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SCREENING RICE TYPES FOR SALINITY TOLERANCE

Several high yielding and photoinensitive rice types have come to stay. But the knowledge on their relative tolerance to salinity is limited. Screening of these rice types for salt tolerance was undertaken. These types were compared with the standard rice variety 'Pokkali', which is reported to be highly salt tolerant (Anonymous, 1967). Other salt tolerant varieties such as SR 26B, "Gettu" and 'Dasal' also were included in this study.

Table 1 Classification of rice types in relation to their tolerance to salinity

Tolerant varieties (ECe-6 mmhos/cm and above) Pokkali, Ac. 1, 2, 3, 102, 106, 189, 158, 157, 154, 140, 111, SR-26-B, Ac. 105, 101, 151 and 152.

Moderately tolerant varieties: (ECe 5-5.9 mmhos/cm) Ac. 193, 196 Nanabokra, Ac. 113, 115, 125, 4, 13, 7, 114 Jagganath, Damodar, Cetu, Basal, PVR-1, Ac. 11, 128, 126, 130, 139, Bhavani, Ac. 163, 168, 172, 10, 173, 171, Manila, Mo. 2, 1, 3, Ac. 21, 176, 30, 177, 127, 46, 43, 51 and 149.

Moderately susceptible varieties: (ECe. 4-4.9 mmhos/cm), IR 20, Madhu, IR8, Mashuri, Ac. 200, 191, 22, Tn 1, Ir 24, Ac. 54, 198, 29, 180, 182, 185, 18, 178, 121, 124, 103, 156, 155, 161, 112, 147, 150, 159, 119, 118, 108, 166, 175, 20, Ptb. 10, Abt-31, Palaman, Ptb-9, Co-32, Ac. 55, 45, 49, 162, 165, Co. 25, Ratna, Ac. 132, 169, Konnagi, Cauvery, Hamsa, Triveni, Ac. 47, 48, Karuna, Co-36, Ac. 35, 38, 23, Krishna, Ac. 199, 42, 41, Sabarmathi, Ac. 179.

Susceptible varieties: (ECe. 4 mmhos/cm). Ac. 56, 160, Sona, Jamuna, Ptb. 20, Ac. 50, 14, 8, 6, 167, 164, 52, Kanchi, Jaya, Ac. 197, 134, 12, 9, Pankaj, Ac. 170, 16, 33, 186, 187, 192, 188, 120, 122, 123, 104, 36, 37, 135, 136, 39, 144, 142, 141, 145, 174, Aswathi, Ac. 5, 110, 107, Co-33 Ac. 57, 135, 138, 143, 131, 17, 15, Jayanthi, Ac. 148, 137, 184, 53, 44, 34, 32, 25, 195, 194, 181, 183, 190, 153, 129, 116, 117, 28, 26, 40, 24, 19, 27, 31 and 58,

Rice seeds of two hundred types were imbibed in 0.4 per cent sodium chloride solution in petri dishes. Third day after soaking, germinated seeds were dibbled in pots holding puddled soil at the rate of ten seeds per pot. Pots were earthen ones coated inside with wax. The bottom was sealed in order to prevent internal drainage. Soil used was alluvial clay (pH 7.0; ECe 0.18 mmhos/cm; O.M. 1.1%, CEC 31-2 me/100 g). Eighteen days after dibbling the seeds, they were thinned to five plants per pot. Daily irrigation was done with 0.4 per cent sodium chloride solution. For each rice type, control pots

irrigated with rain water were also maintained. As and when all the five plants withered away due to salt accumulation in the pots, the soil was analysed for its salinity) 1 :1 soil—water extract). On the basis of the salt content that the plants could tolerate, the two hundred types were resolved into four categories as shown in Table 1.

In general, seedling stage was observed to be sensitive than other stages in rice. Earlier work by nutrient solution culture (Venkateswaralu *et al*, 1972) revealed that salt sensitive rice types tolerated a salt concentration of EC 3.0 mmhos/cm. The medium of natural soil used at present is a more dependable criterion and the salt susceptible varieties were found to tolerate a soil salinity of EC 3.9 mmhos/cm. Of the two hundred rice types tested, about 50 per cent were found to belong to susceptible category. Tolerant and moderately tolerant types constituted 8.5 and 20 per cent respectively, the moderately susceptible types being 17 per cent. Variation among the types on their salt tolerance may be due to either difference in physiological adaptation (Murty and Janardhan, 1971) or genetic make-up (Clark and West, 1971). In an earlier work a maximum limit of tolerance to soil salinity by rice plants was reported to be E_{Ce} of 6.0 mmhos/cm (Pan, 1964). In the present study also, seventeen rice types coming under the tolerant category tolerated an identical soil salinity level.

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