

A study on the basidiomycetous fungal diversity of Sivasagar district and their economic importance

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SUMMARY

Sivasagar district is a well known historically important place of North East India having number of historical monuments of Ahom times. The geographical location of the district is 94°8' and 95°45' East longitude and 26°7' and 27°2' North latitude. The district comprises of three sub divisions viz., Sivasagar, Nazira and Charaideo and seven reserve forests viz., Sola, Abhoypur, Deroi, Sapekhati, Dilli, Panidihing and Galeky. As a rain forest area, huge number of fungal diversity is found in different localities of the region. During the rainy season, edible mushrooms are very common. Moreover, due to increase temperature and humidity many wood rotting fungi grow vigorously on timbers. Different ethnic people of the localities use various types of fungi in different aspects as food, fodder, medicine, fertilizer and for the treatment of various diseases. This paper highlights 32 species of such important basidiomycetous fungi and their economic importance.

Key Words : Sivasagar district, Fungal diversity, Basidiomycetous fungi, Economic importance

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The fungi are members of a large group of eukaryotic organisms, that are colourless due to the absence of chlorophyll, heterotrophic, thallophytic, and may be plasmodial, amoeboid, pseudomycelial unicellular or filamentous either aseptate or septate from microscopic to macroscopic forms. The basidiomycetes, the most important and advanced class of fungi have number of species having attracting fruit bodies. These fungi grow mainly in soil, dead or rotten logs, angiospermic woods etc. and have great economic importance. The well-known delicious and highly proteinaceous food mushroom and polypores which are important as wood rotting fungi belong to this class. The fungi of this class are both harmful and useful. Most of them attack food and ornamental plants as well as forest trees. In

the mean time, though some species of mushroom are very poisonous, yet some are used as delicious food throughout the world. Some of them decompose organic matter and have fundamental role in nutrient cycling and exchange. They are also used as biological pesticides to control weeds, plant diseases and insect pests. The fruiting structures of a few species contain psychotropic compounds and are consumed recreationally or in traditional spiritual ceremonies. The mushrooms are objects of beauty for artists, attracting designs for jewellers and also for architects, the possible source of new drugs for medical people etc. The polypores also known as wood rotting fungi decaying woods and living wood as an energy source by means of enzymatic degradation of the component of wood cell walls and are a key component in regulating the biomass production in forest ecosystem. The decayed wood provides shelters to other organisms and after complete degradation and decomposition of the wood. The residue becomes important component of the soil.

Sivasagar district of North-East India, a historically famous place has rich biodiversity with great variety of fungal species. It lies between 94°8' and 95°45' East longitude and 26°7' and 27°2' North latitude. and comprises of seven reserve forests viz., Sola, Abhoypur, Deroi, Sapekhati, Dilli,

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Panidihing, and Galakey and three sub divisions Sivasagar, Charaideo and Nazira. More than twenty five grazing land with elevated topography receives the highest rainfall of the area favouring fungal growth. During rainy season mushrooms are very common. Many wood rotting fungi are also available in the region due to increase temperature and humidity. Different ethnic people of the localities use various types of fungi in different aspects as food, fodder, medicine, fertilizer and for the treatment of various diseases.

Literature reveals that many workers studied about mushroom, their nutritive value, edible and poisonous mushroom, amino acid composition of the protein from a mushroom and also polypores as wood rotting fungi. Anderson and Fellers, (1942), Atkinson, (1961), Bano, Zakia, (1976), Bano et al., (1963) Bakshi, (1971), studied about fungi. From the north eastern region, different workers like Devi on exploiting of VAM fungi for revegetation land degraded by shifting cultivation in north east region in India: Bisht and Harsh, (2001) and Hazarika and Thakuria (2004) studied on different aspects of fungi..

In this paper, an attempt has been made to study about important basidiomycetous fungi present in the region.

MATERIALS AND METHODS

Survey and collection of fruiting bodies of basidiomycetous fungi was carried in the different reserve forests of Sivasagar district. The fruiting bodies were collected during the months of (July-October) of 2010-2011. The collected specimens were preserved as dry for detailed microscopic studies, and for long term storage they were kept in 4 per cent formaldehyde solution. Identification of species was done in the basis of morphological and anatomical features using various monographs (Overhelts, 1953; Bondertsen, 1953; Bakshi, 1971; Ryvarden and Johansen, 1980, Roy and De, 1996; Sharmah, 2000).

RESULTS AND DISCUSSION

Enumeration of basidiomycetous fungi with family, predominant host, and their economic importance is made, species are arranged in alphabetical order.

