

OCTOBER 2012

SDSU EXTENSION

Soybean production is greatly affected by variety selection.

This circular reports the agronomic performance of entries in the 2012 South Dakota performance trials for glyphosate-resistant. Major factors in variety selection include yield, maturity, lodging resistance, and *Phytophthora* root rot resistance.

Major factors in variety selection include:

- Yield
- Maturity
- Lodging resistance
- *Phytophthora* root rot resistance

Soybean Variety Performance Trials Results – Bath

Robert G. Hall | SDSU Extension Agronomist
Kevin K. Kirby | Agricultural Research Manager
Shawn Hawks | Agricultural Research Manager



Soybean production is greatly affected by variety selection. This circular reports the agronomic performance of entries in the 2012 South Dakota performance trials for glyphosate-resistant and non-glyphosate-resistant soybean varieties. Major factors in variety selection include yield, maturity, lodging resistance, and *Phytophthora* root rot resistance.

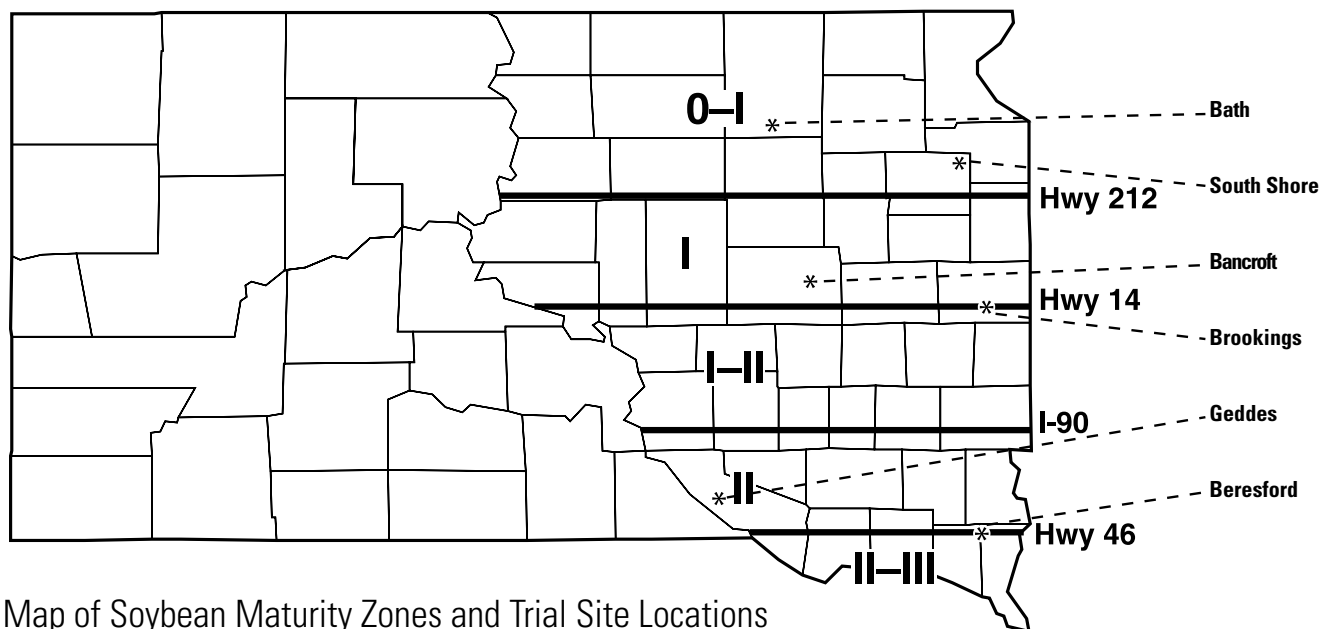
Soybean varieties are classified according to maturity groups that in turn are adapted to maturity zones. Maturity zones are based on day length and therefore are affected by latitude. The very early maturity group-00 varieties are best suited to Canada and bordering regions of the U.S., while maturity group-0, group-I, and group-II varieties are suited to South Dakota. The later groups III-VIII are suited to Iowa, Nebraska, and south to Texas.

