

Studies on seed Mycoflora of Chick Pea (*Cicer arietinum*)

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ABSTRACT

Chick Pea (*Cicer arietinum*) is major pulse crops grown in India. The seed mycoflora was screened by using agar plate method. Seeds sample of these pulse crops was used in the study and results were obtained from untreated and treated seeds. The untreated seeds were found to be associated with highest percent incidence of mycoflora. In case of untreated seeds the percent incidence of *Aspergillus niger* (15.85%) was the highest followed by *A. flavus* (14.82%), *Chaetomium globosum* (14.75%), *Dresclera rostrata* (14.5%), where as all other fungi were within the range of (13.90 to 0.70%).

Key words: Chick Pea (*Cicer arietinum*), treated, untreated

INTRODUCTION

In a world facing problem of malnutrition, protein rich crops assume special significance. Obtaining maximum production through all available avenues and protecting adequately what is produced would certainly alleviate the problem. In the Indian context, where Chick Pea (*Cicer arietinum*) a part of daily diet, maximizing production and enriching nutrition through Chick Pea (*Cicer arietinum*) is a better and acceptable alternative. India stands first in production and area under Chick Pea (*Cicer arietinum*) in the world. Seeds are generally associated with certain saprophytic or parasitic micro-organisms which perpetuate in the seed lots on the advent of favorable conditions. Seeds are associated with pathogens like fungi, bacteria, nematodes etc. Pathogens present in almost any seed lot of economically important crop which may be disastrous if introduced into disease free areas. Therefore, seed must be “Substantially free” from inoculum with high level of germination and purity before sowing. The reports of Nath et al. (1970), Deo and Gupta (1980) and Nakkeeran and Devi (1997) confine to the mycoflora of Legume seeds.

MATERIAL AND METHODS

Collection of Seed Samples: Collection of seed samples from different localities in Uttar Pradesh.

Assessment of Seed Mycoflora: The seed borne fungi of Chick Pea seeds were detected by Agar Plate method is recommended by ISTA.

Agar Plate Method: Firstly glucose nitrate agar medium was prepared. Taken nine petriplates for each sample of seeds. Then GNA medium and petriplates made sterile in autoclave. After sterilization the medium allowed to solidify for sometime. Then the seeds were treated with 0.1% of HgCl₂ for two minutes. Washed the seeds with sterilized water for removal of excess of HgCl₂. Placed 10 seeds at equal distance in

each petriplate. After that incubated these petriplates in incubating chamber for 6-8 days. The ultraviolet light were bombarded for 5-10 minutes each day. Then examined the plates after 8 days and noted the characteristics fungal colonies associated with each seed. Prepared the slides and examined them under microscope. Recorded the percentage range of infection of different fungi. Observed the changes taking place in infection of seeds.

RESULTS AND DISCUSSION

The different seed samples collected from different localities of Uttar Pradesh and external total seed infection average 30.22% and internal 20.72%. These results given in Table 1.

Isolation of seed mycoflora from Chick Pea was done critically and results are given in the form of table-2 and 3. In order to study the total association of seed borne fungi, different seed sample of Chick Pea were placed on agar plate. The seeds pre-treated with 0.1 % Mercuric chloride solutions were placed on agar plate for the isolation of internal mycoflora. It is clear from the obtained results that six fungi appeared on treated seeds namely *Aspergillus candidus*, *A. flavus*, *A. niger*, *Botrytis cinerea*, *Curvularia lunata*, and *Rhizopus arrhizus*. The fungi isolated from untreated seeds ten fungi were *Aspergillus candidus* (10.72%), *A. flavus* (14.82%), *A. niger* (15.85%), *Botrytis cinerea* (9.8%), *Chaetomium globosum* (14.75%), *Curvularia lunata* (8.5%), *Dresclera rostrata* (14.5%), *Fusarium oxysporum* (10.0%), *Mucor varians* (13.90%), and *Rhizopus arrhizus* (0.70%) were common in all samples. In treated seeds of Chick Pea only six fungi were found. *Aspergillus flavus* shows maximum percentage incidence (19.75%) followed by *Aspergillus niger* (18.75%) and *A. flavus*. *Botrytis cinerea*, *Curvularia lunata*, and *Rhizopus arrhizus* were found (6.20-0.35%). Deo and Gupta (1980) [5], Dwivedi and Shukla (1990) [6], Iqbal Singh and Chohan (1975) [7], Jain and Patel (1969) [8], Kumar and Patanik (1985) [9], Kumar and Srivastava (1985) [10], Kumbar Agnihotri and Gupta (1987) [11], Lokesh, Haremath and Hegde (1987) [12], Nakkeeran and Devi (1997) [13] and Suhag (1973) [14] reported more or less similar result.

Table 1. The seed samples collected from different localities

Locality	No. of sample	Infected seed %	
		External	Internal
Kanpur	6	25.30	22.16
Kanpur dehat	6	28.15	18.15
Unnao	6	29.35	20.50
Hardoi	6	33.18	21.33
Orai	6	35.12	21.05
Average		30.22	20.72

Table 2. External and internal seed mycoflora percentage in untreated seed samples of different localities

Fungi associated	% infection	
	Agar plate method	
	Range	Average
<i>Aspergillus candidus</i>	09.25-12.20	10.72
<i>A. flavus</i>	09.50-20.15	14.82
<i>A. niger</i>	13.50-18.20	15.85
<i>Botrytis cinerea</i>	06.30-13.30	09.80
<i>Chaetomium globosum</i>	09.50-20.00	14.75
<i>Curvularia lunata</i>	04.50-12.50	08.50
<i>Dresclera rostrata</i>	10.50-18.50	14.50
<i>Fusarium oxysporum</i>	08.50-11.50	10.00
<i>Mucor varians</i>	09.30-18.50	13.90
<i>Rhizopus arrhizus</i>	00.50-00.90	00.70

Table 3. Internal seed mycoflora percentage in treated seed samples of different localities

Fungi associated	% infection	
	Agar plate method	
	Range	Average
<i>Aspergillus candidus</i>	02.30-05.80	04.50
<i>A. flavus</i>	13.30-24.20	19.75
<i>A. niger</i>	12.30-19.20	18.25
<i>Botrytis cinerea</i>	05.20-06.80	06.00
<i>Chaetomium globosum</i>	- - -	- -
<i>Curvularia lunata</i>	04.20-08.20	06.20
<i>Dresclera rostrata</i>	- - -	-
<i>Fusarium oxysporum</i>	- - -	-
<i>Mucor varians</i>	- - -	-
<i>Rhizopus arrhizus</i>	0.20-0.50	00.35

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