



SCAN ME

*Research Paper*

**LOWER TEMPERATURE AND HIGHER HUMIDITY FAVOURS FUNGAL GROWTH IN RATNAGIRI DISTRICT OF MAHARASHTRA, INDIA**

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**Abstract**

Main aim of this survey was to trace out the genuine reason behind the fungal infestation in Ratnagiri District as well as to increase the awareness among the residents regarding fungal diseases. Therefore, survey was conducted by formulating some questionnaires to the respondents as well as online weather data of last 11years (2009-2019) of Ratnagiri district was retrieved from website and studied the two key environmental factors such as temperature and humidity. After analyzing weather data, it was revealed that nearby Arabian Sea, huge rainfall of monsoon and rich biodiversity plays key role to maintain lower temperature (25 – 30°C) and relative higher humidity (70-92%) in Ratnagiri District. In contrast, fungal growth was observed higher during rainy season as compared to winter and summer.

Key words: *Fungal pathogen, temperature, humidity, biodiversity, environment, Ratnagiri.*

**INTRODUCTION**

Ratnagiri District is a biodiversity rich site of konkan region situated near the Arabian Sea. Soil, water and air of Ratnagiri District have become highly contaminated with fungi and bacteria. Usually fungal growth is seen higher than the bacteria in Ratnagiri district. More focuses on available literature it's well known that fungi and bacteria are responsible for to cause many diseases to humans and animals as well as plants and plant products [11], [12]. Symptoms of fungal infections are easily noticeable on economically and medicinally important plants and plant products, food and food products, cloths, wooden and iron furniture, wall of houses and also noticed as allergens to the peoples of Ratnagiri District. Therefore, survey was done to highlight the genuine

reason behind the fungal infestation in Ratnagiri District as well as to increase the awareness among the residents about fungal diseases. In reduction of fungal growth from the Ratnagiri district this survey definitely helps.

## METHODS

Data was collected based on direct interaction with the local peoples, Doctors, Nursery maintainers, food and fruit sellers, Shopkeepers, Forest care takers and Researchers by making group discussions, corner meetings and semi-structured interviews. Last 11 years of online weather data of two environmental factors such as temperature and humidity was collected and analyzed by using [14] website. Graphs were constructed by using Microsoft Excel.

## RESULTS AND CONCLUSION

Total 157 respondents were tested to gather information about climatic conditions, fungal growth, fungal diseases and its control measures. Most of the respondents were men (88) as compared to women (69) respondents (**Table.no.1.**). According to respondents fungal symptoms on plant and plant products, humans including animals, fruit and food products, cloths and house furniture occurs throughout the year but it rises up during rainy season as compared to winter and summer [13], [6]. Main season of increase in the fungal growth during rainy is that upto two- three months (from June to September) sky remain cloudy so enough sunlight is not reaching on the earth surface. In addition, Nearby Arabian Sea and heavy rain of monsoon contribute a lot to keep lower temperature and high humidity in the air of Ratnagiri district favour the fungal growth. Analyzed online weather data of last 11 years strongly support that the lower temperature (range in between 24-30°C) and relative higher humidity (above 50 to upto 92%) was favorable for the fungal growth (Fig.No.1& Fig.No.2). Hence lower sunlight, temperature and higher humidity act as key factor behind the enhancement of fungal growth in Ratnagiri district [7], [3], [2]. Similarly, [1] and [2] reported that lower temperature and high humidity was the key factors responsible for to boost the fungal growth.

During survey, symptoms of fungal infections such as skin diseases, asthma, hair loss, heart and liver problem and toes infections was commonly viewed among the peoples of Ratnagiri district. Similarly, [8] was reported that fungus leads to

deterioration of liver or kidney functions if ingested by humans through food. [13] also reported that the most of the fungal species found associated with the deterioration of the various fruits, vegetables and allergenic to human also. Survey was done by Mohanan, 2005 in different forest ecosystems in the Western Ghats suggested that rich flora of plant pathogenic fungi harboring the plants and causing different diseases of various intensities.

