

FUNGUS FLORA OF THE BANKURA DISTRICT AND ITS ADJOINING AREAS. 1.

By

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This paper gives an account of the fungus flora (mainly Basidiomycetes) of the Bankura district and its adjoining area. A brief description of the topography is given. Edaphic, climatic and other factors determining the fungal floristic composition of this area have been discussed. 67 species belonging to 23 families are enumerated, of which *Agaricaceae*, *Polyporaceae*, *Astreaceae* are the most pre-dominant.

INTRODUCTION

The district Bankura is a place of historical importance in Burdwan division of West Bengal and lies between 22°38' and 23°38' North latitudes and between 86°36' and 87°46' East longitudes. The district has a total area of 6,87124 Sq. K.M.

Fungus flora of this area has been carefully surveyed during the monsoon period (July to September) of 1972-'74. Before 1972 fungus flora of this area was completely remained unexplored.

Topography: Bankura stands as a connecting link between the plains of West Bengal and the plateau of Chhotonagpur. According to its topography the entire area can be divided into three distinct zones viz. a) Hilly western zone b) Eastern zone level and more or less plain land, and c) Middle zone-undulating and connects the East and West.

Hilly western zone, ending in Chhotonagpur plateau, is interspersed with hillocks and broken up into low ridges and valleys. Lateritic ridges covered with sparse forest. Susunia (ht. 1469' m.s.l.), Biharinath (1400' m.s.l.), Mejhia (200' m.s.l.), Kora (400' m s.l.) etc., are the most pre-dominant hills of this area.

Ecological factors influencing the fungal vegetation

At present there is no meteorological observatory at Bankura district. But the data of the annual rainfall are recorded in the 27 rain recording centres which are well distributed over the district. The following informations are based on the former observatory of this district and other observatories situated in the adjacent districts.

Rainfall: The average annual rainfall in this district is 1,303.7 m.m. . During the summer months (April to June)—it is 10–13%, in the monsoon period (July to September) 78–82%, and in the winter season (October to March) 4–6% of the total annual rainfall.

Temperature and relative humidity

During the summer months (April to June) temperature varies from 33°–45°C. At this period relative humidity is too low and this period is also characterized by low rainfall (150–175 mm) and strong wind which blows from the side between the South and North-West.

With the onset of South-west monsoon period (June to September) temperature gradually drops down i.e. varies in between 25°–35°C. Comparatively high rainfall (1040–1060 mm approx.), low insolation, and high humidity is the characteristic feature.

Monsoon passes into the winter months (October to March). Low rainfall (60 mm–80 mm approx.), high insolation, low temperature (12°C–15°C.) and relatively high humidity is noted during this period.

Edaphic factors

The soil of the upper surface and sub-surface, for the most part of the district, consists of lateritic gravel and calcareous 'kankar'. According to the initial state of the composing materials, soils of this district can be put into two groups—a) Sedentary—i.e. Soils formed from the parent materials e.g. i) Sandstone soil, ii) Lateritic soil and b) Transported—i.e. soils formed from the transported parent materials e.g. alluvial soil etc.

Sedentary soil may be either red or brown in colour. Soils of western and northern parts (Saltors, Mejia, Khatra, Taldangra P.S.) are mostly lateritic and where as in the eastern region (Indus, Kotulpur, Patrasayer, P.S.) the soil is alluvial type.

Due to lack of sufficient vegetative cover, the soil for the most part of the district is subject to erosion hazards. Due to erosion and very low moisture holding capacity, fertility slowly decreases.

Therefore strong wind, high temperature, comparatively low rainfall, soil erosion hazards, mostly lateritic soil exerts a strong desiccating effect on fungal vegetation in most part of the district.

Vegetation : According to the topographical changes and with some variations in ecological factors specially in between the West and East-zone, the fungal vegetation also varies greatly. The members of Agaricaceæ, Russulaceæ, Pluteaceæ, Clavariaceæ, Astræaceæ are more abundant in the eastern alluvian plain land than that of the lateritic Western Zone.

