

First Report of *Golovinomyces* sp. (*Euoidium* sp.) Causing Powdery Mildew on *Aster amellus* L. in India

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ABSTRACT

In November 2020, leaves of *Aster amellus* with typical symptoms of powdery mildew were collected in the Botanical Garden of Yashvantrao Chavan Institute of Science, Satara, Maharashtra, India. Based on its morphological characters, the pathogen was identified as *Golovinomyces* sp. (*Euoidium* sp.). This is the first report of powdery mildew on *A. amellus* in India.

Key words: *Aster amellus*, Asteraceae, *Euoidium* sp., *Golovinomyces* sp.

INTRODUCTION

Aster amellus is well known as the type species for the genus *Aster*, family Asteraceae and order Asterales (Pennisi, 2001). *Aster* is a morphologically heterogeneous and geographically widespread genus, comprising over 400 species. Many species and a variety of *Aster* are popular as garden plants because of their attractive and colorful flowers (**Figure 1a**).

In November 2020, the powdery mildew in its anamorph stage on *A. amellus* was firstly observed in Botanical Garden of Yashvantrao Chavan Institute of Science, Satara. (17° 42.940'N, 0.73° 48.786'E, Altitude 733 m.). The disease appeared as small irregular white powdery spots with very thin effused mycelium on adaxial surface of leaves (**Figure 1b**). Infected leaves at young stage shown deformities and irregular chlorotic patches. Premature leaf fall was also observed consequently. Ultimately the plants get defoliated. Inflorescence also gets damaged (**Figure 1c**) and hence reducing its ornamental value.

The disease specimen had been collected from many localities in Satara District and seems to be wide spread and common. Based on microscopic examinations, the asexual powdery mildew morph on *A. amellus* was identified as *Euoidium* sp.

MATERIALS AND METHODS

The fungal material was mounted in lactophenol, stained with cotton blue and microscopically examined. Microphotography was done with the help of DEC 2000 eyepiece camera capturing Image pro Ver. 6.0. A representative diseased specimen was deposited in the Ajrekar Mycological Herbarium at Agharkar Research Institute, Pune (M.S.) India. (Accession No. AMH -9644)

RESULTS

Golvinomyces sp. (*Euoidium* sp.) on *A. amellus* is morphologically characterized as follows:

Mycelium epiphyllous, amphigenous, caulicolous, much branched, septate, hyaline conidiophores straight and cylindrical. The appressoria on hyphae are nipple shaped (**Figure 1g**). The length of conidiophore is $48 \pm 5 \times 10 \pm 6 \mu\text{m}$, foot cell cylindrical and continuous with the mycelium, the basal cells in chain are cylindrical and the conidia at the top are ovoid, catenulent, lacking fibrosin bodies (**Figure 1d**). Conidia measure about $34 \pm 6 \times 15 \pm 3 \mu\text{m}$ (**Figure 1e**). Germ tube measures upto $60 \pm 10 \mu\text{m}$ (**Figure 1f**). Telomorph was not observed. The compilation of these features, confirms the identity of the present fungus as *Euoidium* sp.

