

***UROMYCES EUPHORBIAE* ON *EUPHORBIA HIRTA* L.
FROM GUERRERO AND MICHOACÁN (MEXICO): FIRST REPORT**

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Abstract

During August and November, 2013, leaves of *Euphorbia hirta* L. were found with a rust disease in Taxco and Morelia cities in Guerrero and Michoacán states, respectively. The pustules of rust were orange - yellow to dark brown in color and were observed on lower and upper side of leaves. Necrotic red-purple or dark brown spots were also observed upper surface of leaves with pustules on the lower surface. On the basis of morphological characteristics, the rust species was identified as *Uromyces euphorbiae*. This is the new record of *U. euphorbiae* on *E. hirta* in Guerrero and Michoacán states in Mexico.

Euphorbia hirta L. is a wild herbaceous plant and has been used as remedy for different diseases like asthma, bronchitis, intestinal problems, treatment of cancer and skin diseases in various states of Mexico (Martinez *et al.* 1995). A rust disease was observed on *E. hirta* leaves in Taxco (Guerrero state) and Morelia (Michoacán state) during August and November, 2013. Numerous rust pustules (uredinia) were observed on lower and upper sides of plant leaves. However, leaves with red-purple or dark brown necrotic spots with pustules on the lower surface were also observed. Density of uredinia was observed to be a few to many per leaf in same plant. Uredinia were hypophyllous, orange-yellow to dark brown sub-epidermal erumpent, powdery (Fig.1A). Diameter of uredinium was 0.5 - 2.5 mm with 0.2 - 0.3 mm in height, becoming a dark brown in color when mature. Urediniospores were pale brown to cinnamon-brown often with a large nucleus, pedicel of 6 - 18 μ m in length, spherical, ellipsoidal and pyriform, from 15 - 19 μ m \times 18 - 23 μ m with spinulate walls of 1.5 - 2.0 μ m (Fig.1B). Urediniospores had 3 - 4 germ pores, more or less equatorial, or a few more pores and seemingly scattered. Telia were present on both sides of leaves, powdery dark chocolate-brown, 0.4 - 1 mm in diameter, scattered, erumpent, ruptured epidermis inconspicuous and pulvinate. Teliospores were cinnamon-brown, moderately verrucose with short hyaline pedicel, broadly ellipsoid obovoid 15 - 18 \times 18 - 26 μ m with wall thickness of 1.0 - 1.5 μ m. A lighter colored, conical papilla was also observed in teliospores.

Scanning electron microscopy (SEM) revealed that the uredinia were characterized by a raised peridium (convex) which emerged from leaf epidermis. Matured uredinium showed a ruptured leaf epidermis and internal large number of urediniospores of globoid or ellipsoid in shapes with numerous conical ecinulations. Urediniospores are borne singly on a pedicel (Fig.1C).

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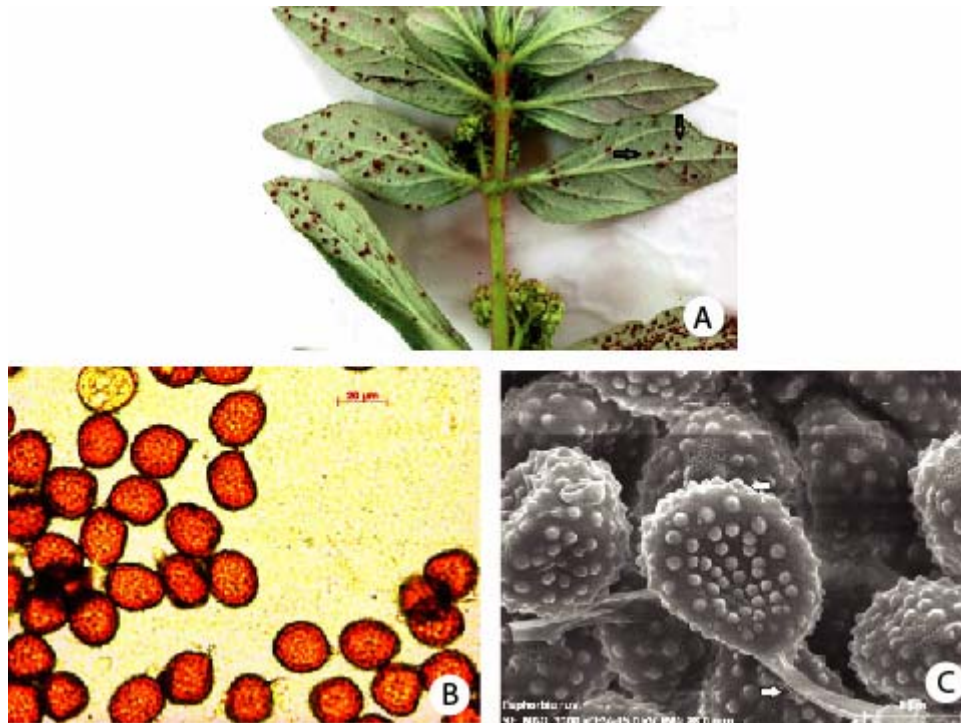


Fig. 1A-C. Rust of *Euphorbia hirta*. A. *Uromyces euphorbiae* infection on lower side of leaf surface of *Euphorbia hirta*. Arrow heads indicate uredinia with a raised peridium. B. Various shapes of spores (40X), C. SEM micrograph (3000X) shows uredinospores with echinulation and pedicel (arrow heads).

Based on morphological characteristics, the fungus was identified as *Uromyces euphorbiae* (Kaneko and Hiratsuka 1984, Monoson and Prose 1983). Previously, this rust was reported on *E. hirta* in Sinaloa state (north of Mexico), more than 34 years ago (León-Gallegos and Cummins 1981). This is the first record of *U. euphorbiae* on *E. hirta* in Guerrero and Michoacán states in Mexico.

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