



Making Better Decisions
The CSU Alfalfa Pages
Posted November 6, 2003

San Luis Valley Alfalfa Variety Trial at Center

by Merlin A. Dillon

The San Luis Valley is a huge, flat inter-mountain valley at 7600 feet altitude surrounded by snow-capped mountains. The area is comprised of five counties: Alamosa, Conejos, Costilla, Rio Grande, and Saguache. This area has increased its alfalfa yield, alfalfa price and acreage. Acreage increased to 167,000 acres in 2001; then decreased. Because of severe drought, acreage dropped back to 135,000 acres. San Luis Valley alfalfa hay production was valued at \$69 million in 2001 but dropped back to \$57 million a year later. Including other areas, high altitude alfalfa acreage in Colorado makes up an area over 250,000 acres.



Fig.1 A view of the alfalfa variety trial; some plots remaining to be harvested. Plot size = 8' x 16'.

Growers here typically cut three times per year. Stands usually last 5 to 7 years; however, warm, dry winters can cause severe winter kill. Winter-hardiness and persistence are important variety selection factors; as well as regrowth, yield and pest resistance.

Researcher Comments

Grateful appreciation is expressed for the cooperation of local grower Sherril Mix, a potato/-barley/alfalfa producer who provided a field and coordinated harvests for this trial.

This trial was planted solo at 15 pounds per acre in June 2000; an excellent stand was established. This field was harvested three times in 2001; however, third harvest data was lost. Data from all three harvests were collected in 2002 and 2003. This trial will be harvested one more year and a new trial will be planted in 2004.

Irrigation water was a big problem for many in 2001 and not much better this year. Irrigation ditches didn't run much water this year. Groundwater wells mostly produced less water than normal. However, adequate water and good growing conditions produced a better than average yield. The second cutting showed rings of higher and lower height alfalfa. Replacing the sprinkler nozzles cured the problem for third cutting.

The early spring was warm which made the first cutting early again this year. Harvest dates were June 11, July 17, and September 22. This year was very dry and most cuttings escaped rain damage. The third cutting was larger than normal because of the early date for first cutting

Variety differences were not statistically significant for any cutting or the total yield in 2003. However, Vernal and Ranger again produced about 0.4 ton/acre less than the top yield. Vernal and Ranger are usually 0.7 tons per acre below the top yield.



Fig.2 The John Deere 3430 crimper/swather with electronic weigh box added to weigh individual plots.

Three-year results also show no statistical significance. Several varieties have performed very well for the 3 years. The test average for 2 years (6.0 tons per acre) is typical for this area considering that yields are calculated from green weights without harvest losses.

Researcher

Merlin Dillon, Area Extension Agent, Agronomy, has conducted alfalfa trials in the San Luis Valley for 20+ years. Raised on a dryland farm in southeast Colorado (Baca County), Merlin received his B.S. in agronomy from Panhandle State University in Goodwell, Oklahoma, and an M.S. in agronomy from Colorado State University. Prior to joining CSU Cooperative Extension in 1982, Merlin worked 5 years as a crop researcher for Kansas State University in

Tribune, KS; 4 years as an irrigated crop consultant; and 2 years as an independent fertilizer applicator. His research in the San Luis Valley has included small grain variety trials (soft white, hard red, and durum wheat plus barley and oats) as well as quinoa, canola, and bio-control crops.

Forage yields of 24 alfalfa varieties at Center¹, San Luis Valley, CO in 2003

Harvest 2003								
Variety	Source	1 st Cut	2 nd Cut	3 rd Cut	Total	2002	2001	3-Yr Average
		June 11	July 17	Sept 22				
					-----tons/acre ² -----			

WL 327	WL Research	2.21	2.30	1.77	6.27	6.97	5.72	6.32
Select	Forage Genetics	2.07	2.34	1.81	6.22	6.54	5.88	6.25

