Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Fusarium armeniacum* Causing Fusarium Head Blight of Wheat in New York

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In July 2017, bleached spikelets and salmon-pink sporodochia, characteristic of Fusarium head blight (FHB), were observed on emmer wheat (*Triticum dicoccum* ‘Red Vernal’) at a noninoculated, nonmisted variety trial in Ulster County, New York. Wheat varieties were sown after incorporation (chisel plowing followed by repeated disking) of a green manure/cover crop of *Phacelia tanacetifolia* and crimson clover (*Trifolium incarnatum* L.). Disease incidence (0 to 20% symptomatic spikes per plot) and severity (0 to 10% infected spikelets per spike) were generally low. Symptomatic spikes were collected from the field, surface sterilized in 1.65% sodium hypochlorite for 2 min, rinsed with sterile distilled water for 1 min, and placed on antibiotic-amended potato dextrose agar (PDA) for 3 days at 22°C with a 12-h photoperiod. *Fusarium* spp. were subcultured based on colony morphology (Leslie and Summerell 2006), and isolates derived from single conidia ($n = 48$) were identified by DNA sequence homology (O’Donnell et al. 2015). One isolate, RED12NY17, was identified as *Fusarium armeniacum* (G.A. Forbes, Windels & L.W. Burgess) L.W. Burgess & Summerell 2000 based on 100% similarity of partial RNA polymerase II beta subunit (870-bp) and translation elongation factor 1- α (618-bp) sequences to known references in the *Fusarium* MLST Database (MH582136 and MH582287). Query sequences were deposited in NCBI GenBank (accession nos. MN538214 and MT294297). The

pathogenicity of *F. armeniacum* RED12NY17 was confirmed on common spring wheat (*T. aestivum* ‘Norm’) in a greenhouse assay. Wheat was grown to boot (Zadoks GS 43) and trimmed to five main tillers per pot. At anthesis (Zadoks GS 65), plants were subjected to one of three treatments: (i) sprayed with a fine mist of inoculum (10^4 conidia/ml of H₂O) until runoff occurred; (ii) inoculated at a central floret with a single 10- μ l drop of inoculum; or (iii) misted with sterile water. Each treatment was applied to three replicate pots of wheat, and spikes were kept under plastic bags for 48 h to increase humidity and promote infection. After 3 weeks, both spray and single floret inoculated plants exhibited symptoms of FHB, whereas mock-inoculated wheat appeared healthy. *F. armeniacum* colonies recovered from symptomatic plants and grown on PDA were morphologically identical to the inoculated isolate. This species can be distinguished from other *Fusarium* spp. commonly associated with FHB of wheat by a central mass of sporodochia that age from apricot to brown and by macroconidia with elongated apical cells and distinctly shaped basal cells. No *Fusarium* was isolated from mock-inoculated plants. To the authors’ knowledge, this is the first report of *F. armeniacum* inciting FHB of wheat. This pathogen has been reported previously as causing soybean seed and root rot in the United States (Ellis et al. 2012) and balloon flower stem and root rot in China (Wang et al. 2015). Though *F. armeniacum* is likely a minor pathogen of wheat, as a known producer of T2 and other mycotoxins (Munkvold 2017), its geographic range and occurrence should be monitored.

References:

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