Diversity of Wood-Inhabiting Macrofungi from District Ayodhya, Uttar Pradesh, India

Balwant Singh* and Vinay Kumar Singh

Mycology and Plant Pathology Laboratory, Department of Botany, K.S. Saket P.G. College Ayodhya, Uttar Pradesh, India.

*Corresponding author Email: balwantsingh1642@gmail.com

(Submitted on June 09, 2023; Accepted on September 11, 2023)

ABSTRACT

Mushroom mycoflora belong to kingdom Mycota (Fungi), which harbors the most diverse group of organisms after insects on earth. Since the beginning of time, macrofungi have drawn the attention of humans due to their peculiar and startling characteristics, such as their varied color, form, and size as well as the existence of gills and pores. Macrofungi also shows great diversity in their inhabiting behaviors encompassing saprobic and parasitic. In the present study, diversity of wood inhabiting macrofungi was surveyed in study area (Ayodhya). Findings exposed a total number of 30 macrofungal species belonging to 14 families. Morphological, microscopic, and macroscopic characters were recorded. Wood inhabiting macrofungi play important role in the biogeochemical cycle of ecosystems. It helps degrade the ligno-cellulosic waste materials and release nutrient back into the ecosystem. In addition to softening wood tissues, the degradation process of wood-growing macrofungi demonstrates collaboration with other micro-organisms.

Keywords: Ayodhya, Diversity, Macrofungi, Mushroom, Wood-decomposer

INTRODUCTION

Macrofungi (mushroom) belong to a separate kingdom Fungi which is a group of heterotrophic organisms (mycoflora). Mushrooms are the most diverse group on the earth after insects (Pala et al., 2011; Singh et al., 2016; Singh et al., 2017; Vishwakarma et al., 2017a; Vishwakarma et al., 2017b; Singh and Singh, 2022). About 1.5 million species are thought to exist in nature, although only about 50% of them have been identified to date (Manoharachary et al., 2005). Around 41,000 types of mushrooms have been recorded worldwide, with 850 of those species coming from India (Deshmukh, 2004). Macrofungi have a key function in the ecosystem starting with human civilisation. They draw the attention of humans due to their remarkable morphological characteristics, such as variety in color, form, size, occurrence, habitat, and presence of pores and gills (Vishwakarma et al., 2017a).

Wood inhabiting macrofungi play important role in ecosystem due to their parasitic and saprobic activities (Kuffer et al., 2004). In Asia, a high species richness of wood inhabiting macrofungi has been recorded and the reason of high diversity is to the availability of host with favorable environmental conditions (Dai and Penttila, 2006). A total number of 2700 species of fungi has been recorded only from India (Manoharachary et al., 2005). Macrofungi is used as the major natural food and medicine from early the civilization. The Macrofungi are act as scavengers and also play an important role in ecological system as well as in biogeochemical cycles (Paliwal et al., 2013). They perform an active role in biodegradation of organic matters like dead and decaying woods, litters, straws, leaves etc (Sultana and Quresh, 2007).

Northeastern part of Uttar Pradesh is endowed with a rich biodiversity. Geographically, it is in Terai region of Himalaya and hence, provide suitable environmental and climate condition for successful establishment of diversity of flora especially macrofungi. Ayodhya is situated in the bank of river Saryu with Holistic approach and widely known for the birthplace of Godes Rama. The present study state the brief description of diversity of wood inhabiting macrofungi in District Ayodhya, Uttar Pradesh, India.

MATERIALS AND METHODS

The collection of macrofungi was done periodically from different sites of Ayodhya district between 2020-2023. The study area was located at between 26°47’N and 82°13’E with elevations of 93 meters at sea level (Mobile GPS App- Geographical Information System). The study area was divided into 5 tehsils and 11 blocks, whereas study site was randomly selected from every block. Macroscopic and ecological characters of surveyed sample were recorded and photography (Oppo Neo-7: 8MP Mobile Camera) of macrofungi were also done in their natural habitat. The samples were brought in laboratory for further studies. Microscopic studies were done by slide preparation of spores. Spore mounting were done by Melzer’s reagent (0.5 g Iodine and 1.5 g Potassium iodide to 20 ml. Chloral hydrate) and examine with oil immersion under microscope (OMX- XM82ESC02 40X-2000X Digital Lab LED Binocular Compound

