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MANAGEMENT REQUIREMENTS OF OVERAGED RICE SEEDLINGS*

Age of seedlings is an important factor that affects the growth and yield of transplanted rice (*Oryza sativa L.*). The potential yield loss on account of planting seedlings older than the optimum physiological depends on the duration of the variety (Pillai, 1958; ten Have, 1971), the weather conditions (Nair *et al.*, 1977) and the cultural and manurial practices adopted (Anonymous, 1976). Two experiments were conducted at the Rice Research Station, Pattambi to assess the management requirements of older seedlings with the object of improving their production efficiency.

The first experiment was conducted for three seasons commencing from the early *'kharif* season of 1976-77 with six treatments (Table 1). The test variety was Joythi, a dwarf *indica* rice of about 110 days duration.

In the second experiment which was conducted during the 'kharif' season Of 1976-77, performance of seedlings of two older age groups (83 days; 63 days) was assessed under 2 spacings (15cm x 20cm; 15cm x 10cm) and four schedules of nitrogen application (Table-2), as compared to that of 30 day-old seedlings planted at optimum management levels (90 kg N/ha in two equal instalments at planting and panicle initiation; 20cm x 15cm spacing). The experiment had 17 treantments, replicated thriee in a Randomised block design. The test variety was Jaya, a dwarf *indica* of medium duration The gross plot size was 3.0m x 4.5m. At planting, all the treatments received a uniform dose of 45kg each of P_2O_5 and K_2O per hectare.

The seedlings of the three age groups-83 days, 63 days and 30 days-were raised in the nursery adopting the 'dry', 'semidry and systems, respectively. Staggered sowing was done in order to facilitate transplanting seedlings on the same day.

The soil of the experimental area was a lateritic sandy loam of moderate fertility (organic carbon, 1.64%; available P_2O_5, 12.5kg/na; available K_2O, 131.0kg/na; pH, 6.1)

1 Transplanting seedlings at the physiological maturity stage of 9 to 10 leaves (45 days) at 6 cm depth in bunches (10 seelding/hill) at the rate of 25 hills/m^2

2 Treatment 1 plus one hand weeding

3 Treatment 2plus nitrogen at 50 kg per ha in two equal instalments at planting and panicle initiation

4 Treatment 3 with the plant population at 50 hills/m^2

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5 Treatment 4 with the seedlings planted shallow at 3 cm depth.

6 Transplanting at theage of 5 to 6 leaves (30 days) with all the agronomic practices adopted for treatment 5.

In the first experiment, the seedlings planted at the physiological maturity stage of 5 to 6 leaves produced more grain yield than those planted at the stage of 9 to 1 leaves in all the three seasons (Table : The cultivators' practice of transplanting older seedlings in bunches under wider spacing as in treatment 1 resulted in the lowest yield consistently, indicating the magnitude of the management gap that limited the potential productivity of seedlings. Weed control only slightly improved the production performance of older seedlings due to poor growth of weeds in the experimental plots. Addition of nitrogen at 50 kg per ha, on the other hand, brought about significant increase in grain production by 904 kg and 395kg per hectare, respectively, in the 'kharif' and 'rabi' seasons of 1976-77 and 385 kg per ha in the kharif season of 1977-78. The mean response was of order of 12.3kg of grain per kg of applied nitrogen. Doubling the plant density per unit area at the same level of nitrogen as in treatment 4 resulted in a moderate yield increase of 169kg per ha only. Shallow planting at 50 hills/m² with two seedlings per hill as in treatment 5 registered grain yields statistically on par with treatments 3 and 4.

As the same level of fertility and plant density, shallow planting older seedlings was more advantageous than deep bunch planting from the point of view of seedling economy. The number of seedlings required in treatment 5 was only 100/m² as against 800/m² in treatment 4. Shallow planting increased the number of panicles per hill and enhanced the flowering duration of the older seedlings by 7 days while bunch planting ensured a large number of panicles per unit area right at the time of planting. Both the practices thus proved to b ; benefitial for increasing the yielding ability of older seedlings The choice of any of these management practices depends on the availability of seedlings.

The seedlings of the older age groups were found to be lower in productivity than those of the younger age group in the second experiment also The potential yield loss on account of planting 83-day and 63 day-old seedlings were, respectively, 718 kg and 714 kg per hectare as compared to 30 day-old seedlings which produced an yield of 4104 kg/ha. The effect due to density of planting was not statistically significant on grain production.

The influence of applied nitrogen on the productivity of seedlings was highly significant (Table-2). At 90 kgN/ha which was applied in two equal instalments, the 83 day old seedlied registered a grain yield of 3586 kg/ha while the 63 doy-old ones yielded 3751 kg/ha. When the basal dose of nitrogen was enhanced by 10 kg/ha without altering the total dose (55 + 35 kg

TABLE I

Number of Panicles/m², panicle weight and grain yield of 'Jyothi' rice as influenced by age of seedlings and management practices.

Treatment	Panicles/m²				Panicle wt (g)				Grain yield (kg/ha)			
	Kharif 1976-77	Rabi 77-78	Kharif 77-78	Mean	Kharif 76-77	Rabi 77-78	Kharif 77-78	Mean	Kharif 76-77	Rabi 76-77	Kharif 77-78	Mean
1.	376	802	299		1.38	0.65	0.64		363	1975	2403	
2.	365	802	815		1.38	0.72	0.68		3678	2043	2400	
3.	480	899	396		1.92	0.72	0.83		4588	2838	2834	
4.	458	814	512		0.98	0.80	0.57		459	2693	3148	
5.	320	764	250		1.34	0.77	1.18		4717	2699	3103	
6.	351	468	217		1.38	0.83	1.44		4874	3589	3200	
CD (5%)	58	92	78		—	—	0.15		363	188	391	

സംഗ്രഹം

പ്രായം കൂടിയ ഞാറുകൾ പറിച്ചുനടുമ്പോൾ ഇവയുടെ ഉൽപ്പാദനക്ഷമത നിലനിർത്തുന്നതിനു ഞാറുകൾ തമ്മിലുള്ള അകലം, ഒരുകട (പുവട്) യിലെ ഞാറുകളുടെ എണ്ണം എന്നീഘടകങ്ങളേക്കാൾ പാകൃജനക വളപ്രയോഗം കൂടുതൽ ഫലപ്രദമാണെന്നു പട്ടാമ്പി നെൽഗവേഷണ കേന്ദ്രത്തിൽ നടത്തിയ പരീക്ഷണങ്ങൾ പ്രകടമാക്കി.

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