2019 Corn Variety Trials
Data Summary

Trial Summary:

These trials were planted on April 11 at a seeding rate of 35,000 seeds/A. Plots were 40' long by 12' side (six 24" rows) with four replicates. Three of the center rows were harvested for yield calculations on September 3. Soil type was a Hyde Loam classified as Organic by NCDA.

The trial site received 10 gal/A 8-0-0-9S + 12 gal/A 30% nitrogen pre-plant broadcast. Starter fertilizer received was 2 gal/A 6-24-6 in-furrow and 12 gal/A 17-17-0-3S 2x2. 34 gal/A 30% nitrogen was applied at layby at V5. Total nitrogen was 180 lb/A.

The trials had great conditions for emergence and early season growth. However, the rain stopped after April 15 and the trials experienced severe drought and heat stress during the last two weeks of May. Rain fell again on May 31, providing adequate moisture for pollination to occur well. There was also some minor drought stress around the end of June and early July during grain fill. Though yields were below normal, they were slightly better than we expected based on our experience from previous drought years. The primary difference from other poorer years was that this trial did receive sufficient rain just prior to pollination. Without that rain it could have been much worse.

Data Summary:

Yield data is more variable this year than normal. This is likely due to drought conditions. Drought stress tends to add quite a lot of variability to corn yield data. Generally, a CV value of 8-10 would be excellent quality data and what we hope for with corn variety trials. For the early hybrid trial, the CV was 11.6 and for the late hybrid trial the CV was 15.46. This indicates that the early hybrid trial had better quality data than the late hybrid trial. In drought conditions, it is unusual for us to have better yields with early hybrids than the later hybrids. This is an indication that the later hybrids were hurt more from the drought. This may be due to the early hybrids getting established slightly quicker while moisture was still ok, or it may be that the heat affected the late hybrids more at pollination. This is also confirmed in the highly variable test weights in the late hybrid trial. Lower test weights in some hybrids indicate a lot of kernel damage, or poorly filled kernels. There was a high level of post pollination kernel abortion on the tip of the ears.

We run our statistical analysis at the 90% confidence level. With this level of confidence and the elevated variability this season, it is more difficult for statistical analysis to separate the best hybrids. That is why so many hybrids are statistically similar to the top yielder in each trial. When reviewing this data, keep in mind that the early hybrid trial data quality is good to fair data and the late hybrid trial data quality is only fair.

Early hybrid yield data is presented on Table 1 on the following page.

Late hybrid yield data is presented on Table 2 on the following page.

Table 1. Early Hybrid Yield Data (<116RM)

Brand	Hybrid	RM	Dry Yield		Test Weight		Moisture	
DeKalb	**DKC 63-57**	**113**	157.9	a	58.4	ab	16.6	a
AgriGold	**A 644-32**	**114**	157.1	ab	58.2	abc	16.3	abc
Axis	**AX 65D28**	**115**	151.9	abc	57.7	abcd	16.8	a
AgriGold	**A 646-12**	**116**	144.4	abcd	57.0	abcde	14.9	abcde
Axis	**AX 62A28**	**112**	143.4	abcd	55.8	bcdef	15.6	abcde
Armor	**A 1447**	**114**	142.2	abcd	54.7	ef	14.8	bcde
Axis	**AX 63D28**	**113**	141.2	abcd	55.3	def	14.8	cde
Armor	**A 1118**	**111**	140.5	abcd	57.3	abcde	16.5	ab
AgriGold	**A 6544**	**115**	137.4	bcd	55.5	cdef	15.1	abcde
AgVenture	**AV 8113**	**113**	128.7	d	55.0	ef	14.3	de
Pioneer	**P 1464**	**114**	125.8	d	55.4	cdef	15.6	abcde
Armor	**A 1299**	**112**	124.4	d	53.4	f	14.2	e
LSD P=.10			19.813		2.634		1.577	
Standard Deviation			16.557		2.201		1.318	
CV			11.6		3.91		8.54	

Means followed by same letter or symbol do not significantly differ (P=.10, LSD).

Means shaded in green are not statistically different from the highest yield or test weight.

