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Field Corn Variety Trial Results

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The 2020 UCCE Delta field corn variety trial, located on Tyler Island, was planted on April 21st by air planter and consisted of three replicate blocks of seventeen varieties. The seventeen varieties included fourteen varieties submitted by seed companies and three submitted by the grower. All varieties were glyphosate tolerant. Each plot consisted of four 30-inch beds on an average row length of 1080 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 (115 lb N/acre) and at-planting 8-24-6 with ½ percent of zinc (30 lb N/acre). Weed control was by cultivation and glyphosate herbicide program, and Onager miticide was applied. The field was harvested on September 25th.

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 during the week of June 29th (68-72 days after planting). We monitored diseases (Fig. 1) and plant lodging in mid-September. Incidence of Fusarium ear rot and head smut were similar between 2020 and 2019. A sign of Fusarium ear rot is white fungal mycelium around the kernels. The disease is usually introduced to the ears by corn earworm or by thrips that travel down the corn silks at pollination. Incidence may be reduced in varieties with longer or tighter husks that prevent insect infestations. Planting earlier in the season may also reduce incidence, as the crop may reach pollination before insect pests are prevalent. Head smut, a disease that replaces ears with dark brown spores, had low incidence this year. Common smut occurs in hot, dry conditions and was more prevalent in 2020 compared to previous years, especially for certain varieties. Common smut appears as gray galls filled with spores that replace kernels. These three diseases are generally managed by variety selection.

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 a 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 Fusarium ear rot, head smut, common smut, ear height, grain moisture, and bushelweight. 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 the diseases, the variability among the three replicates was very high.

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.



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Table 1. 2020 UCCE Delta field corn variety trial
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Entry Name	Company Name	Stand Count* (Plants/A)	Fusarium Ear Rot* (%)	Head Smut* (%)	Common Smut* (%)	Plants Lodged (%)	Ear Height* (in)	Moisture (%)	Bushel Wt.* (lbs/bu)	Yield‡ (lbs/acre)
INT 6533	Grower entry	37171	4 bcde	1 abc	2 b	0	50 abc	13.4 fghij	60.6 ab	15158 a
SX 5583VT2P	Baglietto Seeds	37462	0 de	1 abc	0 b	0	45 cdefg	13.9 cdefg	60.5 ab	14543 ab
INT 6588VT2PRIB	Integra	36300	3 bcde	1 abc	3 ab	0	51 ab	14.8 abc	61.4 ab	13642 abc
SX 5543RR	Baglietto Seeds	36300	1 cde	1 abc	0 b	0	39 g	14.3 bcd	61.8 ab	13474 abc
LG 7514	Grower entry	36590	3 bcde	0 c	0 b	0	43 defg	14.2 bcd	61.7 ab	13434 abc
MS 1457VT2PRIB	Mission Seeds	36010	2 cde	0 c	0 b	0	42 efg	12.8 hij	60.5 ab	13117 abc
P 1366AM	Pioneer	36590	6 bcd	2 abc	1 b	0	47 bcde	12.7 j	60.5 ab	13038 abc
A 647-90VT2RIB	Agrigold	36010	6 bc	0 bc	6 a	0	50 abc	14.5 abcd	62.2 a	12763 abc
CP 5678SS/RIB	Croplan	37752	1 cde	0 bc	0 b	0	40 fg	14.1 cdef	61.8 ab	12544 abc
P 1055AM	Pioneer	34267	29 a	0 c	0 b	0	46 bcdef	12.4 ij	60.6 ab	12533 abc
INT 6695TRE	Integra	36300	3 cde	5 ab	0 b	0	52 ab	13.9 cdefg	61.7 ab	12445 abc
LG 67C45STX	LG Seeds	36300	0 e	1 abc	0 b	0	49 abcd	15.3 a	60.6 ab	12382 abc
LG 61C48VT2PRO	LG Seeds	36300	5 bcd	3 ab	1 b	0	43 defg	13.0 ghij	60.3 ab	12329 bc
P 1197	Grower entry	37752	4 bcde	1 abc	0 b	0	50 abc	13.6 defgh	61.1 ab	12300 bc
MS 1687VT2P	Mission Seeds	35719	2 bcde	2 abc	1 b	0	47 bcde	12.4 efghi	60.2 b	11520 cd
NK 1694-3111	Northrup King	35719	4 bcde	2 abc	3 ab	0	54 a	15.0 ab	57.9 c	10940 cd
A 644-04-3110	Agrigold	35429	12 ab	6 a	1 b	0	52 ab	14.3 bcdef	60.9 ab	8962 d
Average		36351	5	2	1	0	47	14	60.8	12654
Coefficient of Variation (%)		2	30	48	64	-	2	2	0.6	6
Significant variety effect (P value)		0.4578	<0.0001	0.0001	0.0019	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.