

USDA-ARS / USWBSI
FY03 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:	59-0790-9-068
FY03 ARS Agreement Title:	Uniform trials to identify safe products effective against Fusarium head blight in Virginia.
FY03 ARS Award Amount:	\$ 4,878

USWBSI Individual Project(s)

USWBSI Research Area*	Project Title	ARS Adjusted Award Amount
CBC	Uniform trials to identify safe products effective against Fusarium head blight in Virginia.	\$ 4,878
	Total Amount Recommended	\$ 4,878

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: *Uniform trials to identify safe products effective against Fusarium head blight in Virginia.*

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

This project was part of a collaborative effort (Uniform Tests) to identify fungicide treatments that are effective and consistent in performance against FHB across multiple environments and wheat and barley cultivars. My part was to evaluate fungicide treatments to control FHB on soft red winter wheat in Virginia.

2. What were the most significant accomplishments?

The fungicide trial was conducted at the Eastern Virginia Agriculture and Extension Center at Warsaw, VA. The soft red winter wheat cultivar Sisson, treated with Baytan 30 Flowable (1.5 fl. Oz. Product per CWT) for seedling diseases, was no-tillage planted into corn residues on 14 Oct 02 at a rate of 24 seeds/row ft in 7-in. spaced rows. Prior to planting the harvested corn stalks were chopped and flailed and a fertilizer containing 30 lbs N, 80 lbs P₂O₅, 80 lbs K₂O per A was broadcast. The field (Kempsville sandy loam, pH 6.5) was previously seeded to corn in 2002. The experimental design was a randomized complete block with four replications. Treatment units were seven 7-in. wide rows 25 ft long. On 5 Dec at Zadoks' Growth Stage (GS) 10, 25 lbs/A N and Harmony Extra 75DF (0.6 oz. product/A) were applied in a UAN (urea-ammonium-nitrate) solution. On 13 Feb at GS 20 an application of 40 lbs N per A was applied to plots in a UAN solution. A final application of fertilizer (65 lbs/A N in a UAN solution) was made on 26 Mar at GS 25. The wheat survived the winter in good condition. Powdery mildew was not a factor because of the effectiveness of Baytan 30 seed treatment and a moderate level of resistance in the cultivar.

All treatments were made with a CO₂-pressurized backpack sprayer equipped with a 5-ft boom and four dual Tee-Jet 8001 flat fan nozzles pointed forward and backwards at 45° to the plane of the ground. The pair of nozzles was spaced 20 in. apart and 18 in. above plants delivering 25 gal/A at 40 psi. Treatments 2-7 were made in a 2.5 liter volume on 23 Apr (GS 58) and treatments 8-13 were made on 30 Apr (GS 68). This split timing of application permitted an assessment of the efficacy of fungicides at two different growth stages (pre-anthesis and post-anthesis) One hundred heads per plot were scored for incidence and severity for FHB from which the FHB INDEX was calculated. Plots were harvested with a Hage plot combine on 24 Jun. Grain samples were collected for 1000 kernel weight, bushel weight, and vomitoxin (DON) content. DON analyses were conducted in Dr. P. Hart's laboratory at Michigan State University. Yield is expressed in bu/A at a standard 13.5% grain moisture.

All treatments provided statistically significant ($P \leq 0.05$) reduction in incidence and FHB INDEX over the non-treated control, but only the JAU 6476 5.7 fl. oz. + Induce 0.125% v/v and JAU 6476 3.6 fl. oz. + Folicur 3.6F 4.0 fl. oz. + Induce 0.125% v/v applied at GS 68 (post-anthesis) provided statistically significant ($P \leq 0.05$) reduction in FHB severity over the non-treated control. All treatments had low levels of vomitoxin (DON), but none were statistically significant ($P \leq 0.05$) from the non-treated control. All treatments increased statistically significant ($P \leq 0.05$) the 1000 kernel weights over the non-treated control, but none increased grain yield or bushel weights at the ($P \leq 0.05$) level.

