

RESEARCH ARTICLE :

Influence of rice establishment technique on growth and yield of paddy (CO51)

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SUMMARY : The field experiment was conducted at Krishi Vigyan Kendra Kattupakkam Tamil Nadu, India during *Rabi* (Oct-Mar) seasons of 2014-15 to study the different crop establishment techniques on growth yield and economics of new variety of rice (CO-51). The experiment was laid out with unpaired t test design. The treatment of drum seeding technique was compared with SRI square planting. Among the crop establishment techniques, SRI square planting significantly influenced the growth and yield characters and yield of paddy crop. The maximum plant height, number of tillers hill⁻¹, grain yield, straw yield were recorded under SRI square planting during *Rabi*. The lowest grain yield, straw yield were recorded under drum seeding technique.

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KEY WORDS :

Rice, Machine planting, SRI, Drum seeding, Yield, Economics

BACKGROUND AND OBJECTIVES

Rice is the one of the important staple food of more than half of the world's population. Among the rice growing countries, India has the largest area (44 million hectares) and it is the second largest producer (131 million tonnes) of rice. In India the rice productivity is 3.37 t ha⁻¹, while the world average is 4.25 t ha⁻¹ (IRRI, 2011). Tamil Nadu alone contributes eight per cent of the national rice production from an area of 2.07 million hectares, with a production of 7.15 million tonnes (Ministry of Agriculture, 2010). At the current population growth rate (1.5 %), the rice requirement of India by the year 2025 would be around 125 million tonnes (Kumar

et al., 2009). To meet the food requirement of the growing population, the rice production has to be enhanced with good management practices with shrinking availability of land and water resources condition. Establishment technique is one of the cultural practices which will help to reduce the water requirement without affecting the yield. Hence this study was carried out to find the establishment technique in new variety of CO 51 rice.

RESOURCES AND METHODS

The field experiment was carried out during *Rabi* (Oct-Mar) of 2014-15 at KVK, Kattupakkam Kancheepuram district, Tamil

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Table 1 : Crop establishment techniques on growth characters of rice CO-51

Sr. No.	Parameters	SRI square planting	Drum seeding
1.	Plant height (cm)	87.84 ± 0.847	83.77 ± 0.915
2.	Number of tillers (hill ⁻¹)	20.86 ± 0.653	13.33 ± 0.549
3.	Dry matter production (kg/ha)	7770 ± 224.6	6651 ± 210.9
4.	Grain yield (kg/ha)	6689 ± 210	5457 ± 189
5.	Straw yield (kg/ha)	7826 ± 221	6385 ± 129

Nadu, India to evaluate the performance of different establishment techniques of rice cultivation. The soil of the experimental field was clay loam. Two experiments such as drum seeding and SRI square planting were compared. The experiments were replicated thrice. The new variety of CO 51 was used for the crop season. Fourteen days old seedlings of mat nursery were transplanted with a spacing of 25 x 25 cm in SRI. For drum seeding the pre germinated seeds were sown by using eight row paddy drum seeder in a puddled soil. Observations on growth and yield characters were recorded during harvesting stage. The grain and straw yield were recorded. Statistical analysis was done using unpaired t test method.

OBSERVATIONS AND ANALYSIS

Plant growth characters such as plant height, number of tillers and dry matter production is influenced by method of crop establishment. SRI square planting and direct seeding techniques are the two establishment techniques compared in this study. SRI square planting recorded significantly higher growth characters. The maximum plant height of (87.84cm), number of tillers per hill (20), dry matter production (7770 kg ha⁻¹) were recorded under SRI square planting (Table 1). The planting of younger seedlings in SRI method which might have established quickly in the field and started growing at a faster might be attributed to higher plant height (Krishna *et al.*, 2008).

Optimum plant population and geometry under SRI system of planting led to availability of more resources to the plants that resulted in increased plant height and more number of tillers. Further 94 per cent tillers produced panicles in modified SRI, whereas 89 per cent in conventional practices (Thakur *et al.*, 2010). Planting in square method with wider spacing might have resulted in profuse tillering under SRI cultivation, which might have facilitated plants for better utilization of the resources. There is yield advantage, less cost of

expenditure in SRI square planting system, but labour intensive and to be modified according to local needs (Uphoff, 2002). Lower grain yield in drum seeding might be due to early stage of weed growth and higher weed density. This advantage of SRI method in enhancing tiller numbers, reducing the weed growth by Cono weeding has been reported earlier (Sangeetha *et al.*, 2016). The increase in the grain yield of SRI method was attributed to large root volume, profuse and strong tillers with long panicles, with higher grain yield (Chandrapala *et al.*, 2010). The similar results were obtained by Sangeetha *et al.* (2016).

Conclusion :

From the above study it can be concluded that higher plant yield and growth parameters were obtained with SRI square planting compare to drum seeding technique in the new variety of Co51 in north eastern zone of Tamil Nadu.

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