Research Paper :

Exploration of plant extracts and fungal antagonists against *Macrophomina phaseolina* (TASSI.) Goid causing leaf spot in green gram

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SUMMARY

Green gram [*Vigna radiata* (L.) Wilczek] is nutritionally the most important legume crop and excellent source of high quality protein (25%). The leaf blight of green gram incited by *Macrophomina phaseolina* (Tassi.) Goid. was observed at Agronomy farm, College of Agriculture, Dapoli. *In vitro* evaluation of plant extracts revealed that the bulb extracts of garlic (*Allium sativum*) was most effective in inhibiting the growth of the test fungus followed by ginger and onion. *Trichoderma harzianum* was the most promising antagonist against *Macrophomina phaseolina* among the different fungal antagonists tested, followed by *Trichoderma viride* and *Gliocladium virens*.

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Green gram [*Vigna radiata* (L.) Wilczek] is nutritionally the most important legume among pulse crops grown in India. It is supposed to be easily digestible and hence is preferred by patients. When green gram is allowed to sprout, ascorbic acid (vitamin C) is synthesized. The amount of riboflavin and thiamine are also increased. It is also used as a green manuring crop. In Konkan region of Maharashtra it is grown as a sole crop during late *Kharif, Rabi* and summer seasons. Among the various diseases of green gram, the leaf blight caused by *Macrophomina phaseolina* was noticed at the farm of Agronomy, College of Agriculture, Dapoli during the *Kharif* season in the year, 2008. The disease incidence was observed to be more than 45 per cent. So far, no studies have been undertaken on leaf blight affecting green gram in Konkan region of Maharashtra. Therefore, it was decided to conduct the present investigation.

MATERIALS AND METHODS

For studying antifungal effect of plant extracts against the test fungus, these were selected on the basis of their antifungal activity and below procedure was followed.

Crude extraction:

The fresh, thoroughly washed 100 g plant material was blended in 100 ml sterile water in a mixure. The crude material was then passed through double layered muslin cloth and centrifuged at 40000 rpm for 5 min. After centrifuging, the supernatant was collected and filtered through Whatman No. 1 filter paper. This extract was then passed through Sintered glass filter (to avoid the bacterial contamination) and preserved as stock (100%) solution aseptically in conical flask for further use.

All the plant extracts were tried at 10 per cent concentration against the test fungus using 'Poisoned food technique' on Potato dextrose agar as a basal medium. To obtain 10 per cent plant extract, 90 ml PDA was poured in 100 ml sterilized conical flask and 10 ml of plant extract was poured in each flask with the help of sterilized pipette and mixed thoroughly before solidification. 20ml of such medium was then poured in each sterilized Petri plate. Mycelial discs of 5 mm diameter were cut from seven day old culture of test fungus with the help of a sterilized cork borer and transferred aseptically to the centre of Petri