

Study of Detection Methods and Location of *Alternaria carthami* Chowdhury in Safflower Seed

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Physically viable and healthy seed is the primary segment of economically higher production technology of crop. Variety of oil, proteins, carbohydrates are present in safflower seed which make the seed liable to attack by range of seed borne pathogens. In safflower, *Alternaria carthami* Chowdhury is seed-borne in nature causing leaf spot disease Chowdhury (1944). Classen *et al.* (1949) reported more than 50 per cent loss due to this disease from USA. Irwin (1976) reported that *Alternaria carthami* caused pre-emergence mortality, seedling death and reduced seed quality. Considering the importance of seed borne nature of the pathogen, studies were undertaken to find out suitable method for its detection and location of the pathogen.

Standard blotter method and agar plate method (ISTA, 1976), freezing blotter method (Limonard, 1968) were employed to detect the association *A. carthami* from the pre-tested seed samples having maximum natural infection. Blotter method was modified by using water with four

different pH level (5, 6, 7 and 8). In order to locate site of infection by *A. carthami* in different parts of seed, component plating method was used (Maden *et al.*, 1975).

Among the four methods tested, blotter method without pre-treatment (Table-1) resulted in maximum per cent (38%) association of *A. carthami* followed by modified blotter method (25%) at pH7. The minimum (8%) per cent association was found in freezing method. The data (Table -2) exhibited that the association of *A. carthami* was comparatively high (75%) in seed coat than the cotyledon (25%) while, plumule and radicle were completely free from infection.

Similar results have been observed by Bhale *et al.* (1999) in detection of *A. alternata* from chilli seeds and Agrawal *et al.* (1972) for detection of *A. longissima* from green gram seed, Irwin (1976) and Chowdhury (1944) confirm our findings regarding location of *A. carthami* in safflower seeds.

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REFERENCES

- Agrawal, V. K., S. B. Mathur and Neergaard (1972). Some aspects of seed health testing with respect to seed borne fungi of rice, wheat, blackgram and soybean grown in India. *Indian Phytopath.*, 29 (1) : 91-100.

TABLE 1

Comparison of various methods in detection of *A. carthami* associated with safflower seeds.

Sr. No.	Methods	Average association of <i>A. carthami</i> (%)
1.	Standard blotter method	38.0
	a. Untreated seeds	13.5
	b. Pretreated seed	08.0
2.	Deep freezing	17.5
3.	Agar plate (PCA)	
4.	Modified blotter pH	
	5	11.0
	6	21.0
	7	25.0
	8	13.0

TABLE 2

Association of *A. carthami* with different parts of safflower seeds.

Seed parts	Per cent association
Seed coat	75
Cotyledon	25
Embryo	0
Plumule	0
Radicle	0

Bhale, Usha, M. S. Bhale and M. N. Khare (1999). Efficacy of methods in detection of *Alternaria alternata* on chilli seeds. *J. Mycol. Pl. Pathol.*, **29** (1) : 125-126.

Chowdhury, S. (1944). An *Alternaria* disease of safflower. *J. Indian Bot. Soc.*, **28** : 59-65.

Classen, C. E., M. L. Sehuster and W. W. Ray (1949). New diseases observed in Nebraska on safflower. *Plant Dis. Repr.*, **33** : 73-75.

Irwin, J. A. G. (1976). *Alternaria carthami* a seed borne pathogen of safflower. *Aust. J. Expt. Agric. Anm. Husb.*, **16** : 921-925.

ISTA (1976). International rules for seed health testing. *Seed Sci. Technol.* **4** : 3-49.

Limonard, T. (1968). Ecological aspect of seed health testing. *Proc. Intern. Seed Test Ass.*, **33** : 1-160.

Maden, S., D. Singh, S. B. Mathur and P. Neergaard (1975). Detection and location of seed borne inoculum of *Ascochyta rabiei* and its transmission in chickpea (*Cicer arietinum*). *Seed Sci. Technol.*, **3** : 667-681.