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Corn Performance Trials in Oklahoma Panhandle, 2021

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Trial Description

A corn hybrid trial was conducted at the Oklahoma Panhandle Research and Extension Center, Goodwell, OK. A total of 38 hybrids belonging to 5 seed companies (Table 1) were included in the trials. These trials are conducted to evaluate the performance of corn hybrids marketed in the Oklahoma Panhandle and adjacent areas as well as to provide unbiased information on performance of hybrids to extension educators, farmers, and the seed industry and dealers. The Oklahoma Panhandle is a semi-arid area with a long-term mean annual rainfall of approximately 17 inches. It should be noted that corn hybrid performance varies with climatic conditions, and this trial represents corn performance in semi-arid conditions of Oklahoma Panhandle. Climate data and an overview of growing conditions is presented in following sections of this report.

The field was strip tilled during the first week of April. The soil sample analysis report showed approximately 67 lbs of residual N in top 18 inches. Additional fertilizer was applied in the form of 32-0-0 (Urea ammonium nitrate or UAN) during strip tilling to bring available N levels to 250 lbs per acre. Two row plots of 150 feet length were planted for each hybrid on April 29, 2021. A starter fertilizer (10-34-0 or diammonium phosphate) was applied at planting at the rate of 5 gal/acre. The trial was conducted using a randomized complete block design with three replications. The crop was planted with a tractor powered John Deere two-row cone planter at 2.5 inch depth, 30-inch row spacing and at 28,000 plants per acre. Plots were harvested with the Kincaid 8XP two row plot harvest combine on October 8, 2021. The crop was irrigated through lateral irrigation system fitted with sprinkler nozzles. Weeds were controlled using pre- and post-emergence herbicides. However, no major weeds or insect issues were noticed in the field. The average yield of the hybrid trials at OPREC in the prior year (2020) was 176 bushel per acre.

Table 1: Participating seed companies and their contacts

Brand	Contact	Email
DynaGro	Brandon Tripp	Brandon.tripp@nutrien.com
Channel	Mark Bartel	Mark.bartel@bayer.com
BH Genetics	Travis Janak	travisj@bhgenetics.com
Dekalb	Kyle Lawles	Kyle.lawles@bayer.com
Midland Genetics	Chris Hanson	chris@kauffmanseed.com

Growing Conditions

The growing conditions in 2021, remained conducive for corn for the majority of the growing season. Figure 1 shows, that average daily air temperature dipped below the long-term average for a significant number of days in May and June. In fact, the air temperature remained below long-term average during the last week of June and the first week of July. This time-period was in synchrony with onset of reproductive (tasseling and silking) stages of the crop. The cumulative rainfall during growing months (May-August) remained close to long term averages. The cumulative rainfall received during this period was 9.4 inches, approximately equal to the long-term average of 9.6 inches for this period. Inclement conditions persisted towards the end of August and September which hit the crop with high temperatures and high-speed winds. At this point, the crop had already entered the denting stage, which reduced any significant impact of inclement weather towards the end of the growing season. The air temperature below normal during critical stages of crop growth resulted in low ET demand despite the low rainfall during the growing season.

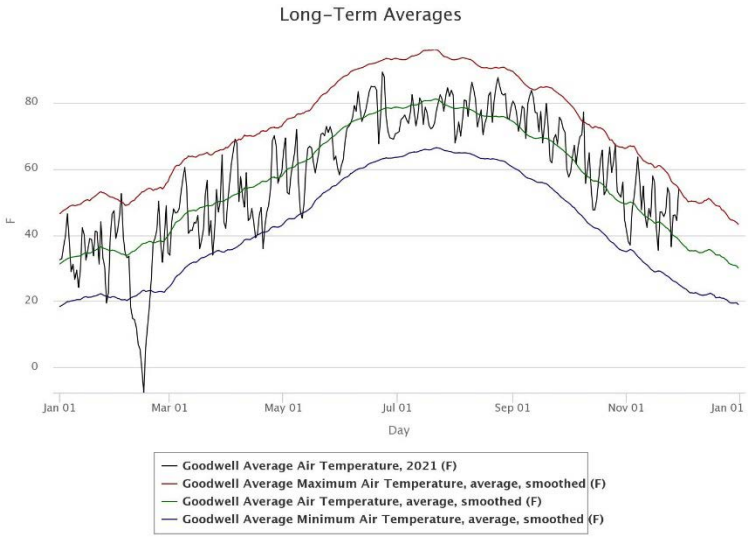

Figure 1: Daily average temperature at Goodwell Mesonet station in 2021 along with long-term average, maximum, and minimum temperatures (source: Oklahoma Mesonet).

