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ORIGINAL ARTICLE

Detection of Seed-borne Fungi Occurring in Different Varieties of Cicer arietinum

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Abstract:

In the beginning of present research the survey & collection of different varieties of seed of chickpea Viz Radhey, ICP-1454, ICC-1876, Avarodhi, Pragati, Ujjain-2, 21, 24, Gulab, Co-1, Kadale-23, BEG-482, and T-3 was done during the year 2011-2012 from local mandi of Kanpur city and other village markets.

The seed sample were labeled at the time of collection by giving them collection number, harvesting time and place of collection. Collected seeds were cleaned by blowing and sieving. After cleaning, seeds were further dried and stored in a cool and dry place.

The seed borne fungi associated with chickpea seeds were determined by the inspection of dry seeds, washing test, agar plate method and standard blotter methods.

KEY WORDS

Fungi, Seed, Crop,

Chick pea is another important pulse crop of India. it is oldest pulse crop of India. It is oldest pulse crop known and cultivated in Asia and Europe and was known to ancient Egyptians and Greeks. It was widely cultivated in tropical America, Africa, Australia, India, Pakistan, Turkey, Burma and Morocco. It occupies the fourth place among food crops of India. An area of about million hectare is under chick pea in India with an yield of 5.5 million tonnes. It is widely grown in Uttar Pradesh, Madhya Pradesh, Punjab, Rajasthan, Haryana and Mahrashtra. Common name of Cicer arietinum is chana.

Inspite the barring efforts made by different agencies to boost up its production the total production and productivity per unit area is very less among the various factors responsible for its low yield one of the major factors is the diseases caused by different pathogens and difficiencies disorders. More than fifty deseases caused by Fungi, bacteria, viruses , nematodes and mycoplasma like organisms have been reported causing substantial reductions in productions of chickpea (Nene et.al., 1996). Fungal disease are responsible for reduction in germination percentage which are mainly seed- borne in nature.

METHODOLOGY :

The present investigation will be carried out in Botany Dept. of Brahmanand P. G. College, Kanpur, U.P. Lab. The details of materials used, experimental procedures followed and techniques adopted are described as below.

1. **Collection of seed samples:** Seed samples of Cicer arietinum will be collected from farmer's field, seed companies and pulse section of C.S.A. Uni. of Ag. & Tech. Kanpur, U.P. These samples will be stored in screw tight plastic bottles at room temperature (20°c - 35°c) for further studies.
2. **Detection of mycoflora associated with collected seed samples:** ISTA (1985) method will be followed for testing of the samples for the presence of mycoflora associated with Cicer arietinum seeds which includes techniques.

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(i) Seed washing test

2. **(i) Seed washing test:** This method will be used to detect the external mycoflora on Cicer arietinum seeds. Fifty randomly selected seeds from each sample will be divided into two groups, each will be suspended in 10mI. of sterilized distilled water in the conical flasks separately.

The flask will be shaken by hands for 10 minutes. After shaking, equal volume of this suspension will be transfered into two centrifugal tubes. These tubes will be kept in centrifuge and rotated at 2500-3000 r.p.m. for 5 minutes. The suspended liquid will be decanted off from each tube and sediment from

Table – 1 : Seed washing test for the detection of fungal species externally associated with chickpea seeds.

S. No.	Fungal Species	VARIETIES HARBOURED											Total No. of varieties harboured
		Radhey	ICP-1454	ICC-1876	Avarodhi	Pragati	Ujjain-2,21,24	Gulab	CO -1	Kadale -23	BEG-482	T-3	
1.	*Alternaria alternata*	+	+	+	+	+	+	+	+	+	+	+	11
2.	*Aspergilli*	+	+	+	+	0	+	+	+	+	0	0	8
3.	*Curvularia lunata*	+	+	0	0	0	0	+	0	0	0	0	3
4.	*Drechslera tetramera*	+	0	0	0	0	0	0	0	0	0	0	1
5.	*Fusarium sp.*	+	+	+	+	+	0	0	0	+	0	0	6

+ Fungal species present, 0 Fungal species absent

Respective tubes will be thoroughly mixed in 2.0ml lactophenol (Agarwal, 1976) and will be examined under compound microscope for the presence of fungal spores, fructification and mycelial fragments.

OBSERVATION :

(i) Seed washing test : The chickpea seed from different samples were washed with sterilized distilled water. Thus obtained suspension was examined under compound microscope as per standard method followed for study. The results obtained are presented in Table - 1 which clearly indicates that spores of five fungi viz., Alternaria, Aspergillus, Curvularia, Drechslera and Fusarium were found associated with seed samples of Varieties/lines like Radhey, ICP 1454, ICC-1876, Avarodhi, Pragati, Ujjain 2, 21, 24, Gulab, Co-I, Kadale-23, BEG-482 and T-3. Study also indicated that Alternaria alternata spores were dominant in almost all the samples. Next predominant fungus was Aspergillus which was Present in eight varieties out of eleven while five varieties Viz, Pragati, BEG-482 and T-3. Showed no association of aspergillus, curvularia lunata. It was seen in the washing of only three varieties Viz, Radhey, ICP-1454 and Gulab. The spores of Drechslera tetramera was seen in the washing of varieties only Radhey. Macroconidia of Fusarium sp. were observed in the washing of six varieties/lines out of eleven. These were Radhey, ICP-1454, ICC - 1876, Avrodhi, Pragati and Kadale- 23.

DISCUSSION :

The chickpea crop under study holds an important place among the pulses due to its major use in vegetarian diet to meet the protein requirements of the people. So for its acreage production and nutritive values are concerned, much emphasis is being laid on increasing its production by use of good quality seeds. Seeds harbour various disease causing agents particularly mycoflora responsible for poor seed health resulting in lower germinatIon and deterioration in storage. These seed mycoflora are carried over from year to year and from one place to another with the seeds which serve as primary source of infrection for subsequent crops. During present study seed mycoflora detection from eleven chickpea varieties were studied with the methods followed by ISTA (1985).

During seed washing test Alternaria alternata, Aspergillus sp., Curvularia lunata, Drechslera tetramera and Fusarium sp. Were isolated. Alternaria alternata, was isolated from seeds of 11 varieties. Aspergillus sp. from 8, curvularia lunata from 3, Drechslera tetramera from 1 and Fusarium sp. from 6 varieties,

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