating paddy, do it on a share cropping basis, with no formal agreements. A large number of the actual

cultivators, therefore, are excluded from the programme.

Up-scaling by CSOs: CSOs made a very conscious effort to bring in the maximum number of beneficiaries from socially marginalized groups. Despite having many reputed NGOs (PRADAN, ASA, AKRSP, BASIX, etc.) working at the grass roots, the number of beneficiaries of SRI is not up to the desired level.

The state needs to make a conscious effort, to engage reputed CSOs as much as possible. This will help CSOs get support with full commitment as well as a cadre of committed staff that has good working knowledge and experience of SRI.

Input focus on SRI as well other programmes: There are many schemes that focus on input distribution such as seeds, fertilizers and others. Even in SRI, the input distribution is a key component. Though input distribution can be a useful intervention, it should not be run parallel to SRI. The challenges related to a biased selection will also be eliminated if the value of inputs is reduced. The same resources, in terms of critical irrigation support that is the backbone of paddy cultivation, can be channelized, to cover a larger number of farmers.

Less focus on customizing implements: Despite organizing an intervention on such a large scale, getting an effective weeder, so essential for SRI cultivation, is still a challenge. There is need for special efforts from the technical agencies to design a proper weeder.

Capacity building of staff at cutting edge: The skills of *kisan salahakars*, regarding the technical aspects of paddy cultivation, need to be improved. The staff working at the ground

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level should be capable of offering instant solutions to farmers, whenever required. In addition, there is need for orientation programmes for subject matter specialists so that they can be sensitized about issues related to the empowerment of farmers.

## CHHATTISGARH

In a state where the majority of the population is dependent on paddy for its year-round food security, augmenting the paddy production in terms of yield, as well as area under the crop, can take the state a long way towards food sufficiency. By 2008, it was established from field experiences that SRI has the potential to improve the yield of paddy crop by 25–50 per cent. In 2008, PRADAN, in collaboration with 11 other NGOs, carried out field trials of SRI with 800 families on 80 ha of land. This marked the beginning of SRI intervention in the state, with the SDTT-PRADAN partnership. It was designed for three years, with the objective of reaching out to 16,000 families during the three years of the programme. The intervention aimed at having 100 per cent family coverage in the programme villages and achieve up to six tonnes per ha productivity. It aimed to involve various stakeholders in the process of implementation, to bring vibrancy to the programme. It also aimed at mobilizing the community to plan at the *gram panchayat* level, based on farmers' needs and converge it with other ongoing programmes. It also introduced a weeder subsidy on a larger scale, to promote weeding activity.

This project proposes to spread SRI knowledge to about 16,000 families, covering about 340 villages in 11 districts across three regions. The project envisages enhancing paddy productivity by 75–100 per cent—from the



level of two or three tonnes per hectare and ensuring year-round food sufficiency for participating families.

### Initiatives by Various Stakeholders

The positive experiences of SRI under the SDTT-PRADAN partnership led to the formation of a state-level forum, popularly known as 'SRI Manch'. Each CSO deputed a person, who had anchored the SRI programme, to the forum. All the members meet bi-monthly to review progress, discuss upcoming challenges and possible solutions in meetings. Together, they make future plans for SRI, in their respective districts, meet state officials to discuss plans for the convergence of the SRI programme with other developmental schemes of the government. This forum regularly organizes SRI *adhiveshans*, *kisan melas* and workshops to share, build capacity of farmers and generate awareness in the state. State officials, researchers and progressive farmers were encouraged to popularize SRI practices in the state. Last year, 27 such *adhiveshans* were organized at the *gram panchayat* and *janpad* levels.

Indira Gandhi Krishi Vishwa Vidyalaya (IGKV) played an important role in working on weeder advancement-cum-availability, as well as in providing technical help to CSOs. The weeder is popularly known as the Ambika weeder. Without the presence of the Indian Council of Agricultural Research (ICAR) in the state, very little research has been done around paddy. Hence, not much scientific information is available. The newly formed KVKs did not have proper farms yet. Therefore, their contribution is limited to participating in workshops and *kisan melas*.

