

# PERFORMANCE OF COMMERCIAL CORN AND SORGHUM HYBRIDS IN ILLINOIS, 2005

## TEST PROGRAM

**Selection of entries.** Each year, producers of corn and sorghum 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 \$240 for each corn hybrid entered in a region or \$80 per hybrid for the Roundup Resistant and corn following corn tests. Fees for sorghum hybrid testing were \$160 per region for each hybrid. Most of these hybrids are commercially available, although a few experimental hybrids are also entered.

**Number and location of tests.** In 2005, 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 398 corn hybrids from 50 companies and 8 sorghum hybrids from 3 companies tested in 2005.

**Field-plot design.** Three replications of an alpha lattice design or randomized complete block were used to give each corn or sorghum entry 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 over planted by 10 percent and later thinned to desired stands. Sorghum plots were planted at a rate to achieve 4-6 plants per foot of row at harvest. Each plot was four rows wide and 23 or 21 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. Sorghum plots were harvested with a sorghum 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) while sorghum was reported using 56 pounds per bushel at 14 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 over planted and thinned to the desired population. Stand differences may be caused by failure to germinate or by damage from diseases, insects, cultivation, or rodents.

**Head Exertion.** Sorghum hybrids were measured in late August for length of seed head exertion from the flag leaf to the base of the seed head (expressed in inches).

**Plant Height.** Sorghum hybrids were measured in late August from the ground to the top of the seed head (expressed in inches).

**Head Compactness.** Sorghum hybrids were rated in late August for seed head compactness. A rating of 1 was given for tightly compacted seed heads, 2 for moderate compactness, 3 for loose compactness.

## 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.

## 2005 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 21.  
Harvest date: October 13.  
Nitrogen: 150lbs. as 28%, pre-emerge.  
Herbicides: Pre emerge- Harness Xtra, Hornet; Post-Calisto.  
Tillage: Spring- field cultivation.

### **DeKalb**

Location: University of Illinois, Northern Illinois Research Center, DeKalb county, southwest of DeKalb.  
Cooperators: Lyle Paul; research director, David Lindgren; farm foreman.  
Soil type: Drummer silty clay loam.  
Planting date: April 21.  
Harvest date: October 14.  
Nitrogen (conventional and roundup resistant): 190 lbs. as anhydrous amonia, fall applied.  
Nitrogen (corn on corn): 240 lbs. as 28% PPI.  
Herbicides: Pre emerge- Fulltime, Balance Pro.  
Tillage: Fall- chisel plow; Spring- mulchfinish.

### **Erie**

Location: Slaymaker farm, Whiteside county, west of Rock Falls, northwestern Illinois.  
Soil Type: Beaucoup silty clay loam.  
Cooperator: Robert Slaymaker.  
Planting Date: April 20.  
Harvest Date: October 12.  
Nitrogen: 200 lbs. as 28% PPI.  
Herbicides: PPI- Bicep Lite II Magnum;  
Post- Steadfast, Atrazine, Callisto.  
Tillage: Fall- chisel; Spring- field cultivate.

### **Monmouth**

Location: University of Illinois, Northwestern Illinois Agricultural Research and Demonstration Center, Warren county, northwest of Monmouth. Cooperator: Eric Adee; research director, Martin Johnson; farm foreman.  
Soil type: Muscatine silt loam.  
Planting date: April 19.  
Harvest date: September 26.  
Nitrogen (conventional and roundup resistant): 180 lbs. as 28% PPI.  
Nitrogen (corn on corn): 220 lbs. as 28% PPI.  
Herbicides: PPI- Fulltime; Post- Laddok, Callisto.  
Tillage: Fall- deep rip; Spring- field cultivate.

### **New Berlin**

Location: King farm, Sangamon county, north of New Berlin, central Illinois.  
Cooperator: Ike and Justin King.  
Soil type: Sable silty clay loam.  
Planting date: April 18.  
Harvest date: September 13.  
Nitrogen: 177 lbs as anhydrous + DAP (fall applied).  
Herbicides: PPI- Lumax+Aatrazine;  
Post- Basagran.  
Tillage: Fall- deep rip; Spring- field cultivate.

