INTERNATIONAL JOURNAL OF PLANT PROTECTION / VOLUME 6 | ISSUE 1 | APRIL, 2013 | 211-212

RESEARCH NOTE

In vitro evaluation of bioagents against anthracose of chilli caused by *Colletotrichum capsici* (Syd.) Butler and Bisby

■ R. REENA*[1], M.G. PALAKSHAPPA[1] AND R. RAJANI[2]

[1]Department of Plant Pathology, College of Agriculture, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

[2]Department of Entomology, College of Agriculture, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

ARITCLE INFO

Received : 13.08.2012
Accepted : 01.03.2013

Key **W**ords :
Chilli, *Colletotrichum capsici,*
Bioagent, *In vitro,*
Disease control

*Corresponding author:
bharatinbhat@gmail.com

ABSTRACT

The efficacy of bioagents were evaluated for their antagonistic effect against *Colletotrichum capsici* for radial growth inhibition on the Potato dextrose agar medium using dual culture technique under *in vitro* condition. Maximum inhibition of mycelial growth was noticed in *T. harzianum* (71.80%) and was found significantly superior to *T. viridae* (69.58%). Least inhibition of mycelial growth was observed in *B. subtilis* (41.02%).

How to view point the article : Reena, R., Palakshappa, M.G. and Rajani, R. (2013). *In vitro* evaluation of bioagents against anthracose of chilli caused by *Colletotrichum capsici* (Syd.) Butler and Bisby. *Internat. J. Plant Protec.*, **6**(1) : 211-212.

Chilli (*Capsicum annum L.*) is an annual herbaceous spice/vegetable/cash crop grown in both tropical and sub-tropical regions and belongs to family Solanaceae. The anthracnose or ripe fruit rot caused by *Colletotrichum capsici* (Syd.) Butler and Bisby is a wide spread problem limiting the profitable cultivation and seed production throughout the major chilli growing regions of India. The disease was reported for the first time in India by Sydow in 1913 from Coimbatore of Madras Presidency. The disease has been observed to occur in three phases *viz.*, seedling blight or damping off stage, prevalent in the nursery, leaf spotting and die back stage which is initiated at different stages of growth and fruit rot stage in which the ripe fruits are infected. The last phase causes extensive damage to the fruits since the lesions on the fruits considerably reduce the market value of the produce. Thind and Jhooty (1985) reported that losses due to anthracnose of chilli varied between 66-84 per cent.

The efficacy of bioagents were tested against *C. capsici* for radial growth inhibition on the Potato dextrose agar medium using dual culture technique under *in vitro* condition. Cultures of antagonistic microorganisms were obtained from Department of Plant Pathology and Institute of Agri. Bio. Technology (IABT), University of Agricultural Sciences, Dharwad.

Bioagents used against *C. capsici* were as follows:

– *Trichoderma harzianum* Rifai
– *Trichoderma viride* Pers.
– *Trichoderma virens* Miller
– *Bacillus subtilis* Cohn
– *Pseudomonas fluorescens* Migula

Dual culture test

Bioagents were evaluated for their efficacy through dual culture technique. The bio agents and the test fungus were inoculated side by side on a single Petridish containing solidified PDA medium. Five replications were maintained for each treatment with one control by maintaining only pathogen separately. They were incubated for 14 days. The diameter of the colony of both bioagents and the pathogen was measured in two directions and average was recorded. Per cent inhibition of growth of the test fungus was calculated by using the formula of Vincent (1947).

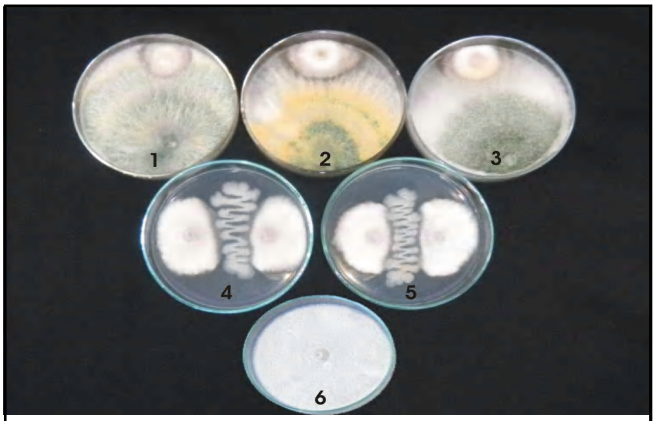
The antagonistic microorganisms *viz., Bacillus subtilis* Cohn. *Pseudomonas fluorescens* Migula, *Trichoderma*

Table 1: *In vitro* evaluation bioagents against *Colletotrichum capsici*

Bioagents	Per cent inhibition of mycelial growth
Trichoderma virens	65.22 (53.90)*
Trichoderma viride	69.58 (56.50)
Trichoderma harzianum	71.80 (57.90)
Pseudomonas fluorescens	46.77 (43.10)
Bacillus subtilis	41.02 (39.80)
S.E.±	0.22
C.D.@1%	0.93

*Arcsine transformed values

harzianum Rifai, *T. viride* Pers. and *T. virens* Miller were evaluated for their antagonistic effect against *C. capsici* under *in vitro* conditions by dual culture technique as explained in Material and Methods. Inhibition zone in mm was recorded and per cent inhibition was calculated (Table 1 and Fig 1).



1.*Trichoderma virens*, 2.*Trichoderma viride*, 3.*Trichoderma harzianum* 4. *Bacillus subtilis*,5. *Pseudomonas fluorescens* 6.Control

Plate 1: *In vitro* evaluation bioagents against *Colletotrichum capsici*

Among the five bioagents tested against *C. capsici*, maximum inhibition of mycelial growth was noticed in *T. harzianum* (71.80%) and was found significantly superior to *T. viridae* (69.58%) followed by *T.virens* (65.22%), *Pseudomonas fluorescens* (46.77%). Least inhibition of mycelial growth was observed in *B. subtilis* (41.02%). Present investigations are in agreement with D'Souza *et al*. (2001) and Tiwari *et al*. (2008).

REFERENCES

D'Souza, A., Roy, J.K., Mohanty, B. and Dasgupta, B. (2001). Screening of *Trichoderma harzianum* against major fungal pathogens of betelvine. *Indian Phytopath*., **54** : 340-345.

Sydow, H. (1913). *Vermicularis capsici*. *Ann. Mycol*., **11**:329.

Thind, T.S. and Jhooty, J.S. (1985). Relative prevalence of fungal disease of chilli fruits in Punjab. *J. Mycol. Pl. Pathol*., **15**:305-307.

Tiwari, R. K., Awadhiyam, Anil Kasyap and Thrimurty, V. S. (2008). Efficacy of bioagents, neem based plant products and plant extracts against *Colletotrichum capsici. Indian J. Pl. Pathol.*, **36**(1): 94-97.

Vincent, J. M. (1947). Distortion of fungal hyphae in the presence of certain inhibitors. *Nature*, **159**:850.

****