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### Interventions by the state government

The Chhattisgarh government prepared a draft of an Agriculture Policy on 15 April 2012. It states that 'Socio-economic well-being ought to be a prime consideration'; the focus, therefore, is more on the economic well-being of farmers rather than just production growth. The focus of the paddy programme of the state is mainly on the following three interventions: a) Adopting SRI to enhance paddy production in the state, b) Demonstrating a second crop around paddy cultivation and c) Promoting the usage of green manure in paddy cultivation. Field visits revealed that the programme implementation team is flat in structure. Each block has one Senior Agri Development Extension Officer (SADEO) and one Rural Agri Extension Officer (RAEO) in every three or four *panchayats*, to manage the programme. In such a scenario, the timely distribution of inputs becomes the only task during the paddy season. Representatives of various NGOs shared that RAEOs leverage benefits for their farmers in lieu of helping the RAEOs meet their target easily. Hence, the task of awareness generation, mobilization, capacity building, training programmes and day-to-day hand-holding support is left to NGOs. The government staff provides the inputs to the farmers endorsed by the NGOs. This has worked in favour of the farmers, although there are reporting issues, as names are presented by NGOs in the government beneficiary list.

The other interesting development at the state level is the decentralized procurement system. The whole process has been computerized and is considered to be the most efficient



in India. When the paddy is supplied, the farmers get paid immediately by cheque. This scheme was introduced by the central government in 1997–98 in a few states, to encourage procurement and extend the benefits of minimum support price (MSP) to local farmers. This system also enhances the efficiency of the Public Distribution System (PDS) and enables the supply of food grains more suited to the local taste through the PDS. This also results in saving transportation costs of Food Corporation of India (FCI). Under this scheme, the Chhattisgarh state government undertakes the procurement of paddy on behalf of the Government of India, and also stores and distributes the food grains under PDS and other welfare schemes. The central government reimburses the entire expenditure incurred by the state on the procurement operations. The benefit is that rice is considered to be a cash crop here and with the improved paddy procurement system and immediate payment, it becomes an attractive means of livelihood.

### Interventions by NABARD

NABARD support to the SRI programme started in 2010. The SRI initiative is through 15 PIAs, covering 10 National Food Security Mission (NFSM) and five non-NFSM rice districts, reaching 240 villages and 12,658 families by *kharif* 2012. The vision is to take up SRI with 12,000 families in three years, mainly in rain-fed areas. In the northern and southern parts of the state, which is tribal dominated, paddy is grown, using the traditional variety of seeds; there is very little use of the high yielding variety (HYV) and chemical fertilizers. The strategy for productivity enhancement is through creating awareness, and organizing

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training programmes and promotional activities such as *kisan melas* and workshops.

The NABARD-supported SRI programme has two models; one is the same as across all states and the other is the Jharkhand model. In states other than Jharkhand, NABARD directly supports PIAs separately; but in Jharkhand there is a lead agency between NABARD and the PIAs.

It has two models—one is for 300 farmers and the other is for 600 farmers. This was done because of the low availability of good PIAs and also their quality of reach with the community. This model works better because it strengthens both the organization playing the role of integrator and the PIAs. The capacity building process as well as the monitoring system evolves gradually. This helps in developing an efficient MIS system. Exposure visits of lower performing PIAs are organized to the better performing ones. All the stakeholders have the opportunity to learn from each other and this layered approach helps create an environment of healthy competition.

### CONCLUSIONS

PRADAN's Programme Director, Orissa and Chhattisgarh, explained that the approach of intervention always focuses on developing skills and making the best use of land. Structural and vegetative measures are taken to make the best use of land. In low-lands, SRI is promoted to address food grain sufficiency. The up-lands are used for commercial crops. The programme takes into consideration all the farming systems, and livelihood interventions are planned around it. SRI is understood as a modified agronomic practice. It is not a technology. Its practice has been mainly NGO-

driven and as long as it remains limited to the domain of NGOs and the community, it cannot be expanded and implemented on a large scale. The schemes are generally developed only around new technology popularization. The financial resources of the government, the social resources of the NGOs and the knowledge resources of the scientific community need to be brought upon the same platform.

With timely awareness development, training, skill development, support services, availability of farm implements and credit support, the programme can go a long way. Proper selection and development of the farm implements is critical for scaling up. There has been some experimentation around the weeder and marker, but we still have not been able to settle the usability of the cono weeder, the mandwa weeder, and the rotary and hand driven markers. Technology needs to be simplified and made usable for the end user. There should be a contingency plan for establishing an extra nursery or trying out the concept of a community nursery as water resource management is critical to SRI. To maintain the soil structure, perhaps organic farming could be introduced. For the timely availability during cultivation, green manure and vermi-compost production could be encouraged.

