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INFLUENCE OF NUTRIENT MEDIA ON THE INCIDENCE OF *FUSARIUM* FROM SOYBEAN

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ABSTRACT

The influence of four different nutritive media on the incidence of fusarium sps. on soybean ie. Js-80, Js-335 and Pooja was studied. PDA and GNA media repectivly found to be more favourable for the isolation of fusarium sps. Whereas MRBA and CzDA respectively found to be less favourable for the isolation of Fusarium sps.

KEYWORDS- *Media, isolation, Fusarium.*

INTRODUCTION :

The fungal growth depends upon the composition of specific culture medium, pH, temperature, light, water availability and surrounding atmospheric gas mixture (Northolt and Bullerman, 1982; Kuhn and Ghannoum, 2003; Kumara and Rawal, 2008). However, the requirements for fungal growth are generally less stringent than for the sporulation. The nutrient media is a major factor that influences the susceptibility tests. The optimal nutrient medium provides adequate growth of fungi but the ecological factors also play major role for their difference as per Taylor, et.al., (2000) and Khushaldas, 2009. mycelial growth and sporulation on artificial media are important biological characteristics (St-Germain and Summerbell, 1996). Bilgrami and Ghaffar (1993) and Aher *et.al.*, (2005) employed different agar media for the isolation of fungi.

High growth rate of *F. oxysporum* in Czapek's Dox agar, after incubation period, has also been observed by Farooq et al. (2005). Difference in surface and reverse colouration of fungal colonies are the key factors for the identification of fungi. Rakesh Kumar et.al., (1993) used different media like plain agar, malt salt agar, czepak solution agar and leaf extract agar for isolation of fungi in Mustard. Okunowo et al. (2010) also observed least sporulation and minimum mycelia growth of *Myrothecium roridum* on Czapek' s Dox agar which may be due to the presence of chloride ion in the test medium.

Physical and chemical factors have a pronounced effect on diagnostic characters of fungi. Hence, it is often necessary to use several media while attempting to identify a fungus in culture (Meletiadis et al., 2001). Therefore an attempt has been made to assess the influence of media for the isolation of *Fusarium*.

MATERIALS AND METHODS:

Collection of seeds, detection and identification of *Fusarium sps*.:

Soybean seed samples were collected from fields, store houses, market places and seed companies and as per methods described by Neergaard (1973). The seed borne *Fusarium sps*. were isolated by agar plate

method (APM) as recommended by , ISTA (1966), Neergaard (1977) and Agarwal (1981). The identification was made with the help of different keys, Wollen Weber and Reinking (1935), Bessey (1950), Joseph Gilman (1960), Ramnath *et.al.*, (1970), Booth (1971), Gerlach and Nirenberg (1982), Dube (1990) and Keith (2002).

Agar media:

Different nutritive agar media was prepared and its composition is as follows.

i) Glucose Nitrate agar (GNA):

1)Glucose - 10g., KNo_3 - 2.5g., KH_2PO_4 - 1.0g., $MgSo_4.7H_2O$ - 0.5g., Agar - 20g. and distilled water - 1000ml. at pH - 5.6.

ii) Potato Dextrose Agar (PDA):

Peeled potato - 200gm., Dextrose - 20gm., Agar - 20gm. and distilled water - 1000ml. Peeled potatoes were boiled until soft and pass through muslin cloth. Then dextrose was added in it and final volume of solution was made up to 1000 ml. in this solution agar was added, pH was adjusted to 5.6.

iii) Czapek Dox Agar (CZA):

Sucrose - 30g., $NaNO_3$ - 2.0g., K_2HPO_4 - 1.0g., $MgSO_4.7H_2O$ - 0.5g., KCl - 0.5g, $FeSO_4.7H_2O$ - 0.01g,, Agar - 15g. and distilled water - 1000ml., at pH - 5.6.

iv) Martins Rose Bengal agar (RBA)

Glucose - 10g, peptone - 5.0g, K_2HPO_4 - 1.0g, $MgSo_4$-$7H_2O$ - 0.5g, Rose Bengal - 0.0001g, Agar - 20g, distilled water - 1000ml and pH - 5.6.

Assay: 25 ml. of autoclaved respective agar medium was poured saperately in each presterilised corning glass petriplates of 10 cm. diameter. On cooling the medium pretreated seeds with 0.1% solution of $HgCl_2$ for one minute and washed twice with sterile distilled water were placed on agar plates (10 seeds per plate) at equal distance for seven days at room temperature in order to isolate the *Fusarium* sps.

RESULTS AND DISCUSSION:

In order to study the influence of different nutritive media, on the incidence of *fusarium* sps. on soybean, four media were used for the isolation. Three varieties of soybean ie. Js-80, Js-335 and Pooja are analyzed as they are commonly cultivated in the study region and results are given in table 1.

It is observed from the table that, the Potato Dextrose Agar is found to be favourable for maximum incidence of *Fusarium species* . It is also observed that Js-80 verities yielded maximum incidence on all the media whereas Js-335 yielded minimum incidence of *Fusarium species. Fusarium dimerum* showed its maximum incidence in JS-80 variety on PDA and CzDA. Minimum incidence of *Fusarium roseum, F.poae, F.semitectum and F. solani* respectively is observed among all the tested media.

PDA and GNA media repectivly found to be more favourable for the isolation of *fusarium sps*. Whereas MRBA and CzDA respectively found to be less favourable for the isolation of *Fusarium sps.*

Table 1: Incidence of seed mycoflora of soybean on different media

Srl. No.	*Fusarium* sps.	Potato Dextrose Agar			Glucose nitrate Agar			Czapek Dox Agar			Rose Bengal Agar		
		JS-80	JS-335	Pooja	JS-80	JS-335	Pooja	JS-80	JS-335	Pooja	JS-80	JS-335	Pooja
		% incidence											
1	*Fusarium chlamydosporum*	20	10	16	10	06	08	20	8	16	16	10	14
2	*Fusarium culmorum*	18	20	20	28	35	25	14	16	18	14	16	16
3	*Fusarium dimerum*	80	13	50	20	25	35	60	12	45	30	10	40
4	*Fusarium equiseti*	40	12	35	05	10	18	38	12	32	32	12	24
5	*Fusarium graminearum*	22	8	10	25	22	24	20	8	10	18	6	8
6	*Fusarium moniliforme*	26	16	16	17	19	22	22	14	14	20	12	14
7	*Fusarium napiforme*	35	10	28	45	30	22	30	8	28	30	8	26
8	*Fusarium nivale*	35	12	25	06	10	08	32	10	24	18	4	22
9	*Fusarium oxysporum*	9	10	13	09	10	10	6	10	12	6	8	12
10	*Fusarium poae*	6	6	6	09	09	12	6	8	8	6	4	4
11	*Fusarium roseum*	4	8	6	10	05	08	6	6	6	4	6	4
12	*Fusarium semitectum*	9	10	13	06	09	10	8	10	10	4	9	10
13	*Fusarium solani*	6	12	10	10	10	12	8	14	8	7	11	6
14	*Fusarium udum*	6	6	6	20	12	09	3	6	5	3	4	4

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