Technical Report TR10-09 October 2010

Agricultural Experiment Station

Colorado State University Crops Testing

College of Agricultural Sciences

Department of Soil and Crop Sciences

Extension

MAKING BETTER DECISIONS

2010 Dry Bean Variety Performance Trials

Acknowledgments

The Colorado State University dry bean improvement team wishes to express their gratitude to the Colorado farmers who voluntarily and generously contributed the use of their land, equipment, and time to facilitate the 2010 dry bean variety trials. Collaborating farmers: Yuma – Richard Wacker and Lucerne – Steve Jelly. Our thanks to Jeff Davidson and Michael Bartolo at the Arkansas Valley Research Center (Rocky Ford, CO) for conducting one of the 2010 variety trials. These trials are evidence of your bean check off dollars at work- they would not be possible without research support provided by The Colorado Dry Bean Administrative Committee, and publication of this report by The Colorado Bean Network. We are also thankful to Larry Lande (Northern Feed and Bean – Lucerne, CO) and Bill Newth (Trinidad/ Benham Bean Co. – Sterling, CO) for their assistance in identifying trial collaborators and hosting bean field days.

Trials conducted by Colorado State University Crops Testing, funded by the Colorado Dry Bean Administrative Committee and reported by the Colorado Bean Network

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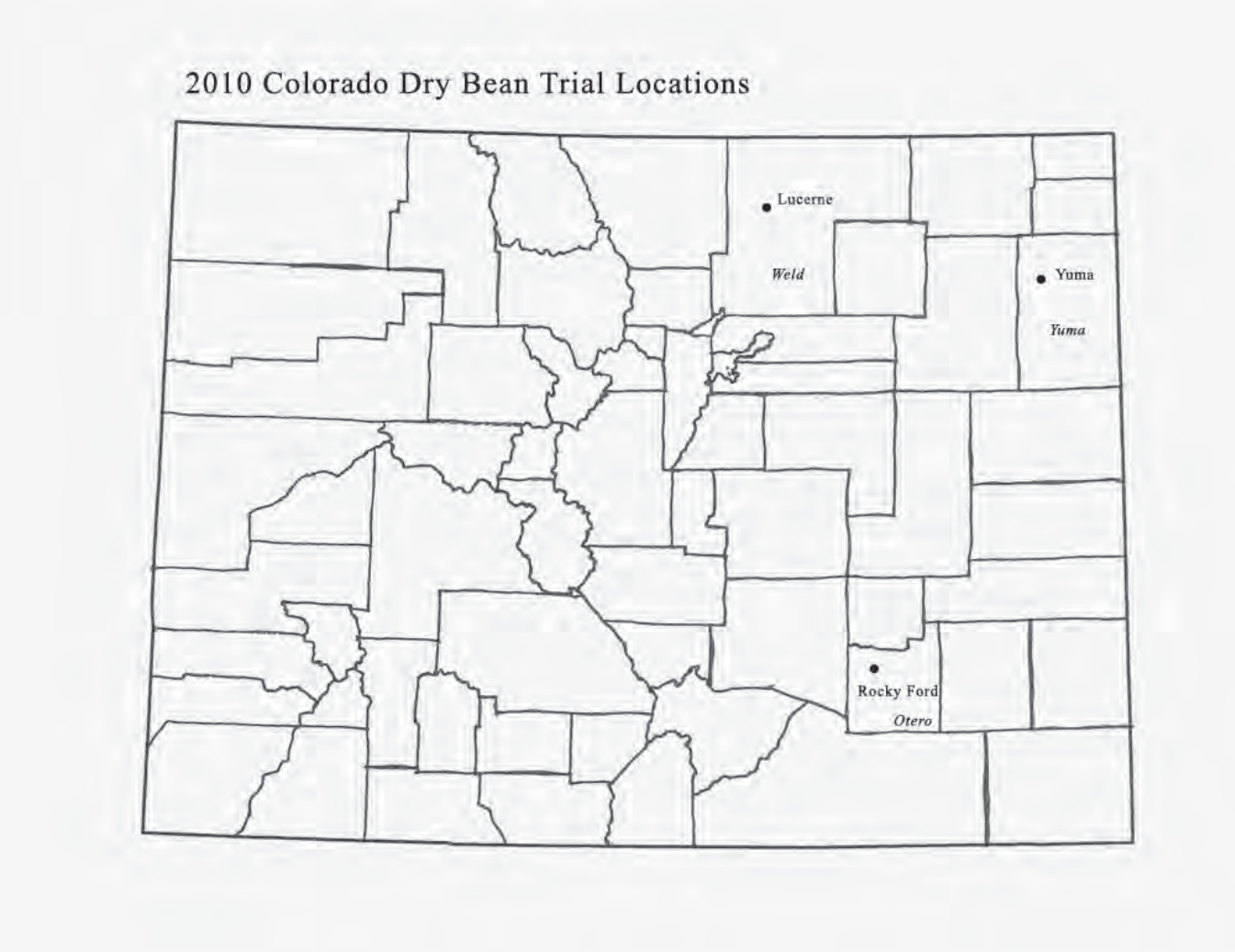
2010 Colorado Dry Bean Performance Trial

