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Agricultural Experiment Station

College of
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Department of
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Arkansas Valley
Research Center

Extension



MAKING BETTER DECISIONS

1999-2006 Colorado Soybean
Variety Performance Trials

Acknowledgments

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Bob Taylor- 2006, 2005

Max Olsen- 2003

Rod Hahn- 2002

Joe Harper- 2001

Research conducted by Colorado State University Crops Testing Program
Department of Soil and Crop Sciences
Crops Testing Program
Arkansas Valley Research Center
Cooperative Extension

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1999-2006 COLORADO SOYBEAN HYBRID PERFORMANCE TRIAL RESULTS

Introduction

In recent history, CSU has conducted one or two soybean variety trials per year since 1999 and it is useful to provide seed companies, collaborating scientists and extension agents, and our producers with results that have been accumulated over the past eight years of experience. No results appear for 2004 due to loss of the trial to hail damage. In 2006, due to excellent management and favorable climatic conditions, a record 99.7 bu/ac was harvested for the top variety in our variety trial. The accumulated results for the past eight years show that there is excellent potential for increasing soybean production in Colorado.

CSU conducts hybrid performance trials to provide unbiased and reliable information to Colorado producers so they can select the best varieties for their farming conditions. Variable climatic conditions, innovations from biotechnology, acquisitions and mergers of seed companies, and rapid evolution of new varieties means that unbiased crop performance information is increasingly important to Colorado soybean producers.

In 2006, Colorado State University personnel evaluated commercial soybean variety performance under 30-inch row and solid planting irrigated conditions at one Eastern Colorado location. All soybean grain yields are reported in bu/ac and adjusted to 13.0% moisture content.

2006 COLORADO SOYBEAN PERFORMANCE TRIALS

Table 1. 2006 Irrigated trial of soybean varieties in row planting at Yuma¹.

Hybrid	Yield bu/ac	Moisture %	Test		Plant	
			Weight lb/bu	Height in	Lodge ² 1-10	Shatter ³ 1-10
NK Brand S28-G1	99.7	7.0	57.0	33.5	1.5	1.0
Dyna-Gro 37T26	98.1	6.7	57.6	40.0	1.5	1.0
NK Brand S27-L4	96.5	6.5	56.7	36.0	1.0	1.0
Dyna-Gro 36D24	94.9	6.4	57.6	36.5	1.3	1.0
Dyna-Gro 39J25	93.7	7.4	56.4	31.0	1.8	1.0
Dyna-Gro 32C25	92.8	6.2	56.3	35.5	1.0	1.0
NK Brand S27-T7	89.6	6.6	57.4	33.5	1.0	1.0
Dyna-Gro 33X19	85.7	6.3	56.9	32.0	1.0	1.0
Dyna-Gro 35C23	85.0	6.2	57.7	36.8	1.5	1.0
Average	92.9	6.6	57.1	35.0	1.3	1.0
LSD _(0.30)	5.7					

¹Trial conducted on the Bob Taylor farm; seeded 5/15 and harvested 10/2.

²Rating scale 1-10, with 1 = no lodging and 10 = completely lodged.

³Rating scale 1-10, with 1 = no shatter and 10 = completely shattered.

*Good growing conditions and excellent weed control.

Table 3. 2006 Irrigated trial of soybean varieties in solid planting at Yuma¹.

Hybrid	Yield bu/ac	Moisture %	Test	Plant	Lodge ² 1-10	Shatter ³ 1-10
			Weight lb/bu	Height in		
NK Brand S27-L4	80.3	8.6	57.3	34	1.0	1.0
NK Brand S27-T7	79.8	8.8	57.8	32	2.0	1.0
NK Brand S28-G1	78.0	9.4	57.3	37	2.3	1.0
Dyna-Gro 39J25	68.1	9.3	57.1	34	2.8	1.0
Average	76.6	9.0	57.4	34	2.0	1.0
LSD _(0.30)	6.1					

¹Trial conducted on the Bob Taylor farm; seeded 5/15 and harvested 10/2.

