



AGRONOMY PROGRESS REPORT

2021 CALIFORNIA ALFALFA VARIETY TRIAL RESULTS

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SUMMARY

This publication details alfalfa yield trial data conducted in California for the year 2021. Yield trials were conducted in the Intermountain area (Tulelake and Scott Valley), the San Joaquin Valley (Parlier) and the Sacramento Valley (Davis). A total of 119 varieties were tested, from 2 to 8 cuts/year, with a total of 2,188 yield observations. Trials were conducted on UC Field facilities, farmer's fields, and the USDA-ARS Parlier research facility. The alfalfa variety trial data from the University of California is placed online well in advance of this published report, see (<https://alfalfa.ucdavis.edu> –click on variety).

INTRODUCTION

Choosing superior varieties of alfalfa is a significant economic factor for alfalfa growers. A large number of commercial varieties are currently available, enabling a wide range of options. These UC trials provide unbiased data from a wide range of environments related to variety performance of alfalfa. In California, alfalfa is grown from the Oregon border to the Mexican border, and throughout the Great Central Valley, which consists of the Sacramento and San Joaquin Valleys (Figure 1). These sites represent 3-4 cut systems (dormant varieties) in the **Intermountain Region**, 6-8 cut systems (semi-dormant, or non-dormant varieties) in the **Northern Central Valley**, 7-8 cut systems (semi-dormant to non-dormant varieties) in the **Southern**

California Alfalfa Acreages by Section

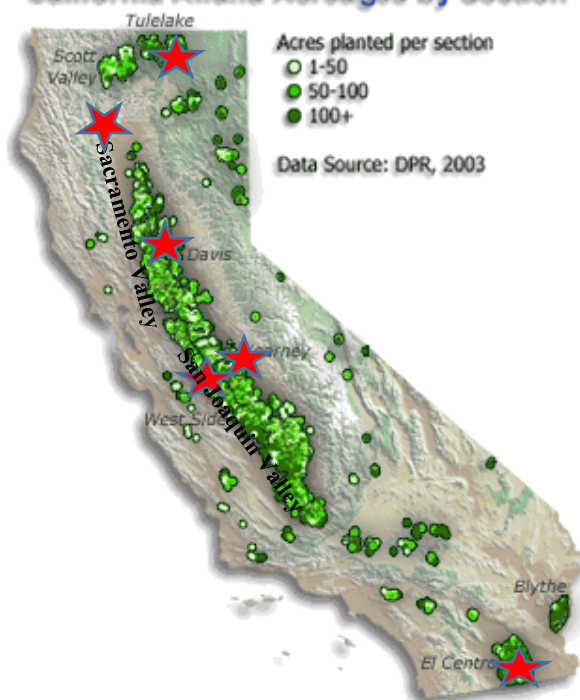


Figure 1. California alfalfa acreage. The Intermountain region is represented by Tulelake and Scott Valley, Sacramento Valley by Davis, San Joaquin Valley by Parlier and Five Points location..

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Central Valley and 8-11 cut systems (non-dormant varieties) in the **Low Desert**. These data are frequently used by growers to choose varieties, and by breeders to help guide further selection. We test both private and public varieties, and experimental lines destined for release within the next few years. This report provides single year and over-the-year summary from alfalfa trials harvested in California in 2021.

VARIETY TESTING METHODS

Yield Trials. The California Alfalfa Cultivar Yield, Fall Dormancy, and Forage Quality Trials are open to any certified alfalfa cultivar, which is sold or is likely to be sold in California. Blends or brands (unless they are certified blends) are not included in these trials. Experimental cultivars with a high likelihood of release within the next few years are tested as space permits.

Four alfalfa-variety yield trials were harvested in 2021 at Tulelake, Scott Valley, Parlier and Davis, CA. There are currently no trials planted in the Low Desert environment at El Centro, CA. Specific planting dates for each trial are given on the results table for each trial. The plantings were at approximately 25 lbs/acre live seed. Plots were 3' to 4' wide and 18 to 20 feet long, depending upon location and specific layout. Four to six replicates of each cultivar were planted at each location, depending upon the expected variation at that site. Experimental design was a randomized complete block design. Harvests for yield estimation were obtained from approximately a 3' x 18' area per plot using a flail-type or cutter-bar type forage harvester, and dry matter yield determined by oven-drying subsamples to a constant weight. A representative group of 5-6 varieties were taken at each harvest, and the average dry matter used for yield determination. Three harvests were taken in the Intermountain Region, while seven cuttings were taken in the Sacramento Valley. Cutting schedules were determined by the most common practice in that region and are the same for all varieties within a trial. The data is obtained from each of the locations and analyzed and summarized at the UC Davis campus.

Note on Statistical Inference: We have elected to analyze and report significance of variety testing data (calculation of F-test and LSD Values) based upon a probability value of 10% vs. the traditional 5%. In doing so, we are accepting a 90% confidence level vs. a 95% confidence level. This is due to the fact that growers routinely base decisions based upon degrees of confidence that are far lower than 95% confidence levels. A 10% probability level (the probability that the declared difference is based solely upon chance) is sufficiently conservative to prevent choosing varieties based upon false differences, yet represents good mean separation. Such decisions are always a compromise between practical factors and statistical vigor.

2021 YIELD RESULTS

Intermountain Region

2017 UC Tulelake Drought Trial -- This trial was planted with 44 entries on May 22, 2017. IN 2021, THIS TRIAL WAS CONDUCTED WITH ZERO ADDITIONAL IRRIGATION WATER. This was due to the sudden cutoff of water in the Klamath irrigation project due to the drought and Endangered Species Act. Approximately 6" of rainfall was contributed during the winter rainy period, far below normal for this region. Thus, this should be considered a 'drought' trial, with the crop growing based only upon residual moisture. Two cuttings were taken during the 2021 season with the first cutting taking place on June 17, 2021. Surprisingly,

these first two cuttings of 2021 were actually higher yielding than the first two cuttings under fully irrigated conditions in 2020 (see results on-line at <https://alfalfa.ucdavis.edu> for previous year's trials). This trial demonstrated that substantial yields can be achieved with only natural rainfall and residual moisture in these soil types. Single year results from the 2021 harvests are provided in Table 1. The average yield across all varieties was 6.6 tons/acre. A third cutting was also obtained, but not measured. The yearly yield averages between high and low varieties (7.2 t/A and 6.0 t/A respectively) varied by 1.2 tons or about 20% of the lowest yielding line. Yields for 2017-2021 averaged nearly 7.3 tons/acre, ranging from 6.7 -7.8 t/A (Table 2). It should be pointed out that this trial was spring planted, and thus yields were understandably low for 2017, and no additional irrigation for the final year of the trial in 2021. The CVs were relatively low; indicating good control of variation over each cut in this trial.