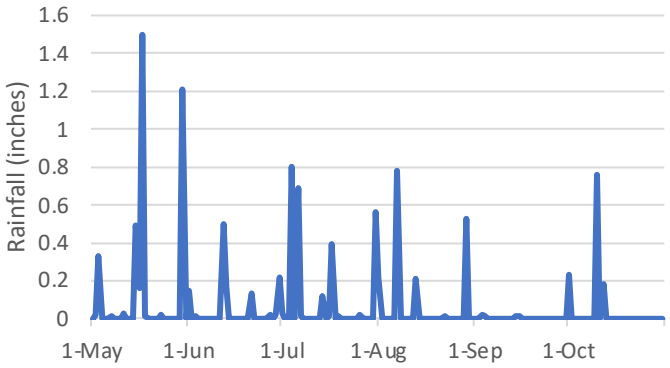

Figure 2: Daily rainfall amounts during growing season recorded at Goodwell Mesonet station (source: Oklahoma Mesonet).

Data Analysis

Harvest data included yield, moisture at harvest and test weight. The yield (Table 2) was adjusted to 15.5% moisture level for all the hybrids. The data was analyzed using SAS 9.4 software. The least significant difference (LSD) was used to determine difference between performance of hybrids. The LSD is the minimum difference between yield of two hybrids to consider them different in terms of performance. For example, if LSD is 10 bu, the difference in average yield of two hybrids is less than LSD indicates that the hybrids have performed similarly, whereas in case the difference among yields was greater than LSD, then the hybrids have performed differently. The difference in hybrids despite similar performance due to LSD, could be due to random factors including soil, moisture or fertility etc. The LSD for this trial is provided with the results table. Coefficient of variance (CV) was calculated to measure the variation of yield data from the mean yield. A CV greater 20% indicates high variation which usually correspond to unreliable data. The mean yield for this trial was 215 bu/acre, with CV of 8.3% and LSD of 41.

Results

Table 2. Comparison of the 37 corn hybrids tested at OSU Panhandle Research and Extension Center in 2021.

Brand	Hybrid	Maturity	Moisture (%)	Test Wt.	Yield
Midland Genetics	KS115-30PCX	115	13.0	59.7	245a
Midland Genetics	KS118-30-VLGX	118	12.6	59.5	241a
BH	8590VT2P	115	12.2	59.3	240ab
BH	7646VT2P	106	12.2	59.4	240ab
DynaGro	D54VC14	114	11.8	60.7	239ab
Dekalb	DKC67-94RIB	117	13.2	60.2	236a-c
Midland Genetics	662 TRE RIB	113	12.6	59.7	233a-d
Midland Genetics	570 SS RIB	112	12.7	59.1	232a-d
DynaGro	D45TC55	105	12.3	58.9	230a-d
DynaGro	D53TC19	113	12.1	61.5	227a-f
Channel	214-22STXRIB	114	12.2	59.9	227a-f
DynaGro	D55BC80	115	13.2	58.5	224a-f
Dekalb	DKC60-80RIB	110	11.4	59.6	223a-f
DynaGro	D54SS34	114	13.5	59.6	222a-g
Midland Genetics	559 PWE	113	13.7	56.4	220a-g
DynaGro	D57TC29	117	12.0	60.4	218a-g
Midland Genetics	KS118-40VLGX	117	11.9	59.3	218a-g
Dekalb	DKC63-91RIB	113	12.0	59.5	216a-g
BH	8121VT2P	111	12.6	59.7	213 a-g
DynaGro	D52DC82	112	12.3	59.3	213 a-g
Channel	215-60TRERIB	115	11.9	60.0	212 a-g
Dekalb	DKC67-37RIB	117	12.3	58.6	211 a-g
Midland Genetics	KS111-10TREX	111	11.8	57.6	210 a-g
Brevant	B14Z97AML	114	12.2	60.6	210 a-g
Brevant	B12CO1AM	112	11.3	59.5	208 a-g
DynaGro	DC57VC17	117	11.9	59.2	207 a-g
Channel	217-01VT2PRIB	117	11.1	60.2	204b-g
BH	8400PCE	114	13.4	57.0	202 b-g
Dekalb	DKC62-89RIB	112	11.1	60.5	199 b-g
BH	8690VIP3111	116	11.2	60.6	199 b-g
BH	X20040VT2P	111	11.5	58.4	197 b-g
Channel	212-04STXRIB	112	10.9	59.6	196c-g
Dekalb	DKC65-95RIB	115	11.2	59.4	192c-g
BH	8412VT2P	114	11.6	60.5	190d-f
Midland Genetics	731 TRE RIB	116	11.7	61.3	187e-f
Dekalb	DKC60-87RIB	110	10.8	60.3	183fg
BH	X2002VT2P	107	11.6	57.9	177g

*the highlighted hybrids were not statistically different from highest yielding hybrid ($p<0.05$).

Acknowledgements

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The Oklahoma Cooperative Extension Service

WE ARE OKLAHOMA

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
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- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
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- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

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