Evaluation of Selected Fungicides for the Control of Fusarium Head Blight in the Soft Red Winter Wheat Cultivar 'Sisson' in Virginia, 2003.											
Project Code: FHB-2003-Fungicides				Location : Warsaw, Virginia							
Cooperator : Erik L. Stromberg				By: Dept. Plant Path., Phys.,							
Pathogen Code			FHB	FHB	FHB	Harvest	Yield	Yield	Bushels	1000K	
Crop Code			GS 79	GS 79	GS 79	moisture	Bu/Ac	Kg/Ha	Lbs	wt in g	
Rating Date			3/Jun/2003	3/Jun/2003	3/Jun/2003	2/Jul/2003	2/Jul/2003	2/Jul/2003			
Rating Data Type			INCIDENC	SEVERITY	INDEX	% H2O	@ 13.5%	@ 13.5%	@13.5%		
Rating Unit			%	%	% LOSS						
Decimals Printed			2	2	2	1	2	1	1	1	
Trt No	Treatment Name	Rate	Rate CWT	1	2	3	4	5	6	7	8
1	Non-treated			22.00 a	15.28 a	3.90 a	13.7 a	77.45 a	5218.8 a	56.6 b	27.6 c
2	Folicur Induce .125v/v	4.0	fl. oz.	6.00 b	9.93 ab	0.61 b	14.0 a	82.25 a	5540.0 a	58.0 a	29.1 b
3	JAU6476 Induce .125v/v	5.7	fl. oz.	4.00 b	6.39 ab	0.33 b	14.2 a	80.65 a	5432.8 a	58.4 a	30.6 a b
4	JAU6476 Induce .125v/v	5.0	fl. oz.	3.00 b	7.88 ab	0.41 b	14.4 a	79.05 a	5324.1 a	58.5 a	30.6 a b
5	JAU6476 Folicur Induce .125v/v	3.6 4.0	fl. oz. fl. oz.	5.50 b	7.83 ab	0.40 b	14.2 a	82.40 a	5551.4 a	58.8 a	31.1 a
6	V-10116 Induce .125v/v	6.0	fl. oz.	3.00 b	2.97 ab	0.28 b	14.2 a	79.90 a	5381.3 a	58.2 a	29.8 a b
7	V-10116 Induce .125v/v	8.0	fl. oz.	4.00 b	7.47 ab	0.37 b	14.1 a	79.13 a	5329.5 a	58.2 a	30.5 a b
8	Folicur Induce .125v/v	4.0	fl. oz.	2.00 b	4.50 ab	0.18 b	13.9 a	70.45 a	4863.4 a	58.4 a	30.8 a b
9	JAU6476 Induce .125v/v	5.7	fl. oz.	0.00 b	0.00 b	0.00 b	14.5 a	75.85 a	5109.1 a	58.8 a	30.6 a b
10	JAU6476 Induce .125v/v	5.0	fl. oz.	1.00 b	4.77 ab	0.10 b	14.3 a	79.70 a	5368.5 a	59.0 a	30.9 a
11	JAU6476 Folicur Induce .125v/v	3.6 4.0	fl. oz. fl. oz.	0.00 b	0.00 b	0.00 b	14.3 a	85.58 a	5765.2 a	58.7 a	30.2 a b
12	V-10116 Induce .125v/v	6.0	fl. oz.	2.00 b	4.77 ab	0.14 b	14.0 a	78.85 a	5313.8 a	58.3 a	30.0 a b
13	V-10116 Induce .125v/v	8.0	fl. oz.	5.00 b	8.19 ab	0.47 b	14.4 a	76.23 a	5134.7 a	58.2 a	29.7 a b
LSD (P=.05)				5.156	7.890	1.707	0.58	9.861	653.06	0.65	1.07
Standard Deviation				3.608	5.521	1.195	0.40	6.900	456.99	0.45	0.75
CV				81.57	89.75	216.43	2.84	8.73	8.57	0.77	2.48
Grand Mean				4.42	6.15	0.55	14.17	79.04	5333.27	58.3	30.1
Bartlett's X2				16.522	15.409	73.804	9.917	12.136	11.846	16.0	7.758
P(Bartlett's X2)				0.086	0.118	0.001*	0.623	0.435	0.458	0.191	0.804
Replicate F				3.032	1.986	0.800	7.399	5.566	5.612	2.610	0.438
Replicate Prob(F)				0.0417	0.1335	0.5020	0.0006	0.0030	0.0029	0.0664	0.7275
Treatment F				9.729	2.206	2.936	1.190	1.138	0.981	7.148	6.359
Treatment Prob(F)				0.0001	0.0333	0.0061	0.3267	0.3622	0.4849	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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PI: Stromberg, Erik
ARS Agreement #: 59-0790-9-068

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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.

None.