2019 Scott Valley Yield Trial – This trial was planted with 24 entries on Sept 5, 2019 and this was the second year of harvest. Single year results from the 2021 harvests are provided in Table 3. Three cuts were taken, and the average yield across all varieties was 8.7 tons/acre. The yearly yield averages between high and low varieties (7.5.0 t/A and 9.6 t/A respectively) varied by 2.1 tons or about 28% of the lowest yielding line. Results for the 2020-2021 yield average can be found in Table 4.

Sacramento Valley Region

2019 UC Davis Variety Trial. This trial was planted Oct. 4, 2019 and includes 28 entries. This is the second year of this trial. Seven cuttings were taken during the 2021 season with the first cutting taking place on April 2. Single year results from the 2021 harvests are provided in Table 5. The average yield across all varieties was 9.3 tons/acre. The yearly yield averages between high and low varieties (11.0 t/A and 5.9 t/A respectively) varied by 5.1 tons or about 86% of the lowest yielding line. Results for the 2020-2021 yield average can be found in Table 6.

Low Desert Region

There are currently no trials planted or harvested in the Low Desert environment at El Centro, CA

San Joaquin Valley Region

2020Parlier Trial-- A new trial was planted March, 2020 with 20 non-dormant varieties on the USDA-ARS facility at Parlier, CA. This is a cooperative project between USDA-ARS and UC Davis. This trial is harvested 7-8 times per season. Single year results from the 2021 harvests are provided in Table 7. The average yield across all varieties was 12.7 tons/acre. The yearly yield averages between high and low varieties (15.0 t/A and 7.3 t/A respectively) varied by 7.7 tons or about 105% of the lowest yielding line. Results for the 2020-2021 yield average can be found in Table 8. It should be noted that only 4 harvests were taken in 2020, the year of establishment.

INTERPRETING YIELD TRIAL RESULTS

We suggest the following procedure for selecting varieties:

1. **Select a group of high-yielding varieties** for your region (generally the top ¼ to 1/3 of a trial which is closest to your area) from Tables 1-9 over-the year's summaries (or from our website). Since this report contains single-year summaries, we recommend that you

see the over-the years summaries from the relevant locations which is on our website:
<http://alfalfa.ucdavis.edu>

2. **Determine the Pest Resistance and Fall Dormancy needs** for your region. The FD scores are provided on these tables and in the Alfalfa Alliance Website. Please see <https://www.alfalfa.org/varietyLeaflet.php> for a current (2022) listing of available alfalfa varieties marketed in the US along with pest resistance ratings.
3. **Consider the Fall Dormancy and Pest resistance Ratings** of individual varieties – available at the National Alfalfa and Forage Alliance Website (www.alfalfa.org).
4. **Choose a group of high yielding varieties** with the best Pest Resistance package for your region.
5. **Consider evidence for high quality** if available (such information is not always widely available, but generally more dormant varieties tend to be higher in quality).
6. **Consider Biotech Traits** such as glyphosate-resistance and the HarvXtra trait. RR should be compared as a comprehensive weed control strategy, not just a variety.
7. **Test a variety on portions of your farm** to see how it does under your soil conditions.
8. **Consider the price of seed, availability and Service.**

ACKNOWLEDGMENTS

The authors are grateful for the help of Dan Spalding, Vince Silva and staff for help with the field plots at UC Kearney Ag Center, USDA crew for help with the field plots at USDA ARS facility in Parlier, Darrin Culp and Rob Wilson's crew at the Intermountain Research and Extension Center, Nicole Stevens and Brandon Fawaz in Siskiyou County, Luis Loza and Israel Herrera for help on the UC. Davis plots.

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Table 1. 2021 YIELDS, TULELAKE ALFALFA CULTIVAR TRIAL (DROUGHT). TRIAL PLANTED 5/22/17

Note: Single year data should not be used to evaluate alfalfa varieties or choose alfalfa cultivars

