WHEAT (*Triticum aestivum*, 'multiple cultivars')
Fusarium head blight; *Fusarium graminearum*

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Reaction of selected winter wheat accessions to Fusarium head blight (FHB), 2020.

The experiment was conducted in Chase silty clay loam soil at Rocky Ford Research Station, Kansas State University, Manhattan, Kansas. The experimental design of Fusarium head blight (FHB) scab Nursery was a randomized complete block with four blocks where 50 entries were randomly assigned within block. Experiment plots were single rows 2.3-m long spaced 0.51-m apart. Seeds were sown on 1 Oct 2019 with the seeding rate of 67.25 kg/ha. Corn kernels were inoculated with two aggressive isolates of *Fusarium graminearum* conidia. Air-dried kernels were spread throughout the plots at the rate 57g/m^2 three times on 10 Apr, 24 Apr, and 09 May 2019. During anthesis, overhead impulse sprinklers were used apply the water at the rate of 12 min every four hours overnight. Visual estimations of the percent symptomatic spikelets (FHB index) was determined on 23 May, 27 May, 29 May, 31 May, 02 Jun, 04 Jun, and 06 Jun and heading date (50% headed) per plot was also recorded. FHB index of seven different observation days were used to calculate the Area Under Disease Progressive Curve (AUDPC) by using "agricolae" package in R (R-Development Core Team). AUDPC values were analyzed by GLM procedure (SAS Institute Inc.) and Fisher's protected least significant difference (LSD; $P = 0.05$) was used for mean comparisons. Grain sub-samples per plot were sent to the North Dakota State University Wheat DON testing laboratory for determination of deoxynivalenol (DON) concentration. Correlation among AUDPC, heading date, and DON were also analyzed.

Good head blight symptoms were observed in all breeding lines. Mean AUDPC values varied with cultivars ($F = 6.53$, $P < 0.001$). 'Overley', the susceptible check had significantly high AUDPC values than other entries ($P < 0.001$) except 0001_0_0004_1, 0003_0_0004_1, and 0001_0_0004_1. Mean DON concentrations varied with cultivars ($F = 3.06$, $P < 0.001$). 'LCH17-4256' had the highest DON levels (43.15 ppm) and it was statistically similar to Overley, LCSLink, LCH17-4196, LCH17-1296, 19CP010259, 19CP010013, 00003_0_0004_1, 00003_0_0005_1, and 00003_0_0006_1. All other entries had statistically lower DON levels than LCH17-4256 ($P < 0.001$). There was a significant negative correlation between mean AUDPC and heading date (Julian) ($n = 200$, $r = -0.30$, $P < 0.001$). Mean AUDPC was significantly correlated with mean DON levels ($n = 200$, $r = 0.32$, $P < 0.001$).

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NAME	Heading date(Julian)z	Fusarium head blight Index (% killed spikelets) FHB1	FHB 2	FHB 3	FHB 4	FHB 5	FHB 6	FHB 7	Average FHB[y]	AUDPC[x]	DON (ppm)
19CP010574	125.3	0.3	3.8	18.8	11.3	28.8	30.0	60.0	21.8	247.3	8.5
19CP010078	125.8	0.3	1.8	8.3	4.5	20.0	23.8	42.5	14.4	160.3	8.8