Inoculation of seed with the appropriate nitrogen-fixing bacterium is a good practice. Always inoculate if seeding soybeans in soils not previously cropped to soybeans. On older soybean ground, there is no guarantee that N-fixing bacteria will be present to inoculate the seed, thus, consider inoculation cheap insurance that N-fixing bacteria will be present.

Use care when evaluating the yield performance of entries in each table. Entries tested for two years may also have a top yield group value in the 2012 yield column. Each company selects the appropriate maturity group trial (maturity group-0, -I, or -II trial) and locations for their entries. There are, however, no standard regional or national check varieties for maturity. It is suggested you compare the reported maturity rating of every entry you are considering with the days to maturity (DTM) calculated for each entry at each location.

Phytophthora root rot (PRR) is an important soybean disease in South Dakota and is often controlled or managed with the use of resistant varieties. Resistance to *Phytophthora* root rot is fungus-race specific. Thus, resistance to one PRR race does not always impart resistance to other races. Knowledge of the prevalent PRR races in your area is important. If you suspect you have a PRR problem, using varieties with a wide range of rot resistance is strongly suggested. The gene resistance of each variety to PRR is supplied by each seed company (proprietary

entries) or by the USDA (Uniform Soybean Tests, Northern States, public entries). The PRR gene for each entry, as given by the seed company is reported in each yield table. Specific race resistance to PRR can be determined by cross-referencing the PRR gene reported in each yield table with table A (glyphosate-resistant entries) to find the resistant races. Currently, races -1, -3, and -4 are the most common races in South Dakota.



Map of Soybean Maturity Zones and Trial Site Locations

Table A. *Phytophthora* Root Rot race resistance by gene code and name.

PRR Code	Gene Name	Race Resistance
0	rps1	None
1A	Rps1, Rps1a	1-2,10-11,13,15-18,24
1B	Rps1b	1,3-9,13-15,18,21-22
1C	Rps1c	1-3,6-11,13,15,17,21,23-24
1K	Rps1k	1-11,13-15,17-18,21-22,24
2	Rps2	1-5,9-20
3,3a	Rps3, 3a	1-5,8-9,11,13-14,16,18,23,25
4	Rps4	1-4,10,12-16,18-21,25
5	Rps5	1-5,8-9,11-14,18,20,25
6	Rps6	1-4,10,12,14-16,18-21,25
7	Rsp7	16,18,19
K6	Rps1k, Rps6	1-22,24-25
C3	Rps1c, Rps3	1-10,13-18,22-25
B3	Rps1b	1-9,13-16,18,21-23,25
NR	NR	Not Reported

Table B. General test information.

Location	Glyphosate resistant soybean trial results - MG-0 and -I
Cooperator:	Gordon and Roger Locken Farms - Bath
Soil Type:	Great Bend silt loam, 0-2% slope
Tillage:	No-till
Fertility Yield-Goal:	70 bushels
Previous Crop:	Corn
Row Space:	30 inches
Seeding Population	165,000/acre
Soil Inoculant:	Nitragin-brand Soybean Soil Implant down the seed tube by label instructions
Weed Control:	Optill Pro label rates/ 1 oz. Sharpen, 1 qt. Roundup
Insect Control:	None
Disease Control:	None
Date Seeded:	May 24, 2012

Plot yields were adjusted to 13% moisture content and expressed in bushels per acre. Harvest was accomplished using a Massey Ferguson 8XP small plot combine. Explanations of the various references contained within the performance tables can be found in table C.

Table C. Explanation of performance table references [.]