		Cut 1	Cut 2	YEAR		% of
		17-Jun	19-Jul	TOTAL		VERNAL
	FD	Dry t/a				
Released Varieties						
54Q29	4	3.95 (1)	3.29 (27)	7.24 (1)	A	117.3
FG R513W227S	5	3.32 (11)	3.77 (1)	7.09 (2)	A B	114.9
Genuity-RR	4	3.59 (2)	3.50 (11)	7.09 (3)	A B	114.7
Hybriforce-3600	6	3.54 (3)	3.52 (8)	7.06 (4)	A B C	114.3
Integra 8450	4	3.38 (10)	3.65 (3)	7.03 (5)	A B C D	113.9
WL377HQ	5	3.20 (22)	3.75 (2)	6.95 (6)	A B C D E	112.6
SW5213	5	3.49 (4)	3.43 (16)	6.92 (7)	A B C D E	112.1
FG R513W224S	5	3.29 (15)	3.60 (4)	6.89 (8)	A B C D E F	111.6
Nexgrow 6422Q	4	3.47 (6)	3.40 (18)	6.87 (9)	A B C D E F G	111.2
Hybriforce-4400	4	3.39 (9)	3.37 (20)	6.76 (10)	A B C D E F G H	109.4
FG R410W253	4	3.31 (13)	3.44 (14)	6.75 (11)	A B C D E F G H	109.3
WL365HQ	5	3.17 (24)	3.57 (5)	6.74 (13)	A B C D E F G H	109.1
Dekalb 43-13	4	3.23 (17)	3.51 (9)	6.74 (14)	A B C D E F G H	109.1
Archer III	5	3.40 (8)	3.29 (28)	6.69 (15)	B C D E F G H I	108.3
AmeriStand 545NT RR	5	3.12 (31)	3.57 (6)	6.68 (16)	B C D E F G H I J	108.2
PGI459	4	3.23 (18)	3.44 (13)	6.67 (17)	B C D E F G H I J	108.0
SW4107	4	3.20 (20)	3.44 (15)	6.65 (18)	B C D E F G H I J K	107.6
Nexgrow 6585Q	5	3.14 (27)	3.50 (10)	6.65 (19)	B C D E F G H I J K	107.6
Xtra-3	4	3.20 (21)	3.39 (19)	6.59 (21)	B C D E F G H I J K L	106.7
WL363HQ	5	3.18 (23)	3.41 (17)	6.58 (22)	B C D E F G H I J K L	106.5
SW5210	6	3.31 (12)	3.21 (32)	6.53 (25)	D E F G H I J K L M N	105.6
WL 372HQ-RR	5	3.00 (38)	3.45 (12)	6.45 (28)	E F G H I J K L M N	104.5
Integra 8444R	4	2.91 (44)	3.53 (7)	6.44 (29)	E F G H I J K L M N O	104.3
Integra 8420	4	3.21 (19)	3.21 (34)	6.42 (30)	E F G H I J K L M N O	104.0
FG R513M225S	5	3.05 (34)	3.34 (21)	6.38 (31)	F G H I J K L M N O	103.4
4R200	4	3.04 (35)	3.33 (22)	6.38 (32)	F G H I J K L M N O	103.2
Ameristand 445-NT	4	3.12 (30)	3.11 (37)	6.23 (35)	H I J K L M N O	100.9
Hybriforce-3420/Wet	4	3.08 (33)	3.11 (38)	6.19 (36)	I J K L M N O	100.2
Vernal	2	3.14 (28)	3.04 (42)	6.18 (38)	I J K L M N O	100.0
Ameristand 427TQ	4	2.97 (41)	3.15 (35)	6.12 (40)	K L M N O	99.1
Hi-Gest 360	3	2.99 (39)	3.11 (36)	6.10 (41)	L M N O	98.7
Hybriforce-3430	3	3.04 (36)	2.88 (44)	5.91 (44)	O	95.8
Experimental Varieties						
msSunstra-143146	3	3.49 (5)	3.26 (31)	6.75 (12)	A B C D E F G H	109.2
msSunstra-155202	6	3.29 (14)	3.31 (25)	6.60 (20)	B C D E F G H I J K L	106.9
RRL414M104	4	3.28 (16)	3.28 (29)	6.57 (23)	B C D E F G H I J K L	106.3
H0415QT111	4	3.45 (7)	3.09 (39)	6.53 (24)	C D E F G H I J K L M	105.8
RRL514W209	5	3.13 (29)	3.33 (23)	6.47 (26)	E F G H I J K L M N	104.7
RRL414W208	4	3.15 (25)	3.31 (26)	6.46 (27)	E F G H I J K L M N	104.5
H0515QT102	5	3.01 (37)	3.33 (24)	6.34 (33)	G H I J K L M N O	102.6
RRL514W201	5	2.97 (42)	3.27 (30)	6.24 (34)	H I J K L M N O	101.1
H0415ST202	4	2.97 (40)	3.21 (33)	6.18 (37)	I J K L M N O	100.1
RRL414M377	4	3.09 (32)	3.05 (41)	6.15 (39)	J K L M N O	99.5
SW4466	4	3.15 (26)	2.88 (43)	6.03 (42)	M N O	97.6
H0415A3144	4	2.93 (43)	3.07 (40)	6.00 (43)	N O	97.1
MEAN		3.22	3.33	6.55		
CV		12.42	7.14	6.87		
LSD (0.1)		NS	0.28	0.53		

Trial seeded at 25 lb/acre viable seed at Intermountain Research and Extension Center, Tulelake, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

*No supplemental irrigation used for 2021 harvests (only natural rainfall and residual soil moisture)

Table 2. 2017-2021 YIELDS. TULELAKE ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 5/22/17

