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SDSU EXTENSION

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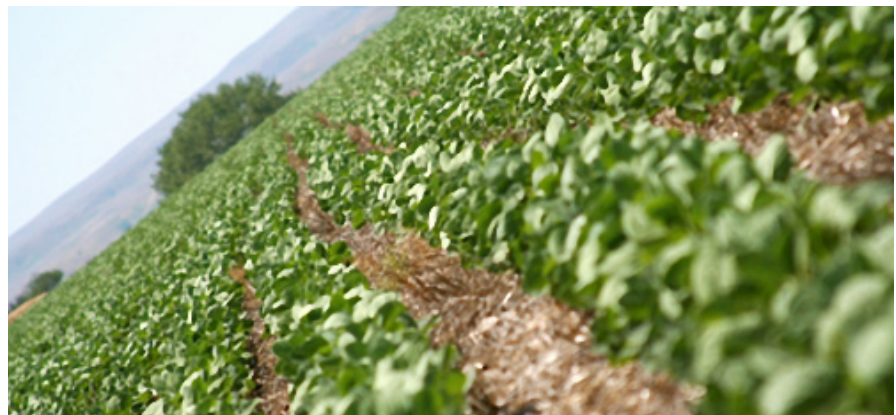
This circular reports the agronomic performance of entries in the 2012 South Dakota performance trials for glyphosate-resistant. Major factors in variety selection include yield, maturity, lodging resistance, and *Phytophthora* root rot resistance.

Major factors in variety selection include:

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

Soybean Variety Performance Trials Results – Geddes

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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.

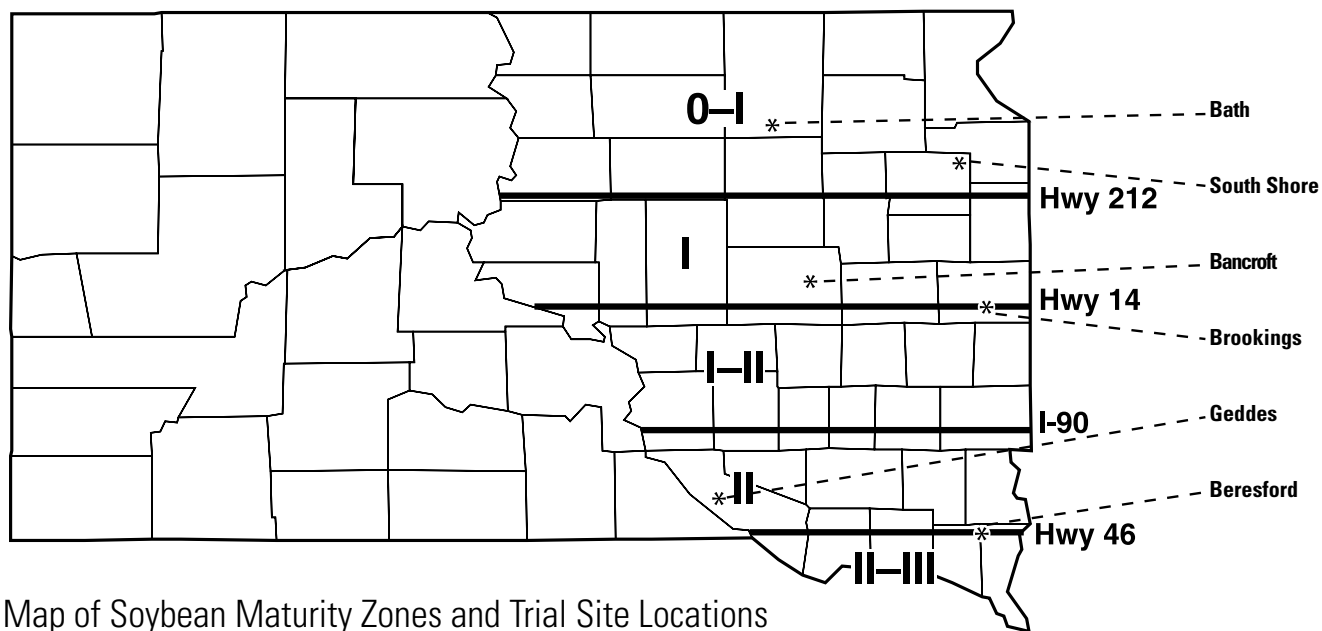
Soybean varieties are classified according to maturity groups that in turn are adapted to maturity zones. Maturity zones are based on day length and therefore are affected by latitude. The very early maturity group-00 varieties are best suited to Canada and bordering regions of the U.S., while maturity 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-I and -II
Cooperator:	Curtis Sybesma Farm - Geddes
Soil type:	Highmore-Walke 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:	1 qt. Roundup
Insect control:	None
Disease control:	None
Date seeded:	May 15, 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-I, Geddes

Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Shatter Rtg. (1-5) [5]
		2-Yr	2012	
PRAIRIE BR./ PB-1823R2 __NR __NR __ 1.8	118	44	37	1
PRAIRIE BR./ PB-1591R2 __NR __NR __ 1.5	115	41	32	1
PRAIRIE BR./ PB-1722R2 __NR __NR __ 1.7	114	38	29	1
PRAIRIE BR./ PB-2042R2 __NR __NR __ 1.9	116	38	26	2
PRAIRIE BR./ EXP 12161 __NR __NR __ 1.6	114	.	38	1
HEFTY/ H13Y11 __NR __1c __ 1.3	116	.	33	1
HEFTY/ H18Y11 __NR __1c __ 1.8	114	.	32	1
PRAIRIE BR./ EXP 12201 __NR __NR __ 1.9	118	.	32	1
PRAIRIE BR./ EXP 12245P __NR __NR __ 1.9	119	.	32	1
PRAIRIE BR./ EXP 12228P __NR __NR __ 1.9	118	.	31	1
HEFTY/ H16Y12 __NR __1k __ 1.6	115	.	29	1
HEFTY/ H15Y12 __NR __3 __ 1.5	114	.	28	1
SOKAK GENET./ SD2149R2Y __Cruiser Maxx __NR __ 1.4	115	.	28	1
SODAK GENET./ SD2181NR2 __Cruiser Maxx __1c __ 1.8	118	.	27	1
HEFTY/ H18Y12 __NR __0 __ 1.8	115	.	25	2
SODAK GENET./ SD2172R2Y __Cruiser Maxx __1c __ 1.7	118	.	25	1
HEFTY/ H16Y11 __NR __1c __ 1.6	118	.	24	2
PRAIRIE BR./ PB-1743R2 __NR __NR __ 1.7	118	.	24	1
HEFTY/ H17Y12 __NR __1k __ 1.7	118	.	20	2
SODAK GENET./ SD2101R2Y __Cruiser Maxx __1k __ 1	112	.	19	3
PRAIRIE BR./ PB-1566R2 __NR __NR __ 1.5	116	.	17	3
HEFTY/ EXP-H14R3 __NR __1c __ 1.4	118	.	16	3
Test avg. :	116	40	27	1
High avg. :	119	44	38	3
Low avg. :	112	38	16	1
[6] Test LSD (.05):	119	NS**	6	1
[7] Min.TPG-avg. :	119	38	32	.
[8] Max.TPG-avg. :	119	.	.	2
[9] Test Coef. Var.:	2	12	14	33
No. Entries:	22	4	22	22

NOTE: Table reference numbers [1-9] are explained in Table C.

* Shaded values within a yield or shatter rating column are included in the top-performance group (TPG).

Therefore, look for varieties that have shaded values within each yield or shatter rating column.

** Indicates differences between values within a yield or shatter rating column are non-significant (NS).

Table 2. Glyphosate-resistant soybean variety performance results - MG-II, Geddes

Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Shatter Rtg. (1-5) [5]
		2-Yr	2012	
WENSMAN/ W 3256NR2 __Acceleron __3 __ 2.5	115	41	28	1
PRAIRIE BR./ PB-2544R2 __NR __NR __ 2.5	115	41	27	1
HEFTY/ H23Y12 __NR __1k __ 2.3	116	40	28	1
ASGROW/ AG2931 __Acceleron+Poncho/Votivo __1c __ 2.9	125	39	30	1
PIONEER/ 92Y51 __PPST Pkg. __1k __ 2.5	116	39	27	1
G-2 GENETICS/ 7250 __Trilex+Allegiance+Gaucho __1k __ 2.5	122	39	25	1
ASGROW/ AG2431 __Acceleron+Poncho/Votivo __1c __ 2.4	122	39	24	1
ASGROW/ AG2031 __Acceleron+Poncho/Votivo __1c __ 2	120	39	20	3
G-2 GENETICS/ 7290 __Trilex+Allegiance+Gaucho __1k __ 2.9	122	38	27	1
CHANNEL/ 2105R2 __Acceleron __1c __ 2.1	121	38	24	3
WENSMAN/ W 3230R2 __Acceleron __1c __ 2.3	123	38	23	1
HEFTY/ H22Y12 __NR __1c __ 2.2	121	38	19	1
PIONEER/ 92Y70 __PPST Pkg. __NR __ 2.7	124	37	25	2
PRAIRIE BR./ PB-2391R2 __NR __NR __ 2.3	123	37	23	1
CHANNEL/ 2402R2 __Acceleron __1c __ 2.4	123	37	22	1
PRAIRIE BR./ PB-2242R2 __NR __NR __ 2.2	116	37	22	1
MUSTANG/ 23530 __Acceleron __1c __ 2.3	122	37	20	1
PIONEER/ 93M11 __PPST Pkg. __1k __ 2.9	122	36	22	1
DAIRYLAND/ DSR-2105/R2Y __Cruiser Maxx __1k __ 2.1	115	36	20	1
WENSMAN/ W 3284NR2 __Acceleron __1c __ 2.8	124	35	24	1
PRAIRIE BR./ PB-2419RR2 __NR __NR __ 2.4	123	35	22	1
HEFTY/ H23Y10 __NR __1c __ 2.3	122	35	21	1
ASGROW/ AG2232 __Acceleron+Poncho/Votivo __1c __ 2.2	120	35	17	2
HEFTY/ H20Y12 __NR __1c __ 2	117	35	15	3
G-2 GENETICS/ 7203 __Trilex+Allegiance+Gaucho __0 __ 2	121	34	17	2
WENSMAN/ W 3200NR2 __Acceleron __1c+1k __ 2	120	32	12	4
DAIRYLAND/ DSR-2799/R2Y __Cruiser Maxx __0 __ 2.8	123	.	32	1
HEFTY/ EXP-H27R3 __NR __1c __ 2.7	125	.	30	1
PIONEER/ 92Y62 __PPST Pkg. __1k __ 2.6	123	.	29	1
G-2 GENETICS/ 7230 __Trilex+Allegiance+Gaucho __1c __ 2.3	122	.	29	1
G-2 GENETICS/ 1272 __Trilex+Allegiance+Gaucho __1k __ 2.7	119	.	29	1
PIONEER/ 92Y32 __PPST Pkg. __1c __ 2.3	121	.	28	1
DAIRYLAND/ DSR-2677/R2Y __Cruiser Maxx __1k __ 2.7	123	.	28	1
STINE/ 26RD02 __NR __1c __ 2.6	122	.	28	1
ASGROW/ AG2933 __Acceleron+Poncho/Votivo __c3 __ 2.9	123	.	27	1
MUSTANG/ 25333 __Acceleron __NR __ 2.4	121	.	26	1
HEFTY/ H26R3S __NR __1k __ 2.6	121	.	26	1
STINE/ 27RD00 __Cruiser Maxx __1c __ 2.7	121	.	26	1
G-2 GENETICS/ 7273 __Trilex+Allegiance+Gaucho __1k __ 2.7	120	.	26	1
G-2 GENETICS/ 7270 __Trilex+Allegiance+Gaucho __1k __ 2.7	122	.	26	1
PRAIRIE BR./ PB-2351R2 __NR __NR __ 2.3	122	.	26	1
PRAIRIE BR./ PB-2668R2 __NR __NR __ 2.6	122	.	26	1
PIONEER/ 92Y83 __PPST Pkg. __1k __ 2.8	123	.	25	1
PRAIRIE BR./ PB-2366R2 __NR __NR __ 2.3	123	.	25	2
ASGROW/ AG2433 __Acceleron+Poncho/Votivo __1c __ 2.4	117	.	24	1

Table 2. Glyphosate-resistant soybean variety performance results - MG-II, Geddes (continued)