51
Microscope) and spore’s morphology such as shape and size were recorded. Spore prints were also observed (Singer, 1986; Vishwakarma et al., 2017a; Wang, 2011). The colour code examines based on standard notation of Methuen Handbook of Colour (Kornerup and Wanscher, 1978). Macrofungal specimens were identified by using relevant literatures (Money, 2004, 2016; Monika, 2022; Singh et al., 2016, 2017, 2019; Singh and Singh, 2023a, 2023b; Vishwakarma et al., 2017a, 2017b) and confirmed by myco-keys (www.mushroomexpert.com, www.messiah.edu, www.inaturalist.org, www.mycobank.org and www.mycokeys.com). Finally, the samples were preserved as wet or dry preservation methods (Ainsworth, 1971). Most of studied specimens were air-dried (at 40-60 °C) with the help of a commercial dryer (Ezidri, Hydraflow Infs. Ltd.). Dried specimens kept in air-tight polythene bags or bottles. Wet preservation follows the alcohol (15 ml), formalin (25 ml) and distilled water (100 ml) for macrofungal fruiting bodies. All preserved specimens were deposited in college laboratory collections.

**RESULTS**

Every weekend (Saturday and Sunday), a general survey is conducted for research sites. Throughout the years 2020-2023, various research locations were surveyed for the collection and identification of macrofungi. Thirty species of mycoflora were reported for identification at the 27 sites that we visited in total. Maximum species of macrofungi reported more than one sites but first reporting site were mentioned. In the present study, a total number of 30 species (Figure A) of wood inhabiting macrofungi belonging to 14 families were recorded. Polyporaceae family was found to be dominant and followed by Fomitopsidaceae family. Whereas in 9 families, only single species per families were recorded (Graph 1). In microscopic study, image of spores was taken with the help of microscope in the laboratory and some of the clear images exposed here in (Figure B).

**DESCRIPTION OF COLLECTED WOOD INHABITING MACROFUNGI**

**Artomyces pyxidatus** (Pers.) Julich

**Sample ID:** Saket111 (Figure A1)

**Family:** Auriscalpiaceae

**Description:** Fruiting body 4-10 cm tall, branched, branches culminate crown-like tips, white to yellow coloured.

**Habitat:** Saprobic, solitary or clustered, on wood of deciduous tree.

**Edibility:** Edible

**Collection Date:** 18.07.2021

**Collection Site:** Village-Chandpur, Block- Bikapur, Tahsil-Bikapur

**Verified from:** Henrici and Mahler, 2012; Zheng et al., 2008.

**Auricularia auricula juda** (Bull.) Schrat.

**Sample ID:** Saket047 (Figure A2)

**Family:** Auriculariaceae

**Description:** Fruiting body floppy ear shaped or cup shaped, gelatinous, elastic, smooth, reddish-brown coloured; stipe absent; gill absent; spore thick walled dark, sausage shaped, 15-22µm × 5-7µm (Figure B1).

**Habitat:** Parasitic, solitary or in group, on healthy trees.

**Edibility:** Edible

**Collection Date:** 19.07.2020

**Collection Site:** Village-Deokali, Block- Pura Bazar, Tahsil-Sadar

**Verified from:** Wu et al., 2014; Vishwakarma et al., 2017b; Singh et al., 2016

**Cerioporus squamosus** (Huds.) Quel.

**Sample ID:** Saket109 (Figure A3)

**Family:** Polyporaceae

**Description:** Pileus 5-25 cm. wide, flattened, large concentric scales, creamy white to yellow-brown coloured; stipe 2-7 cm. long, 1-3 cm. thick, lateral or eccentric, black at base; gill absent; porous, white or yellowish coloured, large, regular, 0.3-1 pore per mm; Spore transparent, large, cylindrical (Figure B2).

**Habitat:** Parasitic and saprobiq, solitary or grouped, overlapping, clustered, on living or dead stem of deciduous tree.