		2017	2018	2019	2020	2021	Average		% of
	FD	Yield	Yield	Yield	Yield	Yield			Vernal
Released Varieties									
WL365HQ	5	3.80 (9)	9.64 (9)	9.42 (2)	9.23 (1)	6.74 (13)	7.76 (1)	A	115.3
Integra 8450	4	3.76 (11)	9.72 (7)	9.03 (5)	8.88 (6)	7.03 (5)	7.68 (2)	A B	114.1
HybriForce-4400	4	4.14 (4)	9.74 (6)	8.95 (10)	8.63 (21)	6.76 (10)	7.64 (3)	A B C	113.4
Nexgrow 6422Q	4	3.03 (35)	9.89 (1)	9.27 (3)	8.98 (3)	6.87 (9)	7.61 (5)	A B C D	112.9
SW4107	4	3.04 (29)	9.84 (2)	9.50 (1)	8.84 (8)	6.65 (18)	7.57 (6)	A B C D E	112.4
SW5210	6	3.74 (12)	9.51 (12)	9.05 (4)	8.92 (4)	6.53 (25)	7.55 (7)	A B C D E F	112.1
54Q29	4	3.04 (30)	9.76 (5)	8.95 (9)	8.63 (20)	7.24 (1)	7.52 (8)	B C D E F G	111.7
FG R513W224S	5	3.64 (18)	9.50 (13)	8.92 (12)	8.64 (18)	6.89 (8)	7.52 (9)	B C D E F G	111.6
FG R513W227S	5	3.27 (24)	9.20 (26)	8.96 (8)	9.01 (2)	7.09 (2)	7.51 (10)	B C D E F G	111.4
WL377HQ	5	3.04 (27)	9.66 (8)	8.98 (6)	8.88 (7)	6.95 (6)	7.50 (11)	B C D E F G	111.4
HybriForce-3600	6	4.28 (2)	9.25 (23)	8.32 (36)	8.53 (24)	7.06 (4)	7.49 (12)	B C D E F G	111.1
SW5213	5	3.51 (22)	9.51 (11)	8.82 (16)	8.61 (22)	6.92 (7)	7.47 (13)	B C D E F G	111.0
Genuity-RR	4	3.74 (14)	9.20 (25)	8.81 (17)	8.53 (23)	7.09 (3)	7.47 (14)	B C D E F G	111.0
Nexgrow 6585Q	5	3.74 (13)	9.25 (22)	8.83 (15)	8.89 (5)	6.65 (19)	7.47 (15)	B C D E F G	110.9
WL363HQ	5	3.78 (10)	9.26 (21)	8.94 (11)	8.75 (13)	6.58 (22)	7.46 (16)	B C D E F G	110.8
FG R410W253	4	3.61 (20)	9.20 (24)	8.67 (21)	8.82 (9)	6.75 (11)	7.41 (17)	C D E F G H	110.0
AmeriStand 545NT RR	5	3.41 (23)	9.35 (17)	8.83 (14)	8.66 (16)	6.68 (16)	7.39 (18)	D E F G H I	109.7
Dekalb 43-13	4	3.81 (8)	9.27 (19)	8.71 (19)	8.38 (28)	6.74 (14)	7.38 (19)	D E F G H I	109.6
Xtra-3	4	3.54 (21)	9.41 (15)	8.89 (13)	8.39 (27)	6.59 (21)	7.37 (20)	E F G H I J	109.4
FG R513M225S	5	3.71 (16)	9.19 (27)	8.69 (20)	8.80 (11)	6.38 (31)	7.36 (21)	E F G H I J	109.2
PGI459	4	4.16 (3)	9.01 (31)	8.64 (23)	8.25 (35)	6.67 (17)	7.35 (22)	E F G H I J K	109.1
HybriForce-3430	3	3.98 (6)	9.79 (4)	8.66 (22)	8.37 (29)	5.91 (44)	7.34 (23)	E F G H I J K	109.0
HybriForce-3420/Wet	4	4.09 (5)	9.57 (10)	8.55 (30)	8.25 (36)	6.19 (36)	7.33 (24)	F G H I J K	108.8
Integra 8444R	4	3.72 (15)	9.27 (20)	8.42 (34)	8.67 (15)	6.44 (29)	7.31 (25)	G H I J K L	108.5
Archer III	5	3.03 (38)	9.41 (16)	8.62 (27)	8.32 (32)	6.69 (15)	7.21 (27)	H I J K L M	107.1
Integra 8420	4	3.03 (34)	9.42 (14)	8.44 (33)	8.28 (33)	6.42 (30)	7.12 (30)	K L M N O	105.7
WL 372HQ-RR	5	3.02 (42)	9.19 (28)	8.56 (29)	8.18 (38)	6.45 (28)	7.08 (31)	L M N O	105.1
4R200	4	3.67 (17)	8.72 (37)	8.29 (37)	8.24 (37)	6.38 (32)	7.06 (34)	M N O P	104.8
Hi-Gest 360	3	3.03 (39)	9.30 (18)	8.63 (26)	8.17 (39)	6.10 (41)	7.05 (35)	M N O P Q	104.6
AmeriStand 427TQ	4	3.04 (25)	8.95 (32)	8.24 (38)	7.77 (43)	6.12 (40)	6.82 (41)	Q R S T	101.3
AmeriStand 445-NT	4	3.04 (26)	8.86 (35)	8.12 (40)	7.82 (42)	6.23 (35)	6.81 (42)	R S T	101.1
Vernal	2	3.03 (32)	8.68 (39)	8.10 (41)	7.69 (44)	6.18 (38)	6.74 (43)	S T	100.0
Experimental Varieties									
msSunstra-143146	3	4.30 (1)	9.83 (3)	8.73 (18)	8.50 (25)	6.75 (12)	7.62 (4)	A B C	113.1
SW4466	4	3.62 (19)	9.13 (29)	8.98 (7)	8.36 (30)	6.03 (42)	7.22 (26)	H I J K L M	107.2
msSunstra-155202	6	3.86 (7)	9.03 (30)	8.04 (42)	8.26 (34)	6.60 (20)	7.16 (28)	I J K L M N	106.3
RRL414M104	4	3.03 (40)	8.69 (38)	8.63 (24)	8.76 (12)	6.57 (23)	7.14 (29)	J K L M N O	106.0
RRL514W209	5	3.03 (31)	8.63 (40)	8.57 (28)	8.70 (14)	6.47 (26)	7.08 (32)	L M N O	105.1
RRL414M377	4	3.04 (28)	8.86 (34)	8.52 (31)	8.82 (10)	6.15 (39)	7.08 (33)	L M N O	105.0
H0415ST202	4	3.03 (37)	8.87 (33)	8.63 (25)	8.36 (31)	6.18 (37)	7.01 (36)	M N O P Q R	104.1
H0515QT102	5	3.02 (41)	8.43 (42)	8.33 (35)	8.65 (17)	6.34 (33)	6.95 (37)	N O P Q R S	103.2
H0415A3144	4	3.03 (36)	8.73 (36)	8.45 (32)	8.44 (26)	6.00 (43)	6.93 (38)	O P Q R S	102.9
H0415QT111	4	3.02 (44)	8.46 (41)	8.00 (44)	8.63 (19)	6.53 (24)	6.93 (39)	O P Q R S	102.8
RRL414W208	4	3.02 (43)	8.42 (43)	8.15 (39)	8.14 (40)	6.46 (27)	6.84 (40)	P Q R S T	101.5
RRL514W201	5	3.03 (33)	8.20 (44)	8.01 (43)	7.90 (41)	6.24 (34)	6.68 (44)	T	99.1
MEAN		3.44	9.20	8.66	8.51	6.55	7.27		
CV		8.16	3.66	3.47	3.97	6.87	2.67		
LSD (0.1)		0.33	0.40	0.36	0.40	0.53	0.23		

Trial seeded at 25 lb/acre viable seed at Intermountain Research and Extension Center, Tulelake, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

*No supplemental irrigation used for 2021 harvests (only natural rainfall and residual soil moisture)

Table 3. 2021 YIELDS. SCOTT VALLEY ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 9/5/19

Note: Single year data should not be used to evaluate alfalfa varieties or choose alfalfa cultivars

