EFFECTS OF FUSARIUM MYCOTOXINS FROM BIRJAND PLAIN ON WILD OAT

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ABSTRACT

Wild oat (Avena sp.) is a serious weed in cereals that is difficult to control due to long-term survival in the weed seed bank. Identifying pathogenic and deleterious microorganisms may lead to crop management strategies that promote weed seed decay and reduce seed longevity. Phytopathogenic Fusarium species can be used as weeds biocontrol agents. The aim of this study was to determine toxicity effects of Fusarium species metabolites from South Khorasan province on wild oat leaf tissues. Several isolates of Fusarium species were recovered from soil and cereal tissues during 2014-2016 from Birjand plain in the South Khorasan province. Fusarium mycotoxins were extracted from 21 days fungal culture in Czapek dox broth media using organic solvents. Extracted mycotoxins were dissolved in distilled water and injected into wild oat seedlings leaves. Inoculated plants were kept at approximately 25/20°C day/night under greenhouse condition. One week after inoculation, the leaves changes compared to the control. Mycotoxins of 15 Fusarium isolates from soil and cereals induced discoloration, chlorosis and necrosis in oat leaf tissues after seven days. Inoculated leaves with distilled water and several Fusarium isolates were healthy, without any chlorosis or necrosis. The results showed that some Fusarium species mycotoxins in Birjand plain can cause wild oat tissue death and may be used as this weed control agent.

Keywords: Fusarium, Mycotoxin, South Khorasan, Wild Oat,