²Rating scale 1-10, with 1 = no lodging and 10 = completely lodged.

³Rating scale 1-10, with 1 = no shatter and 10 = completely shattered.

*Good growing conditions and excellent weed control.

Site Information

Plot Size: row planting trial 7.5' x 31' with 7.5 inch row spacing; solid planting trial 5' x 31'; conventional till

Experimental Design: randomized complete block

Seeding Rate: approximately 165,000 seeds/acre for row trial and 198,000 seeds/acre for solid trial.

Previous Crop: corn

Irrigation: sprinkler

Soil Type: Richfield silt loam

Fertilization: 35 lbs N acre⁻¹

Herbicide: Round-up

2005 COLORADO SOYBEAN PERFORMANCE TRIALS

Differential soybean variety response to solid planting or row planting in the 2005 trial

A combined analysis of planting system and variety response revealed a significant interaction between these two factors. This means that some varieties were ranked higher in one planting system and ranked differently in the other system and that variety performance is affected by the planting system. See the results above by planting system. However, the variety NK Brand S27-T7 was the highest yielding variety in both planting systems, albeit not significantly higher yielding than DEKALB DKB26-53 in the solid planting system, and not significantly higher yielding than NK Brand S29-C9 in the row planting system. The two planting systems were not significantly different from one another in terms of yield.

Table 1. Irrigated trial of soybean varieties in solid planting at Yuma¹.

Hybrid	Yield	Moisture	Test	Plant
			Weight	Height
	bu/ac	%	lb/bu	in
NK Brand S27-T7	69.7	7.7	56.7	27
DEKALB DKB26-53	62.2	7.8	56.4	31
NK Brand S28-G1	59.1	7.9	56.5	29
ASGROW AG3005	51.2	8.2	56.9	32
DEKALB DKB29-51	50.3	7.7	56.2	32
Garst 2018 (RR)	50.2	7.8	56.9	29
Garst 2677 (RR)	48.7	7.6	56.0	28
ASGROW AG2403	46.0	7.6	55.7	26
NK Brand S28-W2	45.6	8.0	56.8	28
NK Brand S29-C9	32.8	7.8	56.2	33
Average	51.6	7.8	56.4	29
LSD _(0.30)	9.5			

¹Trial conducted on the Bob Taylor farm; seeded 5/23 and harvested 10/03/05.

*No shatter.

**Good growing conditions, no problems.

Table 2. Irrigated trial of soybean varieties in row planting at Yuma¹.

Hybrid	Yield	Moisture	Test	Plant	Shatter
			Weight	Height	
	bu/ac	%	lb/bu	in	%
NK Brand S27-T7	58.2	7.7	55.9	31	0.0
NK Brand S29-C9	57.7	7.8	56.0	38	0.7
NK Brand S28-W2	51.1	7.7	56.6	32	0.3
NK Brand S28-G1	50.6	7.8	56.5	32	0.0
Myconate - Non-treated	50.4	7.6	53.7	29	0.3
Garst 2018 (RR)	49.9	7.8	56.6	29	0.0
Myconate - Treated	47.8	7.7	55.6	31	0.0
Garst 2677 (RR)	40.6	7.9	54.7	31	0.0
Average	50.8	7.8	55.7	32	0.2
LSD _(0.30)	4.1				

¹Trial conducted on the Bob Taylor farm; seeded 5/23 and harvested 10/03/05.

*Good growing conditions, no problems.

2003 COLORADO SOYBEAN PERFORMANCE TRIALS

2003 was our third and best year of testing soybean varieties at Yuma. The 2001 trial was severely compromised by hail. Our second attempt at soybean variety testing at Yuma was more successful, without hail and with vigorous vegetative growth, but yields were depressed by high temperatures and mediocre seed set. This sprinkler -irrigated trial included only Roundup Ready varieties. Yuma has a relatively long growing season (average 2615 corn growing degree days) and appropriate for Group 2 maturity varieties.

