

# Uniform Biological Fungicide Evaluations for Control of Fusarium Head Blight and Deoxynivalenol in Wheat

S. Halley<sup>1\*</sup>, G. Yuen<sup>2</sup>, C. Jochum<sup>2</sup>, B.H. Bleakley<sup>3</sup>, N. K. S. Murthy<sup>3</sup>, K.R. Ruden<sup>3</sup>, K.D. Waxman<sup>4</sup>, G.C. Bergstrom<sup>4</sup> and L.E. Sweets<sup>5</sup>

<sup>1</sup>North Dakota State University, Langdon, ND; <sup>2</sup>University of Nebraska, Lincoln, NE; <sup>3</sup>South Dakota State University, Brookings, SD; <sup>4</sup>Cornell University, Ithaca NY; and <sup>5</sup>University of Missouri, Columbia, MO.

\*Corresponding Author: PH (701) 256-2582, Email: [Scott.Halley@ndsu.edu](mailto:Scott.Halley@ndsu.edu)

### Materials and Methods

A baseline protocol was used at all locations.

Grain class and cultivars were determined by Co-PI.

Treatments included:

iv) Prosaro fungicide and Induce adjuvant as a base treatment applied at anthesis.

i) Taegro biological fungicide and Induce; and Taegro and Manganese (Mn) applied as tank mixes with the ii) and iii) base treatment Prosaro at anthesis and as sequential treatments 5-7 days after vi) and viii) anthesis following the base treatment Prosaro. Taegro + Induce applied as sequential v) treatments at anthesis and 5-7 days after anthesis and a vii) nontreated.

Trials were inoculated and misted.

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Treatments <sup>1</sup>	Mead, MO-			MO- MO-		
	NY	NE	Elkhart	NY	Elkhart	Roane
	Ppm DON			% Foliar disease		
vii) Untreated	0.68	0.6	1.2	7.5	2.4	21.6
i) Taegro + Induce	0.42	1.2	1.4	5.0	2.2	17.8
ii) Taegro + Prosaro + Induce	0.06	0.2	<b>0.6</b>	0.1	0.1	16.5
iii) Taegro + Prosaro + Mn + Induce	0.03	0.2	0.9	0.3	0.5	18.3
iv) Prosaro + Induce	0.05	0.3	0.9	0.0	0.0	17.2
v) Taegro + Induce <b>and</b> Taegro + Induce	0.53	0.9	0.9	4.3	2.1	15.9
vi) Taegro + Prosaro + Induce <b>and</b> Taegro + Induce	0.01	0.2	<b>0.6</b>	0.0	0.1	13.1
viii) Taegro + Prosaro + Mn + Induce <b>and</b> Taegro + Induce	0.09	0.4	<b>0.6</b>	0.1	0.0	13.4
LSD <sub>(0.05)</sub>	0.13	0.4	0.3	2.8	0.8	4.5
% C.V.	39.2	72.2	25.5	89.1	59.2	90.8

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Treatments <sup>1</sup>	NY	ND	MO-Roane	MO-Elkhart
	Yield (bu./acre)			Test Weight (lb./bu.)
vii) Untreated	86.8	52.7	78.3	56.5
i) Taegro + Induce	82.6	53.2	74.5	57.4
ii) Taegro + Prosaro + Induce	82.8	55.3	75.2	59.3
iii) Taegro + Prosaro + Mn + Induce	92.1	<b>57.5</b>	85.2	58.9
iv) Prosaro + Induce	82.8	51.2	78.1	58.1
v) Taegro + Induce <b>and</b> Taegro + Induce	84.7	47.8	77.9	58.9
vi) Taegro + Prosaro + Induce <b>and</b> Taegro + Induce	86.8	55.0	83.2	59.6
viii) Taegro + Prosaro + Mn + Induce <b>and</b> Taegro + Induce	<b>106.0</b>	53.2	<b>86.8</b>	59.0
LSD <sub>(0.05)</sub>	11.7	4.2	7.2	1.8
% C.V.	9.0	6.7	6.1	2.1

### Summary

These studies suggest that efficacy of Prosaro may be improved by the addition of a biological fungicide in a tank mix, MO-Elkhart and as a sequential treatment 5-7 days after a Prosaro application, ND (disease symptoms) and MO-Elkhart (DON). The Mn addition to the tank mix was shown to increase yield in NY and MO-Roane. Additional research is needed to determine the role of the Mn and the appropriate usage rate. Results from this study and previous studies conducted by the uniform biological research group have shown value from the addition of biological fungicides as a management tool in managing FHB. The relationship between the biological fungicide, the cultivar and the environment still needs more definition. Additionally if a sequential application can be beneficial, a forecasting system needs to be developed so that a reasonable performance expectation for the second treatment can be anticipated by growers.

Table 1. Fusarium head blight incidence, severity, and index, Fusarium damage kernels, deoxynivalenol accumulation, foliar disease, yield and test weight by trial and treatment, 2011.

Treatments <sup>1</sup>	NY	MO-Roane	ND	ND	Meade, NE	Meade, NY	MO-Elkhart
	% Inc.	% Severity	Index	Index	% FDK	% FDK	% FDK
vii) Untreated	8.0	54.5	38.3	35.6	5.5	4.5	9.3
i) Taegro + Induce	6.5	47.5	38.7	38.2	5.3	3.0	9.6
ii) Taegro + Prosaro + Induce	2.0 <sup>2</sup>	40.5	29.1	27.0	4.1	0.9	7.2
iii) Taegro + Prosaro + Mn + Induce	3.5	45.0	19.8	17.8	2.7	1.8	6.3
iv) Prosaro + Induce	1.5	45.0	36.2	38.8	2.9	0.7	5.6
v) Taegro + Induce <b>and</b> Taegro + Induce	8.0	52.5	35.2	34.7	6.6	4.0	9.8
vi) Taegro + Prosaro + Induce <b>and</b> Taegro + Induce	2.0	42.0	<b>24.3<sup>3</sup></b>	<b>23.4</b>	3.1	0.6	7.3
viii) Taegro + Prosaro + Mn + Induce <b>and</b> Taegro + Induce	2.0	44.0	<b>26.2</b>	<b>24.8</b>	3.7	1.1	7.8
LSD <sub>(0.05)</sub>	2.8	7.8	8.3	8.8	2.1	2.0	3.0
% C.V.	45.3	11.5	23.7	25.7	43.0	66.7	32.7

<sup>1</sup>All treatments included Induce adjuvant @ 0.125%v/v. '+' represent a tank mix. 'and' represents a sequential treatment 5-7 days after anthesis or Feekes growth stage 10.51. <sup>2</sup>Shaded cell represents significant difference of the treatment compared to nontreated. <sup>3</sup>Bolded value represents significant difference compared to the iv) Prosaro + Induce treatment.

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