INTERNATIONAL JOURNAL OF PLANT PROTECTION / VOLUME 6 | ISSUE 1 | APRIL, 2013 | 32-34

RESEARCH ARTICLE

Effect of various nitrogen sources and antagonists on the growth of *Colletotrichum capsici* (Syd.) Butler and Bisby causing anthracnose of yam (*Dioscorea alata* L.)

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ARITCLE INFO

Received : 19.05.2012
Revised : 27.12.2012
Accepted : 13.01.2013

Key Words :
Colletotrichum capsici, Growth, Sporulation, Antagonist, Nitrogen sources, Yam

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ABSTRACT

The yam crop was found infected with anthracnose disease caused by *Colletotrichum capsici*. In present investigation out of seven different nitrogenous sources tried, potassium nitrate proved to be the best for the growth (345.33 mg) and sporulation (380.3 spores/LPM) of the pathogen. Ammonium sulphate, Sodium nitrate and Ammonium nitrate also showed stimulation of growth and sporulation of *C. capsici* as compared to other sources tried. Also the result from the *in vitro* study revealed that nine antagonists *viz*., *Trichoderma viride* Pers. ex Grey, *Trichoderma harzianum* Rifai, *Trichoderma longibrachyatum* Rifai, *Gliocladium virens* Miller., *Chaetomium globosum* Kunze., *Pseudomonas fluorescens* Migula, *Aspergillus niger* Link, *A. flavus* and *Bacillus subtilis* Ell. were tested against *C.capsici.* by dual culture technique. *In vitro* studies on interaction of antagonists revealed strong antagonism of *T. viride* Pers., *P.fluorescens* Migula and *Aspergillus flavus* Link.

How to view point the article : Mehetre, Pooja (2013). Effect of various nitrogen sources and antagonists on the growth of *Colletotrichum capsici* (Syd.) Butler and Bisby causing anthracnose of yam (*Dioscorea alata* L.). *Internat. J. Plant Protec.*, **6**(1) : 32-34.

INTRODUCTION

The yam is an important tuber crop originated from the Indo-Burmese region of South East Asia. The yam is a common name for some species in the genus *Dioscorea* (Family: Dioscoreaceae). The major yam producing states in India includes Gujarat, Maharashtra, Orissa, Rajasthan, Kerala, West Bengal, Bihar and Assam. Two Asiatic yams, *viz*., *Dioscorea alata* Linn. (greater yam) and *Dioscorea esculenta*. (Lour.) Burkill (lesser yam) are the major food of the Indians. The yams exploited for pharmaceutical purposes are non-edible. (Thamburaj and Singh, 2005). The 100 g edible portion of yams contains calcium 38mg, phosphorous 28 mg, iron 1.1mg, vitamin A 5 mg, thiamine 0.10 mg, riboflavin 0.04 mg, niacin 0.5 mg and ascorbic acid 6 mg (Tindall,1983).

In the year 2007, in Horticulture farm of Navsari Agricultural University, Navsari, the yam crop was found to be severely affected by anthracnose disease resulting in severe losses.

MATERIALS AND METHODS

Effect of various nitrogen sources on growth and sporulation of *Colletotrichum capsici* :

The present *in vitro* study was conducted in the Plant Pathology Laboratory of ASPEE College of Horticulture and Forestry, Navsari, by using Completely Randomized Block Design having 4 repetitions. *C.capsici* was repeatedly isolated from naturally infected yam (*D.alata*) leaves on Potato dextrose agar medium in laboratory. The culture was further purified by frequent sub culturing and maintained on Potato dextrose agar (PDA) slants for further investigation.

Fifty ml of sterilized liquid Richard's medium was poured in to 150 ml conical flasks, plugged with non-absorbent cotton and autoclaved at 121^{0}C (15 psi pressure) for 20 minutes. Potassium nitrate in the basal medium was replaced by various