Geneva	Novartis	2.32	2.38	1.89	6.59	6.55	5.43	6.23
DK 143	DeKalb	2.23	2.34	1.76	6.33	6.55	5.80	6.19
DK 142	DeKalb	2.07	2.40	1.72	6.18	6.23	5.73	6.18
Magnum V	Dairyland	2.17	2.32	1.79	6.28	6.46	5.52	6.11
HybriForce™ 400	Dairyland	2.16	2.38	1.89	6.43	6.48	5.28	6.11
WL 325 HQ	WL Research	2.22	2.13	1.73	6.08	6.28	5.76	6.05
Ranger	USDA NE- AES	2.30	2.17	1.78	6.24	6.35	5.30	6.04
Columbia 2000	Public	2.39	2.38	1.86	6.63	7.34	5.63	6.04
54Q53	Pioneer	2.12	2.27	1.66	6.04	6.25	5.66	6.01
Pro Gro	M.B.S., Inc.	2.17	2.07	1.80	6.03	6.48	5.71	6.01
FG 4200	Forage Genetics	2.10	2.28	1.80	6.19	6.24	5.54	5.99
FG 3R139	Forage Genetics	2.12	2.27	1.81	6.19	6.55	5.40	5.99
Vernal	USDA WI- AES	2.22	2.37	1.61	6.20	6.07	5.35	5.98
Baralfa 42IQ	Barenbrug	2.16	2.03	1.70	5.88	6.44	5.54	5.97
Aspire	Asgrow	2.10	2.11	1.79	5.99	6.29	5.48	5.94
DK 134	DeKalb	2.10	2.24	1.75	6.09	6.29	5.34	5.91
WL 232 HQ	WL Research	2.12	2.03	1.68	5.82	6.32	5.70	5.87
Abound	Asgrow	2.18	2.06	1.73	5.97	6.16	5.47	5.82
Award	Asgrow	2.00	2.04	1.67	5.70	6.04	5.48	5.74
Gold Plus	M.B.S., Inc.	2.04	2.05	1.67	5.76	6.09	5.39	5.71
AmeriStand 201	ABI Alfalfa	2.18	1.91	1.63	5.73	6.14	5.58	5.62
53V08	Pioneer	2.21	2.07	1.74	6.02	6.46	5.41	5.46
Average		2.16	2.21	1.75	6.12	6.42	5.54	5.99
CV%		8.6	14.8	8.1	9.4	0.6	NS	6.9
LSD _(0.10)		NS	NS	NS	NS	6.4	6.1	NS

¹Trial conducted on the Sherrel Mix farm, Rio Grande County Roads 8N & 1W; seeded at 15 lbs/acre on June 16, 2000.

²Yields calculated on oven-dry basis.

³Third cutting 2001 was lost to custom swather; yield was estimated.

Site Information:

(Elevation 7700 ft.)

Average annual precipitation 6.92 inches.

Average frost-free days - 88days (32°F).

Average last spring frost - June 6; average first fall frost - September 11.

Soil Series: Norte gravelly sandy loam.

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Western Colorado Alfalfa Variety Performance Test at Fruita 2003

by Dr. Calvin Pearson

The 2003 results of Colorado State University’s alfalfa variety performance test at Fruita are presented in this report. Plots were planted fall 2001 and the 2003 data are for the second of a three-year testing period. Results for 2002 are in Table 1 and the 2003 results are in Table 2. Alfalfa stands are excellent. Plots are very weed-free. Alfalfa is furrow-irrigated. Haymaking conditions during 2003 were good and alfalfa yields were also good despite a very hot and dry summer. Summer 2003 was the hottest on record at Fruita. There were 26 days during the summer above 100°F with 16 of those days being consecutive. On July 14, 2003 the temperature recorded at the weather station at the Fruita Research Center was 107.3°F.

