WHEAT (*Triticum aestivum*)
Fusarium head blight; *Fusarium graminearum*

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Reaction of Kansas, Nebraska, and South Dakota winter wheat accessions to Fusarium head blight (FHB), 2006.

A field experiment was conducted in Chase silty clay loam (pH=6.5) near Manhattan, KS. Experimental design was a randomized complete block with 48 entries, comprising the Tri-state Winter Wheat Scab Nursery with entries from the Kansas, Nebraska, and South Dakota breeding programs. There were four replications and plots were single rows 7.5 ft long and 20 in. apart. Seed was sown 4 Oct 05 (1 bu/A). Air-dried corn kernels colonized by a single, aggressive isolate of *F. graminearum* were spread throughout the test area on 1 Apr, 15 Apr, and 1 May (0.28 oz/ft^2 total). During anthesis, heads were kept wet using small, overhead, impulse sprinklers for 3 min every hour from 9:00 p.m. until 6:00 a.m. For each plot, heading date (50% headed) was determined and visual estimations of the percentage symptomatic spikelets (FHB index) for each plot were taken on 25 May, 30 May, 2 Jun, and 5 Jun. Some cultivars had begun to mature by 5 Jun and were not rated on that date. Plots were harvested with a combine on 20 Jun and grain sub-samples rated for percentage *Fusarium*-damaged kernels (FDK). Ground grain samples were also sent to the North Dakota Veterinary Diagnostic Lab for determination of deoxynivalenal (DON) levels. Data were subjected to analysis of variance and Fisher's least significant differences (LSD, P=0.05) were determined for each rating date, the mean of the first three rating dates, heading date, yields, FDK, and DON levels in grain. Correlations among parameters were also calculated.

Severe head blight developed as evidenced by disease ratings from the susceptible check Overley. All entries had significantly less mean FHB ratings compared with Overley. The line SD03018 had the least mean rating, although ten other entries were statistically similar including the resistant check Hondo. Line SD03018 also had the lowest DON levels although 21 other entries were statistically similar including the resistant check Hondo. There was a significant negative correlation between mean FHB index and heading date (n=192, r=-0.7793, P<0.0001) and mean FHB index and yield (n=192, r=-0.3142, P<0.0001) but no significant correlations between mean FHB index and FDK or DON levels (P=0.1892 and 0.2813, respectively). However, there were significant correlations between FHB index on 5 Jun and FDK (n=74, r=0.3977, P<0.0005) and between FHB index on 5 Jun and DON (n=74, r=0.4631, P<0.0001).

	FHB index (% infected spikelets)					Heading	Yield	FDK	DON
Entry*	25 May	30 May	2 Jun	5 Jun	Mean**	(Julian)	(g/plot)	(%)	(ppm)
SD03018	0.8	2.3	3.3	9.7	2.1	130.8	284.5	1.0	1.3
Harding	1.0	2.5	3.0	5.5	2.2	135.3	228.5	3.0	3.1
SD00111-9	1.0	3.0	4.0	6.8	2.7	132.5	201.5	4.3	3.3
SD02480	1.0	3.0	5.0	11.0	3.0	132.5	223.5	9.0	6.7
Darrell	1.0	4.0	5.8	11.5	3.6	133.3	144.5	9.5	4.6
SD97059-2	1.5	3.5	7.5	11.5	4.2	136.0	173.0	5.3	5.5
SD03184	2.0	5.0	6.3	12.3	4.4	131.8	302.5	2.0	2.8
SD01122	3.5	4.5	5.5	10.8	4.5	136.3	166.0	6.8	3.4
Hondo	1.8	5.3	8.0	10.3	5.0	134.5	166.0	4.8	3.3
SD97380-2	2.0	6.5	8.3	13.0	5.6	131.8	252.5	0.5	2.1
NW03666	2.0	8.0	15.5	22.3	8.5	128.5	271.5	1.8	5.0
NI03418	4.5	11.0	13.8	23.8	9.8	131.5	178.5	12.0	11.7
NE01604	3.5	11.8	14.8	15.0	10.0	129.3	188.5	9.5	5.0
Harry	3.0	12.5	15.0	25.5	10.2	132.3	218.5	14.8	11.3
NE02592	3.0	13.0	15.5	25.0	10.5	130.3	236.0	3.5	3.3
NE03490	2.5	11.3	18.0	21.7	10.6	130.3	223.5	8.3	8.8
NE02584	2.5	9.5	22.5	12.0	11.5	126.3	219.5	6.0	5.6
SD03178	4.0	13.0	20.5	-	12.5	125.8	248.5	2.3	2.6
Expedition	2.5	16.3	20.5	-	13.1	123.3	258.0	3.8	4.1
Infinity CL	4.8	17.5	18.8	26.3	13.7	131.0	214.5	3.5	2.9
SD03144	5.5	17.5	20.0	-	14.3	128.0	223.5	0.8	1.7

