



1

## Effect of Fungicides on Seed borne mycoflora of mung bean (*Phaseolus aureus* Roxb.)

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#### ABSTRACT

Seed samples of mung bean seeds were collected from local area and tested for seed mycoflora by Agar plate method and Blotter method. Twelve fungal species by Agar plate method and fifteen fungal species by Blotter paper method have been isolated. The fungi isolated were *Alternaria alternata*, *Aspergillus candidus*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Rhizopus stolonifer*, *Colletotrichum capsici*, *Rhizoctonia solani*, *Penicillium notatum*, *Fusarium moniliforme*, *Cladosporium cladosporoides*, *Curvularia lunata*, *Chetomium globosum*, *Macrophomina phaseolina*, *Fusarium oxysporum* and *Phoma exigua*. The effect of six fungicides i.e. Thiram, Captan, Mancozeb, Vatavax, Carbendazim and Thiophenate methyl was treated on seed mycoflora of mung bean. Thiram was found to be most effective as compared to other fungicides.

**KEY WORDS :** Seeds of Mung bean, Mycoflora, Fungicides.

#### Introduction

Mung bean (*Phaseolus aureus* Roxb.) is an annual plant with herbaceous bushy appearance, self pollinating legume crop under the family Leguminosae. Mung bean is nutritious as it contains protein, carbohydrates, thiamin, riboflavin and iron (Shakuntala manay and Shadakhara swamy 1987). It is the third most important pulse crop among

  
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the thirteen food legumes grown in India. It is also known as green gram.

Diseases and injuries to seeds are caused by micro organisms including virus, bacteria, fungi and nematodes. Among the fungi are frequently encountered on seeds (Neergaard, 1977). Invasion by fungi in storage might result in the discoloration of the seeds, rise in temperature mustiness, loss in weight and various changes in seed constituents. Some of the seed infecting fungi produce mycotoxins such as aflatoxin, patulin, citrinine and ochratoxin (Bilgrami et al. 1979). Sinha (1979) studied seed mycoflora and indentified fifteen genera of fungi. Murthy et al. (2003) studied cowpea, Horse gram, Black gram and Green gram seeds and found that, *Macrophomina phaseolina*, *Fusarium Semitectum*, *Fusarium moniliforme* and *Fusarium solani* were associated with the seeds. Management of seed borne diseases has been reasonably achieved through fungicides and biological agents. Seed treatment is one of the important methods in the integrated management of any disease and has provided excellent results in reducing losses caused by diseases with increase in quality and quantity of seeds. (Devamani et al. 2017). The main objective of the present study is to see the effect of different fungicides on seed mycoflora in Mung bean.

#### Materials and Methods

Seed samples of Mung bean variety Vaibhav were collected from local market places, fields in Nanded district, following standard methods of sampling (Neergaard Paul, 1977).

The seed borne fungi of Mung bean was detected by blotter paper and agar method, which is recommended by ISTA (1966), De Tempe (1970), Neergaard (1977) and Agrawal (1981).

1. **Blotter Paper Method:** In this method a pair of white blotter papers of about 8.5 cm diameter was soaked in sterile distilled water and placed in sterilized petriplates. Ten seeds of Mung bean were placed equidistantly. The plates were incubated at room temperature for seven days. On eighth day the seeds were examined under microscope. The seed borne fungi found on seeds were isolated and identified following the literature (Subramanian, 1983), (Booth, 1971) and (Burnett, 1972).
2. **Agar Plate Method:** In this method pre sterilized petriplate of 10 cm diameter



was poured with 25 ml of sterilized POA medium having PH 5.6.

The petriplates were kept at room temperature having 10 seeds of Mung bean in each petriplate. The petriplates were incubated at temperature for seven days. On eight day the seeds were examined under microscope for the identification of seed borne fungi.

