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STUDY ON SEED HEALTH STATUS OF BRINJAL OF SOME SELECTED AREAS

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Abstract: The study was carried out to find out the fungi associated with seeds of Brinjal collected from different locations of Bangladesh viz. Rajshahi, Bogra, Rangpur, Kurigram and Thakurgaon. Representative seeds samples were incubated on Blotter for germination of the pathogens and under sterio and compound microscope observation different fungal genera such as *Aspergillus*, *Penicillium*, *Fusarium*, *Alternaria*, *Curvularia*, *Chaetomium*, *Rhizopus*, *Clostridium*, *Bipolaris* and *Botritis* were identified. The prevalence of the genera in seeds was found variable widely. Brinjal seed health status was evaluated as routine seed health test. 11 fungi representing 10 genera were recorded from collected seed samples. Higher incidences of mycoflora were observed in the samples collected from Rangpur than others location. Lower incidence of mycoflora were observed in the samples collected from BARI. Among the fungi *Aspergillus flavus*, *A. niger*, *Penicillium* Spp, *Rhizopus stolonifer* and *Fusarium moniliformae* were predominant over other. In addition, germination percentage of Rangpur seeds shown lower, but germination percentage of BARI is very high.

Key Words: *Solanum melongena* (brinjal), seed, selected areas, seed mycoflora

Introduction

Brinjal (*Solanum melongena*) is one of the most important and widely consumed nutritious vegetable crop grown globally. This vegetable crop of Bangladesh is played by many seed borne diseases. It is attacked by a large number of fungal pathogens. Various mycoflora may be internally or externally associated with seed or present as concomitans with the seed lot. Malane and Muskeit (1964) have stated that a detailed knowledge of seed borne fungi would be needed for a proper understanding of the problems relating to seed health analysis. Good seed good generation. seed is the

basic input for crop production. Most of the farmers in Bangladesh used non-certified seeds, preserved own source from the previous harvested crops or borrowed from neighbors or purchased from local markets. This non-certified and low quality seeds are encouraged spread introduction of diseases in the next crops. In modern agriculture seed health is well recognized factor for better production. Seed quality means sustainability of seed as a planting material for sowing in land in order to get disease free seedling as well as plant and finally to achieve satisfactory yield (Fakir et al., 2002). Out of 16% annual crop loss due to plant diseases, at least 10% loss in incurred due to seed-borne diseases (fakir, 1983). These seed-borne fungal pathogens affect the seed health quality, reduce germination, transmit diseases in the field and consequently hamper the yield of the crop. Pathogen free seed show higher seed germination, plant vigor and healthy plants. sometimes aflatoxin contamination of seed may create human health hazards. Routine seed health test is necessary to know the present seed health status of brinjal. So the present study was undertaken to detect the seed borne mycoflora of brinjal of different areas of North Bengal.

Materials and Methods

Seeds of Brinjal were collected from 6 different locations viz. BARI, Joydevpur, Rajshahi, Bogra, Rangpur, Kurigram, Thakurgaon the Northern part of Bangladesh. The seeds were collected from farmer's seed stock, purchased from local markets (Packet seed) and certified seed from BARI from June to July 2013. Five seed samples were collected from each of the source. For the detection of seed borne fungi the blotter incubation method (ISTA, 2001) was used. Three pieces of blotter paper were soaked in sterilized distilled water and placed in 90 mm petridishes. 25 seeds were placed per dish and incubated for 7 days to 15 days at 25°C at 12 h light and darkness. Seeds were then examined for fungal growth under a stereo microscope. Pathogens were identified by their morphological characters like color and structure of mycelium, types of spores and fruiting bodies using a compound microscope. Prevalence of pathogens was recorded from the infected seeds of the samples. Germination percentage was also recorded.

Results and Discussion

Different pathogens with a wide range of prevalence were recorded from various seeds of different location (Table 1). Nine genera of ten fungi encountered in this study, among them prevalence of *Aspergillus* sp. *Penicillium* sp. *Rhizopus stolonifer* and *Fusarium* sp were more common on the selected seeds of brinjal. The incidence of seed borne infection ranged from 24 to 94%. On the other hand, germination percentages were recorded

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from 19 to 92% on the selected seeds. The highest percentages of germination were recorded which were collected from BARI. In addition lowest percentages of germination were recorded which were collected from Rangpur. Germination percentages and infection range of market seeds in better than farmer seeds. Seed collected from the BARI shown lower incidence of the fungi. In contrary, higher incidence of mycoflora were observed in the samples collected from Rajshahi farmer. Among the fungi *Aspergillus flavus*, *A. niger*, *Penicillium*, *Fusarium* and *Rhizopus stolonifer* were predominant than others.

Table 1: Incidence (%) of seed borne mycoflora and germination(%) of brinjal seed samples collected from selected areas.

Crop	Source	Seed mycoflora [*]												Seed germination
		As	Af	An	Cl	Co	Fm	Rs	Ps	Bo	Ph	Bi	Total	
Brinjal	BARI		9	6			4		5				24	91
	Rajshahi Market		16	13	4		11	14	13		2		73	70
	Rajshahi Farmer	4	19	13	3		14	18	17	2	4		94	50
	Bogra Market		14	10	2	2	10	11	13	1			63	83
	Bogra Farmer	3	14	12	5	5	12	14	16	3	1		85	70
	Rangpur Market		18	14	3	2	13	15	14	1		3	83	44
	Rangpur Farmer		20	14	1		28	9	13	1	5	1	92	19
	Thakurgaon Market	1	15	15	1		10	8	19	1			70	77
	Thakurgaon Farmer	4	17	12	4		13	10	15	1			76	78
	Kurigram Market	1	19	10	5		12	15	19				81	71
	Kurigram Farmer	1	21	12	1		14	15	19		3	1	87	54
	Total	14	182	131	29	9	141	129	163	10	15	5		

Note: *As-*Alternaria* sp., Af - *Aspergillus flavus*, An- *Aspergillus niger*, Cl-*Curvularia lunata*, Fm-*Fusarium moniliformae*, Rs-*Rhizopus stolonifer*, Ps-*Penicillium* sp., Bi-*Bipolaris* sp., Ph-*Phomopsis vexans*, Bo-*Botritis* sp., Co-*Colletotrichum* sp.

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