

## Would a fungicide application have been profitable? Economic comparisons for three Michigan State University fungicide trials on winter wheat- 2008

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Economic comparisons are shown for three replicated small plot fungicide trials done in 2008. The first trial used ‘Caledonia’ white wheat. In this study, disease pressure was low. For powdery mildew, and Septoria leaf blotch, disease never reached above the flag leaf -1. Compared with the untreated, powdery mildew and Septoria were significantly reduced by Stratego at Feekes 5 (stem elongation), Stratego at Feekes 5 + Proline at Feekes 10.5.1 (beginning of flowering) and Headline at Feekes 5 + Caramba at Feekes 10.5.1. Leaf rust was present at low levels but was not rated. Percent head blight severity, percent incidence and field severity ((incidence x head severity)/100), were rated and DON (vomitoxin) ppm were determined. Although there were significant differences among treatments for head blight incidence, severity and field severity, there was no significant difference in DON. DON values ranged from 0.13-0.34 ppm, all well below the value that would result in discounts. No application cost were included with the treatments made at FGS 5, as it was assumed that growers would not be making an extra trip over the field to apply it, but would tank mix it with herbicide. Application costs for FGS 8-9 and FGS 10.5.1 timing= \$7.00. Fungicide and adjuvant costs are based on averages from dealers, and are provided as an example-your actual costs would differ. Non- ionic surfactant was added (0.125% v/v) for all treatments. No “run down” cost was included for any applications. The net increase (or loss) after treatment and application costs have been subtracted is compared with the untreated control and shown in the columns below. Values in the yield column followed by the same letter are not significantly different at P=0.05 (Fisher’s Protected LSD)

Clarksville, MI 2008	Caledonia	Dif.	app cost/A	fungicide		adjuvant	treatment cost	Price/bushel received for wheat					
								\$4.00/bu	\$5.00/bu	\$6.00/bu	\$7.00/bu	\$8.00/bu	\$9.00/bu
	Yield						x bu/A						
untreated	81.6 a							\$354.40	\$408.00	\$489.60	\$571.20	\$652.80	\$734.40
Headline 3 fl oz Feekes GS 5	88.6 a	7.0		\$7.06	\$0.83	\$7.89	\$20.11	\$27.11	\$34.11	\$41.11	\$48.11	\$55.11	
Stratego 7 fl oz Feekes GS 5	85.4 a	3.8		\$9.57	\$0.83	\$10.40	\$4.80	\$8.20	\$12.40	\$16.20	\$20.00	\$23.80	
Kocide 12 oz Feekes GS 5	78.4 a	-3.2		\$4.50	\$0.83	\$5.33	-\$18.13	-\$21.33	-\$24.53	-\$27.73	-\$30.93	-\$34.13	
Proline 5 fl oz Feekes GS 10.5.1	89.1 a	7.5	\$7.00	\$18.95	\$0.83	\$26.78	\$3.22	\$10.72	\$18.22	\$25.72	\$33.22	\$40.72	
Caramba 14 fl oz Feekes GS 10.5.1	90.5 b	8.9	\$7.00	\$17.50	\$0.83	\$25.33	\$10.27	\$19.17	\$28.07	\$36.97	\$45.87	\$54.77	
Prosaro 6.5 fl oz Feekes GS 10.5.1	85.5 a	3.9	\$7.00	\$14.80	\$0.83	\$22.63	-\$7.03	-\$3.13	\$0.77	\$4.67	\$8.57	\$12.47	
Kocide 12 oz Feekes GS 5 +				\$4.50	\$0.83								
Prosaro 6.5 fl oz Feekes GS 10.5.1	88.4 a	6.8	\$7.00	\$14.80	\$0.83	\$27.96	-\$0.76	\$6.04	\$12.84	\$19.64	\$26.44	\$33.24	
Stratego 7 fl oz Feekes GS 5 +				\$9.57	\$0.83								
Prosaro 6.5 fl oz Feekes GS 10.5.1	92.6 b	11.0	\$7.00	\$14.80	\$0.83	\$33.03	\$10.97	\$21.97	\$32.97	\$43.97	\$54.97	\$65.97	
Headline 3 fl oz Feekes GS 5 +				\$7.06	\$0.83								
Caramba 14 fl oz Feekes GS 10.5.1	84.6 a	3.0	\$7.00	\$17.50	\$0.83	\$33.22	-\$21.22	-\$18.22	-\$15.22	-\$12.22	-\$9.22	-\$6.22	

