



AGRONOMY PROGRESS REPORT

2020 CALIFORNIA ALFALFA VARIETY TRIAL RESULTS

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INTRODUCTION

This publication details alfalfa yield trial data for multiple-year, single harvest, and single year summaries for the year 2020. Yield trials were conducted in the Intermountain area (Tulelake and Scott Valley), the San Joaquin Valley (Five Points) and the Sacramento Valley (Davis). The alfalfa variety trial data from the University of California is placed online well in advance of this published report, see <http://alfalfa.ucdavis.edu/+producing/variety>.

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 (dormant, semi-dormant, or non-dormant 90% varieties) in the **Northern Central Valley**, 7-8 cut systems (semi-dormant to non-dormant varieties) in the **Southern Central Valley** and 8-11 cut systems (non-dormant varieties) in the **Low Desert Environment**.

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

California Alfalfa Acreages by Section

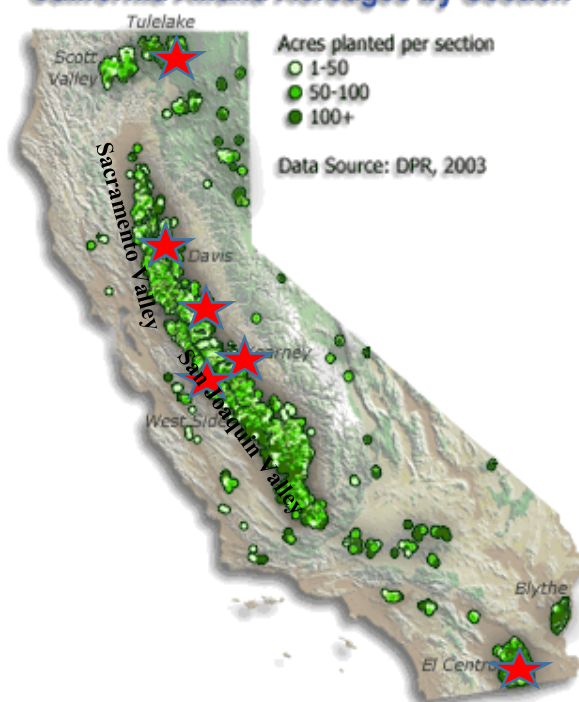


Figure 1. California alfalfa acreage. The Intermountain region is represented by Tulelake and Scott Valley, Sacramento Valley by Davis, San Joaquin Valley by Modesto, Parlier and Five Points Locations, and Low Desert by the El Centro trial.

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release within the next few years. This report provides single year and over-the-year summary from alfalfa trials harvested in California in 2020.

TESTING VARIETY PERFORMANCE - 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.

Three alfalfa-variety yield trials were harvested in 2020 at Tulelake, Scott Valley 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. Four 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 than is commonly used. 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.

2020 YIELD RESULTS

Intermountain Region

2017 UC Tulelake Yield Trial -- This trial was planted with 44 entries on May 22, 2017. Four cuttings were taken during the 2020 season with the first cutting taking place on June 15, 2020. Single year results from the 2020 harvests are provided in Table 1. The average yield across all varieties was 8.5 tons/acre. The yearly yield averages between high and low varieties (9.2 t/A and 7.7 t/A respectively) varied by 1.5 tons or about 20% of the lowest yielding line. Yields for 2017-2020 averaged nearly 7.5 tons/acre, ranging from 6.8t/A -8.0t/A (Table 2). It should be pointed out that this trial was spring planted, and thus yields were understandably low for 2017,

thereby reducing the four-year trial average. The CVs were relatively low; indicating control of varieties was stable 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 first year of harvest. Single year results from the 2020 harvests are provided in Table 3. Three cuts were taken, but data only reported for harvests on 6/17/20 and 9/5/20 due to mechanical problems. The average yield across all varieties was 5.4 tons/acre. The yearly yield averages between high and low varieties (6.0 t/A and 4.8 t/A respectively) varied by 1.2 tons or about 25% of the lowest yielding line.

Sacramento Valley Region

2019 UC Davis Variety Trial. This trial was planted 10/4/19 and includes 28 entries. Harvesting for yield began in the spring of 2020. Seven cuttings were taken during the 2020 season with the first cutting taking place on April 21, 2020. Single year results from the 2020 harvests are provided in Table 4. The average yield across all varieties was 11.3 tons/acre. The yearly yield averages between high and low varieties (12.6 t/A and 9.6 t/A respectively) varied by 3.0 tons or about 31% of the lowest yielding line.

Low Desert Region

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

San Joaquin Valley Region

2017 UC Westside Salinity Yield Trial – This trial was established 3/29/17 with 35 varieties in 4 replications at the West Side Research and Extension Center, Five Points, CA. This trial uses subsurface drip irrigation (SDI) to supply irrigation water uniformly, and occasional sprinkling for salt leaching. Low salinity treatments (LS) were watered with salinity levels of approximately 1.0-1.5 ds/l (ECw) and high salinity (HS) irrigations were approximately 8.0-10.0 ds/l (ECw). Yield results from seven cuts taken in 2020 show an average yield of 14.7 t/A in the LS treatments and 10.2 t/A in the HS treatments, a yield penalty of 4.5 t/A (Tables 5-6). Given the respectable average yield of HS treatments shows that alfalfa performs moderately well as a salt tolerant forage crop. The cumulative average yield for 2017-2020 shows a yield reduction of 10.0 t/A, or a 22% yield loss for varieties in the high salinity treatment (Table 7) NOTE: Single year data should not be used to judge the performance of alfalfa varieties.

