

PERFORMANCE EVALUATION OF CERTAIN RICE CULTIVARS

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Abstract: Experiments were conducted with 12 rice cultivars for three consecutive years from 1984-85 to 1987-88 during kharif and rabi seasons in randomised block design. Pooled analysis of the data for kharif and rabi seasons indicated that MO 4 registered the highest grain yield in the kharif (5068 kg/ha) and rabi (4891 kg/ha) crop seasons. Hence MO 4 can be recommended for cultivation in Wynad in both the seasons. Edavaka was also found to be a promising cultivar when grain yield, straw yield and comparatively shorter duration were considered and hence requires further studies.

INTRODUCTION

The total area under rice in Wynad is 29999 ha, of which 24355 ha are single crop wet lands (Anon., 1989). In single crop wet lands, conventional long duration varieties like Adukkan, Thondi, Veliyan, WND 1, WND 2, Jeerakasala, Gandhakasala etc. are cultivated during the kharif season. However, WND 2 is the most popular among these varieties. Though a large number of high yielding rice varieties have been released, their performance in the high range region has not been studied so far. Hence, an experiment was undertaken to study the performance of some improved rice varieties and cultivars under Wynad conditions.

MATERIALS AND METHODS

The experiment was conducted in a clayey loam soil of the Regional Agricultural Research Station, Ambalavayal for three consecutive years from 1984-85 to 1987-88 over kharif and rabi seasons annually. Twelve cultivars/varieties were tested during both the seasons. MO 4, MO 5, MDU 2, Baroda, MO 7, Cul 745, Cul 796, Cul 1-5-4, Edavaka, IR 20 and Cul 23332-2 were tried

during both the seasons. WND 2 and Jyothi were used as the checks during the kharif and rabi seasons respectively. The experiment was laid out in randomised block design with three replications. Uniform cultural and manurial practices as per the package of practices recommendations of the Kerala Agricultural University were followed (KAU, 1986).

Mean of the biometric observations and yield data pooled over the three years of cultivars during the first crop (kharif) and second crop (rabi) seasons are presented in Table 1 and 2 respectively.

The cultivars varied significantly with respect to plant height during both the seasons. Plant height was significantly influenced by cultivar x year interaction also. WND 2 (142.23 cm) recorded the highest plant height during the first crop season and it was also significantly superior to others. Edavaka with a plant height of 109.26 cm ranked top during the second crop season and it was significantly superior to other cultivars.

The number of effective tillers/hill showed significant difference among the cultivars during the first crop season

whereas this character did not show any significant difference among the cultivars during the second crop season. MO 4 recorded the highest number of effective tillers/hill (10.15) and was significantly superior to other cultivars. During the second crop season also MO 4 recorded the highest number of effective tillers/hill closely followed by Cul 23332-2. The tiller production was highly influenced by cultivar x year interaction during the second crop season.

There was significant difference among treatments with respect to panicle length during both the seasons. Cul 1-5-4, Baroda, Cul 745, IR-20, MDU-2, WND 2 and Edavaka were on par with each other and significantly superior to other cultivars during the first crop season. MDU 2 and IR-20 were on par and superior to all other cultivars with respect to panicle length during the second crop season.

The cultivars did not show any significant difference with respect to number of grains/panicle during the first crop season whereas the cultivars varied significantly with respect to this character during the second crop season. The maximum number of grains/panicle was produced by Cul 1-5-4 during both the seasons. Production of grains/panicle was highly influenced by cultivar x season interaction during both the seasons.

The effect of cultivars on thousand grain weight and thousand grain volume was significant during both the seasons. MO 5 recorded the maximum 1000 grain weight and volume and during the first and second crop seasons respectively. The thousand grain weight was influenced by

cultivar x year interaction during both the season whereas the thousand grain volume was influenced only during the second crop season.

The grain and straw yields differed significantly during both the seasons. MO 4 registered the highest yield of grain during the first (5068 kg/ha) and second (4891 kg/ha) crop seasons. MO 4 was on par with Edavaka, Cul 1-5-4, Cul 796, MO 5, IR 20, Cul 745 and MDU 2 during both the seasons. During the first crop season MO 4 was also on par with WND 2. MO 7 (3093 kg/ha) and Baroda (2928 kg/ha) recorded the lowest grain yield during the first and second crop season respectively. Cultivar x year interaction was significant with respect to grain yield during both the seasons.

WND 2 recorded the maximum straw yield (5577 kg/ha) during the first crop season and it was on par with Edavaka (5306 kg/ha). During the second crop season Edavaka recorded the maximum straw yield (4927 kg/ha) and it was on par with Cul 23332-2 (4130 kg/ha). The effect of cultivar x year interaction was significant on straw yield during both the seasons.