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### Variety x fungicide trials – Sandusky and Clarksville

The next two trials used the same five varieties of winter wheat – ‘D8006’, ‘Crystal’, ‘Jewel’, ‘Hopewell’ and ‘Red Ruby’ (three white, two red). Several treatments were the same, and several were different. Disease pressure from Stagonospora leaf and glume blotch at Sandusky was high. Disease pressure from other diseases including powdery mildew, head blight and leaf rust was low. Overall disease pressure at Clarksville was low. With the high level of foliar disease (Stagonospora leaf and glume blotch) at Sandusky, fungicide application resulted in a net increase in profits much more frequently than at Clarksville, where there was not much disease. DON values at both locations were all below 1.0 ppm, and would not have resulted in any discounts. The net increase (or loss) after treatment and application costs have been subtracted is compared with the untreated control and shown in the columns below.

TRT	Glume blotch	Sandusky, MI 2008		Winter wheat variety/fungicide trials				Price/bushel received for wheat					
D8006	% on flag leaf	Yield/Dif.		application	adjuvant	fungicide	trt. cost	\$4.00/bu	\$5.00/bu	\$6.00/bu	\$7.00/bu	\$8.00/bu	\$9.00/bu
untreated	40.8 a	97.1 a	-----					\$388.40	\$485.50	\$582.60	\$679.70	\$776.80	\$873.90
Tilt	37.5 a	97.4 a	0.3		\$0.83	\$4.97	\$5.80	-\$4.60	-\$4.30	-\$4.00	-\$3.70	-\$3.40	-\$3.10
Headline	4.7 b	104.5 a	7.4	\$7.00	\$0.83	\$14.11	\$21.94	\$7.66	\$15.06	\$22.46	\$29.86	\$37.26	\$44.66
Proline/ Folicur	4.7 b	106.6 a	9.5	\$7.00	\$0.83	\$14.79	\$22.62	\$15.38	\$24.88	\$34.38	\$43.88	\$53.38	\$62.88
“free”	3.1 b	108.5 a	11.4	\$14.00	\$2.49	\$33.87	\$50.36	-\$4.76	\$6.64	\$18.04	\$29.44	\$40.84	\$52.24
<b>Crystal</b>		Yield./ Dif											
untreated	34.2 a	102.7 a	-----					\$410.80	\$513.50	\$616.20	\$718.90	\$821.60	\$924.30
Tilt	35.3 a	103.3 a	0.5		\$0.83	\$4.97	\$5.80	-\$3.80	-\$3.30	-\$2.80	-\$2.30	-\$1.80	-\$1.30
Headline	3.0 b	105.6 a	2.9	\$7.00	\$0.83	\$14.11	\$21.94	-\$10.34	-\$7.44	-\$4.54	-\$1.64	\$1.26	\$4.16
Proline/ Folicur	7.9 b	109.7 a	7	\$7.00	\$0.83	\$14.79	\$22.62	\$5.38	\$12.38	\$19.38	\$26.38	\$33.38	\$40.38
“free”	0.0 b	111.2 a	8.5	\$14.00	\$2.49	\$33.87	\$50.36	-\$16.36	-\$7.86	\$0.64	\$9.14	\$17.64	\$26.14
<b>Jewel</b>		Yield./ Dif											
untreated	23.0 a	91.4 a	-----					\$365.60	\$457.00	\$548.40	\$639.80	\$731.20	\$822.60
Tilt	17.3 ab	96.2 a	4.8		\$0.83	\$4.97	\$5.80	\$13.40	\$18.20	\$23.00	\$27.80	\$32.60	\$37.40
Headline	2.0 b	98.5 a	6.1	\$7.00	\$0.83	\$14.11	\$21.94	\$2.46	\$8.56	\$14.66	\$20.76	\$26.86	\$32.96
Proline/ Folicur	4.5 ab	99.6 a	7.2	\$7.00	\$0.83	\$14.79	\$22.62	\$6.18	\$13.38	\$20.58	\$27.78	\$34.98	\$42.18
“free”	0.0 b	101 a	9.6	\$14.00	\$2.49	\$33.87	\$50.36	-\$11.96	-\$2.36	\$7.24	\$16.84	\$26.44	\$36.04
<b>Hopewell</b>		Yield./ Dif											
untreated	22.2 a	100 a	-----					\$400.00	\$500.00	\$600.00	\$700.00	\$800.00	\$900.00
Tilt	14.3 ab	100.2 a	0.2		\$0.83	\$4.97	\$5.80	-\$5.00	-\$4.80	-\$4.60	-\$4.40	-\$4.20	-\$4.00
Headline	4.0 b	106.2 a	6.2	\$7.00	\$0.83	\$14.11	\$21.94	\$2.86	\$9.06	\$15.26	\$21.46	\$27.66	\$33.86
Proline/ Folicur	3.3 b	106.6 a	6.6	\$7.00	\$0.83	\$14.79	\$22.62	\$3.78	\$10.38	\$16.98	\$23.58	\$30.18	\$36.78
“free”	0.0 b	103 a	3	\$14.00	\$2.49	\$33.87	\$50.36	-\$38.36	-\$35.36	-\$32.36	-\$29.36	-\$26.36	-\$23.36
<b>Red Ruby</b>		Yield./ Dif											
untreated	18.8 a	102.1 a	-----					\$408.40	\$510.50	\$612.60	\$714.70	\$816.80	\$918.90
Tilt	14.0 a	102.4 a	0.4		\$0.83	\$4.97	\$5.80	-\$4.20	-\$3.80	-\$3.40	-\$3.00	-\$2.60	-\$2.20
Headline	1.0 b	103.5 a	1.4	\$7.00	\$0.83	\$14.11	\$21.94	-\$16.34	-\$14.94	-\$13.54	-\$12.14	-\$10.74	-\$9.34
Proline/ Folicur	3.3 b	106.1 a	4	\$7.00	\$0.83	\$14.79	\$22.62	-\$6.62	-\$2.62	\$1.38	\$5.38	\$9.38	\$13.38
“free”	0.0 b	105 a	2.9	\$14.00	\$2.49	\$33.87	\$50.36	-\$38.76	-\$35.86	-\$32.96	-\$30.06	-\$27.16	-\$24.26

