Applied Biological Research 16 (2): 264-265; (2014) **SHORT NOTE**
DOI: 10.5958/0974-4517.2014.00023.8

FIRST RECORD OF RUST CAUSED By *Tranzschelia discolor* (Fuckel) Tranz. & Litv. ON STONE FRUITS IN JAMMU & KASHMIR (INDIA)

Mushtaq A. Bhat, Nisar A. Khan and Nisar, A. Qazi

Division of Plant Pathology,
S.K. University of Agricultural Sciences and Technology of Kashmir,
Shalimar, Srinagar, Jammu & Kashmir, 190 025 (India)
*e-mail: *hejazee2011@gmail.com*

(Received 27 January, 2014; accepted 2 September, 2014)

Stone fruit crops, comprising of apricot, cherry, peach, plum and nectarines, are widely distributed throughout the temperate and sub-temperate regions of world. In India, they are grown in Himalayan mountainous region mainly in the states of Jammu & Kashmir, Himachal Pradesh and Utarakhand. In Jammu & Kashmir state the stone fruit crops are grown on 17,415 ha with annual production of 39,160 metric tonnes (Anonymous, 2012). In July-August 2013, during a routine disease survey of fruit orchards, the leaves of apricot, cherry, peach and plum were found affected by an unusual disease. The leaves of infected plants developed rusty brown pustules which manifested as small circular to angular pale yellow spots on both the leaf surfaces. The spots on lower leaf surface developed typical cinnamon rusty brown pustules (sori) of urediniospores. Black teliospores developed in late season among the cinnamon rusty brown urediniospores. The leaves bearing rust pustules turned yellow or red and resulted in severe leaf defoliation (Plate 1a-c). The twig infection although inconspicuous appeared as light water-soaked swellings bearing the urediniospores of fungus.

Microscopic examination of diseased leaves revealed the presence of both uredino- and telio-spores of rust fungus on the lower surface (Plate 2a-c). The urediniospores, borne on short stalks, intermixed by hyaline capitate paraphysis and light brown in colour, were obvate to clavate in shape and 11-25 x 20-40 µm in size. The teliospores borne singly on hyaline pedicles were bi-celled and dark chestnut brown in colour with verrucose or echinulate cell wall. The apical cell was globoid while the basal cell was oblong or ovate-oblong, tapered towards the base and measured 17-25 x 28-41 µm in size (Plate 2a-c). Significant verrucose cell wall marking was observed on both the teliospore cells which were inconspicuous or reduced in basal cell and prominent in apical cell. The characteristics of both uredino- and telio-spores were compared with the authentic description of Cummins and Hiratsuka (1959) and the fungus was identified as *Tranzschelia discolor* (Fuckel) Tranzschel and Litv. The host specimen bearing rust pustules were deposited in the Division of Plant Pathology, Indian Agriculture Research Institute, New Delhi (India) and identification confirmed vide accession No. HCIO/2013/4. The aecial stage of fungus was not observed on the leaves. *T. discolor* has been reported as causal pathogen for rust disease in stone fruit from many countries *viz.*, Australia, China, New Zealand, Japan, Europe and North and South America (Dunegan, 1938) including from Himachal Pradesh in India (Gupta and Sharma (1991). However, the pathogen is *hitherto* unreported from the Jammu & Kashmir state (Bilgrami *et al.*, 1981; Sarboy *et al.*, 1996; Jamaluddin *et al*., 2004; Butler, 2008), so this forms the first report of *Tranzschelia discolor* on stone fruit crops from the J&K state. Physiological specialization parasitism by the fungus has previously been demonstrated under greenhouse conditions in which various isolates of

Plate 1: Rust on leaves a) rust symptoms on peach & plum, b) uredinia on apricot leaf, c) black telia on plum leaf

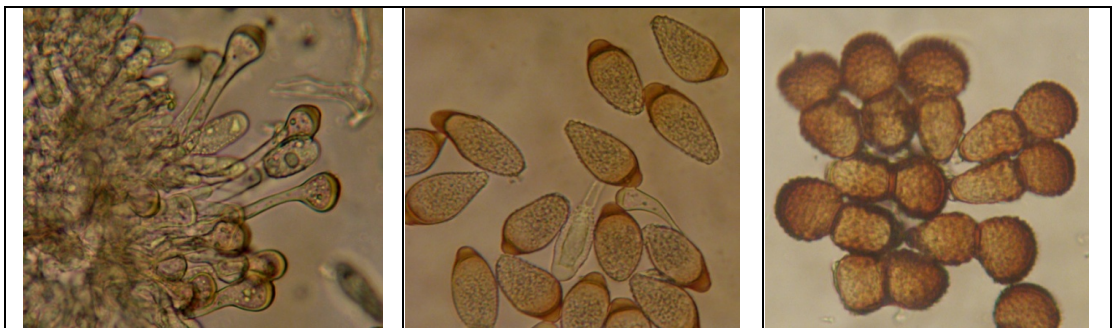

Plate 2: Uredia with capitate paraphysis (left), urediniospores (centre), teliospores [40X] (right)

T. discolor were named as *T. discolor* f. sp. *dulcis* for strains that attack almond, *T. discolor* f. sp. *persicae* for strains that attack peaches, and *T. discolor* f. sp. *domesticae* for strains that attack prunes (Bolkan *et al.*, 1985).

Anonymous, 2012. *Area, Production and Yield of Important Fruits of Jammu and Kashmir State.* Statistical section, Department of Horticulture, Government of Jammu and Kashmir, Srinagar, J&K, India. pp. 1-2.

Bilgrami, K.C., Jamaluddin and Rizvi, M.A. 1981. *The Fungi of India*. Today and Tomorrow's Printers & Publishers, New Delhi, India.

Bolkan, H.A., Michailides, T.J. and Kable, P.F. 1985. Physiological specialization parasitism in *Tranzschelia discolor*. *Plant Disease*, **69**: 485-486.

Cummins, G.B. and Hiratsuka, Y. 1983. *Illustrated Genera of Rust Fungi.* American Phytopathological Society, St. Paul, Minnesota, USA. 225 pp.

Dunegan, J.C. 1938. The rust of stone fruit. *Phytopathology*, **28**: 411-427.

Gupta V.K. and Sharma S.K. 1991. Rust of stone fruits. *Indian Journal of Mycology and Plant Pathology*, **21**: 211-218.

Jamaluddin, Goswami, M.G. and Ojha, B.M. 2004. *Fungi of India (1989-2001)*. Scientific Publishers, Jodhpur, Rajasthan, India.

Sarboy, A.K., Varslmey, J.L. and Agarwal, D.K. 1996. *Fungi of India* (1982-92). CBS Publishers and Distributors, New Delhi, India.