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SHORT COMMUNICATION

Seed mycoflora of fiber yielding crop of cotton (*Gossypium herbaceum* L.) in Uttar Pradesh

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Different varieties of cotton (*Gossypium herbaceum* L.). viz;, Vijay, Sujay, Kalyan, Vijalpa and G.Cot-19 were collected from different localities of Uttar Pradesh. Five fungal species were isolated from cotton seeds by blotter paper methods.

Key words: Cotton (*Gossypium herbaceum* L.), blotter paper method,mycoflora

Cotton (*Gossypium herbaceum* L.) is one of the most important commercial crops playing a key role in economic and social affairs of the world. It is mainly activated as a fiber as well as oil yielding cash crop. Cotton is primarily valued for its extra ordinary strength, fine and durable fiber. Seeds are found to be one of the potential sources for the survival and transmission of seed borne pathogens. In cotton, most of the dangerous diseases are transmitted through seeds. The fungi associated with seeds at the stage of harvest and under storage bring about several undesirable changes making them unfit for consumption. Attempts were made during present investigation to study seeds mycoflora of fiber yielding crops.

Cotton (*Gossypium herbaceum* L.) viz;, Vijay, Sujay, Kalyan, Vijalpa and G.Cot-19 varieties under natural field conditions were collected from different localities of Uttar pradesh.

Detection of seed borne fungi from selected cotton seeds was done by blotter paper method as recommended by International Seed Testing Association (1966), de Tempe (1953), Neergard (1973) and Agrawal (1976). For the standard blotter method, untreated seeds and seeds after treatment with 0.1% Sodium hypochlorite for 10 minutes were placed on three layers of moistened blotter, 10 seeds per petri dish. The plates were then incubated in B.O.D incubator at 25± 2ÚC for 8 days under 12 hrs alternating cycles of light and darkness. Thus, the exposed seeds were examined on the 9th day under stereo binocular microscope for the presence of seed borne fungi. The fungi found on the seeds were recorded and percentage of seeds infested and germination of seeds with different fungi was calculated. The isolated fungi were identified with the help of the keys, monograph and literature provided by Raper and Fennell, (1965); Booth, (1971); Ellis, (1971); Barnett and Hunter (1972). Untreated seeds were used as controls. All experiments were carried out in triplet set.

Incidence of seed discoloration in Cotton

Table 1 : Percent occurrence of discoloration in different varieties of Cotton (*Gossypium herbaceum* L.) seeds

Variety name	Discolored seeds (%)
Vijay	50
Sujay	35
Kalyan	40
Vijalpa	20
G.Cot- 19	33

(*Gossypium herbaceum* L.) varieties under natural field conditions at various places in Uttar Pradesh, India is presented in Table 1. The percent discoloration varied from 20 to 50. Discoloration of seeds is an everlasting problem in Cotton (*Gossypium herbaceum* L.) growing countries as it is mainly caused by fungi with the congenial environment. Due to this, there is a loss in weight of seeds, nutritive quality and hazardous to consumers, perhaps by the presence of aflatoxins. Isolation of pathogen: *Aspergillus flavus, Aspergillus fumigatus, Alternaria alternata, Fusarium solani, and Rhizoctonia bataticola* were found associated with the seeds of different varieties of Cotton (*Gossypium herbaceum* L.) .

The frequency of fungal association and occurrence was varied in different varieties of Cotton (*Gossypium herbaceum* L.) seeds. Observations reported the occurrence of *Alternaria alternata, A. oryzae, F. moniliforme, F. solani, F. udum, M. hiemalis, Penicillium corylophilum, P. expansum, Sclerotium rolfsii, Stachybotrys atra in Gossypium hirsutum, A. brassicicola, A. longissima, A. niger, A. nidulans, A. terreus, Curvularia lunata, F. oxysporum, Nigrospora oryzae, P. chrysogenum, Rhizoctonia bataticola, Rhizopus arrhizus* in *Gossypium herbaceum* seeds as reported by Young and Morris (1972), Misra and Mehra (1970), Kamal and Verma (1979).

In this study, it was observed that, *Aspergillus flavus, Aspergillus fumigatus, Alternaria alternata, Fusarium solani,* and *Rhizoctonia bataticola* presence in the seeds of different varieties of Cotton (*Gossypium herbaceum* L.). In Vijay highest percentage (22%) of *A. flavus* association was observed. *Aspergillus fumigatus* showed 21.10% of occurrence in G.Cot-19, *Alternaria alternata* showed 21.50% in Vijay.

The fungal association with the selected Cotton (*Gossypium herbaceum* L.) varieties is depicted in Table 2. The isolated fungus was associated with stored Cotton (*Gossypium herbaceum* L.) with varying frequencies in the 5 localities sampled (Table 2). Presence of *Aspergillus* spp., especially *A. fumigatus and A. flavus* on seeds of Cotton (*Gossypium herbaceum* L.) in higher frequencies and its association with ungerminated seeds of Cotton (*Gossypium herbaceum* L.) confirmed that species of *Aspergillus* though occur as saprophytes may cause low germination in seeds. A number of fungi isolated in this study are known to produce mycotoxins which are harmful for animal health. Mycotoxins can cause severe damage to liver, kidney and nervous system of man even in low dosages (Rodricks, 1976). *Aspergillus* spp. are common fungal contaminants of cereals and also produces mycotoxins (Bakan *et al.*, 2002). *Aspergillus flavus* produces aflatoxins which were carcinogenic and produce liver cancer (Diener and Davis, 1969; Pesta and Bonday, 1990). So, from the study, it is noted that there is a need for proper storage of Cotton (*Gossypium herbaceum* L.) seed to minimize the fungal infestation and mycotoxin production during storage and provide disease free seeds for human consumption. This study also reveals

Table 2 : Pathogen associated with discolored Cotton (*Gossypium herbaceum* L.) seeds

Variety name	% of seed mycoflora				
	A.flavus	*A. fumigatus*	*A.alternata*	*F.solani*	*R.bataticola*
Vijay	22.00	20.00	21.50	06.00	06.13
Sujay	18.00	19.00	07.00	08.00	02.00
Kalyan	16.00	14.00	13.19	07.00	04.00
Vijalpa	12.00	13.00	06.25	09.00	00.00
G.Cot-19	10.00	21.10	11.18	11.20	00.00

the presence of diverse mycoflora of both pathogenic and non-pathogenic fungi in Cotton (*Gossypium herbaceum* L.) seeds in ruling varieties and hybrids in Uttar Pradesh.

Five pathogenic fungi, namely *Aspergillus flavus, Aspergillus fumigatus, Alternaria alternata, Fusarium solani, and Rhizoctonia bataticola* were isolated from different varieties of Cotton (*Gossypium herbaceum* L.) seeds. The study revealed the presence of diverse mycoflora of both pathogenic and non-pathogenic fungi in Cotton (*Gossypium herbaceum* L.) seeds in ruling varieties and hybrids in Uttar pradesh. Hence it is suggested that there is a need for proper storage of Cotton (*Gossypium herbaceum* L.) seed to minimize the fungal infestation and their mycotoxin production in near future.

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