IN-VITRO STUDIES ON SEED PATHOLOGY OF PEANUT (*ARACHIS HYPOGEAE* L.)

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Twelve samples of peanut seed collected from different locations during 1992 were analysed for seed mycofloral studies. Different species of *Fusarium, Macrophomina, Arthrobotrys, Aspergillus, Cephalosporium* and *Verticillium* were recorded in different frequencies. In pathogenicity trial *Fusarium equiseti, macrophomina phaseolin, F.solani* and *Verticillium albo-atrum* reduced germination over the control.

INTRODUCTION

Peanut (*Arachis hypogeae* L.) is an important oil-seed crop commonly known as groundnut. It is a very good source of edible oil and is also consumed as dried fruit. It confers an area of 88900 hectares with an annual production of 96100 tonnes (Anonymous, 1991) in Pakistan.

Peanut seeds are attacked by many seed borne fungi which cause serious losses to this crop (Richardson, 1979) and reduce germination (Akhtar 1978, 1979; and Gilman, 1965). Present studies on peanut seed pathology report some more fungal flora and their effect on seed germination.

MATERIALS AND METHODS

Twelve samples of peanut seed were collected from local markets of Faisalabad, Sargodha and Khushab districts, during 1992 and were analysed for seed borne fungi in the Department of Plant Pathology, University of Agriculture, Faisalabad. Four hundred seeds from each sample were plated by following standard blotter method (ISTA, 1976). Ten seeds were placed in each petridish having well moistened three layers of blotter paper and were incubated at 20 ± 2°C for seven days. On eighth day petriplates were examined under stereomicroscope and fungi were identified under compound microscope with the help of available literature (Ellis, 1971, Booth, 1971) and maintained on plate dextrose agar medium (PDA) for pathogenicity trial.

Four fungi viz. *M.phaseolin, V.albo-atrum, F.equiseti* and *F.solani*, isolated from peanut seed, were checked in pathogenicity trial. Peanut seeds obtained from a healthy lot were treated with 5% chlorox solution prior to their infesting with above mentioned fungi individually. Seeds were infested with 20 days old culture prepared in 200 ml distilled sterilized water by adding a culture layer of one full grown petri plate of PDA medium. Infested seeds were grown in field sterilized soil. Pots were given distilled sterilized water when required. Surface sterilized and unifested seeds served as the check. The experiment was run in quadruplicate. Data were recorded on germination after twenty days of sowing and analysed statistically.

RESULTS AND DISCUSSION

In the twelve seed samples of peanut

frequencies of different fungi ranged from 2.50 to 99.50%. However *Verticillium albo-atrum* and *Macrophomina phaseolin* were recorded 13.35 and 12.68%, respectively. Both of these fungi have already been reported by Gilman (1965) from Gambia. Akhtar (1978, 1979) also reported *M.phascolina* in high percentage up to 40.50% on peanut seed but *V.albo-atrum* was recorded for the first time in Pakistan. High percentage of *Aspergillus flavus* (22.75%) and *A.niger* (15.35%) might be due to contamination, as both are notorious storage fungi.

Table 1 Frequency of fungi on peanut seeds on Blotter paper

Fungi	Range (%)	Range (%)
Alternaria alternata	0.00–2.50	0.50
Arthrobotrys sp.	0.25–44.00	11.20
Aspergillus niger	0.50–62.50	15.35
Aspergillus flavus	0.25–99.50	22.75
Cephalosporium sp.	0.50–4.00	0.52
Fusarium equiseti	0.00–17.50	3.25
F. semitectum	0.25–5.00	3.00
F. solani	0.00–5.25	0.75
F. moniliforme	0.25–4.25	0.50
Macrophomina phaseolina	1.00–51.75	13.35
Verticillium albo–atrum	2.00–77.25	12.68

Pathogenicity trial was conducted in the research area of Botany and Agronomy Department, University of Agriculture and it was observed that all the fungi reduced germination significantly over uninfested seeds (control) (Table 2). Maximum reduction was observed where the seeds were infested with *V.albo-atrum* (62.64%) over the control (100%). *M.phaseolin, Fusarium equiseti, F.solani* reduced 51.24, 46.18, 45.10% seed germination, respectively, over the control, the differences being statistically similar. These results are similar to those of Mirdha (1978) and Tariq (1978) where they have reported that *M. phaseolin* is very pathogenic fungus of this host and reduced germination.

Table 2 Effect of different fungi on germination of peanut seed

Treatment	Germination (%)	Decrease over control (%)
Verticillium albo–atrum	26.00 c	62.64
Macrophomina phaseolina	33.75 b	51.24
Fusarium equiseti	37.25 b	46.18
Fusarium solani	38.00 b	45.10
Control	69.22 a	
S.E.	3.65	

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