



The 2013 New Mexico Alfalfa Variety Test Report



Agricultural Experiment Station
College of Agricultural, Consumer
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Introduction

In 2013, 180,000 acres of alfalfa (*Medicago sativa*) were in production in New Mexico, down from 210,000 acres in 2012. Hay yields were estimated at 954,000 tons. At a January through November 2013 average of \$256/ton (down from \$271 in 2012), estimated gross returns from 954,000 tons of alfalfa hay produced in 2013 will total approximately \$244 million. This would be a decrease from the \$281 million received in 2012, but it sustains alfalfa hay's position as New Mexico's No. 1 cash crop (New Mexico Agricultural Statistics Service, www.nass.usda.gov/nm). Alfalfa also is the legume of choice in irrigated perennial pastures. Whether used as pasture or hay, the value of alfalfa to New Mexico is greatly magnified by its contribution to livestock production and receipts from the sale of meat, milk, and other products generated by livestock enterprises.

Choosing a good alfalfa variety is a key step in establishing a highly productive stand of alfalfa, whether for hay or pasture. Differences between the highest- and lowest-yielding varieties in irrigated tests included in this report ranged from 1.09 to 3.89 tons per acre in 2013. If sold as hay, this translates to a difference in returns of \$279 to \$996 per acre due to variety, or an increase of at least \$50.2 million for the industry in 2013 alone.

This report, which is a collaborative effort of New Mexico State University scientists at agricultural science centers throughout the state, provides yield data for alfalfa varieties included in yield trials in New Mexico. While consistently high yields compared to other varieties over a number of years and locations within a region is the best indication of varietal adaptation and persistence, other factors should be considered in the variety selection process (see NMSU's Cooperative Extension Service Circular 654, *Selecting alfalfa varieties for New Mexico*). In addition to fall dormancy and winter hardiness, high levels of pest resistance are critical to protecting an alfalfa stand for long-term production. Alfalfa grown in New Mexico should have at least a resistant (R) rating for bacterial wilt, Fusarium wilt, anthracnose, Phytophthora root rot, spotted alfalfa aphid, blue alfalfa aphid, pea aphid, stem nematode, and southern rootknot nematode. Seed quality also should be high. Selecting an alfalfa variety based on seed cost is a gamble producers often lose. To be assured of achieving a long-lasting, highly productive stand, buy either certified or Plant Variety Protected (PVP) seed, which guarantees the genetics and performance. The best choice of seed of any variety is one that was treated with a fungicide and nitrogen-fixing bacteria before it was bagged.

Description of Tests

Replicated alfalfa variety tests included in this report were conducted under research controls at NMSU's Agricultural Science Centers at Las Cruces (standard and limited irrigation studies sown in 2010), Artesia (2011), Tucumcari (standard and Roundup Ready®, both sown in 2012 irrigated with treated municipal wastewater), Los Lunas (2009), and Farm-

ington (2009 and spring 2012). Weather data for 2013 and the long-term averages from all locations are presented in table 1.

Yield data (on a dry matter basis) are presented in tables 2-9. Varieties are listed in order from highest to lowest average annual production. Yields are given by cutting for 2013 and by year for each production year. Statistical analyses were performed on all alfalfa yield data (including experimentals) to determine if the apparent differences are truly due to variety or just to chance. The variety with the highest numerical yield in each column is marked with two asterisks (**), and those varieties not significantly different from that variety are marked with one asterisk (*). Those are the varieties from which to make an initial selection. Otherwise, to determine if two varieties are truly different, compare the difference between the two varieties to the Least Significant Difference (LSD) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different in yield when grown under the conditions at a given location. If NS is given for the LSD, there was no statistical difference between the highest and lowest yielding varieties. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability (<20 percent) is desirable, and increased variability within a study results in higher CVs and larger LSDs. There might be a difference between previously published data and the data given in this publication for the same tests because of differences in the programs used for statistical analysis.

Table 10 summarizes information about proprietors, Roundup Ready genetics, fall dormancy, winter survival (measured in the northern United States), pest resistance, and yield performance across years and locations for all varieties currently included in NMSU's alfalfa variety testing program. Varieties are listed alphabetically by fall dormancy category. As in the data tables, the variety with the highest numerical yield in each column is marked with two asterisks (**), and those varieties not significantly different from that variety are marked with one asterisk (*). Remember good performance across several years and locations is the best indicator of broad adaptation, pest resistance, and persistence.

Seed labeled "common," "variety not stated," or "variety unknown", particularly that from other states, is of unknown genetic background and may or may not have the necessary disease or insect resistance. New Mexico Common and African Common seed used in all tests throughout the state has come from the same supplier and seed fields in New Mexico. Seed purchased from other dealers may or may not be of the same quality and performance.

Summary

Consistent production of high alfalfa yields is the result of selecting good varieties and implementing good management techniques. Soil fertility should be maintained at recommended levels based on soil tests, irrigation should be properly applied, weeds and insects should be controlled using appropriate cultural and/or chemical methods, and harvest man-

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agement should allow sufficient time to restock root energy prior to winter. For dormant (FD 1 to 3) and semidormant (FD 4 to 6) varieties, a 6-week rest period before a dormancy-inducing freeze (27°F) is recommended to allow plants to replenish root reserves for winter survival and initiate spring growth, after which harvesting might be done either mechanically or by grazing. Non-dormant (FD 7 to 9) varieties also might benefit from this rest period. Removing fall growth is beneficial to reducing weevil populations the following year as eggs are laid in and overwinter in stems. Harvesting established stands at early bloom would result in 3 to 5 cuttings per year before initiation of the rest period in most areas of New Mexico. More dormant varieties might not produce balable yields during the rest period; however, these can still be grazed. For further information about alfalfa management, refer to the other NMSU Cooperative Extension Service publications listed in table 11.

