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 149 conventional and 507 roundup resistant varieties from 57 seed companies tested in 2009. This total included 167 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 2009 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 3,139 entries were tested in 2009.

Number and location of tests. In 2009, 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 Elkville and Harrisburg

Seven-inch-row-width conventional and roundup resistant trials were conducted at Urbana.

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. The 7-inch-row trial plots consisted of eight rows, each 21 feet long. The center six rows 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 166,000ppa. A custom-built, cone type, narrow-row drill was used to plant the 7-inch trials at 215,000ppa. 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% 0f 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 Swanson[1] 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, Carmer[2] 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.

[1]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.

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

2009 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 8.
Harvest Date: Oct. 19.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Select; RR-RoundUp, Select.
Insecticide: Asana XL.(aerial)
Tillage: fall chisel, 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 19.
Harvest Date: Oct. 19.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Select; RR-RoundUp, Select.
Tillage: fall chisel, spring field cultivate.
S.C.N.: low.

2009 SOYBEAN LOCATIONS

DeKalb
Location: University of Illinois, Northern Illinois Agronomy Research Center, DeKalb County, southwest of DeKalb.
Soil type: Flanagan silt loam.
Cooperators: Lyle Paul, research director; Dave Lindgren, farm foreman.
Planting Date: May 31.
Harvest Date: Nov. 5.
Herbicide: Pre-Intro, FirstRate, RoundUp.
Post-CV-Fusilade. RR-RoundUp, Fusilade.
Insecticide: Hero.
Tillage: spring disk, mulch finisher.
S.C.N.: medium.

Monmouth
Location: University of Illinois, Northwestern Illinois Agricultural Research and Demonstration Center, Warren County, northwest of Monmouth.
Soil type: Sable silty clay loam.
Cooperators: Eric Adee, agronomist; Martin Johnson, farm foreman.
Planting Date: May 9.
Harvest Dates: September 29 & October 13.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Assure ll, RR-RoundUp, Assure II.
Tillage: fall chisel, spring field cultivate.
S.C.N.: medium.

Goodfield
Location: Wurmnest Farm, Woodford county, north of Goodfield, central Illinois.
Cooperator: Mike Wurmnest.
Soil Type: Ipava silt loam.
Planting Date: May 30. Harvest Date: November 6.
Herbicide: Pre-Intro, FirstRate.
Post-CV-FirstRate,Select; RR-RoundUp, Select.
Insecticide: Warrior (aerial).
Tillage: spring striptill.
S.C.N. medium.

Dwight
Location: Grundy County, Hoffman Farm.
Soil type: Reddick silty clay loam.
Cooperator: Allen Hoffman.
Planting Date: May23. Harvest Dates: Sept. 30, Nov. 4.
Herbicide: Pre-Intro, FirstRate.
Post-CV Basagran, FirstRate, Select; RR-RoundUp, Select.
Insecticide: CV-Mustang Max.
Tillage: fall chisel, spring soil finisher. S.C.N.: medium.

Perry
Location: Pike County, Emerson Farm, west central Illinois.
Soil type: Herrick silt loam
Cooperator: Mike Vose, farm foreman.
Planting Date:June 1. Harvest Dates: Sept. 30, Oct. 20.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Assure II; RR-RoundUp, Assure ll.
Tillage: spring field cultivate, Dyna drive.
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: May 31. Harvest Dates: Oct. 5, Nov. 7.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, 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; Mike Kleiss, farm foreman.
Planting Date: May 29.
Harvest Dates: Sept. 28, Oct. 22, Nov. 3.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Select; RR-RoundUp, Select.
Tillage: fall rip, spring soil finisher. S.C.N.: high.

St. Peter
Location: Magnus Farm, Fayette County, west of St. Peter, south central Illinois.
Soil type: Hoyleton silt loam.
Cooperator: Torrey Magnus.
Planting date: June 28, Harvest Dates: Oct. 21, Nov. 8.
Herbicide: Pre- Boundry, FirstRate.
Post-CV-FirstRate, Select ; RR-RoundUp.
Tillage: spring disk twice, soil crumbler. S.C.N.: low.

Belleville
Location: Southern Illinois University Research Center, east of Belleville, St. Clair County.
Soil type: Ebbert silt loam.
Cooperators: Dr. Ed Varsa, research director; Ron Krausz, field manager.
Planting Date: June 25. Harvest Date: Nov. 8.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Select; RR-RoundUp, Select.
Tillage: spring disk, field cultivate, roller.
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 21. Harvest Dates: Oct. 3 & 21.
Herbicide: Pre-Intro, FirstRate.
Post-CV-First Rate, Basagran; RR-RoundUp.
Tillage: fall chisel, sprg field cult., soil finisher.
S.C.N.: medium.

