

A man with dark curly hair, wearing a blue patterned t-shirt and pink shorts, is working in a lush green rice field. He is using a traditional hand tool, possibly a weeder or a similar implement, to tend to the rice plants. The field is filled with tall, vibrant green rice stalks, and the background shows more of the field under bright, natural light.

# Enhancing employment and sustaining production

*Framework for Integration of System  
of Rice Intensification (SRI)  
with Mahatma Gandhi National Rural  
Employment Guarantee Scheme  
(MGNREGS)*

**NATIONAL CONSORTIUM ON SRI  
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This framework has evolved through a consultation process drawing from wide ranging experiences of several organizations across the country.

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# Framework for Integration of System of Rice Intensification (SRI) with Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)



## 1. Background

The spread of rice cultivation ranges from intensive irrigated, surplus producing areas to rainfed areas under subsistence farming. Barring surplus-producing areas, rice cultivation provides household food security for predominantly small, marginal and tribal farmers.

Increasing soil fatigue, degradation and excessive usage of precious water (surface and ground) have become major areas of concern at regional levels, while stagnant rice production and intensive use of natural resources, particularly of water have become a concern for sustainable national food security.

SRI emerged in this context as a potential alternative promising yield enhancement with over 30 per cent savings in water, more than 75 per cent savings in seed and improvement in soil quality and soil biota. Transition to SRI helps in addressing the issues of resource degradation in rice production systems, saves precious surface and ground water, and at the same time, helps in enhancing household and national level food production. MGNREGS can potentially help in catalysing this transition of rice production systems to SRI by enabling wage workers to learn new skills and adapt to new methods.

This note lays out a framework for supporting SRI under MGNREGS and is intended for evolving a programmatic action. It draws insights from field experiences across the country in compiling the options and the framework.

## 2. System of Rice Intensification (SRI)

SRI involves change in the agronomic methods in transplanting early (8-14 days old / two leaves stage), single seedlings in a square method followed by practising alternate wetting and drying irrigation and mechanical weeding. This involves new skills both for farmers and labour, whereby timeliness of the operations is extremely crucial. Transition to SRI necessitates readjustments in the way farm operations are carried by farmers/ labour, which makes a case for its consideration under MGNREGS. A number of tangible benefits attract farmers' attention and acceptance of SRI practices across the country.

## 3. Support Requirements in SRI

SRI involves changes in the management system in rice production mainly in the following areas:

### 1. Transplantation:

SRI involves single and young seedlings transplanted in wider / square spacing in place of aged seedlings transplanted in bunches at random spacing in the conventional system. Transplanting in general is a women-dominated operation. Shift to SRI necessitates changes in skill base and operations. It increases productivity of women labour (by at least 20 per cent) with practice. Transplantation is done only once in a crop season involving 10 to 15 women wage days per acre in the conventional system. Compared to the conventional, it involves a marking operation with a 'marker' to lay out a square grid for transplantation.

### 2. Weeding:

SRI involves the following shifts in weeding:

- 2.1 Introduction of a mechanical weeder (for removing weeds, their incorporation into soil and for soil aeration), in place of manual weeding in the conventional system.
- 2.2 Weeding early in the season i.e. at 10, 20 and 30 days (sometimes 40 days after transplantation)
- 2.3 Use of mechanical weeder in several places is forcing a shift from women as labour (usually contracted per acre) to men; women are also operating mechanical weeders in some places.

### 3. Shift to Intensive Management:

In transiting from the normal easy methods of aged nurseries, random transplantation and inundation of the field, SRI requires timely management in terms of early and careful transplantation and timely weeding operations. This increases management intensity of operations. SRI also involves shift to 'alternate wetting and drying' in place of the convention of keeping the field in flooded condition to suppress weeds; this requires a more beneficial management system. With low or 'no-cost' for water, there is little incentive for farmers to shift to SRI on this account, though it saves about 30 per cent of irrigation water.