Acknowledgements

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Table 1. Temperature and precipitation data for 2013 and the long-term averages for the New Mexico Alfalfa Variety Test locations.

Location	Las Cruces ¹				Artesia				Tucumcari				Los Lunas				Farmington			
	Elevation 3832 ft. Latitude 32° 12' N				3366 ft. 32° 45' N				4091 ft. 35° 12' N				4840 ft. 34° 46' N				5640 ft. 36° 41' N			
Month	Temp. (°F)		Precip. (in.)		Temp. (°F)		Precip. (in.)		Temp. (°F)		Precip. (in.)		Temp. (°F)		Precip. (in.)		Temp. (°F)		Precip. (in.)	
	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.	13	Avg.
Nov-12	51	50	0.02	0.53	52	49	0.11	0.54	53	47	0.00	0.70	45	44	0.06	0.46	44	41	0.69	0.64
Dec-12	42	42	0.16	0.68	41	41	0.01	0.50	43	39	0.50	0.62	35	35	0.20	0.52	31	31	0.24	0.46
Jan-13	39	42	0.29	0.56	40	41	0.63	0.39	38	38	0.40	0.40	30	35	0.10	0.36	24	30	0.88	0.50
Feb-13	44	46	0.14	0.37	44	45	0.00	0.43	43	42	0.88	0.47	36	40	0.60	0.41	32	36	0.07	0.49
Mar-13	57	52	0.00	0.22	53	52	0.00	0.43	51	49	0.00	0.75	48	47	0.23	0.50	44	43	0.14	0.65
Apr-13	63	59	0.00	0.21	59	60	0.00	0.63	55	57	0.01	1.12	56	55	0.23	0.46	50	51	0.49	0.59
May-13	70	68	0.01	0.29	70	69	0.73	1.22	68	66	0.82	1.88	66	63	0.00	0.46	60	60	0.23	0.51
Jun-13	82	77	0.32	0.72	81	78	0.10	1.42	80	76	1.13	1.89	77	72	0.11	0.61	73	70	0.00	0.24
Jul-13	78	80	2.38	1.36	78	80	3.20	1.76	80	79	1.23	2.64	77	77	4.14	1.25	77	76	0.54	0.83
Aug-13	78	78	0.90	2.29	80	78	0.06	1.70	81	77	0.92	2.74	76	75	1.11	1.70	73	74	1.34	1.04
Sep-13	72	72	1.79	1.38	72	71	3.65	1.80	73	70	4.58	1.57	70	67	2.54	1.17	67	66	3.29	1.05
Oct-13	58	61	0.00	0.91	63	61	0.03	1.18	58	59	0.26	1.32	54	56	0.08	1.04	50	54	0.66	0.99
Annual	61	61	6.01	9.52	61	60	8.52	12.00	60	58	10.73	16.10	56	55	9.40	8.93	52	53	8.57	7.99

¹Long-term averages for the Las Cruces test site are from NMSU's weather station, located approximately 5.5 miles to the north.

Table 2. Dry matter yields (tons/acre) of alfalfa varieties sown October 8, 2010, at NMSU's Leyendecker Plant Science Research Center at Las Cruces and flood-irrigated every 14 days†.

Variety Name	2011 Total	2012 Total	2013 Harvests							2013 Total‡	3-yr Average
			21-Apr	23-May	26-Jun	21-Aug	17-Sep	17-Oct	20-Nov		
NuMex Bill Melton	10.75*	11.12*	1.04*	0.96*	1.28*	1.55**	1.43*	0.79	0.05	7.10*	9.65**
NM0306	10.59*	11.12*	1.12**	0.90	1.27*	1.46*	1.39*	0.68	0.03	6.84*	9.52*
CW058071	9.92	11.56**	0.91*	0.97*	1.31**	1.44*	1.40*	0.88*	0.18	7.07*	9.52*
NM08251	10.73*	10.46*	0.95*	0.99*	1.25*	1.53*	1.45**	0.78	0.09	7.03*	9.41*
NM10-0307	11.19**	10.37*	0.91*	0.87	1.17*	1.37	1.28	0.72	0.02	6.35	9.30*
SuperSonic	10.78*	10.92*	0.75	0.78	1.17*	1.39	1.28	0.73	0.10	6.20	9.30*
WL 656HQ	9.73	10.72*	0.92*	0.96*	1.26*	1.40	1.45**	0.96**	0.36**	7.32**	9.25*
NM07240	10.44*	10.33*	0.86	0.87	1.16*	1.39	1.34*	0.80	0.14	6.55	9.11*
WL 535HQ	9.30	10.53*	0.89	0.96*	1.31**	1.41	1.36*	0.89*	0.30	7.11*	8.98*
NM08244	10.46	10.11	0.87	0.86	1.19*	1.40	1.27	0.67	0.08	6.34	8.97*
PGI 908S	9.70*	10.09	1.04*	1.02**	1.21*	1.37	1.42*	0.81	0.26	7.11*	8.97*
59N59	10.11	10.28	0.83	0.90	1.17*	1.36	1.32*	0.80	0.11	6.48	8.96*
RD74	10.09	10.19	0.78	0.82	1.15*	1.37	1.27	0.71	0.10	6.19	8.82
Wilson	10.03	10.21	0.91*	0.88	1.13	1.37	1.25	0.62	0.04	6.18	8.80
NM08241	10.15	9.93	0.81	0.85	1.08	1.34	1.32	0.75	0.12	6.26	8.78
56S82	9.61	9.35	0.82	0.81	1.01	1.24	1.21	0.57	0.02	5.67	8.21
6010	9.49	9.09	0.77	0.76	1.04	1.30	1.28	0.54	0.06	5.75	8.11
Dona Ana	9.83	8.73	0.55	0.66	0.96	1.22	1.10	0.56	0.03	5.07	7.88
Mean	10.16	10.28	0.87	0.88	1.17	1.38	1.32	0.73	0.11	6.48	8.97
LSD (0.05)	0.87	1.27	0.23	0.12	0.18	0.12	0.16	0.14	0.07	0.74	0.80
CV%	6.06	8.71	18.42	9.95	10.85	6.22	8.54	13.22	40.64	8.00	10.82

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

‡A late April 2013 freeze, along with alfalfa weevil damage, caused first and second harvest yields (April and May) to be lower than average. This in turn reduced the overall 2013 yield mean.

