

Response of Rice (Var. Mashuri) to Age of Seedlings at Transplanting, Methods of Transplanting and Depth of Planting

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ABSTRACT

A field trial involving two age of seedling (young and aged seedlings), two methods of transplanting (random and 25 x 15 cm) and two depths of transplanting (shallow and deep) was conducted on rice variety Mashuri at the College Farm, Navsari Campus of Gujarat Agricultural University, during kharif season of 1977 and 1978. It was found that the transplanting of young seedlings with shallow depth is very ideal for securing higher yield and profit per hectare. But the planting methods has no significant effect.

(Received on Janu. 15, 1981)

INTRODUCTION

Rice (*Oryza sativa* L.) is the principle crop of South Gujarat (Surat & Valsad district) covering an area of about 1.55 lakh hectares which is about 32 per cent of total area under rice in Gujarat. After introduction of high yielding varieties the production of rice increased considerably. However, yield can be still increased by adopting improved method of cultivation. Age of seedling at transplanting, method of transplanting and depth of planting are the non-cash input, which play an important role in increasing rice production. Many workers have suggested that young seedling give better growth and increase the production in transplanted rice (Sinha *et al*, 1971; Singh and Bhattacharya, 1975 and Pillai and Katyal, 1977). Mahapatra and Padalia (1971) suggested 3-5 cm. depth of planting for getting higher yield of rice.

With assured irrigation facilities cultivation of rice variety Mashuri is most popular among the rice grower of this region and there is a scope for increasing rice production by adopting improved practices of cultivation.

MATERIALS AND METHODS

A field experiment was conducted in factorial randomized block design in four replications, at the College farm, Navsari Campus of Gujarat Agricultural University during kharif seasons of 1977 and 1978 to study the effect of age of seedling at transplanting, method of transplanting and depth of planting on the yield of rice variety Mashuri. The treatment consisted of two age of seedlings; young seedlings (24 days old) and aged seedling (36 and 45 days old during 1977 and 1978, respectively); two methods of transplanting, conventional method (random planting) and improved method (line planting at 25

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cm. x 15 cm.) and two depths of planting, shallow planting (3-4 cm.) and deep planting (5-7 cm.). The crop were transplanted in puddled field as per treatments on 1-7-77 and 20-7-78 and harvested on 4-11-77 and 16-11-78 in respective years. The transplanted crop was fertilized with 100-50-0 NPK kg/ha

as per recommendations and proper plant protection measures were taken during both the years.

RESULTS AND DISCUSSION

The results recorded on ancillary observation like plant height, number of tillers per hill and number of grain per panicle are presented in Table 1.

TABLE 1

Effect of age of seedlings, transplanting methods and planting depth on ancillary characters of rice Mashuri.

Treatments	Effective tillers/hill		Noneffective tillers/hill		Number of grain/panicle		Final plant height (cm)	
	1977	1978	1977	1978	1977	1978	1977	1978
I	2	3	4	5	6	7	8	9
(A) Age of seedlings								
(1) Young seedling	6.89	7.01	1.58	1.45	218.25	204.93	94.86	86.33
(2) Aged seedling	6.65	6.55	1.65	1.60	187.06	163.5	94.76	86.61
S.E.m. $\pm$	0.11	0.14	0.03	0.03	2.55	1.96	0.93	0.99
C.D. (5%)	N.S.	0.04	N.S.	N.S.	7.49	5.76	N.S.	N.S.
(B) Planting depth								
(1) Shallow	7.28	7.21	1.39	1.30	218.75	199.93	94.55	84.41
(2) Deep	6.26	6.35	1.84	1.76	186.56	168.50	95.06	85.52
S.E.m. $\pm$	0.11	0.14	0.03	0.03	2.55	1.96	0.93	0.99
C.D. (5%)	0.33	0.40	0.09	0.08	7.49	5.76	N.S.	N.S.
(C) Planting methods								
(1) Random planting	6.73	6.77	1.62	1.54	301.12	185.25	94.74	85.86
(2) 25 x 15 cm. planting	6.81	6.79	1.61	1.51	204.18	183.18	94.88	87.07
S.E.m. $\pm$	0.11	0.14	0.03	0.03	2.55	1.96	0.93	0.99
C.D. (5%)	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

It is revealed from the data given in Table 1 that plant height was not affected by any of the treatments. The number of effective tillers per plant were affected only by age of seedlings at transplanting and depth of planting, but not by planting methods. Shallow depth of planting helped in increasing number of productive tillers per plant over those recorded under deep planting. This is in confirmation to the findings of Mahapatra and Padalia (1971).

More number of productive tillers per plant were also recorded with young seedlings. Though method of planting did not effected the number of grain per panicle, age of seedlings at transplanting and depth of planting significantly affected this character. More number of grain per panicle were recorded with young seedling, when shallow planted.

It is clear from the data given in Table 2 that method of planting did not alter yield of grain or straw in rice but

TABLE 2

Effect of age of seedlings, transplanting methods and planting depths on yield and gross realization of rice Mashuri.

Treatment	Grain yield kg/ha			Straw yield kg/ha			Gross realization Rs./ha.
	1977	1978	Mean	1977	1978	Mean	
1	2	3	4	5	6	7	8
(A) Age of seedling							
(1) Young seedling	3274	3735	3505	11835	11342	11588	6119
(2) aged seedling	3096	3108	3102	11833	11933	11883	5660
S.Em. $\pm$	77	100	—	124	178	—	—
C.D. (5%)	N.S.	293	—	N.S.	525	—	—
(B) Planting							
(1) Shallow	3514	3745	3630	12157	11846	12002	6337
(2) Deep	2855	3098	2977	11510	11429	11470	5441
S.Em. $\pm$	77	100	—	124	178	—	—
C.D. (5%)	227	293	—	363	N.S.	—	—
(C) Planting method							
(1) Random planting	3172	3412	3292	11865	11680	11772	5880
(2) 25 x 15 cm. planting	3197	3431	3314	11803	11595	11699	5898
S.Em. $\pm$	78	100	—	124	178	—	—
C.D. (5%)	N.S.	N.S.	N.S.	N.S.	N.S.	—	—

(Price of rice grain 1.25 Rs./kg and 0.15 Rs./kg for straw)

young seedlings and shallow planting gave significantly higher yield of grain and straw over those recorded with aged seedlings and deep planting. This may be due to higher number of productive tillers per hill and more number of grains per panicle under these treatments.

Considering the gross realization it is very clear that planting methods have no effect on gross realization. While age of seedlings and planting depths affect greatly. (Rs. 459 and Rs. 896 more income by transplanting young seedling and shallow depth of planting over aged seedling and deep planting). Indicating that for securing higher profit, planting of young seedlings with shallow depth is necessary for rice variety Mashuri,

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