

# ***In vitro* Evaluation of Fungicides, Botanicals and Bioagents Against Soybean Anthracnose Incited by *Colletotrichum truncatum***

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*International Journal of Plant Protection, Vol. 2 No. 1 : 103-107 (April to September, 2009)*

## **SUMMARY**

*Colletotrichum truncatum*, the incitant of anthracnose/ pod blight in soybean is one of the most destructive pathogens. Five fungicides viz. Carbendazim 50 WP, Chlorothalonil 75 WP, Difenconazole 25 EC, Hexaconazole 5 EC and Propiconazole 25 EC were evaluated (@ 100, 150 and 200 ppm each), five botanicals viz., Neem, Mehandi, Eucalyptus, Bougainvillea and Parthenium (each @ 10 and 15%) and ready made formulations of two bioagents viz., *Trichoderma viride* (Tricho-Action, 100% w/w) and *Verticillium lecanii* (Viro-Action, 100 w/w) were evaluated *in vitro* against *C. truncatum*, using PDA as basal medium applying poisoned food technique. The results revealed that all the fungicides, botanicals / plant leaf extracts and bioagents tested were found fungistatic and significantly inhibited mycelial growth of the test pathogen over untreated control. Among the fungicides, Carbendazim recorded the highest mean inhibition (90.59 %) of mycelial growth of the test pathogen, followed by the fungicides, Propiconazole (87.95%), Hexaconazole (86.15%), Difenconazole (84.81%) and Chlorothalonil (70.23%). Among five botanicals tested, Neem recorded highest mean inhibition (72.56%) of mycelial growth of the test pathogen, followed by the Parthenium (61.31%), Mehandi (46.03%) and Bougainvillea (28.98%). Bioagents, *T. viride* and *V. lecanii* recorded mean mycelial growth inhibition of 41.79 and 23.75 per cent, respectively.

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## **Key words :**

*Colletotrichum truncatum*,  
Fungicides,  
Botanicals,  
Bioagents

**S**oybean [*Glycine max* (L.) Merrill.] is known as golden/ miracle bean crop of the planet. It has dual qualities *i.e.* 40 per cent protein and 20 per cent oil without cholesterol. Among the conventional oil seed crops of India, soybean ranks first in its importance, next only to groundnut and rapeseed-mustard. Soybean is able to leave residual nitrogen effect for succeeding crop equivalent to 35 to 40 kg / N<sub>2</sub> / ha.

In India, area, production and productivity of soybean during 2005-2006 were 76.720 lakh ha., 61.28 lakh metric tonnes and 799 kg/ha., respectively. In Maharashtra, the area, production and productivity of soybean during 2005-2006 were 23.89 lakh ha., 19.63 lakh metric tonnes and 822 kg/ha, respectively (Anonymous, 2006). Soybean growing major states in the country are Madhya Pradesh, Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Rajasthan, Gujarat, Uttar Pradesh, Punjab and Haryana (Bhatnagar, 1997).

More than 100 plant pathogens have been reported to affect soybean, but among them, very few are economically important causing yield losses to the tune of 12-20 per cent. The most important diseases reported to cause economic losses to the soybean are:

Anthracnose incited by *Colletotrichum truncatum* (Schw.) Andrus and Moore causing yield losses of 16-100 per cent, frog eye spot (*Cercospora sojina*) causing 15 per cent losses, rust (*Phakospora pachyrhizi*) causing 10-90 per cent losses, downy mildew (*Peronospora monshurica*) causing 8 per cent losses, powdery mildew (*Microsphaera diffusa*) causing 10-35 per cent losses and soybean mosaic causing 25-50 per cent losses (Sinclair, 1992). *Colletotrichum truncatum*, is the most common species recorded on soybean (Lenne, 1992) and the crop soybean is susceptible to *C. truncatum* at all the stages of development particularly from bloom to pod fill. The disease causes considerable damage by reducing plant stand, seed quality, seed germination and yield (Vyas *et al.*, 1997).

## **MATERIALS AND METHODS**

The experiment was conducted during *kharif*, 2006 at Department of Plant Pathology, College of Agriculture, Latur, during the present investigations on anthracnose (*C. truncatum*) of soybean [*Glycine max* (L.) Merrill.]. These diseased specimens (leaves, pods) were blot dried and cut with sharp sterilized blade into small bits (5mm) keeping half healthy and half

Accepted :  
March, 2009