

## ASSOCIATION OF SEED MYCOFLORA WITH *ALTERNARIA* SPECIES

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### ABSTRACT

The seed borne pathogens are one of the major cause of serious disease in growing crops because of poor health and quality of seeds. To realized this aspect the study has been undertaken and observed that among the tested different varieties of cereals, pulses and oil seeds with the association of *Alternaria* species on Agar plate and on plate *Alternaria species*, *Aspergillus niger*, *A. flavus*, *Curvularia lunata*, *Fusarium moniliform*, *F. oxysporum*, *Penicillium notatum*, *Rhizopus* are found.

**KEYWORDS:** Cereals, fungi, Oil seeds, Pulses.

### INTRODUCTION

Crops plants suffer from number of diseases caused by species of fungi , bacteria, viruses and nematodes. Most of diseases are transmitted through seeds which are the main carrier of the disease causing organisms among these disease fungal pathogen play major role in yield loss, bioderiation and chemical value of the seeds. The literature cited on seed pathogen clearly revealed that the seed-borne fungi have found to be composed of great diversity which mainly includes species of *Alternaria*. Species of *Alternaria* causes range of diseases with great economic importance on large variety of commercially cultivated tropical crop plants which includes Cereals, Pulses and Oil seeds. It shows diversity with respect to the plants are known to cause wild spread damages in tropical crops It show their incidence on seeds along with the other seed-borne fungi. Species of *Aspergillus*, *Curvularia*, *Cladosporium*, *Fusarium*, *Penicillium*, *Rhizopus* and *Mucor* in dominating state whereas species of *Chetonium* and *Rhizoctonia* in poor state.

In different cereals, pulses and oil seeds Singh et.al.( 1981) also reported *Alternaria tenuis* associated with other fungi on gram seeds. Gomes and Dhingra (1988) recorded *Alternaria alternata* associated with other fungi from cereals and pulses. Raut and Ahire (1988) reported *Alternaria* species are associated with other fungi from pulses. Sharma et.al.(2004) isolated 17 different species of fungi with *A. alternata*.

### MATERIAL AND METHODS

#### Collection of seeds

For the collection of seed samples the method described by Neergaard (1973) has been adopted. Accordingly random samples of different varieties of seeds were collected from field, store houses, market places and seed companies. A composite samples of each variety was prepared by mixing the individual samples together, preserved in cloth bags in laboratory conditions at room temperature during the studies.

#### Detection of seed Mycoflora

The seed mycoflora was isolated by using standard moist Blotter method (SBM) and Agar plate method (APM) as recommended by International Seed Testing Association (ISTA-1966) De.Tempe (1970), Neergaard (1973) and Agarwal (1976).

#### a) Standard blotter method (SBM):--

A pair of white blotter papers of 8.5 cm diameter was jointly soaked in sterile distilled water and were placed in pre-sterilized petriplates of 10 cm diameter. Ten seeds of test samples per petriplates were placed at equal distance on the moist blotters. One hundred seeds were tested for each treatment. The plates were incubated at 25+<sub>-</sub>2\*and diurnal condition for seven days.

#### b) Agar plate method(APM):--

In this method pre-sterilized corning glass petriplates of 10cm diameter were poured with 15cm of autoclaved potato dextrose agar (PDA) medium. On cooling the medium ten seeds per petriplates of the test samples were

placed at equal distance aseptically. Incubation conditions and other details were same as described for blotter method.

In order to isolate only internal mycoflora, seeds were pre-treated with 0.1% solution of mercuric chloride for two minutes and washed thrice with sterile distilled water and placed on agar plates.

c) Identifications of seed-borne fungi:--

The fungi occurring on each and every seed in the plates were identified preliminary on the basis of sporulation character like sexual or asexual spores with the help of stereoscopic binocular microscope. The identification and further confirmation of seed-borne fungi was made by preparing slides of the fungal growth and observing them under compound microscope. The identification was made with the help of manuals. Pure cultures of these fungi were prepared and maintained on potato dextrose agar (PDA) slants.

### RESULTS AND CONCLUSION

It was observed during isolated of seed-borne species of *Alternaria*, Sometimes growth of one, two or many other fungi, also occurred in order to find out their association among other moulds in seed mycoflora observations were recorded. The results are given in table

**Table 1. Association of seed mycoflora with *Alternaria* species**

<i>Alternaria</i> species	<i>A.alternata</i>	<i>A.citri</i>	<i>A. crass</i>	<i>A.dianthicola</i>	<i>A.microspora</i>	<i>A.tenuissima</i>
<i>Aspegillus niger</i>	++++	+	++	++	++	+++
<i>Aspegillus flavus</i>	++++	+++	+	+	+	++
<i>Alternaria chrysanthi</i>	++++	++	+++	+	---	++
<i>Curvularia lunata</i>	++	--	+	+	---	++
<i>Fusarium moniliform</i>	+++	+++	+++	+++	+	+++
<i>Fusarium oxysporum</i>	+++	++	++++	++	++	++
<i>Penicillium notatum</i>	+	+	+	---	---	++
<i>Rhizopus nigricance</i>	+++	+++	+++	+++	+++	+++
<i>Verticillum species</i>	+	--	--	+	---	++
<i>Helmenthosporum tetramera</i>	+++	+++	+	++	+	+++
<i>Phoma</i>	+++	---	---	++	---	+
<i>Alernaria alternata</i>	---	+++	+++	++	+	---
<i>Alternaria citri</i>	++++	----	---	---	+++	+++

--Absent, + Upto 20%, ++ Upto 30%, +++ Upto 40%, ++++ Upto 50%

It is clear from the table that *Aspegillus flavus*, *A. niger*, *Fusarium moniliforme*, *F. oxysporum* and *Rhizopus nigricance* found associated with all the species of *Alternaria*, whereas *Penicillium notatum*, *Verticillum* and *Phoma species* grown only with some of the species of *Alternaria*. *Penicillium notatum* never associated with *Alternaria dianthicola*, *A. microspora*. Similarly *Verticillum species* was never associated with *A. citri*, *A. crassa*, and *A.microspora*.

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