MOLECULAR DETECTION OF *Ralstonia solanacearum* (*Rs*) RACE(S)/ PHYLLOTYPE CAUSING BROWN ROT OF POTATO

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Abstract

Prevalence of significant pathogen *R. solanacearum* causing a potential disease brown rot of potato studied in the major potato growing districts of Bangladesh viz. Munshiganj, Chandpur, Tangail, Narayanganj, Jamalpur, Domar, Patuakhali, Rangpur, Bogra, Shariatpur, Meherpur, Joypurhat and Dinajpur. A total of 133 samples were used for isolation on Kelman's (1954) TZC agar medium, these strains yielded typical virulent type colonies, which were cream coloured, irregularly shaped, highly fluidal with pink pigmentation in the centre. Out of tested isolates, 125 (ie.94%) found positive for presence of *R. solanacearum*. Among the isolates, thirty nine isolates were tested for race, biovar and phylotype study based on a preliminary hypersensitive reaction test. Race and biovar of the test pathogens were determined following standard procedure described by EPPO, 2004; & Kumar, 2017*et al*; and Goszczynska, *et al. 2000;* & IPDN, 2014. It was observed that all thirty nine tested isolates expressed as race 3 while in bovar test thirty seven showed as biovar III except two showed biovar I. Total genomic DNA of all the strains was extracted and subjected to PCR amplification using the *R. solanacearum* specific universal primer pair 759/760. DNA-based methods have provided powerful tools to identify and detect microorganisms with high sensitivity and specificity. PCR assay amplifies the DNA of bacterial pathogens, targeting the species-specific sequences in their genome. In the present study an efficient DNA isolation protocol and PCR based detection of bacterial wilt pathogen in soil, seed and infected plant materials has been used. The specific primers 759f/760r was successfully used to detect *Ralstonia solanacearum* from different sources and predicted 280-bp DNA fragment was obtained. In conclusion, the PCR-based detection method using *R. solanacearum* specific primer offers a rapid and sensitive method for unambiguous detection of this pathogen in soil, seed and infected potato plant materials. The pathogen *R. solanacearum* was consistently isolated from storage potato stored in cold storage and in farmer's storage system. Significantly higher incidence of *R. solanacearum* occurred in farmer's storge compared to cold storage system. Again, in both storage systems the incidence increased significantly with the time of storage period. This indicates that this significant pathogen can well survive in the stored potato and with the duration of storage the infection also increases.

Keywords: molecular detection, race, PCR, primer, genomic DNA, *Ralstonia solanacearum*