

## Screening of Rice Cultivars in the Coastal Saline Soils of Krishna District of Andhra Pradesh

**Key words :** Rice Genotypes, Saline Soils, Coastal Region

The problem of soil salinity is causing concern in over seven million hectares and the potential salinity hazard is threatening another 27 per cent of land area in the country. (Thiyagarajan and Kothandaraman, 1991). Salinity and sodicity are gradually becoming constraints to rice production in Coastal region of Andhra Pradesh. The water logged and salt affected soils in Andhra Pradesh are estimated to be 0.34 and 0.81 m. ha respectively (Subba Rao *et al.*, 2007). Identifying the suitable cultures which can perform equally well in saline soils of Krishna eastern belt would enable the farming community to realize higher yields of the crop without any additional input as the reclamation of soils is cost prohibitive. Keeping this in view, a field experiment was conducted during *Rabi* 2002-03 at Agricultural Research Station, Machilipatnam with an objective of identifying suitable rice cultures to coastal saline soils of Krishna eastern delta region.

The experimental soils are sandy loam in texture with an electrical conductivity of 3.2-18 dS/m and pH of 7.5 – 8. The electrical conductivity readings were taken at 3 growth stages i.e., at planting (3.2 – 4.1 dS/m), at maximum tillering (4.9 – 8.2 dS/m) and at harvest (5.6 – 18.0 dS/m) which was averaged and recorded as 7.38 dS/m.

The field experiment consisted of nine varieties of rice viz., MTU 4870, NLR – 33641, MTU-2077, MTU-2067, MTU-1001, Panvel-1, MTU-7029, MTU-1010 and BPT-5204 were laid in randomized block design with three replications. The treatments are of medium to long duration and were sown on 25<sup>th</sup> December, 2002 and 28 days old seedlings were transplanted by adopting a spacing of 15 x 15 cm. Fertilizers @ 120N + 60 P<sub>2</sub>O<sub>5</sub> + 30 K<sub>2</sub>O kg per ha were applied as per the recommendations to this tract. The data on various plant characters viz., plant height, ear bearing tillers per m<sup>2</sup>, panicle length, number of filled grains per panicle, 1000 grain weight and grain yield were recorded and analyzed as per the standard statistical procedures and the results are presented in the Table 1.

Analysis of variance indicated highly significant differences among the rice genotypes for all the traits studied. The number of ear bearing tillers per m<sup>2</sup> was significantly superior in Panvel-1 (427) followed by MTU-4870 (420) and NLR-33641 (402), where as a very few number of productive tillers were recorded in BPT-5204 (319), MTU-2067 (315) and MTU-2077 (306). The panicle length found to be significantly superior in MTU-1010 (24.2 cm) followed by MTU-2067 (23.9 cm).

Number of filled grains per panicle was significantly superior in NLR-33641 (143) followed by MTU- 4870 (124), MTU-7029 (114) and Panvel-1 (102), while MTU-2067 (91) and BPT-5204 (91) and MTU-1001 (84) recorded lower number of grains per panicle indicating the influence of salinity on tolerant and susceptible varieties. Similar results were reported by Kuchanur *et al* (2005).

The data on grain yield indicated that the soil salinity influenced the grain yield of rice cultures significantly (Table 1). The cultures MTU-4870(5.25 t/ha), NLR-33641(4.92 t/ha), MTU-7029(4.74 t/ha) and Panvel-1(4.34 t/ha) recorded significantly superior grain yield over other varieties which was higher by 31.5% 23.3%, 18.8% and 8.7% respectively over the check variety BPT-5204 (3.99 t/ha). Where as the popularly grown varieties viz., MTU-2067, MTU-2077, MTU-1001 and MTU-1010 were on par with check variety BPT-5204. The superior grain yield of MTU-4870, NLR-33641, MTU-7029 and Panvel-1 may be attributed to more number of ear bearing tillers per hill and more number of filled grains per panicle. Swardekar *et al* (2003) reported the tolerance of Panvel-1 and Subba Rao *et al* (2003) also reported tolerance in MTU-4870 and NLR-33641 under saline-sodic soils. From this study, it could be concluded that, MTU-4870, NLR-33641, MTU-7029 and Panvel-1 were found to be tolerant to moderate salinity up to an average electrical conductivity of 8 dS/m and can be recommended to this tract.

Table 1. Effect of salinity on yield and yield attributes in rice varieties

Varieties	Ear bearing tillers / m <sup>2</sup>	Panicle length (cm)	No. of filled grains / panicle	1000 grain weight (g)	Grain yield (t / ha)	Plant height (cm)
MTU-4870	420	22.5	124	24.3	5.25	105.8
NLR-33641	402	20.8	143	21.2	4.92	112.8
MTU-7029	338	20.6	114	23.3	4.74	109.3
Panvel-1	427	23.7	102	22.5	4.34	100.8
MTU-1001	396	22.7	84	22.3	4.10	99.2
MTU-2077	306	23.8	99	23.6	4.00	116.0
BPT-5204	319	20.0	91	18.5	3.99	104.6
MTU-2067	315	23.9	91	24.0	3.91	118.3
MTU-1010	295	24.2	95	22.9	3.91	101.5
CD (0.05)	33.8	0.81	10	0.4	0.5	3.8
CV (%)	5.46	2.1	5.5	1.14	7.3	2.0
SED	15.9	0.38	4.73	0.2	0.2	1.79

**LITERATURE CITED**

**Kuchanur P H, Pattar P S, Dronavalli N and Patil S A 2005** Performance of introduced rice varieties in Tungabhadra project command area. Karnataka Journal of Agricultural Sciences, 18 (4):1093-1094.

**Swardekar S V, Dhane S S and Jadhav B B 2003** Limits of varietal tolerance of salinity in rice. Journal of Indian Society of Coastal Agricultural Research, 21(1):63-65

**Subbarao G, Srinivas D, Mukundarao B, Prasad P R K and Satyanarayana T V 2007** Yield and yield attributes of rice varieties as influenced by soil salinity. The Andhra Agricultural Journal, 54 (3&4): 121 – 123.

**Thiyagarajan P and Kothandaraman G V 1991** Screening of some rice cultivars in the coastal taluks of Thanjavur District of Tamilnadu. Indian Society of Coastal Agricultural Research, 9 (1/2), 279 – 283.

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