2018

Washington State Hay Growers Association

ALFALFA VARIETY TRIALS

RESULTS

Conducted by Washington State University Extension

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Nine alfalfa trials were harvested for yield in irrigated central Washington State in 2018. The Washington State Hay Growers Association (WSHGA) sanctions the trials and contracts with Washington State University (WSU) Extension to conduct and report the research. Three conventional trials are conducted near Othello, WA and three conventional and three Roundup Ready™ (RR) trials near Pasco, WA. The trials are named by the year the fall planting occurred.

For 2015, 2016, 2017 and 2018 trials, the Othello site is located on the WSU Othello research farm 6 miles ESE of Othello, WA at Lat: N46°47'41 Lng: W119°02'33, at an elevation of 1154 feet. This was the last year for the Pasco site located on Garfield Road at Lat: N46°' 28'999 Lng: W119° 06'852, at an elevation of 870 feet. A new Pasco site was established in fall 2016 with both the 2016, 2017 and 2018 plantings established at 3128 Ivy Road, Pasco, WA at Lat: 46°17'51.01"N Lng: 119° 8'22.40"W with an elevation of 446 ft.

The soils are a Shano silt loam (coarse-silty, mixed-mesic Xerollic Camborthids) at Othello, and a Sagehill very fine sandy loam (coarse-loamy, mixed, mesic Xerillic Camborthids) at the Garfield Road location and a Quincy loamy fine sand (Xeric Torripsamments) at the Ivy Road location. All trials were sprinkler irrigated throughout the April-October growing season. The frost-free (32°F) period at Othello averages 180 days and 209 days at Pasco.

Each trial is arranged in a randomized complete block (RCB) design with 4 replications. All are seeded at 22 lbs/ac in rows spaced 6 inches apart with a 1-foot inter-plot separation. Plot size is 4 x 15 feet. The trials contain some experimental entries that are not available for commercial planting. Forage yields are collected for each submitted entry for three years on each planting.

Coefficient of Variation or "CV" is estimated using statistics and gives an estimate of the variability in the field. The lower the number the less variation in the measurements taken and the more likely you can determine a significant difference between treatments. Least significant difference or "LSD" is used to determine if the varieties are statistically different from each other. If the difference between two treatment means is greater than the LSD then you can determine that one variety yielded greater than another with a high level of confidence (90% for LSD at 0.10). For the longest yield duration in the table, I highlight in yellow the yields of the varieties that yielded statistically similar to the highest yielding variety using the LSD method.

Tables 1 - 3 contain a summary of annual total of yields for alfalfa varieties since the fall planting in 2012 to 2014 at the Pasco and Othello locations. Yields are presented in percent of mean of the test for ease of comparison. Table 4 is from: NAFA's "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties – 2019 Edition and previous editions". For a complete copy of the NAFA document visit www.alfalfa.org/varietyLeaflet.php.

Forage yields for each harvest, total season yield for 2018 and the totals for all years of the trials from those planted in the fall of 2014 to date are reported in Tables 5 through 13. Yields are determined from whole plot fresh weights converted to a 100% dry matter basis using a constant dry matter fraction of 20%. Ratings for regrowth after 5th cutting were taken on September 10, 2018 respectively, and represent visual ratings from 1-5. Rating scale was: 1 - little to no regrowth,

2 - below average regrowth, 3 - average regrowth, 4 - above average regrowth, and 5 - high amount of regrowth.

At the end of each experiment final stands were evaluated for percent stand. This was determined by visually determining how many 6-inch gaps were found between plants in each of the seeded rows compared to the number of 6 inch blocks there are in a plot and calculating the percentage.

The WSHGA-WSU goal for the alfalfa variety testing project is to identify varieties for growers that are adapted to the Columbia Basin region that will tolerate both biotic (pests) and abiotic (environmental) stresses.

This year was the last year at the Garfield (Pasco) location which contained 2015 Pasco Conventional and 2015 Pasco RR trial. Due to irrigation and gopher problems I determined not published the data due to confounded results, which would make them less reliable. The goal of this annual publication is to provide growers and others the best, most reliable quality results possible. Last year data from these trials are published in their place. The other 7 experiments were at other locations and not affected by these problems.

