

Evaluation of Resistance of African Nightshade (*Solanum nigrum* complex) Accessions to Bacterial Wilt (*Ralstonia solanacearum*) in Western Kenya

Abstract

Bacterial wilt disease caused by *Ralstonia solanacearum* is one of the major diseases affecting solanum species, including cultivated African nightshade (*Solanum nigrum* L). The bacterial wilt (BW) management in the african nightshade vegetable presents a great challenge to production due to high survival rate of the pathogen in soil. Use of chemical application to control the disease is not eco-friendly. There is increasing demand for the crop as a vegetable and medicinal plant. Farmers are growing the crop using uncertified seed. In addition, as the crop becomes popular, there is need to identify sources of resistance to this important disease in order to be used in breeding programmes for improved varieties. The best option to avoid bacterial wilt infection in african nightshade therefore is by use of disease resistant varieties. However, only a limited number of bacterial wilt resistant varieties have been developed. However, farmers still grow their preferred landraces. The level of resistance to bacterial wilt caused by *Ralstonia solanacearum* in *Solanum nigrum* complex accession grown in Western Kenya has not been ascertained. This is because the disease is wide spread, wide host range and pose danger to other cross of economic importance and food security. Study to develop improved varieties, information for phytosanitary strategies, manage the disease, use of certified seeds. However, due to most consumers' preferences based mainly on palatability, only limited varieties are available. There was need therefore, to identify and/or develop new resistant varieties. In the current study, 30 accessions from african nightshade growing areas of Western region of Kenya were evaluated against *Ralstonia solanacearum*, and disease incidence was recorded. The different accessions of *Solanum nigrum* L, *Solanum villosum* L from popular african nightshade growing areas in Trans nzoia, Bungoma and Kakamega counties of Western Kenya were identified as susceptible. However, improved accessions of *Solanum scabrum* L sampled from the western region of the African nightshade growing areas in Western Kenya were resistant to bacterial wilt in susceptible accessions, symptoms appeared 4 days after inoculation. The symptoms were first observed on leaves and then progressed toward other parts of plants resulting in complete wilting in susceptible accessions (*Solanum nigrum* L and *Solanum villosum* L) within 14 days. Brown discoloration in vascular systems of transversely cut parts of susceptible plants was also observed. On the other hand, in resistant accessions (*Solanum scabrum* L), symptoms appeared on leaves followed by chlorosis and no wilting was observed even after 14 days

of inoculation. The resistant accession of Solanum scabrum L can be used in production and also breeding programmes for developing new varieties of the other varieties of the African nightshade crops.

Authors: **Janepher N. Mafuta, Rose Onamu ,Solomon I. ShibairoKibabii ,Leonard S. Wamocho**

DOI <https://doi.org/10.2022/ajest.v7i1.756>