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DIALLEL ANALYSIS IN ACID AND FERTILE SOILS OF MAIZE INBRED LINES DIFFERING IN THEIR LEVELS OF ALUMINUM TOLERANCE AND PHOSPHORUS EFFICIENCY. S.N.Parentoni[1]*, A.F.C.Bahia. F[1]., E.E.G.Gama[1], M.A.Lopes[1], P.E.O.Guimaraes[1], M.X.Santos[1]. [1] CNPMS/EMBRAPA -C.P.151- SETE LAGOAS MG.-35701-970 - BRAZIL.

The CNPMS/EMBRAPA has developed a large number of inbred lines selected in acid soils. The parameter relative seminal root length(RSRL) in a 6 ppm aluminum nutrient solution was used to select 8 maize inbred lines with different degrees of aluminum tolerance. RSRL was measured as:((final seminal root length/initial root length) - 1 x 100). The values of RSRL in the selected inbred lines ranged from 14.2 to 58.9. The 28 single crosses among these 8 maize inbred lines were evaluated in: a)6 ppm aluminum nutrient solution; b) red oxissol with 36% aluminum saturation and c)in an red oxissol with no aluminum saturation (0-20 cm). At the same time another set of 100 single crosses were evaluated at two levels of phosphorus in the soil: 5 ppm and 10 ppm. The previously mentioned inbred lines participated as one of the parents in many of these 100 single crosses. The correlation between inbred line RSRL and general combining ability (GCA) for RSRL was high (r=0.79, p= 0.016), showing that aluminum tolerance of inbred lines in nutrient solution can be a good indicator of their behavior in crosses. Although in previous studies we have found a correlation between yield in acid soil and RSRL around 0.5, in this study we didn't find any correlation between these two parameters. The inbred lines that showed the highest GCA for yield in acid soils also showed good phosphorus efficiency but in general had low levels of aluminum tolerance in nutrient solution. These results suggested that in moderate acid soils, with good water availability (as we had in this study),phosphorus efficiency can be a more important adaptive advantage then aluminum tolerance.

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