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 (see #3).
3. **Consider the Fall Dormancy and Pest resistance Ratings** of individual varieties – available at the Alfalfa Alliance Website (www.alfalfa.org).
4. **Choose those 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. This 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 Vince Silva, Dale Pattigan and staff for help with the field plots at UC Kearney Ag Center, Merf Solorio and crew for help with the field plots at Westside Research and Extension Center, Darrin Culp, Giuliano Galdi and Rob Wilson's crew at the Intermountain Research and Extension Center, Luis Loza and Israel Herrera for help on the U.C. Davis plots.

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Table 1. 2020 YIELDS, TULELAKE ALFALFA CULTIVAR TRIAL. 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	Cut 3	Cut 4	YEAR		% of
		11-Jun	16-Jul	11-Aug	23-Sep	TOTAL		VERNAL
FD	Dry t/a							
Released Varieties								
WL365HQ	5	2.97 (4)	2.67 (1)	1.76 (1)	1.84 (4)	9.23 (1)	A	120.0
FG R513W227S	5	2.73 (24)	2.62 (7)	1.72 (2)	1.94 (1)	9.01 (2)	A B	117.2
Nexgrow 6422Q	4	2.90 (8)	2.64 (4)	1.67 (7)	1.78 (8)	8.98 (3)	A B C	116.8
SW5210	6	3.08 (1)	2.62 (6)	1.54 (27)	1.68 (27)	8.92 (4)	A B C D	116.0
Nexgrow 6585Q	5	2.81 (16)	2.61 (8)	1.65 (10)	1.82 (7)	8.89 (5)	A B C D E	115.6
Integra 8450	4	2.92 (5)	2.62 (5)	1.56 (23)	1.77 (11)	8.88 (6)	A B C D E	115.5
WL377HQ	5	2.74 (23)	2.60 (10)	1.70 (4)	1.84 (3)	8.88 (7)	A B C D E	115.5
SW4107	4	2.81 (14)	2.64 (3)	1.64 (12)	1.75 (15)	8.84 (8)	A B C D E	114.9
FG R410W253	4	2.76 (21)	2.59 (12)	1.65 (11)	1.83 (6)	8.82 (9)	B C D E F	114.7
FG R513M225S	5	2.69 (30)	2.52 (21)	1.72 (3)	1.87 (2)	8.80 (11)	B C D E F	114.5
WL363HQ	5	2.71 (29)	2.66 (2)	1.61 (14)	1.77 (12)	8.75 (13)	B C D E F G H	113.8
Integra 8444R	4	2.67 (31)	2.57 (16)	1.66 (8)	1.78 (9)	8.67 (15)	B C D E F G H I J	112.8
AmeriStand 545NT RI	5	2.63 (36)	2.58 (14)	1.69 (5)	1.77 (10)	8.66 (16)	B C D E F G H I J	112.6
FG R513W224S	5	2.71 (8)	2.50 (23)	1.66 (9)	1.77 (14)	8.64 (18)	B C D E F G H I J K L	112.3
54Q29	4	2.89 (9)	2.57 (17)	1.52 (30)	1.64 (34)	8.63 (20)	B C D E F G H I J K L	112.2
Hybriforce-4400	4	3.01 (2)	2.52 (20)	1.43 (35)	1.66 (33)	8.63 (21)	B C D E F G H I J K L	112.2
SW5213	5	2.73 (25)	2.61 (9)	1.60 (18)	1.67 (28)	8.61 (22)	C D E F G H I J K L	112.0
Genuity-RR	4	2.65 (33)	2.56 (19)	1.60 (17)	1.73 (18)	8.53 (23)	D E F G H I J K L M	111.0
Hybriforce-3600	6	2.55 (41)	2.56 (18)	1.59 (19)	1.84 (5)	8.53 (24)	D E F G H I J K L M	110.9
Xtra-3	4	2.48 (43)	2.58 (13)	1.61 (15)	1.73 (17)	8.39 (27)	G H I J K L M	109.1
Dekalb 43-13	4	2.60 (37)	2.47 (29)	1.54 (28)	1.77 (13)	8.38 (28)	G H I J K L M	108.9
Hybriforce-3430	3	2.88 (11)	2.42 (37)	1.34 (42)	1.72 (20)	8.37 (29)	G H I J K L M	108.8
Archer III	5	2.78 (17)	2.50 (24)	1.42 (36)	1.62 (38)	8.32 (32)	I J K L M	108.1
Integra 8420	4	2.66 (32)	2.44 (33)	1.49 (33)	1.69 (26)	8.28 (33)	J K L M N	107.6
PG459	4	2.77 (19)	2.48 (27)	1.37 (40)	1.62 (37)	8.25 (35)	K L M N	107.2
Hybriforce-3420/Wel	4	2.76 (20)	2.47 (30)	1.41 (37)	1.61 (40)	8.25 (36)	K L M N	107.2
4R200	4	2.58 (39)	2.43 (35)	1.50 (32)	1.72 (19)	8.24 (37)	L M N	107.1
WL 372HQ-RR	5	2.55 (40)	2.42 (38)	1.58 (20)	1.63 (35)	8.18 (38)	M N O	106.4
Hi-Gest 360	3	2.78 (18)	2.46 (31)	1.35 (41)	1.58 (41)	8.17 (39)	M N O	106.2
Ameristand 445-NT	4	2.65 (34)	2.34 (41)	1.31 (43)	1.51 (43)	7.82 (42)	O P Q	101.6
Ameristand 427TQ	4	2.54 (42)	2.30 (43)	1.38 (39)	1.55 (42)	7.77 (43)	P Q	101.0
Vernal	2	2.72 (27)	2.30 (42)	1.22 (44)	1.44 (44)	7.69 (44)	Q	100.0
Experimental Varieties								
RRL414M377	4	2.99 (3)	2.59 (11)	1.57 (21)	1.66 (30)	8.82 (10)	B C D E F	114.6
RRL414M104	4	2.81 (15)	2.57 (15)	1.68 (6)	1.70 (23)	8.76 (12)	B C D E F G	114.0
RRL514W209	5	2.91 (6)	2.49 (26)	1.60 (16)	1.70 (24)	8.70 (14)	B C D E F G H I	113.1
H0515QT102	5	2.84 (13)	2.48 (28)	1.63 (13)	1.70 (25)	8.65 (17)	B C D E F G H I J K	112.4
H0415QT111	4	2.87 (12)	2.45 (32)	1.57 (22)	1.74 (16)	8.63 (19)	B C D E F G H I J K L	112.2
msSunstra-143146	3	2.89 (10)	2.49 (25)	1.45 (34)	1.67 (29)	8.50 (25)	E F G H I J K L M	110.5
H0415A3144	4	2.76 (22)	2.51 (22)	1.56 (24)	1.62 (39)	8.44 (26)	F G H I J K L M	109.7
SW4466	4	2.91 (7)	2.44 (34)	1.39 (38)	1.63 (36)	8.36 (30)	G H I J K L M	108.8
H0415ST202	4	2.73 (26)	2.39 (39)	1.52 (31)	1.71 (21)	8.36 (31)	H I J K L M	108.6
msSunstra-155202	6	2.59 (38)	2.43 (36)	1.54 (26)	1.71 (22)	8.26 (34)	K L M N	107.4
RRL414W208	4	2.65 (35)	2.28 (44)	1.55 (25)	1.66 (31)	8.14 (40)	M N O P	105.8
RRL514W201	5	2.34 (44)	2.38 (40)	1.52 (29)	1.66 (32)	7.90 (41)	N O P Q	102.8
MEAN		2.75	2.51	1.55	1.71	8.51		
CV		6.27	4.30	6.18	5.75	3.97		
LSD (0.1)		0.20	0.13	0.11	0.12	0.40		

