

## **STUDIES ON THE PERFORMANCE OF RICE (ORYZA SATIVA LINN) VAR. CULTURE 12035, UNDER VARYING LEVELS OF NITROGEN AND SPACING**

M. ACHUTHAN NAIR\* and C. M. GEORGE

*Agricultural College, Vellayam*

A high yielding, short duration variety called Culture-12035 has been evolved at the Central Rice Research Station at Pattambi by crossing IR 8, a popular dwarf *indica* variety with Annapurna, a high yielding short duration variety. This being a newly evolved variety, information on the nitrogen and spacing requirements are meagre. The present investigation was therefore undertaken to study its response to varying levels of nitrogen and different levels of spacing on the growth, grain yield and quality under the agroclimatic condition of Vellayani, Trivandrum, Kerala.

### **Materials and Methods**

The experiment was laid out at the Agricultural College farm in the wet lands, during the late second crop season (November-February) 1970-'71. The soil belongs to the textural class sandy clay loam, having a total nitrogen content of 0.1140%. The experiment was laid out in a randomised block design, with 12 treatment combinations and 3 replications. There were 4 levels of nitrogen (60, 80, 100 and 120 kg per ha) and 3 spacings, (10 cm x 10 cm, 10 cm x 15 cm and 15 cm X 15 cm). Nitrogen was applied in the form of ammonium sulphate analysing 20.3% N, in 3 split doses viz 1/3 as basal dressing, 1/3 at active tillering stage and the remaining 1/3 at panicle initiation stage. The biometric observations were taken from a sampling unit of one square metre in each plot. The observations on growth performance were recorded at an interval of 20 days, i. e. on 21st, 41st and 61st days after transplanting and 5 days prior to harvest. The four corner plants of the sample area were separately collected before harvest and these were used for recording the panicle characteristics. Each plot was separately harvested and threshed. Dry weights of grain and straw were also recorded plotwise.

### **Results and Discussion**

The data on the effect of different levels of nitrogen and spacing on the development of yield components as well as on the grain and straw yields of rice are presented in Tables 1 and 2.

Now Senior Research Assistant, C. P. C. R. I. Regional Station, Vittal, Mysore.

Table I

Nitrogen kg/ha	No. of onions per square metre	No. of good parcels	% of filled bulbs	Weight of bulb (kg)	Onion yield (Tons/ha)	Onion yield (M. Tons/ha)
80	5.020	2.58	87.02	28.55	5.250	9.1675
80	5.101	2.57	85.27	28.32	5.248	10.2808
180	5.2207	0.77	87.24	27.82	5.4592	10.1508
220	5.4050	1.401	88.25	27.5	5.2757	10.009
Standard Error (S.E.)	NS	NS	NS	NS	NS	NS
Q.D. at 5%	—	—	—	—	—	—
20 × 10	5.05	1.15	—	28	5.880	0.277
30 × 15	5.08	1.88	6	28	5.801	0.10
50 × 15	—	1.907	6.58	88	4.925	0.168
Standard Error (S.E.)	—	NS	NS	NS	—	—
Q.D. at 5%	5.5	5	—	—	—	—

10cm X 15 cm and 15 cm X 15; cm the differences between successive treatments being significant. Spacing, on the contrary, failed to bring about significant differences in straw yield. The increase in grain yield at closer spacing was mainly due to a corresponding increase in the number of panicles per square metre. All other yield components, viz. number of grains per panicles, percentage of filled grains and thousand grain weight were not influenced by variation in spacing. Application of nitrogen beyond 60 kg per hectare did not show any significant effect on any of the yield components.

### Acknowledgements

The first author is thankful to the Indian Council of Agricultural Research, New Delhi, for the award of Junior Fellowship, which enabled him to take up the study.

### REFERENCES

- Chandler 1965 Factors affecting rice yields. *Rice News Letter* 13: 2
- Ghildyal, B. P. and Jana, R. K. 1967 Agrometeorological environment affecting rice yield. *Agron. J.* 59
- Muhr, Gilbert, Datta, N. P., Sankarasubramony, Leley, U. K. and Donahue, R. L. 1965 *Soil testing in India*, U. S. Agency for International Development Missions to India, New Delhi.

The plot size was 6 m. x 5 m. gross and 5.2 m. x 3.9 m. net. The variety 'thriveni' was transplanted at a spacing of 20 cm. x 15 cm.  $P_2O_5$  and  $K_2O$  were kept constant at 60 and 50 kg. per hectare respectively applied during last ploughing.

Data in Table 2 indicate that treatment No. 11 (50 Kg N at tillering and 50 kg. N at panicle initiation) has recorded significantly higher grain yield, grain to straw ratio and number of spikelets per panicle than all the other treatments. There was no significant effect on number of panicles per sq. metre, panicle length and 1000 grain weight due to any of the

**Table 2**  
**Effect of treatments on yield attributes**

Treatment No.	Yield components						
	No of panicles per sq. m	Panicle length (cm.)	Spikelets per panicle	Panicle weight (g)	1000 grain weight (g)	Grain/straw ratio	Grain yield/plot (kg.)
1	299	20.0	922	2.02	248	0.73	7.15
2	343	21.8	975	2.44	26.3	0.68	8.62
3	347	20.9	1027	2.19	26.1	0.04	9.13
4	330	21.2	1109	2.19	25.7	0.70	9.58
5	336	21.2	1124	2.27	25.4	0.71	8.57
6	311	22.0	1083	<b>2.31</b>	26.0	0.79	9.30
7	322	26.4	970	2.37	<b>25.6</b>	0.76	8.86
8	326	20.9	1006	2.44	25.9	0.77	8.60
9	317	22.2	1049	2.16	25.8	0.76	9.90
10	307	21.9	1096	2.62	25.6	0.80	9.63
11	331	23.2	1238*	<b>2.81</b>	26.4	0.89*	11.46*
12	313	<b>20.8</b>	1027	2.55	24.8	0.78	9.23
CD(0.05)	NS	NS	113.7	0.544	NS	0.08	1.38

NS = Not significant

Significant over all other treatments