

**DISTRIBUTION OF BASIDIOMYCETES FUNGI(MUSHROOMS) IN MIYAWAKI
PLANTATION OF SAURASHTRA UNIVERSITY CAMPUS, RAJKOT, GUJARAT****Hemant J. Nakum¹, Fulesh K. Kokni², Kalpna D. Rakholiya³ and Mital J. Kaneria^{1*}**¹Department of Bioscience, Saurashtra University, Rajkot²M.V.M Science and Home Science College, Rajkot³Microbiology Department, Harivandana College, RajkotDOI: <http://dx.doi.org/10.24327/ijrsr.20251604.0037>**ARTICLE INFO****Article History:**Received 13th March 2025Received in revised form 28th March 2025Accepted 16th April 2025Published online 28th April 2025**Key words:**Basidiomycetes, Mushrooms, Fungi, Saurashtra
University campus, Miyawaki Plantation,
Diversity**ABSTRACT**

The present paper deals with the distribution of some Basidiomycetes fungi in Miyawaki plantation of Saurashtra University campus situated in Rajkot of Gujarat. This studies mainly deals with the observation, collection, identification and preservation of 24 different Basidiomycetes fungi found distributed in the study area. The studied 24 fungi belong to 13 different families with 17 genera from these 21 species have been identified and 3 species are unidentified.

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INTRODUCTION

The Basidiomycota (so called basidiomycetes) are large group of fungi with over 30,000 species. Filamentous fungi consist of hyphae (excluding yeast) and reproduce sexually through the development of specialized end cells known as basidia, which typically produce meiospores (Ginns, J., 2003). Mushrooms are most commonly found in this group and mostly live as parasites. Basidia are cells that produce spores, known as basidiospores, on the outside via curved, tapering sterigmata. Typically, a basidium will bear four spores, but occasionally there can be one, two, or more than four basidiospores present. Some varieties reproduce asexually. Basidiomycetes that engage in asexual reproduction are often identified as belonging to this group due to their general similarities to other species, the presence of a unique structural feature known as the clamp connection, specific cell wall constituents, and, conclusively, through phylogenetic molecular analysis of their sequence data (Sampaio *et al.*, 2001).

Basidiomycota include many familiar groups like mushrooms, toadstools, bracket fungi, puffballs, jelly fungi some stink

horns, false truffles, earth star etc. Most of the fungi belonging to this group are macroscopic in their appearance as they have a visualized form called the fruiting body. Basidiomycota are found in virtually all terrestrial ecosystem, as well as freshwater and marine habitats (Hyde *et al.*, 1998; Hibbett and Binder, 2001). Basidiomycetes fungi decompose decaying wood and fallen leaf litter, which facilitates the recycling of both simple and complex compounds that are essential to the ecology of tropical forests and any plant community (Arya A, 2008) & (Kokni *et al.* 2019a). Humans have discovered a variety of uses for Basidiomycota. In many countries, both cultivated and wild mushrooms are consumed (Kokni & Solanki, 2022a). For those without expertise, mushroom foraging can be perilous, as some Basidiomycota species can produce lethal toxins. Mushrooms are used in antibacterial, antifungal, antiviral, antiparasitic, antioxidant, antiinflammatory, antiproliferative, anticancer, anti-HIV, antidiabetic, and hepatoprotective substance, among others (Benjamin, 1995).

The Miyawaki plantation can be described as the cultivation and planting of indigenous plant species specific to a region. Additionally, there exists a significant variety within a group known as fungi. The Miyawaki method encourages restoration by introducing a dense mix of late and intermediate successional plant species chosen based on a survey of the local vegetation.

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MATERIALS AND METHOD

Field survey

The best time suitable for the growth and development of different Basidiomycetes is rainy season. Because this time period gives good favorable warmth, relative humidity and sunshine condition. A continuous field survey was carried out in the months of June-2022 to November-2022. Study area was regularly visited and explored for observing of different Basidiomycetes fungi in the Miyawaki plantation located in the Saurashtra University campus, Rajkot.

Field study and Collection of Samples

During field survey observation of Basidiomycetes was done on the spot itself and characters observed were noted in the field dairy. Characters like substratum to which it was attached, color, shape, size, odor etc. Also changes observed after collection of Fungi were noted down. To prevent any damage and ensure the integrity of the samples, they were carefully collected and placed in a sterile zip-locked polythene bag. Forceps, a knife, and a steel spatula were utilized for collecting the samples. High-quality photographs with a DSLR camera were captured both before and after the samples were collected.

Identification of Macro-fungi

There are several mycological features that are helpful in

identifying mushrooms, such as the type of hymenium, the shape of the cap, the characteristics of the gills, the appearance of the stipe, the color of the spore print, and the ecological type. Most of the Genus was identified based on the visualized characters observed in the field itself. But for identification of species, spore prints were taken and compared with the published data available from Gujarat. Some books were referred for identification like Mushrooms a common field guide by Kokni & Solanki (2022b), Mushrooms how to identify and Gather by Thomas (2013) and Checklist of British & Irish Basidiomycota by Legon & Henrici (2005). Many common fungi were identified based on review of literature from Gujarat like Dediapada forest fungi (Kokni *et al.*, 2019a), Tapi and Dang fungi (Kokni *et al.*, 2019b), Agaricus fungi by (Vasava *et al.*, 2017), Polyporus fungi by (Vasava *et al.*, 2018), New record of wood fungi by (Arya *et al.*, 2008). This research has helped for identification of the fungi observed during study.

