

Study of Suitable Paddy Hybrid With Respect to Transplanting Time in Relation to Weather parameters

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Abstract

Transplanting of kharif paddy during 28th MW improved all the growth components viz., plant height, number of tillers plant-1 with yield component viz., length of panicle, number of spikes plant-1, number of grains panical-1, grain weight panical-1 and test weight but it was at par with transplanting at 26th MW and 30th MW and superior over transplanting at 32th MW. The higher grain (69.5 q ha⁻¹) and straw yield (76.7 q ha⁻¹) were significantly more with the transplanting at 28th MW but it was at par with transplanting at 26th MW [grain (66.6 q ha⁻¹) and straw yield (72.7 q ha⁻¹)] as well as 30th MW [grain (63.6 q ha⁻¹) and straw yield (70.9 q ha⁻¹)] Among the four different hybrids of paddy, Sahyadri – 3 (Savitri) recorded significantly higher growth parameters viz., plant height, number of tillers plant-1 with yield attributing characters viz., length of panicle, number of spikes plant-1, number of grains panical-1, grain weight panical-1 and test weight which was at par with hybrid Sahyadri and significantly superior over rest of all hybrids.

Key words : Rice, Transplanting times, Varieties.

Rice has fed more people over a longer period of time than any other crop. As far back as 2500 B.C. rice has been documented in the history books as a source of food and for tradition as well. Two species have emerged as our most popular cultivated rice. *Oryza sativa* and *Oryza glaberrima*, of these two species the more widely produced is *O. sativa*. From an early history in the Asian areas rice has spread and is now grown on all continents except Antarctica. Being able to grow in this wide spectrum of climates is the reason rice is one of the most widely eaten foods of the world. In Maharashtra area (7.856 lakh ha) and production (19.28 lakh tons rough rice) of rice crop is more in Vidarbha region. The highest productivity was observed in Konkan region that is 2.91 t ha⁻¹ (4.22 t ha⁻¹ for rough rice). Marathwada region is the non-traditional rice growing area. Due to the erratic and less rainfall

in Marathwada region, the average productivity of rice is lowest that is t ha⁻¹ (0.76 t ha⁻¹ for rough rice) To increase and sustain the productivity of rice it is necessary to adopt improved integrated approach of rice cultivation. In integrated approach the proper date of transplanting of rice seedling plays an important role in increasing grain and straw yield of rice. Pandey, *et al.* (2001) reported higher paddy yield when transplanted on 15th or 29th of June. Hence, it is necessary to transplant the rice seedling in proper time and age to achieve the sustainable yield of rice. Optimization of transplanting time saves paddy from attack by insect, pest and diseases.

Materials and Methods

Experimental details : The experiment was laid out in Split plot with sixteen treatment combinations and three replications. The treatment comprising four transplanting times viz., T₁ : 26 MW (24th June to 30th June), T₂ :

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28 MW (8th July to 14th July), T₃ : 30 MW (22th July to 28th July), T₄ : 32 MW (5th August to 11th August) as main plot treatment and four paddy hybrids *viz.*, H₁ : Sahyadri, H₂ : Sahyadri-2 (Vashisthi), H₃ : Sahyadri-3 (Savitri), H₄ : Sahyadri-4 (Hansa) as sub plot treatment. The gross plot size was 3 m x 3 m and net plot size was 2.60 m x 2.60 m.

The other details of layout are given below:

1. Name of crop : Paddy
2. Hybrids : As per treatments
3. Season : Kharif, 2020
4. Design : Split plot
5. No. of Replications : Three
6. Treatments : Sixteen (4 x 4)
7. Spacing : 15-25 cm x 15-25 cm
8. Plot size : Gross: 3 m x 3 m
Net: 2.60 m x 2.60 m
9. Place of research work : A.R.S. farm, Vadgaon Maval, Tal. Maval, Dist. Pune.
10. Commencement of research work : Kharif, 2020
11. Transplanting date : As per treatments

Results and Discussion

Yield studies : The grain yield (q ha⁻¹) of paddy as influenced by different treatments are presented in Table 1. and graphically depicted in Fig. 1. The mean grain yields of paddy was 64.1 q ha⁻¹, Grain yield.

Effect of transplanting times : The grain yield of paddy was influenced significantly due to different transplanting times. The grain yield was maximum (69.5 q ha⁻¹) when paddy was transplanted at 28th MW and it was at par with transplanted during 26th (66.6) and 30th (63.6) MW. The transplanting of paddy seedling at 32nd MW were produced significantly lower grain yield 56.8 q ha⁻¹. These results were in accordance with Nazir (1994), Sherief *et al.* (2000) and Mahmood *et al.* (1995).

Effect of hybrids : The grain yield (q ha⁻¹) of paddy was influenced significantly due to hybrids. The grain yield was significantly higher in Sahyadri - 3 (Savitri) (69.3 q ha⁻¹) and it was at par with Sahyadri (66.0 q ha⁻¹) and significantly superior over rest of the paddy hybrids.

