

Evaluation of Commercial Sweet Corn varieties for response to Tar Spot in Hancock, Wisconsin, 2024.

A trial was established on 18 Jul at the Hancock Research Station in Hancock, WI, to evaluate varietal resistance to tar spot on commercial sweet corn varieties. 20 commercial sweet corn varieties from 4 suppliers (Seminis, Syngenta, Harris Moran, Crookham Company) were evaluated. The experimental design consisted of 4 replicates arranged in a randomized complete block design. Each treatment plot consisted of four, 25-ft-long rows spaced 30 in. apart with 5-ft barren buffer alleys at the end of plots in the same row. Insect, weed, and fertility management was carried out as per commercial standards for the production region. Naturally occurring inocula of tar spot was present from nearby sweet corn plots not sprayed with fungicides. No fungicides were applied to the plots for the duration of the trial. The trial was rated for disease incidence and severity on the leaves closest to ear set on 3 dates, 1 Sept, 21 Sept, and 15 Oct using the Horsfall-Barratt rating scale (0-11 rating with 0=no disease, 11=100% disease severity). The Area Under the Disease Progress Curve (AUDPC) was determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC), i.e. percentage of the maximum possible AUDPC for the whole period of the experiment. 5 feet of a center row was hand harvested for each plot on 15 Oct. All ears with silk were harvested, counted, and weighed without shucking. Data were analyzed using ANOVA ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$.

Disease pressure was heavy with 100% disease incidence in all plots. Due to the late planting, yields were lower than expected for commercial sweet corn plots. There were no significant differences in the ear number per acre, but significant differences between varieties in both yield and disease severity (RAUDPC). The top five yielding varieties were Coachman, Messenger, Triple Threat, GSS3951, Forerunner. The top 5 varieties with the least amount of disease were GSS2259P, GH9335, Townsend, GSS3951, Forerunner. Yield did not closely correlate with disease ($r = 0.054$).

Variety	Yield (ton/A)		RAUDPC ^z		Ear Number/Acre
Azlan	1.94	ab ^z	0.400	f-i	49658.4
Braveheart	2.04	ab	0.387	d-h	44431.2
Bull Moose	1.81	ab	0.362	c-f	38332.8
Coachman	4.11	h	0.402	f-i	50529.6
Column	2.10	ab	0.411	g-i	41817.6
Dall	2.53	b-d	0.396	f-h	47044.8
Devotion	2.22	a-c	0.387	d-h	47044.8
Duration	2.86	c-e	0.366	c-g	48787.2
Forerunner	3.30	c-g	0.343	cd	42688.8
Fortitude RMN	1.76	a	0.398	f-i	42688.8
GH 9335	1.94	ab	0.291	b	46173.6
GSS 2259P	2.10	ab	0.241	a	48787.2
GSS 3951	3.32	c-g	0.341	cd	49658.4
GSS 4628	3.04	d-f	0.348	c-e	47044.8
Kamet	2.23	a-c	0.366	c-g	43560.0
Klondike	2.51	b-d	0.391	e-h	49658.4
Messenger	3.83	gh	0.364	c-f	56628.0
Strongheart	1.74	a	0.443	i	46173.6
Townsend	2.37	a-d	0.334	bc	46173.6
Triple Threat	3.65	f-h	0.425	hi	48787.2

^zRAUDPC= Relative Area Under the Disease Progress Curve.

^z Column numbers followed by the same letter are not significantly different at $P=0.05$ as determined by Fisher's Least Significant Difference (LSD) test.