

PERFORMANCE OF COMMERCIAL SOYBEANS IN ILLINOIS

THE UNIVERSITY OF ILLINOIS commercial soybean testing program was started in 1969 as a result of requests by seedsmen that their private varieties be tested. There were 76 conventional and 276 roundup resistant varieties from 34 seed companies tested in 2013. This total included 125 varieties entered as 'Producer Nominated' varieties, fees for the Producer Nominated varieties were paid by the Illinois Soybean Checkoff Board.

The purpose of this commercial soybean testing program is to provide unbiased, objective, and accurate testing of all varieties entered. The tests are conducted on as uniform a soil as is available in the testing area. Small plots are used to reduce the chance of soil and climatic variations occurring between one variety plot and another.

The results of these tests should help you judge the merits of varieties in comparison with other private and public varieties. Because your soils and management may differ from those of the test location, you may wish to plant variety strips of the higher-performing varieties on your farm. The results printed in this circular should help you decide which varieties to try.

TEST PROGRAM

Selection of entries. Seed companies in Illinois and surrounding states were invited to enter soybean varieties, brands, or blends in the 2013 Illinois soybean performance trials. Entrants were required to enter all nonirrigated, 30-inch-row-width trials on a regional basis. To finance the testing program, a fee of \$90 per location was charged for each variety entered by the seed company. Most of these varieties, brands, or blends are commercially available, but some experimental varieties were also entered. A total of 1,859 entries were tested in 2013.

Number and location of tests. In 2013, tests were conducted at 13 locations in the state (see map). These sites represent the major soils and maturity zones of the state.

Nonirrigated, 30-inch-row-width trials, conventional and roundup resistant, were conducted on a regional basis. The regions are as follows:

- Region 1 Erie, Mt. Morris and DeKalb
- Region 2 Monmouth, Goodfield and Dwight
- Region 3 Perry, New Berlin and Urbana
- Region 4 St. Peter and Belleville
- Region 5 Elkhart and Harrisburg

Field plot design. Entries of each test were replicated three times in a randomized complete block or alpha lattice design. The 30-inch-row trial plots consisted of four rows, each 21 feet long. The center two rows of each plot were harvested to measure yield.

Fertility and weed control. All test locations were at a high level of fertility. Herbicides were used at all test locations for weed control. Weed control for the roundup resistant trials consisted of post-emergence application of Roundup following a pre-emergence foundation herbicide application. Plots were also weeded by hand if needed.

Method of planting and harvesting. The 30-inch-row variety trials were planted with a modified bean planter at 166,000 ppa. Harvesting was done with a small-plot combine. No allowances were made for soybeans that may have been lost as a result of combining or shattering.

Soybean Cyst Nematode. Soil samples were taken from variety plots at each location in August and evaluated for cyst populations. Threshold numbers of cysts per 100cc of soil are as follows:

Low	1-5
Medium	6-25
High	>25

PERFORMANCE DATA

Yield. Soybean yield was measured in bushels (60 pounds) per acre at a moisture content of 13 percent. An electronic moisture monitor was used on the combine for all moisture readings.

Maturity. Maturity was stated as the date when approximately 95 percent of the pods were ripe.

Lodging. The amount of lodging was rated at harvest time. The following scale was used:

- 1 - Almost all plants erect
- 2 - All plants leaning slightly or a few plants down
- 3 - All plants leaning moderately (45°), or 25 to 50 percent of the plants down
- 4 - All plants leaning considerably, or 50 to 80 percent of the plants down
- 5 - Almost all plants down

Height. Height was measured shortly before harvest as the average length of plants from the ground to the tip of the main stem.

Shattering. The percentage of open pods was estimated at harvest time. The following scale was used:

- 1 - No shattering
- 2 - 1 to 10% of pods open
- 3 - 10 to 25% of pods open
- 4 - 25 to 50% of pods open
- 5 - Over 50% of pods open

Shattering was not significant at any location.

SUGGESTIONS FOR COMPARING ENTRIES

It is impossible to obtain an exact measure of performance when conducting 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 are more reliable than those of a single year or a single-strip test. When one variety 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 considered in selecting a variety. However, yield is not the only indicator. You should also consider maturity, lodging, plant height and shattering.