### 4. Promotional Issues:

- 4.1 Main bottleneck in SRI promotion is the shift in labour market and its adjustment to new methods of SRI; this requires learning new skills, gradually establishing negotiated contractual wage rates for transplantation and weeding operations. Often farmers also insist on the old wage rates or are not willing to pay the new wage rate (despite the fact that per acre costs are likely to eventually come down).
- 4.2 In the absence of organised labour use, often labourers are reluctant to come for weeding work in SRI as they do not find any incentive to take to new methods. This increases farmers' risk in taking to SRI and consequently, in several places the propensity is towards labour-displacing mechanisation.
- 4.3 Even in subsistence rice cultivation (including in rainfed situation) external labour is used in terms of paid wage labour or exchange labour or for transplanting and weeding operations.



## 4. Providing labour incentives can help SRI adoption

SRI is by nature an input-reducing and yield enhancing method of rice cultivation. Subsidies in terms of fertilisers, pesticides and seeds that are traditionally used in the promotion of technologies do not augur well in SRI promotion.

The essential requirement in SRI promotion is incentivising the farmers and labour to shift to a new paradigm of rice cultivation. The 'transaction costs of transition to SRI' involve: a) learning new labour skills; b) getting used to new management; c) reaching out to negotiated contractual wage agreements and work routines; and d) emergence of new task groups (from around 10 women joining together for weeding to about three to four men or women joining together for weeding along with as many number of mechanical weeders).

Labour incentives (not subsidies) providing for this transition can buffer the shift to a new SRI method. It is important that such a transition takes place on an area basis where the entire system adjusts to new routines in the labour markets.







## **5.1 Better Natural Resources Management for SRI**

- 5.1 Several of the practices including square grid marking and alternate wetting and drying requires leveled lands to make water uniformly spread across the field. Land leveling increases the ease of SRI practice.
- 5.2 Rice under SRI method responds well to addition of organic matter to soils.  
The practice of green manuring and green leaf manuring from lopped biomass (like Pongamia and Glyricidia) adds substantially to productivity.
- 5.3 Farm ponds help to stabilise rice cultivation in rainfed situations through harvesting runoff water for provisioning critical/ supplemental life saving irrigations.
- 5.4 Irrigation Systems Renovation to provide small quantities of water with precision and reliability than with continuous flooding.

These three NRM initiatives integrated into SRI promotion will improve productivity and contribute to sustainability of rice based farming systems.

## **6. Imperatives of MGNREGS**

- 6.1 MGNREGA is primarily a wage entitlement to labour in need of casual wage employment.
- 6.2 The MGNREGA mandates the work to be consistent with building durable assets; the scope of 'works' to be taken up under MGNREGS are bound by the NREG Act (listed in Schedule 1 of the NREGA).
- 6.3 The scope of coverage of households under MGNREGS is also limited by the Act
- 6.4 MGNREGS should build capital assets and encourage more of private investment to come into agriculture BUT, it must not replace private investment of farmers.
- 6.5 Considering MGNREGS support as 'subsidy' will have longer term implications - the scheme becoming a farmer entitlement rather than 'labour entitlement' & may have (negative) implications in the wage markets.
- 6.6 Also, it is often argued that agriculture development programmes must be funded under the agriculture sector's budget instead of loading into MGNREGS. The innovative institutional arrangements under MGNREGS can however, be used.

## **7. Framework for Supporting SRI Transition**

### **7.1 Why Support SRI?**

If a rice growing area (and farmers) transits to SRI method the following would be the major benefits:

- 1 Enhanced soil structure and productivity through addition of compost and other organic matter
- 2 Water saving production systems through enabling the transition to better management and skills. In case of a groundwater scarce area - this also results in saving groundwater (30 per cent) and savings in electricity consumed per acre of rice. If surface irrigation, savings in irrigation water leads to possibilities of expansion of irrigated area.
- 3 Saves inputs (seed, in particular, up to 70 per cent)
- 4 Soil carbon sequestration and other climate change mitigation benefits (such as reduction in methane and other GHGs)
- 5 Yield enhancement ( a minimum of 15 to 20 per cent)
- 6 Enhances labour absorption and enhancing wage labour productivity

With all these benefits, transition to SRI method enhances availability and quality of Natural Resource Assets (land and water) in the rice production systems bringing in sustainability to landscapes with rice.