This is the first year first cutting quality samples was funded by seed companies and results can be seen in Tables 14 through 22. A method of determining nutrient and fiber value was used according to Dr. Wiess, Nutritionist, who spoke on "Innovations in Forage Digestibility Analyses/Changing Concepts of Forage Quality" at the 2017 Western Alfalfa and Forage Symposium and can be viewed at http://alfalfa.ucdavis.edu/+symposium/2019/workshop.aspx and select the talk at 1:15 pm. This method allows a total dollar value of hay to be calculated on each variety. The numbers given is based on an "as fed" basis with values based in the Midwest since none were available for the PNW. Values for: protein, energy, fiber, and an adjustment for fiber fill effect on dairy cow milk production. I used this method because it allows us to know what in the hay brings value to the dairy industry which is the main ultimate use of our high-quality hay. Maybe you will be surprised that even for dairies protein brings more value than energy contained in the hay. I would be happy to try to answer any questions on how the numbers were calculated.

I want to especially thank Gisela Guzman-Rivas, Rocio Blanco, Megan Bean, Jason Mieirs, Steve Fransen, Josefina Guzman, and Bailey Young for their assistance with this year's trials and planting of next year's trials. I also want to thank the Washington State Hay Growers Association and Washington State University Extension for their continued support.

Please don't hesitate to contact me if you have any questions on the trials. My email is: s.norberg@wsu.edu.

Sincerely,

Regional Forage Specialist

Table 1. 2018 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2013 at WSU Othello Research Farm, WA

	Seeded August 2013				Seeded August 2014				Seeded August 2015				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
Entry	**2014**	**2015**	**2016**	**3 Yr.**	**2015**	**2016**	**2017**	**3 Yr.**	**2016**	**2017**	**2018**	**3 Yr.**	**2013 & 2014 Trials**	**2014 & 2015 Trials**	**2013 & 2015 Trials**
12005	105.1%	96.7%	86.9%	**97.5%**											
55Q27					101.9%	111.0%	113.3%	**108.1%**							
6585Q	105.6%	104.9%	113.1%	**107.4%**											
AmeriStand 427TQ	98.4%	101.6%	106.6%	**101.6%**	98.0%	107.1%	104.2%	**102.8%**	104.5%	102.6%	111.7%	**106.3%**	**102.2%**	**104.6%**	**104.0%**
AmeriStand 445NT	98.5%	103.7%	104.5%	**101.8%**					98.1%	98.0%	100.7%	**99.0%**			**100.4%**
Camas	96.0%	94.2%	101.2%	**98.8%**	100.4%	112.3%	112.3%	**107.7%**					**103.3%**		
CB11007*					103.0%	94.1%	100.2%	**99.2%**							
CB11009*					101.9%	91.7%	80.7%	**92.7%**	96.5%	97.3%	77.5%	**90.3%**		**91.5%**	
DSD01-T	110.4%	111.2%	118.1%	**112.8%**											
DSD06-M	104.7%	103.0%	103.9%	**103.9%**											
FG 48W214*					100.8%	106.9%	106.9%	**104.6%**							
FSG 415BR					106.7%	103.4%	103.4%	**104.6%**							
FSG403LR	102.7%	106.8%	98.1%	**102.7%**											
FSG423ST	98.9%	97.7%	90.2%	**96.1%**											
FSG424	96.9%	97.5%	101.4%	**98.3%**											
FSG426									109.2%	110.1%	114.8%	**111.4%**			
GrandStand	96.7%	98.4%	98.5%	**97.7%**											
GrandsStand II									97.9%	98.7%	124.0%	**107.0%**			
Hi-Gest 360*					99.2%	99.4%	103.2%	**100.3%**							
Magnitude					99.5%	105.2%	103.5%	**102.6%**							
SGS 47M					105.1%	111.0%	107.3%	**107.7%**	105.9%	106.8%	100.4%	**104.4%**		**106.1%**	
SW4107									108.6%	109.5%	106.3%	**108.1%**			
SW4328					102.3%	98.3%	99.1%	**100.0%**							
SW4332*					101.5%	98.9%	103.1%	**101.0%**							
SW5213									107.4%	108.3%	101.6%	**105.7%**			
SW5512Y									96.6%	97.4%	97.9%	**97.3%**			
Vernal	82.0%	81.0%	71.8%	**78.9%**	**82.9%**	**72.3%**	**71.9%**	**76.3%**	77.0%	77.6%	76.7%	**77.1%**		**76.7%**	**78.0%**
Vernema	99.1%	99.4%	93.2%	**97.6%**	**94.3%**	**81.0%**	**83.4%**	**86.8%**	94.0%	90.5%	80.0%	**88.1%**		**87.4%**	**92.9%**
WL 354HQ					102.5%	107.5%	107.5%	**105.6%**							
Total-Tons/Acre	**12.03**	**9.42**	**8.07**	**29.52**	**10.77**	**9.68**	**7.50**	**27.95**	**8.45**	**8.38**	**8.62**	**25.5**			
LSD (0.10)	**6.3%**	**8.2%**	**10.5%**	**8.3%**	**5.2%**	**5.6%**	**5.6%**	**4.5%**	**6.5%**	**7.6%**	**15.2%**	**8.1%**			
CV (%)	**5.3%**	**6.9%**	**7.4%**	**5.8%**	**4.3%**	**4.7%**	**4.7%**	**3.8%**	**5.4%**	**6.4%**	**12.7%**	**6.80%**			

