



SEED MYCOFLORA OF SOME LEGUMES: A REVIEW

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ABSTRACT

Present paper is a review of seed mycoflora.

KEYWORDS: Seeds, Seed-borne fungi, Ghazipur district.

INTRODUCTION

The healthy and viable seed is of a source of new plant. Leguminous crops constitute a significant proportion of human diet throughout the world, more specially in tropical countries. Legume seeds have comparatively higher protein content than non-legume plant. All varieties of pulses are excellent source of easily digestible protein. Microorganisms play an important role in affecting the quality of seed, of which fungi are the largest group. Microbial bio-deterioration of food grains during storage is a well known phenomenon causing a significant loss up to 30% (Chhokar, 2001). The annual crop losses of world as a result of diseases have been estimated at 25,000 million US dollars, of this a major part is due to fungal pathogens carried through seed (Agrios, 1997; Chandler, 2005). Fungi are significant destroyers of food stuffs and grains during storage, rendering them unfit for human consumption by retarding their nutritive value and often by producing mycotoxins (Park *et al.* 2004; Koirala *et al.* 2005). The present review have been organized in various sections as follows.

Pigeon Pea (*Cajanus cajan* L.) Vern. Arhar, Family - Papilionaceae

Pigeon pea is cultivated throughout India, East Indies and West Indies though it is native of Africa. In India it is chiefly grown in Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra and Uttar Pradesh. Grown mostly as a 'Kharif' crop and is used in the form of 'dal'. Pal, A.K. (1937) published the first information on biological value, net protein content,

essential amino acids, and digestibility of different pulses. Sharma *et.al.*(1977), Manimekalai *et.al.*(1979) and Singh *et.al.*(1984) reported large variability for various chemical constituents for nutritive value of pigeon pea. Pigeon pea seeds are made up of 85% cotyledons, 14% seed coat, and 1% embryo, and contain dietary nutrients (Faris, D.G. and Singh, U., 1990).

Storage seed mycoflora of pigeon pea

It is clear from literature seeds are associated with pathogens like fungi, bacteria, nematodes etc. *Alternaria longipes*, *Acremonium* sp., *Aspergillus flavus*, *A.niger*, *A.terreus*, *Botrytis* sp., *Chaetomium* sp., *Curvularia lunata*, *Drechslera* sp., *Fusarium solani*, *F. Oxysporum*, *Macrophomina phaseolina*, *Mycelia sterilia*, *Mucor racemosus*, *Rhizoctonia bataticola*, *Rhizopus nigricans*, *R. nodosus* and *Trichoderma viridae* were isolated which associated with Pigeon pea (*Cajanus cajan*) seeds (Narayan M.G. and Ayodhya D.K.,2013).

Chickpea (*Cicer arietinum* L.) Verna.Chana, Family-Papilionaceae

This is the most important pulse in India.It is native of Europe and in India commonly grown in Bihar, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Uttar Pradesh. There are two groups of gram-brown and white.The brown or 'desi' type is most widely grown. The white or 'kabuli' gram characterised by large seeds. In India, gram is sown as rabi crop at the end of rainy season. Sowing takes place between February and April. The plant is cultivated for its nutritive seeds. The flour of seeds is used in numerous edible preparations like Laddu, Son halua etc. Young leaves are also cooked as vegetable. The plant may be used as fodder for cattle (Anonymous, 1969).

Storage seed mycoflora of Chickpea

Ahmed *et.al.*(1993)reported that the Chickpea seed vigor is debated by the infestation of fungal species like *Alternaria alternata*, *A. porri*, *Aspergillus amstelodami*, *A. flavus*, *A. fumigatus*, *A. nidulans*, *A. niger*, *A. sydowi*, *A. wentii*. *Botrytis cinerea*, *Cladosporium macrocarpum*, *Curvularia lunata*, *Fusarium equiseti*, *F. moniliformae*, *F. semitectum*, *Macrophomina phaseolina*, *Myrothecium rodium*, *Penicillium notatum*, *Rhizoctonia* sp., *Rhizopus arrhizus*.Seed mycoflora viz. *Aspergillus flavus*, *A.niger*, *Botrytis cinerea*, *Fusarium* sp. and *Sclerotium rolfsii* of five cultivars of Chickpea were studied under blotter paper method and found more susceptible(Elizabeth *et.al.*2013).

Pea (*Pisum sativum* L.) Vern. Bari Mattar, Family-Papilionaceae

Pea is native of South Europe and grown as garden or field crop throughout the temperate regions of the world. It is an important crop of dryland agriculture in China, Ethiopia, Congo, India, U.S.S.R. and U.S.A. In India, the crop is grown on a field scale for its dry seeds and on smaller scale for green peas. The most important state cultivating pea on a field scale in India is Uttar Pradesh, which includes about 83% of total area under this crop in the country (Anonymous, 1969). The young green seeds of peas are eaten raw or after cooking. The seeds are also used as pulse and they are good source of Proteins, Vitamins (B1, B12 and K), Potassium and Phosphorous. Peas are consumed both in the fresh form as vegetable and in the dried form as pulse.

Storage seed mycoflora of Pea

Begum *et.al* (2004) isolated 12 fungal species from pea among them *Alternaria*, *Aspergillus*, *Fusarium*, *Penicillium* and *Rhizopus* Spp. were in high frequencies. In year 2011 Hulya.O. and Merve,G., were also isolated *Alternaria* *Aspergillus*, *Fusarium*, *Penicillium* and *Rhizopus* Spp . Narayan M.G. and Ayodhya D.K.(2013) isolated *Acremonium* sp., *Aspergillus flavus*, *A.niger*, *A.terreus*, *Fusarium solani* ,*Macrophomina phaseolina* ,*Rhizoctonia bataticola*, *Rhizopus nigricans* and *Trichoderma viridae* which were associated with pea (*Cajanus cajan*) seeds.

Lentil(*Lens esculenta* L.) Vern. Masoor, Family-Papilionaceae

It is the oldest pulse crop of ancient Egypt, Greece and India. In tropics, it is cultivated as the winter crop of dry areas. In India it is chiefly cultivated in Delhi, Punjab, Himachal Pradesh and Uttar Pradesh. The seeds are light brown and lens shaped. The seeds are very nutritious and digestible. They are used as “dal” and for preparation of porridge and soup. Green pods are eaten as vegetable and whole plants provides a good fodder. It is also a good source of vitamin B.

Storage seed mycoflora of Lentil

A survey of literature, many fungal species have been reported from lentil seeds including species of *Alternaria*, *Chaetomium*, *Drechslera*, *Fusarium*, *Monilia*, *Penicillium*, *Rhizopus* and *Mucor* (Vishunavat and Shukla, 1979; Abdel Hafez,S.I.I.,1984 and 1988; El-Maraghy, S.S.M., 1988; Ahmed *et.al.*, 1993 and Kumar *et. al.* 2002; Hussain *et. al.* 2007) isolated *Alternaria alternata*, *Aspergillus* spp., *Chaetomium* spp. *Fusarium moniliformae*, *Mucor*

hiemalis, *Penicillium citrinum* and *Nigrospora* spp., In year 2010 Summiaya *et.al.* 42 fungal species belonging to 18 genera were isolated.



Figure(image)-1.

CONCLUSION

Thus, the fungi are significant destroyer of food stuffs and grain during storage. Therefore, plant extracts (crude or volatile oils) may recommended for the control of fungi.

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