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 2. 2017-2020 YIELDS, TULELAKE ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 5/22/17

		2017	2018	2019	2020	Average		% of	
	FD	Yield	Yield	Yield	Yield			Vernal	
		Dry t/a							
Released Varieties									
WL365HQ	5	3.80 (9)	9.64 (9)	9.42 (2)	9.23 (1)	8.02 (1)	A	116.7	
HybriForce-4400	4	4.14 (4)	9.74 (6)	8.95 (10)	8.63 (21)	7.86 (2)	A B	114.4	
Integra 8450	4	3.76 (11)	9.72 (7)	9.03 (5)	8.88 (6)	7.85 (3)	A B C	114.1	
SW5210	6	3.74 (12)	9.51 (12)	9.05 (4)	8.92 (4)	7.81 (5)	A B C D	113.6	
SW4107	4	3.04 (29)	9.84 (2)	9.50 (1)	8.84 (8)	7.81 (6)	A B C D	113.5	
Nexgrow 6422Q	4	3.03 (35)	9.89 (1)	9.27 (3)	8.98 (3)	7.79 (7)	A B C D E	113.3	
HybriForce-3430	3	3.98 (6)	9.79 (4)	8.66 (22)	8.37 (29)	7.70 (8)	B C D E F	112.0	
WL363HQ	5	3.78 (10)	9.26 (21)	8.94 (11)	8.75 (13)	7.68 (9)	B C D E F	111.7	
Nexgrow 6585Q	5	3.74 (13)	9.25 (22)	8.83 (15)	8.89 (5)	7.68 (10)	B C D E F	111.7	
FG R513W224S	5	3.64 (18)	9.50 (13)	8.92 (12)	8.64 (18)	7.68 (11)	B C D E F	111.6	
WL377HQ	5	3.04 (27)	9.66 (8)	8.98 (6)	8.88 (7)	7.64 (12)	B C D E F	111.1	
HybriForce-3420/Wet	4	4.09 (5)	9.57 (10)	8.55 (30)	8.25 (36)	7.61 (13)	C D E F	110.7	
SW5213	5	3.51 (22)	9.51 (11)	8.82 (16)	8.61 (22)	7.61 (14)	C D E F	110.7	
FG R513W227S	5	3.27 (24)	9.20 (26)	8.96 (8)	9.01 (2)	7.61 (15)	C D E F	110.7	
FG R513M225S	5	3.71 (16)	9.19 (27)	8.69 (20)	8.80 (11)	7.60 (16)	D E F	110.5	
54Q29	4	3.04 (30)	9.76 (5)	8.95 (9)	8.63 (20)	7.59 (17)	D E F	110.5	
HybriForce-3600	6	4.28 (2)	9.25 (23)	8.32 (36)	8.53 (24)	7.59 (18)	D E F	110.4	
FG R410W253	4	3.61 (20)	9.20 (24)	8.67 (21)	8.82 (9)	7.58 (19)	D E F G	110.2	
Genuity-RR	4	3.74 (14)	9.20 (25)	8.81 (17)	8.53 (23)	7.57 (20)	D E F G	110.1	
AmeriStand 545NT RR	5	3.41 (23)	9.35 (17)	8.83 (14)	8.66 (16)	7.56 (21)	E F G	110.0	
Xtra-3	4	3.54 (21)	9.41 (15)	8.89 (13)	8.39 (27)	7.56 (22)	E F G	110.0	
Dekalb 43-13	4	3.81 (8)	9.27 (19)	8.71 (19)	8.38 (28)	7.54 (23)	F G H	109.7	
Integra 8444R	4	3.72 (15)	9.27 (20)	8.42 (34)	8.67 (15)	7.52 (25)	F G H I	109.4	
PG459	4	4.16 (3)	9.01 (31)	8.64 (23)	8.25 (35)	7.52 (26)	F G H I J	109.3	
Archer III	5	3.03 (38)	9.41 (16)	8.62 (27)	8.32 (32)	7.34 (27)	G H I J K	106.8	
Integra 8420	4	3.03 (34)	9.42 (14)	8.44 (33)	8.28 (33)	7.29 (30)	I J K	106.1	
Hi-Gest 360	3	3.03 (39)	9.30 (18)	8.63 (26)	8.17 (39)	7.28 (31)	J K	105.9	
WL 372HQ-RR	5	3.02 (42)	9.19 (28)	8.56 (29)	8.18 (38)	7.24 (33)	K L	105.3	
4R200	4	3.67 (17)	8.72 (37)	8.29 (37)	8.24 (37)	7.23 (35)	K L M	105.1	
Ameristand 427TQ	4	3.04 (25)	8.95 (32)	8.24 (38)	7.77 (43)	7.00 (40)	M N O P	101.8	
Ameristand 445-NT	4	3.04 (26)	8.86 (35)	8.12 (40)	7.82 (42)	6.96 (41)	N O P	101.2	
Vernal	2	3.03 (32)	8.68 (39)	8.10 (41)	7.69 (44)	6.88 (43)	O P	100.0	
Experimental Varieties									
msSunstra-143146	3	4.30 (1)	9.83 (3)	8.73 (18)	8.50 (25)	7.84 (4)	A B C	114.0	
SW4466	4	3.62 (19)	9.13 (29)	8.98 (7)	8.36 (30)	7.52 (24)	F G H I	109.4	
RRL414M377	4	3.04 (28)	8.86 (34)	8.52 (31)	8.82 (10)	7.31 (28)	H I J K	106.3	
msSunstra-155202	6	3.86 (7)	9.03 (30)	8.04 (42)	8.26 (34)	7.30 (29)	I J K	106.2	
RRL414M104	4	3.03 (40)	8.69 (38)	8.63 (24)	8.76 (12)	7.28 (32)	J K	105.9	
RRL514W209	5	3.03 (31)	8.63 (40)	8.57 (28)	8.70 (14)	7.23 (34)	K L M	105.2	
H0415ST202	4	3.03 (37)	8.87 (33)	8.63 (25)	8.36 (31)	7.22 (36)	K L M	105.0	
H0415A3144	4	3.03 (36)	8.73 (36)	8.45 (32)	8.44 (26)	7.16 (37)	K L M N	104.1	
H0515QT102	5	3.02 (41)	8.43 (42)	8.33 (35)	8.65 (17)	7.11 (38)	K L M N O	103.3	
H0415QT111	4	3.02 (44)	8.46 (41)	8.00 (44)	8.63 (19)	7.03 (39)	L M N O	102.2	
RRL414W208	4	3.02 (43)	8.42 (43)	8.15 (39)	8.14 (40)	6.93 (42)	N O P	100.8	
RRL514W201	5	3.03 (33)	8.20 (44)	8.01 (43)	7.90 (41)	6.79 (44)	P	98.7	
MEAN		3.44	9.20	8.66	8.51	7.45			
CV		8.16	3.66	3.47	3.97	2.69			
LSD (0.1)		0.33	0.40	0.36	0.40	0.24			

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 3. 2020 YIELDS (2 cuttings) 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