2011 Harvest dates: 27-Apr, 26-May, 24-Jun, 28-Jul, 31-Aug, and 13-Oct.

2012 Harvest dates: 23-Apr, 29-May, 26-Jun, 25-Jul, 29-Aug, 16-Oct, and 12-Nov.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 3. Dry matter yields (tons/acre) of alfalfa varieties sown October 11, 2010, at NMSU's Leyendecker Plant Science Research Center at Las Cruces and flood-irrigated every 28 days†.

Variety Name	2011 Total	2012 Total	2013 Harvests							2013 Total‡	3-yr Average
			20-Apr	27-May	27-Jun	1-Aug	8-Sep	6-Oct	18-Nov		
NuMex Bill Melton	6.73**	6.56*	1.42*	1.00**	0.88*	1.13**	1.00*	0.58*	0.45	6.53**	6.63**
NM07227	5.84*	6.93**	1.47**	0.98*	1.06**	1.09*	1.05*	0.45*	0.19	6.23*	6.37*
NM08195	6.35*	6.19*	1.15	0.90*	0.95*	1.12*	1.05*	0.56*	0.52*	6.24*	6.26*
NM07235	5.91*	5.95	1.09	1.00**	0.89*	1.02*	1.08*	0.57*	0.50*	6.22*	6.06*
59N59	5.41	6.42*	1.18	1.00**	1.03*	1.07*	1.09**	0.61**	0.52*	6.29*	6.03*
NM08231	6.15*	5.62	1.12	0.97*	0.85*	0.97*	1.01*	0.53*	0.49*	6.11*	6.01*
PGI 908-S	5.66	6.16*	0.99	0.95*	0.79*	1.00*	1.02*	0.51*	0.58**	5.87*	5.92
Wilson	5.70	6.09*	1.35*	0.85*	0.77*	0.99*	1.02*	0.41*	0.26	5.66*	5.75
CW058071	5.39	5.65	0.99	0.98*	0.88*	1.08*	1.09**	0.61**	0.55*	6.17*	5.70
NM07-0306	6.15*	5.54	1.21	0.81*	0.81*	0.92*	0.91*	0.43*	0.34	5.35*	5.66
56S82	5.51	5.64	1.30*	0.78	0.77*	0.95*	0.97*	0.51*	0.28	5.55*	5.56
Dona Ana	5.34	5.11	1.01	0.82*	0.84*	0.97*	0.91*	0.47*	0.29	5.29*	5.27
NM08281	5.43	5.12	0.96	0.84*	0.74*	0.90*	0.96*	0.46*	0.38	5.25*	5.26
NM08196	5.37	4.99	0.87	0.76	0.74*	0.91*	0.96*	0.41*	0.22	4.87*	5.05
NM07237	4.42	4.93	1.01	0.73	0.64*	0.89*	1.00*	0.40*	0.41	5.11*	4.81
Mean	5.69	5.79	1.14	0.89	0.84	1.00	1.01	0.50	0.40	5.78	5.76
LSD (0.05)	1.03	0.92	0.26	0.20	NS	NS	NS	NS	0.12	NS	0.78
CV%	12.62	11.13	16.23	15.34	20.48	13.18	17.62	24.48	21.30	13.43	16.46

†Data were analyzed using analysis of covariance where alternating plots of 58N57 were used as the covariate.

‡A late April 2013 freeze did not impact first and second harvest yields (April and May) or 2013 total yields as it did for the study in Table 2.

2011 Harvest dates: 21-Apr, 26-May, 26-Jun, 30-Jul, 1-Sep, and 18-Oct.

2012 Harvest dates: 17-Apr, 1-Jun, 30-Jun, 9-Aug, 14-Sep, and 20-Oct.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 4. Dry matter yields (tons/acre) of sprinkler-irrigated alfalfa varieties sown September 12, 2011, at NMSU's Agricultural Science Center at Artesia†.

