

# New Record of Fungi *Cerotelium malvicola* (Speg.) Dietel (Uredinales) Parasitic on *Hibiscus* Species from Nepal

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## Abstract

Recently a rust fungi (Uredinales) identified as *Cerotelium malvicola* (Speg.) Dietel parasitic on *Hibiscus* species is reported as new addition to fungi of Nepal

**Keywords:** *Cerotelium*, *Hibiscus*, Rust

## Introduction

Earlier studies of the rust fungi are based on the literature provided by Balfour-Browne (1955, 1968), Mishra (1963, 1965), Bhatt (1966), Khadka et al. (1967, 1968), Singh (1966, 1971), Singh & Nisha, (1976), Durrieu (1975a, 1975b, 1976, 1977a, 1977b, 1979a, 1979b, 1980, 1987), Manandhar et al. (1977), Lama (1976-77), Joshi (1977), Gjaerum & Steineger (1978), Adhikari (1996, 1998, 2021), Adhikari & Yami (1985), Adhikari et al. (1987-90), Cotter & Adhikari (1986), Ono et al. (1988, 1990, 1991), Ono et al. (1990) and Kaneko et al. (1993). The checklist to Uredinales from Nepal is provided by Ono et al. (1996). None of these publications have recorded the existence of the present rust fungi from Nepal.

In course of mycological collection, the horticultural plant *Hibiscus syriacus* (Rose of Sharon), parasitized by *Cerotelium malvicola* (Speg.) Dietel (Syn. *Kuehneola malvicola* Arthur) (often known as Hollyhoc rust or mallow rust) was found in the premises of Patan Industrial Estate, Lalitpur, Nepal. It is a popular ornamental plant cultivated everywhere in Nepal. The rust was found to attack severely causing yellow to yellow brown spots on the both surface of plant leaves. The pustules were more concentrated on the ventral surface, which coalesced as the disease increased. The disease was found infected on stems also. It is an autocyclic microcyclic rust.

## Materials and Methods

The specimen was brought to the laboratory. The photographs were taken. It was identified by

microscopic examination of the rust pustules and the spores present on the underside of *Hibiscus syriacus* leaf, which were orange-brown pustules typical of most rusts. The mature pustules eventually rupture, releasing spores. The areas on the upper leaf surface appear as slightly larger yellow-orange spots and do not develop pustules.

## Description of fungus

*Cerotelium malvicola* (Speg.) Dietel (as *malvicolum*) in Engler & Prantl. *Nat. Pflanzenfam.*, Edn. 2 (Leipzig) 6:57 (1928) [Syn. *Kuehneola malvicola* (Speg.) Arthur, *N. Amer. Fl.* (New York). 7(3):187 (1912); *Macabuna malvicola* (Speg.) Buritica, *Revta Acad. colomb. cienc. exact. fis. nat.* 19 (no 74):464 (1995).

[Basionym – *Uredo hibisci* Sydow, *Hedwigia Beibl.* 40:128(1901); *Uredo malvicola* Speg. *Ann. Soc. Cient. Argnt.* 17(3):124 (1884). (Figure A-C).

Aecia and pycnia not found. Uredinia hypophyllus, numerous, irregular, covered with peridial wall, pustules 2-5 mm in diameter, often coalesce to form long uredia, yellow to yellowish brown, orange brown, sub-epidermal, erumpent, irregular-shaped uredinia on lower leaf surfaces, sori scattered to covering the entire leaf with coalescing pustules. The pustules eventually rupture, releasing spores. The areas on the upper leaf surface appear as slightly larger yellow-orange spots and do not develop pustules. Premature defoliation is also seen. Urediniospores 24.5-31.5 x 17.5-24.5  $\mu\text{m}$ , light yellow to golden yellow, sub-globose to ovoid

or rarely pyriform, echinulate (coarsely), wall thickened, 1.5 µm, germ pores up to three. Pedicels very short often not attached, wall thick. Telia and teliospores not found.

