INTERNATIONAL JOURNAL OF PLANT PROTECTION / VOLUME 5 | ISSUE 2 | OCTOBER, 2012 | 286-289

IJPP

RESEARCH ARTICLE

Estimation of deteriorative effect of *Fusarium oxysporum* and *Aspergillus niger* on fenugreek seed germination, seedling vigour and *in vitro* efficacy of fungicides

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ARITCLE INFO

Received : 30.03.2012
Revised : 09.05.2012
Accepted : 14.08.2012

Key Words :
Fenugreek,
Seed germination,
Seedling vigour,
Fusarium oxysporum,
Aspergillus niger

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ABSTRACT

In the present investigation, seed and soil inoculations were used to prove the pathogenicity of *Fusarium oxysporum* and *Aspergillus niger*, isolated from fenugreek seeds. Out of both, *Fusarium oxysporum* proved to be highly virulent as it caused higher per cent pre and post-emergence mortality (14.50% and 8.75%) and seedlings showed 49.55 per cent symptoms, whereas *Aspergillus niger* was observed to be less pathogenic because it caused lower per cent pre and post-emergence mortality(6% and 4.55) and seedlings showed (31.25%) symptoms. In *in vitro* test, complete inhibition was observed on Bavistin at all concentrations used. Whereas, 90.40 per cent growth inhibition occurred on Thiram at lowest concentration used *i.e.* 50 ppm. Captan and Raxil were not so effective at lower concentrations.

How to view point the article : Khokhar, Mukesh Kumar (2012). Estimation of deteriorative effect of *Fusarium oxysporum* and *Aspergillus niger* on fenugreek seed germination, seedling vigour and *in vitro* efficacy of fungicides. *Internat. J. Plant Protec.*, **5**(2) : 286-289.

INTRODUCTION

Fenugreek (*Trigonella foenum-graecum*), an annual legume native to the Mediterranean region, locally known as *Methi*, is cultivated not only as a leafy vegetable but also for medicinal purposes (Som and Maity, 1993). It is cultivated in counties India, Argentina, Egypt, Southern France, Morocco and Lebanon. Green methi is a good source of iron (Fe) as well as other minerals for human beings (Chhibba *et al*., 2000). Seeds contain proteins 26 per cent, water-soluble polysaccharide (galactmannan) 20 per cent, hemi-cellulose and cellulose 24.5 per cent, water 9 per cent, fat (fenugreek oil) 7 per cent, lignin 2.5 per cent and saponin 8-10 per cent. The crop suffers severely from few seed-borne diseases including wilt caused by *Fusarium oxysporum* Schlecht which also affects seed germination, vigour index, plant growth and the grain yield (Shivpuri and Bansal, 1987 and Hashmi,1988).

MATERIALS AND METHODS

Two tests were performed :

Soil inoculation technique :

Fusarium oxysporum and *Aspergillus niger* observed on fenugreek seeds were grown, separately on autoclaved rice medium (20g rice + 10 ml distilled water) contained in 250 ml conical flasks. These flasks were inoculated with spore/ mycelial suspension prepared from 7 days old fungal culture. Flasks were shaken every day to avoid clumping. Autoclaved soil (Soil : FYM = 3:1, autoclaved at 1.045 kg/cm^2 for 1 hour for 3 consecutive days) was filled up in 30 cm earthen pots (pre-sterilized with 0.1 per cent $HgCl_2$ solution for 3 minutes followed by 3 washing with sterilized distilled water) and were inoculated with *Fusarium* sp. separately. For inoculation, the upper 4 cm layer of the soil was thoroughly mixed with rice medium supporting fungal growth. The pots were covered with polythene bags and left for 24 hours in a cage house