## 7.2 Integration of SRI with MGNREGS

Irrespective of the source of funding (i.e. Agriculture or Water Resources or MGNREGS), the innovative institutional mechanisms established for MGNREGS can be effectively used to support transition of rice production systems to SRI. Planning for a shelf of works, organising and seeking applications for employment, assigning labour to specific works, measurement and payment of wages directly to wage labour accounts, social audit and transparency systems are well established in MGNREGS. The same system can be used for 'SRI Transition' programmes as the requirement is in terms of incentives to farmer workers/ labour to learn new skills and buffering transition to new methods.

A national level convergence programme (such as the National Programme for Transition to SRI) can be taken up jointly by Ministry of Agriculture and MGNREGS. Ideally, additional budget allocations must be made for the programme to cover all the costs of such transition comprehensively; most importantly on facilitation and knowledge development. Such a programme will complement budgets under MGNREGS.

The second option is to include the SRI programme within MGNREGS i.e. inclusion of relevant SRI 'works' within MGNREGS using its own budgets. The fit of SRI with MGNREGS could be in the objective of 'water conservation' and 'land development' - listed in Schedule (1) of the NREG Act where, improvement in soils and saving of water per ha of area converted to SRI would be the Assets created. Amending Schedule 1 of the NREG Act to include SRI tasks is another way.

In either of the options listed above, the mechanisms of integrating SRI with MGNREGS elaborated in the following can be followed.

## 7.3 Mode of Supporting SRI under MGNREGS

Extending labour support indefinitely from MGNREGS as subsidy for practice of SRI can have major negative consequences to agriculture wage markets and farming. It is also not desirable as shifting to SRI eventually reduces input costs and enhances yields. However, transition to SRI method generates many social, economic and environmentally beneficial public goods. The suggestion is to extend a wing of support for "transition to SRI" in a given timeframe and in an area identified for this purpose rather than giving labour subsidy to farmers practising SRI. It sets deliverables clearly and limits the timeframe.

## 7.4 Modalities of Support

Basic Principles:

1. Support to SRI must be in a given timeframe. It is proposed that a given farmer signing up with MGNREGS to transit to SRI will be supported with wage labour for a maximum of five seasons or 3 years (basic transition period), whichever is earlier.
2. Support labour but not the farmer as employment entitlement is the mandate of MGNREGS; this must be so even in cases where the distinction between farmer and labour is blurred i.e. a farmer will join a labour group for work under the employment guarantee scheme as labour.
3. Support to SRI (public investment) must not replace farmers' (private) investment.
4. Support only for the critical constraints i.e. transplantation, weeding and organic matter addition in SRI adoption
5. Land leveling, digging of farm ponds, repair and renovation of irrigation systems for more controlled use of water, raising biomass plants and composting are complementary works that further increases rice productivity in SRI; they can be taken up as per the normal procedures of MGNREGS, but must be integrated into the overall plan for SRI transition. These are one time physical investments and are well within the mandate of the employment guarantee scheme.





## 7.5 Mechanism of Support to SRI

1. Demarcate SRI transition area: Gram Panchayat or clusters of them or Block(s) with potential could be demarcated specially for SRI initiative. Such area demarcation would a) enable measuring the transition to SRI b) limit the support to specific time period. The scheme would be applicable only for the designated area for the specified time period envisaged for transition.
2. Identify labour for SRI and organise SRI labour/ task groups:  
As the wages are calculated on outturn basis, it would be essential to have labour organised/ arranged into groups. The following number of wage workers would be required per acre of operations in SRI.  
a) SRI Transplantation labour groups' with about eight women in a group &  
b) SRI Weeding Groups with three to four members in a group  
These numbers however, may vary from place to place.
3. Registration, training and certification of SRI labour: Gram Panchayat could open a register to enter the wage seekers willing to take to SRI tasks and set up a registration process. Any job card holder irrespective of their farmer or labour status would be eligible for this registration. Such registered labour would then be trained in SRI skills (transplantation and weeding) and a roster of trained wage workers would be maintained.
4. Arrive at Task Wage Rates for transplantation and weeding: These would be location specific and arrived at for each location based on the normal process followed under MGNREGS.
5. 'SRI Implements Pool' maintained at the Gram Panchayat: An implements pool consisting of markers and weeders would be provided and maintained under the ownership of the Gram Panchayats. The labour groups would be allowed to use them conditional to maintenance. Such pool could be established at the rate of five weeders and one marker for 10 acres (may be decided as per local practices). This supplements any weeders / markers that the farmers may purchase and will ensure work not suffering for lack of implements.
6. Train and orient the farmers on SRI method
7. SRI farmers' register: Maintain a register at the Gram Panchayat to register SRI farmers along with survey numbers of SRI plots and their willingness to shift to SRI. A small form could be filled in where details of the plot (area, date of nursery bed preparation etc.) would be recorded along with the support extended by the programme. The register would also maintain the record of farmers practising SRI (or not) over the transition period. Support would be terminated in case a farmer discontinues the practice of SRI.
8. Eligibility of the farmers: Each farmer (qualifying for support under MGNREGS) willing to try out SRI would be eligible for:  
a) One-time transplantation (i.e. only for one season)  
b) 1st weeding at 10 to 15 days after transplantation for five seasons.  
c) 2nd weeding at 20 to 30 days for five seasons.

