

## ABSTRACT

The effects of fertilizer and fungicide application rates have been demonstrated in the field on potato production. However, the fertilizer rates have not been tested fully to ascertain its effects on incidence and severity of late blight (*Phytophthora infestans*) on Irish potatoes (*Solanum tuberosum* L.). The objective of this study was to determine effects of N-P-K 17:17:17 fertilizer and Acrobat fungicide (Dimethomorph 90g/Kg + Mancozeb 600g/Kg) application rates on the incidence and severity of late blight on Irish potatoes. The experiment was conducted at Egerton University Field seven and Tumaini farm, in Molo Sub County. This was done in a randomized complete block design in a split split plot arrangement with Kenya sherekea and Dutch robjin potato varieties being used. The pathogen was isolated from infected leaves and tubers and identified in the laboratory. It was then used for inoculation in the field. The treatments rates were N-P-K 17:17:17 fertilizer at 0, 90, 135Kg ha and fungicide, Acrobat (Dimethomorph 90g/Kg + Mancozeb 600g/Kg) at rates of 0, 2.5, 3.5g/L. Each potato variety was sprayed with the fungicide three times in intervals of seven days at 47DAP, 54DAP and 61DAP. Fertilizer application was done at planting and 35 days later after emergence at equal splits. Data was collected on percent disease index (PDI) and disease severity index (DSI). Analysis of variance (ANOVA) was conducted and means separated using Tukey's test whenever ANOVA showed significant treatment differences. There was significant ( $P \leq 0.05$ ) difference among the varieties, sites, fertilizer and fungicide levels for disease severity and incidence. The results showed that fertilizer and fungicide application rates had some effects on late blight development under field conditions depending on variety. Therefore fertilizers and fungicides should be used cautiously to reduce incidence and severity of potatoes to late blight