

## INTRODUCTION

Biological diversity is defined as the variety of life forms in a given region, the ecological roles they play and the genetic diversity. It is also called as Species richness. Western Ghats, is one of the eight hot spots of world, rich in biodiversity. Angiosperms, play significant role in the status of biodiversity. Plants are the hosts of fungi which grow directly or indirectly on them. Fungi are microscopic, filamentous organisms and lack the green pigment, chlorophylls in their cells. They are a major component of any ecosystem and in general, exhibit absorptive mode of nutrition. Fungi lead a saprophytic, parasitic or mutualistic type of living, in nature. They occur in all kinds of habitats and substrates and even outstrip bacteria in the variety of organic matter, on that they colonize. There are different groups of fungi viz. Fleshy fungi, Rusts, Smuts, Ascomycetes, Deuteromycetes, Myxomycetes, Aquatic fungi, Soil fungi, Coprophilus, Entomogenous, Predacious fungi etc. In present investigation, more attention is given towards the fungal biodiversity occurring on plants i.e. Follicolous fungi on dry, semidry, living leaves and petioles. The leaf system, of the plant is the chief centre of food synthesis and provides a large surface area which remains moist throughout the year and also provides a good substratum for the fungi to colonise on the leaves. In the present investigation, we observed various forms of fungal biodiversity. A major part of Western boundary of the district coincides with water-shed of the Sahyadris ranges. Satara district is placed at the cushions of the Sahyadri ranges including high altitude localities viz. Mahabaleshwar, Kas, and Koyananagar-back water areas, which flourish the vegetation. It provides the cool and moist conditions throughout the year. These favourable climatic conditions favour, the growth of fungi. The minute fungi were occurring in large extent are collected and studied here. Therefore, the present work has been concentrated on the floristic, taxonomic study of mycoflora of the leaves of the plants which will help to understand the ecological and taxonomical features of the fungi growing on the leaves as a substratum.

The term Phyllosphere is proposed by Last (1955), indicating the leaf surface and immediate adjacent areas. Foliiosphere is a similar term and the actual surface of the leaf, is known as Phylloplane. The leaf surface of the plant is colonized by variety of epiphytic micro-organisms. Leban (1965), classified these epiphytes into two

groups as Epiphyllae: which include macrorganisms as Lichens, Ferns, Liverworts, and Angiosperms and mostly as microbial epiphytes as Bacteria, Algae and Fungi. They are also called as Parasites. While those which grow and multiply on dead or decaying leaves or on dead part of the living leaves (saprophytic). Those which grow on insect honey-dew are called as Sooty moulds. Residents, which grow on leaf are parasitic ones, as they obtain their nourishment from the living plants. The distinction between parasite and epiphyte is very vague and the pathogen may have resident stage living as a epiphyte on the plant surface. The epiphytic fungi are either parasites, saprophytes or epiphytes and are generally favoured by the moist, cool and humid conditions. The mycoflora, vary at different age of leaf. Thus, the foliicolous fungi include mostly the fungi as Ascomycetes, Teliomycetes and Deuteromyceteous one.

Maharashtra is one of the major states of India. It extends from  $15^{\circ}41'$  N to  $22^{\circ}$  N latitude and  $72^{\circ}45'E$  to  $80^{\circ}45'E$  longitude. The state is divided into three parts viz. Western Maharashtra, Marathwada and Vidarbha. Western Maharashtra (Ghats) is also called as Sahyadri ranges. Western Ghats, is a hot spot of biodiversity designated by UNO. It includes Sahyadri ranges and the highest peak is Kalsubai. Satara is situated at  $16^{\circ}50'$  to  $18^{\circ}10'$  N latitude and  $73^{\circ}45'$  to  $75^{\circ}0'$  E longitude at 696 meters above mean sealevel and is situated westward of Sahyadri ranges. Satara district covers 10,0962 sq.km. area (Gazetteer of Satara district 1991). Due to peculiar geographical conditions, it enjoy all types of environmental conditions. The Koyana, Krishna, Venna, Savitri, Saraswati rivers originates in Mahabaleshwar and enrich the basin with evergreen vegetation. All these river streams provide, cool and moist atmosphere to the vegetation throughout year and flourish it well.

**Soil:** The soil vary from tract to tract. The soil in the Satara District belongs to three main classes viz. Reddish brown soil in the hills, Black and Light coloured soil in the plains, depending on the nature of underlying rocks. The red clayey soil in the Sahyadri hill ranges, is formed from the disintegration of laterite. The typical laterite soil found in Mahabaleshwar and on the higher ridges of Sahyadri. Black cotton soil is found in the Wai, Jaoli, Patan and Karad. Medium to deep black alluvial soil is found in the central part of Satara District.

