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## SEED MYCOFLORA OF SOME SOYBEAN (GLYCINE MAX (L) MERILL) VARIETIES

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### ABSTRACT

*Different varieties of Glycine max were screened for seed mycoflora. Sixteen fungi were isolated from these varieties. Varietal variation was found during the investigation. Among these sixteen fungi the percentage of Alternaria alternata, A. tenuissima, Fusarium moniliforme, colletotrichum truncatum, C. dematium and Cladosporium cladosporioides were maximum in all the methods.*

**Keyword :** Soybean, seed mycoflora.

#### Introduction:

Glycine max (L) (Soybean) is native of east Asia. Soybean belongs to the family Fabaceae and tribe Phaseoleae. It contains 40-44% protein, 20% oil, 8.77% fats and 5.6% fibers. It is also rich in both major and minor minerals.

As soybean cultivation expanded throughout, the numbers of diseases have also increased. More than 700 pathogens including fungi are known to infect soybean of which about 35 are economically important (Sinclair, 1982). Leaf spot, Blight, Pod spot, seedling rot

  
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collar rot, charcoal rot, downy mildew are some of the common diseases of soybean (Mukharjee et al. 1986). More than 30 fungi and 3 bacteria are associated with seeds of *Glycine max* (Thapiliyal et al. 1995). The seed mycoflora was detected and 16 fungal species were found from soybean (Tripathi 1993). The pathogenic fungi associated with Soybean and seedling were *R. solani*, *Sclerotium rofsii*, *Macrophomina phaseolina* and *Aspergillus sp.* isolated from the affected seeds.

By considering this view the seed mycoflora of different varieties has been detected by using different methods. The results are present in the form of percent seed mycoflora with and without sterilization.

#### **Material and Methods**

The seed samples of soybean varieties were collected from Soybean Research station, Marathwada Agriculture University, Parbhani. From the sample of soybean, 400 seeds were selected randomly and tested for mycoflora to isolate the External and internal seed mycoflora are given as below.

#### **Standard blotter test:**

Seeds were equidistantly spaced on moist sterile blotters in Petri plate moist chambers. 10 Petri plates of 9" diameter each containing 10 seeds were incubated at 27±2°C for eight days. Observations were made for fungi appearing on seeds every 24 hours and growth was carefully transferred to PDA slants for further studies.

#### **Agar plating:**

Seeds were equidistantly plated on GNA plates aseptically. Colonies which developed during three days were picked up and maintained on PDA/GNA slants. Untreated seeds disinfected externally by treating with 10% sodium hypochlorite solution for 10 minutes were used for internal seed mycoflora.

#### **Rolled Towel Method:**

For this method from the seed sample fifty seeds were placed on paper towel and covered with polythene paper and rolled carefully by avoiding disturbance to the seed. For external and internal seed borne fungi the method of isolation was similar as described earlier in the blotter paper method. After 7-day seeds were observed. The percentage of the individual seed mycoflora was recorded.

**Moist Sand Method:**

From the seed sample five seed were placed in petridish containing sterilized moist sand at equal distance. Isolation method was similar as described earlier in blotter paper method. After 7-days the seed were observed and seed mycoflora was observed.

**Result and Discussion:**

In order to detect the seed mycoflora of different varieties of soybean blotter paper, agar plate, rolled towel, sand method has been used. Among these methods Blotter paper method was found to be more suitable as it shows high percentage seed mycoflora in least incubation period.

In Table no.1 Soybean variety PK-472 was associated with 10 fungi i.e., *Alternaria alternata*, *Fusarium moniliforme* has been high in all methods. *A. tenuissima*, *Colletotrium dematium*, *C. truncatum*, *Curvularia lunata*, *Nigrospora oryzae*, *Sclerotium rolfsii*, *Verticillium cinnabarium*, *Cladosporium cladosporioides*.

In table no. 2 Soybean variety MAUS-30 was associated with 10 fungi i.e. *Colletotrichum truncatum* has being high in all the methods. *Alternaria alternata*, *Cercosporasojina*, *Colletotrium dematium*, *Curvularia lunata*, *Fusarium oxysporum*, *Nigrospora oryzae*, *Macrophominaphaseolina*, *Aspergillus flavus*.

In table no,3 Soybean variety MAUS-38 was associated with 10 fungi i.e., *Alternaria alternata* has been high in all methods. *Colletotrium dematium*, *Curvularia lunata*, *Fusarium oxysporum*, *Macrophominaphaseolina*, *Aspergillus niger*, *Sclerotium rolfsii*, *Cladosporium cladosporioides*.



