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Research Area: **EDM** **Duration of Award: 1 Year**

Project Title: Crop Residues and the Survival, Production and Control of Fusarium Inoculum.

PROJECT 2 ABSTRACT
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The proposal will examine the impact of crop residues on Fusarium head blight (FHB) and examine possible management options aimed at the control of *Fusarium*-infested residues. The project continues field studies designed to examine the use of spring post-planting burning to reduce infested residues. The impact of burning on the volume of residue, initial inoculum and FHB development may be useful in determining the benefit of any cultural practice aimed at reducing primary inoculum. The project also aims to examine the colonization of wheat plants by *Fusarium*, and study the spread of inoculum, thus improving our understanding of the biology and epidemiology of this pathogen. The proposal also seeks to examine the impact of host resistance on the colonization of crop residues resulting from wheat cultivars with differing levels of host genetic resistance to FHB.

Specific objectives are: 1) to study the effect of residue destruction on the survival of *F. graminearum*, 2) to study the patterns of *F. graminearum* spread of primary inoculum, and 3) to examine the relative ability of wheat cultivars with improved FHB resistance to harbor inoculum.

A field experiment is proposed to examine both burn severity (light; severe; and control), on the residues of six wheat cultivars (Alsen (R), BacUp (R); P2375 (MR), Ingot (MR); Norm (S), Wheaton (S)). In 2004 plots of the FHB susceptible wheat Oxen will be superimposed over the residues of the wheat/burning treatments established in 2003 and the plots examined for inoculum and disease development. Wheat varieties included in the Red River On-Farm Yield Trials, that are know to differ in their resistance to FHB, will also be assayed for infestation by *F. graminearum* in order to further help ascertain the impact of host resistance on the colonization of crop residues. Field experiments will be conducted to examine the field-scale movement of inoculum from *Fusarium*-infested residues. Suitable commercial fields of wheat and barley will be located in the Red River Valley in 2004. Sites will be established in 2004 generating wheat-on-wheat residue and barley-on-barley residue plots. An area in the center of each of these plots will be burned after planting using a propane-powered flamer. The movement of inoculum into the burned areas will be determined by sampling plants and soil collected from positions located up to 10 m from the border between the burned and control areas. The Fusaria recovered from the subcrown internodes, crowns, nodes, leaves, spikes and soil samples should help us determine the extent of inoculum movement between fields and thus the likely benefits of cultural control practices which might be implemented by growers on a field-by-field basis to control FHB.