Major species (Ascomycetes and Basidiomycetes) are restricted within the forest areas. Forests occupy a vast area of about 1,404 Sq. K.M. i.e. approx. 1/5th of the total area of this district. According to the standard classification of the forest types of India, Bankura forests is "Northern tropical dry deciduous—Dry sal". Soil is red coloured.

On the remnants of decaying leaves and in a weak light illuminated condition different families such as Agaricaceæ, Clavariaceæ, Xylariaceæ, Lycoperdaceæ, Astræaceæ are very common. Among the order Agaricales *Russula* sp., *Lactarius* sp., *Inocybe* sp., *Laccaria* sp., *Porphyrellus* sp. grow abundantly in the forests.

On some charred woods, decapitated tree base etc., *Lentinus squarrosulus* Mont, *L. Polychrous* Lev., *L. connatus* Berk. *Schizophyllum commune* Fr. etc. are also found.

Hymenochaeta rubiginosa (Dick) Lev., *Xylaria longipes* (Nits) Dennis., *Daldinia concentrica* (Bolt.) Ces & de Not. etc. are responsible for wood decay in a very mild form

Polyporus hirsutus Wulf ex Fries, *P. Sanguineus* L. ex Fries etc., are responsible for the delignifying type of decay of the sap wood. *Ganoderma lucidum* (Leyss.) Karst., a root parasite, is responsible for damazing both heart wood and sap wood.

Late blight disease caused by *Phytophthora infestans* (Mont.), de-Bary, ruins potato crops epiphytotically and in this district approx 4,000 acres of lands are under potato cultivation. At present the virulence of the disease has been checked to a very great extent by the application of some protective mixtures like Copper oxychloride, Dithane Z. etc.

Ustilago nuda (Jens.) Rostrup, *Helminthosporium oryzae* Breda de Hann, *Colletotrichum fulcatum* Wint., *Ustilaginoidea virens* (Cke) Tak etc., are responsible for damage to crop worth thousands of rupees by causing serious diseases.

67 species belonging to 23 families are included in the list and all these specimens with proper field data and index no., are housed in the herbarium of Botany department, Ramananda College, Bankura. The member of *Polyporaceæ* only are deposited to the herbarium of F.R.I., Dehradun and most of the rest species are deposited to the Kew herbarium, Royal Botanic Garden, London.

The classification followed mostly is of (Gwynne-vaughan and Barnes) in general. The major deviations from Gwynne-vaughan and Barnes's are that the

classification followed for *Agaricaceæ* of *Hymenomycetales*, is as used by Singer (1975).

Enumeration

PYTHIACEÆ

Phytophthora infestans (Mont.) de-Bary.

Blight appears on the leaves, stem-tips and on tubers in severe condition, Periodicity, December to January, Patrasayer-1.

P. colocasiæ Racile.

Circular greyish spots appear on the leaves of *Colocasia esculants* L. Periodicity, August to October, Indpur-2.

XYLARIACEÆ

Daldinia concentrica (Bolt) Ces and de Not

Lignicolous, Periodicity, July to October, Bishnupur-10.

Xylaria longipes (Nits) Dennis

On some charred woods, uncommon, Periodicity, August to October, Jaypur : XV-2.

Xylaria sp.

On some charred woods and on humus soil, August to October, Jaypur-11.

ASCOBOLACEÆ

Ascobolus magnificus Dodge.

Abundant on cow dung, Greyish to brownish in colour, July to September, Tantipukur-12.

USTILAGINACEÆ

Ustilago tritici Pers.

Smut spores destroy the entire inflorescence of *Triticum vulgare*, Periodicity, November to January Radhanagar-3.

Ustilaginoidea virens (cke.) Tak.

= *U. oryzae* (Pat) Bref.

A few grain of the entire ear of *Oryza sativa* L. have been affected, Periodicity, September to December, Radhanagar-4.

Ustilago hordei (Pers.) Lagerheim

Chlamydospores infect the entire ear of *Hordeum vulgare* L. Periodicity, November to January, Kotulpur-5.

