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RESEARCH ARTICLE

Genetic diversity of *Ralstonia solanacaerum* from major tomato growing areas of Karnataka

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ABSTRACT

Ralstonia solanacearum isolates from Karnataka (India) were analyzed by random amplified polymorphic DNA technique,the data distinguished the isolates into seven major clusters.High level of polymorphism (73.93%) indicated diverse genetic base. Maximum genetic diversity of 0.61 per cent was observed between Hosalli (Rs-7) and Doddaballapur (Rs-9) isolates, Distribution of strains into genetic clusters did not relate to geographic origin.

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INTRODUCTION

Ralstonia solanacearum(Yabucchi *et al.,* 1995), a causal agent of bacterial wilt of several crops like potato, tomato, pepper, tobacco, etc. is one of the important disease causing organisms in tropical, subtropical and warm temperate regions of the world (Hayward, 1991). *R. solanacearum* embraces a diverse array of populations that differ in host range, geographical distribution, pathogenicity, genetic and physiological properties. To describe this intra-specific variability, binary classification systems are used. There is considerable genetic variation among strains within each race or biovar (Cook *et al.,* 1989). In recent years, research has been directed towards developing rapid, sensitive and specific diagnostic assays to detect the *R. solanacearum* in plant and soil samples (Baker *et al.* 1984; Hendrick and Sequiera, 1984). Random amplified polymorphic DNA (RAPD) analysis (Williams *et al.,* 1990) has many advantages such as speed, low cost, minimal requirement of DNA, and lack of radioactivity, as a means of characterizing genetic variability. Major polymorphisms in RAPD pattern indicate genetic distinctness which can be used to distinguish unrelated groups. Minor polymorphisms may indicate genetic distinctness within groups or may occur because of experimental variability and, therefore, must be verified by repetition. RAPD analysis has been used effectively to distinguish between *R. solanacearum* strains.

MATERIALS AND METHODS

Laboratory experiments were carried out at the Department of Plant Pathology and Institute of Agri - Biotechnology (IABT), College of Agriculture, University of Agricultural Sciences, Dharwad. Karnataka (India), during 2008-2010. *Ralstonia* affected samples were collected from twenty four locations from major tomato growing areas of Karnataka. The details of location and designation given for each isolates are furnished in Table A. The pathogen was isolated on tetrazolium chloride (TZC) medium. Typical mucoid, creamy white colonies with pink centre was observed on medium ofter 48 h incubation and such single colony of each isolate was inoculated to 25 ml of Nutrient broth taken in 100 ml flasks. The flasks were kept for incubation at 32°C for 24 h. Pure cultures of the isolates were subjected to RAPD analysis.