Variety Name	2012	2013 Harvests						2013	2-yr Average
	Total	8-May	6-Jun	8-Jul	5-Aug	4-Sep	18-Oct	Total	
GrandSlam	9.40**	0.92*	2.01*	2.52**	1.68*	1.62*	1.31*	10.14*	9.77**
RGO2011	8.91*	1.08*	2.01*	2.48*	1.70*	1.61*	1.40*	10.32*	9.60*
Arriba II	8.58*	1.19*	2.21**	2.04*	1.97**	1.78**	1.48*	10.47**	9.48*
Malone	8.95*	0.97*	1.80*	2.30*	1.82*	1.55*	1.26*	9.73*	9.39*
Wilson	7.71	1.01*	1.78*	2.36*	1.77*	1.74*	1.50**	10.16*	8.96*
58N57	7.87	0.91*	2.02*	2.43*	1.77*	1.54*	1.33*	9.94*	8.90
Dona Ana	8.00	1.01*	1.87*	2.32*	1.79*	1.45*	1.31*	9.70*	8.84
Mesa	7.35	0.99*	2.01*	2.43*	1.70*	1.60*	1.48*	10.30*	8.82
HybriForce-2600	7.80	0.98*	1.80*	2.37*	1.76*	1.51*	1.29*	9.76*	8.78
DS611	7.30	1.25**	1.95*	2.39*	1.71*	1.51*	1.44*	10.26*	8.77
Key II	7.77	0.89*	1.64*	2.42*	1.67*	1.62*	1.47*	9.63*	8.65
NM Common	7.07	0.94*	1.90*	2.51*	1.81*	1.67*	1.37*	10.18*	8.64
DS919	7.60	1.10*	1.74*	2.31*	1.58*	1.47*	1.34*	9.58*	8.63
African Common	7.13	0.87*	1.83*	2.46*	1.72*	1.59*	1.61*	10.02*	8.53
AmeriStand 901TS	7.65	0.99*	1.67*	2.05*	1.66*	1.63*	1.29*	9.34*	8.52
Cimarron VL500	7.25	1.09*	1.93*	2.21*	1.68*	1.45*	1.23*	9.70*	8.50
DS815	7.49	0.96*	1.66*	2.34*	1.60*	1.48*	1.34*	9.46*	8.50
56S82	6.99	0.95*	1.87*	2.41*	1.77*	1.63*	1.30*	9.90*	8.46
Zia	7.25	0.94*	1.81*	2.31*	1.77*	1.52*	1.12*	9.45*	8.36
Archer III	6.81	0.89*	1.82*	2.23*	1.70*	1.54*	1.46*	9.70*	8.24
GrandStand	7.30	0.91*	1.70*	2.11*	1.61*	1.53*	1.38*	9.21*	8.23
DG 4210	6.54	0.90*	1.61*	2.15*	1.63*	1.61*	1.31*	9.13*	7.82
Mean	7.67	0.99	1.85	2.32	1.72	1.57	1.37	9.82	8.75
LSD (0.05)	1.31	NS	NS	NS	NS	NS	NS	NS	0.82
CV%	12.09	22.60	14.75	10.42	9.47	12.81	16.26	7.99	9.39

†Data were analyzed using analysis of covariance where alternating plots of 56S82 were used as the covariate.

2012 Harvest dates: 26-Apr, 5-Jun, 3-Jul, 1-Aug, 4-Sep and 18-Oct.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 5. Dry matter yields (tons/acre) of alfalfa varieties sown September 26, 2012, at NMSU's Agricultural Science Center at Tucumcari and sprinkler-irrigated twice per week with treated municipal wastewater†.

Variety Name	2013 Harvests					2013 Total
	5-Jun	25-Jun	1-Aug	23-Sep	6-Nov	
56S82	0.43**	1.07*	0.39	1.29*	0.73**	3.90**
Malone	0.24	1.04*	0.64**	1.31**	0.67*	3.90**
Roadrunner	0.32	1.08*	0.51*	1.22*	0.40	3.52*
NuMex Bill Melton	0.17	0.99*	0.44*	1.16*	0.70*	3.45*
Dona Ana	0.21	0.91	0.33	1.13	0.70*	3.28
Mallard	0.28	1.10**	0.37	1.23*	0.27	3.26
WL 454HQ.RR	0.20	0.87	0.35	1.10	0.72*	3.23
NM Common	0.21	0.89	0.32	1.17*	0.62*	3.20
African Common	0.24	0.86	0.31	1.14*	0.64*	3.18
54QR04	0.26	1.00*	0.38	1.21*	0.27	3.12
Integra8400	0.22	1.03*	0.21	1.19*	0.36	3.00
Wilson	0.19	0.96*	0.27	1.12	0.42	2.95
55Q27	0.18	1.00*	0.30	1.08	0.38	2.93
BluejayHR	0.22	0.92*	0.32	1.12	0.30	2.88
Bluejay2	0.17	0.89	0.20	1.06	0.45	2.76
6422Q	0.15	0.93*	0.30	1.04	0.31	2.72
Meadowlark	0.21	0.92*	0.26	1.06	0.23	2.67
54VR03	0.18	0.73	0.27	0.99	0.34	2.52
HybriForce-2400	0.25	0.88	0.16	0.86	0.14	2.27
Mean	0.23	0.95	0.33	1.13	0.45	3.09
LSD (0.05)	0.08	0.19	0.21	0.17	0.22	0.60
CV%	24.30	13.81	45.43	10.57	33.84	13.69

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 6. Dry matter yields (tons/acre) of Roundup Ready® alfalfa varieties sown September 26, 2012, at NMSU's Agricultural Science Center at Tucumcari and sprinkler-irrigated twice per week with treated municipal wastewater†.

Variety Name	2013 Harvests					2013 Total
	5-Jun	25-Jun	1-Aug	23-Sep	6-Nov	
R77T729	0.55**	1.17*	0.39**	1.17*	0.72*	4.00**
R66BX312	0.51*	1.10*	0.34*	1.17*	0.69*	3.81*
R65BD278	0.44*	1.20**	0.26	1.23**	0.65	3.77*
R78T823	0.47*	1.08*	0.29*	1.08*	0.80**	3.72*
R66BX320	0.46*	0.92*	0.32*	1.06*	0.69*	3.45*
RR57K337	0.47*	1.08*	0.38*	1.12*	0.38	3.43*
R57A136	0.46*	1.10*	0.26	1.14*	0.44	3.39*
R66BX311	0.30	0.85	0.28*	1.19*	0.67	3.29
R58HG236	0.32	1.10*	0.35*	1.01*	0.43	3.22
R65BD277	0.36	0.93*	0.33*	1.04*	0.53	3.18
R57K138	0.37	0.89*	0.24	1.06*	0.40	2.96
R65BD279	0.28	0.90*	0.21	0.89	0.66	2.94
54VR03	0.36	0.86	0.20	1.00*	0.39	2.81
R57W213	0.34	0.86	0.23	0.87	0.47	2.77
R57OK217	0.34	0.87	0.26	0.92	0.33	2.71
R57OK216	0.26	0.75	0.24	1.01*	0.39	2.64
54QR04	0.27	0.81	0.21	0.99	0.30	2.57
R86X214	0.19	0.75	0.14	0.82	0.34	2.24
Mean	0.36	0.92	0.27	1.02	0.50	3.07
LSD (0.05)	0.18	0.33	0.13	0.24	0.12	0.71
CV%	35.68	24.83	35.64	16.80	16.39	16.31

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 7. Dry matter yields (tons/acre) of alfalfa varieties sown September 30, 2009, at NMSU's Agricultural Science Center at Los Lunas and flood-irrigated twice per cutting†.