Introduction

Colorado producers annually spend millions of dollars on pinto bean seed. Variety decisions can have a big effect on yields. Colorado State University Crops Testing, the bean breeding program, and the bean pathology research program collaborate to conduct uniform variety trials annually to provide unbiased and reliable performance results to help Colorado dry bean producers make more informed variety decisions. The uniform variety trial serves a dual purpose of screening experimental lines from CSU's bean breeding program and to evaluate commercial variety performance for making variety recommendations to Colorado bean producers. The uniform variety trial is made possible by funding received from Colorado dry bean producers and handlers via the Colorado Dry Bean Administrative Committee. In 2010, two eastern Colorado trials were funded and planted at Yuma and Lucerne. A third trial, with fewer varieties, was conducted at Rocky Ford on the Arkansas Valley Research Center. A wide range of varieties were tested in 2010 as described below with regard to origin, maturity, disease resistance, growth type and adaptability. Seed yields and seed size for all trial varieties are reported in the tables below. Yields are adjusted to 14% seed moisture content .



2010 Pinto Bean Variety Performance Trial at Yuma

Variety	Source	Yield[a]	Moisture	Test Weight	Seeds/Pound
		lb/ac	percent	lb/bu	count
99217	ProVita, Inc.	4028	11.3	60.3	1164
Bill Z	Colorado State University	3971	9.2	59.6	1387
Mariah	Seminis	3963	9.9	59.4	1218
Montrose	Colorado State University	3812	9.6	60.5	1173
Durango	ProVita, Inc.	3706	9.8	60.4	1276
CO 33986	Colorado State University	3634	10.8	60.3	1000
Lariat	NDSU	3595	11.1	60.1	1233
ND-307	NDSU	3593	10.4	58.1	1175
P7025613	ADM-Seedwest	3553	9.4	58.8	1276
GTS-904	Gentec Inc.	3496	10.6	59.1	1199
Windbreaker	Seminis	3443	9.3	58.4	1215
CO 55024-4	Colorado State University	3432	10.3	59.9	1256
La Paz	ProVita, Inc.	3419	10.1	61.0	1443
P7025615	ADM-Seedwest	3390	9.8	59.6	1251
07167 (LP-7)	ProVita, Inc.	3388	10.4	61.1	1428
99195MR	ProVita, Inc.	3330	11.8	60.3	1404
06185	ProVita, Inc.	3326	9.8	60.6	1380
Poncho	Colorado State University	3303	10.2	60.7	1187
Stampede	North Dakota State University	3278	9.7	59.3	1312
CO 67084	Colorado State University	3265	11.2	59.5	1184
Croissant	Colorado State University	3209	8.9	59.8	1227
Grand Mesa	Colorado State University	3208	9.4	59.8	1347
COB-2594-03	Gentec Inc.	3193	10.3	60.1	1429
CO 54150	Colorado State University	3185	13.5	59.1	1221
Othello	Colorado State University	3183	9.0	61.0	1252
CO 55024-13	Colorado State University	3161	10.1	60.3	1184
06189	ProVita, Inc.	3156	9.7	60.8	1425
Medicine Hat	Seminis	3145	9.0	59.5	1240
CO 55646	Colorado State University	3124	10.4	59.9	1243
06187	ProVita, Inc.	3100	10.1	59.1	1188
GTS-903	Gentec Inc.	2980	10.5	60.3	1347
05200	ProVita, Inc.	2888	10.6	58.6	1359
CO 55695	Colorado State University	2673	11.7	60.1	1249
CO 24972	Colorado State University	2604	10.7	58.6	1175
IP08-2	University of Idaho	2262	16.2	58.8	1413
06203	ProVita, Inc.	2245	10.7	61.0	1385
Average		**3284**	**10.4**	**59.8**	**1270**
LSD $_{(0.30)}$		420			

