



STUDY OF FUNGAL DIVERSITY FROM PITHORAGARH REGION

Pathology

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ABSTRACT

The aim of present study is to explore some fungal diversity of Pithoragarh city. Out of total 83,710.3 ha forest area of Pithoragarh, the study site was the main town of Pithoragarh, Pithoragarh district, in Kumaun region of central Himalayas. The study was conducted during April and May. The most significant fungus characteristics used for identification are spores and spore-bearing structures (Sporophores), the characteristic of the fungus body (Mycelium). Samples were alternatively selected from village as well as market areas of city. Outcome of the study shows that 11 genus and related species are discovered as disease causing on common plants widely distributed in Pithoragarh district. The reason of fungal species successful dominance is their survival over unfavourable environmental conditions.

KEYWORDS

Spores, Sporophores, mycelium etc.

INTRODUCTION

Our great Himalayan region in one of the most prominent hotspot from biodiversity point of view. Himalayan ranges are highest, largest and richest in biodiversity. The entire Himalayan ranges can be divided into three major botanical regions, the western, the central and the eastern Himalayas. The Indian Himalayan region alone supports about 18,440 species of plants (Angiosperms: 8000 spp., Gymnosperm: 44 spp., Pteridophytes: 600 spp., Bryophytes: 1736 spp., Lichens: 1159 spp. and Fungi: 6900 spp.) (Singh and Hajra, 1996) of which about 45% are having medicinal properties. Our Himalayan region is rich in microbial diversity. Besides various bacterial varieties, fungal biodiversity is very extensive in most of the Himalayan regions. Higher altitudes of Sikkim and Uttarakhand Himalaya has shown that the *Penicillium* is the most abundant and diverse genus out of widely distributed fungal diversity. Other important genera were *Aspergillus*, *Epicoccum*, *Fusarium*, *Myrothecium*, *Cladosporium*, *Paecilomyces*, *Gangronella* and *Trichoderma* (Rai and Kumar 2015).

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MATERIALS AND METHODS

Present study was carried out in the Uttarakhand state district

RESULT : Fungi reported from Pithoragarh region

Phylum	Family	Genus	Diseases
Oomycota	Albuginaceae	Albugo	White rust of crucifers (Figure-12)
	Pythiaceae	Pythium	Foot-Rot of Papaya (Figure-11)
	Perenosporaceae	Phytophthora	Blight of Colocasia (Figure-10)
Ascomycota	Taphrinaceae	Taphrina	Peach leaf curl (Figure-1)
	Erysiphaceae	Erysiphae	Powdery mildew of Apple (Figure-7)
Basidiomycota	Pucciniaceae	Puccinia	Stem rust of wheat/ rust on Puccinia (Figure 6)
		Gymnosporangium	Pear rust (Figure 4/5) Some wood rotting fungi, Polyporus, ganoderma etc. (Figure-15)
Deuteromycetes	Dematiaceae	Cercospora	Leaf spot of Chenopodium (Figure-8)
	Glomerellaceae	Alternaria	Alternaria brown leaf spot on citrus leaves (Figure-9)
		Nectriaceae	Colletotrichum
		Fusarium	Wilt diseases on bean plants (Figure-14)

In the above list the 11 genus and related species are discovered as disease causing on common plants widely distributed in Pithoragarh district. The Pathogen generally belongs to 9 families after study on plants during observation. Mostly dominant fungi are *Cercospora* blight, spot, *Alternaria* and powdery mildews. Fungi are adopted to high/ low temperature as well as drought because of their highly advanced fruiting body formation character during unfavourable condition.



Figure 1- Gymnosporangium Rust



Figure 2- Peach Leaf Curls



Figure 3- Apple Cedar Rust



Figure 4- Oxalis Rust



Figure 5- Aeciospores of Cedar rust



Figure 6- Stem rust of wheat



Figure 7- Powdery mildew, mildew on Apple



Figure 8- Leaf spot of chenopodium



Figure 9- Alternaria Brown spot on citrus leaf



Figure 10- Blight of Colocasia



Figure 11- Foot Rot of Papaya



Figure 12- White rust of Crucifers



Figure 13- Red rot of Sugercane



Figure 14- Wilt in Beans



Figure 15- Some wood Rotting Fungi

RESULTS

In the above list the 17 genus and 19 species are disease causing on plant disease being reported from Pithoragarh district. Fungi were found to be dominant plant disease causing organism, mostly *Cercospora* blight & spot and *Alternaria* genus are dominant. Powdery mildew is another class which is found almost everywhere during season. Most fungal species and their fruiting bodies are highly exposed to adverse environmental conditions like unfavourable temprature, drought, water conditions. The reason of fungal species successful dominance is their survival over unfavourable environmental conditions.

DISCUSSION

Plant disease are most important part of human life, because all living organism depends directly or indirectly on plants, plants are used

as food, medicine, cereal, colouration, home manufacturing from very ancient time. Some abiotic or biotic factors can damage them and decreases their quality as well as quantity. It is important for us to know what are the factor which can do so. This type of work has been done by the study of plant pathology and knowing different abiotic or biotic factor which are responsible for various plant diseases like (fungi, bacteria, nematode, viruses, mycoplasmas, algae, phanerogames etc). However some of the fungi, bacteria, algae are beneficial for human beings because they are rich in protein, vitamins and other essential elements. Fungi & algae are good source of protein & vitamins, like *Agaricus* & *Morchella* and some algae like *Spirulina* contains 60% protein, essential vitamins, and unsaturated fatty acids. Fungi are also used from medicinal point off view like penicillin is used as antibiotics. Extensive study of fungi is seems to be very interesting in-spite of their harmful activities.

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