

FUNGI ASSOCIATED WITH TOMATO AND BRINJAL SEEDS IN BANGLADESH

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Abstract

Thirteen different fungi were found to be associated with tomato seeds and nine with the brinjal seeds collected from Pahartali (Chittagong), Keranigonj (Dhaka), Gazipur Sadar (Gazipur), Islampur (Jamalpur), Monirampur (Jessore), Kaligonj (Jhenidah), Trisal (Mymensingh), Ishurdi (Pabna), Rangpur Sadar (Rangpur) and Savar (Dhaka). The occurrence of most commonly mycoflora were *Botrytis* sp., *Fusarium oxysporum* and *Aspergillus flavus* on tomato while on brinjal it was *Aspergillus flavus*, *Trichothecium* sp. and *Curvularia* sp. The detected mycoflora varied in prevalence with respect to location of seed collection. Maximum incidence of *Botrytis*, *A. flavus* and *F. oxysporum* were recorded at Gazipur Sadar, and Keranigonj (Dhaka) respectively on tomato while on brinjal, maximum seed-borne incidence of *Trichothecium* sp., *Curvularia* sp. and *A. flavus* at Gazipur Sadar, Pahartali and Islampur (Jamalpur), respectively.

Key words : Fungi, Tomato and Brinjal seed.

Tomato (*Lycopersicon esculentum* Mill) and brinjal (*Solanum melongena* L.) are extensively grown throughout the world and are seed propagated. Seeds are reported to harbor many fungal species which adversely affect the health of seeds and seedlings causing seed rot, root rot, seedling blight and leaf spot diseases (Richardson, 1979). In the past, Kanjanaroot and Mathur (1961), Suryanarayana and Bhombe (1961), Suryanarayana *et al.* (1963) and Sohi and Puttoo (1976) have studied the

seed mycoflora of tomato and brinjal but detailed information of seed mycoflora of these two vegetable crops is lacking. The present investigations were undertaken to determine the fungi associated with tomato and brinjal seeds produced under different agroecological conditions of Bangladesh.

Forty seed samples for each of tomato and brinjal were collected from grower house at ten different locations of Bangladesh during the month of September, 1989. The locations were : Pahartali (Chittagong), Keranigonj, (Dhaka), Gazipur sadar, Islampur (Jamalpur),

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Monirampur (Jessore), Kaligonj (Jhenidah), Trisal (Mymensingh), Mymensingh sadar, Ishurdi (Pabna), Rangpur sadar and Savar (Dhaka). From each location four seed samples were collected for each crop and analyzed during 20th September to 30th September, 1989. Two hundred seeds from each sample were first subjected to dry inspection under stereobinocular microscope for the evidence of abnormalities and presence of fungal fruiting bodies. Then all the seed samples were analyzed for the prevalence of fungi by blotter method following the International Rules for Seed Health Testing (ISTA, 1976) with some modifications (Dey and Fakir, 1988). Two hundred seeds were taken randomly from each sample, placed on moist filter paper in eight replicated Petri dishes at the rate of 25 seeds per plate and incubated for seven days. Germination and seed-borne infection of fungi were recorded on the 8th day of incubation.

Dry inspection of all seed samples of tomato and brinjal showed that the samples were fairly clean and no propagules of pathogens were present on seed surface.

The fungi recorded during this study from tomato seeds in order of prevalence, were : *Botrytis* sp., *Fusarium oxysporum*, *Aspergillus flavus*, *Rhizopus* sp., *Alternaria tenuis*, *Macrophomina phaseolina*, *Stemphylium* sp., *Phoma* sp., *Colletotrichum* sp., *Aspergillus ochraceus*, *Curvularia* sp., *Penicillium* sp., and *Trichoderma* sp. The prevalence of *Botrytis* sp. was 46.54%, *Fusarium oxysporum* 19.29% and *Aspergillus flavus* 9.85%. They constituted 75.68% of the total seed-borne infection. Each of these predominant fungi accounted a minimum of 8% of the total seed-borne infections and at least 4.0% of the seeds yielded each of them. Out of 40 seed samples 36, 28, 19, 13 and 10 samples were infected by *Botrytis* sp., *F. oxysporum*, *A. flavus*, *Rhizopus* sp. and *A. tenuis*, respectively.

