

Field Fungi Associated with the Seeds of *Vigna radiata* (L.) Wilczek var. *Radiata* and *V. mungo* (L.) Hepper and Their Persistence during Storage

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Introduction

A number of field fungi are associated with the seeds of *V. radiata* (L.) and *V. mungo* (L.) but their behaviour during storage is not known (Gupta et al. 1970, Nath et al. 1970, Rath & Routray 1977, Shukla & Bhargava 1977 and Singh & Chohan 1970). According to Christensen (1957), the field fungi associated with the seeds are short-lived and are replaced by storage mycoflora while, Baker and Smith (1960) and Malone and Muskett (1964) hold that the true seed-borne pathogen persists with the seeds, even during prolonged period of storage, providing maximum opportunity for the progeny infection.

Materials and Methods

Freshly harvested seed samples from different agroclimatic conditions of U.P. and Haryana were stored for one year under the laboratory conditions at Agra to observe the presence and persistence of the field fungi, after a periodic interval of two months, following standard rules of seed testing (Anonymous 1966).

Results and Discussion

About 31 and 29 field fungi were found associated with the freshly harvested seed samples of *V. radiata* (L.) and *V. mungo* (L.) respectively. In addition to 17 fungi common to both the crops, 14 fungi viz., *Curvularia pallescens* Boedijn; *Chaetomium globosum* Kunze; *C. indicum* Corda; *Cercospora cruenta* Sacc.; *Fusarium equiseti* (Corda) Sacc.; *F. culmorum* (Smith) Sacc.; *F. chlamyosporum* Wr. & Rg.; *Mucor hiemalis* Wehmer; *Macrophomina phaseolina* (Maubl.) Ashby; *Nigrospora oryzae* Berk. et. Br.; *Penicillium wortmanii* Klocker; *P. frequentens* West; *Phomabetae* (Oudem) Frank and *P. lingam*, were exclusively associated with the seeds of *V. radiata* (L.) and 12 fungi with those of *V. mungo* (L.) seeds viz., *Cladosporium cladosporoides* (Fries.) deVries; *Cephalosporium acremonium* Corda; *Colletotrichum lindemuthianum* (Sacc. & Magn.) Bri. and Cav.; *Diplodia macrospora* Earle; *Dreschlera papendorfii*; *Fusarium avenaceum*; *F. nivale*; *Penicillium cyclopium*; *Pleospora herbarum* Rab.; *Paecilomyces variotii* Bainer; *Rhizopus*

stolonifer (Ehrenb ex. Fr.) and *Verticillium albo atrum* Reinke and Berth. Fungi (17) common to both the crops included: *Alternaria alternata* (Fr.) Klissler; *Aspergillus niger* Van Tiegh.; *A. flavus* Link.; *Ascotricha chartarum* Berk.; *Botrytis cineria* Persoon; *Curvularia lunata* (Walker) Boedijn var. *aeria* M.B. Ellis; *C. verruculosa* Tandon and Bilgrami; *Colletotrichum truncatum* (Schw.) Andrus and Moore; *Dreschlera rostrata* Dreschler; *Fusarium moniliforme* Sheldon; *F. semitectum* Berk and Rav.; *F. oxysporum* Schlecht; *F. poae* (Peck.) Wollenw; *Myrothecium roridum* Tode ex. Fr.; *Pleospora infectoria* Fuckel; *Rhizopus arrhizus* Fischer and *Trichothecium roseum* Link.

Out of the fungi listed above, *Alternaria alternata* (Fr.) Klissler; *A. chartarum* Berk.; *Botrytis cineria* Persoon; *Chaetomium globosum* Kunze; *C. indicum* Corda; *Cercospora cruenta* Sacc.; *Cephalosporium acremonium* Corda; *Diplodia macrospora* Earle; *Dreschlera papendorfii*; *Fusarium chlamydosporum* Wr. and Rg. *F. avenaceum*; *F. poae* (Peck.) Wollenw; *Nigrospora oryzae* Berk et. Br.; *Penicillium herbarum*; *Paecilomyces variotii* Bainer; *Trichothecium roseum* Link and *Verticillium albo-atrum* Reinke and Berth., are hereby recorded for the first time on the crops from India.

The results indicate that most of the field fungi persist, associated with the seeds, for as long as 120 days of storage when the R.H. of the atmosphere ranges between 45 and 78% and temperature between 6.2 and 29.6°C. The maximum number of field fungi are replaced by the storage mycoflora between 120 and 300 days of storage at R.H. of the

atmosphere from 28.2 to 87.0% and temperature from 8.00 to 39.40°C. After one year of storage, only 13 field fungi persisted on *V. radiata* (L.) and 12 on *V. mungo* (L.) seeds respectively. *Aspergillus niger* Van Tiegh; *A. flavus* Link; *Ascotricha chartarum* Berk; *Cladosporium cladosporoides* (Fries) deVries; *Colletotrichum truncatum* (Schw.) Andrus and Moore; *Fusarium semitectum* Berk and Rav.; *F. oxysporum* Schlecht; *Myrothecium roridum* Tode ex. Fr. and *Trichothecium roseum* Link, remain associated with both the crops while *Fusarium chlamydosporum* Wr. and Rg.; *Phoma betae* (Oudem)Fr.; *P. lingam*; *Penicillium wortmanii* Klockker; *P. frequentens* West, exclusively with *V. radiata* (L.) and *Colletotrichum lindemuthianum* (Sacc. & Magn.) Bri. & Cav.; *Diplodia macrospora* Earle; *Fusarium nivale* (Fr.) Ces. & *P. cyclopium* with those of *V. mungo* (L.). The studies suggest the possibilities of the seed transmission of *A. chartarum* Berk; *C. truncatum* (Schw.) Andrus and Moore; *F. oxysporum* Schlecht and *F. semitectum*. Berk and Rav., which were found pathogenic during an earlier study (Saxena & Sinha 1977).

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