

New Record of Two Parasitic Fungi on *Malva sylvestris* L. from Nepal

M. K. Adhikari*

GPO Box no. 21758, Kathmandu, Nepal

*Email: mahesh@mkadhikari.com.np

Abstract

Present paper deals with two species of parasitic fungi found parasitic on the leaves of *Malva sylvestris* L. collected at Bhanimandal, Lalitpur, Nepal. One is *Erysiphe malvae* Heluta (Ascomycota, Erysiphales: Erysiphaceae) and another is *Puccinia malvacearum* Bertero ex Mont. (Basidiomycota: Uredinales: Pucciniaceae). They are recoded as new to the Nepalese mycoflora. They are described and illustrated below.

Keywords: Malva, Mycoflora, Powdery mildew, Rust

Introduction

Malva sylvestris L., is an ornamental horticultural plant cultivated throughout the world including Nepal. It is not an indigenous species to Nepal. The seeds and or plant of this species are imported from India and abroad. This species is cultivated as an ornamental plant everywhere in Kathmandu valley. During investigation, this plant parasitized by two fungal species, was found cultivated in the promises of Bhanimandal, Lalitpur, Nepal. The examination revealed two fungal species, which were *Erysiphe malvae* Heluta and *Puccinia malvacearum* Bertero ex Mont. *Erysiphe malvae* Heluta produces white cottony growth on the upper side of the leaf, while *Puccinia malvacearum* Bertero ex Mont, produces dark brown circular pustules on the lower surface of the leaf. The spots of rust were also found infecting the stems.

The major literatures on the fungi of Nepal are Adhikari (2009) “*Researches on the Nepalese mycoflora: Revised account on the history of mycological explorations*”, Adhikari (2017) “*Researches on the Nepalese mycoflora: Erysiphales from Nepal.- 3*” and Ono et al., (1995) “*An annotated list of the rust fungi (Uredinales) of Nepal*”. Likewise other literatures concerning on the powdery mildews of Nepal are those of Adhikari (1997, 2018, 2020), Adhikari (2020) “*Researches on the Nepalese mycoflora – 4*”, “Shin et al.(2018) and U. Braun & R. T. A. Cook (2012). Rest of the references is cited in the text below. However, the

diversity of the fungi in Nepal is still little known. Numerous new records are still expected to prevail.

Materials and Methods

The present study was based on the host *Malva sylvestris* L. found at Bhanimandal (27°40" Latitude and 85°18" Longitude), Lalitpur, Nepal. Photographs were taken. The specimens were examined using a light microscope, and micrographs were taken with a camera. The microscopic description and distribution of the fungi in the globe are provided below. The specimens gathered are housed in National Herbarium & Plant Lab (KATH), Godawari.

Enumeration of species

1. Powdery mildew on *Malva sylvestris*

Erysiphe malvae Heluta, *Ukrayins'k. Bot. Zhurn.* 47(4): 75, 1990, Fig. 452

Mycelium on stems and leaves, effuse or in patches, white, *hyphae* 4-10 µm wide, hyaline; *hyphal appressoria* almost nipple-shaped; *conidiophores* erect, arising from top and mostly towards one end of mother cell, up to 190 µm long, *foot-cells* cylindrical, straight, 35-70 × 6-11 µm, followed by 1-3 cells, shorter or relatively long; *conidia* cylindrical, singly, ellipsoid-cylindrical, 30-40 × 12-18 µm. *Chasmothecia* immature, scattered, hemispherical, blackish, 100-140 µm diam.; *peridium cells* irregularly shaped, *appendages* numerous, mycelioid,

Host – on cultivated ornamental *Malva sylvestris* L. leaves, Bhanimandal, Lalitpur, Nepal. 2077. 2. 8, Adhikari, no. 2077.2.2 (KATH)

Here, new to Nepal has been claimed based on the publications of Shin et al. (2018); Pawsey (1989); Pandey & Adhikari (2005); Manandhar & Shah (1975); Lama (1976, 1977); Khadka & Shah (1967); Khadka et al., 1968); Bhatt (1966); Braun & Cook (2012); Adhikari et al. (1983, 1984, 1987-90, 1997, 2001, 2005, 2008, 2018); Adhikari & Durrieu (2016) and Adhikari (1990, 2012ab, 2014, 2018, 2020), where there is no record of this fungus.

Distribution - Iran, Israel, Europe (Ukraine). and Nepal

2. Rust on *Malva sylvestris*

Puccinia malvacearum Bert. ex Mont., *Historia Física Política Chile Botánica. Flora Chilena* 8: 43 (1852) [Synonym - *Leptopuccinia malvacearum* (Bert. ex Mont.) Rostr. (1902); *Micropuccinia malvacearum* (Bertero ex Mont.) Arthur & Jacks. (1921)]

The spots are yellow to yellow-orange on the upper leaf surface, while the lower surface has blister-like dark orange raised pustules. Leaves shrivel and defoliate prematurely. Teliosori blackish brown to chestnut brown. Teliospores, 80-112 x 40-65 µm, smooth, yellow to cinnamon-brown, mostly two-celled, occasionally 1-3 to 4 celled, oblong, both upper and lower cells are variable in shape and size, generally tapering toward both ends. teliospore wall is 1-3 µm thick, apex 5-7 µm slightly papillate type. Pedicel hyaline, thick walled, more than 80 µm long (some up to twice the length of the spore).

