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EDIBLE & POISONOUS FUNGI FROM THE FORESTS OF SARAWAK PART 1

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INTRODUCTION

Fungi, together with algae and bacteria, are often known as the "Lower Plants" because of their simple structural differentiations. Fungi belong to the order Eumycophyta of which about 150,000 species are already known. However, the number is still increasing each year as more new species are discovered (Zoberi, 1972).

Fungi grow abundantly in the tropics and provide an excellent opportunity for study. Unfortunately, since no comprehensive study has been made of the fungal flora in Malaysia, the total number of species as well as the distribution of many of the common species in the Malaysian forests are still not known.

In Sarawak, prior to World War II, only a small number of fungi were recorded. In 1959, Johnston carried out a, preliminary study of some of them. Turner contributed greatly to our plant pathology through his studies on fungal diseases of Sarawak.* About 237 named species in 165 genera of fungi were mentioned by him (1971). However, his investigations mainly concentrated on fungal pathogens associated with agricultural crops; only a few of the macrofungi (in Basidiomycetes) were collected. In 1974, Corner described 20 species of *Boletus* and *Phylloporus*.

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Jabatan Muzium Sarawak

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With the establishment of the Forest Pathology Unit in the Sarawak Forest Department in 1976, an extensive investigation programme was drawn up. One of the projects was the study of the morphology and taxonomy of the edible and poisonous macrofungi of Sarawak. In the past several years, 65 different species from the various forest types have been collected. To date, 41 species have been identified, and these are reported in the present paper.

Larger fungi are found throughout the year, but thrive better during the wet, rainy seasons. They may be seen in the field on a variety of substrata, e.g. dung heaps, leaf litter, grass lawns, decaying wood and other organic matter. Some species are extremely specific in their growth associations, being found only on dung or associated with roots of certain trees. Due to their dependance on organic materials for food, most of them may appear whenever such materials are available.

Like other plants, macrofungi require a certain amount of moisture and appropriate temperature for growth. Most species will grow between 5° and 35°C, but the optimum temperature lies in the range of 20–30°C. Light is

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* His studies were published in a series of paper between 1963 and 1969.

essential only for producing spores. As the fruiting conditions of the species vary, different species are found during different times of the year. In Sarawak the main growing season begins from late October or early November to February, with the peak period between December and February. Among some of the groups of macrofungi, cup-fungi (Pezizaceae) mainly fruit between March and April, whereas the cap-fungi (Diag. I) are most abundant after a heavy downpour but with continuing warm and humid conditions. Some of the common species are *Amanita, Boletus, Lactarius* and *Russula.* During the dry season, only the wood inhabiting species are found growing well, e.g. *Schizophyllum commune* Fr. and *Polyporus* spp.

In the tropics, since most fleshy fungi develop and decompose very quickly, it is rather difficult to collect fresh specimens before they decay. Several species of *Coprinus* (the inky-cap fungi) and *Dictyophora* (the stink-horn fungi) last only a few hours; whereas most species of Agaricales may live for a number of days or longer. Some dry specimens of *Marasmius* may still be revived to shed their spores after dipping their dry fruiting bodies in water.

In Sarawak, we find that the macrofungi can flourish very well in riverine, alluvial, lowland dipterocarp, and limestone forest; but less abundant in peat-swamp forest, and even less so in mangrove forest. In kerangas, due to the sandy soil and the forest being liable to drought, macrofungi are very few. At higher altitudes, from about 400 m to a height of 1000 m, hill dipterocarp forest occurs. Here larger fungi decrease in both species and number, becoming very rare in the mossy forest above 1000 m.

Diagnostic Characteristics

Only a few species of poisonous fungi are easily recognised as inedible by their disagreeable taste, smell, and a tough consistency. However, this is not always the case. Even the really edible, delicious and completely inoffensive species can become dangerous with deterioration. Moreover, some edible species may become poisonous when in an advanced stage of development. In addition, there is no botanical distinction between edible and poisonous species occurring in the same family or even in the same genus. Further, there is no chemical test available to determine whether they are edible or not. The only way of distinguishing them is to learn to recognize the different species much as one recognizes the higher plants.

Jabatan Muzium Sarawak

A. Edible Ascomycetes

The Ascomycetes are a very large group of fungi but only a few types are edible. Cup-fungi occur abundantly in the local forests, on soil, fallen sticks and rotten wood.

Order: Pezizales

Family: Sarcoscyphaceae

1. **Cookeina sulcipes** (Berk.) Kuntze (Plates XVIII a–b)

   Kulat mangkok (Iban)

   Fruit-body cup-shaped, delicate rose-pink to golden yellow in colour; approx. 2.5 to 3.5 cm diam., external surface covered with short, white hairs. Stem central, 0.4 to 4.6 cm