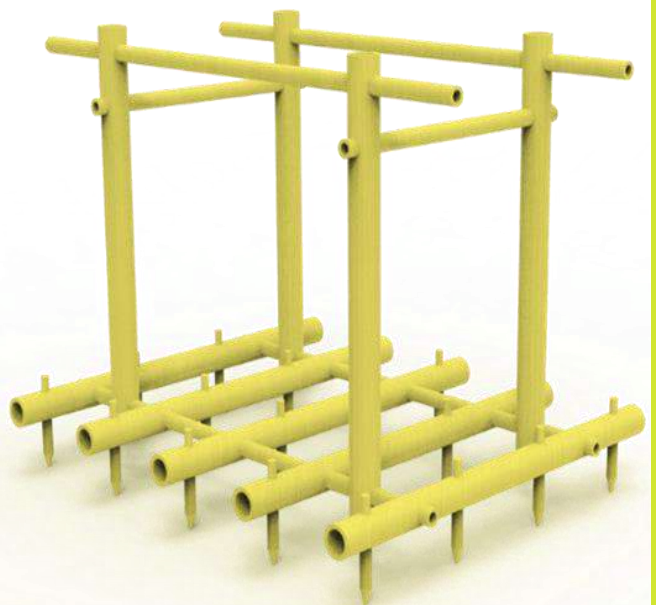




# Science & Technology Resource Centre Gondwana University, Gadchiroli

## Paddy Productivity Enhancement through Saguna Rice Technology (SRT)

Monitoring and  
Evaluation Report  
(Internal Social Audit)



# **Paddy Productivity Enhancement through Saguna Rice Technology**

## **Monitoring and Evaluation Report of Project - Phase 1**

### **Introduction**

Saguna Rice Technique (SRT) is a unique new method of cultivation of rice and related rotation crops without ploughing, puddling and transplanting (rice) on permanent raised beds. This is a zero till, Conservation Agriculture (CA) type of cultivation method. The permanent raised beds used in this method facilitates ample oxygen supply to the root zone area while maintaining optimum moisture condition there. SRT has made suitable changes in the conventional rice cultivation to ease farmers' laborious work and to prevent fertility loss during puddling. The SRT tool facilitates planting of crops in predetermined distances enabling precise plant population per unit area. Absence of puddling and transplanting of rice makes it possible for "Not dependent on erratic behavior of rain."

The monitoring and evaluation report of this project is aimed to measure and conclude objective oriented and associated benefits to know the status of the project. The social and institutional benefits are included in the associated benefits from the project. Overall, this will help for further actions for efficient implementation of the project.

### **Objectives**

- To disseminate improved technology of rice cultivation to the local farmers.
- To create awareness about the best package of practices (PoP).
- To reduce production cost by 40%.
- To overcome soil fertility problems during land preparation operations.

### **Project Activities**

1. Identification of specific geography
2. Targeted MDU sessions
3. Interactive focus group discussion
4. On field training
5. Input Distribution
6. On field demonstration
7. Project Monitoring
8. Technology Introduction

### **Target group and Geography**

Gadchiroli have 76 % of forest area and sufficient annual rainfall; most of rainfall is monsoon type during June to October. Because of unavailability of dams and specific geological conditions, types of rocks; most of the places do not have easily accessible groundwater. Land holding size of the most of farmers in Gadchiroli is small.

