

## **Abstract:**

Host resistance is an important component for the management of late blight [*Phytophthora infestans*] on potato, in the highland tropics, where effective fungicide use is limited because of the cost of application. Potato cultivars with major resistance genes to late blight (population A) and minor or quantitative resistance genes to the disease (population B) were evaluated in field studies at two locations in Kenya during 2000, 2001, and 2002 cropping seasons. Disease severity, area under disease progress curve (AUDPC), infection rates, tuber blight, and tuber yields were assessed to determine the effectiveness of cultivar resistance to potato late blight. Significant differences ( $P < 0.05$ ) in AUDPC were detected among cultivars. Progress of late blight on potato cultivars was best described by the nonlinear form of the logistic model. Infection rates ranged from 0.0047 to 0.3105 logits per day and were generally higher on susceptible than resistant cultivars. Rates of disease progress were highest on the susceptible control 'Kerr's Pink' (0.3015 logits per day) and lowest on 'Rutuku' (0.0047 logits per day), a cultivar derived from population A. The rates of disease progress on population B cultivars were significantly ( $P < 0.001$ ) higher than those on population A in seasons of severe late-blight epidemics. Significant ( $P < 0.05$ ) differences in tuber blight development were also detected among the cultivars. Significant negative correlations were observed between AUDPC and tuber yield for cultivars of population A, but no correlations were observed for cultivars of population B. This suggests that cultivars of population B are less influenced in their yield by late blight than those of population A and may be more suited for use where late blight is a recurring problem.