PUCCINIACEÆ

Puccinia graminis tritici (Pers.) Erik. and P. Hen.

Lesions appear on the leaf, leaf-sheath, stem etc. of *Triticum aestivum*.
Periodicity, December to February, Radhanagar-6.

P. thwaitesii Berk.

Circular blackish spots appear on the leaves of *Justicia gendarussa* Burm.
Periodicity, July to October, Radhanagar-7.

DACRYOMYCETACEÆ

Dacryopinax spathularia (Schw.) Fr.

= *Guepinia spathularia* (Schw.) Fr. = *G. Fissa* Berk.

Grows on dead logs of *Shorea robusta* G. f. and *Bambusa arundinaceæ* Willd.
Periodicity, July to October, Tantipukur-8.

AURICULARIACEÆ

Auricularia auricula-Judæ (L) Schnet.

= *Hirnecola auricula-Judæ* (L) Berk.

Grows on dead log of *Ficus religiosa* L. Periodicity, August to September,
Bishnupur-9.

POLYPORACEÆ

Polyporus palustris Berk. and Curt.

= *Tyromyces palustris* (Berk and curt) Murr.

Grows on the logs of *Albizzia stipulata* Boivin. Periodicity. July to November,
Kotulpur-P 1.

P. caperatus Berk.

= *Polystictus caperatus*

Grows on the dead log of *Shorea robusta* G. f. Basidiocarp found almost
around the year. Bishnupur-P 5.

P. brumalis Pers ex Fries

= *Boletus brumalis*

Grows on the charred wood and humus soil, Periodicity, August to October,
Peardoba-P 6.

P. hirsutus Wulf ex Fries.

= *Boletus hirsutus* Wulf = *Boletus nigromarginatus* Schw.

= *Coriolus nigromarginatus*.

Grows on the dead log of *Salmalia malabarica* Schott. most common,
Kotulpur-P 10

P. versicolor L. ex Fries.

= *Boletus versicolor* L. = *Coreolus versicolor* Quel.

= *Polyporus hirsutus* Schw = *Polystictus macounii* Lloyd.

= *Polystictus trizonatus* Cke = *Polystictus versicolor* Cke

= *Polystictus æquus* Lloyd = *Trametes versicolor* Lloyd.

Grows on the log of *Casuarina equisetifolia* Linn, Kotulpur-P 12.

P. arcularius Batsch ex Fries.

= *Boletus arcularius* Batsch = *Boletus arcularioformis* Murr.

Grows at the base of *Bambusa* sp. Periodicity, July to October, not very common. Morar-P 15

P. xanthopus Fr.

= *Polystictus crassipes*. Currey.

Grows on dead wood of *Shorea robusta*, Un-common, Ranibandh-P 17.

P. sanguineus L. ex Fries

= *Boletus sanguineus* L. = *Pycnoporus sanguineus* Murr.

Sporophore developed on the logs *Albizia* sp, *Salmalia* sp. etc., Periodicity, July to October, Kotulpur-P 21.

P. gilvus (Schw.) Fries

= *Boletus gilvus* schw.

Sporophore on dead wood of *Acacia arabica* wild, *Dalbergia sissoo* Roxb. Periodicity, July to December, Jaypur forest-P 22.

P. cinnamomeus Jacq. ex Fries.

= *Boletus cinnamomeus* Wulf in Jacq. = *Coltricia cinnamomea* Jacq. ex Fries) Murr.

= *Polyporus splendens* Peck = *Polyporus subsericans* Peck

Tarrestrial on humus soil, Periodicity, July to October, Uncommon, Sonamukhi-P 24.

P. tabacinus (Mont.) Fr.

= *Polystictus tabacinus*.

Basidiocarp developed on the dead wood of *Shorea robusta* Patrasayer-P 27.

P. zonalis Berk.

= *Rigidoporus surinamensis* (Miq.) Murr.

Saprophyte on the logs of *Ficus benghalensis* L. *Bauhinia* sp. etc Periodicity, July to January, Ranibandh-P 31.