Rocky Ford, site of soybean variety trials for several years, has a longer growing season (2837 corn growing degree days) and can produce late Group 3 or early Group 4 maturity soybeans. We are extremely pleased with high yields in 2003 at Yuma and the Arkansas Valley Research Center at Rocky Ford. The Rocky Ford trial was furrow irrigated and both conventional and Roundup Ready varieties were included where conventional herbicides were used. Plots in both trials consisted of four rows, each 36 ft long. Yields are expressed at 13% grain moisture as bu/ac (60 lbs per bushel).

Table 1. Irrigated soybean variety performance trial at Rocky Ford¹.

Variety	Yield	Moisture	Test Weight	Plant Height	Leaf Drop ²
	bu/ac	%	lb/bu	in	date
DG 37R39	66	7.1	55.7	33	259
DG 34P38	63	7.0	56.1	31	258
Triumph TR3752 (RR)	62	7.0	56.0	36	257
Garst 3824 RR/N	61	7.0	55.6	35	258
DG 3399 + RR	61	6.9	55.2	34	260
Garst 3135 (RR)	57	7.0	55.8	30	252
Average	62	7.0	55.7	33	257
LSD _(0.30)	4				

¹Trial conducted at the Arkansas Valley Research Center; seeded 5/13 and harvested 9/29.

²Julian Date - 50% leaf drop.

Rocky Ford Site Information

Soil Type: silty, clay loam

Previous Crop: corn

Fertilization: 11 lbs N acre⁻¹; 52 lbs P₂O₅ acre⁻¹

Herbicide: Dual II Magnum, Gramoxone Extra, Basagran, Blazer, Poast Crop Oil

Irrigation: furrow

Table 3. Irrigated soybean variety performance trial at Yuma¹.

Variety	Yield	Moisture	Test	Plant	Lodging ²
			Weight	Height	
	bu/ac	%	lb/bu	in	rating
ASGROW AG2403	69	9.0	55.0	31	1
DEKALB DKB25-51	66	10.1	55.0	38	1
DG 31G30	64	11.1	55.4	32	1
Garst 2018 (RR)	61	9.9	55.8	35	1
Triumph TRX2J28 (RR)	61	9.7	55.5	39	1
DEKALB DKB28-52	61	10.8	55.1	36	1
ASGROW AG2703	60	11.1	55.6	38	1
Garst 2677 (RR)	60	9.6	56.6	33	1
DG 38K28	59	10.2	55.8	38	2
Farmer Check*	55	9.7	56.6	37	1
DG 35R27	52	11.7	56.0	34	1
ASGROW AG3005	50	12.4	54.6	39	1
Average	60	10.4	55.6	36	1
LSD _(0.30)	7				

¹Trial conducted on the Max Olsen farm; seeded 5/21 and harvested 10/02.

²Lodging rating scale 1-5, 1 = Best.

*Farmer check was NK 528-W2.

Yuma Site Information

Soil Type: ascalon fine sandy loam

Previous Crop: sunflowers

Herbicide: Roundup

Irrigation: sprinkler

2002 COLORADO SOYBEAN PERFORMANCE TRIALS

2002 was the second year of testing soybean varieties at Yuma. The 2001 trial was severely compromised by hail. Our second attempt at soybean variety testing at Yuma was more successful, without hail and with vigorous vegetative growth, but yields were depressed by high temperatures and mediocre seed set. This sprinkler irrigated trial included only Roundup Ready varieties. Yuma has a relatively long growing season (average 2615 corn growing degree days) and appropriate for Group 2 maturity varieties.

Rocky Ford, site of soybean variety trials for several years, has a longer growing season (2837 corn growing degree days) and can produce late Group 3 or early Group 4 maturity soybeans. We are extremely pleased with the high yields in this trial at the Arkansas Valley Research Center at Rocky Ford. This may be a record high yield for soybeans in Colorado and gives a rare glance at variety performance under high yield conditions. The trial was furrow irrigated and both conventional and Roundup Ready varieties were included where conventional herbicides were used. Plots in both trials consisted of four rows, each 36 ft long. Yields are expressed at 13% grain moisture as bu/ac (60 lbs per bushel).