## JHARKHAND

The agriculture of Jharkhand is a paddy driven one and the livelihood of most of its population depends upon the performance of its paddy crop. It is widely seen that the paddy production determines the migration status of a household. The total cultivable area of the state is 38 lakh ha, of which the net sown area is 18.04 lakh ha. The area under rice cultivation

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varies from 1.3 to 1.6 million ha and production is between two to three million MT.

## Interventions by Various Agencies

In Jharkhand, CSOs have been the leaders in implementing SRI. The extension services provided by CSOs have been far more than those by agricultural research agencies or the government machinery. Organizations such as Collectives for Integrated Livelihood Initiatives (CINI) and the Society for the Promotion of Wastelands Development (SPWD) have played a prominent role in facilitating the spread of SRI techniques across the state whereas the contribution of organizations such as PRADAN and NEEDS has been phenomenal in bringing SRI to the grass roots. Support from agencies such as SDTT and NABARD has also provided a great impetus to the spread of SRI. PRADAN's contribution has been the most instrumental in bringing SRI to Jharkhand. PRADAN has proved that proper extension support can create wonders for small and marginal households. Livelihood promotion for the poor households has always been the key focus area for PRADAN.

PRADAN has already been making systematic efforts to promote rain-fed paddy by introducing an improved package of practices. During the process, PRADAN has developed a robust model of rain-fed paddy cultivation for small and marginal farmers across several districts in Jharkhand. In 2002–03 PRADAN realized that using SRI could help achieve food security. After its successful trial in Purulia, it decided to spread SRI through most of its teams in Jharkhand because both the socio-economic as well the geographical conditions were identical. In 2004, most of the teams in Jharkhand agreed to experiment with their normal *kharif* crops. In 2005, paddy by the

SRI method was made a major focus area and by 2006 the number of households crossed 5,000 in Jharkhand and kept increasing year after year. By 2008, the number of households using SRI had reached 16,000 and crossed 20,000 by 2010. At present, the number of households that have adopted SRI has already crossed 40,000. Apart from this, PRADAN has also helped other NGOs in Jharkhand to spread SRI, in partnership with NABARD, CInI, etc.

**Non-monetary intervention:** The most notable point under SRI promotion was that all the support provided to the farmers was non-monetary in nature. The farmers paid for all the inputs used in the field. In most cases, a group of five or six farmers got together and purchased a weeder for the group. This proves that for a technology such as SRI, input support is less critical than other support.

**Quality human resource at the field level:** Placing quality professionals at the grass roots has always been the guiding philosophy of PRADAN. Unlike the other structures in which usually less qualified staff is placed at the implementation level, PRADAN ensures that qualified professionals are always available with the farmers in their fields. This not only helps farmers to adopt better practices in the field but also increases their confidence at every stage, especially during a period of crisis.

**Use of service providers:** Every hamlet or village had at least one service provider (SP), who had been given the necessary training. These SPs were farmers from the community. Under the leadership of the SPs, the task of implementation became much easier. Within a period of two to three years, these SPs became an integral part in up-scaling SRI.

**Communication is the key:** When promoting SRI, proper awareness was created by using both traditional and modern methods. Demonstration plots were also prepared with

some of the progressive farmers, helping build the confidence of other farmers. Other mediums such as charts, flex boards and posters were very effectively used. Using the concept of 'Seeing is believing,' an SRI-based movie was prepared and shown to the farmers.

**Training:** Direct capacity building of the community is one of the key characteristics of PRADAN's intervention. Various training programmes such as for SHG leaders, SPs and both husbands and wives, prior to nursery raising, prior to transplantation and, more importantly, at the time of transplantation in the field ensured maximum technology transfer to the farmers.

**Making SRI practical and contextual:** Following all the parameters of SRI was difficult in the context of the agro-climatic conditions of Jharkhand. Hence, based on the local conditions, as required, some customization of SRI was done. Chemical fertilizers were also used to get the maximum yields. The focus was on training farmers for better and more disciplined agriculture practices. This made the technology much more user friendly and farmers became accustomed to it very soon.

CInI has been promoted by Shri Ratan Tata Trust (SRTT), to work as a nodal agency for promoting and strengthening the central India initiative of the Trust. It is one of the main organizations working to spread SRI, in collaboration with partner organizations through various types of support. Since 2007, CInI has been working in the direction of increasing the food security of poor households in central India. Rain-fed paddy cultivation is considered to be the lifeline for more than 80 per cent of the poor households in Jharkhand because their whole year's food security depends upon the yield of paddy during the *kharif* season. Keeping this in focus, CInI started the Kharif Paddy Stabilization (KPS) programme, in which SRI was one of the main areas of focus.

