WHEAT (*Triticum aestivum* 'Crescent', 'Bruehl', 'SY Ovation')
Eyespot; *Oculimacula acuformis* and *O. yallundae*

Z.F. Sexton and T.D. Murray
Dept. of Plant Pathology, Washington State University
Pullman, WA 99164-6430

Evaluation of fungicides to control eyespot in winter wheat, 2015.

Field plots were established in previously planted, commercial winter wheat production fields in two different locations. The experiment was a randomized complete block design with each treatment replicated six times. Plot size was 8 ft by 20 ft and oriented perpendicular to the planting direction. The first location, 10 miles south of Ritzville, WA, was planted on 7 Sept 15 to two different varieties, Bruehl and Crescent, the experiment was split between varieties with replications one through three established in the Crescent and replications four through six established in the Bruehl. The second location, 5 miles southwest of Dayton, WA, was planted the week of 27 Sept 15 to the variety SY Ovation. Fungicides were applied on 20 Mar 15 at Ritzville and 8 Apr 15 at Dayton over the plot area with a CO_2-pressurized (30 psi) backpack sprayer equipped with six TeeJet XR 11002 nozzles-on a 17-in. spacing, at 26 gal/A. Environmental conditions at the time of application were: Ritzville - wind 3 mph, relative humidity 75%, air temperature 48°F, and soil temperature 50°F; and, Dayton - wind 7 mph, relative humidity 60%, air temperature 52 °F, and soil temperature 53 °F. At Dayton, an herbicide mixture containing Powerflex (2 oz/A), Starane (13 fl oz/A), Ally Extra (0.4 oz/A) and Induce NIS (0.125% v/v) was applied on the same day to control downy brome (*Bromus tectorum*) in the experimental plot. Plant growth stage on the day of fungicide application ranged from tillering to pre-jointing (Zadoks growth stages 21-29) at both locations. Pre-application sampling and disease assessment detected eyespot symptoms in 20.3% of stems assessed and 37.5% of stems assessed in Crescent and Bruehl, respectively, at Ritzville, and 16.0% of stems were symptomatic at Dayton. On 12 and 17 Jun 15, the Ritzville and Dayton locations were sampled for eyespot disease assessment, respectively when plants ranged from late milk to early dough (Zadoks growth stage 77-83) at Ritzville and late milk (Zadoks 77) at Dayton. Approximately 60 stems per plot were harvested from each location and assessed for eyespot disease symptoms on the same day. Disease severity was determined by rating stem bases, 1 to 2 internodes above the crown, for symptom severity using a 0 to 4 scale where 0 = no visual symptoms, 1, 2 and 3 = up to 25, 50 and 75% of the stem circumference colonized by a lesion(s), respectively, and a 4 = a stem with a lesion girdling the base. Yield and test weight were determined by harvesting a portion (5 ft by 20 ft) of each plot with a small-plot combine on 21 Aug and 29 Aug 15 at the Ritzville and Dayton locations respectively. A subsample of the grain was cleaned before test weight was determined. Disease and yield data were compared using a general linear model ANOVA on SAS 9.2 and means were separated using Fisher's least significant difference (P = 0.05).

Overall disease pressure was low at both locations based on disease index in the untreated plots. Data was combined for both varieties at Ritzville based on a non-significant variety effect on any dependent variable and a non-significant Levene's test for homogeneity. At Ritzville disease incidence, severity, and index ranged from 51.9% to 98.2%, 1.6 to 2.4, and 25.0 to 60.5 respectively. Yield and test weight ranged from 37.7 to 54.9 bu/A and 54.8 to 57.9 lb/bu respectively. At Dayton disease incidence, severity, and index ranged from 47.0% to 98.3%, 1.2 to 2.4, and 13.6 to 58.5 respectively. Yield and test weight ranged from 55.9 to 78.9 bu/A and 51.7 to 57.0 lb/bu respectively. At both locations only plots treated with Priaxor had significantly lower disease index ratings when compared to untreated plots. There were no significant differences between treatments for yield or test weight at either location.

Treatment[z], application rate/A	Disease incidence[y] %	Disease severity[x] 0 to 4	Disease index[w] 0 to 100	Yield bu/A	Test weight lb/bu
Location: Ritzville[v]					
Untreated	87.5	2.2	48.3	46.3	56.3
Priaxor 4.16SC 8.0 fl oz	64.8	1.9	31.0	47.2	56.6
Tilt 3.6EC 4.0 fl oz + Topsin 4.5FL 20.0 fl oz	79.4	2.1	41.6	50.7	56.8
Alto 100SL 5.5 fl oz	81.4	2.1	42.6	48.4	56.6
$LSD^{u}_{0.05}$	10.8	NS	10.1	NS	NS
Pr>F	0.003	0.200	0.017	0.560	0.915
Location: Dayton					
Untreated	85.3	1.9	41.1	72.8	55.2
Priaxor 4.16SC 8.0 fl oz	65.2	1.7	27.5	74.6	54.9
Tilt 3.6EC 4.0 fl oz + Topsin 4.5FL 20.0 fl oz	90.4	2.0	44.3	69.5	54.7
Alto 100SL 5.5 fl oz	89.6	1.8	39.9	67.4	55.0
$LSD^{u}_{0.05}$	15.9	NS	12.4	NS	NS
Pr>F	0.013	0.325	0.054	0.653	0.958

[z] All products were applied with 0.125% (v/v) NIS as Induce.
[y] Samples consisting of approximately 60 stems were removed from each plot and transported to the farm building where the percentage of infected stems and disease severity, as reflected by extent of colonization, was determined by visual inspection of each stem.
[x] Disease severity was determined by rating stem bases, 1-2 internodes above the crown, for symptom severity using a 0 to 4 scale where 0 = no visual symptoms, 1, 2 and 3 = up to 25, 50 and 75% of the stem circumference colonized by a lesion(s), respectively, and a 4 = a stem with a lesion girdling the base.
[w] Disease index, which ranges from 0 to 100, was calculated by multiplying percent infected stems (disease incidence) by disease severity of infected stems and dividing by four.
[v] Data for wheat varieties were combined at Ritzville based on a non-significant variety effect on any dependent variable and a non-significant Levene's test for homogeneity.
[u] Fisher's protected (P = 0.05) least significant difference (LSD) was used to compare treatment means within columns. Means are based on six replicates.