**Table 1: Percent seed mycoflora on Soybean var.-PK-472**

Fungi isolated	PK-472							
	Blotter Test		Agar plate		Rolled Towel		Sand method	
	SS	USS	SS	USS	SS	USS	SS	USS
<i>Alternaria alternata</i>	12.00	13.70	11.00	12.50	10.20	12.50	9.00	11.50
<i>Alternariatenuissina</i>	10.20	11.00	13.00	14.00	12.00	13.00	8.00	10.00
<i>Colletotrichumdematium</i>	11.00	11.50	12.00	13.00	10.00	12.00	8.40	10.20
<i>Curvularialunata</i>	9.00	11.20	8.00	9.00	12.00	13.00	8.00	9.60
<i>Fusarium.moniliforme</i>	13.00	14.80	11.00	11.50	10.40	11.50	7.40	8.50
<i>Macrophominaphaseolina</i>	8.00	10.20	9.00	10.80	9.00	10.60	7.00	8.20
<i>Nigrosporaoryzea</i>	7.40	9.00	8.00	10.60	8.00	10.80	8.00	10.00
<i>Sclerotium rolfsi</i>	6.00	7.80	8.00	10.40	8.00	10.00	7.60	9.80
<i>Tricilliumcinnabarinum</i>	5.00	7.30	6.00	8.20	7.00	9.00	6.00	8.40
<i>Colletotrichumtruncatum</i>	10.00	11.60	10.00	12.50	11.00	12.20	7.20	9.40

**Table 2: Percent seed mycoflora on Soybean var.-MAUS-30**

Fungi isolated	MAUS-30							
	Blotter Test		Agar plate		Rolled Towel		Sand method	
	SS	USS	SS	USS	SS	USS	SS	USS
<i>Alternaria alternata</i>	9.40	10.20	9.70	10.60	8.00	9.00	8.20	9.00
<i>Aspergillusflavus</i>	11.20	12.00	11.20	12.00	9.80	11.00	9.60	10.30
<i>Cercosporasojina</i>	10.40	11.50	10.80	11.70	9.00	10.20	9.00	10.00
<i>Cladosporium herharum</i>	12.00	13.20	12.00	12.70	10.20	11.30	10.00	11.00
<i>Colletotrichum dematium</i>	13.40	14.20	12.40	13.00	11.00	12.00	10.70	11.20
<i>Colletotrichum tracetum</i>	14.00	15.00	13.00	13.40	11.30	12.70	11.00	12.00
<i>Curvularialunata</i>	10.00	11.00	10.20	11.00	8.30	9.60	8.70	12.00
<i>Macrophominaphaseolina</i>	9.00	10.00	9.00	10.00	7.20	7.80	7.80	8.30
<i>Nigrosporaoryzea</i>	8.60	9.40	8.70	9.20	6.70	7.00	7.00	8.00
<i>Fusarium oxysporum</i>	14.60	15.80	13.40	14.00	12.00	13.20	11.30	12.50



Table 3: Percent seed mycoflora on Soybean var.-MAUS-38

Fungi isolated	MAUS-38							
	Blotter Test		Agar plate		Rolled Towel		Sand method	
	SS	USS	SS	USS	SS	USS	SS	USS
<i>Alternaria alternata</i>	15.20	16.40	14.10	15.00	13.00	14.10	12.10	13.20
<i>Aspergillus niger</i>	9.40	11.80	9.80	9.80	8.20	9.00	9.30	10.30
<i>Asposporium cladosporioides</i>	12.70	13.70	11.00	12.40	10.20	11.00	11.20	12.70
<i>Colletotrichum dematium</i>	13.20	14.20	11.90	13.00	11.00	12.10	12.00	13.00
<i>Colletotrichum truncatum</i>	10.20	12.10	9.70	10.40	9.00	10.00	10.00	11.20
<i>Citrovulvarialmata</i>	11.00	13.00	10.10	11.10	9.70	10.20	10.70	11.60
<i>Fusarium oxysporum</i>	14.00	15.30	13.00	14.10	12.10	13.00	12.10	13.00
<i>Macrophominaphaseolina</i>	9.00	11.00	8.30	8.00	7.80	8.40	8.40	9.00
<i>Sclerotium rolfsi</i>	7.00	9.00	6.50	7.20	6.20	7.00	7.30	8.00

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