

# PERFORMANCE OF COMMERCIAL CORN HYBRIDS IN ILLINOIS, 2018

## TEST PROGRAM

**Selection of entries.** Each year, producers of corn hybrids in Illinois and surrounding states are invited to enter hybrids in the Illinois performance trials. Financing is provided thru entry fees. Entrants are required to enter their corn hybrids regionally at a fee of \$270 for each corn hybrid entered in a region or \$90 per hybrid for the corn following corn tests. Most of these hybrids are commercially available, although a few experimental hybrids are also entered.

**Number and location of tests.** In 2018, hybrid corn entrants were required to enter hybrid(s) in at least one of 4 regions each consisting of 3 locations with a total of 12 locations in the state (see map). These sites represent the major soil and climatic areas of the state.

**Hybrids.** There were 191 corn hybrids from 22 companies tested in 2018.

**Field-plot design.** Three replications of an alpha lattice design or randomized complete block were used to give each corn hybrid an equal chance to show its merits.

**Planting methods.** All trials were planted by a modern four row planter modified for small plot work. A soil insecticide (Force) was applied in furrow at planting for all corn trials. Corn plots were planted to stand and later counted to confirm population. Each plot was four rows wide and 23 feet long. The center two rows of each plot were harvested to determine yields.

**Fertilization.** All test fields were at a high level of fertility. Additional fertilizer was plowed down or side dressed as needed to ensure top yields.

**Method of harvest.** All corn plots were harvested with a custom-built, self-propelled, corn plot combine. Grain collected from each plot was weighed, and tested for moisture content. An electronic moisture monitor was used in the combine for all moisture readings. No allowance was made for grain that might have been lost in harvest.

## PERFORMANCE DATA

**Grain yield.** Grain weight and moisture was converted to bushels per acre of No. 2 shelled corn (15.5 percent moisture).

**Moisture content.** Occasionally, hybrids too late in maturity for a given area are entered in these tests. These hybrids are often high in yield, but their moisture content may make them poor choices for farm use unless proper drying or storage facilities are available.

**Erect plants.** The number of erect plants in each plot of a hybrid was determined at harvest time. Any plant leaning at an angle of more than 45 degrees or broken below the ear was considered lodged. Plants broken above the ear were considered erect.

**Population.** Corn plots were planted to population and later counted to confirm population. Stand differences may be caused by failure to germinate or by damage from diseases, insects, cultivation, or rodents.

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## SUGGESTIONS FOR COMPARING HYBRIDS

It is impossible to measure performance exactly in any test of plant material. Harvesting efficiency may vary, soils may not be uniform, and many other conditions may produce variability. Results of repeated tests, like those reported here, are more reliable than those of a single-year or a single-strip test. When one hybrid consistently out yields another at several test locations and over several years of testing, the chances are good that this difference is real and should be a consideration in choosing a hybrid. When comparing yields, however, grain moisture content, percentage of erect plants, and plant population must also be considered.

A number of statistical tests are available for comparing hybrids within a single trial. One of these tests, the least significant difference (L.S.D.), when used in the manner suggested by Carmer and Swanson<sup>1</sup> is quite simple to apply and is more appropriate than most other tests. When two hybrids are compared and the difference between them is greater than the tabulated L.S.D. value, the hybrids are judged "significantly different."

The L.S.D. is a number expressed in bushels per acre and presented following the average yield for each location. An L.S.D. level of 25% is shown. Find the highest yielding hybrid within the regional table or single location table of interest, subtract the 25% L.S.D. value from the highest yielding hybrid, every hybrid with a greater yield than the resulting number is 'statistically the same' as the highest yielding hybrid. Consider the merits of the hybrids in this group when making hybrid selections.

In a study of the frequencies of occurrence of three types of statistical errors and their relative seriousness, Carmer<sup>2</sup> found strong arguments for an optimal significance level in the range  $\alpha = 0.20$  to  $0.40$ , where  $\alpha$  is the Type I statistical error rate for comparisons between means that are really equal. Herein, a value of  $\alpha = 0.25$  is used in computing the L.S.D. 25- percent level shown in the tables.