Assumptions: no “run down” cost included for any applications. Application costs for FGS 8-9 and FGS 10.5.1 timing= \$7.00

Fungicide and adjuvant costs are based on averages from dealers, and are provided as an example. Non- ionic surfactant added (0.125%v/v) for all treatments.

Tilt 2 fl oz- Feekes GS 4-5, Headline 6 fl oz-Feekes GS 8-9, Proline/Folicur 3 fl oz each-Feekes GS 10.5.1 “Disease Free” treatment=all three application timings.

Values within each variety in the glume blotch and yield columns followed by the same letter are not significantly different at P=0.05 (Tukey’s HSD). Acknowledgements: Thanks to Michigan Crop Improvement Association for funding this research. **Information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU**

**Extension or bias against those not mentioned.**

TRT	Clarksville, MI 2008		Winter wheat variety/fungicide trials				Price/bushel received for wheat					
D8006	Yield/Dif.		application	adjuvant	fungicide	trt. cost	\$4.00/bu	\$5.00/bu	\$6.00/bu	\$7.00/bu	\$8.00/bu	\$9.00/bu
untreated	82.5 a	-----					\$330.00	\$412.50	\$495.00	\$577.50	\$660.00	\$742.50
Tilt/Headline	87.7 a	5.2	\$7.00	\$1.66	\$19.08	\$27.74	-\$6.94	-\$1.74	\$3.46	\$8.66	\$13.86	\$19.06
Headline	82 a	-0.5	\$7.00	\$0.83	\$14.11	\$21.94	-\$23.94	-\$24.44	-\$24.94	-\$25.44	-\$25.94	-\$26.44
Proline	81.3 a	-0.8	\$7.00	\$0.83	\$18.95	\$26.78	-\$29.98	-\$30.78	-\$31.58	-\$32.38	-\$33.18	-\$33.98
“free”	88.2 a	5.7	\$14.00	\$2.49	\$38.03	\$54.52	-\$31.72	-\$26.02	-\$20.32	-\$14.62	-\$8.92	-\$3.22
<b>Crystal</b>	Yield./ Dif											
untreated	91.9 a	-----					\$367.60	\$459.50	\$551.40	\$643.30	\$735.20	\$827.10
Tilt/Headline	94.5 a	2.6	\$7.00	\$0.83	\$19.08	\$27.74	-\$17.34	-\$14.74	-\$12.14	-\$9.54	-\$6.94	-\$4.34
Headline	92.2 a	0.3	\$7.00	\$0.83	\$14.11	\$21.94	-\$20.74	-\$20.44	-\$20.14	-\$19.84	-\$19.54	-\$19.24
Proline	91.1 a	-0.8	\$7.00	\$0.83	\$18.95	\$26.78	-\$29.98	-\$30.78	-\$31.58	-\$32.38	-\$33.18	-\$33.98
“free”	94.1 a	2.2	\$14.00	\$2.49	\$38.03	\$54.52	-\$45.72	-\$43.52	-\$41.32	-\$39.12	-\$36.92	-\$34.72
<b>Jewel</b>	Yield./ Dif											
untreated	89.9 a	-----					\$359.60	\$449.50	\$539.40	\$629.30	\$719.20	\$809.10