Table 1. Forage yields of 15 alfalfa varieties at the Western Colorado Research Center at Fruita in 2002.¹

Variety	Brand/Source	1 st Cut May 29	2 nd Cut July 2	3 rd Cut Aug 23	4 th Cut Oct 8	2002 Total
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		-----tons/acre ³ -----				
Sendero	Allied Seed, L.L.C.	2.38	2.38	2.85	1.56	9.17
FG 3R139	J.R. Simplot Co.	2.45	2.37	2.81	1.54	9.16
Select	IFA	2.28	2.37	2.91	1.54	9.10
DU 201	Great Plains Research Co., Inc.	2.40	2.20	2.77	1.67	9.03
WL 327	W-L Research	2.58	2.37	2.63	1.46	9.03
Goliath	Allied Seed, L.L.C.	2.38	2.34	2.79	1.51	9.01
WL 342	W-L Research	2.55	2.36	2.47	1.53	8.91
Ameristand 403T	America's Alfalfa	2.65	2.19	2.64	1.32	8.80
HybriForce™400	Dairyland Seed	2.46	2.05	2.64	1.50	8.64
Pawnee	Midwest Seed Genetics	2.45	2.27	2.52	1.40	8.64
Dagger+EV	AgriPro	2.26	2.19	2.65	1.52	8.62
Mountaineer	Croplan Genetics	2.21	2.32	2.61	1.45	8.59
Journey Brand 204 Hybrid	Dairyland Seed	2.34	2.06	2.67	1.49	8.56
Enhancer	Sharp Bros. Seed Co.	2.35	1.97	2.63	1.53	8.49
FR 9802	Great Plains Research Co., Inc.	2.33	1.70	2.38	1.54	7.94
Average		2.41	2.21	2.66	1.50	8.78
CV%		7.69	4.88	6.30	5.09	4.32
LSD _(0.05)		NS	0.16	0.24	0.11	0.54

¹Seeded 6 September 2001 at 15 lbs/acre.

²Table is arranged by decreasing, 2002 total yield.

³Yields were calculated on an air-dry basis.

Table 2. Forage yields of 15 alfalfa varieties at the Western Colorado Research Center at Fruita in 2003.¹

Variety	Brand/Source	1 st Cut May 28	2 nd Cut July 8	3 rd Cut Aug 19	4 th Cut Oct 7	2003 Total	2-yr Total	
		----- tons/acre -----						
		-						

FG 3R139	J.R. Simplot Co.	3.06	2.17	2.32	1.14	8.70	17.86
Select	IFA	3.02	2.13	2.35	1.14	8.64	17.74
Mountaineer	Croplan Genetics	3.10	2.02	2.20	1.13	8.46	17.04
Goliath	Allied Seed, L.L.C.	3.08	2.00	2.20	1.08	8.36	17.38
WL 327	W-L Research	3.10	2.06	2.14	1.05	8.35	17.38
DU 201	Great Plains Research Co., Inc.	2.92	2.01	2.21	1.15	8.29	17.32
FR 9802	Great Plains Research Co., Inc.	3.19	1.86	2.04	0.97	8.05	15.99
Dagger+EV	AgriPro	2.91	1.94	2.15	1.02	8.01	16.63
WL 342	W-L Research	2.86	1.94	2.14	1.04	7.98	16.89
Pawnee	Midwest Seed Genetics	2.81	1.97	2.13	1.04	7.95	16.59
Ameristand 403T	America's Alfalfa	2.90	1.92	2.07	0.94	7.82	16.62
Journey Brand 204 Hybrid	Dairyland Seed	2.76	1.86	2.10	1.08	7.81	16.37
Enhancer	Sharp Bros. Seed Co.	2.78	1.91	2.08	1.02	7.79	16.28
Sendero	Allied Seed, L.L.C.	2.48	1.94	2.15	1.22	7.78	16.95
HybriForce™400	Dairyland Seed	2.73	1.78	2.04	1.01	7.56	16.21
Average		2.91	1.97	2.16	1.07	8.10	16.88
CV%		8.4	5.9	4.6	7.2	4.2	3.6
LSD _(0.05)		0.35	0.17	0.14	0.11	0.49	0.88

¹Seeded 6 September 2001 at 15 lbs/acre.

²Table is arranged by decreasing, 2003 total yield.

³Yields were calculated on an air-dry basis.

Site Information:

Elevation: 4510 feet.

Average annual precipitation is 8.4 inches.

Average frost-free days is 181 days.

Last spring frost - April 16, 2003; first fall frost - October 15, 2003.


Frost-free days for 2003 - 182 days (28°F base).