		Cut 1	Cut 2	Cut 3	YEAR	
	FD	Dry t/a			TOTAL	
Ameristand 518 NT	5.2	4.12 (3)	3.26 (1)	2.20 (2)	9.58 (1)	A
Hybriforce 3400	4	4.39 (1)	2.89 (9)	2.11 (11)	9.40 (2)	A B
SW 4412Y	4	4.32 (2)	2.75 (16)	2.19 (4)	9.26 (3)	A B C
LG EXTERRA (5FD)	5	3.94 (8)	2.79 (13)	2.38 (1)	9.11 (4)	A B C D
SW5210	5	4.04 (6)	2.94 (7)	2.07 (13)	9.05 (5)	A B C D
AFX Hybriforce 4400	4	4.11 (4)	2.93 (8)	1.95 (23)	8.99 (6)	A B C D
SW4107	4	3.79 (12)	2.94 (6)	2.20 (3)	8.93 (7)	A B C D E
AFX 579	5	3.89 (9)	2.85 (12)	2.15 (6)	8.89 (8)	A B C D E
AFX Magnum 8	4	3.96 (7)	2.78 (15)	2.06 (14)	8.80 (9)	A B C D E F
SW3407	3	3.67 (18)	2.96 (5)	2.16 (5)	8.79 (10)	A B C D E F
DG 4210 Dynagrow	4	3.70 (16)	2.98 (3)	2.05 (15)	8.73 (11)	A B C D E F
6585 Q	5	4.07 (5)	2.51 (22)	2.15 (7)	8.73 (12)	A B C D E F
LG Camas	4	3.84 (11)	2.86 (11)	1.99 (21)	8.70 (13)	A B C D E F
AFX 460	4	3.88 (10)	2.68 (18)	2.05 (16)	8.61 (14)	B C D E F
Ameristand 427TQ	4	3.60 (19)	2.88 (10)	2.13 (9)	8.61 (15)	B C D E F
DG 5315	5	3.29 (22)	3.11 (2)	2.15 (8)	8.54 (16)	B C D E F
6422Q	4	3.78 (13)	2.64 (20)	2.02 (18)	8.44 (17)	C D E F
Nexgrow 6516	5	3.38 (21)	2.98 (4)	2.07 (12)	8.43 (18)	C D E F
Ameristand 415 NT RR	4.3	3.72 (14)	2.66 (19)	2.02 (19)	8.40 (19)	C D E F G
WL 377 HQ	5	3.71 (15)	2.68 (17)	1.99 (22)	8.38 (20)	C D E F G
LG 5R300 (5FD)	5	3.69 (17)	2.59 (21)	1.99 (20)	8.28 (21)	D E F G
LG 4R300	4.1	3.25 (23)	2.78 (14)	2.04 (17)	8.06 (22)	E F G
AFX 360 Highest	3	3.51 (20)	2.50 (23)	1.95 (24)	7.96 (23)	F G
Ameristand 545 NT RR	5.4	3.04 (24)	2.32 (24)	2.13 (10)	7.49 (24)	G
MEAN		3.78	2.80	2.09	8.67	
CV		11.94	11.36	10.09	8.69	
LSD (0.1)		0.55	0.39	NS	0.91	

Trial seeded at 25 lb/acre viable seed at Intermountain Research and Extension Center, Tulelake, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

Table 4. 2020-2021 YIELDS. SCOTT VALLEY ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 9/5/19

		2020	2021		
		Yield	Yield	Average	
	FD		Dry t/a		
Hybriforce 3400	4	5.86 (3)	9.40 (2)	7.63 (1)	A
Ameristand 518 NT	5.2	5.53 (7)	9.58 (1)	7.56 (2)	A B
AFX Hybriforce 4400	4	5.69 (4)	8.99 (6)	7.34 (3)	A B C
6585 Q	5	5.96 (1)	8.73 (12)	7.34 (4)	A B C
LG EXTERRA (5FD)	5	5.56 (5)	9.11 (4)	7.33 (5)	A B C
SW 4412Y	4	5.31 (17)	9.26 (3)	7.28 (6)	A B C D
SW5210	5	5.48 (11)	9.05 (5)	7.26 (7)	A B C D
SW4107	4	5.52 (9)	8.93 (7)	7.23 (8)	A B C D E
AFX 579	5	5.54 (6)	8.89 (8)	7.21 (9)	A B C D E
Nexgrow 6516	5	5.95 (2)	8.43 (18)	7.19 (10)	A B C D E
SW3407	3	5.39 (13)	8.79 (10)	7.09 (11)	A B C D E
AFX Magnum 8	4	5.36 (14)	8.80 (9)	7.08 (12)	B C D E
DG 4210 Dynagrow	4	5.41 (12)	8.73 (11)	7.07 (13)	B C D E
LG Camas	4	5.31 (16)	8.70 (13)	7.01 (14)	C D E
AFX 460	4	5.21 (19)	8.61 (14)	6.91 (15)	C D E
DG 5315	5	5.25 (18)	8.54 (16)	6.90 (16)	C D E
Ameristand 415 NT RR	4.3	5.33 (15)	8.40 (19)	6.86 (17)	C D E
LG 4R300	4.1	5.49 (10)	8.06 (22)	6.77 (18)	D E F
AFX 360 Highest	3	5.53 (8)	7.96 (23)	6.75 (19)	D E F
Ameristand 427TQ	4	4.83 (24)	8.61 (15)	6.72 (20)	E F
LG 5R300 (5FD)	5	5.13 (20)	8.28 (21)	6.70 (21)	E F
WL 377 HQ	5	5.02 (22)	8.38 (20)	6.70 (22)	E F
6422Q	4	4.96 (23)	8.44 (17)	6.70 (23)	E F
Ameristand 545 NT RR	5.4	5.09 (21)	7.49 (24)	6.29 (24)	F
MEAN		5.40	8.67	7.04	
CV		8.35	8.69	6.36	
LSD (0.1)		0.55	0.91	0.54	

Trial seeded at 25 lb/acre viable seed at Scott Valley, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

*3 harvests taken 2020. Data only reported for cuts 6/17/2020 and 9/5/2020 due to mechanical problems.

Table 5. 2021 Yields. UC Davis Alfalfa Cultivar Trial (Trial planted Oct. 4, 2019)

Note: Single year data should not be used to evaluate alfalfa varieties or choose alfalfa cultivars

