

GOVERNMENT  **MAHARASHTRA**
सत्यमेव जयते
DEPARTMENT OF AGRICULTURE

SUCCESS STORY
UNDER
NFSM PROGRAMME
ON

SAGUNA RICE TECHNIQUE – SRT

(Zero till, More yield & Better Soil fertility!)

YEAR 2015-16

TALUKA AGRICULTURE OFFICER, JAOLI (MEDHA)
SUB DIVISION: WAI DIST: SATARA

SAGUNA RICE TECHNIQUE – SRT

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1. INTRODUCTION

Saguna Rice Technique 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 of oxygen supply to 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 iron forma (the tool will be better soon) facilitates planting of crop 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." This means 'No more waiting for Rain God to shower just optimum rain for best transplanting operation'. Similarly if rain vanishes for few days during crop season it doesn't lead to cracking of land or 'crop kill' immediately.

Important Principles:

- *SRT insists that all roots and small portion of stem should be left in the beds for slow rotting.*
- *No ploughing, puddling and hoeing is to be done to control weeds.*
- *This system will get the crop ready for harvesting 8 to 10 days earlier. Take this into consideration while choosing a variety to avoid getting harvesting caught in receding rain.*

2. BACKGROUND

Jaoli taluka comes under Sub-Mountain Agro-climatic zone having average rainfall 1605 mm with geographical area of 50230 ha. Paddy is cultivated on 7550 ha area by conventional method having various drawbacks like less yield, high cost of cultivation. In Jaoli Taluka farmers generally follow transplanting method of rice cultivation which is not economical and feasible during late monsoon season.

3. PROJECT IMPLEMENTATION

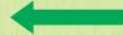
SRT method is implemented under National Food security Mission 2015-16 in Medha and Kudal Agriculture Circle of Jaoli Taluka. In this method farmers have tilled the soil and made the raised beds only once. The same permanent beds are used again and again to grow various rotation crops after rice in Kharif season.



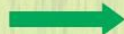
The best time to make these beds is immediately after kharif paddy harvesting, is in October. Good ploughing and tilling is done with available residual moisture or by giving irrigation. Added desirable and / or available quantity of any organic manure. Finally tilled it with rotavator or power tiller to make it workable. Drawn parallel lines with help of rope and lime or wood ash at 136 cm i.e 4.5 feet apart. Used tractor drawn 'Bed maker' or any other means to open furrows at marked lines and make raised beds.

Made depressions / holes with SRT iron forma on the raised beds. Applied fungicides and / or beneficial microorganisms to the seed as per the agriculture university guidelines. Irrigated plot with best possible available method. 3 to 4 hours later spray the plot with selective weedicide Goal (Oxyfluorfen 23.5% EC) @ 1 ml per litter of water. The crop is ready for harvest till 3rd or 4th week of February. Cut the plants leaving roots and 2 to 3 inches stem on the beds.

Its very important to leave the roots of previous crop in to soil and spray the plot with Glyphoset (15 lit water + 100 ml Glyphoset + about 200 g of sea salt or 150 g of Urea) 2 to 3 days after harvesting.



BED PREPARATION



SRT TOOL



SEED SOWING



IMPACT

4. PROJECT IMPACT ANALYSIS

Multiple advantages of SRT

- For not having to do puddling, transplanting and hand hoeing, save 30% to 40% cost of production & not requiring transplanting saves 50% treacherous labour.
- Loss of valuable silt (about 20%) during puddling can be prevented thus more fertile land can be handed over to next generation.
- Leaves of rice plants on SRT beds seem to be more broader and head more upwards to sunlight than their counterparts in conventional method. They are likely to produce more biomass, means higher yield.
- SRT has ability to bring “Vigorous Uniformity” and higher yields in all soil types even in degraded soils and socio-economic groups. For example a very new farmer and well established awarded farmer and agricultural universities will attain about the same higher yield per unit area.
- Hand hoeing is strictly avoided in SRT. Once again this reduces hard-work and loosening of top soil making it vulnerable for washing away.
- Today’s recommend dose of fertilizer can be brought down considerably.
- SRT insists keeping of roots of previous crop in the raised bed. The root network prevents soil from cracking and makes it more spongy. The same roots become valuable source of organic carbon which is uniformly distributed and oxygen pathways to root zone of next crop.