To make the best use of the information presented in this circular and to avoid any misunderstanding or misrepresentation of it, the reader should consider an additional caution about comparing hybrids. Readers who compare hybrids in different trials should be extremely careful, because no statistical tests are presented for that purpose. Readers should note that the difference between a single hybrid's performance at one location and its performance at another is caused primarily by environmental effects and random variability. Furthermore, the difference between the performance of hybrid A in one trial and that of hybrid B in another is the result not only of environmental effects and random variability, but of genetic effects as well.

<sup>1</sup>Carmer, S.G. and M.R. Swanson. "An Evaluation of Ten Pairwise Multiple Comparison Procedures by Monte Carlo Methods." Journal of American Statistical Association 68:66-74. 1973.

<sup>2</sup>Carmer, S.G. "Optimal Significance Levels for Application of the Least Significant Difference in Crop Performance Trials." Crop Science 16:95-99, 1976.

## 2018 TEST FIELDS

### Mt. Morris

Location: Nelson farm, Ogle county, north of Mt. Morris, north central Illinois.  
Cooperator: Rick Nelson.  
Soil type: Muscatine silt loam.  
Planting date: April 27<sup>th</sup>.  
Harvest date: September 26<sup>th</sup>.  
Nitrogen: 182 lbs. N as PPI UAN.  
Herbicides: PRE- Bicep II Magnum; POST- Impact.  
Tillage: Spring- field cultivation.

### DeKalb

Location: Drendel farm, DeKalb County, southwest of DeKalb.  
Cooperators: Steve Drendel.  
Soil type: El Paso silty clay loam.  
Planting date: April 26<sup>th</sup>.  
Harvest date: October 16<sup>th</sup>.  
Nitrogen: (Conv) 160 lbs. as PPI UAN; (CFC) 200 lbs., 100 lbs. fall NH3 as 100lbs as PPI UAN.  
Herbicides: PRE- Resicore and Atrazine, POST- Impact.  
Tillage: Spring- field cultivator.

### Fenton

Location: Mickley farm, Whiteside county, west of Rock Falls, northwestern Illinois.  
Soil Type: Coffeen silt loam.  
Cooperator: Ron and Dave Mickley.  
Planting Date: April 27<sup>th</sup>.  
Harvest Date: September 21<sup>st</sup>.  
Nitrogen: 180 lbs., 160 lbs. as spring NH3, 20lbs. as PPI UAN.  
Herbicides: PPI- Degree Xtra; POST- Impact.  
Tillage: Fall- Chisel; Spring- field cultivate.

### Monmouth

Location: University of Illinois, Northwestern Illinois Agricultural Research and Demonstration Center, Warren County, northwest of Monmouth.  
Cooperators: Greg Steckel; research director, Martin Johnson; farm foreman.  
Soil type: Sable silty clay loam.  
Planting date: April 25<sup>th</sup>.  
Harvest date: September 22<sup>nd</sup>.  
Nitrogen: (conv) 170lbs.;  
(CFC) 220lbs. as PPI 28%.  
Herbicides: PRE- Verdict. Post- Callisto Resource, Atrazine.  
Tillage: Fall- disk ripper; spring- field cultivate.

### New Berlin

Location: Bennett Farm, Sangamon county, north of New Berlin, central Illinois.  
Cooperators: Leahy Bennett.  
Soil type: Sable silt loam.  
Planting date: April 25<sup>th</sup>.  
Harvest date: September 17<sup>th</sup>.  
Nitrogen: 210 lbs., 175 lbs. as spring NH3, 30 lbs. as spring 32%.  
Herbicides: PPI- Parallel Plus; POST- Impact.  
Fungicide: Headline AMP (VT).  
Tillage: Fall- V rip; Spring- vertical finisher.