	FD	Out 1	Cut 2	Cut 3	Cut 4	Cut 5	Cut 6	Cut 7	YEAR	% of CUF101	
		2-Apr	4-May	2-Jun	1-Jul	29-Jul	26-Aug	29-Sep	TOTAL		
		Dry t/a									
WL656HQ	6	1.17 (9)	1.66 (1)	1.61 (1)	2.26 (2)	1.66 (5)	1.40 (2)	1.26 (12)	11.03 (1)	A	103.6
Ameristand 901TS	9	1.22 (6)	1.63 (2)	1.55 (3)	2.02 (4)	1.80 (1)	1.29 (8)	1.45 (1)	10.96 (2)	A B	103.0
SW9813	9	1.32 (2)	1.32 (19)	1.60 (2)	1.86 (11)	1.77 (2)	1.53 (1)	1.39 (3)	10.79 (3)	A B C	101.4
CUF101	9	1.25 (4)	1.48 (6)	1.54 (4)	2.29 (1)	1.63 (6)	1.16 (19)	1.30 (10)	10.64 (4)	A B C	100.0
UC Impalo	9	1.19 (8)	1.43 (9)	1.49 (6)	2.02 (4)	1.62 (9)	1.34 (4)	1.40 (2)	10.50 (5)	A B C D	98.6
SW9215	9	1.22 (6)	1.54 (3)	1.41 (8)	2.02 (4)	1.66 (4)	1.32 (5)	1.26 (12)	10.43 (6)	A B C D	98.0
59N59	9	1.16 (10)	1.43 (9)	1.41 (8)	1.99 (9)	1.69 (3)	1.37 (3)	1.36 (4)	10.40 (7)	A B C D	97.7
SW9812	9	1.15 (13)	1.51 (5)	1.48 (7)	2.00 (7)	1.63 (6)	1.24 (14)	1.26 (12)	10.27 (8)	A B C D E	96.4
Alphatec 621	6	1.03 (21)	1.46 (7)	1.52 (5)	1.99 (9)	1.51 (10)	1.29 (8)	1.33 (7)	10.13 (9)	A B C D E F	95.2
Alphatec 921	9	1.28 (3)	1.51 (4)	1.41 (11)	1.76 (17)	1.63 (6)	1.24 (13)	1.30 (9)	10.13 (10)	A B C D E F	95.1
SW8421-S	8	1.10 (16)	1.37 (17)	1.41 (8)	2.05 (3)	1.45 (14)	1.26 (10)	1.36 (4)	10.01 (11)	A B C D E F G	94.0
SuperNova	9	1.35 (1)	1.32 (19)	1.38 (12)	1.79 (12)	1.48 (12)	1.25 (12)	1.31 (8)	9.88 (12)	A B C D E F G	92.9
Saltana	9	1.22 (5)	1.37 (15)	1.27 (19)	1.79 (13)	1.51 (10)	1.32 (6)	1.36 (4)	9.84 (13)	A B C D E F G	92.5
Alphatec 821	8	1.16 (10)	1.43 (8)	1.35 (14)	1.76 (17)	1.42 (17)	1.31 (7)	1.19 (18)	9.62 (14)	A B C D E F G H	90.4
Catalina	9	1.16 (10)	1.43 (9)	1.35 (15)	1.76 (15)	1.45 (15)	1.26 (10)	1.20 (17)	9.62 (15)	A B C D E F G H	90.4
SW6330	6	1.13 (15)	1.32 (21)	1.32 (17)	1.79 (14)	1.46 (13)	1.20 (17)	1.22 (16)	9.44 (16)	A B C D E F G H	88.7
Ameristand 803T	8	1.10 (20)	1.39 (14)	1.29 (18)	1.99 (8)	1.34 (22)	1.15 (22)	1.07 (24)	9.32 (17)	A B C D E F G H	87.6
UC Highline	9	1.10 (16)	1.37 (15)	1.38 (12)	1.66 (21)	1.34 (21)	1.16 (19)	1.11 (22)	9.12 (18)	B C D E F G H	85.6
DS1168	6	0.97 (27)	1.40 (12)	1.32 (16)	1.76 (15)	1.37 (20)	1.24 (14)	1.05 (25)	9.11 (19)	C D E F G H	85.6
PGI 908-S	9	1.13 (14)	1.29 (22)	1.18 (23)	1.53 (26)	1.43 (16)	1.24 (14)	1.30 (10)	9.09 (20)	C D E F G H	85.4
6906N	9	1.10 (16)	1.37 (17)	1.21 (20)	1.63 (22)	1.40 (19)	1.10 (26)	1.23 (15)	9.04 (21)	C D E F G H	84.9
57Q53	7	1.10 (16)	1.40 (12)	1.21 (20)	1.56 (25)	1.27 (24)	1.13 (24)	1.03 (27)	8.71 (22)	D E F G H I	81.8
Ameristand 618NT	5	0.97 (27)	1.15 (29)	1.15 (24)	1.73 (19)	1.22 (27)	1.12 (25)	1.16 (19)	8.50 (23)	E F G H I	79.9
Hi-Gest 660	6	1.03 (21)	1.18 (27)	1.15 (24)	1.66 (20)	1.22 (26)	1.07 (28)	1.14 (20)	8.47 (24)	E F G H I	79.5
Bulldog 805	8	1.00 (23)	1.23 (24)	1.15 (24)	1.60 (24)	1.28 (23)	1.05 (29)	1.05 (25)	8.36 (25)	F G H I	78.6
AFXH155203	6	0.72 (29)	1.23 (24)	1.21 (20)	1.63 (23)	1.40 (18)	1.18 (18)	0.99 (29)	8.36 (26)	F G H I	78.5
SuperSonic	9	1.00 (23)	1.26 (23)	1.15 (24)	1.47 (28)	1.19 (28)	1.13 (23)	1.08 (23)	8.29 (27)	F G H I	77.8
Magna 715	7	1.00 (23)	1.23 (24)	1.13 (28)	1.53 (27)	1.25 (25)	1.08 (27)	1.02 (28)	8.24 (28)	G H I	77.4
SW7410	7	1.00 (23)	1.15 (28)	0.90 (29)	1.30 (30)	1.13 (29)	1.16 (19)	1.14 (21)	7.79 (29)	H I J	73.2
Ameristand 518NT	7	0.66 (30)	1.01 (30)	0.90 (30)	1.37 (29)	1.09 (30)	1.00 (30)	0.91 (30)	6.93 (30)	I J	65.1
CW 704	7	0.60 (31)	0.79 (31)	0.70 (31)	1.08 (31)	0.93 (31)	0.98 (31)	0.88 (31)	5.94 (31)	J	55.8
MEAN		1.08	1.34	1.30	1.76	1.43	1.21	1.20	9.32		
CV		14.72	18.09	24.53	22.95	22.40	15.94	18.78	16.52		
LSD (0.1)		0.19	0.29	0.38	0.49	0.38	0.23	0.27	1.85		

Trial seeded at 25 lb/acre viable seed on Yolo clay loam soil at the Univ. of California Agronomy Farm, Davis, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fishers (protected) LSD.

FD = Fall Dormancy reported by seed companies.

