

**2002-2004**  
**Alfalfa Research Summary**  
**San Luis Valley Cooperative Extension**  
**San Luis Valley Research Center**  
**Center, Colorado**

**Alfalfa Variety Performance Trial**



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# San Luis Valley Alfalfa Variety Trial at Center

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## Introduction

The San Luis Valley is a huge, flat inter-mountain valley at 7700 feet elevation, surrounded by snow-capped mountains. Alfalfa is grown with irrigation water whose source is snowmelt. This area is comprised of Alamosa, Conejos, Costilla, Rio Grande, and Saguache counties. Alfalfa yield, alfalfa price and acreage increased until the severe drought year of 2002. The Valley produced 167,000 acres in 2001; a hay crop worth a record amount of \$69 million. Including other high altitude areas of Colorado, high altitude alfalfa is grown on over 200,000 acres.

Growers in this area typically cut three times per year. Except in years with unusually warm summers, the third cutting is usually very immature. Stands typically last 5 to 7 years. Warm, dry winters, however, sometimes kill the stand prematurely. Winter-hardiness and persistence are important variety selection factors; as well as regrowth, yield and pest resistance. It is important to test new alfalfa varieties under local conditions .

## Materials and Methods

This study includes 24 varieties planted in four replications in a randomized complete block design. Average annual precipitation is only 7 inches. The frost-free period averages June 9 to September 11, which is 94 days. Appreciation is expressed for the cooperation of local grower Sherrel Mix, a potato/barley/alfalfa producer. The field location is 2.5 miles southwest of the SLV Research Center. The soil is the same as one on the Research Center (Norte gravelly sandy loam), a soil typical of many soils in this area.

This trial was planted solo in June 2000; an excellent stand was established. Trouble with the planter resulted in four missing plots each year of the entire trial. This field was harvested three times in 2002, 2003 and 2004. The plots were harvested twice in 2001; however the third cut was lost to a custom swather. 2001 is not included in this report.

Spring weather was warmer than normal all three years, resulting in early June first harvests.

The entire seasons were warm in 2002 and 2003, allowing extra growth and higher than normal third cutting yields. Cooler temperatures reduced growth of third cutting in 2004. Both 2002 and 2003 were dry and the harvests almost entirely escaped rain damage. Second cutting was rained on in 2004; however, regrowth was normal.

Irrigation water was a problem for many growers beginning in 2002. Ditches ran very little water that year, nearly the lowest year on record. Senior irrigation ditches ran more water in 2003. However, many wells had problems; producing less water, having too little pressure or pumping air. Some wells had no water. Adequate water and good growing conditions produced better than average yields in this test plot for all three years. There was an irrigation problem in second harvest of 2003; the alfalfa showed taller and shorter rings. This problem was corrected with new nozzles and the third cutting was not affected.



**Fig.1 A view of the alfalfa variety trial; some plots had been harvested, others remain to be harvested. Plot size = 8' x 16'.**

## **Results and Discussion**

Warm spring weather resulted in an early first cutting date in 2002. The entire summer was very dry because of severe drought. With very few rain showers, there was no rain damage. Variety differences were statistically significant for second and third cuttings. The 2002 total yield of all 24 varieties averaged 7.0 tons per acre. There were twelve varieties that produced high yields in 2002 (Table 2).

Yields were very good again in 2003. Differences were nonsignificant for harvests I and II and total yield in 2003. The third harvest yields were highly significant (results available on request). Total yield for 2003 is shown in Table 2.



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

Results of each 2004 harvest, total 2004, and the 3-year average yield is also shown in Table 1. Cooler weather reduced third cutting yield and total yield compared to previous years.

Eight varieties produced high yields for Harvest I. Yield differences between varieties were not significant for Harvest 2. There were eight varieties which produced high yields for Harvest 3. Note that many of the same varieties produced high yields for Harvest I, Harvest 3, and Total Yield 2004. The varieties producing high total yield in 2004 included: DK143, FG 3R139, Pro Gro, Baralfa 42IQ, Select, Pioneer 53V08, WL325HQ, and Geneva.

## **Results of Three Years**

The most important yields are the three year average (Table 2). Thirteen of 24 varieties produced high yields when averaged for all 3 years. These did not include the control varieties, Vernal and Ranger. The high yield varieties did include: WL 327, DK 143, FG3R139, Pro Gro, Baralfa 42IQ, Select, 53V08, WL325HQ, Magnum V, Geneva, Abound, DK 142, and Columbia 2000. The high yield varieties included newer, improved disease and insect resistant varieties already being grown by progressive growers in the San Luis Valley.