	FHB index (% infected spikelets)					Heading	Yield	FDK	DON
Entry*	25 May	30 May	2 Jun	5 Jun	Mean**	(Julian)	(g/plot)	(%)	(ppm)
NE01643	4.5	19.5	21.3	28.3	15.1	131.5	233.5	8.8	4.5
NE02495	6.3	17.5	22.5	32.5	15.4	128.0	240.0	7.8	6.0
SD01058	5.0	20.0	23.8	25.0	16.3	127.5	175.0	10.5	5.6
KS970093-8-3	5.0	20.0	26.3	-	17.1	124.5	253.0	2.8	3.7
NE02533	6.5	20.0	26.3	-	17.6	128.5	191.5	8.0	4.9
NI02425	6.5	20.0	27.5	-	18.0	127.0	212.5	6.0	5.6
NE02549	10.5	23.8	28.8	35.7	21.0	131.0	205.0	5.5	4.8
KS990156-2-~3	6.5	23.8	35.0	-	21.8	124.8	168.5	1.3	3.2
NE02588	5.8	25.0	35.0	25.0	21.9	127.3	278.5	6.5	4.8
KS970093-8-1	5.5	30.0	42.5	-	26.0	122.8	220.5	1.3	1.4
KS990528-3-&~5	6.3	31.3	42.5	-	26.7	125.8	158.0	4.5	3.6
KS990524-3-&~1	9.8	32.5	38.8	40.0	27.0	128.3	181.5	2.3	4.5
KS990183-4-~1	8.8	32.5	40.0	-	27.1	124.0	166.5	3.0	2.8
Alice	9.3	31.3	41.3	-	27.3	124.8	257.0	1.3	4.0
Karl 92	8.0	36.3	42.5	-	28.9	123.3	194.5	0.8	2.3
KS980512-11-~3	9.3	30.0	48.8	-	29.3	124.5	236.5	4.5	4.3
KS980386-6-3-#1	11.3	32.5	45.0	-	29.6	125.5	212.5	0.8	2.0
KS990043-3-~1	13.8	37.5	42.5	-	31.3	123.5	150.0	4.8	3.6
Wendy	15.0	36.3	43.8	-	31.7	123.3	193.5	2.0	4.6
KS990160-4-~5	7.5	36.3	51.3	-	31.7	126.3	150.0	15.8	8.8
NE02465	10.5	40.0	47.5	-	32.7	125.3	172.0	1.5	2.3
KS97W0200-9-4	25.0	38.8	41.3	42.5	35.0	125.3	170.5	6.5	4.8
KS980191-1-2-#2	14.3	42.5	55.0	-	37.3	122.8	219.5	1.8	3.0
KS98W0508-1-~1	22.5	47.5	50.0	-	40.0	123.3	158.5	5.3	5.5
X990494-11-~S	17.5	48.8	55.0	-	40.4	123.5	124.0	10.3	7.0
KS980478-3-~5	21.3	47.5	56.3	-	41.7	123.3	209.5	6.3	3.8
Overley	32.5	63.8	70.0	-	55.4	122.3	174.5	10.3	4.7
LSD (P=0.05)	4.77	9.82	10.30	14.69	7.05	1.55	59.52	5.74	2.62

*Sorted by data in “Mean” column.
**Average for rating dates 25 May, 30 May, and 2 Jun.

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