

## ABSTRACT

Bacterial wilt is a problematic disease affecting potato production in Kenya and the available management methods are not efficient. Field, semi-field and laboratory experiments were conducted to evaluate the effect of canola green manure and compound fertilizer on bacterial wilt management. Laboratory experiment was conducted at Egerton university biological laboratory to evaluate the effect of canola extract on *R. solanacearum* population density in-vitro. Four levels of canola extract quantities were used; 0, 100, 200, 300microlitres, and enrich immunomodulator (Di-bromo Di-nitro propane 1-3-diol) (DDD) was used as a positive control. Inoculum was prepared from infested soil and Selective Medium South Africa (SMSA) (Casamino acids, Bacto-Peptone, Glycerol, and Bacto-Agar) was used as growth medium in a completely randomized design. Field experiment was carried out in two sites (Elburgon site is in Upper high land zone two (UH2) and Mau-Narok is in Upper high land zone one UH1). Two levels of canola green manure (with and without green manure application), four levels of fertilizer (NPK+Ca+Mg+ micronutrients) applied at 0(F1), 250(F2), 575(F3), 900 (F4) kg ha<sup>-1</sup> and diammonium phosphate (DAP500 kg ha<sup>-1</sup>) +Calcium ammonium nitrate (CAN300 kg ha<sup>-1</sup>) (F5) as a positive control. The experiment was carried out in randomized complete block design (RCBD) spilt plot replicated three times, canola green manure as main plot and fertilizer and varieties combination as sub plots. Semi-field experiment (in pots) was conducted at Egerton university farm, five levels of canola green manure (100, 75, 50 and 0 g kg<sup>-1</sup> soil) and four levels of the compound fertilizer as used in the field experiment were used in a completely randomized design (CRD) with three replicates. The data shows that canola extract did not have a significant (Pr <0.05) effect on bacterial population density (CFU), where chemical treatment (DDD) restricted the growth of *R. solanacearum* under laboratory experiment. Under field and semi-filed experiments, canola green manure and fertilizer treatments had no significant (Pr <0.05) effect on bacterial population density in the soil nor bacterial wilt incidence. *Kenya karibu* variety it did not show any wilting symptoms of bacterial wilt across the sites and semi-field experiment. Canola did not suppress the growth of *R. solanacearum*; further investigation should be done on other brassica family plants.

**Keywords:** Green manure, Canola extract, Biofumigation, compound fertilizers, Bacterial wilt, enrich immunomodulator