Table 6. 2020-2021 YIELDS. UC Davis ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 10/4/2019

		2020	2021	Average		% of
		Yield	Yield			CUF101
	FD		Dry t/a			
CUF101	9	12.59 (1)	10.63 (4)	11.61 (1)	A	100.0
Ameristand 901TS	9	12.20 (5)	10.94 (2)	11.57 (2)	A	99.7
WL656HQ	6	11.85 (6)	11.01 (1)	11.43 (3)	A	98.5
UC Impalo	9	12.26 (4)	10.48 (5)	11.37 (4)	A	97.9
SW9215	9	12.32 (3)	10.41 (6)	11.37 (5)	A	97.9
SW9813	9	11.56 (13)	10.77 (3)	11.16 (6)	A B	96.2
59N59	9	11.83 (7)	10.38 (7)	11.11 (7)	A B C	95.7
SuperNova	9	11.74 (9)	9.87 (10)	10.80 (8)	A B C D	93.1
PGI 908-S	9	12.35 (2)	9.07 (17)	10.71 (9)	A B C D	92.3
SW8421-S	8	11.40 (16)	9.99 (9)	10.69 (10)	A B C D	92.1
SW6330	6	11.66 (10)	9.43 (13)	10.54 (11)	A B C D E	90.8
Saltana	9	11.21 (17)	9.82 (11)	10.52 (12)	A B C D E	90.6
SW9812	9	10.74 (23)	10.25 (8)	10.49 (13)	A B C D E	90.4
UC Highline	9	11.79 (8)	9.10 (15)	10.45 (14)	A B C D E	90.0
Ameristand 803T	8	11.46 (14)	9.31 (14)	10.38 (15)	A B C D E	89.5
DS1168	6	11.64 (11)	9.09 (16)	10.37 (16)	A B C D E	89.3
Catalina	9	11.12 (19)	9.60 (12)	10.36 (17)	A B C D E	89.3
6906N	9	11.44 (15)	9.03 (18)	10.24 (18)	A B C D E	88.2
57Q53	7	11.60 (12)	8.69 (19)	10.14 (19)	A B C D E	87.4
SuperSonic	9	11.18 (18)	8.27 (24)	9.73 (20)	B C D E F	83.8
Hi-Gest 660	6	10.89 (21)	8.45 (21)	9.67 (21)	B C D E F	83.3
Magna 715	7	11.05 (20)	8.22 (25)	9.64 (22)	B C D E F	83.0
AFXH155203	6	10.82 (22)	8.34 (23)	9.58 (23)	C D E F	82.6
Ameristand 618NT	5	10.61 (24)	8.49 (20)	9.55 (24)	D E F	82.3
Bulldog 805	8	10.33 (25)	8.35 (22)	9.34 (25)	D E F	80.5
SW7410	7	10.31 (26)	7.77 (26)	9.04 (26)	E F G	77.9
Ameristand 518NT	7	10.12 (27)	6.92 (27)	8.52 (27)	F G	73.4
CW 704	7	9.57 (28)	5.93 (28)	7.75 (28)	G	66.8
MEAN		11.34	9.24	10.29		
CV		10.60	16.61	12.32		
LSD (0.1)		1.45	1.85	1.53		

Trial seeded at 25 lb/acre viable seed on Yolo clay loam soil at Univ. of California Agronomy Farm, Davis CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

Table 7. 2021 YIELDS, USDA ARS PARLIER ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 3/10/20

Note: Single year data should not be used to evaluate alfalfa varieties or choose alfalfa cultivars

		Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Cut 6	Cut 7	Cut 8	YEAR		% of
		25-Mar	29-Apr	3-Jun	8-Jul	12-Aug	17-Sep	21-Oct	29-Nov	TOTAL		CUF 101
	FD											
						Dry t/a						
Released Varieties												
SW9812	9	2.25 (3)	1.92 (1)	2.33 (4)	2.58 (3)	2.03 (2)	1.88 (1)	1.21 (3)	0.76 (3)	14.96 (1)	A	106.5
Desert Rose	8	2.07 (8)	1.74 (7)	2.44 (1)	2.81 (2)	1.94 (4)	1.67 (5)	1.15 (8)	0.71 (6)	14.52 (2)	A B	103.3
SW8421RRS	8	2.03 (9)	1.52 (17)	2.38 (2)	2.85 (1)	1.86 (6)	1.63 (7)	1.21 (4)	0.74 (4)	14.23 (3)	A B C	101.3
SW9813	9	2.29 (1)	1.77 (3)	2.31 (5)	2.22 (8)	1.78 (10)	1.84 (3)	1.19 (6)	0.77 (2)	14.16 (4)	A B C	100.8
CUF 101	9	2.10 (7)	1.76 (5)	2.26 (9)	2.14 (10)	2.04 (1)	1.85 (2)	1.21 (2)	0.69 (8)	14.05 (5)	A B C D	100.0
SW8421-S	8	2.00 (11)	1.65 (15)	2.27 (8)	2.24 (7)	1.68 (12)	1.61 (8)	1.41 (1)	0.78 (1)	13.64 (6)	A B C D E	97.1
Super Sonic	9	2.27 (2)	1.72 (9)	2.29 (6)	2.27 (6)	1.78 (9)	1.43 (14)	0.94 (17)	0.61 (15)	13.31 (7)	B C D E F	94.7
AFX779	7	1.64 (19)	1.69 (10)	2.36 (3)	2.40 (4)	1.84 (7)	1.64 (6)	1.15 (7)	0.59 (16)	13.31 (8)	B C D E F	94.7
SW88-304	8	2.18 (4)	1.66 (14)	2.29 (7)	1.87 (14)	1.94 (3)	1.53 (10)	1.14 (9)	0.65 (11)	13.25 (9)	B C D E F	94.3
715RR	7	1.68 (18)	1.67 (12)	2.18 (11)	2.32 (5)	1.93 (5)	1.53 (12)	1.20 (5)	0.58 (17)	13.09 (10)	B C D E F	93.2
UC Highline	9	1.92 (14)	1.67 (13)	2.15 (12)	2.18 (9)	1.72 (11)	1.39 (16)	1.02 (14)	0.69 (7)	12.74 (11)	C D E F	90.7
SW9215RRS	9	2.16 (6)	1.67 (11)	2.24 (10)	1.74 (15)	1.64 (14)	1.53 (11)	1.00 (16)	0.73 (5)	12.71 (12)	C D E F	90.5
UC Cibola	9	1.80 (16)	1.72 (8)	2.13 (13)	2.14 (11)	1.64 (16)	1.54 (9)	1.11 (12)	0.63 (14)	12.71 (13)	C D E F	90.4
HVX840RR	8	1.92 (15)	1.76 (4)	2.02 (15)	1.91 (13)	1.64 (15)	1.68 (4)	1.00 (15)	0.64 (13)	12.57 (14)	D E F	89.4
SW10	10	1.93 (13)	1.80 (2)	2.07 (14)	1.59 (18)	1.67 (13)	1.40 (15)	1.12 (11)	0.68 (9)	12.26 (15)	E F	87.3
UC Impalo	9	2.17 (5)	1.59 (16)	1.95 (17)	1.61 (17)	1.60 (17)	1.48 (13)	1.12 (10)	0.66 (10)	12.17 (16)	E F	86.6
Magna 905	9	2.00 (10)	1.45 (19)	1.94 (18)	1.98 (12)	1.59 (18)	1.38 (17)	1.06 (13)	0.64 (12)	12.05 (17)	E F	85.8
Experimental Varieties												
98218	8	1.96 (12)	1.74 (6)	2.00 (16)	1.62 (16)	1.80 (8)	1.28 (18)	0.93 (18)	0.53 (18)	11.86 (18)	F	84.4
UC 2705	9	1.69 (17)	1.47 (18)	1.78 (19)	1.48 (19)	1.24 (20)	0.94 (19)	0.67 (19)	0.43 (19)	9.70 (19)	G	69.1
UC 2693	9	1.45 (20)	0.95 (20)	0.95 (20)	1.26 (20)	1.47 (19)	0.58 (20)	0.42 (20)	0.23 (20)	7.30 (20)	H	52.0
MEAN		1.98	1.65	2.12	2.06	1.74	1.49	1.06	0.64	12.73		
CV		14.80	14.01	12.94	25.47	17.37	15.80	19.85	19.48	10.23		
LSD (0.1)		0.36	0.28	0.34	0.64	0.37	0.29	0.26	0.15	1.59		

