USDA-ARS / USWBSI
FY03 Final Performance Report (approx. May 03 – April 04)
July 15, 2004

Cover Page

PI:	**Gary Van Ee**
Institution:	**Michigan State University**
Address:	**Department of Agricultural Engineering** **226 Farrall Hall** **East Lansing, MI 48824**
E-mail:	**vanee@egr.msu.edu**
Phone:	**517-353-4508**
Fax:	**517-432-2892**
Year:	**FY2003 (approx. May 03 – April 04)**
FY03 ARS Agreement ID:	**59-0790-9-072**
FY03 ARS Agreement Title:	**Control Wheat Scab with Improved Fungicide Application Technology.**
FY03 ARS Award Amount:	**$ 9,756**

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Control Wheat Scab with Improved Fungicide Application Technology.	$ 9,756
	Total Amount Recommended	**$ 9,756**

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Principal Investigator Date

* BIO – Biotechnology
CBC – Chemical & Biological Control
EDM – Epidemiology & Disease Management
FSTU – Food Safety, Toxicology, & Utilization
GIE – Germplasm Introduction & Enhancement
VDUN – Variety Development & Uniform Nurseries

(Form – FPR03)

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?

Several ground sprayer systems are used by growers and commercial applicators for applying fungicide for control of FHB. The spray systems offer several differing technologies in the delivery mechanism for the fungicides. Three types of drop size determinants are available and three types of spray delivery mechanisms can be purchased for application. The different technologies offer alternatives for fungicide application and growers often ask about the potential of the technologies for fungicide efficacy and performance both before purchases and during fungicide application season. Little information is available on several of the technologies and growers need this information before they make their purchases of sprayers with these technologies. The growers also need information on how each of the technologies can most effectively be operated to maximize fungicide performance.

2. What were the most significant accomplishments?

The objectives of the study were to evaluate field scale spray systems with differing application technologies for enhanced control of FHB in HRSW. The study demonstrated that operation and adjustment of sprayers with differing solution delivery systems (electrostatic, air stream, and hydraulic) and differing spray atomization methods (hydraulic, wind sheer, and rotary) could affect fungicide performance through improved spike coverage. Disease levels were low and excellent yields were produced. One spray system, air sheer with air stream delivery, improved yield over the control at both configurations tested. A second system, rotary and hydraulic delivery, improved yield over the control by one of the configurations.

Spike coverage, measured by fluorescent dye deposition on the head, was greater on the front side of the spike with all spray systems. Some spray systems had three times greater coverage than other spray systems. Coverage between individual spray configurations were as much as four times greater indicating the critical importance of operation of the spray systems. A wide range of drop size measured as volume mean diameter (VMD) was produced by the spray systems ranging from 146 to 577 VMD on the front side of water sensitive paper. Area coverage on the front side paper ranged from 2.7 to 38.7 % indicated the importance of spray systems. Backside area coverage ranged from 0.4 to 18.2 %. A half rate of fungicide effectively controlled FHB at these low levels making differentiating between sprayers difficult.

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 you grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.

PUBLICATIONS:

Halley, S., Van Ee, G., Hofman, V., Panigrahi, S. and Gu, H. 2003. Ground Spray Systems and Spray Parameter Evaluation for Control of Fusarium Head Blight on a Field Scale Basis. 2003 National Fusarium Head Blight Forum Proceedings. p. 69-75.