		YEAR TOTAL		
		dry t/A		
	FD			
6585 Q	5	Nexgrow Alfalfa	6.0	(1)
Nexgrow 6516	5	Nexgrow Alfalfa	5.9	(2)
Hybriforce 3400	4	Alforex	5.9	(3)
AFX Hybriforce 4400	4	Alforex	5.7	(4)
LG EXTERRA	5	LG Seeds	5.6	(5)
AFX 579	5	Alforex	5.5	(6)
Ameristand 518 NT	5.2	Americas Alfalfa	5.5	(7)
AFX 360 Highgest	3	Alforex	5.5	(8)
SW4107	4	S&W	5.5	(9)
LG 4R300	4.1	LG Seeds	5.5	(10)
SW5210	5	S&W	5.5	(11)
DG 4210 Dynagro	4	Dynagro	5.4	(12)
SW3407	3	S&W	5.4	(13)
AFX Magnum 8	4	Alforex	5.4	(14)
Ameristand 415 NT RR	4.3	Americas Alfalfa	5.3	(15)
LG Camas	4	LG Seeds	5.3	(16)
SW 4412Y	4	S&W	5.3	(17)
DG 5315	5	Dynagro	5.3	(18)
AFX 460	4	Alforex	5.2	(19)
LG 5R300	5	LG Seeds	5.1	(20)
Ameristand 545 NT RR	5.4	Americas Alfalfa	5.1	(21)
WL 377 HQ	5	W-L Alfalfa	5.0	(22)
6422Q	4	Nexgrow Alfalfa	5.0	(23)
Ameristand 427TQ	4	Americas Alfalfa	4.8	(24)
MEAN			5.40	
CV			8.10	
LSD (0.1)			NS	

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

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

FD = Fall Dormancy reported by seed companies.

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

Table 4. 2020 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

		Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Cut 6	Cut 7	YEAR		% of
		21-Apr	27-May	24-Jun	21-Jul	21-Aug	22-Sep	28-Oct	TOTAL		CUF101
	FD										
										Dry t/a	
CUF101	9	2.08 (9)	2.36 (5)	2.58 (6)	1.80 (2)	2.02 (1)	0.79 (5)	0.95 (1)	12.59 (1)	A	100.0
PGI 908-S	9	2.11 (7)	2.37 (3)	2.57 (8)	1.83 (1)	1.84 (6)	0.77 (8)	0.85 (10)	12.35 (2)	A B	98.1
SW9215	9	1.87 (21)	2.37 (3)	2.72 (1)	1.69 (9)	1.99 (2)	0.83 (2)	0.85 (10)	12.32 (3)	A B C	97.9
UC Impalo	9	2.11 (7)	2.14 (18)	2.61 (4)	1.63 (13)	1.91 (4)	0.90 (1)	0.95 (1)	12.26 (4)	A B C D	97.4
Ameristand 901TS	9	2.20 (2)	2.17 (13)	2.50 (13)	1.66 (12)	1.95 (3)	0.81 (3)	0.92 (5)	12.20 (5)	A B C D	97.0
WL656HQ	6	2.02 (11)	2.17 (13)	2.54 (11)	1.60 (18)	1.84 (5)	0.79 (5)	0.88 (8)	11.85 (6)	A B C D E	94.2
59N59	9	2.28 (1)	2.30 (8)	2.42 (17)	1.63 (13)	1.52 (20)	0.76 (12)	0.92 (5)	11.83 (7)	A B C D E	94.0
UC Highline	9	2.02 (11)	2.01 (25)	2.65 (2)	1.80 (3)	1.59 (16)	0.77 (8)	0.95 (3)	11.79 (8)	A B C D E	93.7
SuperNova	9	1.93 (15)	2.24 (10)	2.46 (15)	1.72 (6)	1.70 (8)	0.77 (8)	0.92 (7)	11.74 (9)	A B C D E F	93.2