Trial seeded at 25 lb/acre viable seed at San Joaquin Valley Agricultural Sciences Center, Parlier, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

Table 8. 2020-2021 YIELDS. USDA ARS PARLIER ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 3/10/2020

		2020	2021		
		Yield	Yield	Average	
	FD	Dry t/a			
Released Varieties					
SW9812	9	4.89 (2)	14.96 (1)	9.93 (1)	A
SW9813	9	5.26 (1)	14.16 (4)	9.71 (2)	A B
Desert Rose	8	4.81 (4)	14.52 (2)	9.67 (3)	A B
SW8421-S	8	4.85 (3)	13.64 (6)	9.24 (4)	A B C
CUF 101	9	4.12 (10)	14.05 (5)	9.09 (5)	A B C D
SW8421RRS	8	3.92 (14)	14.23 (3)	9.08 (6)	A B C D
AFX779	7	4.52 (5)	13.31 (8)	8.91 (7)	B C D E
SW88-304	8	4.36 (7)	13.25 (9)	8.80 (8)	C D E
715RR	7	4.48 (6)	13.09 (10)	8.79 (9)	C D E
Super Sonic	9	3.97 (13)	13.31 (7)	8.64 (10)	C D E F
HVX840RR	8	4.29 (9)	12.57 (14)	8.43 (11)	C D E F G
SW9215RRS	9	4.00 (12)	12.71 (12)	8.36 (12)	D E F G
SW10	10	4.01 (11)	12.26 (15)	8.14 (13)	E F G
UC Cibola	9	3.54 (16)	12.71 (13)	8.12 (14)	E F G
UC Highline	9	3.40 (17)	12.74 (11)	8.07 (16)	E F G
Magna 905	9	3.79 (15)	12.05 (17)	7.92 (17)	F G
UC Impalo	9	3.32 (18)	12.17 (16)	7.75 (18)	G
Experimental Varieties					
98218	8	4.29 (8)	11.86 (18)	8.07 (15)	E F G
UC 2705	9	2.77 (20)	9.70 (19)	6.24 (19)	H
UC 2693	9	2.79 (19)	7.30 (20)	5.05 (20)	
MEAN		4.07	12.73	8.40	
CV		18.40	10.23	8.33	
LSD (0.1)		0.92	1.59	0.86	

Trial seeded at 25 lb/acre viable seed at San Joaquin Valley Agricultural Sciences Center, Parlier, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

SUGGESTED FALL DORMANCY RANGE AND MINIMUM ALFALFA CULTIVAR PEST RESISTANCE RATINGS FOR SIX CALIFORNIA CLIMATE ZONES. Growers selecting varieties from different regions should emphasize the pests that are most important for their area.

Production Zone	Rating Factor										
	FD	SAA	PA	BAA	PRR	BW	FW	An	Stn	RKN	VW
Intermountain	2--4	S	R	MR	R	R	HR	R	R	R	R
Sacramento Valley	4--8	MR	HR	HR	HR	MR	HR	R	R	R	R
San Joaquin Valley	7--9	R	HR	HR	HR	MR	HR	R	HR	HR	R
Coastal	5--7	MR	HR	HR	HR	MR	HR	R	HR	HR	R
High Desert	4--7	R	R	R	R	MR	HR	MR	HR	HR	R
Low Desert	8--9	HR	HR	HR	HR	S	HR	HR	R	HR	S

NOTE: These pest resistance recommendations were originally developed by Dr. Vern Marble, Extension Agronomist, UC Davis, based upon decades of experience with alfalfa varieties in various locations in California. Zones correspond to the principle regions of alfalfa production in California.

EXPLANATION OF PEST RESISTANCE. Alfalfa varieties consist of a population of plants which have varying degrees of resistance to an insect or disease. Since alfalfa fields can sustain considerable loss of individual plants without reducing productivity, alfalfa varieties with 51% or over are considered to be highly resistant, since resistant plants will make up for losses from other plants.

Resistance Level	Abbreviation	Percent resistance ¹
Highly Resistant	HR	>51%
Resistant	R	31-50%
Moderately Resistant	MR	15-30%
Low Resistance	LOW	6-14%
Susceptible	S	<5%
Tolerant	T	(see definition)

¹ Percent of plants in a population resistant to a given pest

Definitions

I - Immune -- Not subject to attack for a specified pest. Immunity is absolute, and seldom occurs in alfalfa.

R - Resistant -- The ability of plants to withstand pest attack. Resistance is not absolute but varies by degree. Even highly resistant varieties will have some plants that are susceptible (see above percentages). NOTE: Very high insect populations or very severe disease conditions can overwhelm pest resistance in alfalfa.

S - Susceptible -- Damage commonly occurs when in the presence of a specified pest. Inability of a variety to withstand adverse disease or insect conditions.

T - Tolerant -- Ability of plants to sustain yields when confronted with a pest attack or environmental condition (e.g. salt or grazing). Tolerant varieties are affected by the condition, but still maintain yields at high levels relative to less tolerant varieties.

