UC CE University of California
Agriculture and Natural Resources Cooperative Extension

Field Corn Variety Trial Results

Michelle Leinfelder-Miles, Farm Advisor, Delta Crops

The results of the 2019 UCCE Delta field corn variety trial, located on Tyler Island, are presented in Table 1. Three replicate blocks of fourteen varieties were planted on May 7th by air planter. The fourteen varieties included 11 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 1300 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. Anhydrous ammonia was applied pre-plant (115 units N/acre), and 8-24-6 with ½ percent of zinc was knifed in at planting (additional 33 units N/acre). Weed control was by cultivation and glyphosate herbicide program, and Onager miticide was applied. The field was harvested on October 21st.

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. Bloom was assessed over the week of July 15th. We monitored disease incidence and plant lodging in late September. Disease incidence, particularly Fusarium ear rot, was lower in 2019 compared to 2018. 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. These two diseases are generally managed by variety selection.

The table 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". Eight varieties have a letter "a" following their mean yield, which means that those eight 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, Fusarium ear rot, head 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.

University of California
Agriculture and Natural Resources | Cooperative Extension

Table 1. 2019 UCCE Delta field corn variety trial
By: Michelle Leinfelder-Miles, UCCE farm advisor

Entry Name	Company Name	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)
LG 7514VT2PRO	Grower entry	34267	70 d	5 b	0 c	0	0	53 cdef	14.9 bcd	61.3 abc	14623 a
SX 5543	Baglietto Seeds	35719	70 d	5 b	0 c	0	0	48 ef	14.7 bcd	62.0 a	14209 ab
INT 6588VT2PRIB	Integra	35719	74 a	3 b	0 c	0	0	59 abc	15.1 bcd	61.2 abc	13643 abc
REV 2658AM	Mycogen	33977	73 abc	1 b	1 bc	0	0	55 bcde	14.9 bcd	61.6 ab	13589 abcd
CP 5814SS	Croplan	33686	73 ab	1 b	2 abc	0	0	57 abcd	16.5 a	62.3 a	13272 abcde
A 644-32TRCRIB	Agrigold	34267	72 bcd	2 b	2 abc	0	0	60 ab	14.6 cde	60.9 abc	13095 abcde
INT 6533VT2PRO	Grower entry	36010	73 abc	3 b	5 ab	0	0	54 bcdef	14.3 de	59.8 bc	12951 abcde
CP 5678SS/RIB	Croplan	36881	73 ab	2 b	1 abc	0	0	48 f	15.2 bcd	61.3 abc	12904 abcde
LG 66C11VT2PRO	LG Seeds	34558	68 e	2 b	1 bc	1	0	54 bcdef	15.5 abc	59.4 c	12630 bcdef
P 1751AM	Grower entry	34558	73 ab	5 b	0 c	0	0	62 a	15.7 ab	61.5 abc	12490 bcdef
A 646-12VT2PRO	Agrigold	37171	70 d	2 b	13 a	1	0	54 bcdef	15.0 bcd	60.3 abc	11883 cdef
REV 2499AM	Mycogen	32525	72 abc	4 b	0 c	0	0	57 abcd	15.1 bcd	62.0 a	11785 def
INT 6284VT2PRIB	Integra	34558	71 cd	4 b	1 bc	0	0	52 def	13.6 e	60.3 abc	11625 ef
LG 60C33VT2PRO	LG Seeds	33396	70 d	22 a	2 abc	0	0	53 bcdef	12.4 f	59.7 bc	11078 f
Average		**34807**	**72**	**4**	**2**	**0**	**0**	**55**	**15**	**61.0**	**12841**
Coefficient of Variation (%)		**3**	**0.5**	**27**	**61**	**-**	**-**	**3**	**1**	**0.7**	**5**
Significant variety effect (P value)		**0.1503**	**<0.0001**	**<0.0001**	**<0.0001**	**N/A**	**N/A**	**<0.0001**	**<0.0001**	**0.0003**	**<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.