Fertilizer: 324 lbs P₂O₅/acre and 68 lbs N/acre broadcast as 11-52-0 on August 30, 2001 and plowed down prior to planting.

Applied Select at 8 oz/acre on 8 October for weed control in 2001.

For weed control in 2003, Sencor 4F was applied at 1 quart/acre in 22 gallons water/acre at 25 psi on January 22, 2003. Soil series: Youngston clay loam.

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Forage yields of 24 alfalfa varieties at the Arkansas Valley Research Center¹, Rocky Ford, CO in 2003.

		1 st Cut	2 nd Cut	3 rd Cut	4 th Cut	2003	2002	2001	3-Yr
Variety	Brand / Source	June 4	July 8	Aug 12	Oct 14	Total	Total	Total	Total
		-----tons/acre ² ----- ----							
Arapaho	Dairyland Research	2.61	1.33	1.15	0.80	5.89	8.28	5.52	19.69
Arrowhead	Dairyland Research	2.30	1.31	1.28	0.83	5.72	7.63	5.15	18.50
Ranger	USDA-Neb	2.50	1.32	1.24	0.78	5.84	7.63	4.83	18.30
53V08	Pioneer Hi-Bred Int'l.	2.69	1.37	1.14	0.79	5.99	7.29	5.02	18.30
Emperor	America's Alfalfa	2.21	1.33	1.16	0.90	5.60	7.42	5.09	18.11
ZG 9650A*	ABI Alfalfa, Inc.	2.43	1.26	1.14	0.82	5.65	7.36	5.07	18.08
ZX 9450A*	ABI Alfalfa, Inc.	2.36	1.20	1.11	0.60	5.27	7.49	5.20	17.96
Abilene + Z	America's Alfalfa	2.45	1.41	1.13	0.62	5.61	7.25	5.06	17.92
54Q53	Pioneer Hi-Bred	2.27	1.36	1.25	0.92	5.80	7.13	4.91	17.84

	Int'l.								
Lahontan	USDA-NV	2.24	1.34	1.23	0.60	5.41	7.54	4.87	17.82
Winter Crown	Dairyland Research	2.14	1.35	1.16	0.85	5.50	7.19	5.06	17.75
Dagger + EV	AgriPro	2.41	1.09	1.10	0.68	5.28	7.43	5.03	17.74
4200	Seed Solutions	2.23	1.49	1.11	0.95	5.78	7.05	4.79	17.62
FG 6M71*	Forage Genetics Int'l.	1.81	1.21	1.16	0.83	5.01	7.48	5.10	17.59
Target Plus	Producers Hybrids	2.07	1.22	1.11	0.72	5.12	7.23	5.17	17.52
MagnumV-Wet	Dairyland Research	1.91	1.18	1.19	0.77	5.05	7.40	4.90	17.35
Geneva	Novartis	2.18	1.26	1.25	0.68	5.37	7.15	4.78	17.30
FG 5M84*	Forage Genetics Int'l.	2.08	1.39	1.16	0.76	5.39	7.00	4.90	17.29
FG 3R139*	Forage Genetics Int'l.	2.41	1.32	1.16	0.77	5.66	6.84	4.67	17.17
ZX 9853*	ABI Alfalfa, Inc.	2.10	1.20	1.18	0.73	5.21	7.22	4.71	17.14
ZC 9941A*	ABI Alfalfa, Inc.	1.98	1.20	1.12	0.80	5.10	7.08	4.77	16.95
Baralfa42IG	Barenburg USA	1.93	1.13	1.10	0.76	4.92	6.94	4.70	16.56
Samurai	America's Alfalfa	1.96	1.06	1.02	0.80	4.84	6.92	4.74	16.50
A30-06	ABI Alfalfa, Inc.	1.82	1.09	1.14	0.74	4.79	6.34	4.70	15.83
Average		2.21	1.27	1.16	0.77	5.41	7.26	4.95	17.62
CV%		15.80	15.11	18.29	24.07	13.98	7.39	4.71	7.02
LSD _(0.05)		0.49	0.27	0.30	0.26	1.07	0.76	0.33	1.75

¹Trial conducted at the Arkansas Valley Research Center; seeded September 1, 2000.