P. leoninus Klotzsch.

Saprophyte on dead wood of *Mangifera indica*. Periodicity July to January, Ranibandh-P 33.

P. bicolor Jungh.

Basidiocarp on *Dalbergia sissoo*, Indpur-P 41.

P. biformis Fries.

= *Coriolus bi-formis* Pat. = *Coriolus molliusculus* (Berk) Murr.

Saprophyte on *Bauhinia* sp., Khatra-P 42.

P. grammocephalus Berk.

Grows on the dead wood of *Ficus* sp., Khatra-P 43.

Trametes cingulata Berk.

Sporophore on *Shorea robusta*, Periodicity, June to October, Onda-P 11.

T. corrugata (Pers.) Berk.

= *Polyporus corrugatus* Pers. = *Polystictus persooni* Cooke

= *Dædalia sanguinea* Klotzsch.

Fruit body on *Shorea robusta*, Periodicity, July, to November, Khatra-P 14.

T. lactinea Berk.

Saprophyte on *Dalbergia sisoo*, Periodicity, July to November, Khatra-P 35.

Irpex vallereus Berk and Broome

Basidiocarp developed on the logs of *Albizzia stipulata* Boivin, Periodicity, June to October, Ranibandh-P 8.

Irpex flavus Klotzsch.

Grows on the dead log of *Shorea robusta* and *Bambusa* sp., very common, Periodicity, July to September, Khatra-P 9.

Ganoderma collosum (Fr.) Bres.

= *Polyporus colossus*.

Grows on the dead wood of *Ficus benghalensis* L. Sometimes perennial, Tantipukur-P 39.

G. lucidum (Leyss.) Karst.

Serious root parasite on *Dalbergia sissoo* Roxb. *Acacia arabica* Willd. Perennial, Ratanpu-P 18.

G. applanatum (Pers. ex Wallr.) Pat.

Parasite on *Atrocarpus heterophyllus* Lemk, *Albizzia stipulata* Boivin etc. Ratanpur-P.

Hexagonia apiaria Pers.

Saprophyte on *Casuarina equisetifolia* Linn. Periodicity, July to November, Onda-P 20.

H. tenius Hooker ex Fries.

= *Boletus tenius* Hook ex Kunth.

Basidiocarp develops on the dead wood of *Mangifera indica* L. Periodicity, July to November, Ranibandh-P 25.

Fomes lividus (Kalchbr.) Sacc.

= *Polyporus lividus* Kalchbr = *Fomitiporia cubensis* Murr.

= *Poria cinereo*—*Umbrina* P. Henn. = *Fomes cinereus*

= *Fomes olivaceus* Lloyd.—*F. longinous* Lloyd.

Saprophyte on *Tectona grandis*, *Shorea robusta* etc. Perennial, Ratanpur-P 7.

F. fastuosus (Lev.) Cooke.

= *Polyporus fastuosus* Lev.

Developed on charred wood of *Shorea robusta* Gärtn. Perennial most common in sal forest. Ratanpur-P 37.

F. pachyphloeus (Pat.) Bres.

= *Polyporus pachyphloeus* Pat.

Saprophyte on *Ficus benghalensis*, Perrenial, Ratanpur-P 13.

Dædalia flava Lev.

Sporophore on dead wood of *Salmaalía malabarica* and *Terminalia* sp., Periodicity, July to October, Tantipukur-P 19.

Merulius eurocephalus (Berk and Br.) Petch

= *Polyporus eurocephalus* Berk and Br. = *M. similis* Berk and Br.

= *M. pseudolacrymans* P. Henn.

Growing at the living and dead bamboo base, sporophore emits a strong smell specially on drying. Periodicity, July to October, Ratanpur-P 38.

THELEPHORACEÆ

Hymenochæte rubiginosa (Dick) Lev.

= *H. ferruginea* (Bull.) = *Hevella rubiginosa* Dick.

= *Thelephora rubiginosa* Schard. = *Auricularia ferruginea* Bull.

= *Stereum rubiginosum* Fr. = *S. ferrugineum* (Bull). Fr.