SW6330	6	2.05 (10)	2.17 (13)	2.61 (5)	1.72 (7)	1.66 (12)	0.76 (12)	0.69 (18)	11.66 (10)	A B C D E F	92.7
DS1168	6	1.93 (17)	2.20 (11)	2.65 (2)	1.75 (4)	1.66 (11)	0.76 (11)	0.69 (19)	11.64 (11)	A B C D E F	92.5
57Q53	7	1.79 (25)	2.30 (7)	2.57 (8)	1.75 (4)	1.70 (7)	0.74 (17)	0.76 (16)	11.60 (12)	A B C D E F	92.2
SW9813	9	2.14 (3)	2.04 (23)	2.57 (7)	1.60 (19)	1.62 (14)	0.76 (12)	0.82 (13)	11.56 (13)	A B C D E F G	91.8
Ameristand 803T	8	1.87 (22)	2.50 (1)	2.44 (16)	1.67 (10)	1.67 (10)	0.74 (16)	0.57 (25)	11.46 (14)	A B C D E F G	91.1
6906N	9	2.02 (11)	2.17 (13)	2.50 (12)	1.60 (19)	1.59 (15)	0.74 (17)	0.82 (12)	11.44 (15)	A B C D E F G	90.9
SW8421-S	8	1.93 (17)	2.11 (19)	2.42 (17)	1.63 (15)	1.66 (13)	0.76 (12)	0.88 (9)	11.40 (16)	A B C D E F G	90.6
Saltana	9	2.14 (3)	2.07 (21)	2.50 (13)	1.44 (25)	1.48 (22)	0.79 (5)	0.79 (14)	11.21 (17)	A B C D E F G	89.1
SuperSonic	9	2.14 (3)	2.14 (17)	2.31 (23)	1.60 (19)	1.59 (16)	0.74 (17)	0.66 (23)	11.18 (18)	A B C D E F G	88.9
Catalina	9	1.76 (26)	2.01 (25)	2.24 (26)	1.66 (11)	1.70 (8)	0.81 (3)	0.95 (3)	11.12 (19)	B C D E F G	88.4
Magna 715	7	1.93 (17)	2.20 (11)	2.35 (21)	1.63 (15)	1.52 (20)	0.72 (21)	0.69 (19)	11.05 (20)	B C D E F G	87.8
Hi-Gest 660	6	1.96 (14)	2.40 (2)	2.28 (25)	1.35 (27)	1.44 (23)	0.70 (22)	0.76 (15)	10.89 (21)	C D E F G H	86.5
AFXH155203	6	1.93 (17)	2.11 (20)	2.42 (17)	1.49 (23)	1.55 (18)	0.68 (23)	0.63 (24)	10.82 (22)	D E F G H	86.0
SW9812	9	1.73 (27)	1.99 (27)	2.40 (20)	1.62 (17)	1.54 (19)	0.72 (20)	0.76 (16)	10.74 (23)	E F G H	85.3
Ameristand 618NT	5	1.85 (23)	2.07 (21)	2.31 (23)	1.69 (8)	1.37 (25)	0.63 (25)	0.69 (19)	10.61 (24)	E F G H	84.3
Bulldog 805	8	1.82 (24)	1.91 (28)	2.35 (21)	1.58 (22)	1.41 (24)	0.61 (26)	0.66 (22)	10.33 (25)	F G H	82.1
SW7410	7	2.14 (3)	2.04 (24)	2.20 (27)	1.49 (23)	1.26 (27)	0.66 (24)	0.50 (27)	10.31 (26)	F G H	81.9
Ameristand 518NT	7	1.46 (28)	2.33 (6)	2.57 (8)	1.38 (26)	1.30 (26)	0.53 (28)	0.54 (26)	10.12 (27)	G H	80.4
CW 704	7	1.93 (15)	2.27 (9)	2.01 (28)	1.24 (28)	1.16 (28)	0.55 (27)	0.41 (28)	9.57 (28)	H	76.1
MEAN		1.97	2.19	2.46	1.62	1.62	0.74	0.77	11.34		
CV		11.09	16.86	14.46	16.11	18.83	14.65	24.84	10.60		
LSD (0.1)		0.26	NS	NS	NS	0.37	0.13	0.23	1.45		