SPWD, a national-level NGO, has been playing a catalytic role in reversing the process of degradation of land and other related natural resources, in partnership with other NGOs and grass-roots institutions. During the last 25 years of its existence, SPWD has worked in collaborative projects with over 80 local voluntary agencies, across 17 states, in 11 agro-climatic zones of India.

*In Jharkhand, the government is undertaking many initiatives for the development of agriculture for all crops, including paddy. Unfortunately, most of the schemes for the development of paddy cultivation are more input-driven than process-driven.*

Since the last two-and-a-half decades, NABARD has been directly or indirectly influencing farmers to adopt technologies that improve crop productivity. Initially, the focus of NABARD was on fulfilling the capital needs of farmers; gradually, it felt that the extension of new technologies to the farmers was equally important. In Jharkhand, SRI became one of the thrust areas because it helps small and marginal farmers increase the production of rice at a lower cost through a balanced use of seed, water and fertilizer. Prior to 2009–10, a number of CSOs, with support from SDTT and other agencies had already introduced SRI at the farm level and farmers were getting good results. Organizations such as PRADAN believed that technology should be spread across all of Jharkhand. Fortunately, M.V. Ashok, who was the CGM of NABARD's Jharkhand office at that time, was very impressed and convinced with the output of SRI at the field level and hence decided to support SRI in Jharkhand. PRADAN, prepared a detailed plan for the implementation of SRI, to which NABARD agreed. With the objective of promoting SRI technology in paddy among the maximum number of farmers in Jharkhand, NABARD initiated a grant-based pilot project in Jharkhand, using the services of 52 experienced NGOs, covering 21 districts across the state. The project was targeted to

cover 29,406 farmers, covering 7,456 acres of paddy land with a grant support of Rs 495 lakhs for two years—2010 and 2011, commencing from the *kharif* season of 2010.

### **Interventions by the State Government**

In Jharkhand, the government is undertaking many initiatives for the development of agriculture for all crops, including paddy.

Unfortunately, most of the schemes for the development of paddy cultivation are more input driven than process driven. The government has appointed agricultural specialists at the block level such as Block Technology Managers (BTM) and SMSs, who are qualified agricultural professionals to look after the proper implementation of various agricultural extension schemes. Their presence has brought the desired efficiency in the delivery mechanism but their role in the area of extension and transfer of process-driven technology has not been adequate. Currently, the government is administering a number of programmes for agriculture development under schemes such as the National Food Security Mission, Rashtriya Krishi Vikas Yojna and Bringing Green Revolution to Eastern India (BGREI) in the state. SRI has been made a component in all these schemes. At present, the farmers can avail a subsidy of 50 per cent for purchasing a weeder. The government is already working on seed replacements by promoting hybrid varieties and certified seeds. Last year, more than 8,000 MT of seeds of paddy were distributed in the *kharif* season.

The government has started incentive-driven schemes for farmers whereby farmers as well the extension machinery (NGOs and others)

get an incentive for promoting SRI at the field level. The farmers get Rs 1,000 per ha for using SRI whereas supporting NGOs get a sum of Rs 250 per ha.

ATMA and KVK have been the main agencies taking care of demonstration work at the field level. Though ambitious targets were fixed in 2011–12 and 2012–13 for the promotion of SRI, so far the achievements have not been satisfactory. Even adherence to POPs was not up to the best possible extent. As per the data provided by the Agriculture department of Jharkhand, in 2011, SRI was promoted in all 24 districts of Jharkhand. In 2011, the government promoted SRI in 30,000 ha against the target of 1,62,900 ha and the number of households that participated in SRI was 53,405. As per the data provided by the respective DAOs to the state office, SRI is being promoted in 1.4 lakh ha against the target of 4.88 lakh ha.

## LEARNING

SRI in Jharkhand has been driven totally by CSOs, with very limited participation from the Agriculture department. CSOs such as PRADAN and NEEDS started their work in SRI from the very start of when SRI was initiated in the region. Apart from the direct promoting institutions, support from agencies such as CInI, SPWD, SDTT and NABARD also helped in a big way. Mentioned below are a few important lessons from Jharkhand regarding the promotion of SRI.