As an aid in comparing soybean varieties, brands, and blends within a single trial, certain statistical tests have been devised. One of these tests, the least significant difference (L.S.D.), when used in the manner suggested by Carmer and Swanson¹ is quite simple to apply and is more appropriate than most other tests. When two varieties are compared and the difference between them is greater than the tabulated L.S.D. value, the varieties are judged to be "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 soybean variety within the regional table or single location table of interest, subtract the 25% L.S.D. value from the highest yielding variety, every variety with a greater yield than the resulting number is 'statistically the same' as the highest yielding variety. Consider the merits of the varieties in this group when making varietal selections.

In a study of the frequencies of occurrence of three types of statistical errors and their relative seriousness, Carmer² found strong arguments for an optimal significance level in the range $\alpha = 0.20$ to 0.40 , where α 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 varieties. Readers who compare varieties in different trials or row spacings should be extremely careful, because no statistical tests are presented for that purpose. Readers should note that the difference between a single varieties performance at one location or row spacing and its performance at another is caused primarily by environmental effects and random variability. Furthermore, the difference between the performance of variety A in one trial or row spacing and the performance of variety B in another trial or row spacing is the result not only of environmental effects and random variability, but of genetic effects as well.

¹Carmer, 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.

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

2013 SOYBEAN LOCATIONS



2013 TEST FIELDS

Erie

Location: Slaymaker Farm, Whiteside county, west of Rock Falls, northwestern Illinois.

Soil Type: Beaucoup silty clay loam.

Cooperator: Robert Slaymaker.

Planting Date: May 14.

Harvest Date: Oct. 9.

Herbicide: Pre-AuthorityFirst, Dual.

Post-CV-FirstRate, Select; RR-RoundUp, Select.

Tillage: fall- Disk-ripper, spring- field cultivate.

S.C.N.: medium.

Mt. Morris

Location: Nelson Farm, Ogle county, North of Mt. Morris, north central Illinois.

Cooperator: Rick Nelson.

Soil type: Muscatine silt loam.

Planting Date: May 14.

Harvest Date: Oct 9.

Herbicide:Pre-AuthorityFirst, Dual.

Post-CV-FirstRate, Select; RR-RoundUp, Select.

Tillage: fall- vertical till, spring- field cultivate.

S.C.N.: low.

DeKalb

Location: University of Illinois, Northern Illinois Agronomy Research Center, DeKalb County, southwest of DeKalb.

Soil type: Flanagan silt loam.

Cooperators: Greg Steckel, agronomist; Dave Lindgren, farm foreman.

Planting Date: May 14.

Harvest Date: Oct. 14.

Herbicide: Pre-AuthorityFirst, Dual.

Post-CV-FirstRate, Select. RR- RoundUp,Select.

Tillage: fall-disk-ripper, spring- mulch finished.

S.C.N.: low.

Monmouth

Location: University of Illinois, Northwestern Illinois Agricultural Research and Demonstration Center, Warren County, northwest of Monmouth.

Soil type: Sable silty clay loam.

Cooperators: Brian Mansfield, agronomist; Martin Johnson, farm foreman.

Planting Date: May 24.

Harvest Dates: Sept. 30 & Oct. 8.

Herbicide:Pre-AuthorityFirst, Dual.

Post-CV-FirstRate, Resource, Select.

RR- RoundUp, Warrant, Select.

Tillage: fall-disk-ripper, spring- soil finisher.

S.C.N.: low.

Goodfield

Location: Wurmnest Farm, Woodford county, north of Goodfield, central Illinois.
 Cooperator: Mike Wurmnest.
 Soil Type: Ipava silt loam.
 Planting Date: May 13.
 Harvest Dates: Sept. 28 & Oct 8.
 Herbicide: Pre-AuthorityFirst, Dual.
 Post-CV-FirstRate, Select; RR-RoundUp, Select.
 Tillage: fall- Inline ripper, spring-Soil finisher.
 S.C.N. low.

Dwight

Location: Grundy County, Hoffman Farm.
 Soil type: Reddick silty clay loam.
 Cooperator: Allen Hoffman.
 Planting Date: May 13.
 Harvest Dates: Oct. 2 & 10.
 Herbicide:Pre- Warrant, Valor.
 Post-CV-FirstRate, Select; RR-RoundUp, Select.
 Tillage: fall-chisel, spring-soil finisher. S.C.N.: low.