Harrisburg
Location: Wintizer farm, Saline County, extreme southern Illinois.
Soil type: Harco silt loam.
Cooperator: Kevin Wintizer.
Planting Date: May 22. Harvest Dates: Oct. 2 & 21.
Herbicide: Pre- Touchdown, 2,4-D, Dual.
Post-CV-Basagran,FirstRate, Select; RR-RoundUp.
Tillage: fall chisel, spring field cultivate.
S.C.N.: medium.

GROWING SEASON RAINFALL, 2009

Location	May	June	July	Aug	Sept
Erie	3.10	5.75	6.70	10.4	1.50
Mt. Morris	4.10	7.50	6.00	7.00	3.00
DeKalb	3.74	4.20	2.57	5.15	1.18
Monmouth	5.14	8.53	3.58	6.78	1.55
Goodfield	5.80	3.20	5.10	5.30	4.80
Dwight	5.80	3.51	2.40	4.20	1.10
Perry	5.05	5.47	3.06	5.71	1.69
New Berlin	3.70	5.20	1.70	4.60	3.90
Urbana	5.71	4.42	6.30	5.62	0.80
St. Peter	6.86	5.26	9.10	1.49	3.67
Belleville	4.54	6.58	3.47	4.07	2.19
Elkville	8.60	4.50	9.10	4.10	3.80
Harrisburg	6.40	3.55	8.00	2.35	6.30