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 5. 2020 Westside Alfalfa Salinity Trial, Five Points, CA (planted 3/29/17). High salinity treatment yields of 7 harvests.

Variety	2-Apr yield t/A	5-May yield t/A	4-Jun yield t/A	8-Jul yield t/A	11-Aug yield t/A	9-Sep yield t/A	14-Oct yield t/A	Season total yield t/A
UC Salton	2.10	2.66	2.60	2.67	1.55	0.67	0.90	13.15
SW9573	1.85	2.88	2.57	2.53	1.49	0.72	0.94	12.99
UC Impalo	1.61	2.56	2.62	2.69	1.56	0.70	0.79	12.54
SW8412	1.70	2.62	2.43	2.26	1.32	0.68	0.79	11.80
AZ-88NDC	1.58	2.11	2.36	2.63	1.54	0.65	0.78	11.65
Integra 8810S	1.56	2.54	2.47	2.62	1.10	0.59	0.72	11.60
CUF101	1.67	2.55	2.34	2.32	1.31	0.58	0.78	11.56
PGI 908-S	1.56	2.43	2.44	2.55	1.09	0.62	0.86	11.56
9R100	1.67	2.73	2.26	2.34	1.13	0.51	0.72	11.36
SW9106M	1.57	2.32	2.19	2.61	1.06	0.62	0.90	11.29
SW8476	1.63	2.60	2.26	2.71	0.92	0.57	0.57	11.26
R814W258S	1.56	2.26	2.21	2.33	1.35	0.52	0.68	10.90
H0916ST223	1.36	2.52	2.17	2.55	1.12	0.45	0.58	10.75
SW8421RRS	1.56	2.43	2.41	2.42	0.85	0.48	0.53	10.68
SW9577	1.57	2.26	2.14	2.13	1.14	0.50	0.59	10.32
R914W259S	1.42	2.43	2.31	2.12	0.78	0.44	0.56	10.06
AZ-90NDC-ST	1.58	2.39	1.99	2.02	1.06	0.44	0.57	10.06
SW9215RRS	1.28	2.32	2.06	2.60	0.74	0.39	0.59	9.97
C0916ST232	1.46	2.27	1.95	2.38	0.85	0.40	0.55	9.86
FGR814W275	1.39	2.26	1.82	2.01	1.35	0.43	0.60	9.84
H0916ST216	1.13	2.18	2.02	2.24	1.13	0.40	0.56	9.66
SW8409	1.46	2.24	2.00	1.90	1.08	0.48	0.46	9.61
H0915ST212	1.29	2.24	1.90	2.06	1.13	0.48	0.52	9.61
H0716ST227	1.16	2.04	1.89	2.37	1.04	0.47	0.58	9.56
H0715ST209	1.19	2.07	2.01	2.24	0.91	0.48	0.64	9.55
H0916ST218	1.17	1.98	1.93	2.06	0.96	0.39	0.50	8.98
SW9576	1.53	2.18	1.98	1.93	0.42	0.35	0.46	8.86
AFX149092	1.37	2.05	1.86	1.92	0.64	0.40	0.51	8.75
H0815ST210	1.23	1.97	1.76	2.01	0.92	0.39	0.47	8.75
H0916ST217	1.14	2.21	1.79	1.94	0.75	0.40	0.43	8.66
R814W257S	1.37	2.21	1.74	1.63	0.73	0.41	0.57	8.65
H0915ST214	1.21	1.88	1.91	1.66	0.78	0.41	0.49	8.34
H0716ST222	1.27	1.91	1.74	1.40	1.07	0.31	0.36	8.06
H0715ST211	1.25	2.03	1.68	1.62	0.42	0.27	0.40	7.68
Mean	1.5	2.3	2.1	2.2	1.0	0.5	0.6	10.2
CV%	18.3	18.4	17.4	24.1	47.9	35.7	31.8	18.1
LSD (p=0.05)	0.37	0.60	0.52	0.75	0.70	0.25	0.27	2.60

