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PROJECT 1 ABSTRACT

(1 Page Limit)

In wheat, *Gibberella zeae* (anamorph *Fusarium graminearum*) enters the host plant through natural openings and moves through the vascular system for long-range colonization of the plant. Because of its use of the vascular system, resistance responses from the plant that block the vascular passages can arrest migration of the pathogen quite effectively. Previously, the susceptible cultivar Norm was used to characterize the colonization and differentiation of the fungus as it colonized the plant from inoculated spikelet through the stem (Guenther and Trail, 2005). Twenty-five percent of the inoculated plants were arrested in colonization at the inoculated spikelet and the remainder of the head produced normal seed set. Histological examination of the resistant heads revealed vascular gels present in the xylem that effectively stopped further colonization. These have been reported previously and are thought to consist of pectic acid that has moved into the vascular tissue from the middle lamella. This Type II resistance response effectively blocked plant colonization beyond the initially infected spikelet. Here we propose to determine whether this response is inherited. The goals of this proposal are to better understand the development of vascular gels in the cv. Norm. Our specific objective is to determine the heritability of the vascular gel response in wheat cv. Norm or a variety which also shows this effect.

The findings of the proposed experiments will indicate whether the resistance response might be transferred to other cultivars through a breeding program.