PI: Marcia McMullen **PI's E-mail: mmcmulle@ndsuext.nodak.edu**

Project ID: 0405-MC-114 **FY03 ARS Agreement #: 59-0790-9-053**

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

Project Title: Refinement of Application Technologies that will Optimize Fungicide Efficacy Against FHB.

PROJECT 2 ABSTRACT
(1 Page Limit)

Improvements in application techniques for fungicidal control of FHB are necessary for consistent and positive response to fungicides. Information on nozzle angle, gallonage, pressure, and timing of application for anthesis infection has already been provided to producers and adopted by many for their conventional ground sprayers. Our goal is to further identify optimum application procedures that are easily and economically adapted and adopted by producers.

Experiments will be designed to evaluate further timings of application in relationship to inoculum events, environmental conditions, and use of split rates and timings, using one to several applications of fungicide and multiple infection events. Application timing studies in the greenhouse in the winters of 2001-2002 and 2002-2003 indicated that IF an infection event occurs primarily at the time of greatest vulnerability of the crop (anthesis in wheat and early head emergence in barley), the best control with fungicide is achieved with one application of the full label rate at the time of infection, as opposed to split applications at early heading or at watery ripe stage. However, if multiple infection events occur, from early heading to watery ripe stage, then split applications of reduced rates of the fungicide generally educed FHB field severity more than a single application of fungicide at anthesis (Jordahl et al. 2002; McMullen 2003). The DON levels were not measured in these tests, so specific impact of timing of infection events or application events on DON concentration, independent of FHB severity, were not determined. The intent of this study will be to answer the questions: will a late infection event result in high DON content, despite kernel yield and plumpness and will fungicides applied to prevent this late infection result in disease control and DON reduction?

Recent tests with adjuvants in the field and greenhouse have indicated that Placement plus Preference adjuvants are consistently resulting in lower FHB field severity values than other adjuvants tested, when mixed with Folicur or the experimental compound JAU6476. Placement is a deposition and retention agent that micro-encapsulates the fungicide prior to mixing with water and prevents drift enhances movement of the droplet to the target (Young, 2002). Preference is a non-petroleum based non-ionic surfactant, and its addition allows the product to stick to the plant surface once the droplet reaches the target. Additional data showing efficacy of adjuvants will help get these products to the market for producers and determine if they work as well or better with several of the new experimental fungicides, fungicides that may be registered in the future. Modest changes such as improved adjuvants can be a very cost effective tool for producers.