

Field Corn Variety Trial Results

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The 2024 UCCE Delta field corn variety trial, located on Tyler Island, was planted on April 26th by air planter and consisted of three replicate blocks of eleven varieties. The trial included nine varieties submitted by seed companies and two submitted by the grower. All varieties were glyphosate tolerant. Each plot consisted of four 30-inch beds on an average row length of 1370 feet. Seed was planted approximately two inches deep and six inches apart down the row. The soil is a Rindge mucky silt loam with approximately 20 percent organic matter in the top 15 inches of soil. The Rindge series is a mucky peat soil down to about 60 inches, and approximately 55,600 acres in the Delta are described by the Rindge classification. The previous crop in the field was triticale. Subsurface irrigation by “spud ditch” was employed. The fertilizer program consisted of pre-plant UN-32 (113 lb N/acre) and at-planting 8-24-6 with zinc chelate (31 lb N/acre). Weed control was by cultivation and glyphosate herbicide program, and Onager miticide was applied. The field was harvested on October 14th.

Stand counts were made approximately two weeks after planting. The stand was assessed in the center two rows of each four-row plot, counting the plants along a 10-foot length. All varieties reached bloom between July 6th and July 11th (71-76 days after planting). There were periods of exceptionally hot weather during the 2024 growing season, including during bloom (Fig. 1). Corn has photosynthetic adaptations that impart heat tolerance, but research has shown that the photosynthetic capacity of corn can be impeded when high leaf temperatures inactivate photosynthetic enzymes. High mid-season temperatures may have impacted yield for some varieties, but overall performance appears comparable to previous years.

We monitored head smut, common smut, and Fusarium ear rot (Fig. 2), as well as plant lodging and ear height, in mid-September. The three diseases are generally managed by variety selection. Fusarium ear rot incidence was relatively high this year, and members of the industry have confirmed this for other regions of the state. Head smut incidence was low this year, and common smut is not widely observed at this site. Winds were light during the harvest season, so no lodging was observed.

Table 1 presents mean values for the three replicates. The statistical method used to compare the means is called the Tukey’s range test. Varieties were considered statistically different if their P value was less than 0.05, or 5 percent. What this means is that when differences between varieties exist, we are 95% certain that the two varieties are actually different; the results are not due to random chance. Differences between varieties are indicated by different letters following the mean. For example, a variety that has only the letter “a” after the mean yield value is different from a variety that is followed by only the letter “b”, but it is **not** different from a variety whose mean value is followed by both letters (“ab”). Six varieties have the letter “a” following their mean yield, which means that those six varieties all performed similarly in the trial. In other words, based on this trial, we cannot attribute numerical differences to varietal differences.

In addition to yield, there were also statistical differences among varieties for stand count, days to bloom, Fusarium ear rot, ear height, grain moisture, and bushel weight. The CV, or coefficient of variation, is the standard deviation divided by the mean, or a measure of variability in relation to the mean. For Fusarium ear rot, the variability among the three replicates was very high.

Special thanks go to cooperating grower, Gary Mello, and the participating seed companies.