Table 2. Late Hybrid Yield Data (116+RM)

Brand	Hybrid	RM	Dry Yield		Test Weight		Moisture	
AgriGold	**A 647-12**	**117**	142.7	a	58.1	a-e	21.5	abcd
Armor	**A 1688T**	**116**	142.2	a	65.9	a	17.6	fg
DeKalb	**DKC 67-44**	**117**	140.1	a	62.3	abc	23.2	ab
Pioneer	**P 1870**	**118**	133.5	ab	63.5	ab	23.5	a
Axis	**AX 67K27**	**117**	128.2	abc	55.4	abcde	18.7	efg
DeKalb	**DKC 68-69**	**118**	125.1	abc	47.8	cde	22.6	abc
Armor	**A 1778**	**117**	122.8	abc	49.1	bcde	21.9	abc
AgVentrue	**AV 7516**	**116**	120.5	abc	54.4	abcde	20.8	bcde
Armor	**A 1667**	**116**	116.8	abc	47.3	cde	16.6	g
AgVentrue	**AV 3917**	**117**	112.7	bc	45.0	de	19.4	def
AgriGold	**A 6659**	**116**	111.8	bc	56.1	abcde	18.5	efg
AgriGold	**A 6711**	**117**	111.6	bc	59.9	abcd	23.2	ab
LSD P=.10			22.688		14.524		2.476	
Standard Deviation			19.005		12.166		2.074	
CV			15.46		22.45		10.01	

Means followed by same letter or symbol do not significantly differ (P=.10, LSD).

Means shaded in green are not statistically different from the highest yield or test weight.

Seed Company Contact Information

We would like to thank all of the seed companies that sponsored hybrids in these two trials this year. We look forward to continuing and expanding our hybrid testing next year.

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Site and Weather Information

Soil data is presented below. %OM, sand silt and clay samples were taken in 2015 and the chemical analysis was run by NCDA in winter 2018-19.

Pike Road 1D

Hyde Loam	**24**	**% OM**	**40**	**% Sand**	**52**	**% Silt**	**8**	**% Clay**
SOIL CLASS	**%HM**	**W/V**	**CEC**	**% BS**	**AC**	**pH**	**Ca %**	**Mg %**
ORG	6.99	0.7	13.6	73	3.7	5.2	53	17
P-I	**K-I**	**Mn-I**	**Mn-AI**	**Zn-I**	**Zn-AI**	**Cu-I**	**S-I**	**Na-I**
55	71	36	44	212	352	42	71	0.3

The following table presents weather data on a weekly basis. The drought period from mid-April to the end of May is highlighted.

Weekly Weather Data Summary

			Temperature		Rainfall
	Dates		**High**	**Low**	**Inches**
3/31/19	-	4/6/19	64.6	43.6	1.0
4/7/19	-	4/13/19	77.3	51.5	1.4
4/14/19	-	4/20/19	78.0	54.8	1.1
4/21/19	-	4/27/19	81.0	53.0	0.0
4/28/19	-	5/4/19	83.6	57.4	0.0
5/5/19	-	5/11/19	82.4	55.7	0.0
5/12/19	-	5/18/19	79.7	58.0	0.0
5/19/19	-	5/25/19	87.3	59.9	0.0
5/26/19	-	6/1/19	93.3	68.1	2.9
6/2/19	-	6/8/19	84.7	63.2	0.9
6/9/19	-	6/15/19	81.4	60.3	1.3
6/16/19	-	6/22/19	90.1	66.9	0.8
6/23/19	-	6/29/19	91.5	66.0	0.0
6/30/19	-	7/6/19	93.4	69.0	0.3
7/7/19	-	7/13/19	91.3	71.1	1.8
7/14/19	-	7/20/19	96.4	74.9	0.1
7/21/19	-	7/27/19	90.6	68.0	0.3
7/28/19	-	8/3/19	90.8	63.3	0.7
8/4/19	-	8/10/19	91.4	68.8	1.1
8/11/19	-	8/17/19	89.9	69.7	0.7
8/18/19	-	8/24/19	90.8	72.5	2.3
8/25/19	-	8/31/19	86.6	64.3	0.3
9/1/19	-	9/7/19	87.0	67.4	5.9