

diversity And Bio Deterioration Of Fusarium Species On Different Varieties Of Jowar And Maize

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Abstract; Study of varietal variation for bearing capacity of Fusarium species were studied by using five seed varieties of jowar and maize were employed for plating on blotter and agar test method .The results are very remarkable .The maximum composition of Fusarium species were found on the seed varieties of jowar CSH-I and CSH-9. Among the maize varieties like Ganga -5 and Ganga Safed-2 which have maximum number of Fusarium species were observed and highly efficient for seed deterioration in jowar and maize.

Key Words: -Bio-deterioration, Fusarium species, Jowar, Maize .

Introduction

Jowar and Maize are dietary staple food in many states of Central India and in countries of Central America. The first systematic work on seed health testing of Jowar has been made by Leukel and Marlin (1943) and reported the species of *Fusarium* are one of the dominant on seed mycoflora of Jowar crop which also studied by Panchal (1984). The association of seed borne *Fusarium* species from maize were carried out by Leonin (1932) and Butler (1947). The species of *Fusarium* are one of the highly pathogenic and toxified to the plants, animals and human being which were studied fragmentary in the literature. Considering the importance of the facts the present topic was selected for the investigation.

Material and Method

The method is described by Neergaard (1973) has been adopted for the collection of seed samples accordingly. Seed samples were collected from field, store houses and market places .A composite sample was prepared by mixing the individual sample together and preserved in cloth bag at room temperature during the study.

Detection of seed mycoflora

The procedure for blotter and agar plate methods were followed as describe by ISTA (1966), Neergaard 1973 and further confirmation of *Fusarium* species was done as per Woolen Waber and Reinking D.A (1935) ,Bilia (1955) ,Garden W. L, (1952,1954,1960) ,Ramnath P. Neergaard and Mathur 1970 ,Booth C, (1971).

Blotter Plate Method (BPM)

A pair of white blotter papers of 8.5 cm diameter was jointly soaked in sterile distilled water, placed in pre sterilized corning petriplate of 10cm diameter .10 seeds per plate were placed at equal distance on moist blotters .100 seeds were tested for each treatment .The plate were incubated at 25 to 20 °C microscope for the determination of fusarial growth .The identification and further confirmation of *Fusarium* species was made by preparing the slides and observing under microscope.

Agar plate method (APM)

In this method pre sterilized corning glass petriplates of 10 cm. diameter were poured with 25ml of autoclaved potato dextrose agar PDA medium. On cooling the medium 10 seed per plate were equispaced aseptically incubation condition and other details same as blotter plate method. In order to isolate only internal seed mycoflora seeds were pretreated 0.1 % Hg cl₂ for one minute subsequently thoroughly washed twice with sterile distilled water and placed agar plate.

Results and discussion

In order to understand varietal variation of bearing capacity *Fusarium* species from the seeds of different varieties of jowar and maize were utilized for plating to determine their percentage incidence. According to variety of the tested seeds. The results are summarized in the table .The maximum composition of *Fusarium* species were found on jowar seeds variety CSH-1, CSH-9 whereas variety of yellow jowar seed obtained only four species of *Fusarium* such as *F. equiseti*, *F. oxysporum*, *F. roseum*, *F. semitectum*. The tested seed varieties of jowar observed association of *Fusarium oxysporium*, while *F. poae* was noticed only in seed varieties CSH-5 and CSH-6, similarly the *F. avenaceum* did not respond their appearance on seed of CSH-1, CSH-6.

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Table 1:- Variation in the percentage incidence of *Fusarium* species on seed of different varieties of Jowar and maize

(- = Nil)

Species of <i>Fusarium</i>	Jowar variety (in %)					Maize variety (in %)			
	CSH-1	CSH-5	CSH-6	CSH-9	Yellow	Ganga safed - 2	Ganga-4	Ganga-5	Gan ga Kisa n
<i>F.avenaceum</i>	10	-	10	-	-	-	10	-	-
<i>F.dimerum</i>	-	10	20	10	-	-	-	-	10
<i>F.equiseti</i>	20	10	-	10	20	-	10	-	20
<i>F.moniliforme</i>	30	20	20	30	-	10	30	-	20
<i>F.nivale</i>	-	-	-	10	-	-	-	10	-
<i>F.oxysporum</i>	50	20	10	30	20	20	20	30	10
<i>F.poae</i>	-	20	10	-	-	-	-	10	-
<i>F.roseum</i>	20	10	-	-	20	-	-	-	10
<i>F.semitectum</i>	20	-	10	20	20	20	-	10	-
<i>F.solani</i>	10	-	10	-	-	-	20	10	-

The among maize varieties Ganga-5 and Ganga safed-2 have associated maximum number of *Fusarium* species while the seed varieties Ganga-4 have to be noticed the association of *F.moniliforme*, *F.oxysporum* and *F.semitectum*. It is remarkable to note that the appearance of *F. equiseti*, *F-moniliforme*, *F-oxysporum*, *F. roseum*, were observed among these *F.moniliforme*, *F-oxysporum*, *F. semitectem*, *F. equiseti* proved their dominance.

Change in the dry weight of seeds infected with different species *Fusarium* (initial dry weight 25 g)

Eight species of *fusarium* utilized for infestation of seed varieties of the Maize and Jowar separately and incubated for period of the 15 days of the room temperature and the loss of dry weight of tested seed varieties were calculated by compare with the control and the results are given in the table no.2. It is clear from the data the species of *F.equiseti*, *F.oxysporum*, *F.roseum* and *F. udum* which are found to be capable to reduce the dry weight of the both tested seeds. Among the tested *Fusarium* species *F. moniliforme*, *F. oxysporum* found to be more efficient to cause loss in seed weight. In case of Maize followed by *F. moniliforme*, while this was due to *F.equiseti* in case of Jowar as well as Maize.

Table2. Change in the dry wait of seeds infested with different species *Fusarium* (initial dry weight 25 g)

Species of <i>Fusarium</i>	% of dry weight of seeds	
	Jowar	Maize
<i>F.dimerum</i>	21.7	23.0
<i>F.equiseti</i>	18.7	19.6
<i>F.moniliforme</i>	17.5	18.5
<i>F.oxysporum</i>	18.0	18.1
<i>F.roseum</i>	20.1	20.2
<i>F.semitectum</i>	10.3	19.2
<i>F.saloni</i>	20.0	22.4
<i>F.udum</i>	21.5	21.5
<i>Control</i>	22.3	24.1

Change in the Ash content of seeds due to species of *Fusarium*

It is noticed from the result are given in table no.3 which were estimated change in ash content of different varieties of Maize and Jowar and result were remarkable *F.equiseti* and *F.moniliforme* responsible to cause loss in ash content in case of the Jowar followed by Maize. The species of *F. moniliformi* and *F.dimerum* also caused decrease in ash content of Maize and Jowar. It is interesting to note that *F.udum*