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Field Corn Variety Trial Results

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The 2021 UCCE Delta field corn variety trial, located on Tyler Island, was planted on April 20th by air planter and consisted of three replicate blocks of sixteen varieties. The varieties included ten varieties submitted by seed companies and six submitted by the grower. All varieties were glyphosate tolerant. Each plot consisted of four 30-inch beds on an average row length of 1130 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 corn. Subsurface irrigation by "spud ditch" was employed twice. 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 1st.

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 June 30th and July 5th (71-76 days after planting). We monitored head smut, common smut, and Fusarium ear rot (Fig. 1), as well as plant lodging and ear height, in mid-September. The three diseases are generally managed by variety selection. Incidence of head smut was similar to previous years, and common smut is not generally observed at this site. Fusarium ear rot incidence was the lowest observed over the last 8 years of this trial. This year, average incidence across varieties was 0 percent, and it has ranged from 1 percent (2014) to 10 percent (2018).

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"). Similarly, a variety whose mean yield is followed by the letters "ab" is not different from a variety whose mean yield is followed by the letters "bc". Twelve varieties have the letter "a" following their mean yield, which means that those twelve varieties all performed similarly in the trial. In other words, based on this research, we cannot attribute numerical differences to varietal differences.

In addition to yield, there were also statistical differences among varieties in days to bloom, head smut, 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 head smut, the variability among the three replicates was very high, and yield variability across replicates was also high relative to previous years.

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

Figure 1. Diseases monitored in the UCCE Delta field corn variety trial: A) Fusarium ear rot, B) head smut, and C) common smut. Fusarium ear rot and common smut incidence was very low in 2021.

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Table 1. 2021 UCCE Delta field corn variety trial

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Entry Name	Variety Source	Stand Count (Plants/A)	Days to Bloom	Fusarium Ear Rot (%)	Head Smut* (%)	Common Smut (%)	Plants Lodged (%)	Ear Height (in)	Moisture (%)	Bushel Wt. (lbs/bu)	Yield‡ (lbs/acre)
P 1366	Grower	34848	73 cde	0	1 c	0	0	48 ab	12.4 abc	61.4 abc	13095 a
A 647-42TRC	Agrigold	33687	72 ef	0	3 bc	0	0	48 ab	14.2 a	59.4 c	13086 a
BAG SX5543 RR	Baglietto Seeds	32815	74 bcde	0	1 c	0	0	45 ab	14.3 a	62.4 a	12890 a
P 1213AM	Corteva Agriscience	31654	72 ef	0	2 bc	0	0	43 b	13.6 abc	61.5 abc	12826 a
INT 6588	Grower	31073	76 a	0	1 c	0	0	51 a	14.2 a	61.8 abc	12679 ab
P 1359AM	Corteva Agriscience	31363	76 a	0	0 c	0	0	48 ab	13.1 abc	62.0 ab	12662 ab
LG 61C48VT2PRO	LG Seeds	31654	72 ef	0	4 abc	0	0	49 ab	12.2 bc	59.8 bc	11425 abcd
DKC 6916	Grower	31944	75 abc	0	1 c	0	0	48 ab	14.1 ab	61.4 abc	11311 abcd
LG 5643VT2PRO	LG Seeds	31363	73 def	0	0 c	0	0	51 a	12.8 abc	60.4 abc	11199 abcd
INT 6811VT2P	Wilbur-Ellis	33977	75 abcd	0	4 abc	0	0	48 ab	13.4 abc	60.5 abc	10772 abcd
INT 6533VT2P	Wilbur-Ellis	34558	72 ef	0	1 c	0	0	51 a	12.0 c	61.5 abc	10539 abcd
CP 5370VT2P/RIB	Winfield United	32815	76 ab	0	2 bc	0	0	47 ab	11.8 c	59.5 bc	10309 abcd
A 646-12VT2RIB	Agrigold	35138	72 ef	0	13 ab	0	0	50 ab	12.9 abc	60.1 abc	8784 bcd
LG 66C32	Grower	35429	72 ef	1	19 a	1	0	49 ab	12.9 abc	59.8 abc	8612 cd
LG 66C11	Grower	33977	71 f	0	17 a	0	0	46 ab	13.4 abc	59.6 bc	8210 d
INT 6720	Grower	33106	76 a	0	20 a	0	0	47 ab	12.4 abc	60.9 abc	7466 d
Average		**33088**	**74**	**0**	**6**	**0**	**0**	**48**	**13**	**60.8**	**10992**
Coefficient of Variation (%)		**6**	**3**	**-**	**137**	**-**	**-**	**6**	**8**	**2.0**	**19**
Significant variety effect (P value)		**0.7632**	**<0.0001**	**N/A**	**<0.0001**	**N/A**	**N/A**	**0.0160**	**0.0001**	**0.0008**	**<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.