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Influence of Sowing Time on the Yield Attributes and Yield of Rice Varieties in Periyar-Vaigai Command Area

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A Fild trial was conducted during kharif, 1975-76 to study the effect of time of sowing on rice varieties, Bhavani and IR 20, at different levels of fertilization, Six fortnightly sowings commencing from July 1, 1975 coupled with three levles of fertilization were accomodated in a spilt plot design. For early sowing in July Bhavani was best suiied whereas, for delayed sowing, IR 20 was better.

Seasonal factors play a major role in deciding crop production. Rice is grown in all the seasons under diversified conditions in the South and South East Asia. *Kharif* season accounts for more than 50% of the area because of adequate water supply. In Tamil Nadu, an area of 26.9 lakh hectares is grown to rice and of this, Periyar-Vaigai Command Area in Madurai District accounts for 1.6 lakh hectares. A need was felt to determine the optimum time to sowing for exploiting the full potential of the popular, high yielding rice varieties in this tract and hence this study was undertaken.

MATERIAL AND METHODS

A field experiment was conducted in split plot design to study the influence of date of sowing on growth, yield components and yield of two rice cultivars under three levels of fertilizer application. The experiment was conducted from July, 1975 to January, 1976. The soil was sandy clay loam with a pH of 6.7, low in available N and K and medium in available P.

The two cultivars, Bhavani and IR 20, with three levels of fertilizer application (90:45:45, 120:60:60, 150:75:75 kg $N:P_2O_5:K_2O$/ha) were accomodated in the main plots while six dates of sowing at fornightly intervals commencing from July 1st to September 14th formed the sub-plots. The net plot size was 6.4 × 2.2m. In this paper the performance of the two cultivars under different dates of sowings are presented and discussed.

RESULTS AND DISCUSSION

(i) *Productive tiller per hill:*

July 1st sown crop recorded larger number of productive tillers (7.55) and was on par with that of July 15th sowing (Table) the tiller numbers in both the July sowings were greater than in the later sowings. The interaction was absent. Halappa *et. al.* (1974) reported reduction in productive tillers in late planted rice varieties.

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(ii) *Panicle length*:

July 1st sown rice had longer panicle length (25.1 cm) and was on par with that at July 15th sowing. The panicle length in the July sown crop was significantly longer than that in other sowings and delayed sowings significantly reduced the panicle length. Interaction between dates of sowing and variety was significant. Panicles of IR 20 were relatively longer than that of Bhavani under all the dates of sowing.

(iii) *Spikelets per panicle*:

Higher number of spikelets were observed in July sowing than in late sowings; However, the difference between the three sowings was not significant. Interaction between dates of sowings and varieties was significant. In all the sowings, except August 30th sowing IR 20 recorded greater number of spikelets than Bhavani. In Bhavani, though July 1st sowing recorded higher number of spikelets (145) it was on par with other sowings except the last two sowings. A steady decline in number of spikelets was noticed with Bhavani in the successive sowings. The behaviour of IR 20 was erratic. Though July 15th sowing recorded highest number of spikelets (155) it was followed by September 14th and July 1st sowings. Medium duration rice varieties planted during July have been reported to have lengthy panicles and more number of spikeletes than the late season crop (Mahapatra and Bedekar, 1968)

(iv) *Test weight of grains:*

The treatmental differences between variety and dates of sowings were not-significant. Bhavani had heavier grains (21.8 g/1000 grain) than IR 20 (20.5 g). The test weight of grain being a genetic character, was not much influenced by the he treatments.

(v) *Spikelet sterility*:

The dates of sowing had significant influence on spikelet sterility. August 30th sowing recorded the maximum spikelet sterility which was on par with September 14th sowing. These two late sowings had significantly higher sterile spikelets than other dates of sowings. July 1st and 15th sowings recorded the minimum sterility percentage. The interaction between dates of sowing and varieties was also significant In July 1st and 15th sowing, through IR 20 registered higher spikelet sterility it was on par with that of Bhavani. In August 30th sowing IR 20 recorded maximum spikelet sterility which was higher than that in Bhavani. In the last sowing, Bhavani recorded significantly higher values of spikelet sterility than in IR 20. In both the varieties earlier sowing of July 1st and 15th had lesser number of spikelet sterility than the later sowing.

(vi) *Days to flowering:*

The dates of sowing significantly altered the flowering date. July 1st sowing took more number of days (97) to flower than the other sowings. The days to flowering with July 30th sowing was on par with that at July 15th sowing. The last sowing took least number of days to flower. A difference of 9 days for flowering was observed from July 1st to September 14th sowing.

(vii) *Grain ripening Period*:

The date of sowings had appreciable influence on grain ripening period. September 14th sowing had the maximum number ot days (43) for grain ripening. The earlier sowings had lesser number of days for grain ripening period. The interaction between dates of sowing and varieties was significant. Except in July 15th and sowing, Bhavani had significantly more number of ripening days than IR 20. In both the varieties, September 14th sowing took more number of days for grain ripening.

