

SEED BORNE MYCOFLORA OF GROUNDNUT

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ABSTRACT

The seed mycoflora of different varieties of groundnut seed was screened by standard blotter paper and agar plate method as recommended by ISTA. The seed borne mycoflora of five varieties of groundnut seed samples collected from Udgir region was examined. The 07 genera and 12 species of fungi isolated viz. *Alternariacitri*, *Alternariaterrus*, *Aspergillusflavus*, *Aspergillusfumigatus*, *Aspergillusniger*, *Aspergillusustus*, *Aspergillusoxysporium*, *Fusariumsemitectum*, *Macrophominaphaseolina*, *Penicilliumcitrinum*, *Rhizoctoniasolani*, *Rhizopusnigricans*. Out of these fungi *Aspergillusflavus*, *Aspergillusniger* and *Fusariumoxysporium* and *Alternariaterrus* were found predominant fungi and shows higher percent of seed mycoflora. Higher number of fungi was isolated by blotter paper method as compared to agar plate method.

KEYWORDS: Agar plate method, Blotter paper method, Groundnut seed, Seed borne Mycoflora.

INTRODUCTION

Groundnut (*Arachis hypogea* L.) a valuable legume crop is over in India with production of about 37.19 million tons in 2013. India is second largest producer of groundnut after China. Groundnut seed are contain 50% edible oil and rich in fats, protein, vitamin B₁, B₂, B₆, Nicotinic acid and other vitamins. Seeds are generally associated with certain saprophytic or parasitic fungi which causes disease in favorable conditions. Peanut butter has become a common edible diet. Groundnut cake has high nutritive value. Peanut causing various fungal pathogens; *Fusariumsolani*, *Fusariumoxysporium* cause damping off groundnut seedlings. Reddy and Rao (1980), *Aspergillusflavus* attacks germinating groundnut seed Clinton (1960), *Aspergillusniger* caused disease of Crown rot of peanut Gibson (1953). Fungal pathogen present in almost any seed especially in storage conditions many workers have detected different mold fungi and their toxin production ability in stored grains which deteriorate the stored products; Afzal et.al; (1989). Experiments were carried out to determine the composition of the mycoflora of groundnut seed which is presented herein.

MATERIALS AND METHODS

Detection of Seed Mycoflora:

The seed mycoflora was isolated by using different methods such as Standard blotter paper method, Agar plate method as recommended by International Seed Testing Association (ISTA, 1966) and Agarwal (1976). Observations were recorded in percent incidence of seed borne fungi associated with Treated and Untreated seeds. Groundnut seed samples of five different varieties TAG-24, TAG-26, TAG-37, TAG-41 and SB-11 was collected from Udgir region for study of seed borne fungi.

Standard blotter paper method:

This is very simple most convenient and efficient of all the incubation methods Doyer (1938) and De Temp (1953) was first to adopt blotter paper method in seed health management. 100 seeds from each sample were tested. For the standard blotter technique. Untreated seed and seed are Treated with 0.01% HgCl₂ (Mercuric chloride). Seeds were placed on three layers of moistened blotter paper 10 seeds per petridish. The plates were incubated at 25±2°C in alternating cycle of 12 hours light and 12 hours darkness for 7 days. Seeds associated with various mycoflora identified by preparing slides of the fungi with help of microscope.

Agar Plate Method:

In Northern Ireland, Musket first used this method for seed health management. In this method pre sterilized peteriplate were poured with 15ml of autoclaved Potato Dextrose Agar (PDA). 10 seeds of Untreated and Treated per plate of each

sample to be studied were equal distance placed. These petriplates incubated at 25±2°C and other details of the study were same as described for blotter test method.

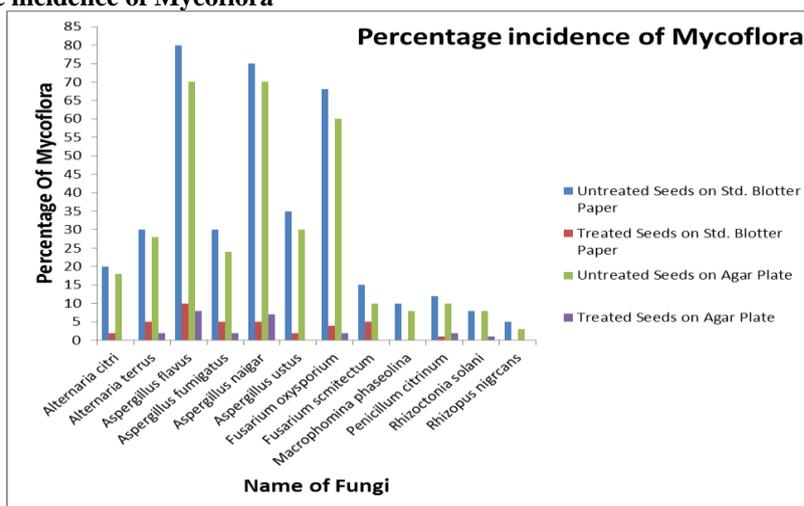
RESULTS AND DISCUSSION

The results shown in table 1 and figure 1.