The presence of quality CSOs can make a great impact: PRADAN has been one of the front runners in spreading SRI at the grass roots. It started its work for SRI promotion in Jharkhand in 2004. Due to its experience and quality human skills, PRADAN not only successfully promoted SRI but also acted as a resource agency for other CSOs as well. PRADAN professionals are not only highly

qualified but also very committed. They helped many CSOs in various aspects of SRI promotion. CSOs such as the SPDW and NEEDS also did commendable work in capacity building of other CSOs.

**Benefits of working together:** In Jharkhand, there have been two or three very successful examples of the hub-and-spoke model wherein there is a main organization at the centre with better expertise and experience, which takes responsibility for guiding other organizations mapped around it. Under this model, the task of bringing SRI to newer areas becomes much easier and the replication is very smooth.

**Perseverance pays:** In terms of adoption of modern agricultural practices, Jharkhand is one of the most backward states. Paddy cultivation by transplantation in itself has been a delayed phenomenon. It was the sheer commitment and perseverance of promoting agencies, and their continuous support and hand-holding that ensured its spread.

**Long term commitment:** The practice of technology such as SRI requires behavioural changes. For making such a practice a part of the farmers' routine requires hand-holding for at least three to four years. There are many places and pockets of Jharkhand, where small and marginal farmers are continuing with SRI despite the fact that the promoting organizations have withdrawn from the area.

**Input support is just a myth:** Input subsidy or support is given a lot of importance in the agriculture promotion programme; however, in almost all the successful models of SRI promotion in Jharkhand, there has been very little support in the form of input subsidy. There can be no substitute for quality extension services in agricultural promotion schemes. If at all some subsidy or grant has to be given, it must be in the form of critical irrigation or

for the purchase of some implements such as weeders.

Large acceptance: The SRI programme has been fairly successful even in districts such as Gumla, Khunti and Lohardaga, considered to be backward on many socio-economic parameters. Traditionally, these districts were more known for their primitive way of agriculture but SRI has broken that myth. Most of the tribal dominated districts have followed SRI rigorously.

NABARD Model: NABARD has been involved for many years in the promotion of SRI in many states, with their own model. In Jharkhand, the model which was being followed in 2010–12 by PRADAN was found to be the most effective in terms of its impact as well as its cost effectiveness. It was a perfect case of synergy where all non-government stakeholders came together and worked continuously for two years to make the SRI pilot project one of the most successful ones.

## CONCLUSION

The government provides an incentive of Rs 1,000 to farmers and Rs 200 to the promoting organizations for every hectare adopting the SRI method. It was difficult to understand the rationale behind fixing such a small amount of incentive for SRI. For a programme such as SRI, a good extension support would be much more beneficial than any amount of incentive. Either there should be no incentive or the incentive needs to be increased. Most of the farmers in Jharkhand do not go for one full hectare of paddy cultivation in the *kharif* season and so the incentive of Rs 1,000 per hectare becomes immaterial for them. Even the most adventurous of the farmers set aside a maximum of one or two acres for SRI. In such scenario, the incentive to farmers as well to the promoting institutions is almost

negligible. The payment in installments makes the situation even worse.

Presumably, participation of the private sector brings efficiency; probably this is one of the reasons that input-oriented programmes are more successful. The push from the input supplying companies, due to their commercial interests, makes these programmes successful. SRI is criticized because it does not suit the commercial interests of the companies that are involved in input supply. In the words of a representative from the SPWD, “SRI represented the second Green Revolution.” However, it was at a disadvantage because it was knowledge-based and not input-based. Seed varieties (hybrids) and fertilizers are prioritized ahead of SRI in extension efforts, he says, “SRI is in the third place, when it should be in the first place.”

SRI is a knowledge-based technology and hence requires a totally different approach. Most of the implementing agencies treat SRI as an activity technology with too much focus on activity. A PRADAN professional says, “To bring sustainability into SRI, one needs to understand the context of the household. Dimensions such as food security, labour availability, migration pattern of the households and cash-flow status need to be taken into account at the time of planning. These factors will result in a pull factor, bringing sustainability into the programme.”

In the context of SRI, the field-level implementation has puzzled research agencies. Most of the research agencies focus their attention on input-related factors such as the variety of seeds and the usage of inputs. SRI is a totally process-driven intervention; the level of trust between the research agencies and the implementing agencies is somehow sadly lacking. Research agencies need to be more receptive to promoting agencies in the

context of SRI. In Jharkhand, the synergy between government departments and CSOs needs to be improved. To bring scalability to this programme, people in the government machinery need to be more sensitized.