**Edibility:** Edible (Young); Inedible (Mature).

**Collection Date:** 30.05.2021

**Collection Site:** Village-Manjha, Block- Maya Bazar, Tahsil-Bikapur

**Verified from:** Spahr, 2009

**Dacrymyces spathularia** (Schwein.) Martin

**Sample ID:** Saket091 (Figure A4)

**Family:** Dacrymycetaceae

**Description:** Fruiting body 1-3 cm. tall, fan shaped or spatula shaped, rounded stalk at base, upward flattened, gelatinous, yellow to orange coloured.

**Habitat:** Saprobic, grouped, clustered, on decaying woods.

**Edibility:** Unknown

**Collection Date:** 05.09.2021

**Collection Site:** Village-Deokali, Block- Harington Ganj, Tahsil-Bikapur

**Verified from:** Zamora and Ekman, 2020.

**Daldinia concentrica** Bolton

**Sample ID:** Saket008 (Figure A5)

**Family:** Xylariaceae

**Description:** No distinct cap, Pileus 5 cm. wide, hemispherical to sub globose, shiny, brown to black coloured; stipe absent; gills absent; spore fusiform to elliptical, black coloured, 12.80 µm × 7.15 µm (Figure B3).
Diversity of Wood-Inhabiting Macrofungi from District Ayodhya, Uttar Pradesh, India

**Ganoderma curtisii** (Berk.) Murrill
- **Sample ID:** Saket062 (Figure A7)
- **Family:** Ganodermataceae
- **Description:** Cap 8-11 cm. wide, shiny, yellow-orange to reddish-brown coloured with whitish margin; stipe typically present, short, tiny, lateral, pronounced to the pileus (cap), reddish-brown coloured; gill absent; porous, whitish to brownish, pore 5-7 per mm.
- **Habitat:** Saprobic and parasitic, solitary or grouped, on dead or living hard wood trees.
- **Edibility:** Inedible

**Ganoderma leucidum** Karst.
- **Sample ID:** Saket010 (Figure A8)
- **Family:** Ganodermaeae
- **Description:** Pileus 7-16 cm. wide, dark reddish to brown, margin yellowish; stipe present; gill absent; porous, 4-5 pore per mm.; spore yellowish to brown, 9-10 µm × 5-6 µm (Figure B5).
- **Habitat:** Saprobic, solitary or grouped or fewer, on dead woods.
- **Edibility:** Medicinal

**Ganoderma sessile** Mullerr
- **Sample ID:** Saket067 (Figure A9)
- **Family:** Ganodermaeae

**Exidia foliacea** (Pers.) P. Karst.
- **Sample ID:** Saket094 (Figure A6)
- **Family:** Phaeotremellaceae
- **Description:** Fruiting body 3-5 cm. wide, gelatinous, seaweed like, brown to dark brown coloured; stipe absent; gill absent; porous; spore ellipsoid, smooth, 5-9 µm × 3-7.5 µm, white (Figure B4).
- **Habitat:** Saprobic, on dead woods.
- **Edibility:** Inedible

**Inonotus hispidus** (Bull.) P. Karst.
- **Sample ID:** Saket105 (Figure A10)
- **Family:** Hymenochaeteaceae
- **Description:** Fruiting body 16-27 cm. wide, thick, without distinct cap, shaggy bracket, rust-brown coloured; stipe absent; gill absent; porous, pore 18 mm. deep, brown coloured, 2-3 pore per mm.; spore print yellowish-white, broadly ellipsoid, smooth, 6-9.5 µm × 4-8 µm (Figure B6).
- **Habitat:** Saprobic, on dead or dried trees.
- **Edibility:** Inedible

**Laetiporus cincinnatus** Morgan
- **Sample ID:** Saket068 (Figure A12)
- **Family:** Fomitopsidaceae
- **Description:** Pileus 2-20 cm. wide, clustered, wrinkled surface, velvety densely matted, dry, pinkish-orange to pinkish-brown coloured; stipe absent; gill absent; porous, whitish.
- **Habitat:** Parasitic, grouped, on base of hard wood trees.
- **Edibility:** Edible on choice

