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Evaluation of mycotoxicity of commercial fungicides against C*olletotrichum capsici fsp. cyamopsicola*

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Abstract
Clusterbean is a legume crop usually used for vegetable purpose, but it is also have industrial benefits because its gum (found in endosperm of seed) is used as a raw material in medicinal, paper, cosmetic industry etc. But due to this fungal disease the yield has been reduced, so that its management at proper time is very necessary for improving its quality and quantity. By keeping this view in mind in present study some commercially available fungicides were evaluated for the mycelial inhibition of *Colletotrichum capsici fsp. Cyamopsicola* by adopting poison food technique under laboratory conditions. The result reveals that the maximum mycelial growth was found in thiram (18.13 mm), which was followed by neemicide (10.46 mm). The absolute mycelial growth inhibition was found in azoxystrobin (0.00 mm), which was followed by hexaconazole (2.33 mm), propiconazole (2.36 mm).

Keywords: mycotoxicity, commercial fungicides, C*olletotrichum capsici fsp. cyamopsicola*

Introduction
Cluster bean [*Cyanosis tetragonoloba* (L.) Taub.] Belongs to the family Fabaceae. It is an important dry land, draught hardy, annual *kharif* crop grow widely under rainfed (barani) condition for grain, green fodder, vegetable, green manuring and for seed purposes. The major world suppliers are India, Pakistan and the United States, with smaller acreages in Australia and Africa. The crop suffers due to number of diseases like vascular wilt (*Fusarium moniliformae* and *Fusarium* spp.) Charcoal rot (*Macrophomina phaseoline)*, Powdery mildew (*Leveillula taurica*), Alternaria leaf blight (*Alternaria cyamopsidis*) and Anthracnose caused by *Colletotrichum capsici* f.sp. *Cyamopsicola* (Desai and Prasad, 1955). Out of which anthracnose is the most important disease, Choudhary, 2007. By using fungicides for the management of the disease is an easier and cheaper source. So i take some easily available commercial fungicides for the inhibition of fungi in present study.

Methods and materials
Nine fungicides were evaluated against *T. penicillariae* under *in-vitro* condition by adopting poisoned food technique. The growth of the fungal mycelium was measured on 7th day after inoculation.

Poisoned Food Technique
The potato dextrose agar medium was prepared and sterilized, then under aseptic condition the required quantity of each fungicide was incorporated into 50ml sterilized PDA filled in flask of 250 ml capacity from each flask 4 sterilized petriplates of 90mm diameter were poured. This poured petriplates were inoculated at the center with a 7mm fungal disc from seven days old culture of the test organism. Control (without fungicide) was maintained for comparison. The petriplates were incubated at 25+2ºC. The radial growth of the fungus was measured at 24 hours interval started from 48 hours after inoculation.

Details of experiment
Design: CRD
Replication: 3
Treatments: 10
Percent inhibition over control was calculated by following formula suggested by Bliss (1934)

$$\text{Percent inhibition} = \frac{C - T}{C} \times 100$$

Whereas

C= Growth of fungus in control
T= Growth of fungus in treatment

Table-1: *In-vitro* evaluation of fungicides against *mycelial growth Colletotrichum capsici f sp. cyamopsicola*

S No.	Fungicide name	Mycelial growth (mm)	Percent inhibition
1	Tebuconazole	5.50	93.53
2	Propiconazole	2.36	97.22
3	Thiophanate methyl	8.33	90.23
4	Azoxystrobin	0.00	100.0
5	Hexaconazole	2.33	97.25
6	Tebuconazole+Trifloxysrobin	6.33	92.58
7	Neemicide	10.46	87.69
8	Mancozeb	4.66	94.51
9	Thiram	18.13	78.61
10	Control	85.00	---
	SE (M)	0.66	
	CD (5%)	1.97	

Result was showed that the maximum mycelial growth was found in Thiram (18.13 mm), which was followed by Neemicide (10.46 mm), thiophanate methyl (8.33 mm). The absolute mycelial growth inhibition was found in azoxystrobin (0.00 mm), which was followed by hexaconazole (2.33 mm), propiconazole (2.36 mm). Other researcher also studied about the efficacy of different fungicides, viz., both triazoles and strobilurins against anthracnose disease have been reported, (Alexander and Waldenmaier, 2002 Lewis and Miller, 2003). Present results also confirmative with the work of Sarfraz and Basu, 2014, and Mishra and Pandey, 2015, who reported that propiconazole is an important fungicide for the inhibition of *Colletotrichum capsici.*

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