Table No. 1: Seed borne Mycoflora of Groundnut

Sr. No	Name of Fungi	Percentage incidence of Mycoflora			
		Std. Blotter Paper Method		Agar Plate Method	
		Untreated Seeds	Treated Seeds	Untreated Seeds	Treated Seeds
1	<i>Alternariacitri</i>	20	02	18	00
2	<i>Alternariaterrus</i>	30	05	28	02
3	<i>Aspergillusflavus</i>	80	10	70	08
4	<i>Aspergillus fumigates</i>	30	05	24	02
5	<i>Aspergillusnaigar</i>	75	05	70	02
6	<i>Aspergillusustus</i>	35	02	30	00
7	<i>Fusariumoxysporium</i>	68	04	60	02
8	<i>Fusariumscmitectum</i>	15	05	10	00
9	<i>Macrophominaphaseolina</i>	10	00	08	00
10	<i>Penicilliumcitrinum</i>	12	01	10	02
11	<i>Rhizoctoniasolani</i>	08	00	08	01
12	<i>Rhizopusnigrcans</i>	05	00	03	00

Figure 1. Percentage incidence of Mycoflora



Seed play a vital role in the production of healthy crop. Healthy seed is the foundation of healthy plant; a necessary condition for good yields Diaz et al., (1998). Many seed borne fungal pathogens, some of which are seed transmitted often reduce the germination ability or kill the infected plants and reduce the productive capacity. A total number of 07 genera and 12 species of fungi viz. *Alternariacitri*, *Alternariaterrus*, *Aspergillusflavus*, *Aspergillusustus*, *Fusariumoxysporium*, *Fusariumscmitectum*, *Macrophominaphaseolina*, *Penicilliumcitrinum*, *Rhizoctoniasolani* and *Rhizopusnigrcans* were isolated from five different varieties sample of groundnut collected from Udgir region.

All these seed samples were found to be infected by *Aspergillusflavus*, *Aspergillusniger*, *Fusariumoxysporium* and *Alternariaterru*. Seeds are treated with 0.01% HgCl₂ as disinfestations shows less or no growth of mycoflora. Microbial contaminations were eliminated by chlorine disinfestations as also reported by Limonard (1968).

In case of standard blotter paper the percent incidence of *Aspergillusflavus* (80%) was highest followed by *Aspergillusniger* (75%), *Fusariumoxysporium* (68%), *Aspergillusustus* (35%), *Alternariaterrus* (30%), *Alternaria fumigates* (30%), *Alternariacitri* (20%), and *Fusariumsemitectum* (15%), *Penicilliumcitrinum* (12%), *Rhizoctoniacitrinum* and *Rhizopusnigricans* were found to be least. In agar plate the percent of incidence of *Aspergillusflavus*(70%) and *Aspergillusniger* (70%) was highest percent of incidence followed by *Fusariumoxysporium* (60%), *Aspergillusustus* (30%), *Alternariaterrus* (28%), *Aspergillus fumigates* (24%), *Alternariacitri* (18%) and *Fusariumsemitectum*(10%), *Penicilliumcitrinum*(10%) *Macrophominaphaseolina*, *Rhizoctoniasolani* and *Rhizopusnigricans* were found to be least. Blotter paper method showed better results as compared to agar plate method. Jovicevic (1980) also reported that the filter paper method was most practical method for routine analysis of seed health such similar results were observed by Khan et al., (1988) on rice seed and Dwar and Ghaffar (1991) on sunflower seed.

The sample collected from Udgir region showed the highest incidence of fungi *Aspergillusflavus*, *Aspergillusniger*, *Fusariumoxysporium* and *Alternariaterrus* were the predominant fungi of groundnut. Mukherjee et al. (1992) also found *Aspergillusflavus* and *Aspergillusniger* were predominant storage fungi of groundnut. Surface sterilization of seed reduces the incidence of mycoflora. Therefore need for reducing the fungal growth in groundnut seeds by improving the storage condition.

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