Variety Name	2010	2011	2012	2013 Harvests				2013	4-yr
	Total	Total	Total	28-May	3-Jul	31-Jul	25-Sep	Total	Average
WL 440HQ	6.81*	7.99*	8.06*	1.77*	2.63**	1.75*	1.25*	7.40**	7.57**
Artesian Sunrise	6.78*	8.26**	8.12*	1.55	2.51*	1.77*	1.27**	7.10*	7.56*
Dona Ana	6.99**	8.05*	8.18*	1.46	2.19*	1.78*	1.12*	6.55	7.44*
NM Common	6.41*	7.87*	8.38*	1.50	2.35*	1.85**	1.25*	6.95*	7.40*
HybriForce-2400	6.66*	7.65*	8.47**	1.82*	2.13*	1.64*	1.11*	6.71	7.37*
Dura 843	6.95*	7.45	8.02*	1.83*	2.26*	1.63*	1.22*	6.94*	7.34*
Malone	6.63*	7.73*	8.27*	1.47	2.12*	1.65*	1.26*	6.50	7.28*
Mountaineer 2.0	6.70*	7.59*	8.12*	1.50	2.28*	1.74*	1.11*	6.63	7.26*
Maxi Graze	6.37*	7.24	8.10*	1.87**	2.17	1.72*	1.10*	6.86*	7.14*
AmeriStand 201+Z	6.30*	7.39	7.76*	1.84*	2.45*	1.59*	1.21*	7.08*	7.13*
WL 363HQ	6.51*	7.47	7.66*	1.66*	2.28*	1.79*	1.07*	6.80*	7.11*
4S417	6.85*	7.27	7.43	1.50	2.51*	1.59*	1.09*	6.69	7.06*
Rugged	6.66*	7.18	7.55	1.60*	2.35*	1.64*	1.07*	6.67	7.01*
African Common	6.06*	7.50	7.56	1.46	2.26*	1.80*	1.27**	6.79	6.97
HybriForce-2420/Wet	6.43*	6.94	7.39	1.54	2.61*	1.72*	1.13*	7.00*	6.94
Velvet	6.67*	7.42	7.19	1.77*	2.10	1.51*	1.08*	6.45	6.93
Wilson	6.76*	7.70	7.36	1.50	1.79	1.51*	1.10*	5.90	6.93
LegenDairy 5.0	6.36*	6.62	7.58	1.55	2.04	1.66*	1.05*	6.30	6.71
6422Q	6.50*	7.10	6.94	1.19	2.07	1.78*	1.04*	6.08	6.65
6305Q	5.81*	6.29	7.24	1.34	2.40*	1.60*	0.97*	6.31	6.41
Mean	6.56	7.44	7.77	1.59	2.27	1.69	1.14	6.68	7.11
LSD (0.05)	NS	0.76	0.85	0.31	0.32	NS	NS	0.65	0.59
CV%	8.43	7.22	7.74	13.60	10.01	9.23	12.31	6.91	11.74

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

2010 Harvest dates: 19-May, 30-Jun, 3-Aug, 8-Sep, and 29-Oct.

2011 Harvest dates: 25-May, 29-Jun, 3-Aug, 22-Sep, and 2-Nov.

2012 Harvest dates: 21-May, 29-Jun, 9-Aug, and 9-Oct.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 8. Dry matter yields (tons/acre) of sprinkler-irrigated alfalfa varieties sown August 26, 2009, at NMSU's Agricultural Science Center at Farmington†.

Variety Name	2010 Total	2011 Total	2012 Total	2013 Harvests				2013 Total	4-yr Average
				4-Jun	11-Jul	20-Aug	1-Oct		
Lahontan	9.76**	10.42**	11.92**	3.31	2.46*	2.22*	1.33	9.26*	10.34**
Mountaineer 2.0	9.35*	9.75*	11.48*	3.72*	2.74*	2.22*	1.52*	10.19*	10.19*
4S417	9.19*	9.50	11.93*	3.59*	2.68*	2.17*	1.54*	9.98*	10.15*
SW435	8.99	9.65*	11.32*	3.80*	2.67*	2.22*	1.68**	10.37**	10.08*
HybriForce-2400	9.40*	9.02	11.06*	3.48*	2.60*	2.25**	1.52*	9.85*	9.83*
6305Q	8.51	9.15	11.12*	3.99**	2.76**	2.08*	1.39*	10.22*	9.75*
WL 440HQ	9.09	9.16	11.35*	2.83	2.55*	2.22*	1.53*	9.13	9.68*
LegenDairy 5.0	9.22*	9.30	10.83*	3.59*	2.59*	2.00	1.18	9.36*	9.68*
HybriForce-2420/Wet	8.69	9.23	11.11*	3.66*	2.51*	1.97	1.49*	9.64*	9.67*
AmeriStand 201+Z	8.59	9.45	10.99*	3.48	2.50*	1.95	1.34	9.26*	9.57
Rugged	8.62	8.92	10.75*	3.40	2.61*	1.97	1.24	9.22*	9.38
Dura 843	9.29	8.67	10.84*	3.14	2.34	2.00	1.22	8.69	9.37
Artesian Sunrise	9.03	8.42	11.38*	2.89	2.31	2.01	1.41*	8.61	9.36
Dona Ana	9.15*	9.45	10.62	2.55	2.21	1.86	1.29	7.90	9.28
6422Q	8.37	8.61	10.40	3.37	2.71*	2.02	1.31	9.42*	9.20
Ranger	8.52	8.76	10.57	3.36	2.30	1.88	1.17	8.71	9.14
Maxi Graze	8.25	9.02	10.21	3.26	2.48*	1.92	1.28	8.95	9.11
WL 363HQ	9.14	8.64	9.88	3.33	2.59*	1.82	1.02	8.77	9.10
Malone	8.60	8.83	10.99*	2.59	2.11	1.87	1.28	7.84	9.06
Velvet	8.62	8.76	9.94	2.86	2.57*	1.96	1.09	8.47	8.95
NM Common	8.90	9.01	10.40	2.52	1.90	1.64	0.89	6.94	8.81
SW6330	8.90	8.79	10.48	2.17	1.71	1.91	1.14	6.93	8.78
African Common	9.16	8.85	9.23	2.18	1.78	1.71	0.89	6.56	8.45
Wilson	8.74	8.36	9.31	2.11	1.73	1.81	0.83	6.48	8.22
Mean	8.92	9.07	10.75	3.13	2.39	1.98	1.27	8.78	9.38
LSD (0.05)	0.63	0.90	1.30	0.57	0.41	0.23	0.31	1.17	0.70
CV%	4.99	7.02	8.59	12.80	12.13	8.38	17.30	9.45	10.50