**Lacrymaria lacrymahunda** (Bull.) Pat.
- **Sample ID:** Saket114 (Figure A11)
- **Family:** Psathyrellaceae
- **Description:** Cap 4-10 cm. wide, campanulate, bell shaped, convex, reddish to brown coloured; stipe 5-10 cm. long, 0.5-1 cm. diameter, russet towards the base, fibrous, ring zone present, yellow-brown coloured; gill Adnet to free, brown to dark brown coloured; spore print brownish, ellipsoid to lemon shaped, warty, 7-10 µm × 4-7 µm (Figure B7).
- **Habitat:** Saprobic, on dead or dried trees.
- **Edibility:** Unknown

**Mycenaria adriana** (Pers.) P. Karst.
- **Sample ID:** Saket120 (Figure A13)
- **Family:** Mycenaceae
- **Description:** Pileus 2-14 cm. wide, flattened to convoluted, yellowish, gill absent; porous, 5 pore per mm.; spore yellowish, 4.5-5.8 µm × 3.5-4.2 µm (Figure B8).
- **Habitat:** Saprobic, on dead woods.
- **Edibility:** Inedible

**Microporus piperatus** (Pers.) P. Karst.
- **Sample ID:** Saket121 (Figure A14)
- **Family:** Boletaceae
- **Description:** Pileus 7-12 cm. wide, bell shaped, convex, yellowish to brownish, gill absent; spore ellipsoid, 2.5-3.5 µm × 2-2.5 µm (Figure B9).
- **Habitat:** Saprobic, on dead or living wood.
- **Edibility:** Inedible

**Polyporus versicolor** (Pers.) P. Karst.
- **Sample ID:** Saket122 (Figure A15)
- **Family:** Polyporaceae
- **Description:** Pileus 10-18 cm. wide, conical, convex, yellowish to brownish, gill present; spore ellipsoid, 6-7 µm × 3-4 µm (Figure B10).
- **Habitat:** Saprobic, on dead woods.
- **Edibility:** Inedible

**Polyporus squamosus** Pers.
- **Sample ID:** Saket123 (Figure A16)
- **Family:** Polyporaceae
- **Description:** Pileus 5-15 cm. wide, campanulate, bell shaped, convex, yellow to brownish, gill absent; spore ellipsoid, 6-7 µm × 3-4 µm (Figure B11).
- **Habitat:** Saprobic, on dead woods.
- **Edibility:** Inedible
**Laetiporus conifericola** Burds. and Banik  
**Sample ID:** Saket015 (Figure A13)  
**Family:** Fomitopsidaceae  
**Description:** Pileus 25-42 cm. wide, 1-3 cm. thick, overlapping plates, bright orange to dark orange coloured; Stipe small, underside, orange coloured; gill absent; porous; spore oval, smooth, hyaline, 6-8 µm × 3-5 µm.  
**Habitat:** Parasitic, on trees.  
**Edibility:** Edible  
**Collection Date:** 12.12.2021  
**Collection Site:** Village-Ballipur, Block-Masodha, Tahsil-Sadar  
**Verified from:** Burdsall and Banik, 2001

**Laetiporus sulphureus** (Berkeley and Curtis) Gilb.  
**Sample ID:** Saket004 (Figure A14)  
**Family:** Fomitopsidaceae  
**Description:** Pileus 5-22 cm. wide, flattish, firm, spongy, globous shaped, whitish-pink to brown-orange coloured; stipe 3-8 cm. long, stocky, central, brown coloured; porous, white to brown; spore print white, oval to elliptic, clear, smooth, 6-8µm × 3-5µm.  
**Habitat:** Parasitic and Saprobiic, on living and dead hard and soft woods.  
**Edibility:** Edible  
**Collection Date:** 10.10.2021  
**Collection Site:** Village-Gaura, Block-Sohawal, Tahsil-Sohawal  
**Verified from:** Berkeley and Curtis, 1853.