[a]Yields corrected to 14% moisture

Experimental Design: randomized complete block with three replications
Field Plot Size: 10' x 30'

Site Information

Cooperator: Richard Wacker
Harvest date: 9/15/2010
Planting date: 6/7/2010
Seeding Rate: 85,000 Seeds/Acre
Previous Crop: Corn
Irrigation: Sprinkler

2010 Pinto Bean Variety Performance Trial at Lucerne

Variety	Source	Yield[a]	Moisture	Test Weight
		lb/ac	percent	lb/bu
Windbreaker	Seminis	3937	7.7	57.4
Montrose	Colorado State University	3520	7.6	58.9
Bill Z	Colorado State University	3435	7.6	59.3
06185	ProVita, Inc.	3390	9.1	59.7
CO 24972	Colorado State University	3330	8.6	57.1
Stampede	North Dakota State University	3300	8.4	57.2
Poncho	Colorado State University	3297	8.0	59.6
GTS-904	Gentec Inc.	3244	9.1	58.5
06187	ProVita, Inc.	3218	7.2	58.0
Durango	ProVita, Inc.	3138	7.9	59.1
Othello	Colorado State University	3117	7.6	59.3
Lariat	North Dakota State University	3101	9.1	59.3
99217	ProVita, Inc.	3088	8.4	59.5
COB-2594-03	Gentec Inc.	3053	8.5	60.6
Grand Mesa	Colorado State University	3035	7.7	58.8
06203	ProVita, Inc.	2963	8.2	61.0
07167 (LP-7)	ProVita, Inc.	2944	9.2	59.2
ND-307	North Dakota State University	2941	8.1	57.6
Medicine Hat	Seminis	2867	7.6	58.5
05200	ProVita, Inc.	2863	6.9	59.1
P7025615	ADM-Seedwest	2861	8.0	58.6
CO 55646	Colorado State University	2857	8.6	59.1
La Paz	ProVita, Inc.	2852	9.4	60.1
GTS-903	Gentec Inc.	2844	8.5	59.2
CO 55024-4	Colorado State University	2705	7.8	58.0
CO 55695	Colorado State University	2538	8.7	58.8
CO 55024-13	Colorado State University	2488	7.8	58.0
CO 33986	Colorado State University	2392	8.7	58.6
CO 67084	Colorado State University	2254	8.4	57.0
IP08-2	University of Idaho	1926	7.7	57.0
Average		**2983**	**8.2**	**58.7**
$LSD_{(0.30)}$		314		

[a]Yields corrected to 14% moisture

Experimental Design: randomized complete block with three replications
Field Plot Size: 10' x 31'

Site Information

Cooperator: Steve Jelly
Harvest Date: 9/6/2010
Planting Date: 6/2/2010
Seeding Rate: 85,000 Seeds/Acre
Irrigation: Furrow

2010 Pinto Bean Variety Performance Trial at Rocky Ford

Variety	Source	Yield[a]	Moisture	Test Weight	Seeds/Pound
		lb/ac	percent	lb/bu	count
Durango	ProVita, Inc.	2887	9.0	58.8	1159
Bill Z	Colorado State University	2847	9.1	58.0	1228
Poncho	Colorado State University	2833	9.0	59.7	1169
GTS-903	Gentec Inc.	2772	9.4	58.7	1180
Othello	Colorado State University	2761	8.9	59.4	1301
Lariat	North Dakota State University	2672	9.5	56.3	1165
Stampede	North Dakota State University	2663	9.1	56.6	1171
Medicine Hat	Seminis	2618	8.8	59.1	1329
Windbreaker	Seminis	2569	8.8	56.2	1181
06185	ProVita, Inc.	2561	9.0	60.6	1275
P7025615	ADM-Seedwest	2543	9.0	57.6	1215
GTS-904	Gentec Inc.	2534	9.1	57.6	1173
CO 24972	Colorado State University	2505	9.3	56.5	1194
La Paz	ProVita, Inc.	2481	9.1	60.7	1320
Montrose	Colorado State University	2453	9.0	59.6	1329
06187	ProVita, Inc.	2449	8.7	59.6	1221
CO 55646	Colorado State University	2377	10.0	57.9	1274
Croissant	Colorado State University	2376	8.9	59.0	1245
Grand Mesa	Colorado State University	2350	8.9	58.6	1374
COB-2594-03	Gentec Inc.	2317	9.2	59.4	1299
ND-307	North Dakota State University	2313	9.1	55.7	1215
Mariah	Seminis	2246	8.9	58.2	1260
99217	ProVita, Inc.	2129	8.9	59.8	1230
IP08-2	University of Idaho	1463	9.3	56.4	1380
Average		**2488**	**9.1**	**58.3**	**1245**
$LSD_{(0.30)}$		228			