No.	Explanation of references
[1]	Seed treatment as reported by seed company.
[2]	Phytophthora root rot (PRR) gene reported by seed company, cross-reference with table A.
[3]	Maturity rating reported by seed company.
[4]	Days to maturity (DTM) – the number of days to maturity from seeding to 95% brown pod. If data is missing [.] the plots were exposed to a killing frost before they attained the 95% brown pod stage.
[5]	Lodging ratings: 0= all plants erect, 3= 50% of plants lodged at 45°-angle, 5= all plants flat. Shatter ratings: 1= none, 2= 1-10%, 3= 10-20%, 4= 25-50%, 5= > 50% pods shattered.
[6]	Least Significant Difference (LSD 0.05) – the difference two values within a column must equal or exceed to be significantly different from one another at the 0.05 level of probability. If the difference is less than the LSD value the difference between the values is nonsignificant (NS).
[7]	TPG-avg. – the minimum value within a column that entry yield values must equal or exceed to qualify for the top-performance group (TPG).
[8]	TPG-avg. – the maximum value within a column that lodging or shatter rating values must equal or be less than to qualify for the TPG.
[9]	Coefficient of variation (C.V.) - the percent of experimental error associated with a test trial. Ideally, the CV values for yield are less than 15%. If the yield CV values exceed 15% the trial contained too much experimental error to be a valid, thus no data analysis for the table yield column is reported.

Table 1. Glyphosate-resistant soybean variety performance results - MG-0, Bath				
Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Ldg. Rtg. (1-5) [5]
		2-Yr	2012	
DAIRYLAND/ DSR-0747/R2Y __Cruiser Maxx __1c __ 0.7	111	68	65	1
MUSTANG/ 09822 __Acceleron __1k __ 0.9	107	67	65	2
G-2 GENETICS/ 6088 __Trilex+Allegiance+Gaucho __0 __ 0.8	109	67	65	1
SEEDS 2000/ 2091 RR2YN __NR __0 __ 0.9	112	67	63	1
ASGROW/ AG0832 __Acceleron+Poncho/Votivo __3 __ 0.8	109	65	64	1
G-2 GENETICS/ 6098 __Trilex+Allegiance+Gaucho __1k __ 0.9	108	65	64	2
G-2 GENETICS/ 6092 __Trilex+Allegiance+Gaucho __1k __ 0.9	107	65	63	2
PRAIRIE BR./ EXP 0913 __NR __NR __ 0.9	108	65	63	2
PRAIRIE BR./ PB-0851R2 __NR __NR __ 0.8	109	65	62	1
WENSMAN/ W 3099R2 __Acceleron __1k __ 0.9	110	64	62	1
SODAK GENET./ SD1093RR __NR __0 __ 0.9	108	62	59	1
PRAIRIE BR./ PB-1120R2 __NR __NR __ 0.9	120	61	61	2
WENSMAN/ W 3090NR2 __Acceleron __3 __ 0.9	108	.	69	1
PRAIRIE BR./ PB-1261R2 __NR __NR __ 0.9	112	.	68	1
PRAIRIE BR./ PB-0863R2 __NR __NR __ 0.7	110	.	67	1
PRAIRIE BR./ PB-0920R2 __NR __NR __ 0.9	111	.	66	1
WENSMAN/ W 3076R2 __Acceleron __3 __ 0.7	109	.	66	1
SODAK GENET./ SD2061R2Y __Cruiser Maxx __1c __ 0.6	108	.	66	1
DAIRYLAND/ DSR-0904/R2Y __Cruiser Maxx __3 __ 0.8	108	.	65	1
PRAIRIE BR./ PB-1061R2 __NR __NR __ 0.9	111	.	64	1
HEFTY/ H07Y12 __NR __1k __ 0.7	108	.	63	1
SEEDS 2000/ 2051 RR2Y __NR __0 __ 0.5	107	.	62	2
SODAK GENET./ SD2091R2Y __Cruiser Maxx __1c __ 0.9	111	.	62	1
MUSTANG/ 08733 __Acceleron __3 __ 0.8	108	.	61	1
HEFTY/ EXP-H02R3 __NR __1k __ 0.2	107	.	61	1
HEFTY/ EXP-H08R3 __NR __3 __ 0.8	108	.	61	1
PETERSON/ PFS 11R08 __NR __3 __ 0.8	108	.	60	1
PIONEER/ 90Y81 __PPST Pkg. __1c __ 0.8	108	.	58	1
ASGROW/ AG0833 __Acceleron+Poncho/Votivo __3 __ 0.8	107	.	57	1
HEFTY/ H06Y11 __NR __0 __ 0.6	108	.	54	2
Test avg. :	109	65	63	1
High avg. :	120	68	69	2
Low avg. :	107	61	54	1
[6] Test LSD (.05):		5	5	<1
[7] Min.TPG-avg. :		63	64	.
[8] Max.TPG-avg. :		.	.	1
[9] Test Coef. Var.:		4	4	27
No. Entries:	30	12	30	30

NOTE: Table reference numbers [1-9] are explained in Table C.
* Shaded values within a yield or lodging rating column are included in the top-performance group (TPG). Therefore, look for varieties that have shaded values within each yield or lodging rating column.

Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Ldg. Rtg. (1-5) [5]
		2-Yr	2012	
CHANNEL/ 1405R2 __Acceleron __1c __ 1.4	116	68	68	1
G-2 GENETICS/ 6162 __Trilex+Allegiance+Gaucho __1c __ 1.6	114	67	70	2
REA/ 71G20 __NR __0 __ 1.1	112	67	68	2
PRAIRIE BR./ PB-1743R2 __NR __NR __ 1.7	117	67	67	1
PRAIRIE BR./ PB-1320R2 __NR __NR __ 1.3	118	65	70	2
PRAIRIE BR./ PB-1823R2 __NR __NR __ 1.8	118	65	70	2
ASGROW/ AG1431 __Acceleron+Poncho/Votivo __1c __ 1.4	113	65	67	2
PRAIRIE BR./ PB-1591R2 __NR __NR __ 1.5	117	65	67	2
REA/ 75G12 __NR __1c __ 1.5	115	65	66	1
CHANNEL/ 1105R2 __Acceleron __3 __ 1.1	116	65	66	2
WENSMAN/ W 3108R2 __Acceleron __3 __ 1	111	65	65	2
DAIRYLAND/ DSR-1370/R2Y __Cruiser Maxx __1c __ 1.3	118	64	68	2
PRAIRIE BR./ PB-1722R2 __NR __NR __ 1.7	116	64	67	1
WENSMAN/ W 3140R2 __Acceleron __0 __ 1.4	117	64	66	2
REA/ 72G21 __NR __1c __ 1.3	120	63	66	2
HEFTY/ H11Y12 __NR __3 __ 1.1	116	63	65	2
WENSMAN/ W 3120R2 __Acceleron __1c __ 1.2	118	63	65	2
ASGROW/ AG1631 __Acceleron+Poncho/Votivo __1c __ 1.6	114	63	63	2
SEEDS 2000/ 2121 RR2Y __NR __3 __ 1.2	111	62	62	1
STINE/ 11RC08 __NR __3a __ 1.1	109	61	62	2
ASGROW/ AG1031 __Acceleron+Poncho/Votivo __3 __ 1	110	61	60	1
PIONEER/ 91Y90 __PPST Pkg. __NR __ 1.9	119	60	61	1
ASGROW/ AG1233 __Acceleron+Poncho/Votivo __1k __ 1.2	116	.	74	1
WENSMAN/ W 3101R2 __Acceleron __1c __ 1	110	.	72	1
SODAK GENET./ SD2172R2Y __Cruiser Maxx __1c __ 1.7	119	.	72	2
PRAIRIE BR./ EXP 12151 __NR __NR __ 1.5	118	.	70	2
WENSMAN/ W 3160NR2 __Acceleron __1c __ 1.6	118	.	70	1
HEFTY/ H10Y12 __NR __1k __ 1	109	.	69	2
PRAIRIE BR./ PB-1566R2 __NR __NR __ 1.5	114	.	69	2
SODAK GENET./ SD2181NR2 __Cruiser Maxx __1c __ 1.8	119	.	69	2
HEFTY/ H16Y12 __NR __1k __ 1.6	120	.	68	1
STINE/ 16RD66 __NR __1c __ 1.6	119	.	68	2
SODAK GENET./ SD2101R2Y __Cruiser Maxx __1k __ 1	109	.	68	2
PIONEER/ 91Y74 __PPST Pkg. __1k __ 1.7	118	.	67	1
HEFTY/ H13Y11 __NR __1c __ 1.3	117	.	67	2
PRAIRIE BR./ PB-1433R2 __NR __NR __ 1.4	116	.	67	2
MUSTANG/ 14323 __Acceleron __1c __ 1.4	116	.	66	1
HEFTY/ EXP-H14R3 __NR __1c __ 1.4	115	.	66	1
PETERSON/ PFS 11R10 __NR __1c __ 1	112	.	66	1
PRAIRIE BR./ EXP 12161 __NR __NR __ 1.6	118	.	66	2
PRAIRIE BR./ PB-1637R2 __NR __NR __ 1.6	118	.	66	2
PIONEER/ 91Y30 __PPST Pkg. __1c __ 1.3	109	.	65	1
PIONEER/ 91Y01 __PPST Pkg. __1c __ 1	108	.	65	2
HEFTY/ H15Y12 __NR __3 __ 1.5	115	.	65	2
DAIRYLAND/ DSR-1710/R2Y __Cruiser Maxx __1c __ 1.7	120	.	65	2

