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FIRST REPORT OF *DILOPHOSPORA* LEAF SPOT (TWIST) DISEASE OF WHEAT IN PAKISTAN

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Abstract

Dilophospora alopecuri (Fr.) Fr. (syns *D. graminis* Desm., *Dilophia graminis* Fuckel) is reported for the first time from Gulmit Gojal, Hunza valley in Northern Areas of Pakistan. *D. alopecuri* was identified after visual and microscopic examination and characterized by the production of cylindrical to ellipsoid spores (8-15 x 1.5 µm) with distinctive claw-shaped appendages and *In vitro* pathogenicity.

Dilophospora alopecuri, seed borne pathogen causes leaf spot (twist) disease of wheat and other cereals. The disease was reported in United States, Canada and caused minor yield losses in parts of Europe (Wiese, 1998) and later from India it has also been found in Ladakh district of Jammu and Kashmir (Dar *et al*., 1995). The symptoms produce spots and leaf distortion. Initially it forms small, yellow, spindle-shaped flecks which increase and become tan brown with black, crusty centers (Fig. 1). These spots may occur on peduncles and heads (Wiese, 1998). The pathogen survives in mycelial form in host debris and as conidia on seeds. Conidia act as primary inoculum and dispersed by wind, splashing rain and nematode vector. When associated with seed gall nematode (*Anguina tritici*) it reaches the whorl and produces twisted symptoms (Fig 2) and without *A. tritici* the pathogen produces only leaf spots (Wiese, 1998). These symptoms have been found during a survey of foliar diseases of wheat in Gulmit Gojal, Hunza valley of Northern Area in July, 2005. The incidence of disease was very low (in traces). However, samples were brought to laboratory and observed under stereo microscope. The black ostiolated pycnidia were observed on leaf sheath with 250 µm in diameter. Pathogen was isolated by cutting small sections of diseased leaves and disinfected in 1% Sodium hypochlorite (NaOCl) for 1 minute, then rinsed in sterile distilled water and placed on potato dextrose agar medium (PDA). The inoculated Petri plates were incubated at 20 ± 2^0C under cool white 1200 lux fluorescent light. For identification pure culture was obtained on PDA by single spore culture. Slides in cotton blue stain were prepared and identified under light microscope. At 1000 x magnification hyaline, cylindrical to ellipsoid conidia having 0-3 septa with distinctive hyaline appendages at both ends were observed (Fig 2). Conidia measured 8-15 x 1.5 µm. Pathogenicity was performed *In vitro* by cotton swab test tube method using cv. Wafaq in growth room at 25^0C. At maturity of symptom (30 days), leaves were harvested and pathogen was re isolated from infected leaves. Pathogen was compared morphologically and microscopically with the mother culture to fulfill the Koch's postulates. Observations were consistent with others like Wiese (1998).

Fig. 1. Leaf spots with dark coloured pycnidia

Fig. 2. Twist symptoms on inter node

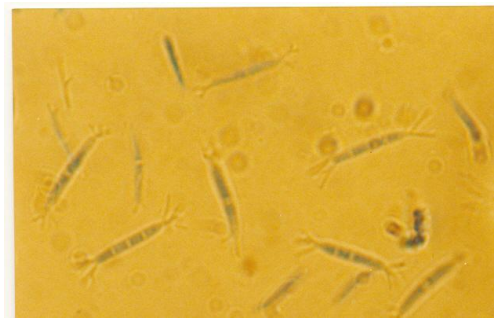

Fig. 3. Conidia with appendages at 1000x magnification

There does not appear to be any previous report of *D. alopecuri* on wheat in Pakistan Therefore this is the first report of *D. alopecuri* as a member of leaf spotting complex on wheat plant in wheat growing areas whereas *Bipolaris sorokiniana* and *Pyrenophora tritici repentis* has been reported (Bhatti *et al*., 1986; Hafiz, 1986; Ali *et. al.*, 2001; Iftikhar *et al.*, 2006).

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