

## **Demonstration and Popularization of SIRA technology for profitable cultivation of transplanting rice in South Gujarat Heavy rainfall zone**

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### **Background and Objectives**

Rice crop is the major cereal crop in India cultivated in both the seasons *Kharif* and Summer season. Production of rice is recorded 104.32 million tonnes derived from 43.39 million hectare area with 2.40 tonnes ha<sup>-1</sup> productivity. (Anon., 2016). In Gujarat, it about produced 1.67 million tonnes from 0.76 million hectares area with 2.19 kg s ha<sup>-1</sup> productivity (Anon., 2016). In current climate change scenario uncertain monsoon occurs, which is affected the rice production. Under such situation, nutrients management by chemical fertilizer is challenging fact in now a day. Because rice crop is a heavy feeder of fertilizers and need nitrogen for its rapid growth at all the stages of growth, as nitrogen is an element which gets rapidly mineralized and leached away its deficiency is found prominent in growth stages of crop hence to overcome this situations the fertilizer management practices like split application, use of briquettes has been formulated to ultimately achieve the goal of profitable rice cultivation and production. Currently rice transplanted in spacing 20 X 15 cm and chemical fertilizers recommended as 80:30:00, 100:30:00 and 120:30:00 N:P:K kg ha<sup>-1</sup> for early mid-late and late maturity cultivar and 10 tone FYM ha<sup>-1</sup> for profitable rice cultivation in South Gujarat condition. Nitrogen use efficiency in irrigated rice has focused in most research concerned with improving yield and reduction of N losses from applied fertilizer.

“Savant’s Integrated Rice Agro technology” (SIRA) is a cropping technology that was withstand erratic conditions of whether and is simple, affordable, low-cost and efficient. The technology was developed a holistic approach as it has great potential for tribal ranges of South Gujarat where the farmers are small-holders and fragmented.

In this technology transplanting of rice and integrated nutrient management system included four major component; 1) recycling of rice substrates, 2) uses of *Gliricidia* green manuring, 3) transplanted in square pair row system and 4) use of Urea-DAP briquettes. Use of ash of rice husk in seed bed: application of ash increased silicon micronutrient in soil to increased resistance of plant against insect- pest and disease. Bio-compost / vermicompost

produces all essential nutrients for better plant growth and improved microbial activity in soil. Use of Urea-DAP briquettes: Urea-DAP briquettes placed in root zone region hence, slowly released nitrogen and phosphorus in soil which is used by plant and reduced the loss of nitrogen by leaching or evaporate in environment.

SIRA has been tested and found successful in neighboring tribal areas of Maharashtra. Navsari Agricultural University also tested and recommended SIRA technology for rice farmers harness benefits if this technology of South Gujarat. The project on demonstration and popularization of SIRA technology for profitable cultivation of transplanting rice in South Gujarat Heavy rainfall zone has initiate in the year 2012-2013” in South Gujarat.

## **Intervention**

Navsari Agriculture University initiated programme on “Demonstration and Popularization of SIRA technology for profitable cultivation of transplanting rice in South Gujarat Heavy rainfall zone” under RKVY in the year 2012-13 with received grant (Rs.17.70292 Lakh) to rice farmers. More than 2000 farmers of all seven districts viz., Navsari, Bharuch, Tapi, Valsad, Waghai, Narmada and Surat of South Gujarat were trained to SIRA method of rice cultivation by conducted total 22 training programmes on SIRA technology were conducted during the year 2012-13. Out of which total 445 farmers interested wish to adopted SIRA technology supplied with 10 kg seed of improved varieties, 50kg Urea-DAP briquettes and 6 bags (300kgs) of Vermicompost / 20 bags (1000 kgs) of bio compost to each selected farmers as an alternative to green manuring. Total 445 demonstrations includes 320 in *Kharif*-2012 and 125 in Summer-2013 season.

