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**Project ID:** 0506-NE-084

**FY04 ARS Agreement #:** 59-0790-3-083

**Research Area:** EDM

**Duration of Award:** 1 Year

**Project Title:** Quantification of Spores of *Fusarium graminearum* Using a Quick and Accurate ELISA Method.

PROJECT 2 ABSTRACT  
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Fusarium head blight (FHB) has reduced the quality of barley grown in the midwest for the last decade due to fungus infected kernels, pinched grain and the presence of the toxin, deoxynivalenol (DON). Individual cultural and chemical control measures have reduced disease, but have been unsuccessful in getting the level of control necessary for the requirements of the malting barley industry. Production of malting quality barley in this region will require an integrated approach to control which includes cultural practices, fungicides, and genetic resistance.

Currently the quantification and identification of *F. graminearum* involves spore trapping, isolation, subculturing and microscopic study of morphological characters such as spore shape and size and hyphae. Most stages in this slow process require technical experience to be efficient and successful.

The proposed project addresses needs for a quick, cheap and simple method of quantifying spores of *Fusarium graminearum*. The technique will utilize an efficient volumetric spore trapping device and an ELISA system using antibodies which are specific to *F. graminearum*. The technique will have wide application as it can be used in projects investigating the effectiveness of various management techniques in reducing inoculum load and thus disease, in epidemiology studies as well as in the development of predictive or fungicide application models.

The outcome of this project will be the development of a series of protocols that can be used for ELISA detection of spores of *F. graminearum*.