EVALUATION OF FUNGICIDES FOR CONTROL OF FOLIAR DISEASES OF SOFT RED WINTER WHEAT IN KENTUCKY

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The soft red winter wheat variety Agripro/Coker Cooper was planted in strip rows with a Lilliston no-till planter following corn harvest on 12 Oct 07 on the Kevil Tract of the University of Kentucky Research and Education Center in Princeton, KY. Wheat strips were planted at a rate that would achieve a final stand of approximately 36 plants ft^2 and consisted of seven, 7-in rows with two, 7-in rows bordering each side. Warrior insecticide was applied 3 fl oz/A in the fall on 16 Nov 07 and again at green-up on 24 Mar 08 to reduce the potential for barley yellow dwarf viral infections. Liquid nitrogen (28-0-0) was applied in a March/April split application at a rate of 40 lb and 80 lbs actual N on 10 Mar 08 and 2 Apr 08, respectively. The strip rows were subdivided into 15 ft-lengths by mowing when plants were entering the stem elongation stage (10 Apr). Established plots were 7.5 ft-wide x 15ft-long, the treatment area consisted of the seven center rows and there were two border rows on either side. Treatments were arranged in randomized complete block design with four replications. All fungicide treatments with the exception of the Feeke's 6 treatments were applied with a hand-held CO^2-powered backpack sprayer boom equipped with three twinjet 8002VS nozzles operating at 40 psi and delivering approximately 20 gpa of spray solution. The F6 treatment was sprayed in like manner using a 4 nozzle boom. Treatments were applied on 2 Apr, 15 Apr, 28 Apr, 3 May, and 8 May corresponding to F6, F8, F10, F10.1-3 and F10.51, respectively. Plots were rated for leaf blotch complex (*Septoria tritici, Stagonospora nodorum*); leaf and stripe rust (*Puccinia triticina*; *Puccinia striiformis)*; and FHB (*Fusarium graminearum*) at the late-milk stage (F11.1) on 29 May 08. Ratings were made based on a visual estimation of the percentage of leaf surface area diseased. The seven center rows of each plot were harvested on 17 Jun 08 using a Wintersteiger small plot combine. Yields were adjusted to 13.5% moisture and 60 lb/bu. Damaged kernels were assessed for each treatment plot by counting the number of shriveled kernels in a 100 kernel grain sample. Counts were repeated a second time and averaged. Grain samples (100 g) from each treatment plot were submitted for Deoxynivalenol (DON) analysis at University of Minnesota, St. Paul, MN. Percentage and count data were arcsine and square root transformed, respectfully prior to analysis using ANOVA and Student-Newman-Keuls test ($P \leq 0.05$). Although statistics provided are based on transformed data, arithmetic means are presented in order to provide a better indication of the level of disease control provided by each treatment, as well as the overall disease pressure in the trial.

Excellent growing conditions throughout the season limited foliar and head disease symptoms. However, light take-all was scattered throughout the test and this accounts for the observed shriveled kernels. FHB incidence and DON contamination were extremely low and were evident throughout the test at about 0.01% incidence and ≤0.2 ppm, respectively. No significant differences were observed between the different foliar treatments and non-treated control for leaf or stripe rust. Leaf blotch disease pressure was relatively light on the flag (0-5%) and F-1 (5-19%), but was greatly reduced by the late-season applications of Headline or Prosaro. Shriveled kernels, yield, test weight and DON were not significantly different from non-treated plots. No phytotoxicity was noted in the test.

Treatment and rate per acre	Feeke's stage applied	Leaf Blotch complex[w] (% flag)	(% F-1)	Leaf & stripe rust[x] (% flag)	Shriveled Kernels (%)	Yield (bu/A)	Test weight (lb/bu)	DON (ppm)
Non-treated……	NA	5.0 a[y]	16.3 ab	1.3 NS[z]	9.8 NS	109.9 NS	59.2 NS	0.0 NS
Picoxystrobin 4 fl oz + Induce 0.25%.....…..……...	7-8	3.3 ab	12.5 a-c	1.3	9.3	112.1	59.0	0.0
Picoxystrobin 6 fl oz + Induce 0.25%.....…..……...	7-8	5.0 a	15.0 ab	2.3	9.9	118.6	60.5	0.1
Picoxystrobin 8 fl oz + Induce 0.25%.....…..……...	7-8	2.0 ab	12.5 a-c	0.8	7.8	114.7	60.4	0.1
LEM17 EC 9.6 fl oz ……..	7-8	5.0 a	18.8 a	1.0	11.0	115.4	58.0	0.1
LEM17 EC 16.8 fl oz ……	7-8	4.0 ab	15.0 ab	2.0	9.1	116.1	58.8	0.1
LEM17 EC 9.6 fl oz + Punch 3 fl oz ……	7-8	4.0 ab	11.3 a-c	1.3	8.5	113.8	59.1	0.1
Punch 3.3 EC 4 fl oz	7-8	1.3 ab	10.0 a-c	2.3	10.5	119.7	59.3	0.1
Headline 6 fl oz + Induce 0.25%...	7-8	4.0 ab	10.0 a-c	0.8	8.4	114.1	60.0	0.1
Topguard 1.04 SC 7 fl oz ….....	7-8,10	2.3 ab	12.5 a-c	1.3	9.4	115.7	59.7	0.1
Topguard 1.04 SC 10 fl oz……	7-8,10	3.0 ab	12.5 a-c	0.5	9.7	113.5	60.0	0.1
Topguard 1.04 SC 14 fl oz…….	7-8,10	1.0 bc	7.5 bc	0.3	9.6	116.6	59.4	0.1
Topguard 1.04 SC 14 fl oz…….	10	4.0 ab	13.8 a-c	1.0	8.6	113.7	58.7	0.1
Headline 6 fl oz……..	10.1-3	0.3 c	5.3 c	0.8	8.9	119.6	60.9	0.2
Stratego 10 fl oz…….	7-8	3.3 ab	10.0 a-c	0.8	9.7	117.1	59.4	0.1
Stratego 5 fl oz + Prosaro 421 SC 6.5 fl oz + Induce 0.25%.....	6,10.51	0.0 c	5.0 c	0.0	7.9	121.0	61.6	0.0
Prosaro 421 SC 6.5 fl oz + Induce 0.25%.....	10.51	0.0 c	5.0 c	0.0	8.7	121.1	60.0	0.0
F value ($P \leq 0.05$)……..		<.0001	<.0001	0.0201	0.8214	0.3440	0.6490	0.0653
CV……		33.17	18.52	75.09	12.06	2.75	6.00	81.96

[w]Leaf blotch complex; *Septoria tritici, Stagonospora nodorum*.
[x]Leaf & stripe rust observation was primarily *Puccinia triticina* with some *Puccinia striiformis* infections.
[y]NS = no significant differences, ($P \leq 0.05$).
[z]Column numbers followed by the same letter are not significantly different, Student-Newman-Keuls test ($P \leq 0.05$).