Research Notes

Optimization of time of planting and nitrogen levels to hybrid rice (ADTRH-1)

K. SUGANTHI, P. SUBBIAN AND S. MARIMUTHU
Department of Agronomy, Tamil Nadu Agricultural University, Coimbatore-641 003, Tamil Nadu.

India has achieved self-sufficiency in food grain production during the past decades, thanks to unfolding technical advances in the field of Agriculture. The country has to increase the food grain production by 5 MT every year and rice productivity by 1.9 t ha^{-1} to sustain self-sufficiency. But, rice production has reached a plateau under irrigated eco-system. So it becomes imperative to increase rice productivity under irrigated systems. Hybrid rice technology may be the practical and viable one to increase the productivity at this juncture. Moreover, it is the proven technology in China, which helped to increase rice production of the country from 29 to 200 MT. It is important to develop good agronomic package of practices in the target environments for cultivating commercial rice hybrids to exploit full yield potential. Timely planting and N management are crucial factors for realizing the maximum of the inherent yield potential of a crop. With this view, field experiment was conducted at wetlands of Tamil Nadu Agricultural University, Coimbatore during *Kuruvai* (June-September) season of 2001 to optimize the time of planting and N level to hybrid rice (ADTRH-1).

The experiment was laid in split plot design with four dates of planting, *viz.* 15th May, 1st June, 15th June and 1st July in main plots and four levels of N (0, 100, 150 and 200 kg N ha^{-1}) in sub-plots with three replications. Staggered sowing of nursery was taken up to get 25 days old seedlings on each date of planting, which were transplanted at a spacing of 20 x 10 cm with one seedling $hill^{-1}$. Total quantity of N was applied as urea in three splits (50,25 and 25% at basal, maximum tillering and panicle initiation stages, respectively) and the entire quantity of P and K were applied

Table 1. Effect of time of planting and N levels on growth and yield of hybrid rice (ADTRH-1)

Treatments	Plant height (cm)		Number of productive tillers $hill^{-1}$	Grain yield (kg ha^{-1})
	30 DAT	60 DAT		
Date of Planting				
May 15	52.96	72.42	17.08	5662
June 1	47.95	71.89	16.89	5100
June 15	45.25	70.92	16.67	4506
July 1	41.92	63.67	15.50	3963
SEd	1.31	1.40	0.71	62
CD (P=0.05)	3.20	3.42	1.75	150
N levels (kg ha^{-1})				
0	44.59	68.06	13.17	4472
100	46.56	69.05	14.46	4720
150	47.31	70.00	17.52	5012
200	49.64	71.88	21.00	5027
SEd	1.45	1.41	0.66	54
CD (P=0.05)	3.00	2.91	1.36	112

as basal, uniformly @ 50 kg ha^{-1} for all the treatments.

The experimental results showed that plant height, productive tillers and grain yield were the highest with the crop transplanted by May 15, followed by June 1 and lowest in July 1 planting (Table 1). Crop transplanted by May 15 recorded maximum plant height (52.96 cm) on 30 DAT, followed by the crop transplanted on June 1st and 15th and both were also comparable. However, the same trend was not observed in plant height on 60 DAT. The significant decline in productive tillers per hill was observed with delayed transplanting resulting in reduced grain yield. Similar findings were also reported by Thakur *et al.* (1996) and Muthukrishnan *et al.* (2000). There was 43 per cent grain yield increase in the crop transplanted by May 15th (5.66 t ha^{-1}) compared to July 1st planting (3.96 t ha^{-1}). The yield increase in earlier planting might be due to the availability of more sunshine hours, which may exert effect on high conversion of light energy into chemical energy and subsequent translocation to assimilatory organs (Hari Om *et al.* 1997).

Graded levels of N also showed significant influence on plant height, productive tillers and grain yield (Table 1). Results showed that highest plant height, productive tillers $hill^{-1}$ and grain yield were recorded at 200 kg N ha^{-1}, but it was comparable with 150 kg N ha^{-1}. However grain yield was significantly high with increase of N from 0 to 150 kg ha These findings were in agreement with t findings of Muthukrishnan *et al.* (1999).

From the study, it is concluded that highe yield in rice hybrid (ADTRH-1) could be exploite by planting during May 15th with an applicatio of 150 kg N ha^{-1} in three splits (50,25 an 25% at basal, maximum tillering and panicl initiation respectively) during *Kuruvai* (June September) season under Coimbatore condition

References

Hari Om, Katyal, S.K. and Dhiman, S.D. (1997 Effect of nitrogen and seed rate on growt and yield of rice hybrid (*Oryza sativa*). *India J. Agron.* **42**: 275-282.

Muthukrishnan, P., Venkatakrishnan, A.S. an Subramanian, M. (1999). Response of ric hybrids to nitrogen levels. *Madras Agri J.* **86**: 625-626.

Muthukrishnan, P., Ponnuswamy, K., Santhi, P. an Subramanian, M. (2000). Effect of tran planting time on the performance of ric hybrids in Cauvery delta zone. *Madra Agric.J.* **87**: 506-507.

Thakur, R.B., Pandya, S.B. and Twivedi, P.K. (1996 Effect of time of transplanting on performanc of scented rice. *Oryza*, **33**: 107-109.

(Received : May 2002; Revised : October 2002

Madras Agric. J. 90 (4-6) : 340-344 April-June 2003

Research Notes

Integrated nutrient management for rice and mustard cropping system

D. DUTTA AND P. BANDYOPADHYAYA
Dept. of Agronomy, Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur-741 252, Nadia, West Benga

Indiscriminate use of chemical fertilizer causes environmental pollution. Considering this, integrated approach of plant nutrient management (conjunctive use of organic, bio and inorganic fertilizers) is gaining importance. Integrated nutrient management (INM) concept if properly designed not only meets the nutrient requirement of component crops of a system but keeps th system intact. The imporance of bio and organi sources such as blue-green algae (Singh an Singh, 1987) and organic manures (Chakrabort *et al.* 1988) to rice cultivation has been accepte globally. Green manuring with *Sesbania* is mor promising technique in increasing the yield o