

NEW RECORDS OF RUST FUNGI FROM PAKISTAN

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Various workers (Ahmad 1956, 1956; Khan and Kamal 1968, 1969; Mirza and Qureshi 1978; Zakaullah et al. 1987) have significantly contributed to the record of rust fungi from Pakistan. The present paper adds four more fungi to the list as occurring either for the first time or recorded on new hosts. The hosts include horticultural and medicinal plants. The descriptions of fungi are as follows:

1. *Tranzschelia pruni-spinosae* (Pers.) Diet., Ann. Myc. 20:31.1922. (Fig. 1-A, B)

Uredia hypophyllous, cinnamon-brown, pulverulent; Urediospores oblong-clavate or oblong-fusiform, $15-23 \times 28-42\mu$, with capitate paraphyses intermixed, wall brownish-yellow above, sharply echinulate below, $1-1.5\mu$ thick at sides, 5.9μ above, smooth above, sharply echinulate below, the pores 3-5, equatorial. Telia hypophyllous, dark chestnut-brown, somewhat pulverulent; teliospores oblong or obovate-oblong; $18-27 \times 30-39\mu$, the cells globoid or oblong-globoid and separable; wall chestnut-brown, often paler below, uniformly $1.5-2\mu$ thick, coarsely verrucose, pedicel colorless, readily detached from the spores.

On leaves of *Prunus armeniaca* L., Peshawar; Dec. 1987, FPH no. 2956 Jehandar Shah.

2. *Puccinia pruni-spinosae* Pers., Syn. Meth. Fung. 226.1801. (Fig. 1-C, D, E)

Uredia hypophyllous, scattered, naked, pulverulent, cinnamon. Urediospores ellipsoid to fusiform, smooth and thickened at the apex, echinulate in the lower half, pale-brown, $12-17 \times 25-35\mu$, germ pores 4, equatorial; paraphyses numerous, capitate. Telia hypophyllous; teliospores $28-45 \times 17-24\mu$, verrucose, brown, pedicel short, hyaline, deciduous, paraphyses numerous, brown.

On leaves of *Prunus bokhariensis* Royle ex C.K. Schn. Peshawar; 23-11-1987, FPH No. 2955 Zakaullah.

3. *Puccinia helianthi* Schw., Nat. Ges. Leipzig 1:73, 1822. (Fig. 1-F, G)

Uredia chiefly hypophyllous, dark cinnamon-brown; Urediospores globoid or obovoid, $19-26 \times 23-34\mu$, flattened laterally, wall dark cinnamon-brown, $1-2\mu$ thick, echinulate, the pores 2, equatorial. Telia chiefly hypophyllous, chocolate-brown; teliospores ellipsoid or oblong, $20-30 \times 36-58\mu$, obtuse or rounded above and below,



Fig. 1.

- A. Infected leaves of *Prunus armeniaca*.
- B. Urediospores of *Tranzschelia pruni-spinosae*.
- C. Infected leaves of *Prunus bokhariensis*.
- D. Urediospores of *Puccinia pruni-spinosae*.
- E. Teliospores of *P. pruni-spinosae*.
- F. Infected leaves of *Helianthus tuberosus*.
- G. Teliospores of *Puccinia helianthi*.
- H. Infected leaves of *Euphorbia prostata*.
- I. Urediospores of *Uromyces proeminens*.

slightly constricted at septum, wall chestnut-brown, 1.5—3 μ thick at sides, 7—12 μ above, smooth; pedicel colorless, twice to thrice length of spores.

On leaves of *Helianthus tuberosus* L. Peshawar; Dec. 1987, FPH no. 2957 Jehandar Shah.

4. *Uromyces proeminens* (DC) Lev. in Ann. Sci. Nat. Bot. Ser. III, 8: 371 & 375, 1847. (Fig. 1-H, I)

Uredia amphigenous, cinnamon-brown, Urediospores globoid, 15—20 \times 19—23 μ ; wall pale golden-brown, 1.5—2 μ thick, echinulate, the pores 3-6, nearly equatorial or scattered. Telia amphigenous, chocolate-brown, uniformly 1.5 μ thick, with a hyaline papilla over the pore, evenly verrucose or indistinctly striate; pedicel colorless, short, fragile.

On leaves of *Euphorbia prostata* Ait., Peshawar; Dec. 1987, FPH No. 2958 Jehandar Shah.

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