



**ORIGINAL RESEARCH PAPER**

**Botany**

**EFFECT OF ECOLOGICAL FACTORS ON THE GROWTH OF BLACK MILDEW FUNGI**

**KEY WORDS:** Black mildew, Bhimashankar Wildlife Sanctuary, climatic factors, fungi, Mahabaleshwar.

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**ABSTRACT**

An attempt has been made to compare climatic factors and topographical conditions, on the occurrence of black mildew fungi of Bhimashankar Wildlife Sanctuary and Reserved Forest Mahabaleshwar. It is revealed that, as compare to number of black mildew fungi from Bhimashankar appears to be 54 species (on 37 hosts) while that of from Mahabaleshwar is 102 species (on 89 angiospermic host species) that belonging to Meliaceae, Asterinaceae, Schiffnerulaceae, and Hyphomycetous group. It seems that, the climatic conditions of Bhimashankar Wildlife Sanctuary along with its topography influences the number of black mildew fungi in this region than Mahabaleshwar Reserve Forest.

**INTRODUCTION**

Bhimashankar Wildlife Sanctuary is located on the crest of Pune and Thane districts along the Northern Western Ghats in Maharashtra. It lies at 19°21'N to 19°11' North latitude and 73° 31'E to 73° 37' East longitude, at an elevation 1,208 meters above mean sea level and near about 238 kilometer away from Mahabaleshwar, located towards the north side. The sanctuary shows great variation in forest types because of its undulating physiographic features and the most of part is covered with montane broad leaved semi evergreen forests along with moist semi evergreen, moist deciduous forest and rocky slopes and plateaus covered with grass (Rahangdale & Rahangdale, 2017). Due to the variation in topography as well as forest types, there is no uniformity in the growth of black mildews. Total 54 species of black mildew fungi were investigated from sanctuary, though the vegetation is quite rich.

Mahabaleshwar is one of the most popular hill stations and famous tourist place located in Satara district of Maharashtra state (India). It is an ecosensitive zone, situated at 17°55'18" North latitude and 73°39'20" East longitude and at an elevation 1,353 meters above mean sea level, in the Sahyadri ranges of Western Ghats (Bhise, 2015). It is a vast plateau, spreads over about 150 square kilometers and provided with annual rainfall over 6100 mm, humidity 98% and temperature 20°-32° max. It is supposed to be a landscape forest bounded by valleys on all sides, clad in subtropical evergreen and semi evergreen forests. The unique climatic conditions of this region, favors the rich vegetation of vascular plants which are suitable for the growth of black mildew fungi, that resulted into report of 102 species of black mildews from this area (Bhise, 2015).

**MATERIALS AND METHODS**

The leaves and twigs of host plants, infected with black mildew fungi were collected and filed notes were prepared mentioning date of collection, nature of colonies and locality. The specimens were brought to the laboratory in separate sterilized polythene bags from study area in winter season (2017-2018). Host plants were identified by using Flora of Maharashtra (Singh & Karthikeyan, 2000; Singh *et al.*, 2001). The fungal species were identified and their distributional records were checked by using standard literature (Bhise, 2015; Bilgrami *et al.*, 1991; Farr, 2018; Hansford, 1961; Hosagoudar, 2008, 2012, 2013; Jamaluddin, 2004; Zeng *et al.*, 2017). For identification and taxonomical studies, micro and macro-morphological characters were studied. The natural structures of colonies were observed by using method described by Patil & Patil (2017). Morpho-taxonomical details were observed under compound light microscope and photomicrographs were taken under Leica DM 2000 fluorescence

microscope equipped with digital camera; illustrations were prepared with mirror type Camera Lucida.

**RESULT AND DISCUSSION**

It seems that, the comparative studies in ecological factors of both the regions might have played important role in growth of black mildew fungi (Table 1). The landscape forest of Mahabaleshwar is clad with semi evergreen and evergreen forests, which becomes a store house of black mildew fungi (Bhise, 2015). Whereas, most of the part of Bhimashankar Wildlife Sanctuary is covered with moist deciduous forest along with plateau vegetation; the climatic conditions like high temperature, low annual rainfall and low humidity might be the factors which are found to be not suitable for the growth black mildews. In future, more studies are needed to explain the effect of ecological aspects on the occurrence of black mildews.

**Table 1. Comparative account of Ecological factors between Bhimashankar Wildlife Sanctuary and Mahabaleshwar Reserved Forest.**

Sr. No.	Ecological factors	Bhimashankar Wildlife Sanctuary	Mahabaleshwar Reserved Forest
1	<b>Total area covered</b>	130.78 sq. km.	150 sq. km.
2	<b>Topography</b>		
	<b>Altitude</b>	340 m. on west side and 1,208 m. at Nagphani point	1,353 meters
	<b>Latitude</b>	19°21' N to 19°11' N	17°55'18" North
	<b>Longitude</b>	73°31' E to 73°37' E	73°39'20" East
3	<b>Climatic factors</b>		
	<b>Temperature</b>	28° to 40° C Max. & 19° to 26° C Min.	20° to 32° C Max. & 13° to 19° C Min.
	<b>Rainfall</b>	4000 mm to 6000 mm	Over 6100 mm
	<b>Humidity</b>	86 % in rainy season & 43% in winter	98% in rainy season & 53% in winter
4	<b>Soil Texture</b>	Lateritic, Murum type	Lateritic
5	<b>Major forest type</b>	Subtropical broad leaved hill forest	Subtropical Evergreen & Semi-evergreen
6	<b>No. of Black Mildews</b>	54 species on 37 hosts	102 species on 89 hosts

**CONCLUSION**

From above observations, it is concluded that, the more number of black mildew fungi are occur (102 species on 89 hosts), in Mahabaleshwar region due to the more favorable climatic conditions; while the occurrence and number of black mildew fungi from Bhimashankar region is found to be less (54 species on 37 hosts), because the climatic conditions are favorable but not remain sustain for longer period in the area of Wildlife Sanctuary.

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