



Golden Research Thoughts

GRT

MYCOFLORA ON FABA BEANS

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ABSTRACT :

The periodicity and occurrence of various fungi in relation to environmental conditions are in conformation with similar studies conducted. During the present investigation period it was also observed that maximum fungal population was observed in winter season, due to favourable temperature and relative humidity, moderate in rainy season and minimum number of fungal population was recorded in summer season, possibly due to unfavourable temperature and relative humidity for mycoflora. The maximum number of spores of *Cladosporium Alternaria*, was recorded. On the contrary minimum number of *Belterniella* spores was observed.

Aeromycoflora over *faba bean* was studied with the help of culture method. Many fungal spores represented some fungal types were observed during the present investigation period. Environmental factor play an important role for the distribution of the fungal spores. Leaf surface is the platform of the numerous fungal spores present in the air. During suitable microhabitat these spores are settled down on this having platform and try to colonised. After settle down fungal spores, a triangular relationship appears among the micro-organisms, leaf surface and the environment.



KEY WORDS: *Alternaria*, *faba beans*, fungal spores.

INTRODUCTION

Aerial plant surfaces provide a suitable habitat for epiphytic microorganisms, which are influenced by the nutrients present on the leaf surfaces. The phyllosphere and phylloplane of the surface of plant leaves are a complex terrestrial habitat characterised by a variety of microorganisms including bacteria, filamentous fungi and yeasts, which play a vital role in health of biological systems¹. Saprotrophic leaf surface fungi perform key ecological roles in the plant, mainly related to natural control of plant pathogens².

MATERIAL AND METHODS

Samples were collected monthly during January–April 2011. The collected samples were packed immediately into sterilised polyethylene bags and transferred to a mycological laboratory to assay their phyllosphere, phylloplane and fungal content³. Faba bean is susceptible to several pathogenic fungi table *Ascochyta* blight, rust, chocolate spot, downy mildew and cercospora leaf spot all attack few other host

species, whereas stem rot, root rot, wilt and alternaria leaf spot .some fungi are observed in culture and some observed by making slide of fresh infected leaves.

The medium of fungal isolation was potato dextrose agar (PDA) medium supplemented with 66.7 mg/l rose-bengal and 250 mg/l chloramphenicol . Five replicates were carried out for each experiment of isolation and then the plates were incubated at 25 °C for 6 days. The fungal populations of the phyllosphere were counted as colony forming units per gram of healthy or diseased leaves. On the other hand, the counts of the phylloplane fungi were calculated as per 25 segments of healthy or diseased leaves. The dilution plate method was used for isolation of phyllosphere fungi from healthy and diseased leaves,.An amount of 20 leaves was added to an flask (250 ml) containing 100 ml sterilised distilled water. One ml of the final dilution was transferred to a sterilised Petri plate on which 15 ml of melted PDA medium was poured.

DISCUSSION

1.Uromyces viciae fabae , is one of the most widely distributed diseases of faba bean around the world .Rusts attack aerial organs, especially leaves and stems, producing typical red-brownish powdery lesions. It is widespread, but is important only in some humid and warm regions. In general, rust appear slate in the season and causes an estimated 20% loss in faba bean production . Rust occurs mostly late in the season and therefore, chemical control may not be economical. However, when rust occurs with chocolate spot in the same field, Mancozeb (Dithane-M45) can be used^{7,8} . leaves to collapse and die. Emergence of the disease is favored by warm, humid cobditions; fungus overwinters on crop debris on the ground^{9,10}. Remove all crop debris after harvest; remove any infected leaves from the plant; apply an appropriate foliar fungicide to control the disease; avoid overhead irrigation; make use of trellises to open up the plat canopy and promote good air circulation around foliage; avoid excessive nitrogen fertilization.*2.Ascochyta fabae* Leaves, stems, and pods exhibit symptoms. On leaves,lesions are dark brown, circular to elliptic,some- whatsunken in the green tissue.*3.Chocolate spot Botrytis fabae* Losses occurred by chocolate spot forced several faba bean growersto abandon their crops . The dis- ease occurs anywhere faba bean is grown. Losses caused by chocolate spot are duemainlyto a decreased number of pods per plant . *4.Mildew Peronospora viciae* Symptoms are visible in leaf margins, which later dryout .Crop rotation and destroying crop residuals alleviate the presence ofmildew. Agronomic management methods Faba bean is susceptible to several pathogenic fungi¹². *5.Fusarium* tunted plant growth; yellowing, necrotic basal leaves; brown-red or black streaks on roots that coalesce as they mature; lesions may spread above the soil line. Damage caused by the mergence of the disease is worsened by warm, compacted soils, limited soil moisture and poor soil fertility. *6.Erysiphe pisi*Yellow spots on upper surface of leaves; powdery gray-white areas which coalesce to cover entire plant; if plant is heavily infected it may appear light blue or gray in color Powdery mildew, Fungus overwinters on plant debris or alternate host; disease emergence is favored by warm, dry weather with cool nights that result in dew formation.The use of clean, unblemished and preferably certified seedis vital for minimizing the spread of Ascochyta blight as the pathogen can be carried under the seed coat . Reducing relative humidity next to the plantsurface is an effective way to hinder the infection process. In addition to their requirements for high humidity and damp leaf surfaces, each of these diseases has an optimum temperature range. *7.Alternaria tenuissima*The fungus frequently associated with diseased broad bean leaves having the characteristic leaf spot symptom was identified as *Alternaria tenuissima*, based on morphological characteristics. The initial lesion was brown, water soaked, circular to slightly irregular. Then the lesion enlarged and became concentric. Mature leaves had coalescing necrosis surrounded by yellowing. Older leaves of the plant were particularly affected. In a later stage of the disease, the leaves became blighted from the margin to the center and most of the diseased plants defoliated. *8.Cladosporium sp. Cladosporium herbarum* is identified from faba beans with spot symptoms. Pathogenicity was confirmed by inoculations to seedlings. The results also revealed that *C. herbarum* infection was seedborne in faba beans, and that the opt. temp. for fungal development was 22°C.*Rhizoctonia sp.*The production of faba bean is limited due to the occurrence of Rhizoctonia canker, caused by the fungus *Rhizoctonia sp.*

RESULTS

The variety and galaxy of fungi and their natural beauty occupy prime place in the biological world. One third of fungal diversity of the globe exists in India. Out of 1.5 million of fungi, only 50% are characterized till now⁴. Unfortunately, only around 5 – 10% of fungi can be cultured artificially. Fungi play a

significant role in the daily life of human beings besides their utilization in industry, agriculture, medicine, food industry, textiles, bio remediation and many other ways fungal biodiversity has become an integral part of the human welfare^{5,6}. Phylloplane communities may be similar on different plants such as mangrove plants and terrestrial and non marine plants.

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