

ADVERSE SOIL TOLERANCE OF RICE: MECHANISMS AND SCREENING

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ABSTRACT

To provide reasonable rice yields on adverse soils without costly amendments, cultivars are needed that tolerate the various associated chemical soil stresses. Since rice has adapted to a wider range of environments than any other crop, free and potential variability of rice germplasm to soil stresses is high. Large variability within cultivars and normal distribution of tolerance scores indicate that a moderate to large number of genes controls adverse soil tolerance and that environmental factors modify phenotypical tolerance. Evolution of ecospecies and domestication has resulted in linkages of traits according to regional genepools and selection pressure. REcombination and cumulative breeding of tolerance traits is promising. Most soil stress tolerance traits are linked to physiological and morphological characters. Because mechanism of tolerance for salinity, P deficiency and Zn deficiency influence numerous physiological and morphological characters, associated tolerance traits are crucial for multiple soil stress tolerance in rice.