**Rainfall:** The rainfall varies in different parts of district. The South-West monsoon, is the main source of rainfall, begins about the first week of June and lasts till the end of

Sept. About 85% of the rainfall occurs during these months only. The eastern belt depends chiefly on irregular storms between Mid-May to Mid-June and October and November from the North-East monsoon. Some North-East rains occasionally shower in December and in March or April. Close to Sahyadri and in the Central belts, the rainfall is heaviest and in the Eastern belt which is rather scanty form. The East wards regions like Phaltan, Khandala, Dahiwadi, Man receive below 75 mm rainfall per annum. While as compared to Karad, Wai, Satara region receives 75-1250 mm rainfall per annum. The Patan and Satara (Westward) region receives high rainfall upto 1250-2000 mm rainfall per annum. The Mahabaleshwar plateau receive above 2500 mm rainfall per annum.

**Temperature:** The temperature variation occurs from season to season and also day and night. In winter (cool weather) season, the days and nights are cool. The daily temperatures are  $15^{\circ}\text{C}$  to  $21^{\circ}\text{C}$  or sometime even less. But during the month of January, the temperature falls upto  $8^{\circ}\text{C}$ . In summer (hot weather) seasons, the maximum temperature are upto  $35^{\circ}\text{C}$ - $40^{\circ}\text{C}$  in the month of April. In Mahabaleshwar, during winter season, the temperatures fall upto  $5^{\circ}\text{C}$  and in summer the temperature almost remain normal as compared to other areas. The overall temperature is upto  $37^{\circ}\text{C}$ . The Mhaswad and Khatav areas are hot in summer season.

**Humidity:** Humidity varies considerably during the day and night. Presences of water vapour make air humid. Humidity refers to that state of atmosphere in which water vapour is present. During monsoon months, the air is highly humid but in the summer and the cold seasons, the air is dry, particularly in the afternoon. The humidity changes from 31% to 83% in the morning and 21% to 79% in the evening. The highest humidity recorded is 100% in July–August. (Gazetteer of Satara District 1991).

**Climate and vegetation:** There are various seasons in climate viz. Rainy seasons (mid June to September), Hot and Dry season (End of September to mid Nov.), Winter season (Nov. to Jan.), Hot and Dry wind blow from Feb. to March end i.e. Summer season (April to mid June). The vegetation mostly depends upon climatic factors viz. temperature, rainfall, humidity and soil. The factors, that distinguish the vegetation regions are as follows:

- 1) **Humid type:** It receives high to moderate rainfall.
  - i) Tropical evergreen forests.
  - ii) Tropical semievergreen forests.
  - iii) Subtropical evergreen forests.
  - iv) Tropical monsoon forests or Moist deciduous forests.
  - v) Mixed deciduous forests.
- 2) **Dry type:** Receiving less rainfall at eastern side of the district. It consists of-
  - i) Dry deciduous forests.
  - ii) Scrub jungles or Thorny forests.

The various types of forests provides, thick deciduous or evergreen vegetation. The leaves are wet and cool throughout year and they provide good substratum to grow and flourish various fungi. In the present study, only Ascomyceteous (Dothideales) and Deuteromyceteous {(Moniliales and Melanconiales) (von Arx and Muller 1975)} fungi were collected and studied along with the other group of fungi.

The dominant vegetation, from the Western Ghats in Satara is as follows-

*Acacia arabica* (Lamk) Wild., *Actinodaphne angustifolia* Nees., *Azadirachta indica* Juss., *Butea monosperma* (Lamk.), *Dalbergia paniculata* Roxb., *Ficus golmerata* Roxb., *Ficus bengalensis* L., *Glochidion hohenackeri* Bedd., *Heteropogon roxburghii* DC., *Mangifera indica* L., *Madhuca indica* Geml., *Memecylon umbellatum* Burm. f. var., *Olea dioica* Roxb., *Semecarpus anacardium* L.F., *Syzygium cumini* (L) Skeel., *Tectona grandis* L.F., *Terminalia paniculata* Roth., *Zizyphus jujube* (L.) Gaertn., *Anodendron paniculatum* (Roxb.) D.C., *Crotalaria retusa* L., *Cassia auriculata* L., *Carissa carandus* L., *Capparis zeylanica* L., *Gymnosporia montana* Benth., *Helicteres isora* L., *Lawsonia inermis* L., *Lantana camara* L., *Storbilanthes callosus* Nees., *Scutia congesta* Brongn., *Woodfordia floribunda* Salib., *Elaeagnus latifolia* L., *Jasminum auriculatum* Vahl., *Piper hookeri* Miq., *Rubia cordifolia* L., *Smilax zeylanica* L.; *Andropogon schoenanthus* L., *Andropogon pumilus* Roxb., *Aristida paniculata* Trin & Rupr., *Cyanodon dactylon* (L.) Pers., *Heteropogon triticens* (R.Br) Stapf ex cordib., *Heteropogon contortus* (L.) P. Beauv. Ex R.& S.

On these plants various fungi grow and flourish at various seasons. They and other plants provide substratum for biodiversity of fungi.