## ODISHA

SRI practices reached farmers' doorsteps in early 2003, thanks to the efforts of CSOs engaged in the promotion of agriculture-based livelihoods. PRADAN, SAMBHAV, Sahabhazi Vikash Abhiyan (SVA) and Centre for World Solidarity (CWS) are a few names commonly heard in the context of SRI in Odisha. PRADAN was among the early starters in the state in 2003, with their presence in Mayurbhanj district. But its programme did not pick up until 2005 due to low awareness levels and the lack of confidence among the farmers about SRI practices. The introduction of SRI, however, has been location specific and restricted to a few areas due to the lack of funding support in the early days. SVA got leads from South India that encouraged them to conduct SRI trials even with limited knowledge and resources. The Regional Centre for Development Cooperation (RCDC) of Bhubaneswar prepared a booklet on SRI principles in 2006. CWS organized an awareness workshop for its partners the same year. In early 2007, SVA published an SRI manual in Oriya. By then, SRI had reached several districts, and promoting organizations were experienced enough to share their knowledge. In April, an experience sharing workshop was organized at SAMBAV. SRI initiatives were being noticed by various stakeholders that led to organizing of first state-level SRI dialogue on the 23 June 2007 during which the innovative concept of

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'Learning Alliances' was born. Dr. Radhamohan, then the Information Commissioner of Odisha, shared facts about SRI with the then Agriculture Director, Dr. Arvind Padhi, who later became interested in promoting SRI through government schemes. This unique platform of Learning Alliances not only linked knowledge sharing but also brought in funding support. SDTT and NABARD came together with committed funds for capacity building, along with

programme support that led to a growth of SRI programme in the state. SDTT was successful in roping in the state government funding support and Rs 3 crores was sanctioned for the promotion of SRI in the state through the SRI partners of SDTT. The programme has been taken up by ATMA in convergence with the state Plan and RKVY.

## Initiatives of the Various Agencies

The Government of Odisha has initiated several programmes to improve the agriculture scenario of the state. The Department of Agriculture is promoting new varieties of HYV/Hybrid seeds. Its objective is to increase the seed replacement ratio and fertilizer consumption. The other agendas of the programme are to implement integrated nutrient management and pest management, farm mechanization, water management, post-harvest management of Agri-produce, etc., in the state.

NABARD is one of the key players promoting SRI in the state. The strategies it employs are to focus more on small and marginal farmers involving the necessary capacity building, hand-holding through on-site technical



guidance, and credit and financial support. Taking these aspects into consideration and through discussions with SDTT and other implementing NGOs such as WASSAN and PRADAN, NABARD has worked out a model for including 560 farmers, covering an area of about 192 ha, spread over 16 villages, in the next three years, 2013–16.

In 2010, PRADAN received a sanction of four units for two blocks each in Mayurbhanj and Keonjhar districts. The money is released as per the number of farmers mobilized. The following are the achievements of the plan, based upon which the money is released. Reasons for variance: in Keonjhar, delayed rains and the delay in sanction are the main reasons for the variance, whereas in Mayurbhanj, the year has been declared as a paddy drought year. Most of the families participated as far as the nursery raising stage but could not transplant because of insufficient rain.

CWS started their SRI programme with an orientation workshop for partners in 2005. The workshop included a theory session that discussed the chronology of SRI, the rationale and the principles to be followed. This was followed by a training-cum-demonstration programme on SRI in 2006. This programme gave the participants hands-on experience on land preparation, bed for nursery, manuring and other processes in detail. These two initiatives set the ground for popularizing the SRI programme. The other notable initiative by them was the state-level dialogue 'Odisha State Dialogue in SRI' with XIMB, WWF, Oxfam and the Department of Agriculture, Government of Odisha in 2007.

## CONCLUSIONS

The SRI programme of the state has been successful in terms of awareness generation, input supply and adaptation of line sowing

by farmers. There are a few interesting cases, which can give direction to large-scale programmes. Two of these are the Odisha Community Tank Management Project (OCTMP) and Pragati. Line sowing and weeding operations have helped in increasing paddy production. These are the only two visible methodologies being followed in the field. The farmers acknowledged that SRI practices are easily doable and scalable. The government machinery has been actively engaged for the successful implementation of the programme. Except one instance of large-scale partnership with SDTT, there was no other collaboration with any CSO. They have preferred to do it themselves. The field staff, however, co-ordinates informally with the CSO staff to identify farmers, plots and for other day-to-day support.

