

Title: Influence of whole and Sub Soil Salinity on Growth, Development, Physiology and Yield of Selected rice Varieties Cultivated in Jaffna District, Sri Lanka.

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Keywords: Electrical conductivity
Growth
Salt tolerance
Sub and whole soil salinity
Yield.

Issue Date: 17-18 November 2016

Publisher: Tropical Agricultural Research Vol. 28 (4): 389 – 401 (2017)

Abstract: Growth and yield reduction of rice is a serious issue in salinity prone areas of the world. Rice yields decrease by 12 % for every unit (dSm⁻¹) increase in EC above 3 dSm⁻¹. Salt in different soil depths influence the yield by interfering growth, development and physiology of plants. Impact of sub and whole soil salinity levels on yield are necessary for adapting salinity mitigation management practices. Study was carried out to identify the influence of whole and sub soil salinity levels on growth, development, physiology and yield of selected rice varieties cultivated in Jaffna district of Sri Lanka for salt tolerance. Experiment was conducted in the poly-tunnel of the Department of Crop Science, Faculty of Agriculture, University of Peradeniya during the period from June to November, 2014. Experiment was conducted as two factor factorial (varieties and depth of salinity of soil column) in completely randomized design with three replicates. Plant height, SPAD reading, shoot root ratio, root length, sodium potassium ratio, thousand grain weight and yield were measured. Data were analysed using Proc ANOVA procedure followed by the LSMEANS procedure for mean separation. Growth and yield of rice varieties were significantly affected under sub and whole salinity conditions. Within the same salinity levels, sub soil condition (top15cm normal soil and rest 45 cm saline soil) showed better performance in all parameters tested than whole soil salinity conditions (up to 60 cm saline soil). With the increased soil electrical conductivity, growth and yield reduction was observed in all tested varieties both in sub and whole soil salinity levels. Among the varieties, Pachaperumal showed the highest yield and tolerant to higher salinity levels followed by Adakari.

ISSN: