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1997 Dry Bean Variety
Performance Trials



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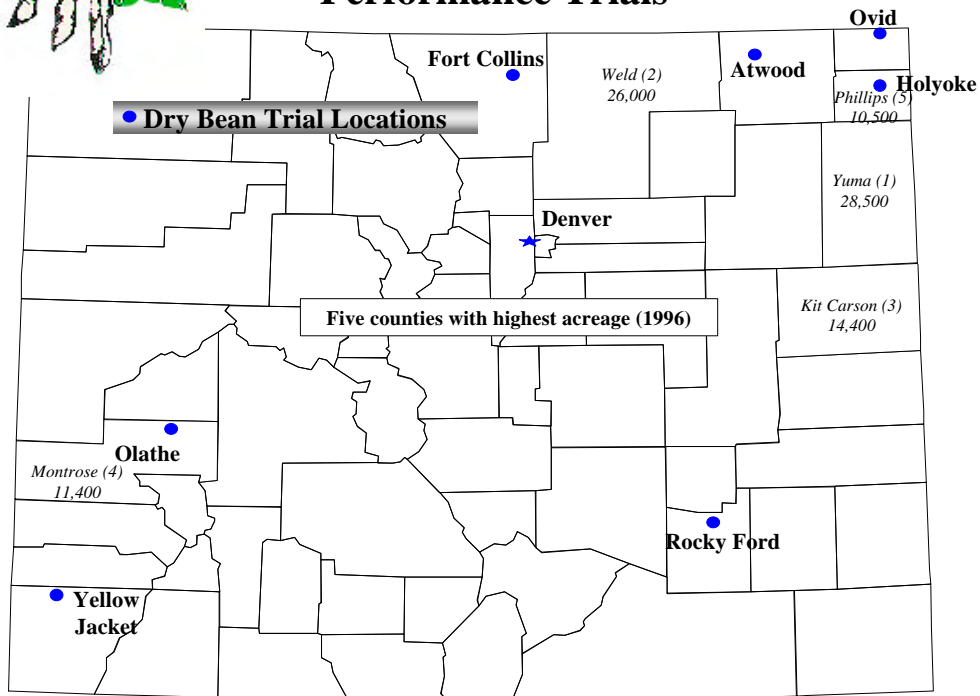
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1997 Colorado Dry Bean Variety Performance Trials



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1997 COLORADO DRY BEAN PERFORMANCE TRIALS

Introduction

The Colorado Agriculture Statistical Services estimates that Colorado dry bean production is expected to be 11% greater in 1997 than in 1996 due to higher average yields on about the same average. Colorado bean producers spend an estimated \$5 million on seed every year meaning that the bean variety decision is extremely important. To provide reliable and unbiased performance information to Colorado dry bean producers for making better variety decisions, CSU's Crops Testing personnel annually evaluate dry bean varieties at three locations in northeastern Colorado. This research is possible in part from funding provided by Colorado dry bean producers via the Colorado Dry Bean Administrative Committee.

In 1997, variety trials were conducted in northeastern Colorado at Holyoke, Ovid, and Atwood (Sterling). Twenty varieties were entered in the trials, including 12 private and eight public varieties or experimental lines. Unlike previous years, all pinto bean entries were planted at each location and average performance over the three locations is expected to be more reliable than the trial-by-trial analysis of previous years. CSU entered its first two rust-resistant lines in recent years since the decision to release no new lines susceptible to rust. Other market classes were tested at Fort Collins. A randomized complete block field design with four replicates was used in all trials. Test plots were planted and harvested by CSU's Crops Testing program. The seeding rate was approximately 87,120 seeds per acre. Plots consisted of four 30-inch rows, and harvest area was approximately 200 sq. ft. All trials were situated in commercial bean fields. Ovid was furrow-irrigated, while Holyoke and Atwood were sprinkler irrigated. Grain yields, in pounds per acre, were adjusted to 14% moisture content.

1997 Season Summary

The 1997 cropping season was characterized by average to late seeding, well-distributed rainfall and moderate summer temperatures. There were sufficient growing degree-days for full-season varieties to reach complete maturity in the field. Leaf rust, bacterial brown spot, common bacterial blight, and white mold were generally controlled. The trial at Ovid was damaged by a severe August hail.

Table 1. Rust disease observations (x) for varieties in Colorado's 1997 bean variety performance trials ¹

Variety	Rust			
	Holyoke	Ovid	Atwood	Rocky Ford
93:220				
96YT115				
96YT116				
96YT117				
Apache				
Arapaho				X
Bill Z	X		X	X
Buckskin	X		X	
Burke				
Cahone				X
Chase				
CO46348				X
CO51713				
CO51715				
Elizabeth				
Fisher				X
Frontier				
GTS-900	X			
Maverick	X			X
Olathe				X
Othello	X	X	X	X
ROG 117				
ROG 178				
ROG 179	X	X	X	
ROG 261				
ROG 299				
UI 114				X
UI 126				X
UI 129				X
UI 196				X
Vision				

■ variety was not tested at that location in 1997
 x variety showed clear symptoms of the disease at that location
¹Disease pressure was trace to light at all locations for rust, white mold, and bacterial blights. Only the rust notes are presented in this summary. Disease observations made by Dr. Howard F. Schwartz, CSU Plant Pathologist.

Pinto bean varietal descriptions

93:220 An experimental short season pinto line from University of Idaho.
 96YT115 An experimental pinto line from Asgrow Seed Co.
 96YT116 An experimental pinto line from Asgrow Seed Co.
 96YT117 An experimental pinto line from Asgrow Seed Co.

Apache	A vine pinto with rust resistance and early maturity from Idaho Seed Bean.	Olathe	A semi-vine pinto variety developed by Colorado State University and released in 1979. It is susceptible to rust, bacterial diseases and white mold. Seed size is comparable to UI 114, but seed shape is more rounded and may split more easily unless handled carefully.
Arapaho	A pinto variety released by Colorado State University in 1993 with semi-upright growth habit. It has some field tolerance to white mold but is susceptible to rust.		
Bill Z	A pinto variety release by Colorado State University in 1985. It has vine growth habit with resistance to bean common mosaic virus and moderate tolerance to bacterial brown spot. It is a productive variety when growing conditions are good, similar to Olathe for white mold susceptibility and maturity.	Othello	A pinto variety released by the USDA with a semi-upright growth habit. It has very good yielding ability, white mold avoidance due to its small plant size, but is highly susceptible to rust and bacterial diseases.
Buckskin	A pinto variety developed by Rogers Seed Co.	Remington	A pinto variety from Rogers Seed Co. that has maturity similar to Bill Z and rust resistance.
Burke	A medium season pinto variety (USWA-19) released by Washington State in 1996. It has resistance to rust but susceptible to bacterial diseases.	ROG 117	An experimental pinto line from Rogers Seed Co.
Cahone	A vine type pinto variety developed for non- irrigated production in the San Juan Basin. It was released in 1981 by Colorado State University.	ROG 178	A pinto variety from Rogers Seed Co., with rust resistance and moderate resistance to some bacterial diseases.
Chase	A vine pinto variety released by the University of Nebraska. It is resistant to rust and white mold, moderately susceptible to bacterial brown spot, but susceptible to Fusarium wilt.	ROG 179	A pinto variety from Rogers Seed Co., susceptible to rust, but moderately resistant to some bacterial diseases.
CO46348	An experimental pinto line from Colorado State University.	ROG 261	An experimental pinto line from Rogers Seed Co.
CO51713	An experimental pinto line from Colorado State University with resistance to rust and excellent seed quality.	ROG 299	An experimental pinto line from Rogers Seed Co.
CO51715	An experimental pinto line from Colorado State University with resistance to rust and excellent seed quality.	UI 114	A pinto variety released by the University of Idaho in 1967. It is susceptible to rust, Fusarium wilt, bacterial diseases and white mold.
Elizabeth Fisher	A pinto line from Fox Bean Co. A pinto variety released by Colorado State University in 1994 for non-irrigated conditions in the San Juan Basin. It has resistance to Fusarium wilt and similar maturity to Cahone.	UI 126	A pinto variety released by the University of Idaho in 1983 with good yield potential, similar to UI-114 for maturity and diseases.
Frontier	A full-season pinto from North Dakota State University.	UI 129	A pinto variety released by the University of Idaho in 1983, with good yield potential, similar to UI-114 for maturity and diseases.
GTS-900	A full season experimental pinto from Gentec Seed Co.	UI 196	A pinto variety released by the University of Idaho in 1990, with high yield potential and similar to UI-114 for maturity. It is susceptible to rust, Fusarium wilt and white mold.
Maverick	An upright pinto variety that is resistant to rust, released by North Dakota State University.	Vision	A full season upright pinto variety with resistance to rust. It was released by Asgrow Seed Co.
		Winchester	A pinto line from Rogers Seed Co.

Table 2. Pinto bean performance at Holyoke in 1997¹

Variety	Yield	Test		
		Weight	Moisture	Seeds
	lb/ac	lb/bu	%	#/lb
CO51715	2719	61.3	18.6	1252
CO51713	2695	61.3	17.9	1212
96YT117	2643	60.8	16.1	1213
96YT116	2629	61.3	16.9	1263
Othello	2609	63.0	13.8	1327
ROG 179	2566	61.7	19.9	1185
Chase	2506	61.2	21.4	1246
96YT115	2407	63.0	20.5	1215
Bill Z	2332	61.0	17.8	1338
Burke	2298	61.1	15.4	1207
Buckskin	2277	62.0	14.9	1291
ROG 117	2241	62.8	16.4	1297
Elizabeth	2199	61.7	18.1	1185
ROG 261	2198	62.2	16.2	1287
Apache	2157	62.3	17.1	1212
Maverick	2047	60.6	17.9	1257
ROG 299	1884	61.6	22.5	1202
Vision	1843	63.9	20.2	1264
93:220	1790	61.9	18.3	1181
GTS-900	1755	61.7	19.4	1285
Average	2290	61.8	17.9	1246
CV%	13.5			
LSD _(.3)	229			

¹Trial conducted on the Jim Hendrix farm; seeded on 6/12 and harvested 9/6.

Table 3. Pinto bean performance at Ovid in 1997¹

Variety	Yield	Test		
		Weight	Moisture	Seeds
	lb/ac	lb/bu	%	#/lb
ROG 179	2005	56.1	13.0	1201
CO51713	1907	54.1	12.4	1315
96YT115	1792	56.2	11.5	1229
Chase	1721	54.3	12.2	1346
ROG 117	1562	56.0	11.4	1353
96YT117	1504	54.3	11.7	1384
96YT116	1503	54.4	11.6	1304
Bill Z	1439	54.6	11.8	1292
Apache	1384	54.8	12.1	1275
Othello	1383	56.0	11.3	1279
ROG 261	1363	55.8	10.8	1322
ROG 299	1342	56.6	12.1	1245
93:220	1310	55.4	12.9	1278
Maverick	1284	53.9	11.7	1317
Burke	1262	52.5	12.5	1391
Vision	1250	56.9	14.3	1378
Buckskin	1171	53.8	10.9	1254
GTS-900	966	54.2	11.9	1315
Average	1453	54.9	12.0	1305
CV%	15.2			
LSD _(.3)	163			

¹Trial conducted on the Joe Shank, Jr. farm; seeded on 6/7 and harvested 9/13. Severe August hail reduced yields.

Table 4. Pinto bean performance at Atwood (Sterling) in 1997¹

Variety	Yield	Test		
		Weight	Moisture	Seeds
	lb/ac	lb/bu	%	#/lb
Chase	3024	61.7	14.5	1237
CO51715	2941	61.7	14.4	1220
93:220	2882	63.1	16.3	1186
CO51713	2839	61.8	15.4	1241
96YT117	2825	62.1	14.9	1234
96YT116	2794	62.4	15.7	1257
ROG 261	2786	62.6	13.5	1269
Burke	2781	60.5	13.9	1267
Apache	2779	62.1	15.3	1180
96YT115	2765	61.9	15.1	1208
ROG 179	2618	63.6	16.0	1221
ROG 117	2608	63.1	13.0	1292
Buckskin	2577	61.4	14.1	1266
Elizabeth	2534	61.4	15.1	1189
Bill Z	2533	62.2	15.1	1336
Othello	2482	63.6	15.2	1312
Maverick	2401	61.5	16.6	1283
ROG 299	2199	64.0	20.0	1273
GTS-900	2108	63.8	21.7	1365
Vision	1778	64.7	24.2	1360
Average	2613	62.4	16.0	1260
CV%	10.4			
LSD _(.3)	200			

¹Trial conducted on the Howard Hettinger farm; seeded on 6/18 and harvested 9/18.

Table 5. Pinto bean cultural conditions in 1997

	Holyoke	Ovid	Atwood	Rocky Ford	Yellow Jacket
Soil Type	Loamy Sand	Loam	Clay Loam	Silty Clay Loam	Silty Clay Loam
	Previous Crop	Corn	Corn	Corn	Winter Wheat
Fertilization	N acre ⁻¹	80	100	30	50
	P ₂ O ₅ acre ⁻¹		25	40	50
	K ₂ O acre ⁻¹		5		
	Zn acre ⁻¹		.5		
Herbicide	Eptam	Sonalan	Eptam	Treflan	Dual
	Sonalan	Eptam	Treflan	Eptam	
Insecticide	None	None	None	Asana	None
Irrigation	Sprinkler	Flood	Sprinkler	Furrow	None

Table 6. Pinto bean performance at Rocky Ford in 1997¹

Variety	Yield	Test	Test	Moisture
		Average	Weight	
	lb/ac	%	lb/bu	%
CO51715	2891	120	60.1	11.4
UI 196	2883	120	60.5	12.3
CO51713	2805	116	60.0	11.4
Bill Z	2708	112	58.7	11.3
UI 126	2628	110	60.3	11.6
Chase	2598	108	58.6	11.0
Olathe	2507	104	59.3	11.6
Cahone	2505	104	60.0	13.1
UI 129	2483	103	59.8	11.8
Arapaho	2480	103	59.0	11.6
CO46348	2432	101	59.1	11.2
Vision	2393	99	60.3	12.4
Apache	2327	96	59.7	11.1
UI 114	2307	96	59.0	11.2
Fisher	2266	94	59.6	18.5
Othello	2244	93	59.4	10.7
Maverick	2149	89	57.8	11.1
Frontier	2124	88	58.9	24.0
ROG 178	2037	84	58.0	10.4
Average	2461	102	59.4	12.5
CV%	13.6			
LSD _(.05)	464			

¹Trial conducted on the Arkansas Valley Research Center; seeded on 5/22 and harvested 9/15.

Table 7. Dryland pinto bean performance at Yellow Jacket in 1997¹

Variety	Yield	Maturity
	lb/ac	
78158	1804	7 days later than Cahone
90436-2-2	1762	Same or earlier than Cahone
90436-2-3	1744	Same or earlier than Cahone
89716	1711	7 days later than Cahone
90432-2-10	1699	Same or earlier than Cahone
90432-2-2	1672	Same or earlier than Cahone
90432-2-8	1668	Same or earlier than Cahone
90432-2-4	1633	Same or earlier than Cahone
89721	1618	7 days later than Cahone
Cahone	1614	
10145-1-5	1605	Late
10143-1-2	1567	3-5 days later than Cahone
89699	1558	Same as Cahone
89748	1553	7 days later than Cahone
Fisher	1476	3-5 days earlier than Cahone
78153	1413	Same as Cahone
10143-1-5	1409	3-5 days later than Cahone
10145-1-2	1401	3-5 days later than Cahone
Bill Z	1385	Early
10143-1-1	1372	3-5 days later than Cahone
10147-2-2	1358	3-5 days later than Cahone
UI 114	1147	Early
10157-3-3	1130	Same or earlier maturity than Cahone
Average	1553	
CV%	9.0	
LSD _(.3)	105	(w/o missing values)

¹Trial conducted on the Southwestern Colorado Research Center; seeded on 6/6 and harvested 10/9.

Table 8. Average pinto bean performance over eastern Colorado sites in 1997

Variety	Yield	Test	Moisture	Seeds
		Weight		
	lb/ac	lb/bu	%	#lb
CO51715*	2830	61.5	16.5	1236
CO51713	2480	59.0	15.2	1256
Chase	2417	59.1	16.1	1277
ROG 179	2396	60.5	16.3	1202
Elizabeth*	2367	61.5	16.6	1187
96YT117	2324	59.0	14.2	1277
96YT115	2322	60.4	15.7	1217
96YT116	2309	59.4	14.7	1275
Othello	2158	60.8	13.4	1306
ROG 117	2137	60.6	13.6	1314
ROG 261	2116	60.2	13.5	1293
Burke	2113	58.0	13.9	1288
Apache	2107	59.7	14.8	1222
Bill Z	2101	59.3	14.9	1322
Buckskin	2008	59.1	13.3	1270
93:220	1994	60.1	15.8	1215
Maverick	1911	58.7	15.4	1285
ROG 299	1808	60.7	18.2	1240
Vision	1624	61.8	19.6	1334
GTS-900	1610	59.9	17.7	1322
Average	2141	59.9	15.4	1269

*Average of two locations (Holyoke, Atwood).

Special market class varietal descriptions

88:409	An experimental navy line from University of Idaho.
88:539	An experimental small red from University of Idaho.
90:465	An experimental great northern from University of Idaho.
96YT77	An experimental from Asgrow Seed Co.
B340	An experimental from Asgrow Seed Co.
Calif Early	A light red kidney released by the University of California in 1990.
Enola	A yellow bean line from Red Beard Bean Co., Delta, CO.
GT-401	An experimental white kidney from Gentec Seed Co.
GTS-OB16-89	An experimental black turtle from Gentec Seed Co.
Lassen	A white kidney bean from Sacramento Valley Milling.
Mackinac	A navy bean released by Michigan State.
Midnight	A black variety from New York.
Montcalm	A dark red kidney released by Michigan State.
Moonbeam	An upright great northern with rust resistance from Asgrow Seed Co.

NW 63	A small red from the USDA, susceptible to rust, white mold and bacterial diseases.
CO96902	An experimental shiny black seeded line from Colorado State University.
UI-239	A small red Mexican bean from the University of Idaho released in 1993. It is a high-yielding, early-maturing red bean similar to NW 63. It has better-than-average canning qualities. It has resistance to BCMV strain found in Colorado.
UI-537	A pink from the University of Idaho, susceptible to rust, but moderately resistant to some bacterial diseases.
UI-686	A cranberry from the University of Idaho released in 1989.
UI-911	A black bean released from the University of Idaho in 1993. It has high yields, an upright growth habit, and resistance to BCMV.
US 1140	A great northern variety released by the USDA in 1960.
Vista	An upright navy bean released by Gen Tec Seeds in Ontario, Canada.
Viva	A pink variety released by the USDA in 1974. It is resistant to viruses and root rot stress.