Among three predominant fungi, *Botrytis* sp. and *F. oxysporum* was detected in seed samples of all locations while *A. flavus* detected from nine locations except Jamalpur. The maximum seed-borne infection of *Botrytis* sp. was 43.0% at Gazipur sadar followed by Rangpur sadar 39.0%, Savar 29.0%, Pahartali (Chittagong) 25.0% and minimum at Trisal (Mymensingh) 4.0%. Infection of *F. oxysporum* on tomato was 20.5% at Dhaka 15.0%, at Jessore 15.0%, and 7.0% at Ishurdi. The maximum and minimum seed-borne infection of *A. flavus* was observed 18% at Dhaka and 1% at Mymensingh, respectively (Fig. 1).

The fungi associated with brinjal seeds in order of prevalence were : *A. flavus*, *Trichothecium* sp., *Curvularia* sp., *Penicillium* sp., *A. tenuis*, *F. oxysporum*, *A. ochraceus*, *Rhizopus* sp. and *Chaetomium* sp. The predominant fungi in order of prevalence were *A. flavus* 30.62%, *Trichothecium* sp. 24.13%, *Curvularia* 11.61%, *Penicillium* sp. 8.45% and *A. tenuis* 8.14%. They constituted more than 82.0% of the total seed-borne infection.

Of the 40 seed samples of brinjal, respectively, 37, 29, 22, 17, 15, 14, 10, 8, and 6 were found infected by *A. flavus*, *Trichothecium*, *Curvularia* sp., *Penicillium* sp., *F. oxysporum*, *A. tenuis*, *A. ochraceus*, *Rhizopus* sp. and *Chaetomium* sp. The predominant fungi *A. flavus* and *Trichothecium* sp. and *Curvularia* sp. was observed in seeds of all 10 locations except *Curvularia* sp. which was not detected at Islampur (Jamalpur) and Trisal. The seed-borne infection of *Trichothecium* was 59.0% at Gazipur sadar by 40.5% at Monirampur and 15.0% at Ishurdi 15.0% and 1.5% at Keranigonj. In case of *Curvularia* sp., maximum seed infection was at Pahartali 25.0% followed by Ishurdi 18.0% and Rangpur sadar 17.0% while minimum at Keranigonj 3.0%. Regarding *A. flavus*, highest was at Islampur 48% followed by