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		FHB1	FHB 2	FHB 3	FHB 4	FHB 5	FHB 6	FHB 7			
19CP010571	126.0	0.5	7.0	16.8	15.0	30.0	40.0	72.5	25.9	294.3	9.1
00001_0_0007_1	131.8	0.3	1.3	7.8	9.3	30.0	37.5	71.3	22.5	243.7	9.3
00002_0_0001_1	125.8	0.0	1.5	9.3	6.3	16.3	23.8	47.5	14.9	162.3	9.6
19CP010569	125.8	0.3	9.3	15.0	17.5	48.8	35.0	56.3	26.0	312.3	10.0
19CP010566	125.3	0.0	14.3	16.3	12.5	30.0	50.0	63.8	26.7	316.9	10.3
19CP010588	125.8	0.3	4.8	15.0	8.8	31.3	30.0	61.3	21.6	243.5	10.4
DH15HRW63-81	128.5	0.5	2.5	10.5	5.5	18.8	33.8	51.3	17.5	195.3	11.1
00005_0_0004_1	124.0	0.5	14.8	28.8	23.8	52.5	65.0	82.5	38.3	460.1	11.5
00002_0_0003_1	124.3	0.8	22.5	32.5	37.5	50.0	62.5	71.3	39.6	493.6	11.8
Everest	122.5	0.5	4.8	17.5	7.5	43.8	48.8	71.3	27.7	318.9	12.0
00005_0_0007_1	123.8	0.8	17.5	31.3	25.0	52.5	60.0	66.3	36.2	448.6	12.7
LCH18-7080	123.3	0.3	4.8	16.3	12.5	48.8	58.8	73.8	30.7	358.5	13.0
LCH17-3118	131.3	0.8	3.5	8.0	10.5	28.8	36.3	55.0	20.4	231.9	13.3
00004_0_0007_1	125.3	0.3	4.3	17.5	9.3	30.0	37.5	60.0	22.7	259.5	13.8
19CP010506	123.3	1.0	16.3	25.0	25.0	45.0	51.3	76.3	34.3	410.9	14.0
19CP010092	125.3	0.5	11.5	26.3	26.3	53.8	62.5	78.8	37.1	445.8	15.0
19CP010586	125.0	0.8	27.5	31.3	25.0	42.5	46.3	62.5	33.7	422.4	15.2
LCH17-5660	125.5	0.5	11.0	35.0	26.3	43.8	63.8	71.3	35.9	437.0	15.5
19CP010435	124.3	0.8	27.5	37.5	26.3	56.3	55.0	77.5	40.1	497.4	15.7
LCH17-1850	126.5	0.0	1.3	9.3	8.0	30.0	35.0	61.3	20.7	228.9	16.9
Karl92	122.5	1.0	10.5	31.3	17.5	50.0	43.8	67.5	31.6	380.3	17.0
LCH17-5221	126.3	0.0	2.5	12.5	12.5	35.0	46.3	56.3	23.6	275.0	18.7
19CP010505	123.5	1.3	12.5	22.5	18.8	50.0	58.8	61.3	32.1	394.4	19.0
00006_0_0008_1	130.8	0.0	1.5	7.5	5.5	32.5	42.5	70.0	22.8	249.8	19.8
SyBenefit	123.5	1.0	9.0	15.0	13.8	31.3	46.3	71.3	26.8	307.8	20.2
00003_0_0007_1	126.8	0.0	1.5	4.3	6.3	22.5	31.3	68.8	19.2	201.0	20.4
LCH17-3481	124.3	0.5	13.0	33.8	27.5	48.8	63.8	78.8	38.0	459.5	20.7
00006_0_0003_1	131.8	0.0	0.8	3.5	5.0	21.3	42.5	67.5	20.1	213.9	20.9
LCH18-7071	126.8	0.0	5.5	21.3	20.5	39.3	36.3	60.0	26.1	308.3	20.9
00001_0_0004_1	125.0	1.0	28.8	42.5	37.5	63.8	66.3	75.0	45.0	568.4	20.9
19CP010068	125.5	0.0	3.5	17.5	11.3	35.0	56.3	65.0	26.9	313.8	21.1
00003_0_0006_1	125.0	0.8	15.0	28.8	23.8	56.3	70.0	85.0	39.9	481.1	21.5
LCH17-1765	124.3	0.3	16.3	43.8	36.3	53.8	67.5	76.3	42.0	519.8	23.5
19CP010111	128.0	0.0	1.5	5.5	7.5	30.0	35.0	55.0	19.2	214.8	23.8
LCH17-093	126.5	0.5	12.8	31.3	28.8	58.8	72.5	83.8	41.2	498.9	25.0
LCH17-3468	124.0	0.0	6.5	23.8	20.0	38.8	58.8	76.3	32.0	375.0	25.4
00007_0_0005_1	125.0	0.3	7.8	16.3	13.8	61.3	73.8	81.3	36.3	431.0	26.0
LCH17-2444	128.3	0.8	6.5	11.3	22.5	40.0	55.0	72.5	29.8	347.4	26.4
00003_0_0005_1	125.3	0.3	6.8	23.0	21.3	51.3	67.5	76.3	35.2	419.5	29.0
00003_0_0004_1	122.3	0.5	25.5	41.3	42.5	67.5	81.3	83.8	48.9	613.3	29.6
LCH17-1296	125.3	0.0	6.8	23.8	21.3	46.3	58.8	75.0	33.1	391.9	30.6
00007_0_0006_1	123.0	1.0	17.5	40.0	33.8	65.0	73.8	81.3	44.6	551.5	34.6
19CP010259	123.5	0.5	6.5	30.0	22.5	58.8	63.8	72.5	36.4	439.5	37.0
Overley	123.8	2.3	53.7	47.5	35.0	66.3	83.8	96.3	55.0	699.0	37.5
LCH17-4196	124.8	0.5	19.7	30.0	23.8	52.5	63.8	80.0	38.6	470.1	38.1
LCSLink	129.3	0.0	2.5	10.0	12.5	40.0	53.8	78.8	28.2	317.5	39.1
19CP010013	127.3	0.3	6.2	13.8	33.8	66.3	71.3	82.5	39.1	468.5	41.8
LCH17-4256	127.3	0.3	9.2	18.8	30.0	52.5	56.3	78.8	35.1	417.3	43.2
Average	125.7	0.4	10.5	21.7	19.2	43.3	52.5	70.2	31.1	370.3	20.4
LSD	1.93	0.62	14.12	19.13	14.41	18.13	16.54	13.92	9.6	134.31	15.22

[z]Days from January 1

[y]Average rating from FHB1-FHB7

[x]Area Under Disease Progress Curve