

## RESEARCH ARTICLE

# Detection and isolation of mycoflora associated with pigeonpea by seed washing test

■ S. N. Sharma

### SUMMARY

Pigeonpea (*Cajanus cajan*) is important pulse crops grown in India. Pigeonpea [*Cajanus cajan* (L.) Mills.] is being grown in tropical and subtropical parts of the world and has got high protein content of 21 per cent. Nutritionally, it is very rich in protein and good source of amino acids, minerals and vitamins. Main constituents of pigeonpea per (100g of seed) are protein (21.9g), carbohydrate (72.7g) oil (1.5g) and minerals. Seed is the most important input for crop production. Pathogen free healthy seed is urgently needed for desired plant populations and good harvest. Seed mycoflora association in different varieties were detected by seed washing test. Seed washing test revealed the presence of *fusarium monilliformae* in 8, *Alternaria alternate* in 18, *Aspergillus* sp. In 14, *Curvularia lunata* in 5 and *Drechslera tetamera* in 2s varieties.

**Key Words :** Pigeonpea, Mycoflora, Seed born fungi

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Pigeonpea [*Cajanus cajan* (L.) Millsp.] is one of the major pulse crops of the tropics and sub tropics including America, India, Australia, Hawaii, Uganda, Italy, East and West Indies and South-East Africa. Pigeonpea belongs to the sub-tribe Cajaninae of the agriculturally most important tribe Phaseoleae under sub-family Papilionoideae of the family Fabaceae (Leguminosae). Pulse seeds are reported to carry many moulds both in fields and during storage (Anonymous,

2018). The association of fungi adversely affects quality and health of the seeds. The term “seed mycoflora or seedborne fungi” is used for both qualitative as well as quantitative analysis of fungi occurring on or in the seeds (Narayan and Kshirsagar, 2013). The country’s total area coverage and production of Arhar has been about 44 Lha and 42 Lt, respectively. As usual Maharashtra has contributed >28 per cent of area and 25 per cent of total production during this period (Anonymous, 2018). The present investigation was undertaken to find out the seed borne fungi associated with the seeds of selected 19 varieties collected from different agroclimatic region.

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## MATERIAL AND METHODS

The materials of the present investigation were 19 varieties of pigeonpea [*Cajanus cajan* (L.) Millsp.]. Seed of these pigeonpea varieties were collected and studies were made with reference to the mycoflora associated with them. The research work was carried out in the Department of Agricultural Botany, S.D.J Post Graduate College Chandeshwar Azamgarh. The seed samples of 19 varieties of pigeonpea were collected from various places in different agro-climatic zones for the detection of seed mycoflora associated with them. These samples were stored at room temperature (20-35°C). The presence of fungal flora associated with pigeonpea seed was detected by using the ISTA(1985) by seed washing test. Seed washing test method used to detect the external mycoflora on pigeonpea seeds. From Each samples, 50 seeds were selected randomly and were divided into two groups. Seeds of each group were suspended in 10 ml sterilized distilled water in conical flask separately. After shaking the flask by hand for 10 minutes, equal volume of this suspension was transferred into two centrifugal tubes. These tubes were kept in centrifuge and rotated at 2500-3000 r.p.m for 15 min.

The supernatant liquid was decanted off from each tube and sediment from respective tube was thoroughly mixed in 2.0 ml. lacto phenol. Then it is examined under compound microscope for the presence of fungal spore, fructification, mycelia fragmentation etc.

## RESULTS AND DISCUSSION

Detection of mycoflora associated with pigeonpea seeds were carried out and finding are presented below. The experimental result in the examination of seed borne mycoflora association from the seed washing test revealed the presence of 5 fungi such as *Fusarium*, *Alternaria*, *Curvularia*, *Drechslera* and *Aspergillus* were associated with sample of 18 varieties namely UPAS-120, Pant A-3, G.T.M.A-97, T-21, ICP-151, T-7, Pusa -9, ICP-8862, Manak C-11, Pusa -74, Narendr-1, BDN2, Bahar, ICP-335 and Mukta (Table 1). The spore of these fungi were not observed on the seeds of variety NP (WR) 15. It was observed that *Alternaria alternata* spores were comparatively more frequent in almost all the varietal samples. The next predominant fungus was *Aspergillus*, which was present in 14 varieties out of the 19 studied (Table 1). The rest 5 varieties namely T-

**Table 1: Externally associated fungal species detected by seed washing test in different varieties of pigeonpea**

Sr. No.	Varieties	<i>Fusarium moniliformae</i>	<i>Alternaria alternata</i>	<i>Aspergillus</i>	<i>Curvularia lunata</i>	<i>Drechslera tetramera</i>
1.	UPAS-120	+	+	+	+	+
2.	Pant A-3	+	+	+	-	-
3.	GT-1	+	+	+		-
4.	MA-97	+	+	+	+	-
5.	T-21	+	+	+	+	-
6.	ICP-151	+	+	+	-	-
7.	T-7	+	+	-	-	-
8.	T-17	-	+	+	-	-
9.	Pusa-9	-	+	+	+	-
10.	ICP-8862	-	+	+	-	-
11.	Manak	-	+	+	-	-
12.	C-11	-	+	+	-	-
13.	Pusa-74	-	+	+	-	-
14.	Narendra-1	+	+	+	-	-
15.	BDN2	-	+	+	-	+
16.	Bahar	-	+	-	-	-
17.	ICP-335	-	+	-	-	-
18.	Mukta	-	+	-	-	-
19.	NP(WR)15	-	-	-	-	-
20.	Total no. of varieties harboured	8	18	14	4	2

N.B (+) Presence of fungus

(-) Absence of fungus

7, Bahar, ICP-335, Mukta and NP (WR)15 showed no association with *Aspergillus* sp. Macroconidia of *Fusarium* sp. were seen in washing test of 8 varieties namely UPAS-120, Pant A-3,GT-1,MA-97,T-21,ICP-151, T-7 and Narendra – 1. The presence of *Curvularia lunata* was observed on seeds of 4 varieties namely UPAS-120,MA-97, T-21 and Pusa -9. The fungus *Drechslera tetramera* was found on seeds of only two varieties namely UPAS-120 AND BDN2 (Table 1). Similar work related to the present investigation was also carried out by Kannaiyan *et al.* (1984); Patil *et al.* (2012); Paul (1973) and Reddy *et al.* (2006).

#### Conclusion:

Seed mycoflora association in different varieties were detected by seed washing Test. Seed washing test revealed the presence of *fusarium monilliformae* in 8, *Alternaria alternate* in 18, *Aspergillus* sp. In 14, *Curvularia lunata* in 5 and *Drechslera tetamera* in 2 varieties.

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