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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Year:	**FY2001 (approx. May 01 – April 02)**
Grant Number:	**59-0790-9-070**
Grant Title:	**Fusarium Head Blight Research**
FY01 ARS Award Amount:	**$ 18,935**

Project

Program Area	Project Title	Requested Amount
Epid/Dis. Mgt.	Plant Residue Management in the Control of Fusarium Head Blight	$ 19,451
	Total Amount Requested	**$ 19,451**

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Principal Investigator Date

(Form – FPR01)

Project 1: Plant Residue Management in the Control of Fusarium Head Blight

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

This research is part of an ongoing investigation to establish the correlation between residue management and the survival of *Fusarium*. Residue decomposition and fusarium survival are quantified when wheat, barley and corn plant residues are placed on and below the soil surface. Cover crop and nitrogen (N) fertilizer treatments are included as well as monitoring parameters related to decomposition such as soil temperature and water, carbon to nitrogen ratio and lignin content of the residue. If *Fusarium graminearum* survival is related to residue decomposition, then residue management strategies which enhance displacement of *Fusarium* might be developed. Since residue decomposition is a microbial process, manipulation of the indigenous microorganisms might accelerate the loss of *Fusarium.*

2. What were the most significant accomplishments?

Residue bags have been collected and analyzed since September 1999. Representative data is presented in Table 1. Preliminary assessment indicates buried residue is decomposing at a faster rate than residue left on the surface. In the first year of field incubation, nearly all of the corn residue was lost while 20% of the barley and wheat residues were present in the buried bags. Thirty percent of the corn and wheat surface residues and half of the surface barley residue remained over the same time period. Nitrogen fertilizer slightly enhanced the decomposition rate. Fusarium populations appear consistent with the level of residue present. Upon completion of the data collection phase (summer 2002) decomposition rates, fusarium survivability, soil water availability, soil temperature and residue nutrient status will be correlated based on residue placement, N fertility and cover crop.

Table 1. Residue Decomposition and Fusarium Survivability

Residue	Placement	Nitrogen (lbs/acre)	% Residue Remaining After 10 Months	% Residue Colonized by Fusarium
Corn	Surface	120	31	53
		0	32	92
	Buried	120	2	75
		0	3	95
Wheat	Surface	120	33	95
		0	26	95
	Buried	120	19	93
		0	17	73
Barley	Surface	120	52	96
		0	50	90
	Buried	120	20	54
		0	22	52

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.

Todd, R., E. Deibert, R. Stack and J. Enz. 2001. Fusarium Head Blight and Plant Residue Management. *In* Proceedings of the National Wheat Industry Research Forum, New Orleans, Louisiana, February 1-2, 2001.

Todd, R. L., R. Stack, E. Deibert and J. Enz. 2001. Plant Residue in the Control of Fusarium Head Blight. *In* Proceedings of the 2001 National Fusarium Head Blight Forum, Cincinnati, OH, page 161.

Todd, R. L., R. Stack, E. Deibert and J. Enz. 2001. Control of Fusarium Head Blight using Plant Residues. *In* Proceedings of the 2001 Annual Meeting of the Soil Science Society of America, Charlotte, NC, October 23, 2001, page 923.

Todd, R. L., 2001. An Integrated Approach to Control Fusarium Head Blight in Wheat and Barley. An Invited Paper presented at the 2001 Annual Meeting of the Soil Science Society of America, Charlotte, NC, October 22, 2001.