Specimen examined - Parasitic on *Hibiscus syriacus* (Hybrid plant) cultivated as hedge in front of Nepal Bank Limited, Patan Industrial Estate, Lalitpur, Nepal. 2079.5.30 (2022.09.15) Adhikari, no. 207930. KATH

Distribution - America and Asia including Nepal.

### Comment

This *Hibiscus* rust *Cerotelium malvicola* (Speg.) Dietel (Syn. *Kuehneola malvicola* Arthur) is confirmed and reported by McRitchie (1996). According to DeWolf (1986) the members of the family Malvaceae are frequently attacked by the rust fungus *Cerotelium malvicola* (Speg.) Dietel. The studies confirmed *Cerotelium malvicola* (Speg.) Dietel (Syn. *Kuehneola malvicola* Arthur) is an autoecious (it may complete its life cycle on a single host species). This pathogen is easily dispersed by air currents. Most references simply list occurrences of *Puccinia malvacearum*, *P. heterogena*, *P. sherardiana* and *P. platyspora*, on Malvaceous plants, which are closely related and have been identified as separate species by molecular analysis (Demers et al., 2015) having an autoecious microcycle stage. These above four *Puccinia* species have teliospores. Adhikari (2021) also reported teliospores of *Puccinia malvacearum*, on cultivated *Malva sylvestris* L. leaves at Bhanimandal, Lalitpur, Nepal.

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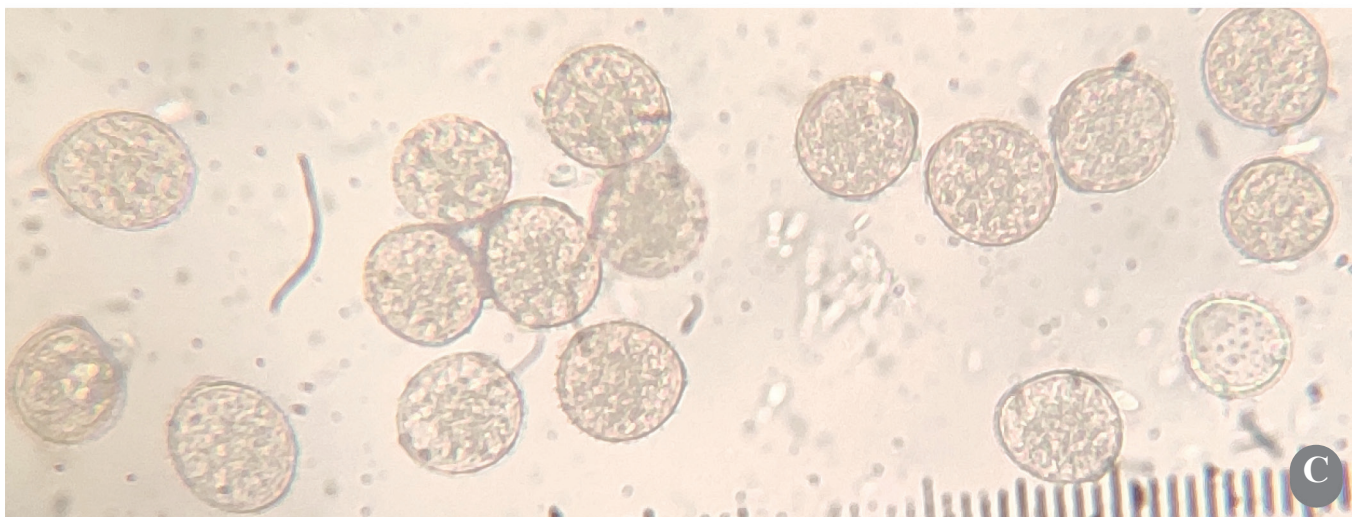
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**Figure:** A. Infected *Hibiscus* plant, B. Showing postules on lower surface of leaf (in cm), C. Urediniospores (1bar = 3.5  $\mu$ m)