DISTRIBUTION AND PARTIAL BIOLOGICAL CHARACTERIZATION OF WHEAT AND BARLEY STRAINS OF WHEAT DWARF VIRUS IN IRAN

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Abstract
Barley yellow dwarf viruses (BYDVs), Cereal yellow dwarf virus (CYDV) and Wheat dwarf virus (WDV) are the causes of dwarfing and yellowing in small grain cereal crops in Iran. WDV consists of at least two strains each adapted to wheat (WDV-W) or barley (WDV-B). In this research, the distribution and genetic variation of WDV-B and WDV-W isolates in Iran were investigated. Infected barley and wheat plants showing dwarfing and yellowing symptoms were collected from cereal fields of Chahar Mahal and Bakhtiari, Fars, and Yazd provinces during 2009-2010 and from other provinces in 2004-2005 growing seasons. These samples were subjected to DNA extraction, PCR, and sequencing, using specific WDV primers at species and strain levels. Results showed that WDV was detected in 155 of 270 samples. WDV-W and WDV-B accounted for 55% and 45% of WDV positive samples, respectively. While WDV-B was only isolated from naturally infected barley plants, isolates of WDV-W was isolated from both wheat and barley. The results of this study indicated that in addition to BYDVs, WDV is a major component of yellows complex in cereal fields in Iran. WDV was transmitted from wheat and barley infected plants to healthy plants using leafhoppers collected from cereal fields and reared on plants in the greenhouse. Morphological characteristics especially those of male genitalia indicated that Psammotettix alienus is the WDV vector in Iran.

Keywords: Barley, Geminivirus, Mastrevirus, Psammotettix alienus, Wheat, Wheat dwarf virus.

See Persian text for figures and tables (Pages 17-21).

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