### Quincy

Location: Dedert Farm, Adams County, east of Quincy, west-central Illinois.  
Cooperator: David Dedert.  
Soil type: Edwardsville silt loam.  
Planting date: April 24<sup>th</sup>.  
Harvest date: November.  
Nitrogen: 220 lbs., 190 lbs. as 28% PPI, 30 lbs. as fall DAP.  
Herbicides: PPI- Lexar; POST- Impact.  
Tillage: Fall- Chisel, Spring- field cultivate.

### Dwight

Location: Hoffman farm, Grundy county, north of Dwight, northeastern Illinois.  
Cooperator: Allen Hoffman.  
Soil type: Reddick silty clay loam.  
Planting date: April 26<sup>th</sup>.  
Harvest date: September 20<sup>th</sup>.  
Nitrogen: 200 lbs. as UAN Side dress.  
Herbicides: PPI- Salvo, Atrazine;  
POST- Impact.  
Tillage: Fall strip till.

### Goodfield

Location: Wurmnest farm, Woodford county, north of Goodfield, central Illinois.  
Cooperator: Mike Wurmnest.  
Soil Type: Ipava silt loam.  
Planting date: April 27<sup>th</sup>.  
Harvest date: September 28<sup>th</sup>.  
Nitrogen: 200 lbs., 60 lbs as PPI UAN, 80 lbs. as side dress, 60 lbs. as fall DAP.  
Herbicide: Pre- Lexar; POST- Impact.  
Tillage: Fall- chisel, Spring- field cultivator.

### Urbana

Location: University of Illinois, Crop Sciences Research and Education Center, Champaign county, Urbana, east-central Illinois.  
Cooperators: Jeff Warren; farm foreman.  
Soil type: Flanagan silt loam.  
Planting date: May 1<sup>th</sup>.  
Harvest date: (conv) September 27<sup>th</sup>  
(CFC) September 29<sup>th</sup>.  
Nitrogen: (Conv) 210 lbs. as 28% PPI.  
(CFC) 210 lbs. as 28% PPI.  
Herbicides: PPI- Verdict, Infantry; POST- Impact.  
Tillage: Spring- soil finisher, Fall- chisel plow.

### St. Peter

Location: Schwarm Farm, Fayette county, North of St. Peter, south-central Illinois.  
Cooperators: Russ Schwarm, Scott Reynolds.  
Soil type: Hoyleton silt loam.  
Planting date: May 29<sup>th</sup>.  
Harvest date: September 19<sup>th</sup>.  
Nitrogen: 150 lbs. as PPI 32%.  
Herbicides: PPI- Balance Flex, Roundup;  
POST- Impact.  
Tillage: Fall- Disk; spring- Field cultivate.

### Belleville

Location: Tiedemann Farm, east of Belleville, St. Clair county.  
Cooperators: David and Dan Tiedemann.  
Soil type: Caseyville silt loam.  
Planting date: May 2<sup>nd</sup>.  
Harvest date: September 18<sup>th</sup>.  
Nitrogen: 180 lbs. as spring NH3.  
Herbicides: PPI- Medal II ATZ and Sotriion.  
Fungicide: Trivapro at R1.  
Tillage: Spring- field cultivator.

### Elkville

Location: Funk farm, Jackson county, Elkville, north of Carbondale, southern Illinois.  
Cooperators: John and Trent Funk.  
Soil Type: Okaw silt loam.  
Planting date: May 1<sup>st</sup>.  
Harvest date: September 18<sup>th</sup>.  
Nitrogen: 185 lbs. as Anhydrous (spring).  
Herbicides: PPI- Lumax; POST- Impact.  
Tillage: Fall- Chisel, Spring- field cultivator.

