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Physiology of Sensitive Isolate of *Fusarium udum,* Causal Organism of Wilt of Pigeon Pea

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Abstract:

Effect of various sources of carbon, nitrogen, phosphorus, sulphate, salts, micronutrients, vitamins and amino acids on the growth of Fusarium udum was carried out by incorporating them in Czapek Dox Agar medium. Sensitive isolate of Fusarium udum which was determined by taking the sensitivity test of Fusarium udum collected from various localities of Maharashtra and Karnataka were selected for this experiment. Plates without any source served as control.

Key words: Amino acids, Czapek Dox Agar medium, carbon, Fusarium udum, micronutrients, nitrogen, phosphorus, sulphate, salts, vitamins.

Introduction

Pigeon pea (*Cajanus cajan* (L.) Huth.) is a leguminous crop that belongs to the family Fabaceae and is widely grown in tropical and subtropical regions of the world, such as Madagascar, India, Myanmar, Philippines, and Australia. It is a major source of protein, amino acids, and vitamin B for human consumption and also improves soil fertility by fixing atmospheric nitrogen. However, pigeon pea production is threatened by various biotic stresses, especially the wilt disease caused by the fungus *Fusarium udum* Butler. This fungus belongs to a large and diverse group of ascomycetes that are responsible for severe losses in yield, quality, and quantity of many crops, including cereals, vegetables, ornamentals, and trees. Some Fusarium species also produce toxic metabolites called trichothecenes that can cause health problems in humans and animals. In this paper, we aim to review the current status of Fusarium wilt of pigeon pea, its epidemiology, management, and future prospects. We also discuss the molecular and genetic aspects of the interaction between Fusarium and pigeon pea, as well as the potential applications of biotechnology and genomics for improving the resistance of this crop.

Fusarium wilt of pigeon pea is one of the oldest and most destructive diseases of this crop, first reported by Butler in 1906 from Bihar State of India. The disease occurs in all the major pigeon pea-growing areas of the world, such as India, Myanmar, Malawi, Tanzania, Kenya, and Australia. The disease can cause up to 100% yield loss, depending on the stage of infection, environmental conditions, and cultivar susceptibility. The pathogen is soilborne and enters the plant through the roots, colonizes the xylem vessels, and interferes with the water and nutrient transport, leading to wilting, yellowing, and drying of leaves, followed by death of the whole plant. The pathogen can survive in the soil for several years as chlamydospores, which are resistant to adverse conditions. The disease is favoured by high soil moisture, high soil temperature, and low soil pH.

The management of Fusarium wilt of pigeon pea is challenging due to the soilborne nature of the pathogen and the lack of effective chemical and biological control agents. The