²Yields calculated on oven-dry basis.

*Indicates experimental entry.

Site Information:

Elevation: 4178 ft.

Precipitation: Average annual 11.77 inches. 2003 April through September - 7.32"

Growing Days: Average - 158 May 1 - Oct. 6 Frost Free

2003 - 188 April 9 - Oct. 14 Frost Free

Fertilizer: 100 lbs. P₂O₅ + 21 lbs. N/acre prior to planting


 156 lbs. P₂O₅ + 33 lbs. N/acre - 11/28/02

Herbicide: Sencor DF .75 lbs. + Gramoxone Extra .47 lbs. AI/Acre - 3/12/02, 3/13/03.

Insecticide: Warrior T .025 lbs. + Lorsban .125 lbs. AI/Acre - 5/13/02, 5/14/03.

Soil Series: Rocky Ford Silty Clay
 Loam.

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Forage yields of 20 alfalfa varieties at Yellow Jacket in 2003.¹

		1st Cut	2nd Cut	3rd Cut ³	2003	3-Year
Variety	Brand/Source	June 9	Aug 5	Sept 24	Total	Total
		-----tons/acre ² -----				
		-				
ZG 9650A*	ABI Alfalfa, Inc.	2.99	2.56	0.77	6.32	21.36
Magnum V	Dairyland Seed Co.	3.05	2.28	0.83	6.16	21.26
Baralfa 54	Barenbrug USA	3.08	2.56	0.99	6.63	21.25
Millennia	IFA	3.11	2.71	0.88	6.70	21.19
WL 327	Germain's Seed	2.96	2.44	0.75	6.15	21.12
DK 134	DeKalb	2.93	2.51	0.87	6.31	20.91

Forecast 1001	Dairyland Seed Co.	3.32	2.54	0.98	6.84	20.87
Focus HSN	Arkansas Valley Seeds	2.75	2.60	0.74	6.09	20.80
Pro Gro	MBS Genetics	3.07	2.47	0.83	6.37	20.78
DK 142	DeKalb	2.84	2.62	0.76	6.22	20.66
DK 143	DeKalb	2.87	2.61	0.79	6.27	20.46
Award	Asgrow Seed Co.	2.77	2.49	0.77	6.03	20.29
Aspire	Asgrow Seed Co.	2.48	2.38	0.80	5.66	20.27
Geneva	Novartis Seeds	3.04	2.49	0.87	6.40	20.22
Archer II	America's Alfalfa	2.94	2.49	0.80	6.23	20.17
ZX 9652*	ABI Alfalfa, Inc.	2.85	2.34	0.82	6.01	19.49
AmeriGraze 401+Z	America's Alfalfa	2.79	2.40	0.72	5.91	19.39
WL 325HQ	Germain's Seed	2.89	2.35	0.67	5.91	19.32
Abound	Asgrow Seed Co.	2.81	2.33	0.68	5.82	19.10
Ranger	Public	2.45	1.90	0.42	4.77	15.82
Average		2.90	2.45	0.79	6.14	20.24
CV%		6.04	5.38	14.97	5.27	6.00
LSD _(0.30)		0.13	0.10	0.09	0.24	0.90

¹Trial conducted at the Southwestern Colorado Research Center, seeded 6/2/00.

²Yields were calculated on an oven-dry basis and adjusted to 12% moisture.

³The 3rd cut was damaged by a severe hailstorm on Sept. 9, 2003.

*Indicates experimental entry.

Site Information:

Elevation: 6960 ft.

Soil series: Wetherill clay loam

Seeding rate: 20 lbs/ac (8-in. row spacing)

Previous crop: Small grain

Fertilizer: 200 lbs P₂O₅/ac broadcast in 2001

Herbicide: Pursuit DF 1.44 oz/ac applied on July 7, 2000

Insecticide: Mustang Max 2.5 oz/ac applied on April 11, 2003 to control army cutworm

Precipitation: 12.8 in. Oct. 1, 2002 thru Sept. 30, 2003 (long-term average is 16.0 in.)

Irrigation: 34.5 in. sprinkler (wheel-line)

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