(viii) *Grain Yield*:

The grain yield of Bhavani as well as IR 20 was higher in the first two sowings during July. July 1st sowing recorded the highest grain yield of 6749 kg/ha which was significantly higher than that at the other dates of sowing. The data clearly indicate that the yield reduction was quite considerable with delayed sowings. Though the decline in yield with delay in sowing was steady in Bhavani the cultivar IR 20 showed an increes in yield at the last sowing (Sept. 14.) than at September 1st sowing. In the late sowings however, the last sowing performed better than the previous sowing. As discussed already the earlier sowings had higher number of productive tillers, lengthy panicles and more number of spikelets under yield components as well as increased plant height and LAI under growt characters. The spikelet sterility was low under early sowing than that of late sowings. All these factors contributed to the better performance during early sowing. The observations are in agreement with that of the earlier workers (Rajagopalan *et. al.*, 1973. Halappa *et al.*, 1974) who reported decline in grain yield with delay in sowing dates behaviour of IR 20 to time of sowing as compared to Bhavani.

(ix) *Straw Yield*:

The yield of straw increased with delay in sowing. However, September 14th sown crop recorded the least straw yield. In both the varieties the straw yield exhibited a similar trend. Barring September 14th sowing, the later sowings produced greater straw yield than the earlier sowing in contrast to the trend observed in grain yield. This phenomenon may be due to the poor conversion of source to sink.

REFERENCES

HALAPPA, G., T. A. KHAN, M. MAHADEVAPPA. and M. N. VENKATARMAN. 1974. Optimum time of planting High yielding varieties of paddy in Khariff season of Tank fed tracts of Karnataka. *Mysore J. Agric Sci* 8 (4): 488-92.

MAHAPATRA.I.C. and BEDEKAR. 1968. Tech.Rep. *Cent Rice. Res. Inst*, Cuttack. 1967 and 1968 Ag. 3.3. pp. 20-22.

RAJAGOPALAN, K.P. NARAYANASWAMYandM.L. KUMLER, 1973.Yield potential of some I.R.R.I. varieties under different dates of planting at Coimbatore (Tamil Nadu *Int. Rice. Comn. Newsl.* 22 (1):1-8.

TABLE : Effect of time of sowing on yield components and yield of rice varieties, Bhavani and IR 20

Dates of Sowing	productive tillers/ hill	Panicle length (cm)	Spikelets per panicle	Spikelet sterility %	Date to flowering	Grain ripe-ning period (days)	Grain yield (kg/ha)	Straw yield (kg/ha)
Bhavani								
Jul. 1 (D1)	7.17	24.3	145.3	16.7	99.0	38.0	6921	9928
Jul. 15 (D2)	6.55	24.2	144.7	18.6	96.7	36.1	6317	10352
Jul. 30 (D3)	6.30	24.0	144 2	20.6	95.4	37.5	5642	10523
Aug. 15 (D4)	6.55	24.1	141.8	23.6	93.5	38.0	5105	10751
Aug. 30 (D5)	5.07	23.0	137.9	23.9	95.1	38.9	4895	10852
Sept 14 (D6)	5.18	23·4	119.7	30.3	87.5	44.0	4782	9310
Mean	6.14	23.9	138.9	22.3	94.5	36.7	5618	10286
Jul. 1 (D1)	7 75	25.9	145.8	18 8	95.4	36.0	6578	9118
Jul. 15 (D2)	7.75	25.8	155.0	20.2	93.6	87.0	6545	9202
Jul. 30 (D3)	7.07	24.2	139.8	23.6	95.1	37.9	5749	9464
Aug. 15 (D4)	5.47	24.2	130.7	23.3	87.7	37.0	5500	9857
Aug. 30 (D5)	5.43	23.3	117.1	30.6	89.7	38.0	4649	10151
Sept. 14 (D6)	7.67	25.0	148.6	22.3	89.0	41.9	5338	8739
Mean	6.86	24.8	139.5	23.1	91.7	37.9	5787	9437

	D	V	D	V	D	V	D	V	V	D	V	D	V	D	V	D
S. Ed ± for D& V	0.17	0.24	0.11	0.14	1.01	0.62	0.62	0.01	0.15	0.28	0.19	0.27	3.26	126.13	41.90	52.55
CD at 5%	0.34	0.48	0.22	0.30	2.01	N.S.	N.S.	2.01	0.32	0.56	0.41	0.54	113.63	252.14	89.48	118.60

SEd ± for V at D	V at D	V at D	V at D	V at D	V at D	V at D	V ar D	V at D
	0.17	0.19	1.44	1.44	0.39	0.40	172.58	79.54
C. D at 5%	0 34	0.47	2.91	2.91	0.79	0.91	345.88	161.22