Table 9. Black bean performance at Fort Collins in 1997¹

Variety	Yield	Seeds
	lb/ac	#/lb
GTS-OB16-89	2106	2771
UI 911	1609	2389
Average	1858	2580
CV%	11.0	
LSD _(.3)	154	

¹Trial conducted on the Agricultural Research Development and Education Center; seeded 6/10 and harvested 10/7.

Table 10. Kidney bean performance at Fort Collins in 1997¹

Variety	Yield	Seeds
	lb/ac	#/lb
GTS-401	1895	1071
Enola	1798	1099
Lassen	1478	842
Calif Early	1409	765
B340	1344	829
Montcalm	1082	851
Average	1501	909
CV%	10.5	
LSD _(.3)	106	

¹Trial conducted on the Agricultural Research Development and Education Center; seeded 6/10 and harvested 10/8.

Table 11. Small seed bean performance at Fort Collins in 1997¹

Variety	Market Class	Yield	Seeds
		lb/ac	#/lb
NW 63	Small Red	2288	1459
88:409	Navy	2199	2552
88:539	Small Red	2154	1446
Vista	Navy	2121	2501
Average		2191	1990
CV%		14.3	
LSD _(.3)		215	

¹Trial conducted on the Agricultural Research Development and Education Center; seeded 6/10 and harvested 10/7.

Table 12. Medium seed bean performance at Fort Collins in 1997¹

Variety	Market Class	Yield	Seeds
		lb/ac	#/lb
90:465	Great Northern	2281	1255
Moonbeam	Great Northern	2055	1495
US1140	Great Northern	1998	1466
96YT77	Great Northern	1979	1262
Average		2078	1369
CV%		19.5	
LSD _(.3)		278	

¹Trial conducted on the Agricultural Research Development and Education Center; seeded 6/10 and harvested 10/7.

Table 13. Special market class performance at Olathe in 1997¹

Variety	Market Class	Yield	Seeds
		lb/ac	#/lb
Fisher	pinto	2427	1107
UI-196	pinto	2284	1216
UI-911	black	2261	2167
Viva	pink	2203	1563
NW-63	small red	2015	1397
Vision	pinto	1906	1187
UI-239	small red	1900	1425
Burke	pinto	1893	1152
CO51715	pinto	1892	1196
CO96902	black	1860	2233
UI-537	pink	1851	1232
Midnight	black	1839	2259
Maverick	pinto	1799	1240
CO51713	pinto	1741	1256
Othello	pinto	1689	1107
Bill Z	pinto	1658	1294
Arapaho	pinto	1602	1288
Enola	other	1596	1112
Chase	pinto	1406	1277
Olathe	pinto	1398	1264
UI-126	pinto	1365	1180
UI-686	cranberry	1282	945
Average		1812	1368
CV%		18.8	
LSD _(.05)		462	

¹Trial conducted on the John Case farm; seeded on 5/30 and harvested 10/10.

Table 14. Irrigated special market class performance at Yellow Jacket in 1997¹

Variety	Market Class	Yield	Comments
		lb/ac	
Winchester	Pinto	3056	Three to five days later than Bill Z; Common bean blight noted
Bill Z	Pinto	3009	
RNK 179	Pinto	2758	
Burke ²	Pinto	2744	Three to five days later than Bill Z
Othello	Pinto	2604	Early maturity
88-409	Small White	2572	One to two days later than Bill Z, larger seed than Mackinac
Arapaho	Pinto	2569	
Apache	Pinto	2265	Small plants; Not suitable for SW Colorado
Mackinac	Small White	2003	About 10 days later than Bill Z
Remington	Pinto	2002	
Average		2558	
CV%		10	
LSD _(.3)		201	(w/o Burke)

¹Trial conducted on the Southwestern Colorado Research Center; seeded on 6/6 and harvested 10/9.

²Only 2 replications were planted.