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

2010 Harvest dates: 4-Jun, 14-Jul, 24-Aug, and 14-Oct.

2011 Harvest dates: 7-Jun, 13-Jul, 18-Aug, and 11-Oct.

2012 Harvest dates: 5-Jun, 12-Jul, 16-Aug, and 2-Oct.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 9. Dry matter yields (tons/acre) of sprinkler-irrigated alfalfa varieties sown May 9, 2012, at NMSU's Agricultural Science Center at Farmington†.

Variety Name	2012 Total	2013 Harvests				2013 Total	2-yr Average
		6-Jun	12-Jul	21-Aug	2-Oct		
HybriForce Mesa	4.16*	3.13*	2.53*	2.45**	1.66*	9.77**	6.97**
MagnaGraze	4.21*	3.04*	2.55*	2.21*	1.84**	9.64*	6.92*
DG4210	3.98*	3.16**	2.71**	2.09*	1.59*	9.55*	6.76*
Creeping Crown	4.33*	2.90*	2.34*	2.11*	1.62*	8.97*	6.65*
Archer III	4.13*	2.90*	2.48*	1.88	1.62*	8.88*	6.50*
Gunner	3.90*	2.90*	2.41*	2.15*	1.62*	9.08*	6.49*
MagnaGraze II	3.94*	2.95*	2.55*	2.07	1.33*	8.90*	6.42*
WL 440HQ	4.37*	2.72*	2.24*	1.97	1.54*	8.46*	6.42*
Lahontan	4.20*	2.66*	2.35*	2.07	1.48*	8.56*	6.38*
Mountaineer 2.0	3.77*	2.84*	2.29*	2.15*	1.68*	8.96*	6.36*
WL 363HQ	3.75*	2.50*	2.19	2.13*	1.57*	8.39*	6.07*
Ranger	3.65*	2.66*	2.21*	2.17*	1.37*	8.41*	6.03*
GrandStand	4.15*	2.43*	2.14	1.94	1.35*	7.87	6.01*
WL 354HQ	3.81*	2.82*	2.05	1.84	1.35*	8.06*	5.93*
NM Common	4.30*	2.31	1.98	1.80	1.41*	7.49	5.90*
African Common	4.10*	2.42	1.97	1.77	1.27*	7.43	5.77
Dona Ana	4.65**	1.95	2.00	1.76	1.09*	6.81	5.73
Arrowhead II	3.39*	2.21	2.09	2.31*	1.42*	8.03	5.71
54VR03	3.45*	2.39	1.93	1.80	1.27*	7.40	5.42
Malone	3.64*	1.84	1.73	1.78	1.36*	6.71	5.17
Wilson	3.29*	1.75	1.72	2.07	1.48*	7.01	5.15
Zia	4.18*	1.60	1.51	1.34	1.00*	5.45	4.81
Mean	3.97	2.55	2.18	1.99	1.45	8.17	6.07
LSD (0.05)	NS	0.74	0.52	0.37	NS	1.72	1.13
CV%	14.14	20.60	16.79	12.98	21.74	14.89	18.70

†Data were detrended using nearest neighbor analysis, and analyzed using analysis of variance.

