Wheat (*Triticum aestivum*)
Fusarium Head Blight; *Fusarium graminearum*

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Disease Severity of Selected Winter Wheat Cultivars to Fusarium Head Blight (FHB), 2022.

The experiment was conducted at Kansas State University Rocky Ford Research Station, Manhattan, Kansas. Field soil type was Chase silty clay loam (pH = 6.5). A randomized complete block design was used with four replicates of 50 wheat cultivars (entries) including the checks namely Everest and Overley. Experimental plots were five rows 0.51 m wide and 0.1902 m long and were seeded on October 7th. Corn kernel inoculum were prepared using a native aggressive *Fusarium graminearum* isolate GZ-3639 and air-dried. Field application of the inoculum was done in early spring April 15, May 1 and May 15 at a rate of 53g/m^2. Moisture conditions on the nursery necessary for *Fusarium graminearum* perithecia, spore development and infection were maintained with mist irrigation throughout the nursery for about 15 minutes at 4-hour intervals during flowering. Heading dates for entries were taken at 50% headed tillers. The incidence of symptomatic wheat plants from natural infection of Fusarium head blight (FHB) were visually estimated for each plot during the flowering period. Sterile corn kernels were used for inoculum production. The FHB incidence (%) were rated every other day namely May 19th, May 21st, May 23rd, May 27th, May 29th, June 3rd, June 6th, and June 9th by rating the percentage of infected spikelet with symptomatic head blight. Area under the disease progressive stairs (AUDPS) (quantitative intensity of FHB) was calculated for all entries and the least significant differences (LSD) (p=0.05) were determined using 'Agricolae' R package tool version 1.3-3 (R-Development Core Team). Plots for various entries were harvested on …..2022 and Fusarium damaged kernel (FDK) were estimated (in percentage) through visual inspection after cleaning.

There was pathogen infectivity across the nursery due to optimal conditions necessary for pathogenicity. The early susceptible check Overley had the highest disease severity with an AUDPS of 918.25. Entry KS21U8584.C.A3 had the lowest AUDPS (quantitative disease intensity/severity) of 176.75, which outperformed the moderately resistant check Everest (with AUDPS of 339). 11 entries outperformed the moderately resistant entry Everest with lesser disease intensity. The individual incidence taken at different dates contributed to the total area under the disease progression curve and Fusarium damaged kernel (FDK). Average FDK estimations range between 2.5 % (for entry KS21U8584.C.A3) to 52.5 % (for the check entry Overley) and correlated with evaluated AUDPS.

	Fusarium Head Blight Incidence (%) *										
Entry	Heading	May 19	May 21	May 21	May 27	May 29	June 3	June 6	June 9	FDK	AUDPS**
KS21U8584.C.A3	128.75	0.25	0	0.75	1	1.25	10	12.5	32.5	2.5	176.75
KS21U8086.13.14	131	0	0.75	1.25	1.25	6.75	11.25	15	32.5	5	219
NE19590	128	0	0.5	1	1	1.25	11.25	18.75	42.5	10	230.75

