

0203-KE-036 Can We Debilitate the Wheat Scab Fungus With a Virus?

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PROJECT ABSTRACT

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A given isolate of a plant pathogenic fungal species may be an exceptionally aggressive pathogen while another isolate may be much less aggressive, or even avirulent. Aggressive and avirulent isolates occupy the same ecological niche giving the avirulent, or hypovirulent, isolate the potential to successfully compete with the virulent isolate, thereby protecting host plants from disease. Hypovirulence can be a phenotype conferred by nuclear or mitochondrial genomes, or it can result from infection with a debilitating virus. Examples of pathogenic fungi in which dsRNAs (viruses) have been studied for hypovirulence are *Cryphonectria parasitica*, *Diaporthe ambigua*, *Chalara elegans*, *Mycosphaerella pinodes*, *Ophiostoma novo-ulmi*, *Sclerotinia homoeocarpa*, *S. minor*, and *S. sclerotiorum*. Among *Fusarium* species, dsRNAs have been identified in *F. solani*, *F. poae*, *F. oxysporum*, and *F. proliferatum*. We propose to continue to screen our collection of over 500 *F. graminearum* isolates collected from North and South America for the presence of potentially debilitating dsRNAs. All dsRNAs will be molecularly characterized, compared among isolates and to the dsRNAs of other plant pathogenic fungi, and their transmission patterns determined. In later experiments, isolates that contain dsRNAs will be tested for pathogenicity on wheat and those showing hypovirulence will be tested for their efficacy as biological control agents of *Fusarium* head blight of wheat.