[a]Yields corrected to 14% moisture

Experimental Design: randomized complete block with three replications
Field Plot Size: 10' x 25'

Site Information

Cooperator:	Arkansas Valley Research Center-CSU
Harvest date:	9/16/2010
Planting date:	6/7/2010
Seeding Rate:	85,000 Seeds/Acre
Soil Type:	Rocky Ford Silty Clay Loam
Previous Crop:	Corn
Irrigation:	Furrow

The variety IP08-2 (new release from University of Idaho) was weak and yellowed from emergence through harvest. Disease pressure was minimal throughout season with some light virus pressure. Insect pressure was light to moderate. Mexican Bean beetle was present from mid-season through harvest and pressure was heavy in some areas of field (25-30% defoliation). Some pod-feeding insect damage from caterpillars (salt marsh, Painted Lady larvae, yellow-striped armyworm). Crop had good moisture early but the hot and dry weather during late July and August may have resulted in water deficits and affected yield. Difficulty combining trial may have reduced yields because beans had to be hand-fed into the combine with pitch forks and some shattering occurred.

10-Year Summary of Pinto Bean Variety Performance in Colorado Variety Trials from 2001-2010

Every year CSU personnel conduct pinto bean variety performance trials in different locations. Both varieties and locations change from year to year so this table summarizes varieties that have been tested over the years. In the table, yield performance by variety has been averaged over locations within each of ten years. Entries reported are public and commercial named varieties common to all trials for a year. Experimental lines are not included in this summary. The number of locations per year varied from two to six. The trial average at bottom of each year's yield column is a simple average of the yields of reported varieties for that year. Average yield over years is shown in the column at the extreme right .

	Yield											
Variety[a]	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Long Term Average	
						lb/ac						% of avg.
99217						3080	2406	4482	3296	3082	3269	110
99195 MR					2374	3437	2508	5046	2390	3330	3181	107
Baja					2629	2963	2328	3730			2912	98
COB-2527-99									2600		2600	88
Durango						3170	2390	4457	3136	3244	3279	111
Bill Z	2621	2613	2463	2253	2454	3689	2796	4910	3273	3418	3049	103
Buckskin		2184	2382	2090	2428	3090	2754	4024			2707	91
Buster	2654			2185		3286					2708	92
Croissant									2855	2792	2824	95
Grand Mesa	2458	2329	2283	1865	2265	2944	2429	4450	3132	2864	2702	91
Kimberley									2939		2939	99
La Paz					2490	3164	2586	3804	2177	2917	2856	97
Mariah									3033	3105	3069	104
Medicine Hat									2902	2877	2890	98
Montrose	2705	2586	2956	2562	2449	3466	2587	4854	3569	3261	3099	105
ND-307									2735	2949	2842	96
Othello				1936		3033				3020	2663	90
Poncho	2862	2371	2826	2398	2676	3033	3179	4432		3144	2991	101
Rally	2312	2134		1935							2127	72
USPT-73	2825	2374									2600	88
Lariat							2528	4472	3010	3123	3283	111
GTS-904							3118	3513	2634	3091	3089	104
Shoshone									3337		3337	113
Stampede							2502	4015	3100	3081	3175	107
Sonora							2421	4356			3389	114
Windbreaker									3415	3316	3366	114
Average	2634	2370	2582	2153	2471	3196	2609	4325	2974	3095	2959	

[a]The following varieties were only tested for few years during the ten year period and are not included in this performance summary: 01242, 03250, 06185, 06206, 03261,05200, 6I13, 6I15, 6I7, 6I9, Apache, Canyon, COB-2576-99, COB-2585-99, Frontier, COB 502-94, Maverick, ROG 214, ROG 261, UI 320, USPT 72, USPT 73, USPT 74, Winchester, P250215, P251215, P131423, P223217, GTS-905, GTS-906, 00218, 01223, Burke, Chase, Cisco, Elizabeth, Kodiak, and Vision.