Host - It is an obligate, autoecious microcyclic rust, causing disease on many species of Malvaceae family. Rust on cultivated ornamental *Malva sylvestris* L. leaves, Bhanimandal, Lalitpur, Nepal 2077.2.8, Adhikari, no. 2077.2.1 (KATH)

Here, new to Nepal has been claimed based on the publications of Sivanesan (1970); Singh & Nisha (1976); Singh (1968); Parajuli et al. (1999, 2000); Ono et al., (1988, 1990ab, 1995); Manandhar (1977, 2007, 2009); Kaneko, Kakishima & Ono (1993); Durrieu (1975ab, 1976, 1977ab, 1979, 1980, 1987); Cotter et al., (1986, 1987); Classen et al. (2008); Balfour – Browne (1955, 1968); Arthur (1934); Adhikari et al. (1985, 1988, 2005, 2006, 2008, 2013) and Adhikari (1998, 2016, 2019), where there is no record of this fungus.

Distribution – Worldwide (where the plant is cultivated) and Nepal

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Rust

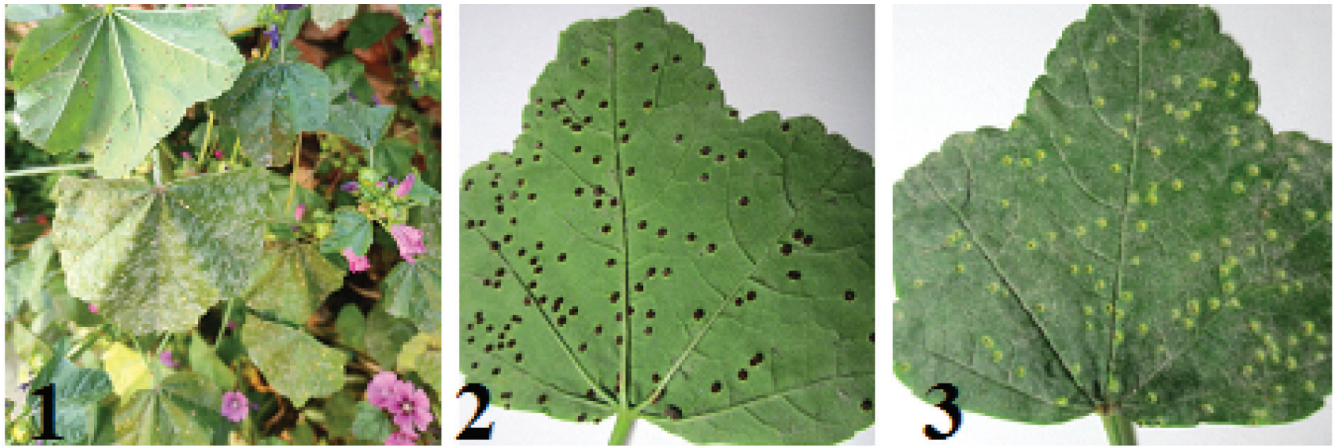


Figure 1: Host- *Malva sylvestris* **2:** Lower side of leaf with rust pustul **3:** Upper side of leaf with yellow spots

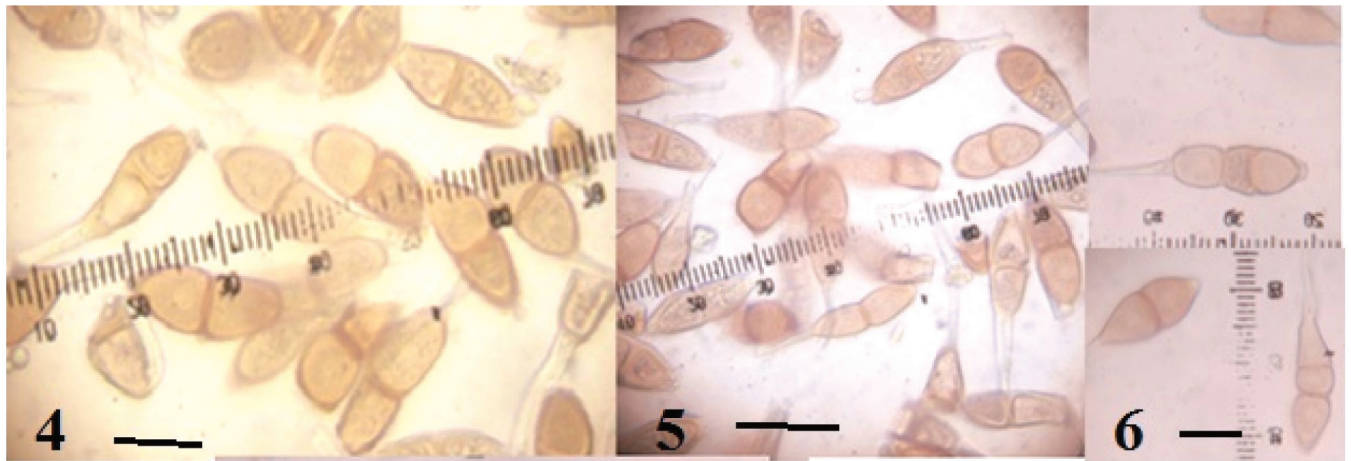


Figure 4-5: Bicelled teliospores (Bar =25 µm) **6:** Two celled (21 µm) and three celled teliospores

Powdery mildew



Figure 1: Host- *Malva sylvestris* **2:** Coonidiopore and spores (30 µm) **3:** Spores (23 µm) **4:** Chasmothecia