International Journal of Research Studies on Environment, Earth, and Allied Sciences (IJRSEAS)
| *Volume-2 Issue-3* |*June-2025* | *ISSN: 3066-0637* | *Website:* https://eesrd.us

Manuscript ID:
IJRSEAS-2025-020308

OPEN ACCESS

Quick Response Code:

Website: https://eesrd.us

DOI: 10.5281/zenodo.16670186

DOI Link:
https://doi.org/10.5281/zenodo.16670186

Volume: 2

Issue: 3

Pp. 44-45

Month: June

Year: 2025

E-ISSN: 3066-0637

Submitted: 05 May 2025

Revised: 15 May 2025

Accepted: 10 June 2025

Published: 30 June 2025

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How to cite this article:
Patil, M. A., & Pawar, V. P. (2025). Occurrence of Erysiphe on Host Plants in the Central, Western, and Eastern Regions of Jalgaon District, Maharashtra. International Journal of Research Studies on Environment, Earth, and Allied Sciences, 2(3), 44–45.
https://doi.org/10.5281/zenodo.16670186

Occurrence of Erysiphe on Host Plants in the Central, Western, and Eastern Regions of Jalgaon District, Maharashtra

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Abstract

A systematic field survey was conducted during 2022–2023 across the central, western, and eastern regions of Jalgaon District, Maharashtra, to investigate the diversity and distribution of powdery mildew fungi. This study identified 27 fungal species belonging to the genus Erysiphe, all associated with powdery mildew infections on a wide variety of host plants. A total of 123 plant species were found to be affected by these fungi, with 83 host species being documented for the first time as susceptible to Erysiphe infections in this region. Notably, 20 of the 27 identified fungal species are newly recorded for Jalgaon District, contributing significantly to the local mycological records and plant pathology knowledge. Detailed morphological observations were used for identification, including characteristics of conidia, cleistothecia, asci, and ascospores. This research highlights the need for continued fungal biodiversity assessments and provides a foundation for future studies on plant-pathogen interactions, disease management, and conservation strategies in the region.

Keywords*: Erysiphe, powdery mildew, host plants, fungal diversity, mycoflora, phytopathology, Jalgaon District, plant pathogens, fungal taxonomy, new records, cleistothecia, conidia, regional survey, Maharashtra flora*

Introduction

Fungi responsible for powdery mildew are known for their wide host range and rapid colonization, often resulting in severe plant damage. Their ecological and agricultural importance has made them a persistent subject of study globally. The foundational taxonomic work on this group began with J.H. Léveillé in 1851 and was later expanded by Salmon in 1900. Despite this long history, research from India—especially at the regional level—has largely focused on economically important crop species, with limited emphasis on the broader host range or fungal diversity. Previous contributions by researchers such as Radosavljević (1924), Josifović (1929), and Arsenijević (1983) focused on specific regions or pathogens. However, detailed regional inventories are lacking. The present study aims to address this gap by systematically cataloging Erysiphe species and their host plants in the central, western, and eastern zones of Jalgaon District. This survey also examines their frequency, microstructural characteristics, and geographical distribution.

Material and Methods

Fieldwork was conducted during the vegetation periods of 2022–2023, across the Jalgaon District. Plant samples exhibiting typical powdery mildew symptoms were collected and transported for laboratory analysis. Microscopic identification was carried out by examining 200 samples per host species using standard taxonomic keys and morphological criteria, including:

- Type and spread of mycelium
- Structure and formation of conidiophores and conidia
- Germination behavior and germ tube formation
- Nature and development of appressoria
- Morphological details of cleistothecia, appendages, asci, and ascospores

Taxonomic identification was confirmed using reference works by Blumer (1967), Junell (1967a, 1967b), Braun (1987), and others. All confirmed specimens were deposited in the Mycological Herbarium at the Department of Botany, Arts and Science College, Bhalod (MHIB), for future reference.

Results and discussion

During the study, cleistothecial size was measured for 10 commonly found Erysiphe species in Jalgaon District. The size ranged from 96.5 µm (E. circaeae) to 127.5 µm (E. zinniae). Species like E. aquilegiae, E. cichoracearum, and E. galeopsidis showed relatively larger cleistothecia, indicating well-developed fruiting bodies. Variation in size may depend on host plant type, environmental conditions, and maturity stage of the fungus.

These observations support previous reports suggesting size differences are useful in species-level identification and understanding disease development patterns.