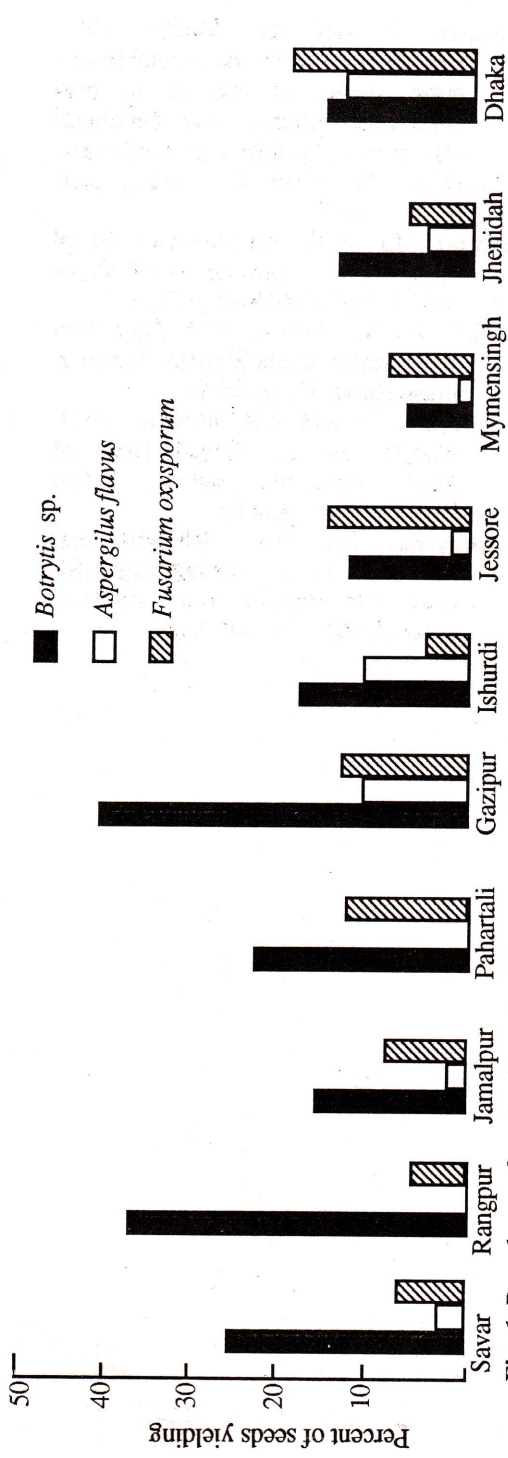


Fig. 1. Prevalence of predominant fungi in tomato seeds obtained from different parts of Bangladesh.

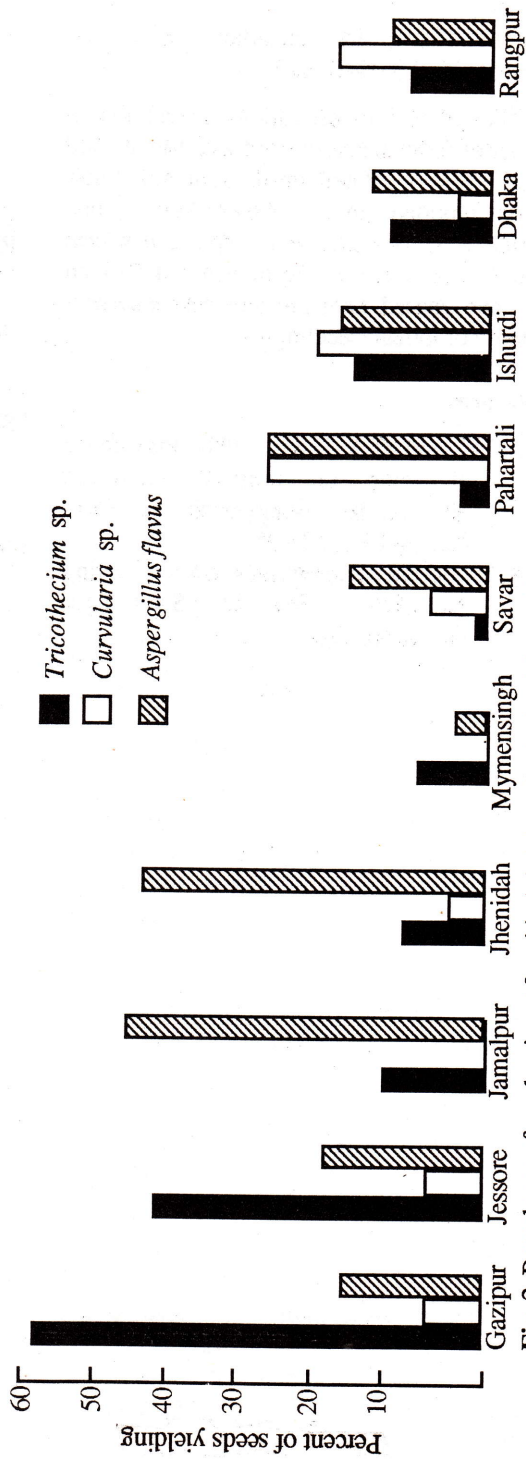


Fig. 2. Prevalence of predominant fungi in brinjal seeds obtained from different parts of Bangladesh.

Kaligonj 43.5% and Pahartali 25.0% and lowest at Trisal 3.0% (Fig. 2).

The present investigations reveal that a number of fungi are associated with tomato and brinjal seeds in Bangladesh. Sohi and Putto (1976) reported that *Aspergillus* spp., *Alternaria* sp., *Cladosporium* sp., *Curvularia* sp. and *F. oxysporum* are transmitted through seeds and caused both pre and post emergent mortality of tomato seedlings.

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