Pinto Bean Variety Descriptions:

99195 MR An AmeriSeed Inc. variety from ProVita, Inc. with intermediate resistance to rust and *Bean common mosaic virus* (BCMV). It is a late maturing variety with a 2B plant type

99217 An AmeriSeed Inc. variety from ProVita, Inc. with intermediate resistance to rust and BCMV. It is a late maturing variety with a 2B plant type.

Bill Z A medium maturity (95-96 days) pinto variety released by Colorado State University in 1985. It has a vine Type III growth habit with resistance to BCMV and moderate tolerance to bacterial brown spot. It is a very productive variety with good seed color. It is susceptible to white mold, common bacterial blight and strains of rust in the Hi-Plains region.

Croissant A new release from Colorado State University. It was formerly tested as CO23704 and Foundation seed was sold in 2008. It has semi-upright plant growth habit in most environments, bright pinto seed color, resistance to rust, field tolerance to common bacterial blight and resistance some strains of BCMV. Maturity is somewhat similar to Bill Z at 94-98 days.

Durango An AmeriSeed Inc. variety from ProVita, Inc. with intermediate resistance to rust and BCMV. It is a full season maturing variety with a 2B plant type.

Grand Mesa A medium maturity (94-96 day) pinto variety from Colorado State University released in 2001. Grand Mesa combines resistance to rust, BCMV, semi-upright Type II plant architecture and field tolerance to white mold, but is susceptible to common bacterial blight and bacterial brown spot. It has moderate yield potential, good seed color, and has shown field tolerance to white mold.

La Paz An AmeriSeed Inc. variety from ProVita, Inc. with intermediate resistance to rust and BCMV. It is a full season maturing variety with a 2B plant type.

Lariat A pinto line, tested as ND020069, was recently released by the North Dakota Agricultural Experiment Station in 2008. It has Type II upright, short vine, with good lodging resistance. In Colorado, it is a full season variety at approximately 99-100 days. It is resistant to rust and BCMV.

Mariah A variety released by Seminis. It is a full season (96- 98 day) pinto bean with an erect, short vine growth habit and resistance to BCMV.

Medicine Hat A variety released by Seminis. Medicine Hat is a medium to full season variety (94 – 96 day) with short-vine growth habit. It is resistant to BCMV.

Montrose A medium maturity (96-97 day) pinto variety released by Colorado State University in 1999. It has resistance to rust and BCMV. It has high yield potential and excellent seed quality. It is highly susceptible to white mold.

ND-307 Developed by North Dakota State University. It is a late season (>100 day) high yielding variety with upright short-vine growth habit and has resistance to rust, and BCMV.

Othello Othello was released by the USDA in 1987. It is an early (84 to 87 d) variety with resistance to Bean common mosaic virus, some root rot pathogens, and curly top virus. It is susceptible to local strains of rust, common bacterial blight and white mold. It has good seed quality.

Poncho A medium maturity (97 d) pinto variety released by Rogers/Syngenta Seeds, Inc. in 1998 with resistance to Bean common mosaic virus, has high yield potential and excellent seed quality. It has Type III growth habit. It is susceptible to rust and bacterial brown spot.

Stampede A pinto line, tested as ND0203 51, was recently released by the North Dakota Agricultural Experiment Station in 2008. It has full season maturity in the Hi-Plains (96-99 days), high yield capacity and excellent seed size, shape, and appearance. Stampede is an erect variety, with very good lodging resistance. It is resistant to rust and BCMV.

Windbreaker A variety released by Seminis. It is a full season (96 to 98 day) pinto bean with upright, short-vine growth habit and has resistance to BCMV.

Pinto Bean Experimental lines:

07167 (LP-7)	An AmeriSeed Inc. experimental line from ProVita, Inc.
5200	An AmeriSeed Inc. experimental line from ProVita, Inc.
6185	An AmeriSeed Inc. experimental line from ProVita, Inc.
6187	An AmeriSeed Inc. experimental line from ProVita, Inc.
6189	An AmeriSeed Inc. experimental line from ProVita, Inc.
6203	An AmeriSeed Inc. experimental line from ProVita, Inc.
CO24972	An experimental pinto line from Colorado State University.
CO33986	An experimental pinto line from Colorado State University.
CO54150	An experimental pinto line from Colorado State University.
CO55024-13	An experimental pinto line from Colorado State University.
CO55024-4	An experimental pinto line from Colorado State University.
CO55646	An experimental pinto line from Colorado State University.
CO55695	An experimental pinto line from Colorado State University.
CO67084	An experimental pinto line from Colorado State University.
COB-2594-03	An experimental pinto line from Gentec, Inc.
GTS-903	An experimental pinto line from Gentec, Inc.
GTS-904	An experimental pinto line from Gentec, Inc.
IP08-2	An experimental pinto line from the University of Idaho
P7025613	An experimental pinto line from ADM-Seedwest
P7025615	An experimental pinto line from ADM-Seedwest

