Characterization of Fungicidal Compatible Endophytes by RAPD and 16S rDNA RFLP Analysis

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ABSTRACT Stem rot of groundnut incited by *Sclerotium rolfsii* Sacc. is an important disease often occurring severely in Rayalaseema region of Andhra Pradesh, India and being the principal limiting factor for its profitable cultivation. Polymorphism among antagonistic seed and root endophytes against *Sclerotium rolfsii* was studied by RAPD-PCR and 16S rDNA-RFLP. The RAPD banding pattern reflected the genetic diversity among the isolates and the formation of two clusters. There were 133 reproducible and scorable polymorphic bands ranging approximately as low as 800 bp to as high as 3000 bp were generated with four RAPD primers. The potential antagonists GSE-3 and GSE-4 amplified with OPD-02 primer yielded unique bands of 2600 bp and can be used to develop sequence characterized amplified region (SCAR) markers. The 16S region of rDNA amplification with genus specific 63F and 1387R universal primers produced approximately 1300 bp fragments with all the potential endophytes. Studies on 16S rDNA-RFLP with *TaqI* enzyme indicated polymorphism in restriction banding pattern among the antagonistic endophytes.

KEY WORDS : Antagonists, groundnut, stem rot, *Sclerotium rolfsii*

INTRODUCTION

Sclerotium rolfsii Sacc. is a serious soil borne pathogen and has a very extensive host range which includes more than 500 plants particularly in the tropical, subtropical and warm temperate areas of the world (Mordue, 1974; Singh and Allen, 1979; Wydra, 1996). It is a saprophytic fungus producing dormant structures (sclerotia) which survives for many years in the soil. The sclerotia constitute the primary inoculum of the pathogen as well as its principle means of dispersal and the sole organs by which the fungus survives adverse environmental conditions, awaiting germination and infection of susceptible hosts when favorable conditions return (Wokocha, 1988; Okabe *et al*., 2000).

Groundnut (*Arachis hypogea* L.), which occupies a prime position among the commercially cultivated oil seed crops in India, is susceptible to stem rot caused by *S. rolfsii*, affecting the quality and quantity of crop causing severe damage with yield losses of over 25% (Mayee and Datur, 1998). It is important crop of the smallholder-farming sector in India and as a protein source; it is an important component of the diet of the rural people. The demand for it by oil expressing industry and confectioners also makes groundnut a cash crop of significance to the economy of the country. In Andhra Pradesh, it is grown in 1.69 million ha with 1.2 t production and the southern zone of Andhra Pradesh is predominantly a groundnut growing area. In

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