

## **Screening Selected Maize Single Crosses for Tolerance to Low P in Acidic Soils of Bumala and Maseno**

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### **ABSTRACT**

Generally, 13% of Kenya's arable land mass (7.5 million ha) is acidic and prone to poor phosphorus (P) availability and soil acidity. This results in crop yield losses due to the direct adverse effects of Aluminium toxicity and P deficiency due to fixation of this element in the soil. The objective of this study was to develop P efficient maize single crosses. Sixty maize genotypes, among them 34 single crosses were screened under acidic soils in Bumala and Maseno in a randomised complete block design. Sixty-seven percent of these single crosses were efficient, while 33% were inefficient. Two percent were efficient and responsive, 14% were inefficient but responsive, and the 79% were efficient but non-responsive. Generally, GY had a positive correlation with EH (0.45) and PH (0.61), while PH and EH had a positive correlation ( $r=0.86$ ) for the single crosses. The addition of P had significant effect on the grain yield, plant height, ear height and flowering of the genotypes at Bumala and Maseno. However the effect of 26kgP/ha was marginal at Maseno as compared to Bumala. The sites and genotypes varied significantly with regard to soil analysis and grain yield respectively, with the efficient and responsive genotypes selected for use in low input farming systems in low P soils. Also, some of the efficient but non-responsive lines exhibited selection potential for low input farming in low P soil systems.

**Keywords:** Maize, Single Crosses, Aluminium Toxicity, P Efficiency, Genotype