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Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.net

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DETECTION OF MYCOFLORA ASSOCIATED WITH CICER ARIETINUM SEEDS BY AGAR PLATE METHOD WITH PDA

V. K. Singh

Department of Botany , Brahmanand P.G. College, Kanpur.

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.

Keywords: Cicer arietinum Seeds , Agar Plate Method , washing test , standard blotter methods.

INTRODUCTION: -

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.

(i)Agar plate method with potato dextrose agar medium
2. (i) Agar plate, method: Four hundred seeds per samples in four replications, each of one hundred seeds will be pretreated with 1.0 percent chlorine as described in standard blotter method and will be plated on PDA at rate of 5 seeds per petridish. The seeds will be incubated at 28 +1°c for 7 days under twelve hours, alternating cycles of light and darkness and will be examined

macroscopically by naked eyes for the presence of fungal colonies on seeds. Their specific indentification will be made with the help of standard identification manuals under sterioscopic binocular and compound microscope.

OBSERVATION :

2. (I) Agar plate method:

Seeds of all the varieties of chickpea were also tested by agar plate method with potato dextrose medium for observing the presence of mycoflora associated with them as described in "Methodology" . The observations were recorded after 7 days of incubation under sterioscopic binocular and compound microscope as summarized in Table-1.

The results presented in Table-1 revealed that seven fungal species belonging in five genera were detected from chickpea seeds on PDA; *Alternaria alternata, Aspergillus fluvus, A. niger* and *F. moniliforme* were detected from six to eleven varities some fungal species i.e. *A fumigatus, C. lunata* and *R. solani* were not observed on seeds of most of the varieties. It indicated that either surface disinfection or the method is responsible for their elimination of the twenty varieties. Seeds of varieties Radhey were found to yield maximum number of fungal species (seven fungal species) followed by ICP-1454, ICC-1876, Avarodhi, Pragati and Ujjain-2, 21, 24 which exhibited five and four fungal species.

Table– 1 : Percent incidence of fungal species associated with chlorine pretreated seeds of different varieties of chickpea in agar plate method with PDA (No of seeds tested : 400)

S. No.	Fungal Species	VARIETIES HARBOURED										No. of Vars. har.	Range of incedence
		Radhey	ICP-1454	ICC-1876	Avarodhi	Pragati	Ujjain-2,21,24	Gulab	CO-1	Kadale-23	BEG-482	T-3	
1.	*Alternaria alternata*	17	10	8	8	4	8	3	7	8	7	6	11	4-17
2.	*Aspergillus flavus*	11	7	7	5	4	6	2	0	6	0	0	8	2-11
3.	*A. niger*	8	5	5	6	0	5	2	0	6	4	0	7	2-8
4.	*A. fumigatus*	3	0	0	0	1	0	0	0	0	0	0	2	1-3
5.	*Curvullaria lunata*	5	2	2	0	0	3	0	0	0	0	0	3	2-5
6.	*Fusarium moniliforme*	12	5	5	4	2	0	0	4	0	0	0	6	2-12
7.	*Rhizoctonia solani*	8	0	3	0	0	0	0	0	0	0	0	2	3-8
Total no. of fungal species		7	5	4	4	4	4	3	2	3	2	1	-	-

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 agar plate method seven fungal species such as Alternaria alternata, Aspergillus flavus, A niger, A fumigatus, Curvularia lunata, Fusarium moniliforme and Rhizoctonia solani were isolated. Seeds of variety Radhey were found to yield maximum number of fungal species.

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