

## **Abstract**

Five maize varieties were evaluated for two seasons in two semi-arid areas of Kenya; at Jomo Kenyatta University of Agriculture and Technology (JKUAT) Farm and at Longonot, in Naivasha Division. Three of the maize varieties were imported and the other two were locally produced. Nitrogen fertiliser was applied as urea at 0 and 36 kg N/ha; the latter was split applied in equal quantities at 20 and 40 days after emergence. The experimental design was a randomised complete block laid as split plot and replicated three times. The fertiliser and maize variety were main plots and sub-plots respectively. The phenological, biomass accumulation and grain yield data were analysed using Genstat Version 6.1 software. There were no significant differences in grain yield among the varieties between the sites within season but there were grain yield differences between the sites and seasons. Grain yield response to nitrogen fertiliser was significant only at JKUAT in 2004, where there was some rainfall received during the reproductive phase. Water use efficiency was 60% higher at JKUAT than at Longonot possibly due to high evaporation rate at Longonot, and late season drought.