- The traumatic shock caused to the rice seedlings during transplanting is avoided in SRT. This reduces possibility of pest & disease problem.
- Rice crop gets ready 8-10 days earlier. Also it saves time required for soil tilling between two crops. This leaves valuable 10– 15 days of crop season for the farmer enabling him to take more than one crop in the same plot in a year.
- SRT is feasible for organic farming method.
- Due to excessive water in low-lying plots removing of harvested paddy from the plot for drying can be avoided with SRT raised beds.
- During milling of paddy, SRT will yield higher percentage recovery of grains.
- Non-use of heavy agricultural machinery for tilling in field will prevent compaction & formation of hard pan of lower strata of soil enabling better percolation of water into deeper soil & permanent establishment of earthworms.
- It is possible to get high returns (more than ₹ 4,00,000 per hectare per annum) with crop rotation such as Basmati Rice (PS-5) in Kharif, leafy vegetables in Rabbi, Bold Groundnut (W-66) in Summer, while improving health of the soil.
- This could be the best solution in natural calamities such as hail storm, floods, cyclones, untimely rain-storms, etc. because the crop cycle is shortest (NO TILL) and it involves multiple choices of short-term rotation crops such as pulses, vegetables, onion, sun-flower, groundnuts, and so on.

- Damaged soils can be recovered by SRT, which is caused by lashing, scrubbing & natural calamities, in quickest possible time.

Comparative analysis of SRT and Conventional Rice Method

Conventional Practice	SRT Method
Use of little or no organic manure or chemical fertilizers	Use of organic manure is ensured
Age of seedlings for transplanting is 20-25 days	Seed sowing is followed
No. of seedlings per hill : 4-6	No. of seeds per hill : 1-2
little weeding	use of weedicides

Conventional Practice	SRT Method
Plant Height: 84 cm	90 cm
No. of tillers per plant : 12	17
Grain Production (Q/ha): 14.50	16.75

Conventional Practice (Q/ha)	SRT Method (Q/ha)
Hybrid rice yield : 15.00	17.50
Improved rice yield: 14.50	17.75
Local rice yield: 13.05	16.50

5. FARMERS FEEDBACK

Farmer: Mr. Madhukar Krushna Padgal

Village: Kurloshi, Tal: Jaoli, Dist: Satara

Project: National Food Security Mission 2015-16-SRT Method

Crop: Rice, Var: Indrayani

Project Area: 0.40 ha

Myself, Mr. Madhukar Krushna Padgal, resident of Kurloshi, Tal: Jaoli having 8A area of 3 acre. I am cultivating rice, gram, nagali etc crops on my field with conventional methods. During year 2015-16, I followed Saguna Rice technique (SRT) method on 0.40 ha area under guidance of Agriculture Department (Taluka Agriculture Officer, Jaoli) for paddy cultivation. I followed all the cultivation practices of rice as per guidelines of NFSM Scheme with conventional plot of paddy cultivation for comparison with SRT method.

After learning about the new technique, I along with my wife made the beds and started to cultivate rice with SRT. The result was so astonishing. Earlier I would get 4 guni (bags) of rice; now I can have 12 guni of rice as seen in the previous two years. This is a huge difference for me". During Paddy Cultivation, I observed there is 25% saving of Cost of cultivation, required less seed rate for sowing with maintenance of optimum plant population enhanced crop growth and vigor, Soil health improvement with no-till and proper maintenance of space. Yield of rice in SRT method was 16.5 Q/ha as compared to conventional method (13.9 Q/ha). There is no requirement of bed preparation for further Rabi season Gram crop which was additional income to me and my family. So 2016-17 onward, I am going to implement Saguna method for rice cultivation and also promoting other Marginal farmers to follow SRT method for efficient management of water and labour resources. The experience of this farmer made us to realize how this technique can revolutionize problems of labor, production and remoteness of land for a small farmer.

Farmer: Mr. Ashok Pandurang Todkar

Village: Kurloshi, Tal: Jaoli, Dist: Satara

Project: National Food Security Mission 2015-16-SRT Method

Crop: Rice, Var: Phule Samruddhi

Project Area: 0.20 ha

Mr. Ashok Pandurang Todkar, resident of Kurloshi, Tal: Jaoli having 8A area of 1.25 ha, I am cultivating rice, gram crops on my field with conventional methods. During year 2015-16, I followed Saguna Rice technique (SRT) method on 0.20 ha area under guidance of Agriculture Department (Taluka Agriculture Officer, Jaoli) for paddy cultivation. I followed all the cultivation practices of rice as per guidelines of NFSM Scheme with conventional plot of paddy cultivation for comparison with SRT method.

During Paddy Cultivation, I observed there is 22% increase in yield of rice in SRT method compared to conventional methods, 27% saving of Cost of cultivation, required less seed rate for sowing with maintenance of optimum plant population enhanced crop growth and vigor. Yield of rice in SRT method was 18.25 Q/ha as compared to conventional method (15.5 Q/ha). There is no requirement of bed preparation for further Rabi season Gram crop which was additional income to me and my family. So 2016-17 onward, I am going to implement Saguna method for rice cultivation and also promoting other Marginal farmers to follow SRT method. SRT method is very successful economically as compared to conventional methods of rice cultivation. This exposure has given us a lot to think about: how one can add to the cause of sustainable intensification for enhancing livelihoods in rained agriculture by this convergence of SRI and CA in the form of SRT.

6. PHOTO GALLERY



BED PREPARATION

DSAO SATARA VISIT



SEEDLING STAGE