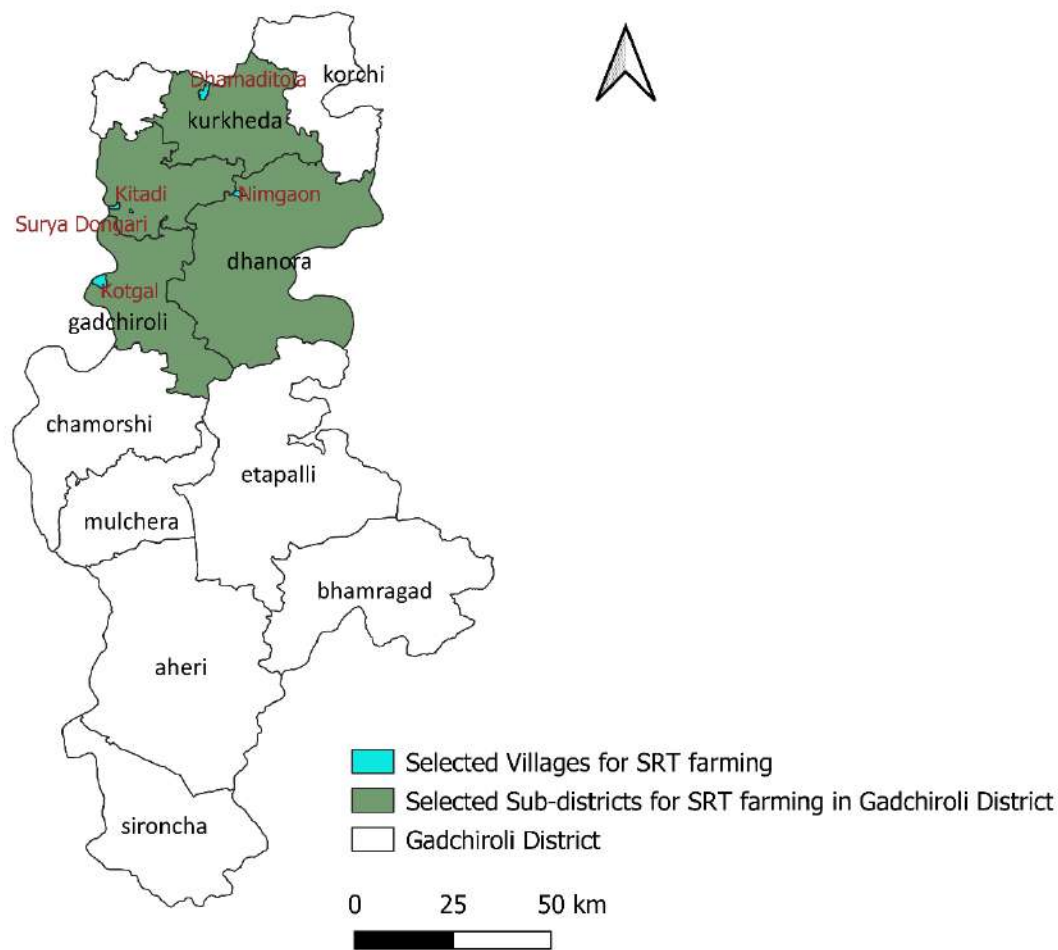


Figure 1 : The Project and Study Area

Keeping these things in mind; STRC-GUG implemented paddy productivity enhancement through SRT project to improve paddy yield with limited available resources for reduced cost of production and improved yield. In the phase 1; total 50 farmers were targeted out of which 23 farmers adopted Saguna Rice Technology (SRT). Farmers from Kurkheda, Dhanora, Armori and Gadchiroli sub-districts and villages from these sub-districts were selected as shown below.

Table 1 : Selected villages for the project activity from the sub-districts of Gadchiroli

Sr No	Sub-District	Selected Village for SRT adoption
1	Armori	Kitali
		Suryadongari
2	Kurkheda	Dhamaditola
3	Dhanora	Nimgaon
4	Gadchiroli	Kotgal

## Methodology

### Sampling

Around 30 % (7 beneficiaries) of the sample size out of total (23 beneficiaries) were selected randomly for assessment. Beneficiaries from all blocks Kurkheda, Armori , Dhanora, Gadchiroli were selected for assessment as show in figure 1. Telephonic interviews were conducted in order to save time after pilot testing. Respondents participated positively for telephonic interviews. Communication was recorded and simultaneously responses were filled in the MS-Excel sheet.

### Approach of the Social Audit

We have used two approaches here:

- a. Assessment of project objectives
- b. Assessment of associated benefits (including social benefits)

Following indicators were developed in the brainstorming session with expert advice and the same were tested using the designed questionnaire in the field testing. After field testing; indicators and questionnaire were finalized.

