

Research Article

Molecular Characterization and Pathogenicity of Indian *Phytophthora infestans* Isolates Reveals No Correlation between Phenotypes and their Geographic Origin

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Abstract

Phytophthora blight (*Phytophthora infestans*) causes significant yield loss in potato and tomato crops. It is imperative to understand the diversity of the pathogen to devise efficient management strategies. Isolates (120) collected from hills and sub-tropical plains of India were first characterized for phenotypic diversity like mating type, metalaxyl sensitivity and pathotypes and isolates differed in pathotypes (17) were further assessed using RAPD, AFLP, URP and SSR markers, and mitochondrial haplotypes for genetic diversity and differentiation based on geographical origin or phenotypic traits. Molecular markers revealed some diversity and isolates could be grouped into 2 major groups and 4 sub-groups. All the isolates were of Ia mtDNA haplotype which indicates that the Indian *P. infestans* isolates belong to the new pathogen population. Pathogenicity of isolates was also studied and isolates were grouped into moderately aggressive, aggressive and highly aggressive categories. No marker could establish the relationship between origins of isolates and/or phenotypic traits neither could categorize the population on the basis of aggressiveness. These results indicate that *P. infestans* population was genetically diverse, which should be taken into account while breeding for resistant cultivars or other disease management programme.

Keywords: Aggressiveness, genetic diversity, late blight, molecular markers, mitochondrial haplotype, potato

Citation: Sharma Sanjeev, Singh BP, Jeevalatha A and Chakrabarti SK. 2017. Molecular characterization and pathogenicity of Indian *Phytophthora infestans* isolates reveals no correlation between phenotypes and their geographic origin. *J Mycol Pl Pathol* 47(1): 1-12.