Table 1. Irrigated soybean variety performance trial at Rocky Ford¹.

Variety ²	Test		Plant	Leaf	Maturity	
	Yield	Moisture	Weight	Height.		Drop ³
	bu/ac	%	lb/bu	in	date	rating
DG 3399+RR	89	8.5	54.4	39	272	3.3
Syngenta S39-Q4	88	10.8	53.5	39	276	3.9
Garst 3135(RR)	84	8.4	55.6	32	262	3.1
Triumph TR3752RR	81	8.8	55.6	41	271	3.7
Pioneer brand 93B85	80	8.6	55.1	36	267	3.8
DG 3390 N RR	78	8.7	54.9	38	272	3.3
US Seeds US S4002(RR)	77	8.7	55.2	36	273	4.0
Pioneer brand 93B68	76	8.5	56.6	33	264	3.6
Pioneer brand 93B72	75	9.1	55.0	37	266	3.7
US Seeds US S3902(RR)	74	9.9	55.1	39	273	3.9
AG3701 + Myconate +	72	8.6	56.3	34	268	3.7
DG 3388RR	69	8.6	55.3	41	271	3.3
Garst 355(RR)	69	8.4	56.6	35	263	3.5
AG3701 + Myconate -	66	8.7	56.3	38	269	3.7
Garst 3083(RR)	63	8.7	55.4	30	260	3.0
Average	76	8.9	55.4	37	269	
LSD _(0.30)	5					

¹Trial conducted on the Arkansas Valley Research Center; seeded 5/16 and harvested 10/7.

²Myconate® is a new agricultural product developed by researchers at Michigan State University. Myconate® is a signal compound put out by plant roots in times of stress that encourages beneficial fungus (mycorrhizae) to colonize them. The fungus extends the plants root system and helps it take up nutrients and water, and fight off disease. Previous research has shown significant yield increases on a number of crops in a variety of locations. This simple compound is non-toxic, is quickly broken down in the soil, and is effective in very small quantities. It is water soluble and easy to apply to seeds or soil. Myconate® is a trademark product of VAMTech, L.L.C., commercially available for enhancing mycorrhizal colonization.

³Julian date.

Rocky Ford Site Information

Soil Type: silty, clay loam

Previous Crop: corn

Fertilization: 16 lbs P₂O₅ acre⁻¹; 75 lbs K₂O acre⁻¹

Herbicide: Basagran, Blazer, Poast

Irrigation: furrow

Table 3. Irrigated soybean variety performance trial at Yuma¹.

Variety	Test			Plant		
	Yield	Moisture	Weight	Height	Shatter	Maturity
	bu/ac	%	lb/bu	in	rating ²	rating
ASGROW AG3003	47	8.0	55.6	33	1.0	3.0
DGX 432 RR	43	7.7	53.4	34	1.0	4.3
ASGROW AG2703	42	8.2	53.8	34	1.0	2.7
DEKALB DKB26-51	42	8.2	56.4	32	1.0	2.6
DG 3270 RR	42	8.6	56.1	39	1.0	3.2
DG 3287 RR	41	7.7	56.2	31	1.0	3.2
Syngenta S29-C9	41	7.8	54.1	36	1.0	2.9
DEKALB DKB24-51	41	7.8	56.6	28	1.0	2.4
US Seeds US S2503(RR)	40	7.6	55.4	32	1.7	2.5
Garst 2677 (RR)	39	7.5	56.6	31	1.0	2.6
US Seeds US S2703(RR)	37	8.3	53.8	35	1.0	2.7
Pioneer 91B91+Myconate +	37	7.8	51.3	30	1.0	1.7
Garst 2332 (RR)	33	7.7	56.9	29	1.0	2.3
DEKALB DKB23-51	33	7.6	57.6	30	1.0	2.3
Pioneer 91B91+Myconate -	30	8.0	55.4	28	1.0	1.7
Garst 2603(RR)	30	7.9	51.5	33	1.0	2.6
Average	39	7.9	55.0	32	1.0	
LSD _(0.30)	5					

¹Trial conducted on the Rod Hahn farm; seeded 5/14 and harvested 10/1.

