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CHARACTERIZATION OF RALSTONIA SOLANACEARUM WHICH CAUSES BACTERIAL WILT OF POTATO

A. A. U. Perera1, P. N. Dasanayaka2, O. V. D. S. J. Weerasena1

1Institute of Biochemistry, Molecular Biology and Biotechnology, University of Colombo

2Department of Botany, Faculty of Applied Sciences, University of Sri Jayewardenepura

aauperera@gmail.com

Bacterial wilt of potato caused by *Ralstonia solanacearum* is an important disease, causing huge losses worldwide. The estimated crop loss of potato due to bacterial wilt in Sri Lanka is around 5-25% causing high financial losses to the growers. *R. solanacearum* is a Gram-negative, rod-shaped bacterium. Four biovars of the bacterium were distinguished and among them biovar 1 has not been recorded in Sri Lanka. This study was conducted to characterize the pathogen based on Badulla district which is one of the major potato producing areas in Sri Lanka, contributing about 75% of the production. Samples of wilted potato plants were collected from the fields in the areas of Kahagolla, Haputhalegama and Diyathalawa in the district. *R. solanacearum* was isolated on triphenyl tetrazolium chloride (TTC) agar medium using infected stem sections and tubers of the potato plant samp les. Isolates were characterized biochemically using potassium hydroxide test, catalase test, oxidase test, citrate utilization test, nitrate test, starch hydrolysis test and gelatin liquefaction test. Genomic DNA of bacterial isolates was extracted using cetyltrimethyl ammonium bromide (CTAB) method and isolates were identified on molecular basis using species-specific primers, Rsol_*fliC*. Biovar of the isolates was determined based on their ability to utilize disaccharides and to oxidize hexose alcohols. Isolates of *R. solanacearum* from wilted potato plants produced mucoid, irregular, white colonies with red centres on TTC medium. According to biochemical tests isolates of *R. solanacearum* were Gram negative, positive for potassium hydroxide reaction, catalase activity, oxidase reaction, and citrate utilization, were able to reduce nitrate to nitrite and were negative for starch hydrolysis and gelatin liquefaction. In the polymerase chain reaction (PCR) with the Rsol_*fliC* primers, 06 isolates produced a 400 bp size amplicon, confirming their identity as *R. solanacearum.* All 06 isolates belonged to biovar 2, being able to utilize cellobiose, lactose and maltose, but not able to oxidize dulcitol, mannitol or sorbitol. The causal organism of bacterial wilt of potato in the selected areas was successfully characterized as *R. solanacearum* biovar 2.

Keywords: *Potato, bacterial wilt, Ralstonia solanacearum, characterization, biovar*