COAGMET Monthly Summaries from 2008-2010

Compiled by H. F. Schwartz & M. S. McMillan, Colorado State University www.coagmet.com

Monthly Daily High Temperature (F)

	2008			2009			2010		
	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford
May	70.5	73.1	78.1	72.0	72.3	78.4	70.1	70.1	76.2
June	81.1	83.8	88.5	79.3	80.3	84.7	84.3	84.1	88.8
July	92.2	91.9	93.1	84.2	84.6	89.8	87.9	84.0	91.5
Aug	83.2	81.9	86.0	83.3	83.4	88.2	87.9	86.9	90.9
Sept	76.8	76.3	79.9	75.9	73.9	79.2	81.9	82.8	88.5
average	80.8	81.4	85.1	79.0	78.9	84.1	82.4	81.6	87.2

Number of Days Above 95 F

	2008			2009			2010		
	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford
May	0	0	0	0	0	1	0	0	4
June	0	3	7	0	1	3	1	1	6
July	10	11	14	1	1	10	3	2	11
Aug	4	4	5	0	1	4	1	0	7
Sept	0	0	0	0	0	0	1	1	3
total	14	18	26	1	3	18	6	4	31

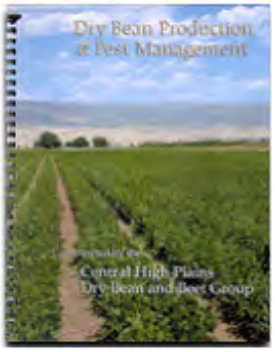
Monthly Rainfall (inches)

	2008			2009			2010		
	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford	Holyoke	Burlington	Rocky Ford
May	2.3	0.9	0.5	3.1	3.2	1.1	1.0	1.7	1.2
June	3.2	1.7	0.4	5.0	3.3	1.3	4.8	0.2	1.9
July	1.6	2.6	0.6	4.4	5.6	2.6	2.8	3.3	3.9
Aug	4.9	8.0	4.4	4.2	3.0	0.5	2.7	2.5	2.0
Sept	1.4	1.5	0.0	1.6	2.8	0.6	1.5	0.4	0.2
total	13.3	14.7	5.9	18.3	18.0	6.2	12.8	8.1	9.1

Summary: 2010 had higher daily temperatures in southern Colorado during the season than did eastern sites.
Days above 95 F were lower in eastern Colorado, and could have influenced early season growth and flowering cycles during 2010
Rainfall patterns were high in northeastern Colorado in 2010, contributing to more bacterial disease and common rust // **CSU Veg Path Web Sites:**

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

http://legume.ipmpipe.org/cgi-bin/sbr/public.cgi



http: //www.csuag.com

2010 Common Bean Disease Scouting Summary

[Excerpts from the Legume ipmPIPE Report @ http://legume.ipmpipe.org/cgi-bin/sbr/public.cgi]

Rusts (soybean, common)
Common rust was noted in various fields of susceptible varieties in eastern Colorado during August to mid September. Some later fields sustained moderate infection before harvest.

Other Fungal Diseases (root rots, white mold)
Root rots were widespread during June and July, resulting in poor stands, reduced root vigor, and early maturity in some fields during August; as a result of the cool, wet spring conditions in many production areas. White mold has occurred in some fields with a history of the disease and in varieties with more dense plant canopies.

Bacterial Diseases (common blight, halo blight, brown spot, wilt)
The bacterial disease complex (primarily bacterial brown spot and common bacterial blight) was widespread in eastern Colorado as a result of the cool to moderate conditions with frequent storm activity.

Virus Diseases (AMV, BCTV, BCMV, BYMV, CMV, other)
Viruses like Bean common mosaic virus were widespread in susceptible varieties like yellow beans in eastern and southern Colorado.

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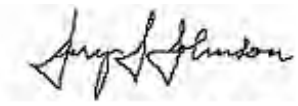
Crops Testing



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