SOURCES OF SEED

AgAlumni, Ag Alumni Seed, 702 State Rd. 28 E, Romney, IN 47981 (800-822-7134)
Arise, Brown Seed Enterprises, Inc. 289 Co. Rd. 550 N Neoga, IL 62447 (217-895-2335)
Asgrow, Monsanto, 800 N Lindbergh Blvd. St. Louis, MO 63167 (800-768-6387)
Asoyia, Asoyia, 2730 Naples Ave SW Suite 104, Iowa City , IA 52240 (319-339-4645)
Baker, Baker Seed Co., 610 W Seminary St. West Salem, IL 62476 (618-456-8851)
Beck, Beck's Hybrids, 6767 E 276th St. Atlanta, IN 46031 (800-937-2325)
Beck / XL, Beck's Hybrids, 6767 E 276th St. Atlanta, IN 46031 (800-937-2325)
Channel, Crow's & Midwest Seed Gen., 1551 Hwy 210 Huxley, IA 50124 (515-597-5903)
Croplan, Croplan Genetics, 9541 Gardner Ave. Sparta, WI 54656 (608-633-0857)
Dairyland, Dairyland Seed Co. Inc., PO Box 958, West Bend, WI 53095 (800-236-0163)
Delta Grow, Delta Grow Sd, PO Box 219, England, AR 72046 (800-530-7933)
DeRaedt, DeRaedt Sd Corp, 10N 971 Tower Rd. Hampshire, IL 60140 (847-514-8844)
Diener, Heritage Diener Seeds, 371 N. Diener Road, Reynolds, IN 47980 (800-545-8611)
Dyna-Gro, Crop Production Services, PO Box 1467, Galesburg, IL 61402 (309-342-4100)
eMerge Genetics, Schillinger Genetics, 4200 Corp Drive, Suite 106, West Des Moines, IA 50266 (515-225-1166)
Excel, Agrinetics Inc., 1764 Windward Ave., Naperville, IL 60563 (630-417-4265)
Excel, Excel Brand, PO Box 320, Camp Point, IL 62320 (800-593-7708)
Excel, Hilliard Farm Corp.,26845 S 1015 Zola Rd, Harrisburg, IL 62946 (618-841-3645)
Excel, Hartke Seed Farms, 22679 Sunset Rd. Litchfield, IL 62056 (217-324-2680)
Excel, Miller Bros Farm & Fert., 2001 Niemansville Trail, Walshville, IL 62091 (217-456-9311)
Fielder's Choice, Fielder's Choice Direct, 306 N Main St, Monticello, IN 47960 (574-870-9207)
Fontanelle, Fontanelle Hybrids, 1955 E. Military Ave. Fremont, NE 68025 (402-721-1410)
FS Hisoy, Growmark Inc., 1701 Towanda Ave, Bloomington, IL 61701 (888-222-4405)
G2 Genetics, G2 Genitics (NuTech), 36131 Hwy 69, Forest City, IA 50436 (641-581-3350)
Great Heart, Great Heart, 220 W. Washington, Paris, IL 61944 (217-465-4132)
Hoblit, Hoblit Seed, 826 Arenzville Rd., Arenzville, IL 62611 (217-997-5511)
Hoffman, Hoffman Seed House Inc., 200 E 4th St, Hoffman, IL 62250 (618-495-2617)
Horizon, Horizon Genetics, PO Box 31, Mason City, IL 62664 (217-482-3281)
Hubner, Hubner Seed, 10280 West SR 28, West Lebanon, IN 47991 (800-328-4428)
Hughes, Hughes Seed Farms, 206 N Hughes Rd, Woodstock, IL 60098 (815-338-2480)
iCorn, iCorn, 792 N. Peru St., Cicero, IN 46034 (800-240-0101)
Kaltenberg, Kaltenberg Seeds, PO Box 278, Waunakee, WI 53597 (608-849-5021)
Kitchen, Kitchen Seed Co., PO Box 286, Arthur, IL 61911 (217-543-3476)
Kruger, Kruger Seeds, Inc., PO Box A, Dike, IA 50624 (800-772-2721)
Lewis, Lewis Hybrids, Inc., PO Box 38, Ursa, IL 62376 (800-252-7851)
LG Seeds, LG Seeds, 22827 Shissler Rd. Elmwood, IL 61529 (800-752-6847)
Martin, Martin Seeds, 10045 W. Second St. Williamsport, IN 47993 (765-986-2030)
Mavrick, Bo-Jac Seed Co., 245 1500th Ave., Mt. Pulaski, IL 62548 (217-792-5001)
Merschman, Merschman Seeds, Inc., PO Box 67, West Point, IA 52656 (800-848-7333)
Munson, Munson Hybrids, 1262 Knox Rd. 100 E, Galesburg, IL 61401 (309-343-8410)
MWS, MWS Seeds, LLC, 2737 N 700 E Rd. Ashkum, IL, 60911 (815-698-2204)
Mycogen, Mycogen Seeds, 9330 Zionsville Rd., Indianapolis, IN 46268 (800-692-6436)
NK Brand, Syngenta Seeds Inc., 7500 Olson Memorial Hwy, Golden Valley, MN 55427 (800-445-0956)
NuTech, NuTech Seed, 36131 Hwy 69 N, Forest City, IA 50436 (641-581-3350)
O'Brien, O'Brien Seed and Grain, 2004 Island Rd. Harvard, IL 60033 (815-943-5076)
Pioneer, Pioneer Hi-Bred Intern. Inc., 14171 Carole Dr., Bloomington, IL 61705 (309-821-9940)
Power Plus, Power Plus, 826 Arenzville Rd. Arenzville, IL 62611 (217-997-5511)
Prairie Hybrids, Prairie Hybrids, 27445 Hurd Road, Deer Grove, IL 61243 (815-438-7815)
Public Varieties, University Of Illinois, 1102 S Goodwin Ave., AW-101 Turner Hall, Urbana, IL 61801 (217-265-4062)
Renk, Renk Seed, 6809 Wilburn Rd. Sun Prairie, WI 53590 (800-289-7365)
Schillinger, Schillinger Genetics, 4200 Corporate Drive Suite 106, West Des Moines, IA 50266 (515-225-1166)
Southern Cross, Miles Seed , PO Box 22879, Owensboro, KY 42304 (888-786-4537)
Southern States, Southern States Co-op, PO Box 26234, Richmond, VA 23260 (804-281-1203)
Steyer, Steyer Seeds, 6154 N Co Rd 33, Tiffin, OH 44883 (800-231-4274)
Stine, Stine Seed Company, 22555 Laredo Trail, Adel, IA 50003 (515-677-2605)
Stone Seed Group, Stone Seed Group, 5965 W State Rt 97, Pleasant Plains, IL 62677 (309-944-5131)
Sun Prairie, Champaign County Seed Co., 1676 County Rd. 2200 E. St. Joseph, IL 61873 (217-469-2351)
Trisoy, Trisler Seeds, Inc. 3274 E 800 North RD. Fairmount, IL 61841 (217-288-9301)
UniSouth, Unisouth Genetics, Inc., 2640-C Nolensville Road, Nashville, TN 37211 (800-505-3133)
Wilken, Wilken Seed Grains Inc., PO Box 770, Pontiac, IL 61764 (815-844-3458)
Willcross, NeCo Seed Farms, PO Box 379, Garden City, MO 64747 (816-862-8203)
Wycoff, Wycoff Hybrids Inc. 594 E 400 N, Valporaiso, IN 46383 (219-462-6716)