**Laetiporus persicinus** (Berk and Curtis) Gilb.  
**Sample ID:** Saket004 (Figure A14)  
**Family:** Fomitopsidaceae  
**Description:** Pileus 2-10 cm. wide, fan shaped, brown to dark brown coloured, upper surface rust brown with concentric tinged zone, pallid margin; stipe absent; gill absent; porous or gill like radial arrangement, brown coloured; spore print white to brown, smooth, cylindrical, 7-8 µm × 2-3 µm (Figure B10).  
**Habitat:** Saprobic, grouped, on decaying woods.  
**Edibility:** Inedible  
**Collection Date:** 06.06.2021  
**Collection Site:** Village-Ganeshpur, Block- Mawai, Tahsil-Rudauli  
**Verified from:** Vishwakarma et al., 2017a; Vishwakarma et al., 2017b; Singh et al., 2019

**Microporus affinis** (Blume and Nees) Kuntze  
**Sample ID:** Saket009 (Figure A19)  
**Family:** Polyporaceae  
**Description:** Fruitbody 2-7 cm. wide, fan shaped, velvety, ridged, brown concentric zones, saucer shaped depression in cap, leathery bracket, brown, grey to black coloured with white margin; stipe 1-2.5 cm. long, small disc like, grey, brown to black coloured; gill absent; porous, pore thick walled, oval shaped, white to yellow-pink coloured, 7-10 pore per mm.; spore print white, ellipsoidoidal, hyaline, thin walled, 5.5 µm × 2.5 µm.  
**Habitat:** Saprobiic, solitary or in group, on dead branches and logs.  
**Edibility:** Unknown
**Collection Date:** 14.11.2021  
**Collection Site:** Village-Itaunja, Block-Amanigunj, Tahsil-Milkipur  
**Verified from:** Nagadesi and Arya, 2012; Lee, 2017.

**Microporus verniceps** (Berk.) Kuntze  
**Sample ID:** Saket011 ([Figure A20])  
**Family:** Polyporaceae  
**Description:** Fruiting body 3-7 cm. wide, flabelliform, upper surface covered with spreading striae, margin smooth, woody and dried, reddish brown to golden brown coloured; stipe short, laterally, 3-6 mm. long, 2-4 mm. diameter; gill absent; porous, pore angular, 3 mm. thick, white, 4-5 pore per mm.; spore cylindrical, smooth, hylane, thin walled.  
**Habitat:** Saprobic, solitary or in group, on dead branches and logs.  
**Edibility:** Unknown  
**Collection Date:** 28.11.2021  
**Collection Site:** Village-Jainabad, Block-Mawai, Tahsil-Rudauli  
**Verified from:** Saha et al., 2018.

**Microporus xanthopus** (Fr.) Kuntze  
**Sample ID:** Saket005 ([Figure A21])  
**Family:** Polyporaceae  
**Description:** Pileus 4-10 cm. wide, 1-2 mm. thick, glabrous, margin wavy, concentric zone on upper surface, fan shaped, brownish coloured; stipe 2-5 cm. long, 3-6 mm. diameter, narrow toward base, glabrous, white coloured; gill absent; porous, grey coloured, pore 7-8 per mm.; spore print brown, smooth, cylindrical, hylane, 4-6 µm x 1-2 µm.  
**Habitat:** Saprobic, grouped, on hard dead woods.  
**Edibility:** Inedible  
**Collection Date:** 16.10.2021  
**Collection Site:** Village-Akbara, Block- Pura Bazar, Tahsil-Sadar  
**Verified from:** Vishwakarma et al., 2017a; Vishwakarma et al., 2017b.

**Phyllotopsis nidulans** (Pers.) Singer  
**Sample ID:** Saket120 ([Figure A22])  
**Family:** Tricholomataceae  
**Description:** Pileus 2-7 cm. wide, oyster shaped, densely covered with hair, dry, orange to yellow coloured; stipe absent; gills radiating from point of attachment, orange to yellow coloured; spore print yellow-pink ([Figure B11]).  
**Habitat:** Saprobic, solitary or overlapping clustered, on deciduous wood.  
**Edibility:** Inedible  
**Collection Date:** 01.10.2022  
**Collection Site:** Village-Ghatampur, Block-Harington Ganj, Tahsil-Bikapur  
**Verified from:** Jang et al., 2013; Davis et al., 2012.