Basidiocarp on the bark of *Casurina equisetifolia*. Periodicity, August to December, Ratanpur-P 28.

TRICHOLOMATACEÆ—Tribus—CLITOCYBEÆ

Laccaria laccata (Scop ex Fr.) Berk and Br.

Terrestrial in humus soil of the forest areas. July to October, Jaypur-A 4.

VOLVARIACEÆ

Volvariella thwaitesii (Hooker) Rath.

On decayed straw, Cæspitose, July to September, Bishnupur-A 13.

POLYPORACEÆ. TRIBUS—LENTINEÆ

Lentinus squarrosulus Mont.

Lignicolous, Cæspitose, Periodicity, July to October, Peardoba-A 19.

Lentinus polychrous Lev.

= *L. prærigidus* Berk.

Sporophore on the dead log of *Albizzia procara*, Cæspitose, Periodicity, July to October, Kotulpur-A 20.

L. connatus Berk.

Grows at the bamboo base, white in colour, Periodicity, July to September, Bishnupur-C 11.

POLYPORACEÆ

Schizophyllum commune Fr.

Very much common on the stem surface of dry *Bambusa* sp., *Shorea robusta* etc Periodicity, July to September, Peardoba-A 25.

STROBILIOMYCETACEÆ

Porphyrellus malaceenis (Pat and Baker) Singer

Grows abundantly on the humus soil of the forest areas, hygrophanus, Periodicity, July to September, Jaypur-B 1.

AGARICACEÆ

Agaricus sp.

Terrestrial on humus soil, Favours weak light illuminated condition. Periodicity, July to September. Jaypur-A 1.

CORTINARICEÆ

Inocybe sp.

Grows on humus soil, favours shady place, Periodicity, July to October, Jaypur-A 3.

PLUTEACEÆ

Amanita sp.

Commonly present in the forest areas, Periodicity, July to October, Ratanpur-A 5.

RUSSULACEÆ

Russula sp.

On humus soil of the forest areas, upper surface of the pileus deeply red in colour, Periodicity, July to October, Jaypur-A 8.

Lactarius sp.

Abundantly grows on the decayed leaves, favours weak light illuminated condition; fresh, basidiocarp on cutting secretes a milky substance, Ratanpur-A 10.

CLAVARIACEÆ

Clavulina sp.

Grows on sandy loam, solitary, Periodicity, July to September, Jaypur-C 1.

Clavaria sp.

Grows on sandy loam, pink coloured, abundant, simple, Periodicity, July to October, Jaypur-C 2.

Ramaria sp.

Grows on red alluvial soil, greyish black in colour, much branched, Periodicity, July to September, Jaypur-C 3.

Clavulinopsis sp.

Terrestrial on humus soil, greyish colour, branched, Periodicity, July to October, Ratanpur-C 4.

LYCOPERDACEÆ

Lycoperdon endotephrum Pat.

Grows on the soil surface, at shady places, Cæspitose, Periodicity, August to November, Patrasayar-L 1.

Clavatia cyathiformis (Bose) Morg.

Terrestrial on sandy loam, uncommon, Periodicity, July to October, Kotulpur-L 3.

ASTRÆCEÆ

Astræus hygrometricus (Pers. Morg.

Fruit body abundantly present in the humus soil of the forest areas, Periodicity, July to November, Jaypur-L 2.

NIDULARIACEÆ

Cyathus triplex Lloyd.

Occur less frequently at the dead and living base of *Bambusa* sp., Periodicity, July to September, Sonamukhi-N 1.

SCLERODERMACEÆ

Scleroderma endoxanthum Petch.

Terrestrial on sandy loam in the forest areas, Periodicity, August to November, Ranibandh-S 1.

PHALLACEÆ

Dictyophora indusiatus. (Vent. Ex. Pers.) Desv.

= *Phallus indusiatus* vent. Ex. Pers.

Terrestrial on humus soil, favours weak light illuminated condition, Periodicity, July to September, Jaypur-Ph 1.

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