I J R B A T, Issue (Special-15), Feb 2020: 93-95

A Double-Blind Peer Reviewed & Refereed Journal

OPEN ACCESS

e-ISSN 2347 – 517X

Original Article

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY

 www.ijrbat.in

EFFECT OF LIGHT INTENSITY ON GROWTH OF *COLLETOTRICHUM COCCOIDES* ISOLATED FROM TOMATO (LYCOPERSICUM ESCULENTUM L.)

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ABSTRACT:

Tomato (*Lycopersicum esculentum* L.) family solanaceae is an important vegetable and a spice crop worldwide and one of the most important vegetables in India. Andhra Pradesh, Karnataka, Maharashtra, Orissa, West Bengal, Tamil Nadu, Madhya Pradesh, Gujarat, Assam, are found to be important states growing Tomato in India. Tomato is one of the most commercially cultivating crops from Maharashtra state of the India. Anthracnose caused by *Colletotrichum coccoides* is a major problem in India and one of the more significant economic constraints of tomato Production worldwide, especially in tropical and subtropical regions, Effect of different Temperature and Light Intensity tested against the growth of *C. coccoides* under in Vitro. The present investigation was conducted to examine the effect of different temperature and light Intensity on the mycelial growth. Potato dextrose agar medium supported significantly the maximum growth of all two isolates of *C. coccoides*. Further, the strains were found to very morphologically between the isolates under the study. Effect of different temperature, Light intensity tested against the growth of *C. coccoides* under in vitro. Result indicated that the growth of C. *coccoides* was maximum at light intensity range of 65.6mm. Further, the strains were found to vary morphologically between the isolates under the study.

INTRODUCTION

Tomato (*Lycopersicon esculentum* L.) family solanaceae is an important commercial crop in the world. Tomato (*Lycopersicum esculentum*) is the second most popular and widely grown vegetable in the world after potato (Panthee and Chen 2010). Nutritional values of tomato make it a widely accepted vegetable by consumers. Nevertheless, tomato is a very perishable vegetable with a short shelf-life and high susceptibility to fungal diseases (Coursey, 1983). *C. coccoides* colonies appear as a dense white to dark grey mass that is dark black on the reverse side, with abundant setate (Holliday, P.,1980). Anthracnose disease is responsible for major economic losses in tomato production worldwide, especially in tropical and subtropical region (Pakdeevaraporn P., Wasee, S., Taylor, P.W.J., Mongkolporn, O., 2005.) Many fruits are perishable especially in tropical and subtropical regions without adequate refrigeration (Coursey 1983). Fruits, due to their low pH, high moisture content and nutrient composition are very susceptible to attack by pathogenic fungi, which in addition to causing rots, may also make them unfit for consumption by producing mycotoxins (Stinson *et al.*, 1981; Philips, 1984; Moss, 2002). Fungi exhibit varying response to light, depending on the light intensity, quality, and duration of exposure and temperature. Exposure to light is needed by some fungi for sporulation (Marsh et al.,1959), whereas other fungi sporulate better in dark (Shoemaker,1955) and with the decrease in germination of conidia as the period of darkness increased (Rewal and Grewal,1989). Behaviour of a fungus/pathogen depends upon its nutritional response.

Colletotrichum coccoides is most adhesive that adhere to the plant surface and remain latent until such physiological changes occur in the fruit and cause economic losses to the farmers due to low fruit quality and is our marketability many postharvest diseases of fruit exhibit the phenomenon of quiescence in which symptoms do not develop until fruit ripen (Bailey,J.A. and Jegar,M.J.,1992).In anthracnose, the ripe fruits turning red get affected by this disease, whereas green fruits are not generally attacked. Symptoms on the fruit first appear as sunken, water- soaked lesions that expand rapidly on the fruit (Voorrips, R.E., Finkers, R., Sanjaya, L. and Grornwold, R., 2004). Disease symptoms occurs only on ripened fruits occasionally appears on leaf as leaf spot and also on mature green fruits. *Colletotrichum*

coccoides is an air-borne, and also soil-borne, seed-born pathogen caused to tomato (Wallr.)A wide range of media are used for isolation of different groups of fungi that influence the vegetative growth and colony morphology, pigmentation and sporulation depending upon the composition of specific culture medium, temperature, light, Ph, water availability and surrounding atmospheric gas mixture (Northolt and Bullerman,1982,Kuhn and Ghannoum,2003,kumura and Rawal,2008)

Material and Method

1. Healthy and diseased ripen Tomato fruits were randomly collected from fields of Marathwada region. The collected samples were sun dried and then kept in brown paper bags with proper label and stored in the refrigerator at 4°C for subsequent studies.

2. The infected portion of the fruit was cut in to small bits, surface sterilized in 0.01% sodium hypochlorite solution for 30 seconds, washed in repeated changes of sterile distilled water and plated on to PDA medium.

3. The fungi were purified by single spore isolation technique. The purified isolates were maintained on PDA plates and preserved in refrigerator for subsequent studies.

4. The effect of different light colour on the growth of pathogen was studied by exposing the inoculated culture to alternate cycles of 24 h light, 24 h dark and h light and 12 h dark in an environment chamber maintained at room temperature(25°C). Mycelial disc of four mm was used to inoculate Petri-Plates. Three replications were maintained for each treatment. Inoculated plates were kept in environment chamber and light intensity was adjusted to required level. The mycelia growth was recorded on eight day after inoculation.

RESULT:

The isolation of *C.coccoids* from the infected fruits was made as described in material and methods. The pure culture obtained was again sub cultured on potato dextrose agar slants and kept in the refrigerator at 5°C for further studies. The data on diseases grade and disease reaction indicated differential interaction between host and isolates of pathogen. Isolate C3 was distinct from the remaining isolates as it gave susceptible reaction

Colony characteristics were classified based on.1) Colony growth rate 2) Surface mycelium description 3) Colony colour 4) Conidia mass colour.

Effect of light intensity on the growth of different isolates of *C. coccoides* was studied. The result showed that all the isolates grew well when they were exposed with alternate cycles of 12 h light of red, blue, yellow green, and white with five intensity of colour. The mean highest growth of effect on mycelial is followed by Blue 65.6mm. and the lowest growth of all isolates was followed was found when exposed to Green 52.2mm.

Light has profound effect on the mycelial growth of pathogen. Exposure of the colony to alternate cycles of light and darkness lead to maximum mycelial growth. The results agrees with findings of wherein he found that yielded maximum growth of fungus when compared to the continuous exposure of different light Intensity.

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Table:01Growth depends on physical factors depends on Light Intensity

Sr.No.	Light	Sensitive (mm)	Resistent (mm)
1	Blue	64.7	65.6
2	Yellow	62.8	63
3	Red	54.6	56
4	Green	50.2	52
5	Normal	62.3	65.8
6	Control	64.2	65.2
	Total	**358.8**	**367.6**
	Mean	**27.6**	**29**

Growth depends on physical factors depends on colours