

Research Paper :

Efficacy of chemical fungicides and bio-agents against major cotton fungal foliar diseases



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SUMMARY

An investigation was conducted during summer 2008 on the farm of All India Coordinated Cotton Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri on isolation of leaf spot pathogens, pathogenicity to efficacy of chemical fungicides and bioagent in field conditions. The isolated pathogens associated with fungal foliar diseases were *Alternaria macrospora*, *Myrothecium roridum* and *Helminthosporium spiciferum*. The pathogenicity of isolation pathogens was proved on susceptible cotton var. LRA-5166. These pathogens produced symptoms within 8-13 days. The pathogenicity test proved the pathogenic nature of the isolated pathogens. The chemical fungicides Mancozeb (0.3%), Propiconazole (0.1%), Propineb (0.3%), Copper oxychloride (0.25%) and bioagent *Trichoderma viride* (0.5%) recorded the efficacy against *Alternaria* leaf blight, *Myrothecium* and *Helminthosporium* leaf spot diseases of cotton and increasing the seed cotton yield.

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Cotton is the most important commercial crop which plays a vital role in the national economy. The area under Maharashtra state during 2007-08 was 31.91 lakh ha with the production of 60.00 l bales and productivity of 320 kg lint / ha (Anonymous, 2008). Cotton plant subjects to infection by various fungi, bacteria and viruses which leads to reduction in gross yield and deterioration in quality causing depreciation of market value. Amongst the diseases *Alternaria* leaf blight, *Myrothecium* leaf spot and *Helminthosporium* leaf spot poses an alarming situation in Maharashtra but very less information is available on these aspects. Hence, systemic studies on isolation, pathogenicity of isolated organisms and testing the efficacy of chemical / bioagents in field condition was carried out.

MATERIALS AND METHODS

A field experiment was conducted during summer 2008 on the farm of All India Coordinated Cotton Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri. Six fungicides and one bioagent *Trichoderma viride* were evaluated to find out effective control measure against the foliar diseases of

cotton. Three sprays were given at fifteen days interval immediately after the appearance of disease.

To carry out the field experiment, fresh specimen of cotton leaf spots were collected, isolation of fungus associated with leaf blight and leaf spot of cotton was made on Potato dextrose agar. The pathogens were grown on Potato dextrose broth (PDB) to study the pathogenicity. The well developed contamination free fungal growth was transferred to agar slants by hyppal tip method to obtain pure culture. The susceptible var. LRA-5166 of cotton was sown in thirty sterilized earthen pots filled with sterilized soil under controlled conditions in glasshouse. Forty five days old plants were used to test the pathogenicity. The pure cultures of *Alternaria macrospora* Zimm., *Myrothecium roridum* Todex ex Fr. and *Helminthosporium spiciferum* (Bain) Nicot were inoculated separately by leaf injury method on the healthy seedlings of cotton var. LRA-5166 under controlled conditions and Koch's postulates were proved. The control plants sprayed with sterilized water only.

The field experiment was carried out with

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