### **Perry**

Location: University of Illinois, Orr Agricultural Research and Demonstration Center, Pike county, west of Perry, west-central Illinois.  
Cooperator: Mike Vose; farm foreman.  
Soil type: Downs silt loam.  
Planting date: April 18.  
Harvest date: September 17.  
Nitrogen: 210 lbs. as anhydrous (fall applied).  
Herbicides: Pre emerge- Harness Xtra; Post-Laddok.  
Tillage: Fall- deep chisel; Spring- field cultivate.

### **Dwight**

Location: Hoffman farm, Grundy county, north of Dwight, northeastern Illinois.  
Cooperators: Allen Hoffman.  
Soil type: Reddick silty clay loam.  
Planting date: April 29.  
Harvest date: October 10.  
Nitrogen: 212 lbs. as 28% PPI.  
Herbicides: PPI- Harness Xtra; Post-Laddok.  
Tillage: Spring-soil finisher.

### **Goodfield**

Location: Wurmnest farm, Woodford county, north of Goodfield, central Illinois.  
Cooperator: Mike Wurmnest.  
Soil Type: Ipava silt loam.  
Planting date: April 20.  
Harvest date: September 28.  
Nitrogen: 180 lbs. as 28% PPI.  
Herbicides: PPI- Atrazine;  
Post- Steadfast, Atrazine, Callisto.  
Tillage: Spring- soil finisher.

### **Urbana**

Location: University of Illinois, Crop Sciences Research and Education Center, Champaign county, Urbana, east-central Illinois.  
Cooperators: Robert Dunker; superintendent, Mike Kleiss; farm foreman.  
Soil type: Flanagan silt loam.  
Planting date: April 16.  
Harvest date: October 2.  
Nitrogen: 180 lbs. as 28% PPI.  
Herbicides: PPI- Dual, Aatrex;  
Post- Hornet, Laddok and Accent.  
Tillage: Spring- soil finisher.

### **Brownstown** (Corn)

Location: University of Illinois, Brownstown Agronomy Research center, Fayette county, south of Brownstown, south-central Illinois.  
Cooperators: Steve Ebelhar; research director, Lindell Deal; field worker.  
Soil type: Cisne silt loam.  
Planting date: April 25.  
Harvest date: September 30.  
Nitrogen: 160 lbs. as 28% PPI.  
Herbicides: PPI- Harness Fieldmaster, Aatrex.  
Tillage: Spring- field cultivate, mix-n-till.

**Brownstown** (Sorghum)

Location: University of Illinois, Brownstown Agronomy Research center, Fayette county, south of Brownstown, south central Illinois.

Cooperators: Steve Ebelhar; research director. Lindell Deal; field worker.

Soil type: Cisne silt loam.

Planting date: May 24.

Harvest date: October 12.

Nitrogen: 120 lbs. as 28% (side dress).

Herbicides: Pre- Atrazine, Outlook.

Tillage: Spring- disk, mix-n- till, mulch.

**Belleville**

Location: Southern Illinois University Research Center, east of Belleville, St. Clair county.

Cooperators: Dr. Ed Varsa; research director, Ron Krausz; field manager.

Soil type: Ebbert silt loam.

Planting date: May 04.

Harvest date: September 30.

Herbicides: PPI- Lumax, Aatrazin;

Post- Accent, Atrazine.

Nitrogen: 150 lbs as ammonium nitrate PPI.

Tillage: Spring-disk, field cultivate, and cultumulcher.

**Carbondale**

Location: Myers farm, Jackson county, north of Carbondale, southern Illinois.

Cooperators: Oval Myers.

Soil Type: Starks silt loam.

Planting date: April 25.

Harvest date: September 24.

Nitrogen: 160 lbs as ammonium nitrate PPI.

Herbicides: PPI- Harness Xtra.

Tillage: Spring- disk.

**Dixon Springs** (Sorghum)

Location: University of Illinois, Dixon Springs Agricultural Center, Pope county, extreme southern Illinois.

Cooperators: Steve Ebelhar; research director, Carl Hart; research specialist.

Soil type: Belknap silt loam.

Planting date: May 25.

Harvest date: October 20.

Herbicide: Pre emerge- Bullett, atrazine.

Nitrogen: 120 lbs. as 28% (side dress).

Tillage: Spring- disk twice.