### **CONTROL MEASURES**

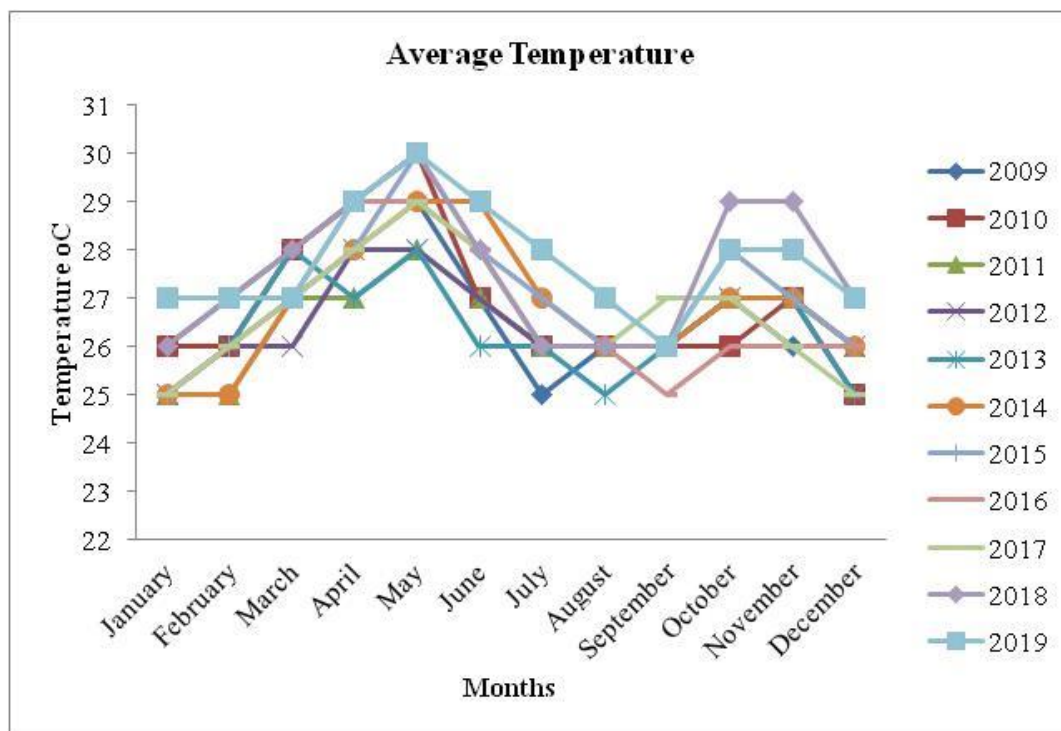
As like plants, food products, wood materials and human beings including animals are also sensitive to the air particles, which can be monitored through proper quantification and standardization protocol. For avoiding the fungal growth there is need to keep the vegetable and fruits selling site always clean and dry, always use the recommended fungicides only, arrange proper storage facility for vegetables and fruits, keep cloths clean and dry under using sunlight or artificial light, use the glassware material in kitchen for storage, keep proper ventilation, keep short nails, keep hair clean and dry, don't eat affected food and food products, Instead of leather shoes use sandals or plastic shoes, use antifungal stains for wooden and iron furniture [4], [5], [10], [15]. Recommended control measures taken from the available literature definitely help to the peoples of Ratnagiri district so they can protect themselves, animals, plant and plant products, fruit and fruit products, cloths and furniture from fungal infections. Organization of fungal awareness programmes such as poster presentation, seminars and group meetings are also helps to them to control the fungal infestation in an around area. Present article definitely helps to forester, various govt. and non-govt. offices, nursery coordinators, furniture makers, vegetable and fruit seller, bakery and dairy product maker and seller, cloth shopkeeper as well as local residents and tribal peoples to remain safe from fungal infection.

### **ACKNOWLEDGEMENT**

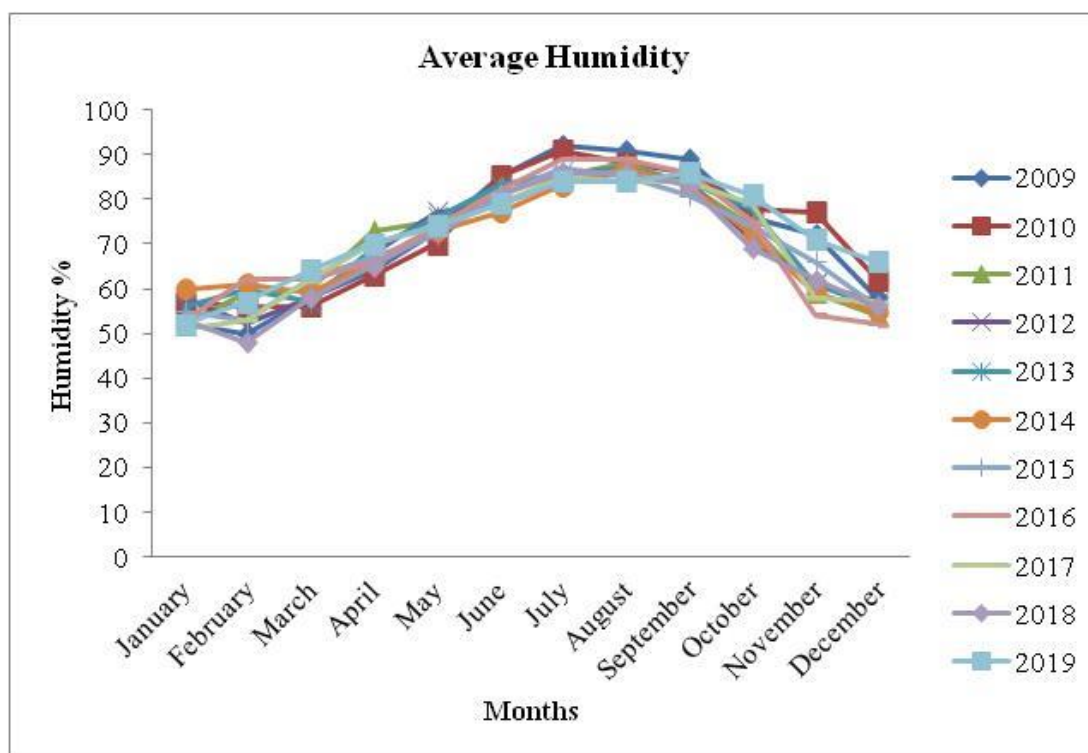
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**Table. No.1. Demographic structure of the respondents on the knowledge of fungal disease and its control measures.**

Parameter	Specification	N (%)
Sex	Male	88 (110)
	Female	69 (81)
Age	1-20	-
	21-40	92
	41-60	65
Respondents	Doctors	09 (10)
	Food & Fruit seller	80 (92)
	Nursery maintainers & Saw mills	40 (55)
	Shopkeepers	28 (37)
Nationality	Indian	157



**Fig.No.1. Average temperature in °C of the last 11 years in the Ratnagiri District.**



**Fig.No.2. Average humidity percentage of the last 11 years in the Ratnagiri District.**

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