Table 1. The yield of paddy influenced by different treatments

Treatment	Grain yield (q ha ⁻¹)
A) Transplanting Time (T)	
T ₁ : 4 th week of June (26 th MW)	66.56
T ₂ : 2 nd week of July (28 th MW)	69.50
T ₃ : 4 th week of July (30 th MW)	63.63
T ₄ : 2 nd week of August (32 nd MW)	56.81
S.E.±	1.93
CD at 5%	6.66
B) Hybrids (H)	
H ₁ : Sahyadri	65.99
H ₂ : Sahyadri-2 (Vashisthi)	59.69
H ₃ : Sahyadri-3 (Savitri)	69.27
H ₄ : Sahyadri-4 (Hansa)	61.56
S.E.±	1.34
C.D. at 5%	3.92
C) Interaction (A x B)	
S.E.± between levels of A	3.85
C.D. at 5%	13.33
S.E.± between levels of B	2.68
C.D. at 5%	7.83
General mean	64.1

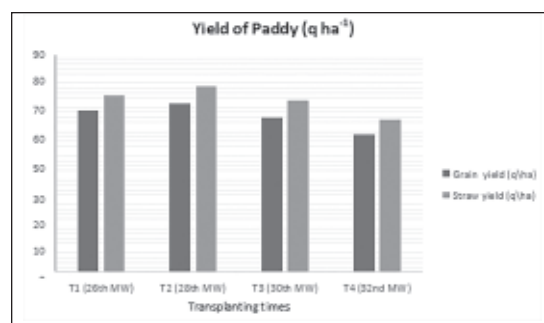


Fig. 1. The yield of paddy as influenced by different transplanting times

The hybrid Sahyadri-2 (Vashisthi) recorded significantly lower grain yield (59.7 q ha^{-1}). The differences in grain yield in paddy hybrids might be due to inherent genetical potential of paddy hybrids.

Interaction effects : The grain yield (q ha^{-1}) of paddy as influenced by interaction effects are reported in (Table 2.). The interaction between transplanting of Sahyadri - 3 (Savitri) hybrid in 28th MW was recorded the highest grain yield (80.3 q ha^{-1}) than rest of treatment combinations and it was at par with Sahyadri in all the transplanting times except transplanting at 32th MW. Overall, Sahyadri - 3 (Savitri) hybrid recorded more grain yield in all the transplanting times except transplanting at 32th MW as compared to Sahyadri, Sahyadri-2 and Sahyadri - 4. The least grain yield was observed in Sahyadri-2 (Vashisthi) when interacted with different transplanting times.

This result showed that delay in transplanting of paddy hybrids, could not able to assimilate the more biomass as result reduced mean grain yield of paddy. A hybrid Sahyadri - 3 (Savitri) recorded maximum grain yield due to varietal characters and weather conditions during that period. The correlation between weather parameters and grain yield revealed significant negative correlation in case of T_{max} ($r = -0.645^{**}$), GDD ($r = -0.524^*$) and bright sunshine hour ($r = -0.622^{**}$). Significant positive correlation found with T_{min} , RH-I, RH-II, and rainfall and it was $r = 0.610^*$, $r = 0.565^*$, $r = 0.653^{**}$ and $r = 0.656^{**}$, respectively (Table 2).

Conclusions

Transplanting of *kharif* paddy during 28th MW favourably influenced all the growth and yield components but early transplanting during 26th MW as well as during late transplanting up to 30th MW also gave sustainable yield. It would be, therefore, advisable to transplant *Kharif*

Table 2. Grain yield (q ha^{-1}) of paddy as influenced by interaction between transplanting times and hybrids

Hybrid Time of Trans-planting	H ₁	H ₂	H ₃	H ₄	Mean
T ₁ (26 th MW)	68.47	61.73	71.49	64.57	66.56
T ₂ (28 th MW)	73.72	57.77	80.27	66.23	69.50
T ₃ (30 th MW)	68.39	56.47	72.33	57.31	63.63
T ₄ (32 nd MW)	53.36	62.79	52.98	58.11	56.81
Mean	65.99	59.69	69.27	61.56	
S.E. \pm	3.85				
C.D. at 5%	13.33				

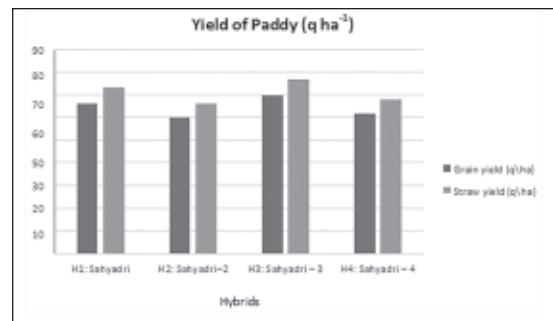


Fig. 2. The yield of paddy as influenced by different hybrids

paddy during 28th MW to obtain maximum yield of paddy. Among the four different hybrids of paddy, Sahyadri-3 (Savitri) recorded significantly higher growth and yield components which was at par with hybrid Sahyadri and significantly superior over Sahyadri-2 (Vashisthi) and Sahyadri-4 (Hansa). It would be, therefore, suggested to adopt hybrid Sahyadri-3 (Savitri) or Sahyadri for *kharif* paddy cultivation under Vadgaon Maval conditions.

References

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