

Pathogen Identification of *Fusarium* Spp. And Chemotypes Associated With Wheat Crown Rot in Hebei Province of China

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Abstract : *Fusarium* crown rot (FCR) diseased wheat seedlings were collected from different wheat-growing counties in seven different regions (Baoding, Cangzhou, Handan, Hengshui, Langfang, Shijiazhuang, and Xingtai) in Hebei province, China from 2019 to 2020. One-hundred twenty-two *Fusarium* isolates were isolated from crown rot diseased wheat seedlings and identified morphologically, confirmation was undertaken molecularly, and species-specific PCR was utilized to verify the morphological identification of *F. pseudograminearum*, *F. graminearum*, *F. asiaticum*, and *F. culmorum*. The predominant *Fusarium* species associated with wheat crown rot in the Hebei province were *F. pseudograminearum*, *F. graminearum*, *F. asiaticum*, and *F. culmorum* with isolation frequency of 85.25%, 12.30%, 1.64%, and 0.81%, respectively. All the *Fusarium* strains isolated from the different wheat-growing fields were qualitatively tested for toxigenic chemotypes using toxin-specific primers and chemotaxonomically classified into DON, 3-ADON, 15-ADON, and NIV. Among *F. pseudograminearum* identified, 84.62% were classified as DON chemotypes, 6.73% as 15-ADON chemotypes, 3.84% as 3-ADON chemotypes, and 4.81% of them had NIV as detected by the toxin-specific PCR results. Most of the *F. graminearum* isolates produced 15-ADON, and only two isolates had NIV chemotypes. *F. asiaticum* and *F. culmorum* produce chemotype of 15-ADON and 3-ADON, respectively. Pathogenicity test results showed that *F. pseudograminearum* and *F. graminearum* had strong pathogenicity, and *F. asiaticum* and *F. culmorum* had moderate pathogenicity to wheat in Hebei province.

Keywords : crown rot, pathogen, wheat, *Fusarium* species, mycotoxin

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