Table 2. Glyphosate-resistant soybean variety performance results - MG-I, Bath (continued)				
Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Ldg. Rtg. (1-5) [5]
		2-Yr	2012	
PETERSON/ PFS 12R12 __NR __3 __ 1.1	109	.	65	2
HEFTY/ H12Y11 __NR __3 __ 1.2	112	.	64	2
HEFTY/ H16Y11 __NR __1c __ 1.6	119	.	64	2
HEFTY/ EXP-H10R3 __NR __3 __ 1	115	.	63	1
NORTHSTAR/ NS 1257R2 __Acceleron __3 __ 1.1	109	.	63	2
WENSMAN/ W 3142NR2 __Acceleron __1k __ 1.4	118	.	62	2
NORTHSTAR/ NS 1528NR2 __Acceleron __1c __ 1.5	114	.	62	1
G-2 GENETICS/ 6143 __Trilex+Allegiance+Gaucho __1c __ 1.4	109	.	61	2
PIONEER/ 91Y81 __PPST Pkg. __1c __ 1.8	118	.	60	1
HEFTY/ H18Y11 __NR __1c __ 1.8	114	.	60	2
SOKAK GENET./ SD2149R2Y __Cruiser Maxx __NR __ 1.4	110	.	60	2
PIONEER/ 91Y10 __PPST Pkg. __1c __ 1.1	108	.	59	1
G-2 GENETICS/ 7186 __Trilex+Allegiance+Gaucho __1k __ 1.7	115	.	59	2
G-2 GENETICS/ 7183 __Trilex+Allegiance+Gaucho __1c __ 1.8	118	.	59	1
MUSTANG/ 15523 __Acceleron __1c __ 1.5	113	.	57	2
Test avg. :	115	64	65	2
High avg. :	120	68	74	2
Low avg. :	108	60	57	1
[6] Test LSD (.05):		NS**	5	<1
[7] Min.TPG-avg. :		60	69	.
[8] Max.TPG-avg. :		.	.	1
[9] Test Coef. Var.:		4	5	28
No. Entries:	60	22	60	60
NOTE: Table reference numbers [1-9] are explained in Table C.				
* Shaded values within a yield or lodging rating column are included in the top-performance group (TPG). Therefore, look for varieties that have shaded values within each yield or lodging rating column.				
** Indicates differences between values within a yield or lodging rating column are non-significant (NS).				

GLYPHOSATE-RESISTANT SOYBEAN VARIETY TRIAL RESULTS

Maturity Group-0 (Table 1):

The two-year and 2012 yield averages were **65** and **63** bushels per acre, respectively; and the lodging rating average was **1**. Varieties had to average **63** and **64** bushels or higher to be in the top yield group for two years and for 2012, respectively. Variety yield differences among both the two-year and 2012 averages had to differ by **5** bu. Variety lodging rating values had to equal **1** to be in the top performance group for lodging resistance and had to differ by less than **1** to be significantly different.

Maturity Group-I (Table 2):

The two-year and 2012 test-yield averages were **64** and **65** bushels per acre, respectively; the lodging rating average was **2**. Varieties had to average **60** and **69** bushels or higher to be in the top yield group for two years and for 2012, respectively. Variety two-year yield averages did not differ significantly. The 2012 variety yield differences had to differ by **5** bushels to be significantly different. Variety lodging score values had to equal **1** to be in the top performance group for lodging resistance and had to differ by **1** to be significantly different.