### Objective-Based Assessment

The following indicators were finalized after brainstorming and reading of the literature. Questionnaire were designed as per objective based indicators. These all were asked in local language i.e. Marathi and Hindi. The objectives, measurable component and related indicators are shown as below:

Table 2 : Objective based assessment components and indicators

Objective Number	Objective	Components	Indicators
1.	To disseminate improved technology of rice cultivation	Adoption of Technology	% of adoption with STRC-GUG support % of farmers willing to adopt without STRC-GUG support
2.	To create awareness about the best package of practices	Awareness and Knowledge	Know basic information : What is SRT all about ( <b>Awareness</b> ) Know about the package of practices of SRT and Benefits ( <b>Knowledge</b> )
3.	To reduce production cost by 40%	Cost of Production	[ % of the cost by Conventional method - % of the cost by SRT method ]

4.	To overcome soil fertility problems during land preparation operations	Soil Fertility	Improved Soil Fertility : Farmer's opinion [ Yes, No, Somewhat and Don't know ]
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Much detailed facts were collected in order to know cost and cost-benefit ratio needed in the assessment of the project.

Table 3 : Data collected for cost and cost-benefit assessment

S.N.	Input	Output
1.	Fertilizer	Yield (Quintal/Acre)
2.	Seed	Sale price of yield/Acre(Rs/Acre)
3.	Labour	-
4.	Harvesting	-

### Associated Benefits

Some benefits of the project activities are not visible easily. Social impact like public participation and organized beneficiaries, etc. are hardly seen if we don't observe and measure it. Many development projects now a days consider triple bottom line approach for the assessment of project's output and outcome and the same is used here.

### Associated benefits (Social Audit) are assessed in order to know followings

1. To assess the sustainability of the Agro-ecosystem of the paddy cultivation using SRT at farm level in a local context with fewer resources available for study.
2. To identify and know the present status of activities that need to be improved for sustainability of Paddy cultivation using SRT.

Table 4 : Attribute, Sustainability Dimensions and Indicators

Attribute	Sustainability Dimensions	Indicators NTFP/ Med. Plants and Other Livelihoods (Calleros-Islas, 2019; López-Ridaura, 2002)
Self-Reliance and Equity	Social	Participation in decision making
		Organized beneficiaries

		Level of commitment / responsibility
		External-Input Dependence
Adaptability	Institutional	Trained Farmers
		Adoption of new practices / technology
		Level of trust in public institutions
		Reliance on subsidies
Productivity and Stability	Economical	Yield
		Benefit-Cost Ratio
		Costs
Resilience and Reliability	Environmental	Number of different Crops grown
		Chemical Inputs used

## Result and Discussion

The result and discussion part has been divided in two parts: A. Objective-Based Assessment and B. Associated benefits (Triple Bottom Line Approach).

### Objective-Based Assessment

#### 1. Adoption of Technology

Almost all of the beneficiaries are adopting Saguna Rice Technology (SRT) method and Package of Practices (PoP) with the support from STRC-GUG. Comparatively low (28.57 %) farmers are ready to continue with the SRT cultivation without any institutional support. This clearly highlight the importance and role of organizations like STRC-GUG in the Gadchiroli region. Farmer need support for technology, awareness, capacity building and timely advisory.

Table 5 : Scores of indicators as per Objective-based assessment

Components	Indicators	Values in %
Adoption of Technology	% of farmers adopting with STRC-GUG support	100.00
	% of farmers willing to adopt without STRC-GUG support	28.57
Awareness and Knowledge	% of farmers Know basic information : What is SRT all about ( <b>Awareness</b> )	100.00
	% of farmers Know about the package of practices of SRT and Benefits ( <b>Knowledge</b> )	57.14

<i>Cost of Production</i>	Average value of [ % of the cost by Conventional method - % of the cost by SRT method ]	<b>30 % difference</b>
<i>Soil Fertility</i>	Improved Soil Fertility : % of Farmer's opinion [ Yes, No, Somewhat and Don't know ]	57.14

## 2. Awareness and Knowledge

It has been observed that most of the farmers know about the basic information of SRT. They know what is SRT and the procedure to be followed for SRT cultivation. But, comparatively half number of farmers (57.4 %) know in much detail about the Saguna Rice Technology (SRT) and Package of Practices (PoPs). STRC-GUG use Mobile Demonstration Unit (MDU) for the awareness and capacity building through audio-visual means, Focus Group Discussions, on field training with subject experts and local resource persons, etc.