2012 Harvest dates: 13-Jul, 14-Aug, and 3-Oct.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 10. Characteristics and performance of alfalfa varieties across years and tests in New Mexico.		Varietal Characteristics ¹											Las Cruces						Artesia		Tucumcari		Los Lunas				Farmington									
													2010 ²						2011		2012		2009		2009		2012									
		Pest resistance											F ³			L			2011		Std ⁴		RR ^{®5}		2009				2009		2012					
		Variety	Proprietor	RR	FD	WS	BW	FW	AN	PRR	SAA	PA	BAA	SN	RKN	11 ⁶	12	13	11	12	13	12	13	13	13	10	11	12	13	10	11	12	13	12	13	
AmeriStand 201+Z	America's Alfalfa		2	2	HR	HR	R	HR	HR	n/r	R	n/r	n/r												*	*	*			*	*					
Arrowhead II	Dairyland Seed Co.		2	2	HR	HR	HR	HR	n/r	R	n/r	HR	n/r																				*			
Creeping Crown	Dairyland Seed Co.		2	2	HR	HR	HR	HR	n/r	R	n/r	HR	n/r																				*	*		
Maxi Graze	Croplan Genetics		2	2	HR	HR	R	HR	n/r	n/r	n/r	n/r	n/r												*	*	*									
Velvet	Producer's Chioce Seed		2	1	HR	HR	HR	HR	n/r	HR	S	n/r	n/r												*											
6305Q	Nexgrow Alfalfa		3	1	HR	HR	HR	HR	HR	n/r	n/r	R	MR												*					*	*					
LegenDairy 5.0	Croplan Genetics		3	2	HR	HR	HR	HR	R	R	n/r	MR	R											*			*	*	*							
MagnaGraze	Dairyland Seed Co.		3	2	HR	HR	R	HR	R	n/r	MR	MR	LR																				*	*		
MagnaGraze II	Dairyland Seed Co.		3	2	HR	HR	HR	n/r	R	n/r	n/r	R	n/r																				*	*		
Ranger	USDA, Univ. of Nebraska		3	n/r	R	n/r	n/r	n/r	R	n/r	n/r	R	n/r																				*	*		
Rugged	Producer's Chioce Seed		3	1	R	MR	R	MR	n/r	HR	n/r	MR	n/r											*						*	*					
4S417	Mycogen Seed		4	2	HR	HR	HR	HR	n/r	n/r	n/r	HR	R											*			*	**	*							
54QR04	Pioneer HiBred Int'l	Y	4	n/r	HR	HR	HR	HR	n/r	n/r	n/r	n/r	n/r																					*		
54VRO3	Pioneer HiBred Int'l	Y	4	n/r	HR	HR	HR	HR	n/r	HR	n/r	n/r	n/r																						*	
6422Q	Nexgrow Alfalfa		4	1	HR	HR	HR	HR	n/r	R	n/r	R	n/r											*						*						
Bluejay 2	Blue River Hybrids		4	2	HR	HR	HR	HR	R	HR	n/r	n/r	n/r																							
Bluejay HR	Blue River Hybrids		4	2	HR	HR	HR	HR	R	HR	n/r	R	n/r																							
DG4210	Crop Production Services		4	1	HR	HR	HR	HR	HR	R	n/r	R	n/r								*												*	*		
GrandStand	Crop Production Services		4	2	HR	HR	HR	HR	R	HR	n/r	MR	n/r								*												*	*		
HybriForce Mesa	Triumph Seed		4	2	HR	HR	HR	HR	n/r	R	n/r	HR	R								*											*	**			
HybriForce-2400	Dairyland Seed Co.		4	2	HR	HR	HR	HR	n/r	n/r	n/r	HR	R											*	*	**		*	*	*						
HybriForce-2420/Wet	Dairyland Seed Co.		4	2	HR	HR	HR	HR	n/r	n/r	n/r	R	R											*			*		*	*						
Integra 8400	Wilbur-Ellis Company/Integra		4	2	HR	HR	HR	HR	n/r	HR	n/r	R	n/r																							
Meadowlark	Blue River Hybrids		4	2	HR	HR	HR	HR	R	HR	n/r	R	n/r																							
Roadrunner	Blue River Hybrids		4	2	HR	HR	HR	HR	HR	LR	n/r	R	n/r									*														
SW435	S & W Seeds		4	2	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r																*	*	**					
WL354HQ	W-L Research		4	1	H	H	H	H	R	R	R	R	MR																				*	*		
55Q27	Pioneer HiBred Int'l		5	n/r	HR	HR	HR	HR	R	R	n/r	HR	n/r																							

¹RR=Roundup Ready if "Y"; WS=Winter Survival (1=No injury, 6=Dead plants), FD=Fall Dormancy (2=Vernal, 3=5246, 4=Legend, 5=Archer, 6=ABI 700, 7=Dona Ana, 8=Pierce, 9=CUF101, 10=UC1887), BW=Bacterial wilt, PRR=Phytophthora root rot, FW=Fusarium wilt, AN=Anthracnose, SAA=Spotted alfalfa aphid, PA=Pea aphid, BAA=Blue alfalfa aphid, SN=Stem nematode, RKN=Rootknot nematode (southern); (S=Susceptible, LR=Low resistance, MR=Moderate resistance, R=Resistant, HR=High resistance).

n/r indicates either that the variety was not rated for that characteristic or no rating was available.

²Establishment year.

³S=Standard flood irrigation approximately every 14 days, L=Limited flood irrigation approximately every 28 days.

⁴Standard performance evaluation.

⁵Roundup Ready® entries only.

⁶Harvest year.

Shaded boxes indicate that the variety was not in the test.

**Highest yielding variety in the test for that year.

*Not significantly different from the highest yielding variety in the test for that year.