Preservation

As per (Kokni *et al.*, 2019 a&b) two different methods were used for preservation of Basidiomycetes fungi. These methods were based on the condition of Fungi weather it is fleshy or wood inhibiting dry. Most of the wood fungi were preserved by the dry method using Oven. Fleshy fungi were preserved with fresh method and kept in glass jars. In fresh method fungi were preserved in 2% or 4% formaldehyde. All the preserved specimens were submitted in the Department of Biosciences,

Table 1 List of fungi recorded in Miyawaki plantation of Saurashtra University, Rajkot

Sr. No	Scientific Name	Family	Substratum	Edibility
1	<i>Cystoagaricus trisulphuratus</i> Berk.	Agaricaceae	Soil	Not Edible
2	<i>Leucoagaricus hodocephallus</i>	Agaricaceae	Soil	Not Edible
3	<i>Leucoagaricus melanotrichus</i> (Malencon & Bertault) Trimbach	Agaricaceae	Soil	Not Edible
4	<i>Leucoagaricus</i> sp.	Agaricaceae	Soil	Not Edible
5	<i>Leucocoprinus cretaceus</i> (Bull.) Locq.	Agaricaceae	Soil	Not Edible
6	<i>Leucocoprinus</i> sp.	Agaricaceae	Soil	Not Edible
7	<i>Chlorophyllum molybdites</i> (Meyer:Fr.) Masse	Agaricaceae	Soil	Not Edible
8	<i>Agaricus bitorquis</i> (Quelet) Saccardo Syll.	Agaricaceae	Soil	Not Edible
9	<i>Agaricus xanthodermus</i> Genevier Bull.	Agaricaceae	Soil	Not Edible
10	<i>Panaeolus cyaneus</i> (Berk. & Broome) Sacc.	Bolbitiaceae	Cow dung	Not Edible
11	<i>Ganoderma lucidum</i> (Curtis) P. Karst.	Ganodermataceae	Wood	Not Edible
12	<i>Ganoderma aplanatum</i> (Pers.) Pat.	Ganodermataceae	Wood	Not Edible
13	<i>Ganoderma lobatum</i>	Ganodermataceae	Wood	Not Edible
14	<i>Geastrum saccatum</i> Fries	Geastraceae	Soil	Not Edible
15	<i>Hygrocybe conica</i> (Schaeff. Fries) Kumm.	Hygrophoraceae	Soil	Not Edible
16	<i>Termitomyces globulus</i> R. Heim & Gooss. Font.	Lyophyllaceae	Soil	Edible
17	<i>Marasmius plicatulus</i>	Marasmiaceae	Dead leaves	Not Edible
18	<i>Marasmius sullivantii</i>	Marasmiaceae	Dead Stick	Not Edible
19	<i>Flavodon flavus</i> (Klotzsch) Ryvarden	Meruliaceae	Wood	Not Edible
20	<i>Cyathus stercoreus</i> (Schwein) De Toni	Nidulariaceae	Cow dung	Not Edible
21	<i>Pleurotus</i> sp.	Pleurotaceae	Wood	Edible
22	<i>Lenzites steriodes</i> (Fr.) Ryvarden	Polyporaceae	Wood	Not Edible
23	<i>Psathyrella candolleana</i> (Fries) Mai	Psathyrellaceae	Soil	Not Edible
24	<i>Schizophyllum commune</i> Fr.	Schizophyllaceae	Wood	Not Edible

Saurashtra University, Rajkot.

RESULT AND DISCUSSION

Several Basidiomycetes fungi have been reported from different parts of Gujarat. There and many wood inhibiting fungi reported, edible mushrooms reported, lignicolous fungi reported by different authors from Gujarat (Arya et al .,2008; Vasava et al., 2017; Vasava et al .,2018; Kokni & Solanki,2019a & b; kokni & Solanki,2022a & b). This study mainly reveals

about 24 different Basidiomycetes fungi distribution from a study area called Miyawaki Plantation in Saurashtra University campus of Rajkot. These 24 different fungi belong to 13 different families having 17 genera from which 21 were identified up to species level and 3 fungi like *Leucoagaricus* Sp., *Pleurotus* Sp. *Leucocoprinus* Sp., were not been identified up to species level (Table 1 & Figure 1). Attachment of the fungi with the substratum is also mentioned in table 1. A small interview with care taker revealed that from these 24 different

PHOTOPLATES OF BASIDIOMYCETES FUNGI FROM MIYAWAKI PLANTATION	
	
<i>Cystoagaricus trisulphuratus</i> Berk.	<i>Leucoagaricusr hodocephallus</i>
	
<i>Leucoagaricus melanotrichus</i>	<i>Leucoagaricus</i> sp.
	
<i>Leucocoprinus cretaceous</i>	<i>Leucocoprinus</i> sp.



Chlorophyllum molybdites



Agaricus bitorquis



Agaricus xanthodermus



Panaeolus cyanescens



Ganoderma lucidum



Ganoderma aplanatum



Ganoderma lobatum



Geastrum saccatum



Hygrocybe conica



Termitomyces globulus



Marasmius licatulus



Marasmius sullivantii



Flavodon flavus



Cyathus stercoreus



Pleurotus sp.



Lenzites steriodes



Basidiomycetes fungi found distributed in the study area were taken as food which have been confirmed by author as edible mushroom by some research work done in Gujarat (kokni & Solanki,2022).

CONCLUSION

The present work has helps to know the basic of Basidiomycetes fungi (Mushrooms) and their role in nature. Different fungi were identified based on their morphological appearance and substratum. In the present study, 24 fungi belong to 13 different families with 17 genera were recorded. There are lot of fungi that needs to be explored hoping same to do in upcoming future.

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