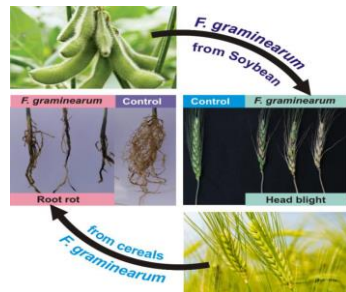


Introduction

Fusarium graminearum is a heterotrophic fungal pathogen that causes head blight and crown rot diseases in cereals including wheat. It also infects soybean plants and causes Fusarium Root Rot disease. The causal agent *F. graminearum*, maintains an elevated level of diversity and of pathogenic variability. In an earlier study, we showed such a high variability among isolates recovered from either wheat or soybean when inoculated on their original or alternative hosts. *F. graminearum* isolates from wheat, and soybean were aggressiveness on both wheat and soybean. This study was designed to determine whether infection of the original and alternative host plants influence the pathogenic and the saprophytic fitness of *Fg* on wheat and soybean plants.



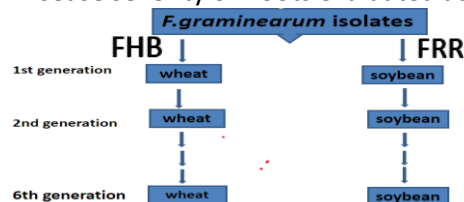
Materials and Methods

Fusarium head blight (FHB) infection:

- point-inoculum at anthesis stage 50% flowering spikes of wheat plants. Disease severity measured at 20 dpi.

Fusarium root rot infection:

- Fusarium root rot (FRR) infection. Conidia suspension was added the cornmeal-soil mixture and incubated then mixed with soil in pots for soybean seeds planting. Disease severity on roots evaluated at V3 stage.



Results and Discussion

- In FRR, four isolates originally from soybean, two were no change, one got less aggressive, and one got more aggressive (Fig-1), and four isolates from wheat three out of four isolates increase aggressiveness and one got less aggressiveness, with this time study, aggressiveness of *Fg* increases over generations, which might be a risk of causing significant soybean yield reduction in future.
- In FHB, four isolates from soybean, one was no change, two got less aggressive and only one got more aggressive, and four isolates from wheat, only one showing increase of aggressiveness and the other three no change (Fig-2), however it might be a single for an infection.
- The fungal growth study in vitro matches the results of aggressiveness *in vivo*. Thus, the isolates with faster growth rate in PDA plates correlated with more aggressiveness in the soybean root rot test (data is not included).

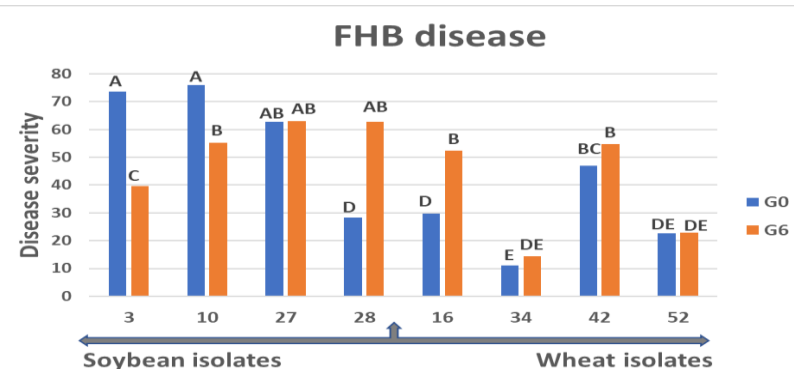


Figure-1- Aggressiveness of G0 and G6 isolates in FRR disease. (G0) original isolates from filed before serial passage, (G6) isolates after 6 generations in soybean, (FRR) fusarium

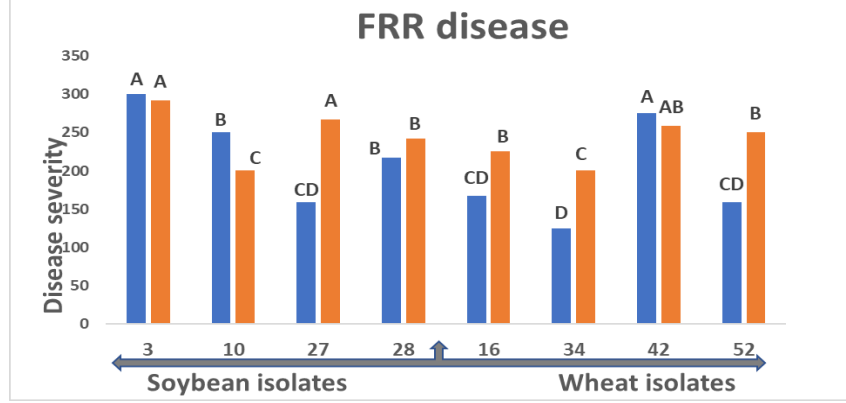


Figure-2- Aggressiveness of G0 and G6 isolates in FHB disease. (G0) original isolates from filed before serial passage, (G6) isolates after 6 generations in wheat

Conclusion

- After infecting wheat spikes multiple times, aggressiveness of *Fg* isolates causing soybean root rot was increased, thus this might become a risk in future for soybean growers .
- A correlating between pathogenic and saprophytic behavior of *Fg* isolates during its infection.
- Fg* is host non-specific and isolates do not retain the same pathogenic fitness level after infection and colonization of the alternative host

Acknowledgements