Perry

Location: Pike County, Emerson Farm, west central Illinois.
 Soil type: Herrick silt loam
 Cooperator: Mike Vose, farm foreman.
 Planting Date: June 11.
 Harvest Dates: Sept 30 & Oct 13.
 Herbicide: Pre-Valor.
 Post-CV-Warrant, Select, Flexstar; RR-RoundUp, Warrant, Blazer.
 Tillage: spring- Field cultivate. S.C.N.: medium.

New Berlin

Location: Bennett Farm, Sangamon county, north of New Berlin, Central Illinois.
 Cooperator: Leahy Bennett.
 Soil type: Sable silty clay loam.
 Planting Date: June 5.
 Harvest Dates: Oct 2 & 20.
 Herbicide:Pre-AuthorityFirst, Dual.
 Post-CV-FirstRate, Select; RR-RoundUp, Select.
 Tillage: fall-V ripper, spring-vertical finisher. S.C.N. low.

Urbana

Location: University of Illinois, Crop Sciences Research & Education Center, Champaign County, east central Illinois.
 Soil type: Flanagan silt loam.
 Cooperators: Robert Dunker, farm manager; Jeff Warren, farm foreman.
 Planting Date: May 19.
 Harvest Dates: Sept. 26, Oct. 12.
 Herbicide:Pre-AuthorityFirst, Dual.
 Post-CV-FirstRate, Select; RR-RoundUp, Select.
 Tillage: fall-chisel, spring-soil finisher. S.C.N.: low.

St. Peter

Location: Magnus Farm, Fayette County, west of St. Peter, south central Illinois.
 Soil type: Hoyleton silt loam.
 Cooperator: Torrey Magnus.
 Planting Date: May 30.
 Harvest Date: Oct 11.
 Herbicide:Pre-AuthorityFirst, Dual.
 Post-CV-FirstRate, Select; RR-RoundUp, Select.
 Tillage: spring-disk, mulch finisher twice. S.C.N.: low.

Belleville

Location: Southern Illinois University Research Center, east of Belleville, St. Clair County.
 Soil type: Ebbert silt loam.
 Cooperator: Ron Krausz, field manager.
 Planting Date: May 25.
 Harvest Dates: Oct. 4 & 18.
 Herbicide: Pre-AuthorityFirst, Dual.
 Post-CV-Flexstar, Select; RR-RoundUp, Select.
 Tillage: spring-disk, field cultivate, cultumulcher
 S.C.N.: low.

Elkville

Location: Funk farm, North of Carbondale, Jackson County, extreme southern Illinois.
 Soil type: Okaw silt loam.
 Cooperator: Trent Funk.
 Planting Date: May 15.
 Harvest Dates: Oct. 1, 4 & 18.
 Herbicide:Pre-AuthorityFirst, Dual.
 Post-CV-FirstRate, Select. RR-RoundUp, Select.
 Tillage: fall-chisel, spring-soil finisher.
 S.C.N.: low.

Harrisburg

Location: Wintizer farm, Saline County, extreme southern Illinois.
 Soil type: Harco silt loam.
 Cooperator: Kevin Wintizer.
 Planting Date: May 16.
 Harvest Dates: Oct. 1 & 21.
 Herbicide:Pre- AuthorityFirst.
 Post-CV- FirstRate, Select. RR-RoundUp, Select.
 Tillage: fall-disk, spring-disk, field cultivate.
 S.C.N.: low.

GROWING SEASON RAINFALL, 2013

Location	May	June	July	Aug	Sept
Erie	4.05	4.55	3.10	0.85	0.30
Mt. Morris	2.50	6.60	2.00	1.65	1.50
DeKalb	3.42	7.55	1.46	4.16	1.31
Monmouth	10.55	2.28	2.01	0.18	1.17
Goodfield	7.60	4.00	1.30	0.80	1.30
Dwight	6.10	4.10	0.60	3.70	0.70
Perry	9.80	3.43	3.96	0.08	3.73
New Berlin	7.63	2.22	2.44	.027	1.27
Urbana	4.65	5.33	3.47	0.49	0.50
St. Peter	6.95	6.68	4.85	2.03	2.21
Belleville	7.97	11.22	5.36	0.94	1.75
Elkville	3.26	7.61	4.84	2.83	1.23
Harrisburg	3.71	5.57	2.75	1.95	1.26

