U.S. Wheat and Barley Scab Initiative
FY01 Final Performance Report (approx. May 01 – April 02)
July 15, 2002

Cover Page

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Grant Number:	**59-0790-9-072**
Grant Title:	**Fusarium Head Blight Research**
FY01 ARS Award Amount:	**$ 9,409**

Project

Program Area	Project Title	Requested Amount
Chem/Bio	Control Wheat Scab with Improved Fungicide Application Technology	$ 10,000
	Total Amount Requested	**$ 10,000**

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Principal Investigator Date

(Form – FPR01)

Project 1: Control Wheat Scab with Improved Fungicide Application Technology

1. What major problem or issue is being resolved and how are you resolving it?

Currently growers are using standard, row-crop, horizontal-boom spraying systems to apply fungicide to post-headed wheat for the control of FHB. Frequently the resultant FHB control is less that desired. Researchers believe that in addition to the efficacy of the fungicide, the deposition efficiency of the sprayer to the heads of wheat is a major limiting factor. This studies objective is to evaluate the potential of adapting low-volume, air-assisted, small-droplet, fruit spraying technology into a cost efficient fungicide application system for the control of FHB in wheat.

A prototype, horizontal air boom, truck-mounted, sprayer was use to spray Folicur fungicide on research plots during the 2001 wheat production season.

2. What were the most significant accomplishments?

A project evaluating an MSU prototype sprayer was held at the Michigan Bean and Beet Farm; Saginaw, MI. The MSU sprayer was a low-volume, air-assisted, small-droplet, tower sprayer that was "skid" mounted into the bed of a 4 x 4 pick-up truck. The spray plume moved horizontal to the ground and sprayed a 75 foot wide swath at 4 mph. Folicur was applied at GS 10.5 (June 8th) on the variety Harus using either a conventional boom sprayer using 25 gal of water/acre with flat fan nozzles straight down; or the MSU sprayer using 5 gal of water/acre. Four oz of Folicur + 0.125% Induce, was the only fungicide applied. Each plot was 75 x 525 feet, and the center 30 feet x 525 was harvested on July 16th. The treatments were:

1) Wheat was sprayed from two sides with the prototype to ensure complete coverage of the head with fungicide;
2) Wheat was sprayed on only one side with the prototype sprayer resulting in incomplete coverage;
3) Conventional flat fan sprayer with nozzles aimed downward;
4) Untreated controls.

There was only one replication per treatment. Twenty-five grain probes per treatment were collected directly from the combine at harvest. Each probe sample was analyzed was analyzed separately for DON (Hart, et al, 1998). Treatments were not evaluated for FHB incidence, severity or yield. DON levels in the different treatments were:

Treatment	DON (PPM)	Standard Deviation
1	0.3	0.10
2	0.9	0.21
3	0.9	1.17
4.	0.9	0.25

Although these results are preliminary and not replicated, they do suggest that thorough coverage of the wheat head is essential to reduce DON, and new technologies using very low spray volumes may compete very well with conventional sprayers.

Include below a list of the publications, presentations, peer-reviewed articles, and non-peer reviewed articles written about your work that resulted from all of the projects included in the grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

The preliminary results along with a "five minute" video that illustrated the application technologies used in the study was presented at the December 8-10, 2001: National Fusarium Head Blight Forum held at the Holiday Inn - Cincinnati Airport, Erlanger KY.