The total duration of the cultivars varied from 250 to 190 days during the first crop season and 161 to 181 days during the second crop season. Baroda (150 days), Cul 23332-2 (153 days) and Edavaka (156 days) were earlier types in the first crop season. Jyothi (161 days), Cul 23332-3 (164 days) and Edavaka (165 days) were comparatively earlier during the second crop season. WND 2 (190 days) and Cul 1-5-4 (181 days) recorded the maximum

Table 1. Biometric and yield characters of rice cultivars during kharif crop season

Cultivars	Plant height (cm)	No. of effective tillers/hill	Panicle length (cm)	No. of grains/panicle	1000 grain weight (g)	1000 grain volume (cm ³)	Yield of grain (kg/ha)	% increase of grain yield ¹	Yield of straw (kg/ha)	% increase of straw yield ¹	Duration (days)
MO 4	73.1	10.1	17.3	83.2	24.6	22.7	5068	37.6	3397	-39.0	164
MO 5	65.0	6.8	19.5	94.5	32.6	28.8	3983	8.1	2615	-53.1	164
MDU 2	78.4	7.8	21.2	104.6	21.7	20.7	3668	-0.3	2800	-49.7	164
Baroda	103.2	7.3	21.9	78.2	28.3	25.6	3173	-13.8	3472	-37.7	150
MO 7	69.0	7.4	19.1	93.7	30.4	26.0	3093	-15.9	2060	-63.0	158
Cul 745	74.8	6.5	21.7	105.0	31.6	25.4	40%	11.2	2622	-52.9	162
Cul 796	68.8	7.9	20.2	100.0	27.8	25.7	4463	21.2	3104	-44.3	165
Cul 1-5-4	74.3	6.8	22.0	115.6	26.4	23.6	4192	13.8	3227	-42.1	176
Edavaka	114.4	7.8	20.6	105.4	29.3	26.4	4939	34.1	5306	-4.8	156
IR 20	77.8	8.1	21.6	106.6	22.4	19.2	4260	15.7	3635	-34.8	164
Cul 23332-2	60.8	7.7	16.6	97.5	23.9	21.0	3465	-5.8	1909	-65.7	153
WND 2	142.2	6.2	20.9	114.7	27.3	26.6	3682	-	5577	-	190
CD (0.05)	10.9**	1.3**	1.4**	NS	4.2**	2.5**	1474**	-	1691**		
CD (0.05) for cultivar x year interaction	19.0**	NS	NS	57.2**	7.3**	NS	2554**		2935**		

** Significant at 1% level

¹ Over standard cultivar

Table 2. Biometric and yield characters of rice cultivars during the rabi season

Cultivars	Plant height (cm)	No. of effective tillers/hill	Panicle length (cm)	No. of grains/panicle	1000 grain weight (g)	1000 grain volume (cm ³)	Yield of grain (kg/ha)	% increase of grain yield ¹	Yield of straw (kg/ha)	% increase of straw yield ¹	Duration (days)
MO 4	69.7	114	18.2	75.3	26.4	21.7	4891	46.3	3342	38.9	173
MO 5	66.1	8.6	19.1	73.2	30.2	26.2	4218	26.2	3539	47.0	170
Baroda	87.5	7.7	19.1	51.9	27.2	24.3	2928	-12.3	2649	10.0	168
MO 7	66.8	6.7	18.0	57.9	28.8	25.2	3410	2.0	2812	16.8	168
Cul 745	65.8	8.2	18.4	60.0	28.4	24.4	4008	19.9	3045	26.5	170
Cul 796	65.7	9.0	18.5	72.0	26.5	22.7	4259	27.4	2955	22.8	170
Cul 1-5-4	76.3	7.5	19.2	99.0	24.3	21.2	4422	32.3	3566	48.2	181
MDU 2	81.7	8.4	22.1	89.1	20.6	18.0	3736	11.7	3498	45.3	178
Edavaka	109.2	7.7	19.9	86.2	26.2	23.8	4701	40.6	4927	104.7	165
IR 20	76.9	7.3	21.7	94.9	20.5	18.1	4103	22.7	3018	25.4	176
Cul 23332-2	60.0	10.2	15.4	74.7	20.2	18.1	3233	-3.2	4130	71.6	164
Jyothi	59.1	7.9	16.3	44.9	26.6	23.6	3342	-	2406	-	161
CD (0.05)	6.61**	NS	1.47**	25.3**	3.68**	2.30**	1440**	-	1256**		
CD (0.05) for cultivar x year interaction	NS	7.48**	NS	43.82**	6.38**	3.98**	2513**	-	2180**		

** Significant at 1% level

¹ Over standard cultivar

duration during first and second crop season respectively.

MO 4 and Edavaka out yielded the standard cultivar WND 2 in grain yield by 37.64 and 34.14 per cent respectively during the first crop season. In the second crop season MO 4 and Edavaka outyielded the standard cultivar Jyothi in grain yield by 46.35 and 40.66 per cent and in straw yield by 38.96 and 104.78 per cent respectively.

The higher grain yields in MO 4 and Edavaka can be attributed to the higher number of effective tillers and higher number of grains/panicle in Edavaka. The higher straw yield in Edavaka is due to the higher plant height, number of ear bearing (effective) tillers, number of grains/panicle and yield of straw had very high association, and plant height and number of grains/primary earhead had moderate correlation with the yield of grains in paddy according to

Chandramohan (1964). The significant association of yield with plant height was reported by Abraham *et al.* (1962).

The results of the studies indicate that MO 4 can be recommended as a promising cultivar for Wynad during the first and second crop seasons since it registered higher yields during both the seasons.

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