The SRI programme gradually shifted its focus to increasing the per capita productivity with extensive usage of technology and mechanization because of the large-scale implementation of the Bringing Green Revolution into Eastern India (BGREI) programme.

1. With increasing focus on inputs supply, private companies have found it an opportunity to do large-scale business with the government.
2. SRI principles are about issues of acceptance, not labour or cost. So, radical thoughts of outsourcing the nursery preparation and transplantations need to be well researched, and discussed before trying them out. The government needs to explore the outsourcing of the village development plans or SRI plans to CSOs engaged with the community for many years. The control over quality seeds, the availability of green manure and pest management are the three major concerns of the farmers. These issues need to be

addressed through various interventions with SAMBAV, PRADAN, PRAGATI, etc.

3. A large number of small farmers are share croppers; therefore, it is not always possible for them to adopt the whole package of practices due to less say in the matter or pressure to follow the conventional practices.
4. Big farmers should be brought under the SRI programme to make the programme sustainable. Just by input subsidy, HYV seeds and easy availability of credit, the required discipline in the farming practice will not be possible. SRI should not be seen as an activity only. There is a need to shift from 'activity focus' to 'productivity focus' because the former is always short term and ends with the crop cycle whereas the latter has a long-term focus and will help build a long-term relationship among the actors to empower the beneficiary.
5. CSOs play an important role in creating awareness about the SRI programme in all districts, with or without the support from the government or the funding agency. Initiatives such as Learning Alliances will continue to help in learning and adopting progressive practices and unlearning outdated ones, thereby strengthening the SRI programme in the state.
6. Strengthening the farmers' knowledge through the KVKs, making available progressive farming practices and knowledgeable resources at the field level should be on the priority list. At present, this is missing on the agenda. The process

*The farmers have received information about SRI from their respective promoting agencies with varied levels of treatment, which has resulted in different perceptions, depending upon the quality of the extension and other services. In all these processes, there has been hardly any focus on the empowerment of farmers, which is required in order to make SRI internal to the farmers*

needs to be simplified and the technology made usable for everyone.

7. Very little support is available to the farmers during pest attacks. All recruits at CSOs as well as the government should be compulsorily trained through a basic certificate course on food grains. The course can be designed by the State Agriculture University. More investment is required on knowledge building of manpower.

The field study was conducted across four states namely Bihar, Chhattisgarh, Jharkhand and Odisha. During the field visits, we interacted with various stakeholders such as the farmers, the CSOs, other implementing agencies, supporting organizations, the Agriculture departments and government-promoted institutions such as ATMA, KVK, and research institutions such as agricultural universities. The purpose of these meetings was to understand their views over critical issues in the context of SRI. The aim was to develop a better understanding about the reasons for promoting SRI, understanding the various delivery models and extension services, understanding the approach of transfer of resources and technology, the way forward, etc. There are many stakeholders promoting SRI, each with different objectives and following different approaches, as reflected in the reasons for the adoption of SRI at the farmers' level. All the stakeholders—the government, CSOs, NABARD, research institutions (agriculture universities) and even the farmers—are very convinced about the benefits of SRI. But the responses from all these stakeholders have been in great variance from one state to the other and from one

intervention design to another. The government in the states of Odisha and Bihar are promoting SRI as a tool for increasing the paddy output in their states and are treating it as one of their agricultural activities. CSOs are treating it as a tool for food security, which has helped them in mobilizing the community but which poses challenges in up scaling. The role of research agencies has been so far passive in the context of SRI and most of their steps have been reactive. The farmers have received information about SRI from their respective promoting agencies with varied levels of treatment, which has resulted in different perceptions, depending upon the quality of the extension and other services. In all these processes, there has been hardly any focus on the empowerment of farmers, which is required in order to make SRI internal to the farmers.

SRI or any other agriculture programme can only be considered successful if it has been internalized by the farmers and this can be achieved only when we make our intervention family-focused rather than activity-focused. There is need to understand the context of the household, the farmer's resources, limitations and readiness about accepting any new technology. This can only happen by empowering farmers. In all the interventions by and large, external agencies treat the farmers only as recipients of the services rather than partners in the implementation process.

