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A NEW FOLIAR FUNGAL PATHOGEN, *ALTERNARIA ALTERNATA* ISOLATED FROM *CHENOPODIUM ALBUM* IN PAKISTAN

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Chenopodium album L. of the family Chenopodiaceae is an annual weed of cultivated fields, especially on rich soils and old manure heaps (Clapham, 1962; Grieve, 1984). It is often one of the first weeds to appear on newly cultivated soils (Stuart, 1979). The species was introduced from Europe (Densmore *et al*., 2001; Parker, 1990). It is considered to be a very serious weed in many parts of the world (Randall, 2003). In Pakistan, *C. album* is the most common and problematic weed in the wheat fields (Siddiqui & Bajwa, 2001). It significantly reduces yield of wheat by 23-65% (Siddiqui, 2005).

During surveys of wheat fields of Punjab, Pakistan leaf blight on *Chenopodium album* caused by *Alternaria alternata* (Fig. 1) showing, 10-60% mortality due to this disease in different wheat fields was observed. The disease starts to appear in the middle of February and remains throughout summer. Mortality rate is high in the rainy season. Symptoms of this disease starts with brown necrotic spots which develop concentric rings. These spots then coalesce to form large irregular blotches. Infected leaves wilt, die and drop off quickly.

Alternaria alternata isolated from diseased plants, grows rapidly and the colony size reaches a diameter of 3 to 6 cm following incubation at 25°C for 7 days on potato dextrose agar. The colony surface is grayish white at the beginning, which later darkens and becomes greenish black or olive brown with a light border. The backside of the leaf is typically brown to black. The fungus produces abundant branched septate, brownish mycelium, conidiophores simple, olive-brown, septate, variable in length with terminal conidia, which are solitary or in short chains. Conidia mostly obclavate to obpyriform with a short conical or cylindrical apical beak not exceeding one third of the conidial length, or beakless, smooth walled or verruculose, slightly constricted with 3-8 transverse septa, the lower part each portion has one or two longitudinal septa. The identification of the fungus on the basis of morphological characters was confirmed by the First Fungal Culture Bank of Pakistan.

For pathogenicity tests plastic pots of 7 cm diameter and 10 cm deep were filled with sandy loam soil collected from a cultivated field of Punjab University, Lahore. Plants of *C. album* at 10-12 leaf stage were transplanted from field into the pots. There were two plants per pot. Pots were prepared in triplicate. After transplantation, pots were kept in a wire netting house for 7 days for the establishment of plants and were irrigated with tap water when required. After the establishment of plants, leaves were sprayed with *A. alternata* spore suspension of 1×10^9 conidia per ml and incubated at 30 ± 1°C. Plants were covered with plastic bags to maintain 100% humidity for 24 hours then bags were removed and plants were kept under observation for 21 days. Control plants were sprayed with sterile water. The pathogenicity tests were repeated three times. The first lesion appeared after a period of 15 days. The pathogen was consistently re-isolated from the lesions.

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Fig. 1. *Chenopodium album* plant infected with blight caused by *Alternaria alternata*.

A survey of the literature reports the occurrence of fungal pathogens vz., *Cercospora dubia* (Riess.) Wint., *Dothiorella chenopodii* Ahmad., *Eutypella russodes* Berk. & Br. Berl., *Leptosphaeria gallicola* Sacc., *Metasphaeria ambigua* (Dur. & Mont.) Sacc., *Peronospora effusa* (Grev.) Rabenhorst., *Peronospora variabilis* (Gaeumann) Mitteil., *Phoma chenopodii* Ahmad.,and *Phoma herbarum* West. (Ahmad *et al*., 1997) on *C. album*. This is the first report of *A. alternata* on *C. album* in Pakistan.

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