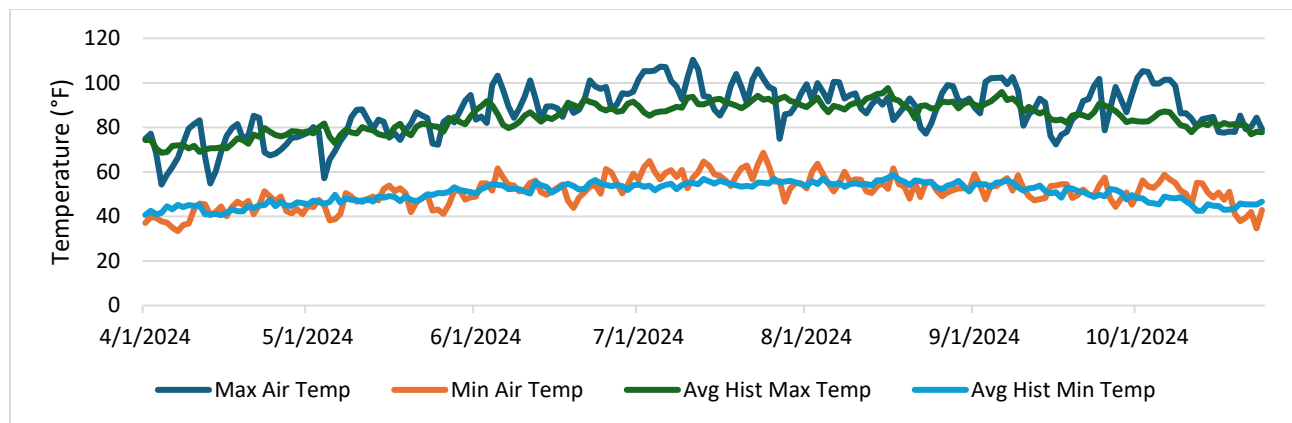


Figure 1. Temperature data from the California Irrigation Management Information System (CIMIS) Staten Island station, which is the most proximal station to the trial location. The maximum and minimum temperatures for the 2024 season are shown in relation to the average historical temperatures for that station (2016-2023).



Figure 2. Diseases monitored in the UCCE Delta field corn variety trial: A) Fusarium ear rot, B) head smut, and C) common smut. Fusarium ear rot incidence was high in 2024.

Table 1. 2024 UCCE Delta field corn variety trial by Michelle Leinfelder-Miles, UCCE farm advisor.

Entry Name	Variety Source	Stand Count (plants/ac)	Days to Bloom*	Fusarium Ear Rot* (%)	Head Smut (%)	Common Smut (%)	Plants Lodged (%)	Ear Height* (in)	Moisture (%)	Bushel Wt. (lbs/bu)	Yield‡ (lbs/acre)
P 14830AML	Pioneer Seeds	37752 ab	75 a	1 c	3	0	0	52 ab	13.0 a	61.8 bcde	13123 a
P 1366	Grower	36300 abc	75 abc	1 c	0	0	0	55 a	11.9 c	61.2 de	12714 ab
LG 7514	Grower	36590 abc	72 cd	2 c	0	0	0	49 abc	12.2 bc	63.0 ab	12324 abc
P 1222AM	Pioneer Seeds	37171 abc	76 a	2 c	1	0	0	52 ab	12.0 bc	62.1 abcd	12280 abc
D 54SS74RIB	Nutrien Ag Solutions	38623 a	72 cd	2 c	1	1	0	46 bc	12.3 bc	61.5 cde	12226 abc
LG 64C43VT2RIB	LG Seeds	36590 abc	73 bcd	2 c	0	0	0	47 abc	12.4 abc	60.7 e	11928 abcd
PS 8360VT2ProRIB	ProHarvest	36010 abc	76 a	2 c	1	0	0	53 ab	11.9 c	61.5 cde	11188 bcde
B SX5543RR	Baglietto Seeds	33687 c	71 d	16 a	2	0	0	40 c	12.5 abc	63.3 a	11034 cde
B SX5583VT2P	Baglietto Seeds	31654 cd	71 d	6 bc	0	0	0	47 abc	12.6 ab	61.3 de	10987 cde
D 53SS13RIB	Nutrien Ag Solutions	34267 bcd	75 a	6 bc	2	0	0	54 ab	12.1 bc	62.5 abc	10479 de
LG 63C54PCE	LG Seeds	35138 abcd	74 abc	11 ab	0	0	0	54 ab	12.4 abc	61.0 de	10212 e
Average		35798	74	5	1	0	0	50	12	61.8	11681
Coefficient of Variation (%)		7	3	106	-	-	-	10	3	1.4	9
Significant variety effect (P value)		0.0002	<0.0001	<0.0001	N/A	N/A	N/A	0.0001	0.0001	<0.0001	<0.0001

Results for each variety are expressed as the average across three replications.

* Data were transformed for analysis. Arithmetic means are presented.

‡ Yield adjusted to 15% moisture.