² Rating scale 0-10.

*Myconate® is a trademark product of VAMTech, L.L.C., commercially available for enhancing mycorrhizal colonization

Yuma Site Information

Soil Type: manter, loamy sand

Previous Crop: corn

Fertilization: 9 lbs N acre⁻¹; 23 lbs P₂O₅ acre⁻¹; 6 lbs K₂O acre⁻¹; 6 lbs S; .5 lbs Zn

Herbicide: Touchdown

Irrigation: sprinkler

2001 COLORADO SOYBEAN PERFORMANCE TRIALS

2001 was the first year of testing soybean varieties at Yuma. This sprinkler irrigated trial on soils with pH in the range of 7.0 – 7.4 included only Roundup Ready varieties. Yuma has a relatively long growing season (average 2615 corn growing degree days) and is appropriate for Group 2 maturity varieties. Our first attempt at soybean variety testing was marred by a severe hail storm during the first week of September. Our collaborating grower thinks yields were reduced by 40% due to the storm.

Rocky Ford, site of soybean variety trials for several years, has a longer growing season (2837 corn growing degree days) and can produce late Group 3 or early Group 4 maturity soybeans. The trial was furrow irrigated with a soil pH of 7.8. Both conventional and Roundup Ready varieties were included, and conventional herbicides were used. Plots in both trials consisted of four rows, each 36 ft long. Yields are expressed at 13% grain moisture as bu/ac with 60 lbs of soybeans in one bushel.

Table 1. Irrigated soybean variety performance trial at Rocky Ford¹.

Variety ²	Yield	Moisture	Plant Height	Leaf Drop
	bu/ac	%	in	date ³
DG 3399(RR)	72.9	7.2	35	275
Pioneer brand 93B85	72.1	7.0	33	275
Garst 355(RR)	70.8	6.8	36	273
Pioneer brand 93B72	69.9	6.9	32	274
Pioneer brand 93B53	69.1	6.9	34	273
Garst 437(RR/N)	68.8	7.7	38	277
DG 3388(RR)	68.5	7.2	37	0*
Asgrow AG3903	67.9	7.4	35	275
Asgrow AG3902	67.8	7.5	36	0*
Garst 381(RR/STS)	67.6	6.9	35	273
DEKALB DKB40-51	61.8	7.6	37	277
Average	68.8	7.2	35	225
LSD _(0.30)	4.4			

¹Trial conducted on the Arkansas Valley Research Center; seeded 6/4 and harvested 10/10. No shatter.

²Abbreviations used with soybean variety traits: RR = Roundup Ready, RR/N = Not Roundup Ready, STS = Sulfonyleurea Tolerance

³Julian date.

*Frosted before leaf drop.

Table 2. Irrigated soybean variety performance trial at Yuma¹.

Variety ²	Yield bu/ac	Moisture %	Plant	
			Height in	Shatter rating ³
DG 3270(RR)	47.6	13.4	34	2.3
Syngenta S29-C9	45.7	11.2	31	2.0
Prairie Brand PB-2717(RR)	42.8	11.8	34	2.0
Asgrow AG2703	41.2	13.5	33	2.0
Asgrow AG2402	36.6	12.7	36	3.0
Syngenta S24-K2	35.0	14.5	36	2.7
Garst 198(RR)	32.6	12.7	30	3.0
Prairie Brand PB-2131(RR)	32.5	12.6	34	3.0
DG 3263(RR)	31.6	12.9	37	2.3
DEKALB DKB26-51	30.8	11.5	31	2.3
Garst 2547(RR)	29.9	12.4	32	3.3
DEKALB DKB23-51	28.5	13.0	33	3.0
Asgrow AG2302	28.0	11.0	33	3.0
Garst 2603(RR)	25.0	13.5	34	3.0
Garst 2112(RR/N)	24.9	12.3	29	3.0
Average	34.2	12.6	33	2.7
LSD _(0.30)	4.4			

¹Trial conducted on the Joe Harper farm; seeded 6/6 and harvested 9/25.

