

Optimum Spacing for Three Rice Varieties under South Gujarat Condition

C. L. Patel, H. S. Patel and H. C. Patel

Department of Agronomy, GAU,
Navsari Campus, Navsari

To boost up the rice production per unit area, plant population should be optimum, considering soil fertility and varietal characters. Yadav *et al.* (1976) observed non-significant difference among 15 x 5 cm, 15 x 10 cm, and 15 x 15 cm spacings; while Kumar Virendra *et al.* (1975) reported that spacing of 15 x 15 cm was statistically superior to 25 x 15 cm spacing.

A field experiment were conducted during 1978 and 1979 *kharif* seasons at the college farm, GAU, Navsari Campus, Navsari, in split plot design replicated thrice with spacings, in main plots and varieties in sub-plot. The land was puddled and 28th and 25th days old rice seedling of varieties IR. 22; Pusa. 33 and Sona were transplanted as per spacing treatment with two seedlings per hill on 31-7-78 and 17-7-79, respectively. Fertilizers were given at the rate of 100-50-0 kg NPK/ha, as per recommendation. The variety Pusa-33 was harvested on 16-10-78 and 12-10-79, I.R. 22 on 28-10-78 and 16-10-78 and Sona on 10-11-78 and 2-11-79.

TABLE 1

Effect of different spacings on yield and yield attributes of three rice varieties.

Treatments	Grain yield kg/ha			Straw yield kg/ha			Effective tillers/hill		No of grains/panicle		100 grain weight in gm.	
	1978	1979	Mean	1978	1979	Mean	1978	1979	1978	1979	1978	1979
(A) Spacing:												
1. 10 x 10 cm	4802	5116	4959	8064	9135	8500	3.20	4.17	102.8	100.0	2.16	2.07
2. 15 x 10 cm	5057	5294	5176	7965	9182	8574	4.32	5.44	106.1	116.3	2.22	2.16
3. 20 x 10 cm	4918	5253	5085	8069	8529	8299	5.60	6.55	116.5	112.4	2.23	2.26
4. 25 x 10 cm	4518	5011	4769	7816	8737	8277	5.61	6.81	121.6	120.3	2.24	2.14
5. 30 x 10 cm	4291	4991	4591	7399	8173	7786	6.55	6.90	121.2	126.3	2.27	2.22
S.E.m. $\pm$	100	72	—	219	216	—	0.35	0.26	2.4	4.6	0.04	0.04
C. D. (5 %)	327	233	—	N.S.	N.S.	—	1.14	0.85	7.7	15.2	N.S.	N.S.
(B) Variety:												
1. IR. 22.	4789	5375	5078	8651	8369	8510	5.10	6.06	109.9	112.6	2.22	2.12
2. Pusa-33	4630	4767	4699	5920	7739	6830	5.65	6.08	81.1	90.7	2.53	2.48
3. Sona (IET.1991)	4741	5196	4968	9016	10146	9581	4.32	5.78	150.4	141.9	1.92	1.91
S.E.m. $\pm$	83	76	—	169	108	—	0.18	0.18	2.5	4.0	0.02	0.05
C. D. (5 %)	N.S.	223	—	498	317	—	0.53	N.S.	7.3	11.8	0.06	0.14
(C) Interaction:												
S.E.m. $\pm$	187	170	—	378	240	—	0.39	0.41	5.5	8.9	0.04	0.11
C. D. (5 %)	N.S.	N.S.	—	N.S.	708	—	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

Different spacing treatments markedly influenced the grain yield and yield contributing characters (Table 1). In both the years 15x10 cm spacing gave the highest grain yield and was at par with 20x10 cm and 10x10 cm spacings which is in agreement with the finding of Singh and Singh (1973). The straw yield was not significantly affected by any of spacing treatments in both the years. Significant differences in effective tillers per hill were observed in both the years. The 30 x 10 cm spacing gave highest number of tillers per hill which was at par with 25 x 10 cm and 20 x 10 cm spacing. The number of grain per panicle also gave significant results in both the years. In 1978 crop season 25 x 10 cm spacing gave the highest number of grain per panicle which was at par with 30 x 10 cm and 20 x 10 cm spacings, while in the 1979, 30 x 10 cm spacing gave the highest number of grain per panicle which was at par with 25 x 10 cm, 20 x 10 cm and 15 x 10 cm spacings. The 100 grain weight was not significantly affected by any of spacing treatments.

The variety IR-22 gave the highest grain yield in both the year but the difference was significant in 1979 crop season only over Pusa-33. The variety Sona gave significantly the highest straw yield in both the years which was at par with IR-22 in 1978 crop season.

The significantly higher number of grain per panicle was also given by variety Sona. The variety Pusa-33 gave the highest number of effective tiller per hill but the difference was significant only in 1978 crop season. It also gave significantly the highest 100 grain weight in both the year.

The effect of interaction for straw yield in 1979 crop season was significant. The variety Sona with 15 x 10 cm, spacing gave the highest straw yield (11004 kg/ha) followed by 25 x 10 cm spacing (10292 kg/ha). The lowest straw yield was given by Pusa-33 with 30 x 10 cm spacing (6873 kg/ha).

(Received on Oct. 6, 1980)

REFERENCES

- Kumar Virendra, P. M. Chauhan and A. C. Singh (1975) Effect of three levels of nitrogen and three spacings on grain yield of two varieties of rice. *Indian J. Agron.* **20** (3) : 269-270.
- Singh, S. P. and V. Singh (1973). Effect of different levels of nitrogen, plant population and different water regimes on grain yield of rice variety Jamuna. *Indian J. Agron.*, **18** (4) : 445-447.
- Yadav, D., P. B. Bajpai and S. P. Pathak (1976). Effect of fertility and spacing on grain yield of rice. *Indian J. Agron.* **21** (1) : 57-58.