Seed borne Alternaria species: A review

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Abstract
Species of Alternaria cause range of diseases with great economic importance on large variety of commercially cultivated tropical crop plants which include cereals, legumes, oil seeds and large number of post harvest crops. Alternaria species causing early blight disease to the plants are known to cause wild spread damage in tropical crops.

Keywords: Alternaria, seed, fungi, cereals, legumes, oil seeds, vegetables seeds

INTRODUCTION

In agriculture seeds of many crops are known to carry various types of pathogenic and non-pathogenic fungi which are commonly known as seed mycoflora or seed-borne fungi. Depending upon the presence of fungi either on seed coat or in the seed it is further called as external seed-borne fungi and internal seed-borne fungi.

It is observed from the literature on seed pathology and seed biodeterioration that due to association of seed-borne fungi several abnormalities occurred on seeds such seeds are toxic and poor in quality for consumption as well as for seed industry.

Neergaard (1973) [1] reported several types of abnormalities occurred to the seeds, which mainly include seed discoloration, necrosis, seed abortion, seed toxification, seed rotting, etc. He further reported that these types of abnormalities occur due to dominate fungi like Aspergillus, Curvularia, Drechslera, Fusarium, Penicillium, Rhizoctonia, Verticilastum and Alternaria.

Alternaria species associated with jowar (Sorghum vulgare Pers.) seed

Sorghum is one of the most important cereals. It is a dietary staple in central India and in countries of Central America. The first systematic work on seed health testing of Jowar has been made by Leukel and Martin (1943) [2] where they have reported that among the mycoflora, species of Alternaria are dominated. Similarly, Basuchaudhary (1973) [3] isolated few fungi and three actinomycetes in which Alternaria tenuis was in maximum count. Doupnik (1974) [4] observed the discoloration of seeds due to Alternaria. Similarly Panchal (1984) [5] isolated species of Alternaria which cause discoloration to the five local varieties cultivated in Marathwada region of Maharashtra state.


Alternaria species associated with rice (Oryza sativa L.) seed

The first ever recorded report on seed discoloration in rice was by Hemmi et al. (1931) [10], whereas Singh et al. (1987) [11] noted that A. padwickii infected rice grains which reduced carbohydrates of the grains while, Misra and Dharmavir (1988) [12] isolated many fungi responsible for seed discoloration in the field. These fungi were prominently Alternaria alternata and A. padwickii. Similarly, Jayaweera et al. (1988) [13] isolated and identified seed-borne fungi from seeds of Oryza sativa and found Alternaria padwickii as dominant. Agrawal et al. (1989) [14] studied the seed-borne diseases and seed health testing of rice and found seeds infected by a number of fungi such as Alternaria alternata and A. padwickii which caused brown discoloration in rice seeds. Mathur et al. (1972) [15] noted Alternaria padwickii caused decay of rice seed and resulting in the death of seedlings.

Alternaria species associated with wheat (Triticum aestivum L.) seed

Conner (1987) [16] observed black point caused by Alternaria alternata in wheat increased after irrigation during the milky stage, whereas, Singh et al. (2001) [17] found Alternaria alternate on grain storage.

Alternaria species associated with black gram (Phaseolus mungo L.) seed

**Alternaria species associated with mustard (Brassica campestris Prain) seed**

It has been reported by Gupta and Basuchaudhary (1994) [22] that range of infection of seed-borne fungi from different seed samples of Mustard seeds and they found that Alternaria alternata is the most common pathogen along with the presence of Alternaria brassicicola. Chatterjee and Biswas (2002) [23] found Alternaria blight caused by A. brassicicola. Patni et al. (2006) [24] reported Alternaria blight of mustard. Alternaria blight caused by Alternaria brassicicola and A. brassicicola and A. raphani isolates from mustard. Similarly, Kumar and Kolte (2006) [25] studied Alternaria blight of mustard.

**Alternaria species associated with cotton (Gossypium hirsutum L.) seed**

Cotton seeds are also used as a oil seed, Templeton et al. (1967) [26] reported Alternaria alternata from seed coat of cotton. Similarly, Padaganur (1979) [27] found Alternaria macrospora on cotton seeds. Gawade et al. (2006) [28] reported Alternaria macrospora from cotton seeds.

**Alternaria species associated with brinjal (Solanum melongena L.) seed**


**Alternaria species associated with chilli (Capsicum annum L.) seed**

It forms a part of Indian diet. The fruits are used in daily food. Suryanarayana and Bhombe (1961) [32] isolated the fungal flora of crop and observed the dominant seed mycoflora with Alternaria species. Similarly Sanz and Hermilia (1970) [33] identified 30 – 40 % loss in the crop due to the seed-borne pathogen i.e. Alternaria alternate. Whereas Deena and Basuchaudhary (1984) [34] noted that Alternaria alternata was the seed-borne fungi and causes the fruit rotting, discolouration, losses in seed viability and seedling mortality in nursery bed. Whereas Sujathabai (1992) [35] recorded the presence of Alternaria tenuis from fruit rots of chilli. Vijayalaxmi et al. (2001) [36] reported incidence of Alternaria on chillies.

**Alternaria species associated with cabbage (Brassica oleracea) seed**


**Alternaria species associated with onion (Allium cepa L.) seed**

Onion is a most important vegetable. The seeds cannot be stored safely for longer period due to loss in viability within a short period of time. It suffers from several micro organisms which were studied by several workers. Gupta and Shrivastava (1981) [40] revealed the presence of fungi like Alternaria alternata. Similarly Thind and Jhooty (1982) [41] showed the Alternaria porri with purple blotch infection on onion plants.

**CONCLUSION**

It can be concluded that Alternaria species are dominant seed borne fungi and these species are responsible for changes in physical properties of seeds.

**REFERENCES**


O.K.).


[17] Singh, D.P., Kumar, J. and Saharan, M.S. 2001. Effect of some diseases on quality of grain and seed in wheat and approaches to tackle these – a review. Directorate of wheat research, Post Box No. 158, Karnal, 132001.