## 3. Cost of Production

The average response for the difference in the cost of the production of traditional and SRT based paddy cultivation is observed as 30 %. It varied from 15 % to 50 %. It was observed that farmers with more detailed knowledge and implementation of package of practices (PoPs) on the ground is reducing the cost of production significantly. Only knowledge without implementation at the right time is not helping. Timely monitoring and proactive involvement of skilled Local Resource Persons and farmers are important.

## 4. Soil Fertility

The score for soil fertility was observed as 57.14 %. Physical appearance of the soil, looseness of soil for infiltration and permeability has been improved. This score may increase after 2-3 years of implementation. But, it is fruitful to get positive response from farmers. The correct sequence of package of practices (PoPs) are playing vital role here which need to be strengthened.

### **Associated benefits (Social, Institutional, Economical and Environmental benefits):**

As per the framework mentioned in the methodology section; social, institutional, economic and environmental themes were assessed as below.

### **Social**

The 'external input dependence' and 'organized beneficiaries' score is calculated as 42.86 %. Most of the farmers are dependant for ready-made fertilizers. Although there are alternatives for organic pesticides and integrated pest management; farmers use ready to use inorganic ones. Allied activities like organic manure and pesticide (Integrated Pest Management) training for using farmer's school can give better results.

Although beneficiaries were selected from the clusters of villages; very few of them observed as organized for most of the activities. Here, STRC-GUG's fifth vertical communication for development (C4D), local resource persons, integration with FPOs (Farmer Producer Organizations), etc can help.

Very few farmers are discussing and taking collective decisions regarding farming activities. For some of the activities like input purchases, forward market linkages and water management, etc; participation in decision making helps a lot. The score of this indicator is observed very low (14.29 %)

## Institutional

'Trained farmers' indicator is scored as 42.86 %. Farmers don't consider MDU sessions as a training. They said 'on-field training' of most of the package of practices and SRT method to each farmer is needed. STRC-GUG should focus more about 'on-field training' after MDU sessions.

All responded farmers adopted SRT method but some lacked sequence of package of practices. The focus should be on these vital package of practices during training sessions and project implementation. Only adoption of SRT method without implementation of package of practices may be the reason behind the less performance of some agriculture farms.

Most of the farmers have trust on government, STRC-GUG and public institutions (Score 89.29 %) and they depend very less on the government subsidies for farming (Score 71.43 %).