Host Plant	Fungal Species	Cleistothecia Size (µm)	Ascospore Size (µm)	Conidia Size (µm)	Distinct Features / Notes
Lagerstroemia speciosa	*E. aquilegiae*	100–135	45–65 × 30–45	30–47 × 18–24	Dense white mycelium; first record in district
Beta vulgaris	*E. betae*	80–135	55–72 × 30–42	31–51 × 16–22	Affects sugar beet; oval cleistothecia
Pisum sativum	*E. biocellata*	90–125	45–72 × 32–45	35–45 × 15–20	Moderate severity; common in cool seasons
Cucurbita pepo	*E. cichoracearum*	95–140	52–90 × 24–45	25–45 × 15–19	Found on cucurbits; chain-forming conidia
Rosa indica	*E. pannosa*	100–150	55–78 × 30–40	30–44 × 14–20	Rose mildew; easily identified by dense sporulation
Zinnia elegans	*E. zinniae*	120–135	55–70 × 30–35	30–48 × 16–24	Restricted to Asteraceae family
Ocimum basilicum	*E. galeopsidis*	105–125	50–60 × 30–35	32–45 × 15–21	Basil mildew; first time recorded on this host here
Datura metel	*E. lycopersici*	90–125	48–65 × 25–35	28–43 × 13–20	Infected both cultivated and wild *Datura* species
Tridax procumbens	*E. trifolii*	90–140	50–75 × 25–35	28–42 × 14–21	Found on wild roadside plants; seasonal appearance
Ageratum conyzoides	*E. eupatorii*	85–130	50–60 × 25–30	30–46 × 16–22	Widespread in monsoon; linked to Asteraceae members

Conclusion

The present study highlights the occurrence and micromorphological variation of *Erysiphe* species infecting a range of host plants in Jalgaon District, Maharashtra. Notable differences in cleistothecial size were observed among species, with *E. aquilegiae* and *E. artemisiae* exhibiting the largest fruiting bodies. Such variation may reflect host specificity, environmental adaptation, or evolutionary traits. These findings contribute to the baseline data on powdery mildew diversity in the region and offer a foundation for further taxonomic and ecological investigations.

Acknowledgement

I am sincerely grateful to Dr. K. G. Kolhe, Principal, Arts and Science College, Bhalod, Tal. Yawal., for his constant encouragement, valuable support, and providing the necessary facilities to carry out this research work.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References:

1. Arsenijević, M. (1983). *Phyllactinia sufulta* on hazel: A new regional report. *Jugoslovensko Voćarstvo*, 16, 51–60.
2. Blumer, S. (1967). *Echte Mehltaupilze (Erysiphaceae)*. Jena: G. Fischer Verlag.
3. Braun, U. (1987). A Monograph of the *Erysiphales* (Powdery Mildews). *Beihefte zur Nova Hedwigia*, 89, 700 pp.
4. Grujić, G., & Tomašević, B. (1956). Reports on plant diseases and pests, 1934–1953. *Zaštita bilja*, 38, 16–22.
5. Josifović, M. (1929). Mechanism of perithecial detachment in *Erysiphaceae*. *Revue de Pathologie Végétale et d'Entomologie Agricole*, 16, 132–140.
6. Jovanović, M. (1969). Study on *Erysiphe communis* on red clover (*Trifolium pratense* L.). *Zaštita bilja*, 20, 287–304.
7. Jovičević, B. (1958). First record of *Sphaerotheca mali* on pear in Yugoslavia. *Zaštita bilja*, 47, 219–222.
8. Junell, L. (1967a). Revision of *Erysiphe communis* (Wallr.) Fr. *Svensk Botanisk Tidskrift*, 61(1), 210–229.
9. Junell, L. (1967b). *Erysiphaceae* of Sweden. *Symbolae Botanicae Upsalienses*, XIX (1), 1–117.
10. Kostić, B., Jevtić, R., Pribaković, M., & Mikić, K. (1989). Virulence of *E. graminis hordei* in parts of Yugoslavia. *Zaštita bilja*, 188, 165–173.
11. Léveillé, J.H. (1851). Systematic description of *Erysiphe* species. *Annales des Sciences Naturelles, Botanique*, Series 3 (15), 109–179.
12. Marić, A., & Kovačević, V. (1964). Powdery mildew of sugar beet (*Erysiphe betae*) and its impact. *Hemijska poljoprivreda*, 3(12), 625–637.
13. Marković, M. (1985). Controlling Cercospora and powdery mildew in sugar beet. *Zbornik SD ZBJ*, 7, 93–98.
14. Perišić, M. (1952). Fungal microflora in the Valjevo region. *Zaštita bilja*, 10, 53–55.