²Abbreviations used with soybean variety traits: RR = Roundup Ready, RR/N = Not Roundup Ready, STS = Sulfonyleurea Tolerance

³Rating scale 0-10, with 0 = no shattering and 10 = 100% shattering. Shatter was due to hail damage on 9/15/01.

2000 COLORADO SOYBEAN PERFORMANCE TRIALS

Table 1. Irrigated soybean variety performance trial at Rocky Ford¹.

Variety	Yield	Moisture	Test Average	Test Weight
	bu/ac	%	%	lb/bu
DKB 38-51	74.2	8.3	112	56.0
346 RR	72.4	8.5	110	56.2
5404	71.3	8.4	108	55.8
93B51	71.2	8.4	108	56.1
5383	70.8	8.3	107	56.0
5370 RR	67.8	8.3	103	56.2
TR3750 RR	67.6	8.4	102	56.4
93B34	66.7	8.4	101	56.8
TR3939 RR	65.7	8.7	99	56.6
CX 391 RR	65.7	9.0	99	56.4
AG 3701	65.4	8.3	99	57.0
5316 RR	63.6	8.5	96	55.7
AG4101	63.4	11.8	96	55.7
TR4319 RR	61.3	14.4	93	55.6
429 RR	60.9	8.9	92	56.9
94B01	58.8	8.9	89	56.5
9396	57.5	8.3	87	56.6
Average	66.0			
LSD _(0.10)	5.7			

¹Trial conducted on the Arkansas Valley Research Center; seeded 5/31 and harvested 10/13.

*Yield adjusted to 13% moisture and 60 lbs. bushel.

Site Information

Fertilizer - 50 lbs. P₂O₅/Acre

Soybean inoculants - 15 oz./300 lbs. of seed

Herbicide - Pursuit .0626 lbs. AI/Acre - 6/6, Poast .28 lbs. AI/Acre + Dash - 6/20, Basagran 1 lb. + Blazer .25 lbs.

AI/Acre - 6/23

Fungicide - None

Insecticide - None

1999 COLORADO SOYBEAN PERFORMANCE TRIALS

Table 1. Irrigated soybean variety performance trial at Rocky Ford¹.

Variety	Brand	Test		Test	
		Yield	Average	Weight	Moisture
		bu./ac	%	lb/bu	%
TR4319RR	Triumph	63.7	119	53.5	7.7
CX419RR	DeKalb	59.7	111	55.5	7.7
S39-D9	NK Novartis	59.7	111	55.5	7.5
TR 3939RR	Triumph	59.4	111	54.1	7.6
9396	Pioneer	59.0	110	55.7	7.6
377RR	Producers	57.7	107	55.1	7.6
S42-K2	NK Novartis	57.3	107	55.7	7.7
93B34	Pioneer	56.9	106	55.2	7.6
94B01	Pioneer	55.9	104	55.3	7.8
93B51	Pioneer	55.1	103	54.9	7.8
5366NRR	Mycogen	53.5	100	54.7	7.6
S36-U2	NK Novartis	52.6	98	53.4	7.7
5370RR	Mycogen	52.2	97	54.4	7.6
TR4339RR	Triumph	50.7	94	55.9	7.7
J-399	Mycogen	49.7	93	55.4	7.5
CX390RR	DeKalb	42.0	78	55.6	7.7
X8135RR	Producers	27.5	51	55.7	8.0
Average		53.7			
LSD _(0.10)		8.9			

¹Trial conducted on the Arkansas Valley Research Center; seeded 5/24 and harvested 10/13.

*Yield adjusted to 13% moisture and 60 lbs. bushel.

