

Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 12 *Keeping up with Research*

Article 126

1995

Soybean Variety Choices for Increased Resistance to Pendimethalin Herbicide

D. G. Glover

William T. Schapaugh Jr.

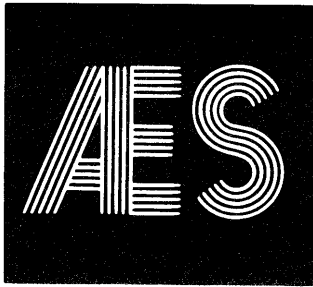
Follow this and additional works at: <https://newprairiepress.org/kaesrr>

Recommended Citation

Glover, D. G. and Schapaugh, William T. Jr. (1995) "Soybean Variety Choices for Increased Resistance to Pendimethalin Herbicide," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 12. <https://doi.org/10.4148/2378-5977.7363>

This report is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Kansas Agricultural Experiment Station Research Reports by an authorized administrator of New Prairie Press. Copyright 1995 the Author(s). Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. K-State Research and Extension is an equal opportunity provider and employer.





Keeping
Up With
Research

111

November 1995

SOYBEAN VARIETY CHOICES FOR INCREASED RESISTANCE TO PENDIMETHALIN HERBICIDE

D.G. Glover and W.T. Schapaugh, Jr.*

Stem breakage and lodging near the soil line are reoccurring problems for soybean in Kansas. These are among the symptoms of a condition known as brittle bean syndrome, which is associated with use of pendimethalin herbicide (Prowl, Squadron, and Pursuit Plus) and suitable environmental conditions (wet during and following emergence). Stem breakage/lodging is of economic concern and may occur any time during the growing season.

Soybean varieties vary in resistance to pendimethalin. Varieties less adversely affected should be planted when pendimethalin is used. This study was undertaken to identify varieties with increased levels of resistance.

Procedures

One-hundred eleven soybean varieties were studied at the Agronomy Research Farm near Manhattan, KS, and at the East Central Experiment Field near Ottawa, KS for their response to pendimethalin herbicide-induced stem damage (brittle bean syndrome). Varieties were grown on untreated control plots or treated with 1 and 3 lb/per acre rates of pendimethalin and scored near harvest for percent stem breakage (0=no breakage, 100=all plants broken). Soils were a fine sandy loam at Manhattan and a silt loam at Ottawa. Rainfall and temperatures at Manhattan were normal, with

AGRICULTURAL EXPERIMENT STATION

Kansas State University, Manhattan
Marc A. Johnson, Director

adequate precipitation for timely activation of the herbicide. Rainfall at Ottawa was delayed for 14 days; thus, emergence occurred before activation of the herbicide.

Results

Reactions of the public and private soybean varieties tested are given in Table 1. Results are presented for both location and herbicide rates, because the varieties responded differently in the two environments. These data cover released varieties available to the public or experimental lines nearing release and of interest to producers.

The most susceptible varieties included Essex, KS5292, Stafford, Delsoy 4900, and Hutcheson. Some of the most resistant varieties were Probst, Asgow A4715, Flyer, and Agripro AP 3727.

Conclusions

No soybean variety appeared to have complete resistance to pendimethalin. However, many of the commercial varieties expressed little or no damage to pendimethalin under the environmental conditions of our study. These resistant varieties offer increased plant protection and higher yield potential when grown in a cropping system using pendimethalin herbicide.

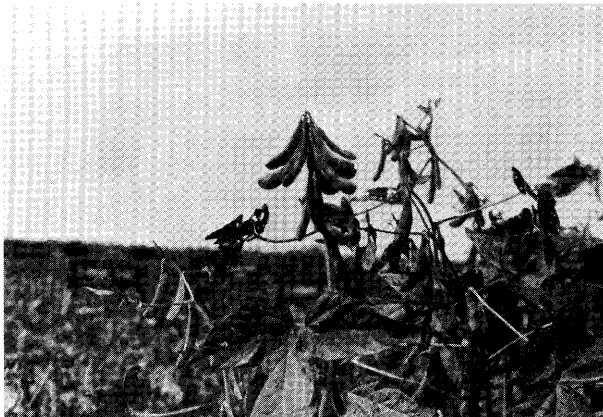


Table 1. Evaluation of soybean varieties grown at two locations and treated with two rates of pendimethalin for percent stem breakage.

