

Reaction of winter wheat cultivars and breeding lines to Cephalosporium stripe in Washington, 2016.

Forty-four winter wheat cultivars and breeding lines were sown at the Palouse Conservation Field Station in Pullman, WA in a Thatuna silt loam soil (pH 5.5) on 14 Sep 15. Seeds were sown at the rate of 90 lb/A in eight-row plots, 4.0 ft wide by 20.0 ft long, with a 12 in. spacing between rows in a field managed in a 4-yr, chickpea (*Cicer arietinum* L.), spring wheat, fallow, winter wheat rotation. The experimental design was a randomized complete block with each genotype replicated four times. Prior to planting, seeds were treated with CruiserMaxx Cereals and Cruiser 5FS, 5.0 and 1.0 fl oz/100 lb seed, respectively. Based on soil test recommendations, 100 lb N, 10 lb P, and 6.5 lb S/A were applied on 13 Sep 15. On 2 Oct 15, Axiom DF (8 oz/A) was applied over the plot area with an electric pump sprayer, mounted on a 4-wheel ATV, equipped with 11 TeeJet XRC 8002 nozzles on a 20-in. spacing, at 12.5 gal/A for the control of grassy weeds. On 12 Oct 15, dry oat kernels colonized by a seven-isolate mixture of *Cephalosporium gramineum* were broadcast on the soil surface at the rate of 87 lb/A. On 9 April 16, Priaxor was applied at 6 fl oz/A for the control of eyespot caused by *Oculimacula acuformis* and *O. yallundae*. On 10 May 16, Quilt XL was applied at 10.5 fl oz/A to control stripe rust caused by *Puccinia striiformis*. Cephalosporium stripe disease incidence and severity were evaluated from 21 to 30 June 16 by destructively sampling one foot of row when most plants were between watery ripe to mid-milk, Zadoks growth stages 71 to 75. Disease incidence and severity were determined by rating individual stems for extent of symptom development using a 0 to 5 scale where 5 = symptoms detected on the peduncle or a dead head, 4 = symptoms detected in the flag leaf, 3, 2, or 1 = symptoms detected on the respective leaves below the flag leaf, and 0 = no visual symptoms. Disease severity is the weighted mean of all rated stems and incidence is the percentage of stems with symptoms. Disease index is calculated by multiplying disease incidence by disease severity and dividing by five and ranges from 0 to 100.

Conditions were very favorable for Cephalosporium stripe development during the winter 2015 to 2016 due to intermittent snow cover and mild temperatures. Disease pressure was severe based on the reaction of Stephens (disease index = 77.9), a highly susceptible cultivar. Disease incidence, severity and index ranged from 63 to 98%, 3.4 to 4.0, and 45.6 to 77.9, respectively. Breeding line A10601WDH061 had the lowest disease index of 45.6, which was not significantly different from Eltan (46.5), the tolerant control, but it was significantly less than Stephens, the susceptible control. Only breeding lines ARS Crescent, ORLD2112334, WA8244, and KXB01 had statistically similar disease indexes to Eltan (47.5 to 54.4).

Variety	Disease incidence ^z %	Disease severity ^y 0 to 4	Disease index ^x 0 to 100
A10601WDH061	63.0	3.6	45.6
Eltan	68.6	3.4	46.5
ARS Crescent	69.9	3.4	47.5
ORLD2112334	73.8	3.5	51.1
WA8244	73.1	3.7	53.9
KXB01	80.0	3.4	54.4
A10601WDG073	73.9	3.8	55.8
WA8202	77.1	3.6	55.9
09PN062#18	77.4	3.6	56.1
MTS1224	76.7	3.7	57.4
WA8243	86.5	3.5	60.7
WA8245	82.7	3.7	62.0
ORLD2113092	88.0	3.6	64.0
X06134-57C	85.4	3.7	64.1
ID DB44	84.2	3.9	65.9
04PN028B-3	85.5	3.9	66.1
Madsen	90.0	3.7	66.6
X06132-45C	87.7	3.9	67.8
X20060123-0-31C	88.7	3.8	67.8
OR2110664	93.1	3.7	69.0
WA8225	90.8	3.8	69.2
X010679-1C	91.2	3.9	70.9
LWW14-73163	93.1	3.8	71.5
HE 181/3	93.7	3.8	71.9
WA8187	93.5	3.9	72.3
UI WSU Huffman	93.2	3.9	72.3
IDN 02-29001A	95.4	3.8	72.5

LWW14-73161	95.1	3.8	72.5
04PN096-2	93.6	3.9	72.9
X06135-9C	93.1	3.9	73.1
OR2120276H	91.3	4.0	73.1
LWW14-71195	95.6	3.9	74.0
LCS Colonia	95.9	3.9	74.4
IDN 01-10704A	95.8	3.9	75.0
MT1332	94.0	4.0	75.0
OR2110679	95.8	3.9	75.0
WA8234	94.5	4.0	75.1
MT1354	95.5	4.0	75.6
MT1257	95.6	4.0	76.2
04PN077-23	95.9	4.0	76.4
LWW14-71032	98.0	4.0	77.5
MT1348	96.9	4.0	77.7
MAS08019-94-1-S-s	97.3	4.0	77.9
Stephens	97.8	4.0	77.9
LSD ^w 0.05	10.6	0.21	9.3
Pr >F	0.0001	0.0001	0.0001

^z Samples, consisting of one ft of row, were removed from each plot on 21 June (replications 1 and 2) and 24 June (replications 3 and 4) transported to the farm equipment building where percentage of infected stems and disease severity, as reflected by the presence of symptoms and extent of colonization, was determined by visual inspection of each stem. Disease incidence is the percentage of stems with symptoms in the uppermost four leaves.

^y Disease severity was determined by rating individual stems for symptom severity using a 0 to 5 scale where 5 = symptoms detected on the peduncle or a dead head, 4 = symptoms detected in the flag leaf, 3, 2, or 1 = symptoms detected on the respective leaves below the flag leaf, and 0 = no visual symptoms. No disease severity ratings of 5 were given in this trial.

^x Disease index, which ranges from 0 to 100, was calculated by multiplying disease incidence by disease severity and dividing by five.

^w Fisher's protected ($P = 0.05$) least significant difference (LSD) was used to compare treatment means. Means are based on four replicates.