Cover Page

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USDA-ARS Agreement Title:	Enhanced Tools for the Deployment of Fusarium Head Blight Predication Models.
FY07 ARS Award Amount:	$ 27,847

USWBSI Individual Project(s)

USWBSI Research Area[*]	Project Title	ARS Adjusted Award Amount
EEDF	Enhanced Tools for the Deployment of Fusarium Head Blight Prediction Models.	$27,847
	Total Award Amount	**$ 27,847**

_____ *Paul G Kny* _____July 2, 2008_____

Principal Investigator   Date

[*] CBCC – Chemical, Biological & Cultural Control
EEDF – Etiology, Epidemiology & Disease Forecasting
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain
GET – Genetic Engineering & Transformation
HGR – Host Genetics Resources
HGG – Host Genetics & Genomics
IIR – Integrated/Interdisciplinary Research
PGG – Pathogen Genetics & Genomics
VDUN – Variety Development & Uniform Nurseries

Project 1: *Enhanced Tools for the Deployment of Fusarium Head Blight Prediction Models.*

1. **What major problem or issue is being resolved and how are you resolving it?**
    The issue of properly assessing the risk of FHB on a very small spatial scale by using both finer scale atmospheric data (called RTMA) and atmospheric prediction models is the primary issue. In addition, since the finer scale atmospheric data, RTMA, is interpolated/downscaled, it inherently has biases related to both the initial data and the downscaling process. Therefore, we have acquired a separate data stream from the agricultural networks (agnets) in the Plains and Great Lakes region to test two issues. The first is to compare the FHB risk tools for the agnets with the fine scale atmospheric data, RTMA, on the same interface. The second is to use historical data (2007 agnet data – available for North Dakota and Michigan) to determine a bias correction factor based on differences between agnet and RTMA from last season. These bias corrected FHB predictions are available in real-time on the web interface so that the wheat growers community can determine whether the risk is the same, greater than or less than the RTMA based on the bias correction. This employs state of the art prediction techniques.

2. **List the most important accomplishment and its impact (how is it being used?). Complete all three sections (repeat sections for each major accomplishment):**

    <u>**Accomplishment:**</u>
    A very sophisticated interface which brings together more than 4 large data streams in real-time then presents the user with the tools needed to make decisions concerning the health of their wheat/barley crops. In addition to several plant pathology models (winter vs spring wheat and four variations of spring wheat), there are risk assessments based on just past data or adding up to 2 and half days of predicted atmospheric conditions for planning purposes.
    <u>**Impact:**</u>
    The addition of a bias correction forecast in Michigan and North Dakota this season is expected to reduce the occurrence of false positive predictions of the disease. This prototype can then be applied to the other states with agnets (whose data we are acquiring daily to determine model biases in their region).

    <u>**As a result of that accomplishment, what does your particular clientele, the scientific community, and agriculture as a whole have now that they didn't have before?:**</u>
    The clientele currently have the smallest scale of hourly data (5km)as input to the best plant pathology models using a highly sophisticated technique of prediction (bias correction) in atmospheric science.

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.

No publications to date.