Table 10 (cont.). Characteristics and performance of alfalfa varieties across years and tests in New Mexico.		Varietal Characteristics ¹											Las Cruces						Artesia		Tucumcari		Los Lunas				Farmington							
													2010 ²						2011		2012		2009				2009		2012					
		Pest resistance											F ³			L			2011		Std ⁴		RR ⁵		2009				2009		2012			
		Variety	Proprietor	RR	FD	WS	BW	FW	AN	PRR	SAA	PA	BAA	SN	RKN	11 ⁶	12	13	11	12	13	12	13	13	13	10	11	12	13	10	11	12	13	12
Archer III	America's Alfalfa		5	2	HR	HR	HR	HR	n/r	HR	n/r	HR	HR									*										*	*	
Cimarron VL500	Cimarron USA		5	R	HR	R	HR	HR	HR	R	R	MR	n/r									*												
Gunner	Croplan Genetics		5	1	HR	HR	HR	HR	HE	R	n/r	R	n/r																			*	*	
Key II	Cimarron USA		5	n/r	HR	HR	HR	HR	HR	HR	MR	MR	n/r									*												
Mallard	Blue River Hybrids		5	3	HR	HR	HR	HR	R	HR	n/r	R	n/r																					
Mountaineer 2.0	Croplan Genetics		5	2	HR	HR	HR	HR	R	HR	n/r	HR	R												*	*	*	*	*	*	*	*	*	
WL363HQ	W-L Research		5	2	H	H	H	H	R	R	MR	MR	MR												*	*	*	*	*	*	*	*	*	
Zia	New Mexico State University		5	n/r	MR	MR	S	S	MR	S	S	NR	NR									*										*		
6010	BrettYoung		6	2	HR	HR	HR	HR	n/r	n/r	n/r	R	R																					
56S82	Pioneer HiBred Int'l		6	5	HR	HR	HR	HR	HR	HR	HR	HR	HR					*			*	*	**											
Arriba II	America's Alfalfa		6	n/r	R	HR	HR	HR	HR	HR	R	HR	n/r									*	**											
DS611	Dairyland Seed Co.		6	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r									*												
HybriForce-2600	Dairyland Seed Co.		6	n/r	HR	HR	HR	HR	n/r	n/r	n/r	n/r	n/r									*												
Lahontan	USDA, Univ. of Nevada		6	n/r	R	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r														**	**	*	*	*	*	*	
SW6330	S & W Seeds		6	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r																					
Wilson	New Mexico State University		6	n/r	R	R	n/r	n/r	MR	R	n/r	MR	n/r					*	*			*				*	*	*	*	*	*	*	*	*
WL440HQ	W-L Research		6	n/r	HR	HR	R	HR	HR	HR	HR	HR	HR												*	*	*	*	**		*	*	*	*
Artesian Sunrise	Croplan Genetics		7	n/r	MR	HR	R	HR	HR	HR	R	R	n/r												*	**	*	*	*	*	*	*	*	*
Dona Ana	New Mexico State University		7	n/r	MR	MR	LR	R	MR	R	n/r	n/r	n/r					*	*			*	*		**	*	*	*	*	*	*	*	*	**
Malone	New Mexico State University		7	n/r	R	HR	R	R	R	HR	S	MR	n/r									*	*	**		*	*	*	*	*	*	*	*	*
NuMex Bill Melton	New Mexico State University		7	n/r	MR	R	R	R	R	MR	MR	n/r	n/r	*	*	*	**	**					*											
WL424HQ.RR	W-L Research	Y	7	M	R	HR	HR	HR	HR	HR	HR	HR	n/r																					
58N57	Pioneer HiBred Int'l		8	n/r	LR	R	HR	HR	R	HR	HR	MR	HR									*												
CW058071	CalWest Seed		8	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	**	*			*																
DS815	Dairyland Seed Co.		8	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r									*												
Dura 843	Croplan Genetics		8	n/r	MR	HR	n/r	HR	HR	HR	HR	R	n/r											*	*	*	*	*	*	*	*	*	*	*
GrandSlam	Crop Production Services		8	n/r	R	HR	HR	R	HR	HR	HR	MR	n/r									**	*											
RGO2011	Cimarron USA		8	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r									*	*											

¹RR=Roundup Ready if "Y"; WS=Winter Survival (1=No injury, 6=Dead plants), FD=Fall Dormancy (2=Vernal, 3=5246, 4=Legend, 5=Archer, 6=ABI 700, 7=Dona Ana, 8=Pierce, 9-CUF101, 10=UC1887), BW=Bacterial wilt, PRR=Phytophthora root rot, FW=Fusarium wilt, AN=Anthracnose, SAA=Spotted alfalfa aphid, PA=Pea aphid, BAA=Blue alfalfa aphid, SN=Stem nematode, RKN=Rootknot nematode (southern); (S=Susceptible, LR=Low resistance, MR=Moderate resistance, R=Resistant, HR=High resistance).
n/r indicates either that the variety was not rated for that characteristic or no rating was available.

²Establishment year.

³S=Standard flood irrigation approximately every 14 days, L=Limited flood irrigation approximately every 28 days.

⁴Standard performance evaluation.

⁵Roundup Ready® entries only.

⁶Harvest year.

Shaded boxes indicate that the variety was not in the test.

**Highest yielding variety in the test for that year.

*Not significantly different from the highest yielding variety in the test for that year.

Table 11. New Mexico State University Agricultural Experiment Station and Cooperative Extension Service publications related to alfalfa management.

Number	Title
A-114	Test your soil
A-122	Soil test interpretations
A-123	Sampling for plant tissue analysis
A-129	Nitrogen fixation by legumes
A-130	Inoculation of legumes
A-131	Certified seed
A-137	Soil analysis: A key to soil nutrient management
A-145	Certified noxious weed free program
A-229	Phymatotrichum root rot
A-325	Managing weeds in alfalfa
A-326	Downy mildew on alfalfa
A-333	User manual of the alfalfa yield predictor
A-334	Beet armyworm in New Mexico Hay
A-335	Variegated cutworm in New Mexico Hay
A-336	Managing Roundup Ready alfalfa and conventional or organic alfalfa hay in nearby fields in New Mexico
A-337	Recommendations for Roundup Ready alfalfa weed management and stand removal in New Mexico
A-338	Alfalfa weevil control options in New Mexico
A-339	Alfalfa integrated pest management: Aphids
H-158	How to collect and send plant specimens for disease diagnosis
CR-536	Blister beetles in alfalfa
CR-633	Using a computer application to predict irrigated alfalfa yield
CR-641	Hay quality, sampling and testing
CR-644	Assessing alfalfa stands after winter injury, freeze damage, or any time renovation is considered in New Mexico
CR-646	Managing alfalfa during drought
CR-654	Selecting alfalfa varieties for New Mexico
CR-659	Whitefringed beetle in New Mexico alfalfa
CR-668	Reducing harvest and post-harvest losses of alfalfa and other hay
RR-766	Furrow-irrigated alfalfa dry matter yield is not affected by different seeding rates in the Southern High Plains, USA
RR-772	Observations on how cowpea aphid affects alfalfa

These publications, and alfalfa variety test reports from previous years, are available from your county office of the NMSU Cooperative Extension Service or online at <http://forages.nmsu.edu/resources.html> and aces.nmsu.edu/pubs/