Agaricus campestris (Agaricaceae); soil, edible fungus, highly proteinaceous, also called vegetable meat, considered as best diet to be recommended to heart patient.

Amanita phalloides (Agaricaceae); soil, highly poisonous.

Armillaria mellea (Agaricaceae); soil, luminiscent, glow in dark. also used as edible fungus. Known as white rot fungi. Well known as white rot fungi.

Boletus edulis (Agaricaceae); soil, luminescent, glow in dark. used as edible fungus.

Coprinus comatus (Agaricaceae); soil, (Agaricaceae), edible, very deliquet and soon becomes black liquid which

can be used for writing purposes.

Coriolus versicolor (Coriolaceae); logs, important as wood rotting fungi, causing white rot disease. Brackets have been used for making hats for costume decoration.

Coriopsis accidentalis (Polyporaceae); logs, important as wood rotting fungi.

Daedalia confragrosa (Fomitopsidaceae); tree, important as wood rotting fungi.

Daedalia quercina (Fomitopsidaceae); logs, wood rotting fungi, used to clean down horses, particularly those whose skins are tender for an ordinary curry-comb. It is also used by man for cleaning hair.

Favolous brasiliensis (Polyporaceae); logs, important as wood rotting fungi.

Fomes fomentarius (Fomitopsidaceae); tree, wood rotting fungi, also used for rapid coagulation of blood. Known as brown rot fungi.

Fomes applanatus (Fomitopsidaceae); logs, important as wood rotting fungi.

Ganoderma applanatum (Ganodermataceae); tree, wood rotting fungi, also used to produce a suede like material from which hats, various articles of drees, hand bags and picture frames are made.

Ganoderma lucidum, (Ganodermataceae); tree, important as wood rotting fungi.

Hexogonia species (Coriolaceae); tree, important as wood rotting fungi.

Lentinus species (Coriolaceae); logs, important as destroyer of timber and standing trees, but some species are also economically important as edible mushroom.

Lycoperdon pyriforme (Lycoperdaceae); logs, wood rotting fungi and medicinally used.

Microporallus obovatus (Polyporaceae); logs, important as wood rotting fungi.

M. flabelliformis (Polyporaceae); logs, important as wood rotting fungi.

Phellinus caryophyllii (Hymenocetaceae)); logs, important as wood rotting fungi.

P. species (Hymenocetaceae); logs, important as wood rotting fungi.

Pycnoporus coccineus (Polyporaceae); logs, wood rotting fungi.

Polyporus squamosus (Polyporaceae); logs, important as wood rotting fungi. Bottle corks are made from it, also used for the purpose of etching.

P. xanthopus (Polyporaceae); logs, important as wood rotting fungi.

P. tricholoma (Polyporaceae); logs, important as wood rotting fungi.

P. violaceo-cinerscens (Polyporaceae); logs, important as wood rotting fungi.

Rigidoporus microporus (Meripilaceae); logs, important as wood rotting fungi. Causes white root disease

on rubber tree.

Trametes cingulata (Polyporaceae); (Polyporaceae); logs, important as wood rotting fungi.

T. corrugate (Polyporaceae); logs, important as wood rotting fungi.

T. cubensis (Polyporaceae); logs, important as wood rotting fungi.

T. scabrosa (Polyporaceae); logs, important as wood rotting fungi.

Volvariella volvaceae (Agaricaceae); soil, edible, lower the blood pressure and also active against tumour cells..

The present enumeration has brought to light at least 32 economically important basidiomycetous fungi present in the study area. They belong to seven different families of the class Basidiomycetes, viz., Agaricaceae, Polyporaceae, Coriolaceae, Fomitopsidaceae, Ganodermataceae, Hymenochaetaceae, and Meripilaceae. The family Polyporaceae with 14 species was found to be the most dominant followed by Agaricaceae with 6 species and other 22 species belong to remaining 5 families. The study shows that the different fungal species are used in different aspects. Most of the members of the family Agaricaceae are edible and used as very delicious food though some are highly poisonous eg. *Amanita phalloides*. The members of the family Polyporaceae are mainly wood rotting fungi playing an important role in the forest ecosystems by decaying woods, regulating the biomass component and recycling the nutrients. The other species belonging to different families have used in different fields as in decoration, design for jewellers and architects, controlling diseases etc. The ethnic people inhabiting near forest areas of the district use mushroom commonly as one of the main foods. They also use some fungi for the prevention of some diseases and some species for decoration for their attractive and large fruiting body. But the fungal diversity of the region has been decreasing due to leakage crude oil in the drilling side and use of fungicide in the tea plantation.

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