**Pleurotus dryinus** (Pers.) P. Kumm.  
**Sample ID:** Saket106 ([Figure A23])  
**Family:** Pleurotaceae  
**Description:** Pileus 2-10 cm. diameter, fan or oyster shaped, convex, hairy, circular outline, yellowish coloured; gills close, running down to stipe, white to yellowish coloured; stipe 4-6cm. length and 1-2cm. thick, tough, off centric, whitish to yellow coloured; spore print greyish-white, cylindric-ellipsoid, smooth, 8-11 µm x 2-3 µm ([Figure B12]).  
**Habitat:** Parasitic, grouped, on living deciduous tree  
**Status:** Inedible  
**Collection Date:** 22.01.2023  
**Collection Site:** Village-Bisnoharpur, Block-Bikapur, Tahsil-Bikapur  
**Verified from:** Vishwakarma et al., 2017a.

**Pleurotus ostriatus** (Fr.) P. Kumm.  
**Sample ID:** Saket065 ([Figure A24])  
**Family:** Pleurotaceae  
**Description:** Pileus 4-27 cm. diameter, fan or oyster shaped, white or grey to dark brown coloured; gills descend on stipe, white to grey coloured; stipe off-centre, 1-4 cm. length and 1-2cm. thick, lateral attachment with substrate (wood); spore print white to yellowish, cylindric-ellipsoid, smooth, 7-11 µm x 2-4 µm ([Figure B13]).  
**Habitat:** Saprobic, grow on dead woods.  
**Status:** Edible and Cultivable  
**Collection Date:** 25.06.2022  
**Collection Site:** Village-Datauli, Block- Poora Bajar, Tahsil-Sadar  
**Verified from:** Singh and Singh, 2023a.

**Pleurocybella porrigens** (Pers.) Singer  
**Sample ID:** Saket095 ([Figure A25])  
**Family:** Marasmiaceae  
**Description:** Pileus 2-10 cm. wide, thin flesh, smooth, white coloured; stipe generally absent (present as narrowed, stubby, white coloured); gills crowded, narrow, decurrent, white coloured, spore print white.  
**Habitat:** Saprobic, solitary, clustered, on dead woods or logs.  
**Edibility:** Unknown  
**Collection Date:** 13.09.2020  
**Collection Site:** Village-Janaura, Block- Masodha, Tahsil-Sadar  
**Verified from:** Holmberg and Marklund, 2013.

**Schizophyllum commune** Fr.  
**Sample ID:** Saket016 ([Figure A26])  
**Family:** Schizophyllaceae  
**Description:** Fruiting body 1-5 cm. wide, fan shaped when lateral attached, saucer shaped when centrally attached, white to grey coloured; stipe absent; gill folds hairy, split lengthwise, white to grey coloured; spore print white.  
**Habitat:** Saprobic, solitary, scattered or overlapping, clustered, on decaying hard woods.  
**Edibility:** Inedible  
**Collection Date:** 12.12.2021  
**Collection Site:** Village-Rasulpur, Block-Bikapur, Tahsil-Bikapur  
**Verified from:** Guarro et al., 1999; Monika, 2022; Singh and Singh, 2023b.

Graph 1: Family wise representation of macrofungal species.
**Trametes betulina** (L.) Pilat
*Sample ID: Saket072 (Figure A27)*
*Family: Polyporaceae*
*Description: Cap 2-9 cm. wide, 1-2 cm. thick, fan shaped, tiered brackets or rosettes emanating from common base, cream or yellow buffed, yellow-brown to greyish-brown coloured; gills radiating from attachment base point, broad, tough, white to cream coloured; stipe absent; spore print white, smooth, cylindrical to bean shaped, 4-6 µm × 1-2 µm.*
*Habitat: Scattered to Clustered in overlapping on hardwoods.*
*Edibility: Inedible*
*Collection Date: 13.12.2020*
*Collection Site: Village-Sidhaura, Block- Harington Ganj, Tahsil-Bikapur*
*Verified from: Justo and Hibbett, 2011*