**Table 1. Three Year Alfalfa Variety Performance Trial Results, San Luis Valley<sup>2/</sup>, 2001-2004.**

Variety	Source	Harvests 2004			Total 2004	3 Year Average <sup>1/</sup>
		6/16	7/24	9/21		
-----tons/acre <sup>3</sup> -----						
WL 327	WL Research	2.5	2.1	1.3	5.9	5.1 a
DK 143	DeKalb	2.6	2.2	1.2	6.0	5.1 a
FG 3R139	Forage Genetics	2.6	2.1	1.3	6.0	5.1 ab
Pro Gro	M.B.S., Inc.	2.4	2.1	1.2	5.7	5.1 ab
Baralfa 42IQ	Barenbrug	2.5	2.1	1.2	5.8	5.0 ab
Select	Forage Genetics	2.4	2.0	1.3	5.7	5.0 ab
53V08	Pioneer	2.3	2.2	1.2	5.7	5.0 ab
WL 325 HQ	WL Research	2.6	2.0	1.2	5.8	5.0 ab
Magnum V	Dairyland	2.3	2.1	1.2	5.6	5.0 ab
Geneva	Novartis	2.4	2.2	1.2	5.8	5.0 ab
Abound	Asgrow	2.3	2.1	1.2	5.6	4.9 ab
DK 142	DeKalb	2.3	2.0	1.2	5.5	4.9 ab
Columbia 2000	Public	2.3	2.0	1.1	5.5	4.9 ab
Award	Asgrow	2.3	2.1	1.1	5.5	4.8 ab
Ranger	USDA-NE AES	2.1	2.2	0.9	5.2	4.8 ab
Aspire	Asgrow	2.3	2.0	1.1	5.4	4.7 ab
DK 134	DeKalb	2.3	2.0	1.1	5.4	4.7 ab
FG 4200	Forage Genetics	2.3	1.9	1.2	5.5	4.7 ab
54Q53	Pioneer	2.3	1.9	1.2	5.4	4.7 ab
WL 232 HQ	WL Research	2.2	2.0	1.1	5.3	4.7 ab
HybriForce™ 400	Dairyland	2.1	1.9	1.1	5.1	4.6 ab
AmeriStand 201	ABI Alfalfa	2.3	2.0	1.0	5.3	4.6 ab
Gold Plus	M.B.S., Inc.	2.4	1.8	1.1	5.2	4.5 b
Vernal	USDA-WI AES	2.1	2.0	0.8	4.9	4.5 b
Average		2.34	2.05	1.14	5.53	4.85
CV (%)		8.3	10.1	10.5	6.7	5.0
LSD (0.10)		0.23	N.S.	0.14	0.44	0.29

<sup>1/</sup> Tukey's Test: Yields followed by the same letter are not statistically different.

<sup>2/</sup> Trial conducted on the Sherrel Mix farm, Rio Grande County Roads 8N & 1W; seeded at 16 lbs/acre on 6/16/2000.

<sup>3/</sup> Yields calculated on oven-dry basis.

Harvest dates in 2004 were June 16, July 24, and September 21.

**Table 2. Three Year Alfalfa Variety Performance Trial Results, San Luis Valley<sup>2/</sup>, 2001-2004.**

Variety	Source	2002	2003	2004	3 Year Average <sup>1/</sup>
		-----tons/acre <sup>3</sup> -----			
WL 327	WL Research	7.4	5.9	5.9	5.1 a
DK 143	DeKalb	7.1	6.0	6.0	5.1 a
FG 3R139	Forage Genetics	7.2	5.9	6.0	5.1 ab
Pro Gro	M.B.S., Inc.	7.3	5.6	5.7	5.1 ab
Baralfa 42IQ	Barenbrug	7.1	5.8	5.8	5.0 ab
Select	Forage Genetics	7.3	5.9	5.7	5.0 ab
53V08	Pioneer	7.1	5.8	5.7	5.0 ab
WL 325 HQ	WL Research	7.2	5.8	5.8	5.0 ab
Magnum V	Dairyland	7.2	6.1	5.6	5.0 ab
Geneva	Novartis	7.0	5.9	5.8	5.0 ab
Abound	Asgrow	7.1	5.8	5.6	4.9 ab
DK 142	DeKalb	7.1	5.8	5.5	4.9 ab
Columbia 2000	Public	7.1	5.7	5.5	4.9 ab
Award	Asgrow	6.7	5.5	5.5	4.8 ab
Ranger	USDA-NE AES	6.9	5.5	5.2	4.8 ab
Aspire	Asgrow	6.8	5.5	5.4	4.7 ab
DK 134	DeKalb	6.9	5.5	5.4	4.7 ab
FG 4200	Forage Genetics	6.8	5.5	5.5	4.7 ab
54Q53	Pioneer	6.8	5.7	5.4	4.7 ab
WL 232 HQ	WL Research	6.9	5.5	5.3	4.7 ab
HybriForce™-400	Dairyland	6.8	5.6	5.1	4.6 ab
AmeriStand 201	ABI Alfalfa	6.5	5.1	5.3	4.6 ab
Gold Plus	M.B.S., Inc.	6.5	5.0	5.2	4.5 b
Vernal	USDA-WI AES	6.6	5.6	4.9	4.5 b
<b>Average</b>		<b>7.0</b>	<b>5.67</b>	<b>5.53</b>	<b>4.85</b>
<b>CV ( %)</b>		<b>4.6</b>	<b>8.3</b>	<b>6.7</b>	<b>5.0</b>
<b>LSD (0 .10)</b>		<b>0.38</b>	<b>N.S.</b>	<b>0.44</b>	<b>0.29</b>

<sup>1/</sup> Tukey's Test: Yields followed by the same letter are not statistically different.

<sup>2/</sup> Trial conducted on the Sherrel Mix farm, Rio Grande County Roads 8N & 1W; seeded at 16 lbs/acre on 6/16/2000.

<sup>3/</sup> Yields calculated on oven-dry basis.