

Abstract

A field study was carried out for 2 seasons (November to February 1999 and April to August 2000) to investigate the influence of irrigation on maize growth, nitrogen uptake and yield. The experimental design was randomized complete block design laid out as split plot with water regime as main plots (irrigated, rainfed), and factorial combinations of N (0, 50, 100 kg N/ha) and P (0, 25 kg P₂O₅) as subplots. Data collected included leaf area index (LAI), photosynthetically active radiation (PAR) interception, total dry matter (TDM), nitrogen uptake and maize grain yield. Phosphorus had no effect on, growth and yield, so the data were pooled [0{ P. In the wet (350 mm rainfall) Short Rains, 1999 (SR99), irrigation had no effect on LAI and fractional PAR interception but significantly increased total N uptake, TDM and grain yield by 50 to 100%. Under low rainfall (143 mm) in the Long Rains 2000 (LROO), irrigation increased LAI and PAE. interception by 50 to 100% and N-uptake, TDM and grain yield by 10, 10 and 34 fold respectively. However there was no significant response to N fertiliser application without supplemental irrigation. Nitrogen application above 50 kg/ha did not improve maize growth and yield in both seasons. Supplementary irrigation can therefore increase maize yield even at low fertilizer input level in semi-arid Kenya.