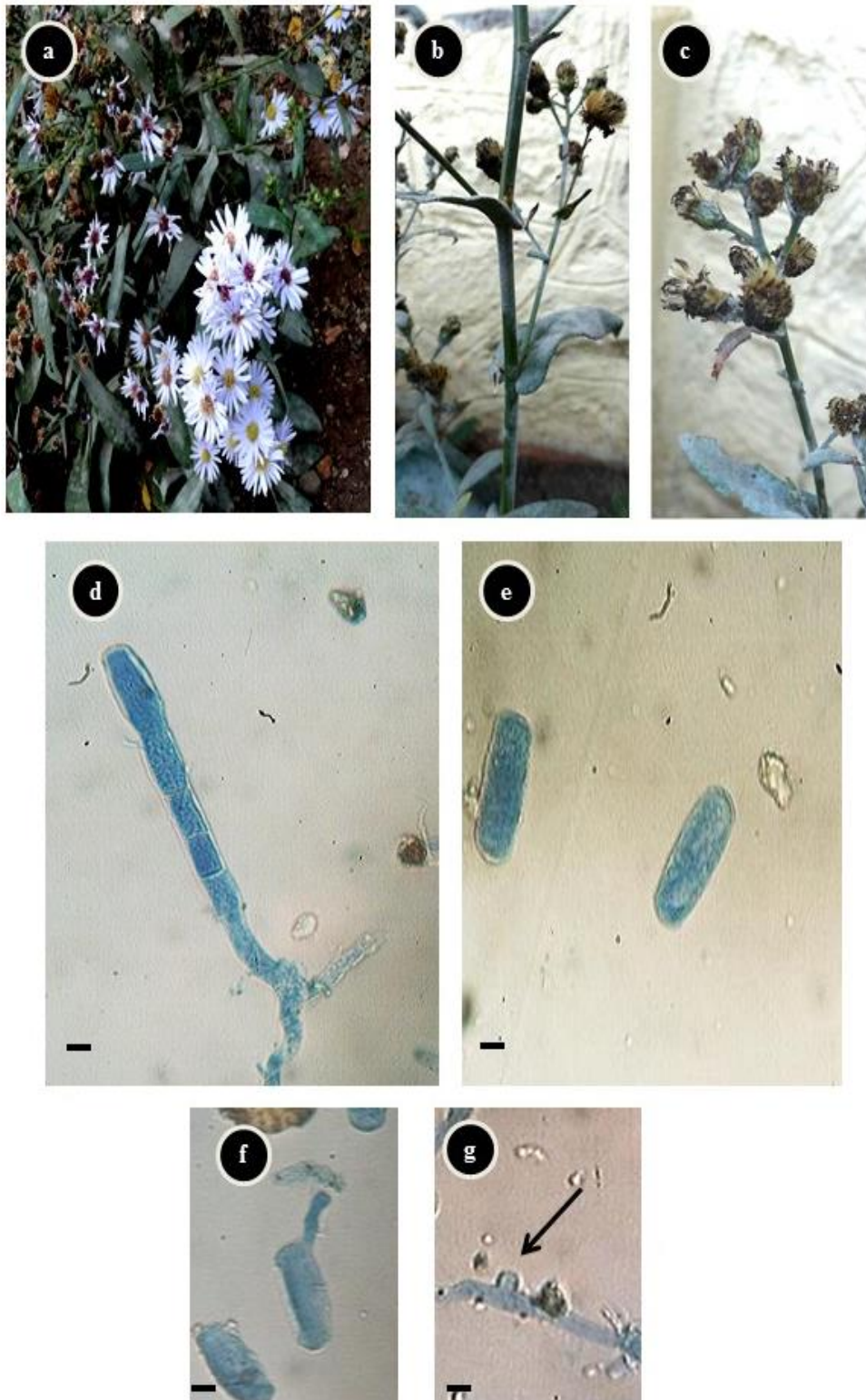


Figure 1: a, Infected host; b-c, Symptom on stem and inflorescence; d, Condiophore with chain of conidia 45x (Bar=20 μ); e, Conidia 45x (Bar =20 μ); f, Germinated Conidium; g, Arrow indicates nipple shaped hyphal appressorium (Bar, Wherever marked = 20 μ)

DISCUSSION

A literature survey suggests that *Oidium* sp., *Erysiphe cichoracearum*, *Golovinomyces cichoracearum* reported on *A. amellus* from different parts of the world (Amano, 1986; Braun, 1995; Bolay, 2005). However, from India there is no any report of powdery mildew on *A. amellus* (Bilgrami *et al.*, 1991; Jamaluddin *et al.*, 2004; Paul and Thakur, 2006; Pande, 2008; Hosagoudar and Agarwal, 2009; Braun and Cook, 2012). Therefore, this is the first report of *Euoidium* sp. on *A. amellus* from India.

Aster is one of the important floricultural crops also add the glory in home gardens due to its beautiful colored flowers. Powdery mildew are pleomorphic fungi with ability of infection to relevant taxonomic group of higher plants. Occurrence of powdery mildew on this in a wide area of Satara District was pointing towards alarming situation for the *Aster* cultivation. So, it definitely needs attention of plant pathologists to understand pathogenicity and severity of powdery mildew.

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REFERENCES

- Amano, K. 1986. Host range and geographical distribution of the powdery mildew fungi. Japan Scientific Society Press, Tokyo.
- Bilgrami, K.S., Jamaluddin, M.A., Rizwi, M.A. 1991. The Fungi of India (List and References). Today and Tomorrow's Printer and Publishers, New Delhi.
- Bolay, A. 2005. Powdery mildews of Switzerland (Erysiphaceae). *Cryptogamica Helvetica*, **20**:1-176.
- Braun, U. 1995. The Powdery mildews (Erysiphales) of Europe. Gustav Fischer Verlag.
- Braun, U, and Cook R.T.A. 2012 -Taxonomic manual of the Erysiphales (Powdery Mildews). Fungal Biodiversity Centre (CBS Biodiversity Series No. 11), Utrecht.
- Hosagoudar V.B, Agarwal, D.K. 2009. Powdery mildews of India: Check list. Associated Publishing Company, New Delhi.
- Jamaluddin, S., Goswami M.G., Ojha, B.M. 2004. Fungi of India (1989-2001), Scientific Publishers, Jodhpur.
- Pande A. 2008. Ascomycetes of Peninsular India. Scientific Publisher, Jodhpur.
- Paul, Y.S. and Thakur, V.K. 2006. Indian Erysiphaceae. Scientific Publishers, Jodhpur.
- Pennisi, E. 2001. Taxonomy-Linnaeus's last stand? *Science*, **291**(5512):2304-2307.