FHB BC2F2-5	126.75	0	0.25	0.75	1	1.25	15	17.5	45	21.25	244.25
8992-L-B02	130.5	0.25	0	0.75	1	5.75	10	17.5	43.75	12	248
NE14494	128	0	0	0.75	1	2.75	12.5	21.25	46.25	17.5	258.75
CO19D322R S	129.5	0	0.5	1	1	2.5	20	27.5	45	6.75	297
CO19D304R	129.5	0	1	1	1.25	3.25	21.25	26.25	51.25	30	321
CO18042RA	127	0	0.25	0.75	1	6.75	20	27.5	47.5	6	324.25
NI17410	127.25	0	0	1	1	1	11.25	25	68.75	3.75	326
NE19542	130	0	0.25	0.5	1	2.5	20	25	58.75	12.5	328.25
Everest	126.75	0.5	0.75	1.5	1.5	3.25	12.5	28.75	62.5	5	339
NE20474	126.5	0.5	0.75	0.75	1.25	1.75	20	26.25	62.5	15.25	343
KS140794K-8	129.25	0	0.5	1	1	2	23.75	26.25	58.75	35	343.25
NE17544	128.5	0.5	0.25	0.75	1.5	2.75	25	35	51.25	15	355
NE16468	128.5	0	0	1	1	1.5	18.75	27.5	73.75	10	373.5
KS140884C4-6	127	0.75	0.75	1.25	1	6	21.25	25	66.25	14.25	377.5
NE19454	128.75	0.5	0.25	1	1.75	7	23.75	27.5	60	12.5	377.75
CO16SF067	127.5	0	0	1	1	6.25	23.75	36.25	56.25	20.75	386
CO18922W	127.5	0.25	0.75	1	1.25	4	21.25	35	68.75	21.25	403.5
CO18035RA	127	1.75	0.5	1.25	1.5	8.25	21.25	32.5	66.25	9.75	413.75
CO19D087R	127.25	0.75	0.75	1	1.75	13.5	26.25	33.75	58.75	4.75	434.25
KS141050K-10	128.5	0.5	0.75	1.5	1	3.25	21.25	41.25	75	12.5	439.25
CO19D223W	129.25	0	0.25	0.75	1.5	1.25	28.75	46.25	68.75	28.75	444
KS140732K-2	127.25	0	0.75	0.5	1.25	3.75	27.5	28.75	83.75	20	444.75
NE19430	126.5	0	0	1	1.5	3.75	30	38.75	71.25	16.25	445.75
KS14FHB0599M-2	127.25	0.25	0.75	1.25	1.75	9.25	26.25	35	73.75	18.75	461.75
CO18499M	129.5	0.25	0.5	1.25	1.5	6.25	27.5	41.25	72.5	21.75	464.5
NE19455	127.25	0.25	1	1	1.5	4.5	33.75	33.75	77.5	13	467
KS15DH0055-11	128.75	0.25	0.5	1	1	2	20	48.75	83.75	21.25	475
CO17449R CO08346/Antero//Antero	127.25	0.5	1	1.25	1.5	13.75	33.75	32.5	67.5	25	481
KS13DH0041-35	126.75	0.25	0.75	1	1	1.5	30	50	82.5	8.75	503
KS140064M-1	127.75	0	0.25	1	1.25	6.5	36.25	42.5	76.25	14.25	504.5
NE19611	128	0.25	0.25	1.5	1.5	8.75	40	41.25	70	16.25	507.5
CO18228RA	126.25	0.5	2.75	1.75	1.25	11.25	31.25	41.25	81.25	11.75	533.5
KS16DH0010-17	127	0.5	0.75	1	1	5.25	32.5	51.25	83.75	18.75	537.25
KS130236C4-8	127.5	0.75	0.75	1	1.5	7.25	31.25	57.5	81.25	22.5	556.25
NE16424	127.75	0.25	0.75	1.5	2.25	12	32.5	55	73.75	3.75	556.25
NE19406	128.75	0	0.5	1.25	1.5	12.5	33.75	46.25	82.5	9.5	559
KS130403M-3	126.75	0.5	0.5	0.75	1	3.25	48.75	61.25	68.75	18.75	559.5
CO16SF032	128.5	0	0.5	1	1.75	10.75	41.25	43.75	86.25	14.25	576
KS14FHB0732M-4	128	0.25	0	0.75	1.25	4.5	31.25	58.75	92.5	6.25	576
KS120215K-6	127.5	0.5	1	1.75	2.5	14	40	47.5	82.5	18.25	595
KS16DH0002-12	127.75	0.25	0.25	1	1.75	4.5	40	67.5	88.75	17.5	619.75
CO19D255W	127.25	0.25	1.5	1	1.75	10.5	53.75	52.5	83.75	18.75	633.5
CO19D040W	127.25	0	0.75	1.5	2.75	16.25	60	50	81.25	13	668
CO19D042W	128.25	0.25	1	1.75	2.25	30	50	51.25	86.25	18.25	726.5

NE19412	126.5	0.5	4.25	3	5.25	26.25	52.5	67.5	90	28.75	793.25
KS130019C4-7	128	0.75	2.75	2.75	4	36.75	63.75	71.25	92.5	35	892.25
Overley	127	0.5	2.5	3.75	8	33.75	67.5	76.25	93.75	52.5	918.25
Average	127.895	0.285	0.72	1.19	1.64	7.89	29.3	38.925	69	16.295	461.175
P-value											<0.001
LSD	2.180126	0.80246	1.3273	0.800181	1.858666	11.83181	17.74666	17.83398	18.43938	16.50901	165.7648

* Percentage of wheat plants showing Fusarium head blight symptoms
** Area Under Disease Progress Steps (AUDPS)