

MANAGEMENT OF FUNGAL DISEASES OF BLACK PEPPER

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Abstract

Phytophthora foot rot and slow decline are the two major diseases of black pepper. While the foot rot is caused by *Phytophthora capsici*, slow decline is the result of feeder root damage by *P. capsici*, *Radopholus similis* and *Meloidogyne incognita* either alone or in various combinations. The expression of symptoms depends up on the site of infection and extent of damage. Integrated control measures include cultural, chemical, biological methods besides host resistance. Cultural control comprises of phytosanitation, shade regulation, improving drainage and application of organic matter to soil. Among chemicals in addition to copper fungicides systemic fungicides which are compatible with biocontrol organisms such as Metalaxyl and Potassium phosphonate are used. Biological control includes use of vesicular arbuscular mycorrhizae, *Trichoderma harzianum* and *Pseudomonas fluorescens*. As the major pathogens are soil borne and are transmitted inadvertently along with planting material, production of disease free planting material is the first step in managing black pepper diseases. Use of disease tolerant lines such as IISR- Shakthi is recommended. Anthracnose caused by *Colletotrichum gloeosporioides*, earlier restricted to nurseries, also causes spike shedding in adult vines. An integrated management programme should include summer irrigation to induce production of bisexual flowers, balanced nutrition and prophylactic spray with fungicides.

Keywords: Antagonistic bacteria , antagonistic fungi, arbuscular mycorrhizae (VAM), crop loss, foot rot, fungal disease, *Meloidogyne incognit*, *Phytophthora capsici*, *Radopholus similes*, slow decline, soil solarization, vesicular arbuscular

Introduction

Crop loss due to pests and diseases has been identified as a major constraint in the production of black pepper (Sarma, *et al.* 1994, Nair, 2004). The major diseases identified in black pepper are ‘quick wilt and slow wilt’ (Nambiar & Sarma, 1977). These diseases are now known as *Phytophthora* foot rot and slow decline (Anandaraj, 2000). Though *Phytophthora* is not considered as a true fungus due to

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