SALT TOLERANCE LIMITS OF RICE GENOTYPES (*ORYZ SATIVA* L.)

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In Pakistan few cultivars have been recommended for cultivation on salt affected soils both for the province of Sind [1]; and Punjab. Cultivar Jhona 349 was released in 1933 to be cultivated on alkali soil. Very few efforts to breed and screen for salt tolerance may be the likeliest cause of the dead-lock. However, the strifes initiated at Nuclear Institute for Agriculture and Biology for breeding [2-4] and screening [5-7] for salt tolerance have elucidated that possibilities do exist for screening and breeding of relatively salt tolerant strains of Rice.

The approach of breeding becomes easier when a crop cultivar is found to be tolerant to a well-defined limits of salt stress [8]. The information regarding the well defined salt tolerance limits of rice cultivars is very meagre. This prompted the present investigation.

Six genotypes of rice previously identified as relatively salt tolerant and a cultivar Basmati 370 were grown under five saline sodic conditions during 1981-82.

The artificial salt stresses in the saline cemented field basins were developed by using the technique followed by Sajjad [4]. The experiment was conducted in a split plot design with four replications and with 20 x 20 cm ear-to-row distance using single seedling (45 days old) per hill.

The regression equations between salt stresses (ESP) and yield per plant for each genotype were computed. From respective regression equations the respective LD_{50} (Salt stress corresponding to 50% reduction in yield as compared to control) values were computed.

Table 1 indicates that different genotypes exhibited an array of variability for salt tolerance. The most salt tolerant genotypes were C23-3-1 (LD_{50} = 57.1 ESP) and NR74-108 (LD_{50} = 55.3 ESP) followed by Getu LD_{50} = 53.0 ESP) and Basmati 370 the most salt sensitive. (LD_{50} = 39 ESP).

The genotypes with the highest LD_{50} may be used as gene source for salt tolerance.

Table 1. Effect of increased salt stresses on yield per plant on different genotypes of rice.

Name of genotypes	Salt stresses (ESP)					Regression equation	Estimated LD_{50} (salt stress in ESP corresponding to 50% reduction in yield)
	15 (cont.)	44.0	46.0	53.0	56.0		
NR74-108	11.8	11.8	6.9	5.1	4.5	Y = 15.2841-0.1697X	53.3
Getu	18.7	17.6	14.7	9.4	2.0	Y = 25.746-0.31X	52.7
C23-3-1	13.6	9.4	7.9	7.9	6.7	Y = 16.047-0.162X	57.1
IRI529-430-3 IR305-3-17-1-3/ IR661-1-140-3	15.6	11.8	10.3	9.1	0.0	Y = 21.189-0.276X	48.5
K1-9-1	24.3	10.7	10.5	9.0	4.2	Y = 31.145-0.453X	41.8
IR4630-22-2-5-1-2 Pelita 1-1-/ Pokkali/IR2061/ IR1820	22.2	16.3	10.2	3.2	3.1	Y = 30.789-0.462X	42.6
Basmati 370	21.4	12.3	10.0	0.0	0.0	Y = 30.822-0.515X	39.1

Keywords: Salt tolerance limits, *Oryza sativa*, Genotypes.

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