

C2095. SCREENING OF MAIZE SINGLE CROSS HYBRIDS FOR TOLERANCE TO LOW PHOSPHORUS

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Abstract

Maize (*Zea mays* L.) is one of the world's most important staple food crops; however, its productivity is limited by phosphorus (P) deficiency in acid soils. The objective of this study was to develop single cross hybrids from P-efficient inbred lines and screen them for tolerance to P efficiency in the acid soils at Sega and Bumala in Western Kenya known to be low in available P. Forty nine single cross hybrids were developed from high P parental lines and screened for tolerance to low P (2-2.2mgP/Kg soil) in the field. The effect of P application (26kgP/ha) on maize grain yield, ear and plant height was assessed. Mean grain yield for the hybrids was 42.3% higher with P fertilizer than without P for the same hybrids. Plant and ear heights were reduced by about 14.8%. Thirty three per cent of these crosses were inefficient but responsive to P application, 27% were efficient and none responsive and only 2% were efficient and responsive. Grain yield was positively correlated ($r = 0.57^{**}$) with plant height and ear height ($r = 0.60^{**}$) and plant height with ear height ($r = 0.86^{***}$). However, grain yield had low and negative correlation with days to 50% silking ($r = -0.32$) and days to 50% tasseling ($r = -0.32$). This study has developed and identified P-efficient single cross hybrids that can be used either directly or in developing 3-way and/or 4-way cross hybrids for use in acid soils of Western Kenya and in other acid soil within the region.

Keywords: phosphorus, interaction, genotype, efficiency, responsiveness, genotype, acid soils.