## GROWING SEASON RAINFALL

## 2018 CORN LOCATIONS

Location	April	May	Jun	July	Aug	Sept	Total
Mt. Morris	1.46	6.38	7.02	5.26	7.29	6.86	34
DeKalb	1.63	6.18	7.87	2.99	4.17	4.14	27
Fenton	1.53	4.72	8.28	3.48	6.67	6.55	31
Monmouth	1.12	2.09	3.44	1.96	4.82	4.78	18
New Berlin	1.89	4.02	4.90	4.77	6.02	4.04	26
Perry	0.62	2.69	2.39	3.78	7.39	5.13	22
Dwight	1.68	3.23	4.42	1.36	4.59	3.39	19
Goodfield	1.97	3.54	4.60	3.47	6.74	2.05	22
Urbana	2.26	3.59	8.27	6.95	3.73	5.60	30
St. Peter	3.31	3.21	6.74	4.43	6.37	6.64	31
Belleville	3.23	5.18	4.90	4.28	6.72	5.60	30
Elkville	4.48	5.37	3.85	2.08	4.08	5.78	26



## SOURCES OF SEED

<b>AgVenture</b> , Wehmeyer Seed,	<a href="http://www.agventure.com">www.agventure.com</a>
<b>Axis</b> , Axis Seed Direct,	<a href="http://www.axisseed.com">www.axisseed.com</a>
<b>Burrus</b> , Burrus Seed,	<a href="http://www.burrusseed.com">www.burrusseed.com</a>
<b>Channel</b> , Channel,	<a href="http://www.channel.com">www.channel.com</a>
<b>Cornelius</b> , Cornelius, Seed,	<a href="http://www.corneliusseed.com">www.corneliusseed.com</a>
<b>Dairyland</b> , Dairyland Seed,	<a href="http://www.dairylandseed.com">www.dairylandseed.com</a>
<b>DeKalb</b> , Dekalb,	<a href="http://www.asgrowanddekalb.com">www.asgrowanddekalb.com</a>
<b>Dyna-Gro</b> , Dyna-Gro Seed,	<a href="http://www.dynagroseed.com">www.dynagroseed.com</a>
<b>Great Lakes</b> , Great Lakes Hybrid	<a href="http://www.greatlakeshybrids.com">www.greatlakeshybrids.com</a>
<b>Hughes</b> , Hughes Hybrids,	<a href="http://www.hugheshybrids.com">www.hugheshybrids.com</a>
<b>InVISION</b> , FS InVISION	<a href="http://www.fsinvision.com">www.fsinvision.com</a>
<b>Lewis</b> , Lewis Hybrids,	<a href="http://www.seedcorn.com">www.seedcorn.com</a>
<b>Miller</b> , Miller Hybrids,	<a href="http://www.millerhybrids.com">www.millerhybrids.com</a>
<b>Munson</b> , Munson Hybrids,	<a href="http://www.munsonhybrids.com">www.munsonhybrids.com</a>
<b>NuTech</b> , NuTech Seed, LLC	<a href="http://www.nutechseed.com">www.nutechseed.com</a>
<b>OMG</b> , Original Maize Genetics,	<a href="http://www.omgcorn.com">www.omgcorn.com</a>
<b>Pioneer</b> , Pioneer Hybrids,	<a href="http://www.pioneer.com">www.pioneer.com</a>
<b>Power Plus</b> , Burrus Seeds,	<a href="http://www.burrusseed.com">www.burrusseed.com</a>
<b>Prairie</b> , Prairie Hybrids,	<a href="http://www.prairiehybrids.com">www.prairiehybrids.com</a>
<b>Renk</b> , Renk Seed Co.	<a href="http://www.renkseed.com">www.renkseed.com</a>
<b>Roeschley</b> , Roeschley Hybrids,	<a href="http://www.roeschleyhybrids.com">www.roeschleyhybrids.com</a>
<b>Stone</b> , Stone Seed Group,	<a href="http://www.stoneseed.com">www.stoneseed.com</a>
<b>Sun Prairie Seeds</b> , Sun Prairie Seeds,	<a href="http://www.sunprairiehybrids.com">www.sunprairiehybrids.com</a>
<b>Viking</b> , Albert Lea Seed,	<a href="http://www.alseed.com">www.alseed.com</a>
<b>Whisnand</b> , Whisnand Hybrids,	(217-268-3714)
<b>YIELDirect</b> , YIELDirect,	<a href="http://www.yieldirect.com">www.yieldirect.com</a>