**2005 CORN AND SORGHUM LOCATIONS**



**GROWING SEASON RAINFALL, 2005**

Location	May	June	July	Aug.	Sept.
Mt. Morris	1.50	1.00	2.30	3.50	4.00
DeKalb	2.08	2.87	1.86	3.36	1.40
Erie	2.90	1.50	1.30	4.45	2.75
Monmouth	2.15	2.07	1.58	3.09	5.86
New Berlin	1.10	2.10	1.10	2.20	1.20
Perry	1.04	1.98	2.32	5.39	3.45
Dwight	0.70	0.90	3.70	3.50	1.10
Goodfield	0.40	0.40	2.30	1.80	1.10
Urbana	1.08	2.57	4.07	2.05	5.50
Brownstown	1.11	1.34	2.07	3.49	3.53
Belleville	0.80	1.60	4.80	3.40	9.50
Carbondale	2.97	1.04	5.73	2.57	3.83
Dixon Springs	1.86	2.59	4.32	7.26	2.72

## SOURCES OF SEED

**Adler**, Adler Seeds, 6085 W. 550N, Sharpsville, IN 46068. (800-536-2676)  
**Ag Venture**, Ag Venture Seeds, 1763 E. 200N, Hoopeston, IL 60942. (217-375-4335)  
**Asgrow**, Monsanto, 800 N. Lindbergh Blvd., St. Louis, MO 63167. (800-335-2676)  
**Beck**, Beck's Superior Hybrids, 6767 E. 276 St., Atlanta, IN 46031. (800-937-2325)  
**Bio Gene**, Bio Gene Seeds, 5477 Tri County Hwy., Sardinia, OH 45171. (888-862-3276)  
**Brown**, Brown Seed Farms Inc., P.O. Box 246 720 St. Croix St. Prescott, WI 54021. (715-262-4331)  
**Burrus**, Burrus Hybrids, 826 Arenzville Rd., Arenzville, IL 62611. (217-997-5511)  
**Campbell**, Campbell Seed, Inc., 1375N 800W, Tipton, IN 46072. (800-788-5950)  
**Corn Belt**, Corn Belt Hybrids, P.O. Box 95, St. Marys, OH 45885. (800-977-3841)  
**Cornelius**, Cornelius Seed, 14760 317th Av., Bellevue, IA 52031. (563-672-3463)  
**Dairyland**, Dairyland Seed Co. Inc., P.O. Box 958, West Bend, WI 53095. (262-338-0163)  
**DeKalb**, Monsanto, 800 N. Lindbergh Blvd., St. Louis, MO 63167. (800-335-2676)  
**DeRaedt**, DeRaedt Seed Corp. 10 N 971 Tower Rd. Hampshire, IL 60140. (847-464-5553)  
**Dyna-Gro**, UAP/Richter Dyna-Gro Seed, 1267 W. Washington, Pittsfield, IL 63263. (217-285-4461)  
**Exsgen**, Miles Seed, P.O. Box 22879 Owensboro, KY 42304. (800-666-4537)  
**Garst**, Garst Seed Co., 2369-330th St., P.O. Box 500, Slater, IA 50244. (800-831-6630)  
**Golden Harvest**, Golden Harvest, Box 248, Pekin, IL 61555. (800-747-2127)  
**Henkel**, Henkel Seeds, 107 Cedar Grove Rd., Mendota, IL 61342. (815-539-9317)  
**High Cycle**, Trelay Seed Co., 11623 Hwy 80, Livingston, WI 53554. (608-943-6363)  
**Hoblit**, Hoblit Seed, 2189 1900<sup>th</sup> Av. P.O. Box 487, Atlanta, IL 61723. (217-648-2392)  
**Horizon**, Horizon Genetics P.O. Box 31, Mason City, IL 62664. (800-533-2879)  
**Hughes**, Hughes Hybrids, Inc., 206 N. Hughes Road, Woodstock, IL 60098. (815-338-1141)  
**ICORN**, ICORN, 792 N. Peru St. Cicero, IN 46034. (800-240-0101)  
**Jung**, Jung Seed Genetics, 341 South High St. Randolph, WI 53956. (920-326-5891)  
**Kaltenberg**, Kaltenberg Seeds, 5506 SR 19 P.O. Box 278, Waunakee, WI 53597-0278. (608-849-5021)  
**Kruger**, Kruger Seed Co., 33938 160 th. Av., Dike, IA 50624. (800-772-2721)  
**Lewis**, Lewis Hybrids, Inc., 530 W. Maple Av., Ursa, IL 62376. (217-964-2131)  
**LG Seeds**, LG Seeds, 22827 Shissler Rd., Elmwood, IL 61529. (309-742-2211)  
**M&D**, M&D Seed, 8982 Ford Rd., Kinmundy, IL 62854. (618-547-3404)  
**Merschman**, Merschman Seeds, Inc., 103 Av. D, West Point, IA 52656. (800-848-7333)  
**Midland**, Brown Seed Enterprises, Inc., 289 CR 550 N. Neoga, IL 62447. (217-895-2335)  
**Miller Hybrids**, Miller Hybrids, Inc., 2858 470 th St. SW, Iowa City IA 52240. (319-325-6158)  
**Munson**, Munson Hybrids, Inc., 1262 Knox Road 100 E.,

