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

L. Tidakbi[1], M. Bruce[1], M. A. Davis[1], A. Ibrahim[2], J. Rudd[2], B. Carver[3], J. Rupp Noller[1].
[1]Department of Plant Pathology,
Throckmorton Plant Science Center,
Kansas State University, Manhattan KS, 66506
[2]Soil and Crop Sciences,
Texas A & M, College Station TX, 77843
[3]Department of Plant and Soil Sciences, Oklahoma State University, Stillwater OK, 74078

Disease Severity of Selected Southern Wheat Cultivars to Fusarium Head Blight (FHB), 2023.

The experiment was conducted at Kansas State University Rocky Ford Research Station, Manhattan, Kansas. The 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 Emerson, Karl92, and Overly checks. Experimental plots were ten rows 0.51 m wide and 2.286 m long and were seeded on October 7 . Corn kernel inoculum was prepared using a native aggressive *Fusarium graminearum* isolate GZ-3639 and air-dried. Sterile corn kernels were used for inoculum production. 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) was 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 26 , May 28 , May 30 , June 1 , June 3 , June 5 , June 7 , and June 9 by rating the percentage of infected spikelets with symptomatic head blight. The 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 July 4 , 2023, and the Fusarium damaged kernel (FDK) were estimated (in percentage) through visual inspection after cleaning.

Pathogen infectivity across the nursery was due to optimal conditions necessary for pathogenicity. The early susceptible check Overly had the highest disease severity with an AUDPS (quantitative disease intensity/severity) of 587.5. Entry OK16103083 had the lowest AUDPS of 211, outperforming TX15M8456-19AZ504 (AUDPS 537) and Everest (AUDPS of 260) with the lowest concentrations of DON 5.60 PPM and 7.13 PPM respectively. TX15M8456-19AZ504 outperformed the moderately resistant entry Everest and other entries with lesser concentration mycotoxin DON levels but relatively higher AUDPS. The individual incidence at different dates

contributed to the total area under the disease progression curve and Fusarium damaged kernel (FDK). Average FDK estimations range between 2.75 % (for entry Everest) to 58.75 % (for entry OK20708) and correlate with evaluated AUDPS and DON at 0.21 and 0.78 respectively.

		F			
E	H	A	FHB (%) *	FD	D	A D **
16103083	131.50		13.19	17.00	19.57	211.00
C	131.25		31.59	31.25	17.23	505.50
18217-19H -4	131.75		16.31	30.50	23.45	261.00
19225	131.67		20.54	32.33	32.57	328.67
20418-7C21	131.75		23.34	21.25	17.90	373.50
16107133-19H -3	130.75		14.00	26.50	13.75	224.00
16107133-19H -4	131.50		18.50	19.25	13.85	296.00
20708	129.00		27.25	58.75	27.38	436.00
21538	131.00		21.06	23.25	21.93	337.00
198417C	131.25		20.22	38.75	25.75	323.50
20925 F	129.75		15.97	2.75	11.00	255.50
19515-20H -2	134.25		15.31	41.00	32.45	245.00
2189176 F	134.50		23.47	51.25	32.25	375.50
2189178 F	134.50		20.66	23.00	14.65	330.50
21227	130.50		35.72	27.00	10.85	571.50
19A001030	131.25		16.78	22.25	15.03	268.50
15A001482-19A 16	134.00		24.06	38.75	28.85	385.00
18DH129	133.00		26.63	55.00	30.65	426.00
18DH266	130.75		25.16	26.50	17.33	402.50
18DH287	129.50		21.88	26.25	14.53	350.00
18DH313	131.50		21.06	20.33	12.93	337.00
15 8456-19A 435	132.00		27.97	48.75	20.03	447.50
15 8456-19A 504	126.50		33.56	26.25	5.60	537.00
19 3183	129.50		24.81	28.75	10.53	397.00
14A001035	130.00		21.97	18.75	14.20	351.50
14 70214	129.50		18.19	9.50	11.85	291.00
15 8024	130.50		28.09	35.75	19.75	449.50
16 9216	133.50		19.84	45.00	23.80	317.50
18A001119	131.00		20.06	14.25	13.83	321.00
18A001132	128.25		21.16	7.25	8.58	338.50
E	126.75		16.25	2.75	7.13	260.00
92	127.50		13.47	6.25	11.68	215.50
	126.50		36.72	10.00	12.30	587.50
A	133.00		15.84	58.33	28.37	253.50
A B	128.75		22.75	22.75	13.50	364.00

A	130.80	22.10	27.64	18.14	353.55
	<0.001	<0.001	<0.001	<0.001	<0.001
D	1.14	22.58	54.50	33.81	22.58

* F

** A D (A D)