

Comparison of System of Rice Intensification (SRI) and conventional method of rice planting under Nagarjuna Sagar project left canal command area of Andhra Pradesh, India

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ABSTRACT

On farm field trial was conducted to compare the System of Rice Intensification (SRI) method over to Conventional method of planting for two consecutive years during *kharif* 2005 and 2006 under A.P. Water Management Project funded by FAO at pilot area Ganapavaram of Nalgonda district of Nagarjuna Sagar Project (NSP) left canal command. The trial was carried with the farmers participatory mode to study the impact of SRI with conventional planting method on grain yield, nutrient content, uptake and water use efficiency. Two treatments were applied in large size plots (1000 m²) with two organic sources as green manuring (sunhemp seed rate @ 25 kg/ha) and FYM @ 5 t/ha in addition to recommended dose of fertilizers *i.e.* 100-60-40 NPK kg/ha. The results revealed that highest grain yield of 6735 and 6125 kg/ha and water use efficiency of 6.75 and 6.25 kg/ha-mm was recorded with green manuring and FYM under SRI method of planting compared to conventional method (6467 and 6053 kg/ha-mm and 4.50 and 4.25 kg/ha-mm) during both the years. Between two sources of organic manures in both the methods of planting low grain yield and less water use efficiency was observed with the application of FYM than green manuring. Similar trend was continued in case of nutrient uptake by grain, however the nutrient content was *at par*. The organic carbon content and available major nutrient status of soil was slightly more over initial values, in general, with SRI than Conventional method and in particular with the application of *in situ* green manuring over to FYM in both years.

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Key words : System of Rice Intensification (SRI), Green manuring, Uptake, Nutrients, Water use efficiency, Productivity.

The Nagarjuna Sagar Project is one of the biggest multi purpose projects in South India. The NSP Left canal command spread in Nalgonda, Khammam and Krishna districts of Andhra Pradesh with a total command of 3.87 lakhs hectares, largely consist of red sandy loams locally known as chalka soils followed by mixed sandy loams (dubba soils) together constitutes 75% of the area. Soils are poor in nutrient status and farmers are anxiously applying large quantities of chemical fertilizers, which have deteriorated soil health leading to diminishing of soil productivity and multiple nutrient deficiencies and disorders (Singh *et al.*, 2006). Hence, the introduction of organic manures and green manures is beneficial practice in rice-rice cropping system for improving the soil fertility and productivity besides reducing the expenditure on chemical fertilizers and is easily feasible to small and marginal farmers.

The SRI technology differs for traditional/conventional method mainly in terms of planting young

seedlings *i.e.* 8-10 days old with very low seed rate *i.e.* 5 kg/ha, careful planting of single seedling, wider spacing (25 x 25 cm), weed control by using cono weeder, water management and application of more organic manures. This new technology has been recently introduced in Andhra Pradesh state during *kharif* 2003 and is being studied for its performance in hundreds of farmer's fields in different districts at the first instance itself. The results are highly encouraging in respect of yield advantage over traditional practice, but very less or no data is available on water and nutrient use efficiency. Hence, there is necessity to conduct experiments systematically to generate reliable data to draw meaningful conclusions particularly in respect of water and nutrient use efficiency, as this is essential for recommendation of this technology at a large scale. Keeping in view, the present onfarm field trial was conducted to study the effect of green manuring and FYM under various rice productivity systems in farmers participatory research mode in Ganapavaram pilot area of N.S.P Left Canal Command area in Nalgonda district of Andhra Pradesh under A.P Water Management Project, a collaborative project between Alterra ILRI of The Netherlands and Acharya