Galesburg, IL 61401. (309-343-8410)  
**Pioneer**, Pioneer Hi-Bred International, 14171 Carole Dr., Bloomington, IL 61704. (309-821-9940)  
**Prairie Hybrids**, Prairie Hybrids, 27445 Hurd Rd., Deer Grove, IL 61243. (815-438-7815)  
**Premium**, Premium Seed, Inc., P.O. Box 218, Berwick, IL 61417. (309-462-2396)  
**Prime**, PRIME Farm Seeds, Inc., 120 N. Maple St., P.O. Box 549, Dana, IN 47847. (765-665-0170)  
**Quality Plus**, Quality Plus Seed Company, 562 State Highway 164, Monmouth, IL 61462. (309-734-5764)  
**Renk**, Renk Seed, 6800 Wilburn Rd., Sun Prairie, WI 53590. (800-289-7365)  
**Roeschley**, Roeschley Hybrids, 8222 E. 1500 N. Rd., Graymont, IL 61743. (815-743-5938)  
**Schillinger**, Schillinger Seed, 4200 Corporate Drive, Suite 106, West Des Moines, IA 50266. (515-225-1166)  
**Select**, Select Seed Hybrids, P.O. Box 54, Camden, IN 46917. (574-686-2743)  
**Sieben**, Sieben Hybrids, Inc., 633 N. College Av., Geneseo, IL 61254. (309-944-5131)  
**Sorghum Partners**, Sorghum Partners, Inc., P.O. Box 189, New Deal, TX 79350 (806-746-5566)  
**Steyer**, Steyer Seeds, 6154 N. Co. Rd. 33, Tiffin, OH 44883. (419-992-4570)  
**Stone**, Stone Seed Farms, Inc., 5965 W. St. Rt. 97, Pleasant Plains, IL 62677. (217-546-8006)  
**Trisler**, Trisler Seed Farms, Inc., 3274 E 800 North Rd., Fairmount, IL 61841. (217-288-9301)  
**Vigoro**, Royster-Clark, Inc., Vigoro Seed Division, 717 Robinson Rd. SE, Washington C.H., OH 43160. (800-659-7790)  
**Whata**, Whata Hybrid, Inc., 8908 W. Sabin Church Rd., Pearl City, IL 61062. (815-864-2290)  
**Whisnand**, Whisnand Hybrids, 1220 E. State Rt. 133, Arcola, IL 61910. (217-268-3714)  
**Wilken**, Wilken Seed Grains, Inc., R.R. 4, P.O. Box 770, Pontiac, IL 61764. (815-844-3458)  
**Willcross**, Willcross Hybrids, LLC, P.O. Box 560, Garden City, MO 64747. (877-862-6326)  
**Wyffels**, Miles Seed, P.O. Box 22879 Owensboro, KY 42304. (800-666-4537)

### \* KEY TO REGIONS

- 1 (NORTH) = MT. MORRIS DEKALB ERIE
- 2 (W. CENTRAL) = MONMOUTH PERRY NEW BERLIN
- 3 (E. CENTRAL) = DWIGHT GOODFIELD URBANA
- 4 (SOUTH) = BROWNSTOWN BELLEVILLE CARBONDALE
- 5 = DEKALB CORN FOLLOWING CORN
- 6 = MONMOUTH CORN FOLLOWING CORN
- 7 = URBANA CORN FOLLOWING CORN
- 8 = DEKALB ROUNDUP RESISTANT
- 9 = MONMOUTH ROUNDUP RESISTANT
- 10 = URBANA ROUNDUP RESISTANT
- 11 = BELLEVILLE ROUNDUP RESISTANT

\*\* RM = RELATIVE MATURITY IN DAYS