The labour would come with the implements (weeders and markers), borrowed from the Gram Panchayat. Additional weeding, if any, would be taken up by farmers themselves.

Support would be conditional upon timeliness of operation and continued practice of SRI for the programme period. Transplantation and maximum of two mechanical weeding operations per season would be supported under the programme. The actual wage worker days per acre required would be location specific and would need to be arrived at with work-motion studies as in the normal course of determining task wage rates for MGNREGS. These rates would be decided for 1/4th, 1/2 and one acre plot sizes.

9. Assign labour groups to farmers: Before the date of transplantation, the village volunteer at the Gram Panchayat could assign specific transplantation and weeding groups to farmers against their applications. The conditionality of timely transplantation and following all principles of SRI must be ensured.





10. Mode of payment: Payments must be made directly to labour into their accounts as per the MGNREGS procedure.

- After the work is complete, the Village/ Field assistant of MGNREGA would verify the work on field, prepare muster roll and endorse the payment.
- Muster roll could be submitted to the processing office of MGNREGA payments of that particular mandal/block. A separate head could be created for SRI in the existing computer or manual system of MGNREGS.
- Based on the endorsed muster roll, payment could be processed and deposited in the workers' bank/postal/smart card account as per the existing procedure under MGNREGS.



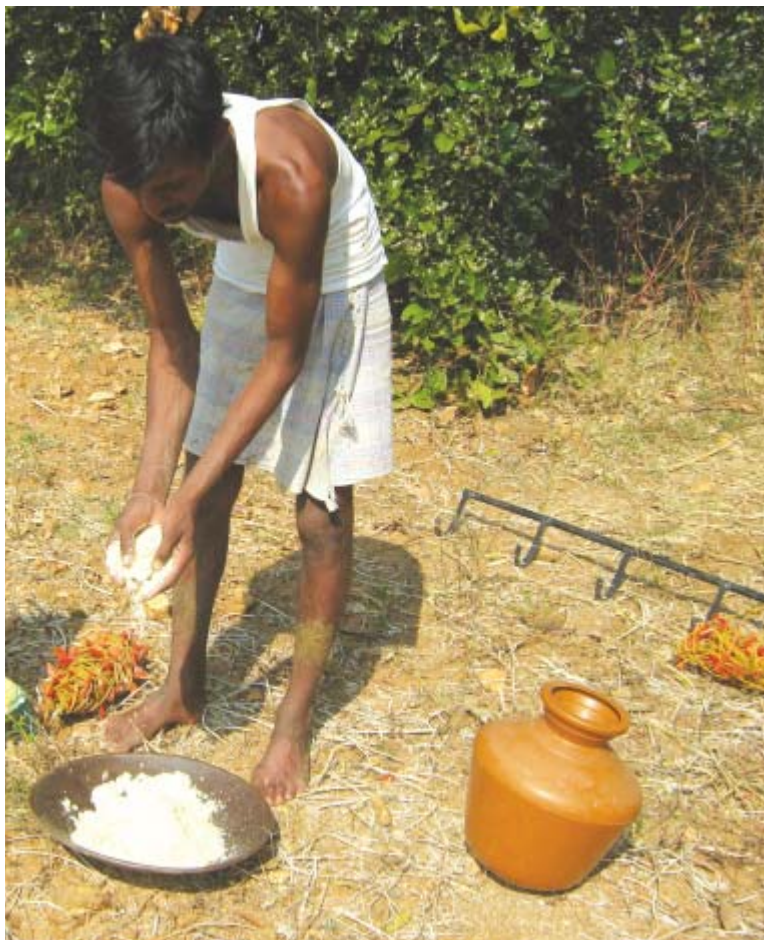
## 7.6 Special provisions if budget source is not MGNREGS