The spread of SRI has been mainly due to the interventions by governments and CSOs. CSOs or government agencies have pushed SRI at the ground level through different approaches. The strategies adopted by agencies have helped in creating awareness at

*The spread of SRI has been mainly due to interventions by governments and CSOs. CSOs or government agencies have pushed SRI at the ground level through different approaches. The strategies adopted by agencies have helped in creating awareness at the ground level*

the ground level. Many farmers have been very successful in achieving a higher level of food security, resulting in better quality of living. The initiatives of CSOs have ensured a much better livelihood scenario for small and marginal farmers in tribal-dominated pockets of Jharkhand, Odisha and Chhattisgarh, for both of which paddy cultivation is a must for survival. Due to the efforts of the government through its

Agriculture department and Jeevika (BRLPS), Bihar has received great recognition in paddy cultivation at the national and international levels. The number of farmers practising SRI—in hundreds until five years ago—is now in lakhs. Yet, the state has a long way to go. Even if we put all the numbers together, not even 10 per cent of the farmers are practising SRI, neither is it being grown in even 10 per cent of the total area under cultivation. Following are a couple of notable points gathered during interactions with various stakeholders.

### **Proposed SRI Up-scaling Model**

Despite having fewer resources and input subsidy, CSOs have been very successful in spreading SRI. The focus on the household and ensuring empowerment has been the main reason for this. Based on the analysis of various implementation models—operational and field—a sustainable way of up-scaling SRI has been proposed.

A large number of parallel programmes are operational at the field level, which have different objectives. Prior to starting interventions, various government departments and agencies need to merge their programmes and schemes that are operational in any particular area or cluster. Once this has

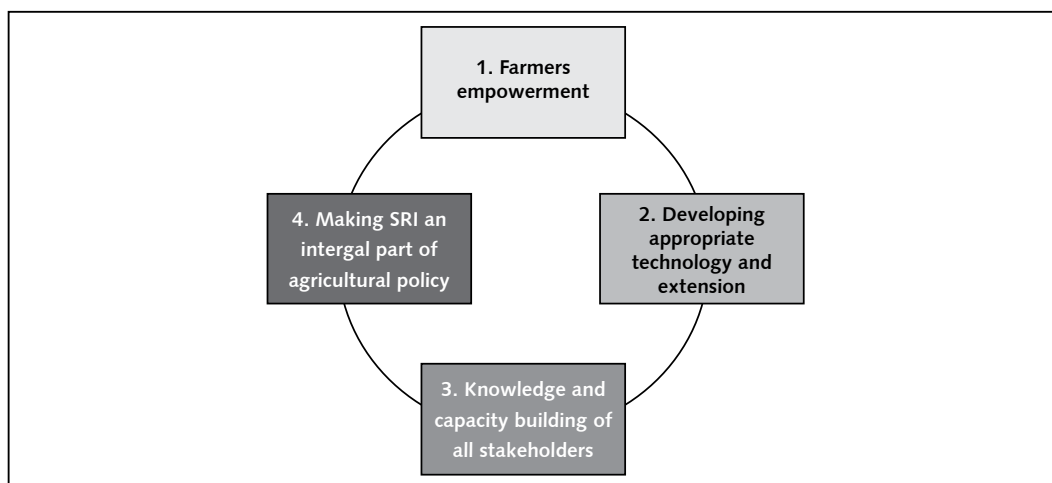
been done, programmes need to be designed as per the socio-economic and geographical conditions. The implementing agencies, with support from community based institutions such as *panchayats*, *gram sabhas* and SHGs should conduct a proper resource mapping. Based on the context of the household and the availability of resources, different programmes can be linked to different households. For example, small and marginal farmers can be engaged in those programmes where risks are lower.

All the common resources, either natural or created, need to be managed and maintained by the community themselves. In future, if the government or other supporting agencies are introducing any asset development programme, minimum exclusion needs to be ensured. In agriculture-based interventions, extension services are the key to the effectiveness of such programmes. There is need to design appropriate extension services that can be effective in the local context. Some of the technologies such as markers and weeders need to be made more customized as

per the soil quality of the area.

Policy makers and other stakeholders designing the programme need to be more sensitive to the needs of the households and a support area has to be designed by keeping the criticality of the intervention in mind. For example, a small support in terms of critical irrigation can be more effective than providing the farmer with inputs, implements or cash incentives.

Interactions with all the stakeholders revealed that farmers' empowerment should be at the core of all interventions. This has to be followed by the development of an appropriate technology, which can be supported through the local extension systems. These should be backed by knowledgeable and skillful staff, extension workers and CSOs, all working towards the stated vision. At the same time, at the macro level, SRI has to be given greater attention by the policy makers when framing agricultural policies, and the necessary resources have to be dedicated to it through various programmes.



**Suggested Model for Up-scaling SRI Programme**