

**USDA-ARS / USWBSI
FY04 Final Performance Report
July 15, 2005**

Cover Page

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| Year: | FY2004 (approx. May 04 – April 05) |
| FY04 ARS Agreement ID: | 58-5430-4-374 |
| FY04 ARS Agreement Title: | Risk of Fusarium Head Blight Based on Larger Scale Patters of Land Management. |
| FY04 ARS Award Amount: | \$ 16,325 |

USWBSI Individual Project(s)

| USWBSI Research Area* | Project Title | ARS Adjusted Award Amount |
|------------------------------|---|----------------------------------|
| EDM | Risk of Fusarium Head Blight Based on Larger Scale Patterns of Land Management. | \$ 16,325 |
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| | Total ARS Award Amount | \$ 16,325 |

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: *Risk of Fusarium Head Blight Based on Larger Scale Patterns of Land Management.*

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

The risk of Fusarium head blight is in part a function of weather conditions and crop management decisions such as tillage, rotation schemes, and choice of cultivars. Rotation schemes and tillage practices are important not only in fields currently planted to wheat or barley, but also in nearby fields that may supply inoculum. Risk as a function of weather variables is currently being analyzed by the Disease Forecasting Group of the U. S. Wheat and Barley Scab Initiative. This estimate of risk could also be adjusted to account for the risk posed by varying inoculum levels as a result of rotation and tillage practices within a field and in neighboring fields. For example, risk levels are probably quite different in regions with different levels of corn production and may also be different within a region as a function of cropping practices in neighboring fields.

Our overall project goal is to develop estimates of the risk of Fusarium head blight based on larger scale land use, specifically based on the regional pattern of corn, wheat, and barley planting and their management, as a tool for growers' decision-making.

Our supporting objectives are to

1. Estimate the effect of regional land use on Fusarium head blight risk as a function of the size, proximity, crop or other plant species, and management of nearby fields.
2. Determine the experimental requirements to avoid confounding in studies of how the pattern of land use in fields adjacent to wheat or barley fields influences the risk imposed by climatic parameters and management practices within a wheat or barley field
3. Determine whether thresholds exist such that risk increases substantially in an area when corn and/or wheat or barley plantings exceed a threshold density

We will accomplish these objectives through the following approaches:

(a) modeling Fusarium head blight severity as a function of land management on a county-by-county basis using existing data, (b) statistical background work for planning future field surveys, and (c) landscape modeling to simulate outcomes from different management scenarios.

2. What were the most significant accomplishments?

This project has been delayed. Results of the project should be available within the next year.

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.

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