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Fungal population on seeds of *Arachis hypogea* L.

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Abstract

The seed of four groundnut varieties viz. Gujrat, Western, Ghungroo and Local were collected from different market places of Beed, (M.S.) and seed mycoflora was isolated by standard blotter paper method and agar plate method. In all the four varieties seeds exhibited maximum number of fungi with higher percentage of *incidence. Aspergillus flavus. A. niger, Fusarium oxysporum, Macrophomina phaseolina Penicillium* sp. were found predominant. Higher numbers of fungi were isolated on agar plate method used as compared to standard blotter paper method. Surface sterilization with $HgCl_2$ reduces the incidence of *Aspergillus flavus* and *Aspergillus niger.*

1. Introduction

Groundnut (*Arachis hypogea* L.) a valuable legume crop is also known as peanut. It is annual, wet season plant grown in many tropical and temperature countries of the world. Groundnut seed contain 50% edible oil. Seeds are rich in fats, protein, vitamin, B1, B2, B6 and nicotinic acid. It is also good source of lecithin present to the extent of 0.5-0.7% in decorticated nuts. Groundnut flour is suitable for supplementing white flour (Sastri, 1948). Various diseases caused by organisms *Fusarium solani, F.*oxyporium cause damping off of groundnut seedlings (Reddy and Rao, 1980). *Aspergillus* attacks germinating groundnut seed (Clinton, 1960) *Aspergillus niger* caused crown rot disease of peanut (Gibson, 1953). Many workers have detected mold fungi and their toxin production ability in stored grains, which deteriorate the stored products (Afzal *et al.,* 1979; Vedahayagam *et al.*, 189). Therefore experiments were carried out to determine the composition of the mycoflora of groundnut seeds which is presented here.

2. Materials and Methods

The seed of four groundnut varieties viz. Gujrat, Western, Ghungroo and Local were collected from the different market places of Beed (M.S). For the isolation of seed mycoflora associated with seed samples, the method recommended by ISTA (1966) was adopted. For the standard blotter paper method technique, untreated seeds and treated seeds with 1% $HgCl_2$ were placed on three layers of moistened slandered blotter paper, ten seeds per petri dish. For agar plate method, the treated and untreated seeds were placed on potato dextrose agar (PDA), ten seeds per petri dish and were incubated at 24^0 C for 7 days. Fungi were identified by standard literature.

3. Results and Discussion

It is clear from table 1 and 2 that total numbers of 17 fungi were isolated namely. *Macrophomina phaseolina, Penicillium sp., Alternaria alternate, Alternaria tenuis, A. carthami, Aspergillus candidus, A. flavus, A. niger, A. ustus, A. terreus A. fumigatus, Curvularia lunata, Fusarium oxysporum, F. moniliformae, F. equiseti, Macrophomina phaseolina, Penicillium* sp., *Rhizopus nigricans, Trichoderma viride* and *T. harzianum* were isolated from four varieties of groundnut seeds by agar plate and blotter paper method. It is interesting to note that their percent incidence is more on agar plate than on blotter papers. Among these fungi, five species of *Aspergillus,* four species of *Alternaria,* three species of *Fusarium* and two species of *Trichoderma* were dominant. Surface sterilization with 1% Hg Cl_2 significantly reduced the incidence of *A.flavus* and *A. niger.*

Gupta and Chauhan (1970) detected *Aspergillus niger, A.fumigatus, M. Phaseolina, Fusarium oxysporum, Rhizopus arrhizus, Neocosmospora Vasinpect, Peacilomyces varioti, Alternaria tenuis, Penicillium sp.* and *Curvularia sp.* are the maximum count. Species of *Aspergillus, Penicillium* and *Rhizopus* have also been reported on groundnut seed (Lumpungu *et al.*, 1989). These species reduces the germination of seeds and damaged the seeds in storage (Christemen, 1973). *Fusarium solani* and *F. oxysporum* cause damping off of groundnut seedling (Reddy and Rao, 1980). Therefore there is need for reducing the fungal growth and mycotoxin production in groundnut seeds by improving the storage condition.

Table 1 Incidence of seed mycoflora on different groundnut varieties on PDA medium

Fungi	Groundnut varieties							
	Local		Ghungroo		Western		Gujrat	
	T	UT	T	UT	T	UT	T	UT
Alternaria alternata	15	25	12	20	-	10	-	07
A. tenuis		16	-	18	06	14	-	-
	-	13	15	40	12	25	-	-
A.carthami	10	50	16	60	07	30	12	05
	20		-	12	-	08	10	10
Aspergillus niger	25	80	10	26	-	12	-	-
A.flavus	07	12	-	25	-	10	-	01
	02	39	08	10	-	-	-	03
A.ustus	-	40						
A.terreus	06		-	12	02	08	-	01
A.fumigatus	06	12	02	10	-	02	02	05
Curvularia lunata	-	15	-	17	-	-	-	02
Fusarium oxysporum	09	10	-	20	-	-	-	03
F.moniliforme	02	32	02	22	02	02	-	04
F.equiseti	06	35	07	16	-	01	-	02
Macrophomina Phaseolina	04	30	-	02	-	-	-	01
Penicillium sp.	-	19	-	01	-	-	-	-
Rhizopus nigricans	-	07	-	01	-		-	-
Trichoderma viride								

T–Treated seeds, UT – Untreated seeds

Table 2. Incidence of fungi on different varieties of groundnut on standard blotter paper

Fungi	Groundnut varieties							
	Local		Ghungroo		Western		Gujrat	
	T	UT	T	UT	T	UT	T	UT
Alternarnia alteranata	12	56	02	25	02	22	-	15
A. tenius	10	47	08	45	06	30	-	20
A. carthami	-	22	-	20	-	15	-	10
Aspergillus candidus	-	12	-	10	-	10	-	09
A.niger	10	47	05	66	10	60	01	40
A. flavus	20	77	10	80	10	80	04	35
A. ustus	03	12	-	10	-	12	-	10
A. terreus	-	22	-	30	-	14	-	02
A. fumigatus	-	40	-	32	-	35	-	08
Curvularia lunata	09	39	03	25	01	13	-	-
Fusarium oxysporium	10	50	04	14	01	18	-	04
F.monoliformi	12	47	-	15	-	22	-	-
F.equiseti	-	12	-	20	-	22	-	04
Macrophomina phaseolina	-	17	10	30	02	09	-	-
Penicillium sp.	05	22	03	32	-	10	-	10
Rhizopus nigricans	02	32	7	30	-	02	-	-
Trichodemra viride	-	32	02	-	-	02	-	-

T–Treated seeds, UT – Untreated seeds

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