800 farmers were benefited by conducted 5 training on SIRA technology during the year 2013-14 (with total grant was Rs. 28.02574 Lakh). Total 535 farmers directly benefited through this technology supplied above mentioned inputs. Out of these 435 in *Kharif* -2013 season and 100 in *Summer*-2014 season.

More than 1124 farmers were trained to this method of SIRA technology by conducted 24 training on SIRA technology during the year 2014-15 with grant of total Rs.26.50 Lakh . Out of these 520 farmers selected in *Kharif* -2014 season and 604 in *Summer*-2015.

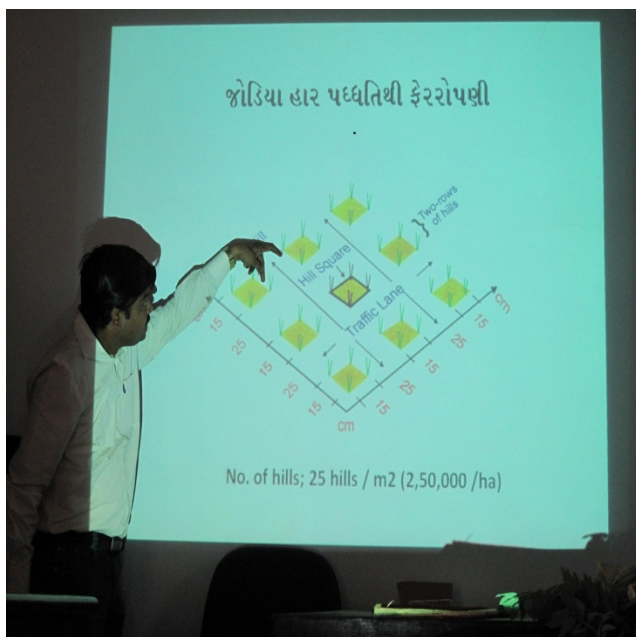
The SIRA technology found very popular among the rice grower in South Gujarat. More than 5934 farmers of all seven districts of South Gujarat trained to SIRA method of paddy

cultivation for this total 51 training, on SIRA technology were conducted during the year 2012 to 2015.

## **Outcome**

- On an average farmers obtained 4763 kg/ha grain yield under SIRA method of transplanted rice cultivation while, in conventional practices farmers obtained 3902 kg/ha. Overall farmers got 22.46 per cent grain yield increased under SIRA method over the conventional practices during *khariif*-2012 and farmers got average grain yield 4763 kg/ha with 14.50 per cent grain yield increased during *Summer*-2013.
- An average farmers obtained 4392 kg/ ha grain yield with 19.67% per cent grain yield increased during *Khariif*-2013 over the conventional practices. While, farmers got an average 4571 kg/ha grain yield with 22.67 per cent grain yield increased during *Summer*-2014.
- An average farmers obtained 4199 kg/ ha grain yield with 19.23 percent yield increased during *Khariif*-2014 where as 21.74 per cent grain yield increased during *Summer*-2015 over the control.
- Overall 20-22 percent grain yield increased in rice cultivated under SIRA technology over the conventional practices in South Gujarat.
- Urea-DAP briquettes is the novel way of application of fertilizer. This application improves Urea efficiency by nearly 2.5 times compare to normal broad casting in rice field.
- About 40 percent nitrogenous chemical fertilizer reduced in rice cultivation through SIRA technology.
- Farmers got about an average 700-1000 kg- ha. more grain yield due to this technology.

## 1. Supporting Quotes and Images:



Training to farmers for SIRA technology



Paddy seed distributed to farmers



**Uprooting of paddy seedling by farmers**



**Puddling of field by farmers**



**Transplanting of paddy by farmers**



**Urea-DAP Briquettes placed in paddy field by**



**Farmer cleaning paddy Harvested from SIRA Plot**



**Farmer happy and got more grain yield paddy from SIRA Plot**

**Urea-DAP Briquettes placed in paddy field by**