INFLUENCE OF AGRONOMIC STRATEGIES ON YIELD AND ECONOMICS OF ADT 43 RICE CROP.

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ABSTRACT

Field experiments were conducted during Navarai Season at Experimental farm, Annamalai University to study the system of Rice intensification (SRI) and their effect on yield components and economics of rice crop. The treatment has the influence of combined effect of age of the seedlings, spacing, weed management by conoweeder, chemical weeding, manual weeding, nutrient management with organic and inorganic fertilizer and alternate wetting and drying on the growth character, (plant height, tillers hill^{-1}, tiller m^{-2}, leaf area index, dry matter production) of SRI were studied. Among the treatments, SRI (use of 8-12 days old seedling, 25 × 25 cm of spacing, saturation of water, four times conoweeding only inorganic) significantly increased the growth characters. This was followed by SRI (use of 8-12 days old seedlings, 25 × 25 cm of spacing, four times conoweeding, saturation water, use of 75% inorganic + 25% organic).

Key words: Agronomic practices – Yield – Economics of Rice.

INTRODUCTION:

Over Ninety percent of the world's rice is produced and consumed in the Asia – pacific region. SRI is a holistic agro-ecological crop management technique seeking alternatives to the conventional high input oriented agriculture through effective integration of crop soil water continuum. In SRI, one of the sound principles is wider spacing (25 × 25) of plant leading to greater root growth by creating aerobic condition and better tillering potential. Rice fields are kept moist rather than continuous flooding thereby minimizing anaerobic condition and it improves the root growth and aerobic microorganisms. SRI has the edge over others as the method offers not only water saving but also enhances the yield and helps in environmental protection (Norman Uphoff, 2006). SRI increases rice yield two or three fold compared to farmers current rice yields (Norman Uphoff, 2002). Excessive weed growth is one of the major constrains in intermittent irrigation practice followed under SRI. Early and frequent weeding by cono or rotary weeder solves this problem (Stoopet *et al.*, 2002). Burying the weeds in the fields rather than removing them improve the crop yield. Besides, the soil gets aerated and the weeds get decomposed in the soil and turn into organic matter. Due to this, the root and plant grow healthier and higher yields can be achieved. In SRI, methodology productivity will not only increase but input use efficiency will also be

enhanced (Ghosh *et al.*, 2007). The present investigation was conducted to evaluate the principles of SRI and their contribution towards enhancement of growth and yield.

MATERIALS AND METHODS:

Field experiments were conducted at Annamalai University Experimental Farm, Annamalainagar during Navarai with the cultivars of ADT 43 to evaluate the SRI and their contribution towards towards yield components and economics of rice crop . The Experimental Farm is situated at 11º 24' North latitude and 79º 44' longitude at an altitude of + 5.79 m above mean sea level. The experiments were taken up in a Randomized Block Design with four replication with seven treatments *viz.*,(T1) - SRI (Use of 8-12 days old seedling raised bed nursery, carefully transplanting at a spacing of 25 × 25, weed management with conoweeder 4 times, saturation of water management use of 75% inorganic +25% of organic, (T2) - T1 with 20 to 25 days old seedlings, (instead of 8-12 days old seedlings), (T3) - T1 with 20 × 15 cm spacing, (instead of 25 × 25 spacing), (T4) - T1 with only inorganic (RDF) (instead of organic + inorganic, (T5) - T1 with herbicide + manual weeding (instead of conoweeding), (T6) - T1 with alternate wetting and drying (instead of saturation of water management), (T7) - conventional transplanting (location specific best management practice).

RESULT AND DISCUSSION:

The computed data on economic indices like gross return, net return and benefit – cost ratio (BCR) were worked out in Navarai season is shown in Table 1. Among the treatments, 8 – 12 days old seedling, saturation water, use of four time conoweeding, only using inorganic registered higher gross return of Rs. 107713.96, net return Rs. 78651.96, and return per rupee of 3.51 in Navarai season respectively. This was followed by the treatment 8 – 12 days old seedling spacing of 25x25cm, weed management with conoweeding four times and using 75% inorganic + 25% organic, recorded the higher gross return, net return and return per rupee. The treatment conventional method of establishment recorded least gross return of Rs. 42291.00, net return of Rs. 14272.14 and return per rupee inverted of 1.56 in Navarai season.

It was evident from the data that 8 – 12 days old seedlings, saturation of water, 25x25 cm of spacing, only inorganic with four times conoweeding registered the highest net return and BCR due to excellent weed control, minimum labour, less input cost and higher yield. Conventional method of planting registered the lower BCR when compared to all the treatments due to higher weed competition which reduced the grain yield. This was also confirmed by earlier reports of shivamangala Prasad *et al.*(2001) and Sarath and Tilak (2004).

Table 1: Role of Agronomic Strategies on Yield and Economics of ADT 43 Rice Crop

Treatment	Rice Grain Yield (kg ha^{-1}) Navarai	Economics of Rice			
		Gross Income	Cost of Cultivation	Net Income	BCR
T_1	4242	102086.00	30476.00	70823.00	3.34

T_2	3632	80401.00	29045.00	50657.00	2.76
T_3	3750	89951.00	29045.00	59903.00	3.09
T_4	4250	107713.96	30662.00	78651.96	3.51
T_5	4236	97837.06	30062.66	68355.66	3.25
T_6	4238	107450.00	30476.00	70421.34	3.36
T_7	3250	42291.00	27027.46	14272.14	1.56
SE.d	225	-	-	-	-
CD (P = 0.05%)	382	-	-	-	-

CONCLUSION:

From the present studies, it can be concluded that under SRI by adapting transplanting with 8-12 days old seedlings, saturation of water, 25 × 25 cm of spacing and only inorganic with four times conoweeding effectively increased the rice yield with attractive economic returns in Navarai season.

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