Mycopath (2015) 13(1)**:** 67-69 **Brief Article**

First report of foliar blight of *Convolvulus arvensis* from Pakistan

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Abstract

A severe foliar blight disease was observed on wheat (*Triticum aestivum* L.) cultivars namely Morocco, Sehar-2006 and Inqilab-91 during March 2014 at Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, Pakistan. During the same season, disease symptoms similar to wheat were also observed on field bindweed (*Convolvulus arvensis* L.) under field conditions. Pathogen was isolated from infected leaves of both field bindweed and wheat. Morphological and pathogenecity tests were conducted which confirmed the presence of *Alternaria triticina* the cause of foliar blight of *C. arvensis*. To the best of our knowledge, this is the first report of *A. triticina* infecting *C. arvensis* in Pakistan.

Keywords: *Alternaria triticina,* blight, field bindweed, wheat.

Alternaria Blight of wheat inflicted by *A. triticina* is an important foliar disease of wheat but ignored due to dominancy of rust and spot blotch diseases. During March 2014, wheat was severally affected by Alternaria blight at field area of NIAB, Faisalabad, Pakistan with disease incidence up to 50%. Similar symptoms were also observed on *C. arvensis* which is a notorious herbaceous weed of many annual and perennial crops that trails over the ground and climbs the crops pulling them down and hinder harvesting (Weaver and Riley, 1982). Disease symptoms on *C. arvensis* were started as small necrotic lesions at margins and move toward mid vein. At later stage, often the circular spots coalesce to form large patches resulting in the leaf blight (Fig. 1A). Wheat plant surrounded by *C. arvensis* showing small necrotic spots on lower leaves which coalesce and cover more leaf areas. Lesions on leaves were irregular in shape and dark brown to gray. Initially, the disease appeared as small, oval lesions, which coalesce with disease progression, resulting in leaf death (Fig. 1B). Moreover, some leaves of wheat displayed large necrotic areas beside the spots which were suspected due to toxin produced by *A. triticina*.

Twenty infected leaf samples each of *C. arvensis* and wheat were collected and brought to disease diagnostic laboratory. A section of diseased infected leaves of *C. arvensis* and wheat were cut into 1-cm^2 using a flame-sterilized scalpel and were rinsed with distilled water. Infected leaf sections were surface sterilized by immersing in 1% solution of sodium hypochlorite for 2 min, rinsed with sterilized water, and were dried using sterile filter paper. Leaf sections were equidistantly placed in sterilized Petri plates containing moistened filter paper and were incubated at 25±2 ^{o}C. Grayish brown to black mycelial growth was observed on symptomatic leaf sections after 72 hours of incubation. Conidiophores were olive brown to olive in colour, thick, septate, unbranched, erect, broader towards the distal end, amphigenous, geniculate or straight, thick and arising singly or in small groups. Conidia were pale-brown to dark olive-buff, becoming darker with age, acrogenous, borne singly or in chains of 2-4, smooth, irregularly ovoid, both ends rounded, or ellipsoid, or conical-ellipsoid with 1–10 transverse and several longitudinal or oblique septa gradually tapering into a beak. The beak is usually shorter than or the same length as the body (Fig. 2). Based on foliar symptoms, mycelium and conidial morphology, the isolated fungus was identified as *Alternaria triticina* (Ellis, 1976; Simmons, 1994, 2007).

For pathogenicity test, *A. triticina* was grown on standard nutrient agar (SNA) (1.36 g K2HPO4, 1.06 g Na2CO3, 5 g MgSO4.7H2O, 5 g dextrose, 1 g asparagine and 20 g agar in 1 L distilled water) and potato dextrose agar medium (20 g potato starch, 20 g dextrose, 15 g agar, 10 mg of streptomycin sulphate per litre of medium) (Logrieco *et al.*, 1990) at 24±2 ^{o}C under 10/14 h fluorescent-light/darkness for 7 days. Extensive sporulation was observed on SNA medium which were harvested by flooding the Petri plates with sterile distilled water amended with 2 drops of Tween 20 per 100 ml and scraping the culture surface with glass slide. After filtering through 0.5-mm^2 pore strainer, the resulting spore suspension was adjusted to 2×10^5 conidia mL^{-1}

using a haemocytometer (Perello and Sisterna, 2006).

Detached leaf assay was used to fulfill Koch's postulates. Fully expanded healthy leaves of *C. arvensis and Triticum aestivum* (Varieties: Sehar-2006 and Morocco) were detached and placed in sterilized Petri dishes (140 mm dia.) containing moistened filter paper. Some leaves were placed with adaxial surface up and some with abaxial surface. Leaves of both *C. arvensis* and wheat were inoculated with a 50 µL drop of conidial suspension at the centre of leaf surface while leaves inoculated with sterile distilled water were used as control (Akhtar *et al.,* 2011). Inoculated leaves were incubated at 25±2 ^{o}C under 16 h photoperiod as described by Perello and Sisterna (2006). Disease symptoms appeared within 3 days on both inoculated leaves of *C. arvensis* and wheat while control leaves remain unaffected. *A. triticina* was re-isolated from developing symptoms, thereby completing the Koch's postulates and confirmation of the casual fungus. The whole experiment was repeated five times.

A. triticina causes significant yield losses in wheat in the Indian subcontinent, considered as quarantine pathogen in many countries (Perello and Sisterna, 2006). *A. triticina* as a pathogen of wheat was already reported from wheat from leaves, glumes and seed in Pakistan (Shakir *et al.*, 1997) while oat, barley and rye were its minor host. To the best of our knowledge this is the first report of *A. triticina* infecting *C. arvensis*in Pakistan.

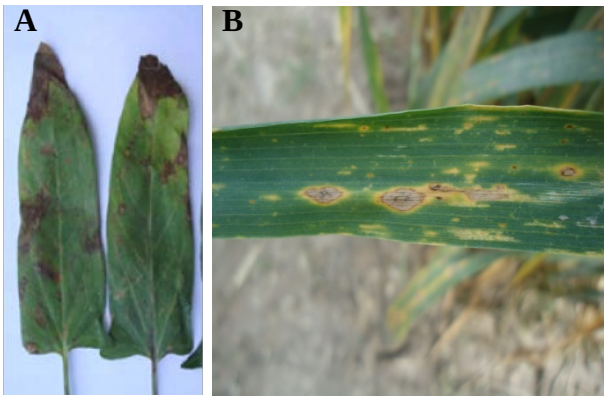

Fig. 1: Symptoms of Alternaria blight on *C. arvensis* (A) and wheat (B) leaves.

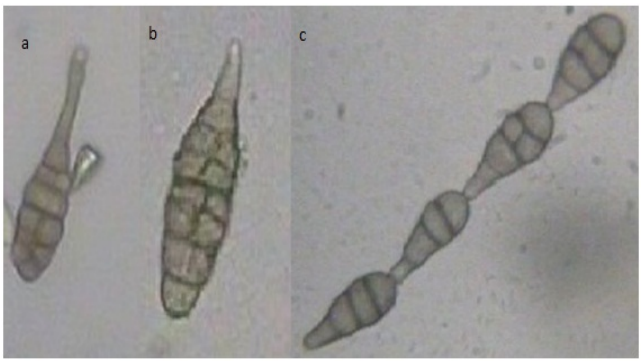

Fig. 2: Conidia of *Alternaria triticina*. **a** conidia with beak of same length as body. **b** ellipsoid conidia with shorter beak. **c** conidia in short chain.

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