

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

Cover Page

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Year:	FY2003 (approx. May 03 – April 04)
FY03 ARS Agreement ID:	59-0790-1-067
FY03 ARS Agreement Title:	Determination of Wetness Duration Using Radar-Derived Precipitation Estimates.
FY03 ARS Award Amount:	\$ 25,902

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
EDM	Determination of Wetness Duration Using Radar-Derived Precipitation Estimates: FY2003.	\$ 25,902
	Total Amount Recommended	\$ 25,902

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

Project 1: *Determination of Wetness Duration Using Radar-Derived Precipitation Estimates: FY2003.***1. What major problem or issue is being resolved and how are you resolving it?**

Fusarium head blight (FHB) of small grains tends to be associated with particular environmental conditions, especially rain-induced wetness periods occurring near anthesis. Attempts to monitor and predict the risk FHB over large areas have been limited by the measurement of precipitation, which is among the most spatially discontinuous of all environmental variables. In this study, 4 km resolution precipitation estimates from National Weather Service weather radar are employed in a Geographic Information System-based model simulation of wetness duration periods for small grains using a crop canopy energy balance approach. This method of estimating wetness duration over large areas should enhance the ability of researchers to correlate specific weather data with the occurrence of FHB epidemics in specific areas, and ultimately assist producers and processors of small grains in making decisions critical to the management and use of grain during epidemics.

2. What were the most significant accomplishments?

Work continued on two portions of the project began during 2002: Testing and validation of the raw radar precipitation estimates and the development of a GIS-based leaf wetness duration scheme. During late 2003 and early 2004, assessment of the accuracy of the precipitation estimates was carried out in Michigan for 2003 growing season (May-September) data. While processing and registration of estimated and observed precipitation data is complete, statistical analysis of the results is still in progress. Secondly, 6 miniature automated weather stations monitoring air and soil temperatures, precipitation, and leaf wetness were placed in commercial wheat fields from early May through early July 2003 just prior to harvest. Data from these stations will be utilized in subsequent validation of the leaf wetness simulation scheme.

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.

Presentations:

Andresen, J.A. and T.M. Aichele, 2003. Simulation of plant disease risk on a regional basis. Proc. American Society of Agronomy Annual Meeting, 5 Nov 2003, Denver, CO. Am. Soc. Ag., Madison, WI.

Andresen, J.A., T.M. Aichele, and A.Pollyea, 2003. Determination of wetness duration using radar-derived precipitation estimates. 2003 National Fusarium Head Blight Forum, 13-15 December 2003, Bloomington, MN. US Wheat and Barley Scab Initiative, Michigan State University, East Lansing, MI.

Publication:

Andresen, J.A. T.M. Aichele, and A. Pollyea, 2003. Determination of wetness duration using radar-derived precipitation estimates. Proceedings from 2003 National Fusarium Head Blight Forum, 13-15 December 2003, Bloomington, MN, p. 122. US Wheat and Barley Scab Initiative, Michigan State University, East Lansing, MI.