PERFORMANCE OF COMMERCIAL SOYBEANS IN ILLINOIS, 2016

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 45 conventional, 57 liberty resistant and 209 roundup resistant varieties from 32 seed companies tested in 2016.

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 2016 Illinois soybean performance trials. Entrants were required to enter all non-irrigated, 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.

Number and location of tests. In 2016, tests were conducted at 13 locations in the state (see map). These sites represent the major soils and maturity zones of the state.

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

Region 1 Fenton, 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

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 all locations consisted of a pre-emergence foundation herbicide followed by trial specific post-emergence application of Roundup, Liberty or conventional 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.

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^{o}), 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.

2016 TEST FIELDS

Fenton
Location: Mickley Farm, Whiteside County, west of Rock Falls, northwestern Illinois.
Cooperators: Ron and Dave Mickley.
Soil Type: Coffeen silt loam .
Planting Date: May 6. Harvest Date: Sep. 28.
Herbicide: Pre-Authority First, Dual. Post-CV-First Rate, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall—Disc/ripper, spring—field cultivate.

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 11.
Herbicide: Pre-Authority First, Zidua. Post-CV-Flexstar, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall- vertical till, spring- field cultivate.

DeKalb
Location: Drendel Farm, DeKalb County, southwest of DeKalb.
Cooperator: Steve Drendel
Soil type: Flanagan silty clay loam.
Planting Date: May 19. Harvest Date: Oct. 11.
Herbicide: Pre-Authority First, Zidua. Post-None Applied
Tillage: fall-chisel, spring- soil finished.

Monmouth
Location: University of Illinois, Northwestern Illinois Agricultural Research and Demonstration Center, Warren County, northwest of Monmouth.
Cooperators: Brian Mansfield, agronomist; Martin Johnson, farm foreman.
Soil type: Sable silty clay loam.
Planted: May 6. Harvest: Sep. 29, Oct. 14.
Herbicide: Pre-Authority First, Dual. Post-CV-First Rate, Select Maxx. RR- RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall-disk-ripper, spring- field cultivate.

Goodfield
Location: Wurmnest Farm, Woodford County, north of Goodfield, central Illinois.
Cooperator: Mike Wurmnest.
Soil Type: Ipava silt loam.
Planting Date: May 16.
Harvest Date: Sep. 27, Oct 13.
Herbicide: Pre-Authority First, Zidua. Post-CV-Flexstar, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall- Chisel, spring- field cultivate.

Dwight
Location: Grundy County, Hoffman Farm.
Cooperator: Allen Hoffman.
Soil type: Reddick silty clay loam.
Planted: May 20. Harvest: Oct 5, Oct 24.
Herbicide: Pre-Authority First, Zidua. Post-CV-Flexstar, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall-chisel, spring- field cultivate.

Perry
Location: Pike County, Emerson Farm, west central Illinois.
Cooperator: Mike Vose, farm foreman.
Soil type: Herrick silt loam
Planted: June 2. Harvest: Oct 14.
Herbicide: Pre-Authority First, Zidua.
Post-None applied
Tillage: spring- Disk, Dyna-Drive.

New Berlin
Location: Bennett Farm, Sangamon County north of New Berlin, Central Illinois.
Cooperator: Leahy Bennett.
Soil type: Sable silty clay loam.
Planted: May 8. Harvest: Sep. 26 & Oct 15.
Herbicide: Pre-Authority First, Zidua, Round-Up, Post-CV-Flexstar, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall-V ripper, spring-vertical finisher.

Urbana
Location: University of Illinois, Crop Sciences Research & Education Center, Champaign County, east central Illinois.
Cooperator: Jeff Warren, farm foreman.
Soil type: Flanagan silt loam.
Planting Date: May 7.
Harvest Date: Sept. 21, Oct 8.
Herbicide: Pre-Authority First, Zidua, Round-Up. Post-CV-Flexstar, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: fall-chisel, spring-soil finisher.

St. Peter
Location: Schwarm Farm, Fayette County, North of St. Peter, south central Illinois.
Cooperator: Russ Schwarm
Soil type: Darmstadt silt loam
Planted: June 20. Harvest: Oct 19, Oct 25.
Herbicide: Pre-Authority First, Glory. Post- Select Maxx.
Tillage: fall-chisel plow, spring--field cultivate.

Belleville
Location: Southern Illinois University Research Center, east of Belleville, St. Clair County.
Cooperator: Ron Krausz, field manager.
Soil type: Ebbert silt loam.
Planted: May 5. Harvest: Oct 14.
Herbicide: Pre- Authority First, Dual. Post-CV- First Rate, Select Maxx; RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx.
Tillage: spring-disk, field cultivate, cultimulch.

Elkville
Location: Funk farm, North of Carbondale, Jackson County, extreme southern Illinois.
Cooperator: Trent Funk.
Soil type: Okaw silt loam.
Planted: May 24. Harvest: Oct 18.
Herbicide :Pre-Authority First, Zidua. Post-CV-Flexstar, Select Maxx. RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx
Tillage: fall-chisel, spring-soil finisher.