SOURCES OF SEED

Asgrow, Monsanto, 800 N Lindbergh Blvd., St. Louis, MO 63167 (314-694-1000)
Baker, Baker Seed LLC, 610 W Seminary Street, West Salem, IL 62476 (618-456-8851)
Biogene, Miller Bros. Fert., 2001 Niemanville Trail, Walshville, IL 62091 (217-456-9311)
Channel, Channel, 800 N Lindbergh Blvd., St. Louis, MO 63167 (314-562-5815)
Dairyland, Dairyland Seed, PO Box 958, West Bend, WI 53095 (800-236-0163)
DeRaedt, DeRaedt Seed Corp., 10N971 Tower Rd, Hampshire, IL 60140 (847-514-8844)
Dyna-Gro, Dyna-Gro Seed, #1 Briscoe Dr, Flora, IL 62839 (618-662-4918)
Emerge, Schillinger Genetics, 4401 Westown Parkway, Suite 225, West Des Moines, IA 50266 (515-225-1166)
FS Hisoy, Growmark, 1701 Towanda Avenue, Bloomington, IL 61702 (309-557-6399)
Gateway, Gateway Seed Co., 5517 Van Buren Rd, Nashville, IL 62263 (618-327-8000)
Great Heart, Great Heart Seed, 220 W. Washington, Paris, IL 61944 (217-465-4132)
Great Lakes, Great Lakes Hybrids, 9915 W M-21 Hwy, Ovid, MI 48866 (989-834-5941)
Green Valley, Green Valley Seed LLC, P.O. Box 35 Kahoka, MO 63445 (800-748-7943)
Hoblit, Burris Seeds, 826 Arenzville Rd, Arenzville, IL 62611 (217-997-5511)
Hoffman, Hoffman Seed, 200 E 4th St. Hoffman, IL 62250 (618-495-2617)
Hughes, Hughes Hybrids, 206 N. Hughes Rd, Woodstock, IL 60098 (217-997-5511)
JGL, JGL Inc, 1550 Pidco Dr, Plymouth, IN 46563 (574-780-6445)
Lewis, Lewis Hybrids, 530 West Maple Ave, Ursa, IL 62376 (217-964-2131)
Martin, Martin Seeds, 10045W Second Williamsport, IN 47993 (765-986-2030)
Merschman, Merschman Seeds Inc, 103 Avenue D, P.O. Box 67 West Point, IA 52656 (319-837-6111)
Monier, Monier Seed & Service, 846 Yankee Lane, Sparland, IL 61565 (309-469-2511)
Munson, Munson Hybrids, 1262 Knox Road 100 E, Galesburg, IL 61401 (309-343-8410)
Mycogen, Mycogen Seeds, 9330 Zionsville Rd, Indianapolis, IN 46268 (800-692-6436)
NuTech, NuTech Seed LLC, 2321 N Loop Dr, Suite 230, Ames, IA 50010 (515-232-1997)
Power Plus, Burrus Seeds, 826 Arenzville Road, Arenzville, IL 62611 (217-997-5511)
Prairie Hybrids, Prairie Hybrids, 27445 Hurd Rd, Deer Grove, IL 61243 (309-928-3123)
ProHarvest, ProHarvest Seeds Inc, 2737N 700 E Rd, Ashkum, IL 60911 (815-698-2204)
Public, Univ. Of Illinois, 1102 S. Goodwin Ave., AW-101 Turner Hall, Urbana, IL 61801 (217-265-4062)
Public, Univ. Of Missouri, 3600 New Haven Rd, Columbia, MO 65201 (573-884-7333)
Renk, Renk Seed, 6809 Wilburn Rd, Sun Prairie, WI 53590 (800-289-7365)
Roeschley, Roeschley Hybrids, 8222 E 1500 N Rd, Graymont, IL 61743 (815-743-5938)
Scoular, The Scoular Co, 2027 Dodge St, Omaha, NE 68102 (402-342-3500)
Steyer, Steyer Seeds, 36161 SR10, Mason City, IL 62664 (217-482-3281)
Stine, Stine Seed Co, 22555 Laredo Trail Adel, IA 50003 (515-677-2605)
Stone, Stone Seed Group, 5965 W St Rte 97, Pleasant Plains, IL 62677 (217-546-8006)
Sun Prairie, Sun Prairie Seeds, 1676 C. R. 2200 E, St. Joseph, IL 61873 (217-469-2351)
Williamsfield, Williamsfield Seed Co, 1122 Knox Hwy. 18, Williamsfield, IL 61489 (309-369-2248)