---

**Trametes suaveolens** (L.) Fries.
*Sample ID: Saket003 (Figure A28)*
*Family: Polyporaceae*
*Description: Cap 5-15 cm. wide, 1-3 cm. thick, finely hairy to glabrous, azonate, soft, whitish to brownish coloured; stipe absent; gill absent; porous, pore surface whitish to yellowish-brown.*
*Habitat: Saprobiac and Parasitic, solitary, on living deciduous trees.*
*Edibility: Inedible*
*Collection Date: 03.10.2021*
*Collection Site: Village-Bisnoharpur, Block- Bikapur, Tahsil-Bikapur*
*Verified from: Justo and Hibbett, 2011*

---

**Trametes versicolor** (L.) Lloyd.
*Sample ID: Saket002 (Figure A29)*
*Family: Polyporaceae*
*Description: Cap 3-8 cm. wide, 1-2 cm. thick, multicoloured, concentric-zone yellowish to brownish, velvety-zones hairy, outer-zone yellow coloured; stipe absent; gill absent; porous, pore 3-4 per mm, spore print blueish-white (Figure B14).*
*Habitat: Saprobiac and Parasitic, clustered, overlapping or in fused rosette, on dead deciduous wood or dried trees.*
*Edibility: Inedible*
*Collection Date: 02.07.2021*
*Collection Site: Village-Bhelsar, Block- Rudauli, Tahsil-Rudauli*
*Verified from: Justo and Hibbett, 2011; Vishwakarma et al., 2017b; Singh et al., 2017*

---

**Tuber aestivum** Vittad.
*Sample ID: Saket071 (Figure A30)*
*Family: Tuberaceae*
*Description: Fruiting body globus, covered in pyramidal warts, brown to blackish coloured; stipe absent; gill absent; spore print blackish-brown, ovoid, reticulate, 7.16 µm × 7.10 µm (Figure B15).*
*Habitat: Saprobiac, in group, gregariously on decaying woods and logs.*
*Edibility: Edible in choice*
*Collection Date: 29.05.2022*
*Collection Site: Village-Sidhauli Block- Rudauli, Tahsil- Rudauli*
*Verified from: Gryndler et al., 2011; Vishwakarma et al., 2017b; Singh et al., 2016*

---


---

58
DISCUSSION

Mushrooms occupy diverse niches of nature in forest ecosystem as a seasonal fungus (Pushpa and Purushothama, 2012). They can live in symbiotic association with plant root as mycorrhiza or grow in soil and degrade plant woods as saprophores (Vishwakarma et al., 2017a). Establishment of seedling and their growth in forest ecosystem and nutrient cycling is the major important role of macrofungi. Some species of fungi also form parasitic association with plants and cause damage (Tapwal et al., 2013). Dead woods play important role for maintaining fungal ecology in forest and other wild type areas (Wang et al., 2011). Dead wood provides food and shelter for saprobic organisms especially macrofungi. They help in recycling matters and storage of nutrients. Macrofungi also have practical importance as food, medicine, and bioremediation resources for human beings (Hattori, 2005; Vishwakarma et al., 2017a). Macrofungal species diversity is related to their particular habitats. Their growth and development are greatly influence by factors including temperature, humidity, light, elevation, geographical location, and surrounding florals (Tapwal et al., 2013). In current research, Polyporaceae family of macrofungi represents high species richness. Whereas, the total diversification of wood growing macrofungi reported that the study area has a very clear and self-maintaining wild environment.

CONCLUSION

The performance of ecosystems' biogeochemical cycles is shown by macrofungi. It helps to degrade the lingo-cellulosic waste materials and release nutrients back in the ecosystem. The ecology of wood-growing macrofungi differs as they inhabit substrate which differs in its stage of decomposition, moisture content, etc. Macrofungi's role in the decomposition process aids in the wood's cooperation with other small organisms (decomposers) by weakening and softening the tissues.

ACKNOWLEDGEMENTS

The authors are thankful to the Head, Department of Botany and Principal of K. S. Saket P.G. College Ayodhya for providing all the necessary permissions and facilities.

REFERENCES