Tilt/Headline	96.2 a	4.8	\$7.00	\$0.83	\$19.08	\$27.74	-\$8.54	-\$3.74	\$1.06	\$5.86	\$10.66	\$15.46
Headline	97.3 a	7.4	\$7.00	\$0.83	\$14.11	\$21.94	\$7.66	\$15.06	\$22.46	\$29.86	\$37.26	\$44.66
Proline	94.9 a	5	\$7.00	\$0.83	\$18.95	\$26.78	-\$6.78	-\$1.78	\$3.22	\$8.22	\$13.22	\$18.22
“free”	94.6 a	4.7	\$14.00	\$2.49	\$38.03	\$54.52	-\$35.72	-\$31.02	-\$26.32	-\$21.62	-\$16.92	-\$12.22
<b>Hopewell</b>	Yield./ Dif											
untreated	98.6 a	-----					\$ 394.40	\$ 493.00	\$ 591.60	\$ 690.20	\$ 788.80	\$ 887.40
Tilt/Headline	98.8 a	0.2	\$7.00	\$0.83	\$19.08	\$27.74	-\$26.94	-\$26.74	-\$26.54	-\$26.34	-\$26.14	-\$25.94
Headline	99.9 a	1.3	\$7.00	\$0.83	\$14.11	\$21.94	-\$16.74	-\$15.44	-\$14.14	-\$12.84	-\$11.54	-\$10.24
Proline	96.7 a	-1.9	\$7.00	\$0.83	\$18.95	\$26.78	-\$34.38	-\$36.28	-\$38.18	-\$40.08	-\$41.98	-\$43.88
“free”	103.3 a	4.7	\$14.00	\$2.49	\$38.03	\$54.52	-\$35.72	-\$31.02	-\$26.32	-\$21.62	-\$16.92	-\$12.22
<b>Red Ruby</b>	Yield./ Dif											
untreated	102.7 a	-----					\$ 410.80	\$ 513.50	\$ 616.20	\$ 718.90	\$ 821.60	\$ 924.30
Tilt/Headline	100.7 a	-2.0	\$7.00	\$0.83	\$19.08	\$27.74	-\$35.74	-\$37.74	-\$39.74	-\$41.74	-\$43.74	-\$45.74
Headline	103.6 a	0.9	\$7.00	\$0.83	\$14.11	\$21.94	-\$18.34	-\$17.44	-\$16.54	-\$15.64	-\$14.74	-\$13.84
Proline	99.2 a	-2.5	\$7.00	\$0.83	\$18.95	\$26.78	-\$36.78	-\$39.28	-\$41.78	-\$44.28	-\$46.78	-\$49.28
“free”	106.9 a	4.2	\$14.00	\$2.49	\$38.03	\$54.52	-\$37.72	-\$33.52	-\$29.32	-\$25.12	-\$20.92	-\$16.72

Assumptions: no “run down” cost included for any applications. Application costs for FGS 8-9 and FGS 10.5.1 timing= \$7.00

Fungicide and adjuvant costs are based on averages from dealers, and are provided as an example. Non- ionic surfactant added (0.125%v/v) for all treatments.

Tilt 2 fl oz- Feekes GS 4-5 + Headline 6 fl oz-Feekes GS 8-9, Headline 6 fl oz-Feekes GS 8-9, Proline/Folicur 3 fl oz each-Feekes GS 10.5.1 “Disease Free” treatment=all three application timings.

Values in the yield column within each variety followed by the same letter are not significantly different at P=0.05 (Tukey’s HSD). Acknowledgements: Thanks to Michigan Crop Improvement Association for funding this research.

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