Table 15. Special market class cultural conditions in 1997

	Fort Collins	Olathe	Yellow Jacket
Soil Type	Clay Loam	Sandy Loam	Silty Clay Loam
Previous Crop	Corn	Wheat	Winter Wheat
Fertilization			
N acre ⁻¹	60	70	75
P ₂ O ₅ acre ⁻¹	50	116	40
Herbicide	Sonalan	Partner	Dual
Insecticide	Basagran	Dimethoate	None
Irrigation	Furrow	Sprinkler	Sprinkler

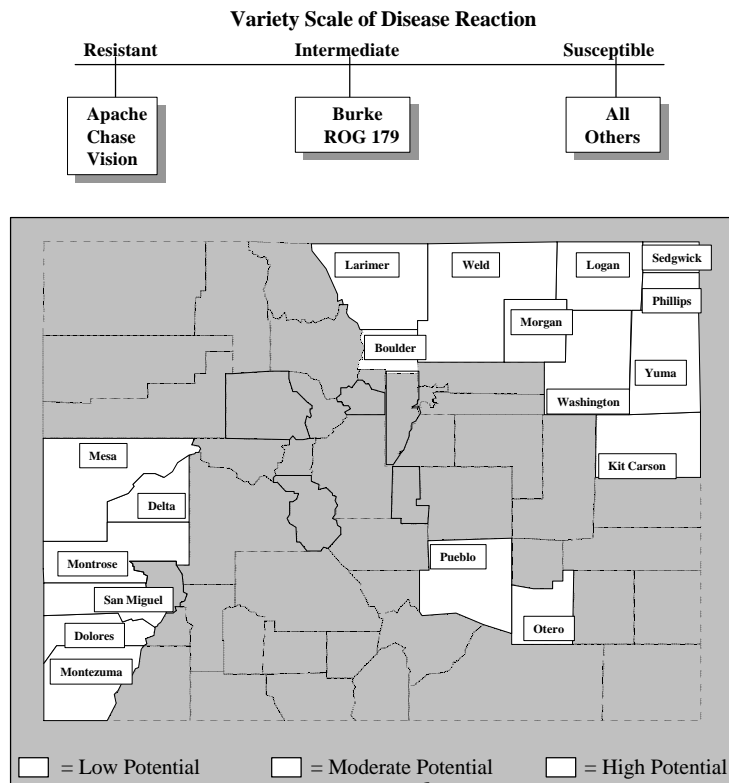
Entry Forms for 1998 Trials

Entry forms for 1998 trials may be obtained from the Department of Soil and Crop Sciences, Colorado State University, by contacting Cynthia Johnson, C-4 Plant Science Building, Fort Collins, CO 80523; Telephone (970) 491-1914; Fax number (970) 491-2758; or E-mail cjohnson@ceres.agsci.colostate.edu.

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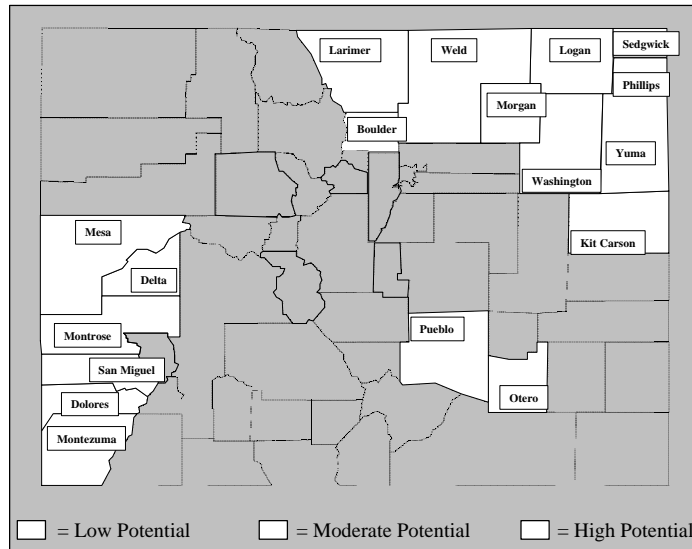
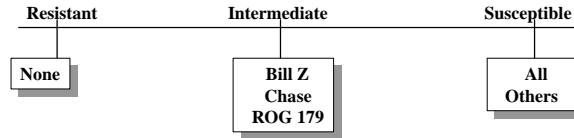
Potential for Rust in Colorado



