

Fusarium Methodology Work in Corn

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Current State

- Only 4 of 11 Tymirium - *Fusarium graminearum*—inoculated field trials resulted in meaningful treatment differences (stand or vigor significantly less in inoculated check vs. non-inoculated check) in 2019.

Objective

- Evaluate methodology to separate seed treatments for efficacy on crown and stalk rot in field trials.



Fusarium graminearum inoculum growing on PDA

Pathogen

- Are we using high quality, aggressive inoculum?
 - All isolates were screened for pathogenicity, and not all suppliers provided pure, pathogenic inoculum in 2019.
- Is our inoculum delivery correct?
 - Inoculum is placed in-furrow in both pathogenicity testing and field trials.
- Should we use a mix of *Fusarium* species – *graminearum*, *oxysporum*, & *culmorum*?
 - This may ensure infection over a wider set of environmental conditions



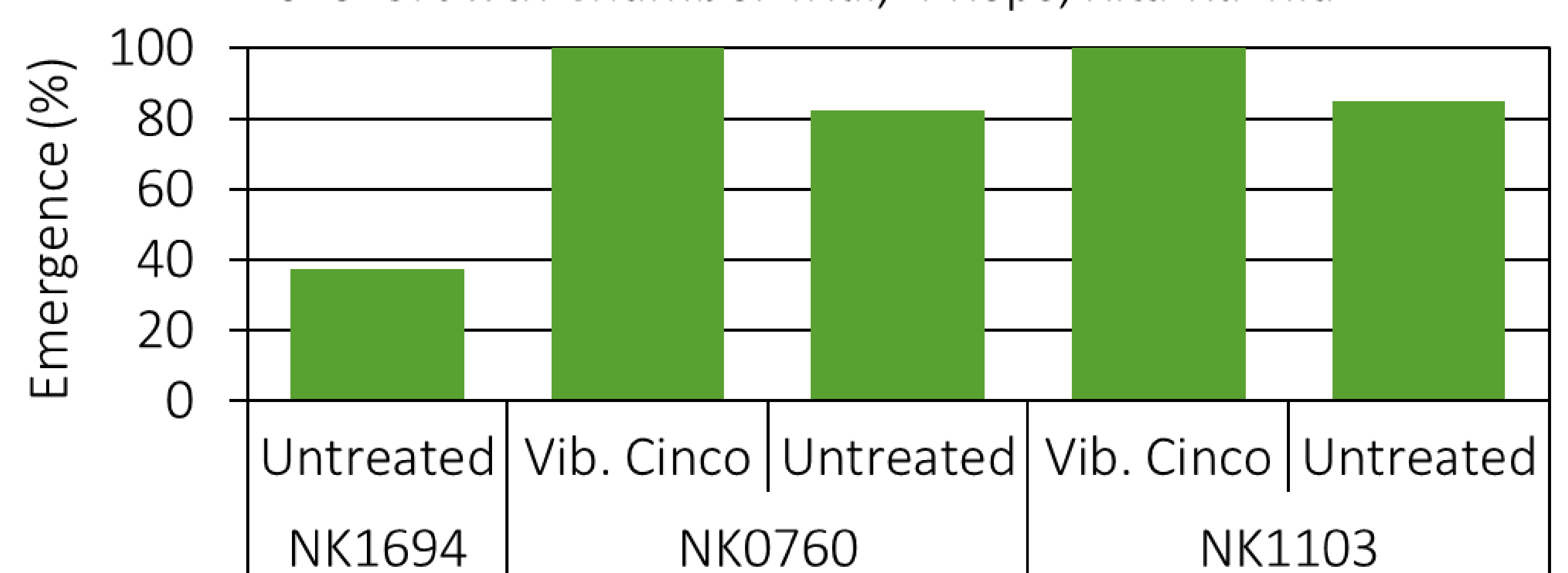
Below ground disease symptoms include discoloration of the mesocotyl, roots, and shoot. Once discoloration is this severe the plant will wilt and die leaving a gap in the stand

Factors Influencing Disease Development

Host

- Are we using a susceptible host?
 - With varying degrees of susceptibility within dent hybrids and inbreds and sweet corn hybrids, each are currently being screened for susceptibility in the GH.
- Are early- and late-season crown rot susceptibility correlated?
 - Early- and late-season hybrid dent corn susceptibility do not appear to be related (limited data).
- Does the base seed treatment (Vibrance Cinco) suppress the pathogen?
 - Fludioxonil and thiabendazole are efficacious against *F. graminearum*.

Effect of Hybrid and Seed Treatment on Emergence of Corn Inoculated with *Fusarium graminearum*
2019 Growth Chamber Trial, 4 Reps, Rita Kuznia



Environment

- What soil moisture favors pathogen infection?
 - A range of soil moistures are being evaluated for *F. graminearum* infection.
- What soil temperature is necessary for infection?
 - Infection of *F. graminearum*, *oxysporum*, and *culmorum* are being evaluated under different soil temperatures.
- What can be learned from previous Syngenta trials?
 - 895 total trials with Fusarium in Corn: 263 in North America and 205 in the US

Further Questions

- What's the best growth stage to assess for early-season crown rot in the field?
- Does early infection increase late-season crown and stalk rot incidence and severity?
- Does Tymirium have an impact on late-season crown and stalk rot?