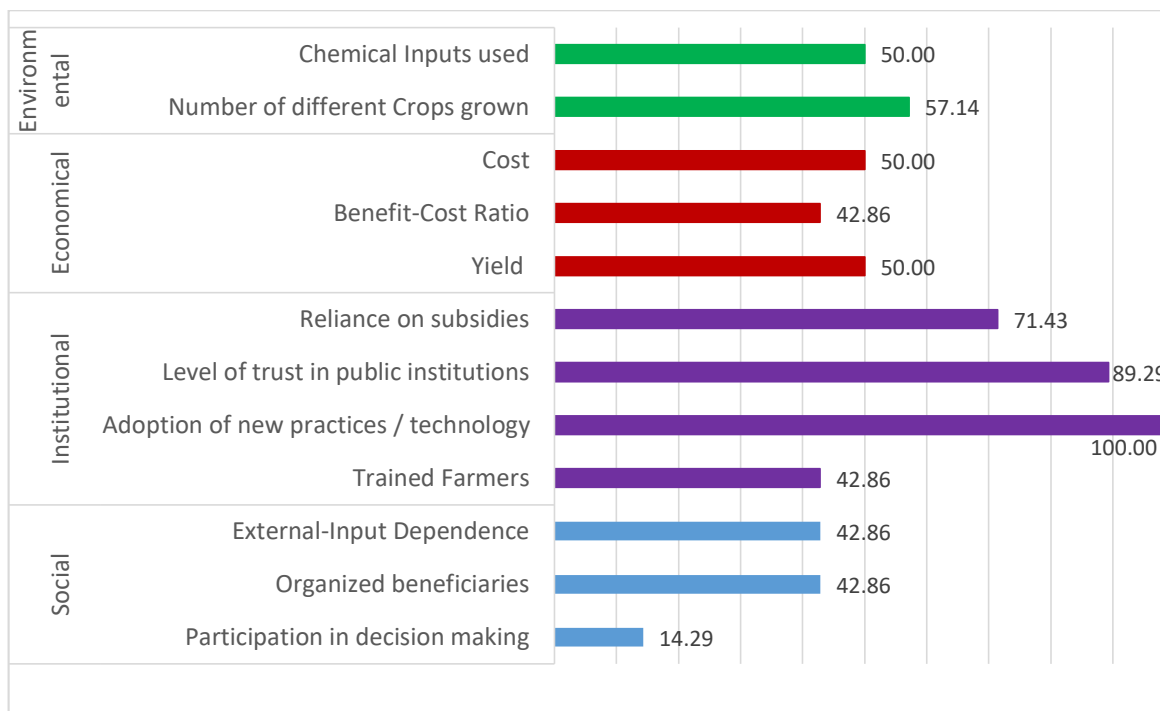


Figure 2 : Assessment of Triple Bottom Line (Social, Economic and Environmental) of SRT adopted Agro-Ecosystem in the study area

## Economical

On economic front; most of the indicators are scored around 50 %. Relatively much variations were observed among farmers. Some farmers who follows package of practice (PoPs) correctly and timely have very less cost as compared with the yield. Others who don't follow package of practices ( PoPs ) are having more cost as compared with the yield. Growth of weed can't be controlled if sequence of package of practices (PoPs) is not followed correctly and timely. The same is the case with yield of paddy using SRT method. Once Again; a quality on-field demonstration after MDU sessions with quality videos of package of practices and use of SRT aided by local resource person and subject experts (scientific officers and Jr. Scientific Officers, STRC-GUG) are vital.



## Environmental

Numbers of different crops grown has been scored as 57.14 %. There are many barriers for diversified crop pattern in Gadchiroli region. Most of the farmers have very less land holding size and they cultivate 1 or 2 crops in a year. Another reason is unavailability irrigation water during summer season. The inability of farmers to pump water and having open well, tube well with needed infrastructure is also an indirect reason behind mono-cropping.

The needed and suitable use of chemical input are some of important package of practices (PoPs) and it can't be avoided. This indicator have scored as 50 %. The use of organic chemicals and integrated pest management can be part of the strategy. The Farmer school can be a platform for training and capacity building on these issues.

## Output of Monitoring and Evaluation (and Social Audit)

Outcome of the M and E highlight the importance of **on-field training, sequence and timely following package of practices, active involvement of subject experts and local resource persons on ground, etc. The improved paddy productivity and reduced cost of cultivation** is observed. But, the variation among SRT farmers regarding the same is huge.

It has been observed that beneficiaries have **sufficient awareness** but **lack knowledge and skills** to have successful SRT adoption. **Efficient training and capacity building** with sufficient **monitoring** have a vital role to play.

Allied or supplementary activities through projects like **farmers school, vegetable cultivation** can be integrated with SRT adoption. This will improve **the sustainability** aspect and more **training, skill** and frequency of **monitoring**.

With the process followed correctly; STRC-GUG expect that these successful pilots of SRT adoption will stimulate other nearby farmers to use SRT method of paddy cultivation.

## References

- a. Calleros-Islas, A. (2019). Sustainability assessment. An adaptive low-input tool applied to the management of agroecosystems in México. *Ecological Indicators*, 105(December 2017), 386–397. <https://doi.org/10.1016/j.ecolind.2017.12.040>
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