Bacterial Disease* Potential in Colorado

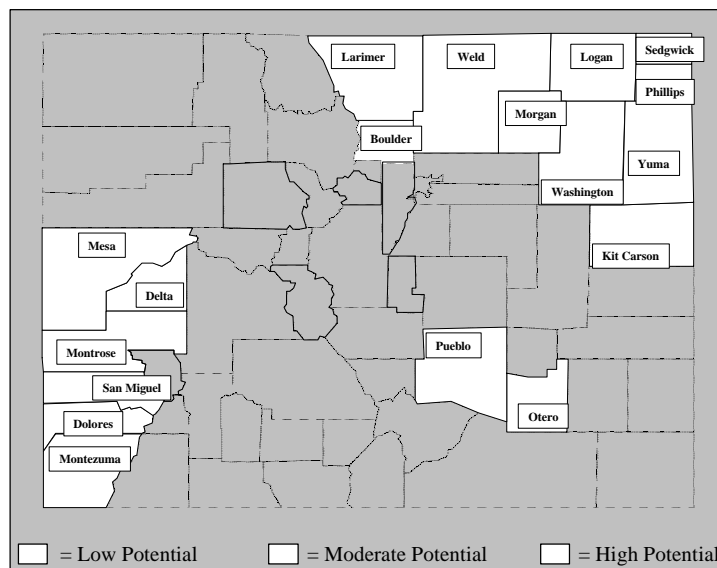
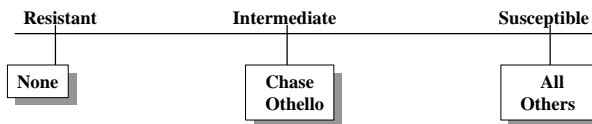
* Complex of Halo Blight, Bacterial Brown Spot &/or Common Bacterial Blight

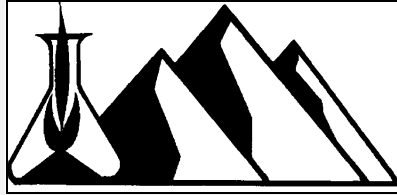
Variety Scale of Disease Reaction



White Mold Potential in Colorado

Variety Scale of Disease Reaction



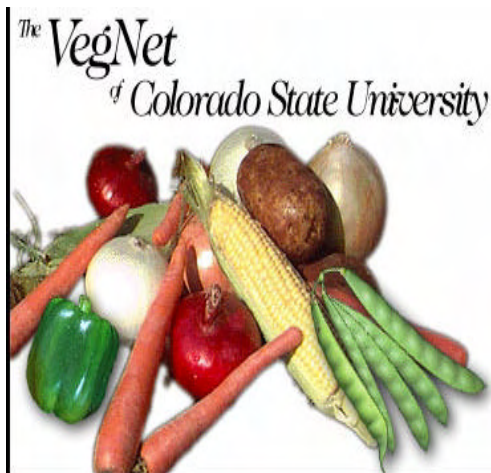


***For the Fastest Access to Up-to-Date Variety Information
Come and See Us On the Net***

<http://www.colostate.edu/Depts/SoilCrop/extens.html>

Extension Information

***1997 Northeastern Colorado Pinto Bean Variety Performance Trials
1997 Colorado Corn Hybrid Performance Trials
1997 Colorado Sunflower Hybrid Performance Trials
Collaborative On-Farm Test (COFT) Results for 1997
1997 CSU Winter Wheat Variety Performance Trial Results
and much more..***



<http://www.colostate.edu/Orgs/VegNet/>

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