Table 6. 2020 Westside Alfalfa Salinity Trial, Five Points, CA (planted 3/29/17). Low salinity treatment yields of 7 harvests.

Variety	2-Apr yield t/A	5-May yield t/A	4-Jun yield t/A	8-Jul yield t/A	11-Aug yield t/A	9-Sep yield t/A	14-Oct yield t/A	Season total yield t/A
SW8421RRS	2.02	3.16	3.27	3.49	2.27	1.40	1.66	17.27
PGI 908-S	1.96	3.08	3.22	3.49	1.86	1.62	1.83	17.06
SW8476	2.16	3.16	2.81	3.29	2.19	1.57	1.52	16.71
SW9106M	2.17	2.90	2.72	3.19	1.88	1.72	1.81	16.39
R814W257S	2.10	3.11	3.09	2.88	2.15	1.53	1.51	16.37
9R100	1.91	2.90	2.85	3.06	2.44	1.50	1.65	16.32
R814W258S	1.92	3.01	2.66	2.98	2.39	1.51	1.63	16.11
H0915ST214	1.80	2.64	2.73	3.28	2.53	1.55	1.52	16.06
Integra 8810S	1.89	3.16	2.95	2.87	2.00	1.67	1.44	15.99
SW9215RRS	1.87	2.66	2.83	2.51	2.55	1.77	1.67	15.85
H0815ST210	1.79	2.95	2.75	3.43	1.62	1.49	1.63	15.66
R914W259S	1.98	2.84	2.77	2.82	1.76	1.76	1.66	15.60
AZ-90NDC-ST	1.81	3.43	2.69	2.91	1.65	1.40	1.64	15.52
UC Impalo	1.81	2.69	2.61	3.28	1.77	1.52	1.51	15.18
SW8409	1.92	3.11	2.78	2.78	1.70	1.39	1.49	15.17
SW9573	1.82	2.92	2.74	2.80	1.80	1.40	1.56	15.04
AFX149092	2.29	2.62	2.74	2.62	1.42	1.42	1.64	14.75
AZ-88NDC	1.92	2.60	2.49	2.82	1.67	1.38	1.74	14.61
H0715ST209	1.62	2.49	2.73	2.56	2.30	1.35	1.43	14.47
SW8412	1.87	2.64	2.61	2.78	1.73	1.42	1.40	14.44
SW9577	1.82	2.81	2.74	2.67	1.68	1.23	1.39	14.34
H0915ST212	1.76	2.77	2.79	2.98	1.37	1.32	1.22	14.22
H0715ST211	1.80	2.67	2.64	2.30	1.98	1.28	1.32	14.00
C0916ST232	1.85	2.46	2.35	2.58	1.54	1.47	1.62	13.86
UC Salton	1.80	2.49	2.35	2.17	2.04	1.46	1.50	13.81
H0916ST218	1.66	2.73	2.38	2.55	1.53	1.30	1.32	13.47
CUF101	1.69	2.34	2.28	2.65	1.70	1.19	1.25	13.10
FGR814W275	1.69	2.49	2.22	2.45	1.64	1.08	1.46	13.02
H0716ST227	1.79	2.56	2.53	2.40	1.16	1.13	1.31	12.88
H0916ST216	1.59	2.22	2.14	2.71	1.25	1.64	1.32	12.87
H0916ST217	1.54	2.33	2.17	2.34	1.45	1.29	1.22	12.34
SW9576	1.65	2.41	2.16	2.39	1.20	1.10	1.41	12.33
H0916ST223	1.80	2.37	2.23	2.37	1.48	0.78	1.24	12.27
H0716ST222	1.71	2.09	2.02	1.93	1.63	1.25	1.36	11.99
Mean	1.8	2.7	2.6	2.8	1.8	1.4	1.5	14.7
CV%	16.3	17.3	23.7	28.3	47.6	37.8	20.0	21.1
LSD (p=0.05)	0.42	0.66	0.87	1.10	1.20	0.75	0.42	4.34

Table 7. Westside Alfalfa Salinity Trial (planted 3/29/17 Five Points, CA). 2017-2020 Cumulative Yield of alfalfa grown under low and high saline conditions.