Harrisburg
Location: Wintizer farm, Saline County, extreme southern Illinois.
Cooperator: Kevin Wintizer.
Soil type: Harco silt loam.
Planted: May 8. Harvest: Oct. 5.
Herbicide: Pre- Pre-Authority First, Zidua.
Post- Post-CV-Flexstar, Select Maxx. RR-RoundUp, Select Maxx; LL-Liberty, Select Maxx
Tillage: fall-disk, spring-disk, field cultivate.

2016 GROWING SEASON RAINFALL

Location	May	June	July	Aug	Sept	Total
Mt. Morris	5.32	3.11	5.81	6.02	2.83	**23.0**
DeKalb	7.58	4.34	6.23	6.45	1.98	**26.6**
Fenton	3.42	5.01	6.85	8.19	2.94	**26.4**
Monmouth	3.70	3.51	6.68	5.41	1.92	**21.2**
New Berlin	3.17	.71	5.09	5.43	1.97	**16.4**
Perry	4.50	1.52	9.32	4.78	2.13	**22.2**
Dwight	3.63	3.63	7.58	8.47	4.06	**29.1**
Goodfield	4.42	3.28	3.28	7.63	4.22	**25.7**
Urbana	4.18	6.29	5.09	4.08	6.08	**25.7**
St. Peter	3.75	3.16	8.06	8.75	5.67	**29.4**
Belleville	4.19	1.80	4.40	5.37	7.52	**23.8**
Elkville	6.83	1.69	7.83	6.36	5.75	**28.6**
Harrisburg	7.35	13.3	11.0	7.81	2.86	**42.3**

2016 SOYBEAN LOCATIONS

SOURCES OF SEED

Agventure, Wehmeyer Seed.
www.agventure.com
Asgrow, Monsanto,
www.agseedselect.com
Baker, Baker Seed LLC.
www.bakerseed.com
BioGene Miller Bros Fertilizer
millerbrosfert@frontiernet.net
Credenz, Bayer CropScience,
www.Credenz.Bayer.com
Channel, Channel Seed
www.channel.com
Cornelius, Cornelius Seed.
www.corneliusseed.com
Dairyland, Dairyland Seed.
www.dairylandseed.com
DeRaedt, DeRaedt Seed Corp.,
847-514-8844
Dyna-Gro, Dyna-Gro Seed.
www.dynagroseed.com
FS Hisoy, Growmark.
www.fsseeds.com
G2 Genetics, NuTech Seed LLC.
www.yieldleader.com
Great Lakes, Great Lakes Hybrids.
www.greatlakeshybrids.com
Green Valley, Green Valley Seed LLC.
www.gvseed.com
Hoblit, Burris Seeds.
www.burrusseed.com
Hoffman, Hoffman Seed House.
www.hoffmanseedhouse.com
Hughes, Burrus Seeds.
www.burrusseed.com
Illini, Baird Seed Co.
www.bairdseedcompany.com
Lewis, Lewis Hybrids.
www.lewishybrids.com
Martin, Martin Seeds,
765-986-2030
Monier, Monier Seed & Service,
309-469-2511
Munson, Munson Hybrids.
www.munsonhybrids.com
Pfister, Pfister Seeds LLC.
www.pfisterseeds.com
Power Plus, Burrus Seeds.
www.burrusseed.com
Public, Univ. Of Illinois
217-265-4062
Renk, Renk Seed.
www.renkseed.com
Roeschley, Roeschley Hybrids.
www.roeschleyhybrids.com
Steyer, Steyer Seeds.
www.steyerseeds.com
Stine, Stine Seed Co
www.stineseed.com
Stone, Stone Seed Group
www.stoneseed.com
Sun Prairie Seeds, Champaign Co. Seed.
www.sunprairieseeds.com

Soybean Seed Treatment Designations

na	No information available
U	Untreated
ACC	Acceleron®
ACCN	Acceleron® + NitroShield®
ACCQ	Acceleron + Cue
AMX	ApronMaxx®
AMXV	ApronMaxx® with Vibrance
AST	Agrishield™ ST System Fungicide+Insecticide
AST+	Agrishield™ ST System Fungicide+Insecticide+Nematicide
CC	Clariva™ Complete Beans
CCM	Clariva™ Complete Beans+Mertect
CMX	CruiserMaxx® Beans
CMXO	CruiserMaxx® Beans with Optimize®
CMXV	CruiserMaxx® Beans with Vibrance®
CMXVI	CruiserMaxx® Beans with Vibrance® plus Illevo®
EE	EverGol™ Energy
EEG	EverGol™ Energy plus Gaucho® 600
EEGI	EverGol™ Energy plus Gaucho® 600 plus Illevo®
GIA	Gaucho® 600 + Illevo®+ Allegiance® FL
INTS	Intego™ Suite
PGP	Profit Guard Plus
PV	Poncho® Votivo®
PVI	Poncho® Votivo® plus Illevo®
PVIEE	Poncho® Votivo® plus Illevo® plus Evergol™ Energy
PRSLD	PowerShield SDS
RAN	Rancona®
SS	SureStand™