		Manhattan		Ottawa	
Brand	Entry	1.0	3.0	1.0	3.0
		lb/ac	lb/at	lb/at	lb/at
%					
AgriPro	AP 3727	0	3	0	3
AgriPro	AP 3800	0	5	1	1
AgriPro	AP 3990	0	8	1	10
AgriPro	AP 4100	0	8	1	18
AgriPro	AP 4510	0	6	2	8
AgriPro	AP 4880	3	4	0	6
Asgrow	A3313	1	3	1	8
Asgrow	A3510	0	5	0	10
Asgrow	A3935	1	5	2	6
Asgrow	A4045	0	4	3	11
Asgrow	A4138	0	9	0	9
Asgrow	A4341	0	4	1	15
Asgrow	A4415	1	5	3	18
Asgrow	A4715	0	1	1	5
Asgrow	A5112	0	4	5	9
Dekalb	CX335	1	5	0	10
Dekalb	CX377	0	5	1	9
Dekalb	CX404	1	6	3	11
Dekalb	CX411	1	1	4	6
Dekalb	CX445	1	4	1	5
Dekalb	CX458	1	4	1	4
Dekalb	CX469c	1	5	2	11
Delta Pine	DP 3375	0	1	3	5
Delta Pine	DP 3456	0	15	0	8
Delta Pine	DP 3478	0	3	1	10
Delta Pine	DPX 3358	1	8	3	13
Delta Pine	DPX 3381	1	12	3	9
Delta Pine	DPX 3388	3	4	1	8
Delta Pine	DPX 3432	0	8	0	14
Delta Pine	DPX 3391	1	10	0	8
ICI	D371	1	5	0	5
ICI	D396	0	4	1	10
ICI	D414	0	14	4	10
ICI	D454	1	10	0	9
ICI	EX4484	4	6	1	9
NC+	3A44	0	4	0	6
NC+	3K84	0	6	1	10
NC+	4A10	0	4	1	10
NC+	4A27	3	9	1	11
NC+	5A15	0	9	4	16
NC+	5H61	3	10	4	25
Northup King	S29-39	0	5	1	6
Northup King	S30-06	0	3	1	9
Northup King	S35-35	1	6	1	10
Northup King	S39-41	0	4	0	15
Northup King	S42-50	2	5	0	5

Brand	Entry		Manhattan		Ottawa	
			1.0	3.0	1.0	3.0
			lb/at	lb/ac	lb/at	lb/at
%						
Northup	King	S42-60	3	6	1	15
Northup	King	S46-44	1	19	3	19
Northup	King	S52-25	1	12	4	7
Pioneer		9341	1	1	0	9
Pioneer		9362	1	6	1	3
Pioneer		9381	0	5	0	7
Pioneer		9391	3	9	1	14
Pioneer		9393	0	4	0	11
Pioneer		9394	3	8	3	6
Pioneer		9411	1	14	0	13
Pioneer		9491	5	10	4	28
Pioneer		9521	0	8	3	15
Stine		3260	0	6	0	8
Stine		3470	0	5	8	5
Stine		3490	0	5	0	9
Stine		3510	0	3	3	11
Stine		3630	4	6	0	6
Stine		3660	0	8	1	9
Stine		3680	3	9	1	14
Stine		4340	1	13	1	10
Stine		4350	1	4	3	13
Stine		4680	0	13	3	6
Stine		4390	0	8	1	10
Stine		4322CN	0	8	1	6
		Avery	3	19	8	11
		Corsica	0	5	0	9
		Crawford	0	3	1	6
		Delsoy 4210	3	8	4	8
		Delsoy 4500	3	5	3	13
		Delsoy 4710	0	5	3	11
		Delsoy 4900	0	14	6	38
		Edison	0	5	0	13
		Essex	1	31	8	51
		Fayette	1	9	1	10
		Flyer	0	5	1	4
		Forrest	0	3	2	6
		Hamilton	0	6	0	6
		Hartwig	0	5	0	5
		Holladay	0	12	4	8
		Hutcheson	0	19	5	31
		K1213	2	6	0	12
		K1218	0	5	1	9
		K1231	0	10	3	9
		K1235	3	9	0	6
		K1261	0	3	1	5
		K1262	2	5	1	3
		K87-7-95 EXP.	10	41	9	15
		K88-22-42 EXP.	13	24	4	41
		Kenwood	1	6	1	11
		KS3494	1	5	5	4
		KS4390	0	10	3	26

Brand	Entry	Manhattan		Ottawa	
		1.0 lb/at	3.0 lb/at	1.0 lb/at	3.0 lb/at
		%			
	KS4694	0	3	3	9
	KS4895	1	3	1	8
	KS5292	1	10	8	49
	KY88-5037	0	4	4	9
	Kunitz	1	6	3	5
	Linford	3	10	1	10
	Manokin	1	5	0	14
	Probst	0	0	0	5
	Resnik	0	6	1	8
	Sherman	0	6	3	8
	Sparks	6	13	3	11
	Stafford	1	25	6	33
	Stressland	0	13	3	5
	Williams 82	1	1	3	6
LSD (5%)		3	10	4	13

Note: Trade names are used to identify products; no endorsement is intended, nor is any criticism implied of similar products not mentioned.

*Graduate student and professor, respectively, Department of Agronomy, Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66502-5501. Glover E-mail: Donnie@ksuvm.ksu.edu.

Contribution no. 96-138-S from the KAES.



**Agricultural Experiment Station
Kansas State University
Manhattan 66506-4008**

SRL 111

November 1995

Kansas State University is committed to a policy of nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities, and employment (including employment of disabled veterans and veterans of the Vietnam Era), all as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries, including those concerning Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act, has been delegated to Jane D. Rowlett, Ph.D., Director of Unclassified Affairs and University Compliance, Kansas State University, 111 Anderson Hall, Manhattan, KS 66506-0124 (913-532-4392).

1M