If the SRI Transition Programme is totally supported under the MGNREGS budget allocations there is no need for any special provisions. Alternatively, if the programme is specially funded and uses the institutional mechanisms of MGNREGS, the following processes and provisions would be required.

- The amounts paid to workers under SRI programme from MGNREGS funds should be reimbursed by the Agriculture department from the funds allocated for the scheme
- The number of days worked by a worker in SRI would not be added to the regular MGNREGS wage days and thus, his/ her entitlement of 100 days would be additional and secured.
- Various other provisions in the act like provision of work within 15 days, unemployment allowance, etc., need not be mandatory. Certain amount of flexibility could be allowed. The SRI programme could draw its own provisions based on the nature of work involved or the flexibility needed.
- Broadly, the SRI promotion programme would be a distinct programme with its own funds and procedures. It would only access the channels/mechanisms created by MGNREGS, such as identity (in the form of job cards), payment procedures (in the form of muster rolls, processing software, bank accounts etc.) and the institutions/personnel like panchayat, field assistant, programme officer in addition to the regular agriculture extension officers.
- In the states where work allocation and payment processes are computerised, a separate software patch could be created for SRI and the computer node could be kept in the local agriculture offices for processing the payments. Alternatively, the Gram Panchayat office could be the nodal point.
- The framework outlined above has elaborated on the special tasks for SRI. The entire program of 'SRI Transition' must also include support for land levelling, farm ponds, renovating irrigation infrastructure, raising biomass trees etc., which are normally permissible under MGNREGS; modalities of their operation are also well laid out and hence not detailed in this note.
- The 'SRI Transition' programme must have an integrated support for training of farmers and labour, not only on the specific tasks and technologies of nursery raising, transplantation and weeding but also on the general principles of SRI including alternate wetting and drying.









## 7.7 Indicative Budget for SRI Transition Programme

Though the costs vary substantially from place to place, the following table provides an indicative support budget/expenditure per acre:

S.No.	Cost Item	Details of costing	Unit (labour days per acre)					Total
			[1] Yr	[2] Yr	[3] Yr	[4] Yr	[5] Yr	
	<b>SRI TASKS / Years or season</b>							
A	Transplantation (One Time)		8	8				16
B	Weeding (for 5 seasons/ 3 years whichever is lower)		4	4	4	4	4	20
								Rs lac
C	Implements cost (one time)							
	• Markers	One per 10 acres						1000
	• Weeders (farmer can buy these additionally, if required)	5 numbers per 4 workers (also can take it as 5 per 10 acres)						700
	• Training & field days	10% of the costs						
	<b>Supportive Activities*</b>							
A	Farm ponds	As per the regular MGNREGS task rates						
B	Land leveling							
C	Raising biomass trees							
D	Composting etc.							
E	Renovation of irrigation Infrastructure							
F	Village level facilitation	One community resource person per about 100 acres						
G	Secondary facilitation and monitoring							

\* many of these tasks already have standard designs and unit rates in MGNREGS & therefore, the details are not mentioned.



## 8. Conclusion

The systems and processes evolved in MGNREGS and wage worker support, if extended, can catalyse shifting of rice production systems to sustainable System of Rice Intensification. The period of support required is for five years in a given area.

Land development, soil quality improvement through addition of organic matter, suitably modifying irrigation systems to enable alternate wetting and drying, and wage support for labour to learn and transit to new skills need to be an integral package of support that can be extended through MGNREGS. About 10 million ha rice area can be targeted over the next five years for such support. This support will go a long way in getting rice production systems onto a sustainable pathway.







# **National Consortium on SRI**