3. Effect of Fungicides: Six fungicides i.e. Thiram, Captan, Mancozeb, vatavax, Carbendazim and Thilphenate methyl were used. 0.1, 0.2, and 0.3 % concentration of each fungicide was done for the study. The seeds were soaked in these concentrations of fungicides in a flask and kept it for 10 min. seed treated with distilled water considered as control such seed were kept on blotter paper for seven days. On eighth day seeds were examined for its mycoflora.

### Result and Discussion

Total fifteen fungal species namely *Alternaria alternata*, *Aspergillus candidus*, *Aspergillus flavus*, *Aspergillus fumigates*, *Chetomium globosum*, *Cladosporium cladosporiodes*, *Colletotrichum capsici*, *Curvularia lunata*, *Fusarium moniliforme*, *Fusarium oxysporum*, *Macrophomina Plaseolina*, *Penicillium notatum*, *Phoma exigua*, *Rhizoctonia solani* and *Rhizopus stolonifer* were isolated from Mung bean seeds by blotter paper method. Twelve fungal species namely *Alternaria alternata*, *Aspergillus candidus*, *Aspergillus flavus*, *Aspergillus fumigates*, *Cladosporium cladosporiodes*, *Colletotrichum capsici*, *Curvularia lunata*, *Fusarium moniliforme*, *Fusarium oxysporum*, *Macrophomina Plaseolina*, *Rhizoctonia solani* and *Rhizopus stolonifer* were isolated by agar plate methods as shown in Table no. 01.

Isolated fifteen fungi were treated with six different fungicides i.e. Thiram, Captan, Mancozeb, Vitavax, Carbendazim and Thiphenate methyl as shown in Table no. 02. It is observed that all fungicides are effective for reducing the seed mycoflora. Among these six fungicides Thiram have been found to be most effective which reduces the seed mycoflora completely at 0.3% concentration. Captan found effective next to Thiram. Similar study of seed mycoflora on Mung bean and other pluses have been done by various workers. (Dwivadi and Udit, 2002), (Sultana N, Ghaffar 2009) and (Sonavane et al 2011).



Table No. 01- Seed mucoflora in Mung bean variety Vaibhav

Sr. No.	Isolated Fungi	Agar Plate Method	Blotter Method	Paper
1	<i>Alternaria alternata</i>	+		+
2	<i>Aspergillus candidus</i>	+		+
3	<i>Aspergillus flavus</i>	+		+
4	<i>Aspergillus fumigates</i>	+		+
5	<i>Chetomium globosum</i>	-		+
6	<i>Cladosporium cladosporiodes</i>	+		+
7	<i>Colletotrichum capsici</i>	+		+
8	<i>Curvularia lunata</i>	+		+
9	<i>Fusarium moniliforme</i>	+		+
10	<i>Fusarium oxysporum</i>	+		+
11	<i>Macrophomina Phaseolina</i>	+		+
12	<i>Penicillium notatum</i>	-		+
13	<i>Phoma exigua</i>	-		+
14	<i>Rhizoctonia solani</i>	+		+
15	<i>Rhizopus stolonifer</i>	+		+





Table No. 02 Effect of Fungicides on seed mycoflora of Mung bean variety Vaibhav

Sr. No.	Isolated Fungi	Fungicides Control	Thiram			Captan			Mancozeb			Vitavax			Carbendazim			Thiphenate methyl		
			0.1%	0.2%	0.3%	0.1%	0.2%	0.3%	0.1%	0.2%	0.3%	0.1%	0.2%	0.3%	0.1%	0.2%	0.3%	0.1%	0.2%	0.3%
1	<i>Alternaria alternata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	<i>Aspergillus candidus</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	<i>Aspergillus flavus</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
4	<i>Aspergillus fumigatus</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5	<i>Chetomium globosum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6	<i>Cladosporium cladosporioides</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
7	<i>Colletotrichum capsici</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
8	<i>Curvularia lunata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
9	<i>Fusarium moniliforme</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	<i>Fusarium oxysporum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11	<i>Macrophomina phaseolina</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12	<i>Penicillium notatum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
13	<i>Phoma exigua</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
14	<i>Rhizoctonia solani</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15	<i>Rhizopus stolonifer</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+


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