

## **Pathogenic Variability of Eight *F. graminearum* Isolates after Serial Passages in Wheat and Soybean Plants**

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### Abstract

*Fusarium graminearum* the heterotrophic fungal pathogen that cause head blight and crown rot diseases in cereals including wheat also infect soybean plants and cause Fusarium Root Rot disease. The causal agent *F. graminearum*, maintains a high 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 (wheat and soybean). *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 aggressiveness of *F. graminearum* or to its saprophytic fitness (Growth rate). We selected eight single-spore *F. graminearum* isolates which are 4 isolates recovered from soybean and 4 recovered from wheat were selected from our collection based on their levels of aggressiveness on soybean and wheat. One moderate soybean (24-10RY) cultivar and one wheat (Prosper) cultivar were selected to be infected by soybean Root Rot and SRR and Fusarium head blight FHB diseases respectively. After six inoculation cycles, representative isolates of the final passage compared to their corresponding initial isolates in terms of their pathogenicity levels. The results showed that all isolates whether form soybean or wheat with the highest and lowest aggressiveness levels and showed a different change in their pathogenicity levels in terms of gain or loss aggressiveness. This study provides Manitoba growers with questions on crop rotations to achieve better disease management of soybean root rot.