Variety	2017 Season Yield (ton/A)		2018 Season Yield (ton/A)		2019 Season Yield (ton/A)		2020 Season Yield (ton/A)		Cumulative Average (t/A)	
	Low Salinity	High Salinity	Low Salinity	High Salinity	Low Salinity	High Salinity	Low Salinity	High Salinity	Low Salinity	High Salinity
UC Salton	5.2	5.2	12.0	12.2	15.0	13.4	13.8	13.2	46.0	44.0
SW9573	5.5	5.1	12.0	11.3	14.4	13.3	15.0	13.0	47.0	42.7
SW9106M	4.7	5.5	12.9	10.4	15.2	13.2	16.4	11.3	49.2	40.4
AZ-88NDC	6.0	4.7	13.7	10.9	14.4	13.0	14.6	11.6	48.6	40.4
9R100	5.5	5.0	14.6	11.1	16.0	12.5	16.3	11.4	52.4	40.0
Integra 8810S	4.9	4.6	12.9	11.3	15.6	12.3	16.0	11.6	49.5	39.8
UC Impalo	4.5	4.9	12.7	9.9	15.4	12.3	15.2	12.5	47.8	39.6
PGI 908-S	5.4	5.0	14.3	9.8	15.9	13.0	17.1	11.6	52.7	39.3
SW8421RRS	5.0	5.5	13.5	11.3	16.2	11.7	17.3	10.7	52.0	39.2
CUF101	4.9	4.6	12.9	10.4	13.7	12.6	13.1	11.6	44.6	39.2
H0916ST223	4.5	4.9	10.8	10.5	13.8	12.8	12.3	10.8	41.4	38.9
SW9577	5.2	5.0	13.7	10.2	14.8	12.4	14.3	10.3	48.1	38.0
C0916ST232	5.3	4.8	12.9	10.7	13.4	11.8	13.9	9.9	45.5	37.1
SW9215RRS	4.8	5.2	13.3	10.1	15.8	11.5	15.9	10.0	49.8	36.8
R814W258S	4.8	4.7	11.8	9.1	15.0	11.9	16.1	10.9	47.8	36.6
SW8476	4.5	4.8	13.1	9.1	15.4	11.5	16.7	11.3	49.8	36.6
H0715ST209	4.5	5.0	10.2	10.4	12.5	10.8	14.5	9.5	41.7	35.7
AZ-90NDC-ST	4.8	4.4	12.5	9.3	14.8	11.6	15.5	10.1	47.6	35.5
R914W259S	4.2	4.5	11.5	9.0	15.4	11.3	15.6	10.1	46.6	34.9
R814W257S	5.2	4.6	13.7	9.4	16.1	12.0	16.4	8.7	51.5	34.7
SW8409	4.9	5.0	11.7	9.0	13.8	11.0	15.2	9.6	45.7	34.5
H0916ST218	4.9	4.9	12.1	9.4	14.2	11.2	13.5	9.0	44.6	34.5
SW8412	4.9	3.7	12.3	8.4	13.3	10.0	14.4	11.8	45.0	33.9
H0716ST227	4.2	4.4	10.6	9.0	12.4	10.5	12.9	9.6	40.1	33.5
FGR814W275	3.5	3.6	10.5	9.2	14.0	10.9	13.0	9.8	41.1	33.5
H0916ST216	4.5	3.7	11.5	8.5	12.6	11.4	12.9	9.7	41.4	33.3
SW9576	4.9	4.6	11.5	9.5	11.4	9.9	12.3	8.9	40.1	32.8
H0915ST214	4.3	4.0	11.3	8.9	15.5	11.5	16.1	8.3	47.2	32.8
AFX149092	4.7	4.0	13.5	8.3	14.1	11.1	14.7	8.7	47.0	32.1
H0915ST212	4.8	3.9	11.1	8.4	13.8	10.1	14.2	9.6	43.9	32.1
H0815ST210	4.7	4.0	11.8	8.4	14.3	10.5	15.7	8.7	46.5	31.8
H0916ST217	4.0	4.2	10.4	8.6	12.4	9.9	12.3	8.7	39.0	31.4
H0716ST222	4.9	4.3	12.9	7.9	14.0	10.7	12.0	8.1	43.8	31.0
H0715ST211	5.0	4.0	11.5	8.6	13.2	10.2	14.0	7.7	43.7	30.5
Average	4.8	4.6	12.3	9.6	14.4	11.5	14.7	10.2	46.1	36.1
Yield loss	4%		22%		20%		31%		22%	
Treatment Mean	4.7		11.0		13.0		13.0		41.1	
CV%	16.3		16.5		12.8		20.5		10.0	
LSD (p=0.05)	0.2		1.8		1.6		0.6		1.0	

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.