Site Information

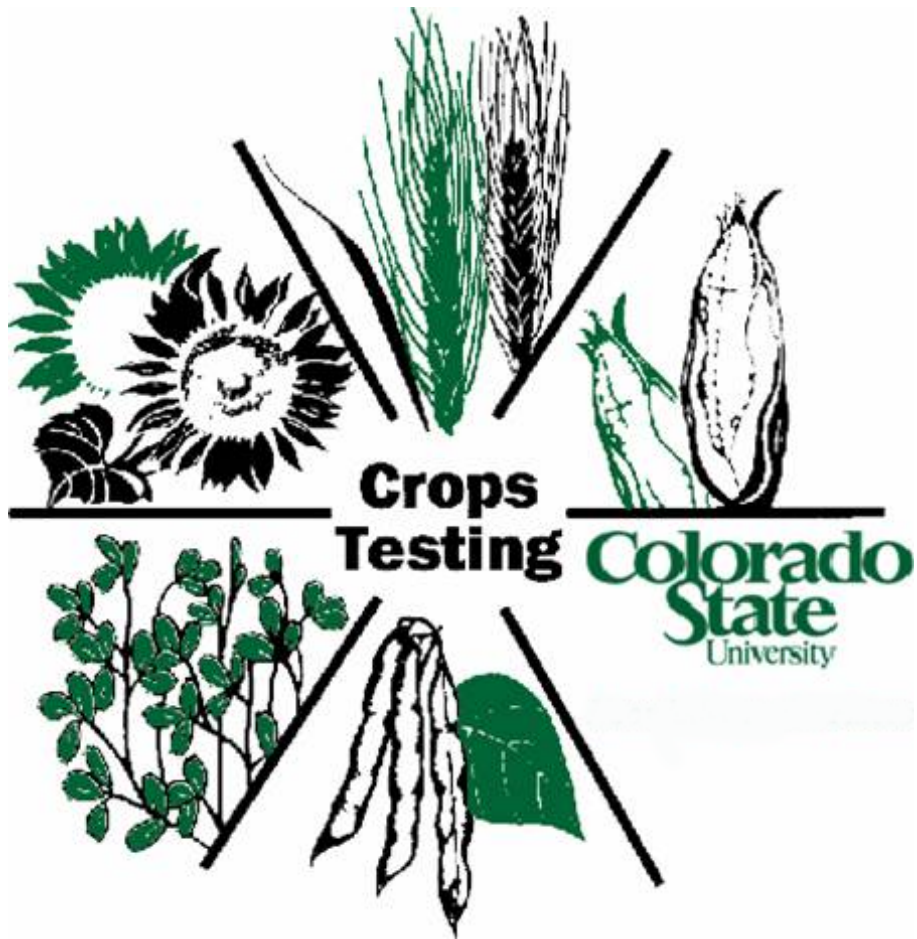
Fertilizer - 50 lbs. P₂O₅/Acre

Soybean inoculants - 15 oz./300 lbs. of seed

Herbicide - Roundup 1 lb. + Dual II .98 lbs. AI/Acre - preplant

Seed Company Entrants in the Colorado Soybean Performance Trials from 1999-2006

Entrant	Brand/Hybrid	Address	Telephone
Garst Seed Co.	Garst	1101 Mansfield Drive, Fort Collins, CO 80525	970-222-4719
Dyna-Gro Seeds	Dyna-Gro	240 22 nd Street, Greeley, CO 80631	800-332-4045
Monsanto	DEKALB/Asgrow	4312 Carol Ave., Cortland, IL 60112	815-754-4809
NK Brand Seeds, Inc.	NK Brand/Syngenta	86852 572 nd Avenue, Box 277, Laurel, NE 68745	402-256-9109
Pioneer Hi-Bred Int'l	Pioneer brand	1616 S. Kentucky, Suite C-150, Amarillo, TX 79102	806-356-0160
Plant Health Care, Inc.	Myconate	440 William Pitt Way, Pittsburgh, PA 15238	412-826-5488
Prairie Brand Seed Co.	Prairie Brand	15 X Avenue, Story City, IA 50248	515-733-2101
UAP-Pueblo	DG	Box 1279, Garden City, KS 67846	620-275-6127
United Suppliers, Inc.	US Seeds	PO Box 538, Eldora, IA 50627	877-714-4503
VAMTech, L.L.C.	Myconate	3186 Pine Tree Rd., Unit D, Lansing, MT 48911	517-819-9739



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