Brand/ Variety Seed Trt. [1] PRR Gene [2] Mat. rtg. [3]	DTM [4]	Yield Averages* bu/a		2012 Shatter Rtg. (1-5) [5]
		2-Yr	2012	
MUSTANG/ 22823 __Acceleron __1k __ 2.2	116	.	24	1
STINE/ 25RD00 __Cruiser Maxx __0 __ 2.5	124	.	24	1
SODAK GENET./ SD2201NR2 __Cruiser Maxx __1c __ 2	123	.	24	1
ASGROW/ AG2733 __Acceleron+Poncho/Votivo __1k __ 2.7	122	.	23	1
MUSTANG/ 26623 __Acceleron __1c __ 2.6	122	.	23	1
HEFTY/ EXP-H20R3 __NR __1c __ 2	121	.	23	1
HEFTY/ EXP-H24R3 __NR __3 __ 2.4	119	.	23	1
STINE/ 24RB00 __Cruiser Maxx __1c __ 2.4	123	.	23	1
G-2 GENETICS/ 7243 __Trilex+Allegiance+Gaucho __1k __ 2.4	116	.	23	1
NORTHSTAR/ NS 2377NR2 __Acceleron __1k __ 2.3	117	.	23	1
RENK/ RS241R2 __NR __1c __ 2.4	123	.	23	1
RENK/ RS263NR2 __NR __1k __ 2.6	121	.	23	1
G-2 GENETICS/ 7286 __Trilex+Allegiance+Gaucho __1c __ 2.8	125	.	22	1
PRAIRIE BR./ PB-2143R2 __NR __NR __ 2.1	121	.	22	1
PRAIRIE BR./ PB-2230R2 __NR __NR __ 2.2	121	.	22	1
WENSMAN/ W 3222NR2 __Acceleron __1c __ 2.2	122	.	22	1
NORTHSTAR/ NS 2118NR2 __Acceleron __1k __ 21.4	123	.	22	2
DAIRYLAND/ DSR-2411/R2Y __Cruiser Maxx __1c __ 2.4	122	.	21	1
CHANNEL/ 2305R2 __Acceleron __1k __ 2.3	117	.	21	1
PRAIRIE BR./ PB-2650R2 __NR __NR __ 2.6	121	.	21	1
MUSTANG/ 21993 __Acceleron __1k __ 2.1	121	.	20	2
HEFTY/ EXP-H26R3 __NR __1c __ 2.6	122	.	20	2
STINE/ 20RD20 __Cruiser Maxx __1c __ 2	121	.	19	2
G-2 GENETICS/ 7213 __Trilex+Allegiance+Gaucho __1c __ 2.1	122	.	19	1
HEFTY/ EXP-H21R3 __NR __1k __ 2.1	120	.	17	2
G-2 GENETICS/ 7208 __Trilex+Allegiance+Gaucho __1c __ 2	116	.	11	4
Test avg. :	121	37	23	1
High avg. :	125	41	32	4
Low avg. :	115	32	11	1
[6] Test LSD (.05):		8	5	<1
[7] Min.TPG-avg. :		33	27	.
[8] Max.TPG-avg. :		.	.	1
[9] Test Coef. Var.:		9	13	28
No. Entries:	71	26	71	71

NOTE: Table reference numbers [1-9] are explained in Table C.

* Shaded values within a yield or shatter rating column are included in the top-performance group (TPG). Therefore, look for varieties that have shaded values within each yield or shatter rating column.

GLYPHOSATE-RESISTANT SOYBEAN VARIETY TRIAL RESULTS

Maturity Group-I (Table 1): The two-year and 2012 test-yield averages were 40 and 27 bushels per acre, respectively; the lodging rating average was 1. Varieties had to average 38 bushels and 32 bushels or higher to be in the top yield group for two years and for 2012, respectively. Variety yield differences among the two-year averages were not significant (NS), while the 2012 variety yield differences had to differ by 6 bushels to be significantly different. Lodging was not a problem at Geddes, but shattering was a significant issue. Therefore, shattering ratings were taken and reported. Look for low numbers in the shatter rating column. Variety shatter rating values of 2 or less were in the top-performance group for shattering resistance in this test trial in 2012.

Maturity Group-II (Table 2):

The two-year and 2012 test-yield averages were 37 and 23 bushels per acre, respectively; and the shatter rating average was 1. Varieties had to average 33 and 27 bushels or higher to be in the top yield group for two years and for 2012, respectively. The two-year yield differences had to differ by 8 bushels per acre to be significantly different; while the 2012 variety yield differences had to differ by 5 bushels to be significantly different. Variety shattering rating values of 1 were in the top-performance group for shattering resistance. Variety shatter rating values had to differ by 1 to be significantly different in 2012. The level of shattering at Geddes undoubtedly had an effect on the poor yield performance because of the drought at this site.



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