Table 2. 2018 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2013 - Near Pasco, WA

	Seeded August 2013				Seeded August 2014				Seeded August 2015			6 YR Avg. of	5 YR Avg. of	5 YR Avg. of
Entry	**2014**	**2015**	**2016**	**3 Yr.**	**2015**	**2016**	**2017**	**3 Yr.**	**2016**	**2017**	**2 Yr.**	**Seeded 13 & 14**	**Seeded 14 & 15**	**Seeded 13 & 15**
12005	100.5%	107.5%	101.0%	**103.3%**										
55Q27					106.1%	106.0%	107.5%	**106.5%**						
55VR05**					104.6%	105.4%	108.5%	**106.0%**						
6585Q	102.5%	100.8%	103.7%	**102.2%**										
AmeriStand 427TQ	92.8%	94.9%	100.6%	**96.2%**	99.9%	100.6%	108.9%	**102.8%**				**99.5%**		
AmeriStand 445NT	105.9%	106.1%	115.5%	**109.2%**										
Camas	103.7%	105.6%	109.5%	**106.4%**	103.4%	104.5%	113.2%	**106.7%**	98.3%	99.8%	**99.0%**	**106.5%**	**102.8%**	**102.7%**
CB11001					98.1%	98.0%	99.0%	**98.3%**						
CB11007*					105.3%	104.9%	109.2%	**106.3%**						
CB1109*									102.2%	96.2%	**99.4%**			
DG 4210	105.9%	96.7%	92.9%	**98.0%**										
DG 5315									104.1%	111.7%	**107.6%**			
FG 48W214*					104.5%	105.3%	112.5%	**107.1%**						
FSG524	104.8%	107.8%	110.4%	**106.4%**										
GrandStand	100.6%	100.3%	98.6%	**99.8%**										
GrandStand II									107.0%	108.0%	**107.4%**			
Hi-Gest 660					93.9%	95.9%	106.1%	**98.2%**						
Integra 8420									108.2%	109.6%	**108.9%**			
L455HD	99.1%	100.6%	98.4%	**99.4%**										
Nimbus	104.6%	103.1%	104.0%	**103.8%**										
SGS 47M					98.5%	100.2%	103.6%	**100.6%**						
SW 4107									103.1%	105.2%	**104.1%**			
SW 4328					100.5%	99.6%	94.1%	**98.3%**						
SW 4332*					102.6%	101.8%	104.3%	**102.8%**						
SW 5212Y*									97.0%	94.2%	**95.7%**			
SW 5213									97.8%	93.8%	**95.9%**			
Vernal	84.9%	83.2%	75.0%	**80.9%**	82.8%	80.7%	55.8%	**74.2%**	80.2%	75.1%	**77.8%**	**77.5%**	**76.0%**	**79.4%**
Vernema	94.9%	93.3%	90.6%	**92.8%**	102.8%	100.4%	80.1%	**95.3%**	94.1%	87.5%	**91.0%**	**94.1%**	**93.2%**	**91.9%**
WL 365HQ									99.9%	109.6%	**104.4%**			
WL 377HQ									108.2%	109.4%	**108.8%**			
Total Tons/Acre	**7.47**	**10.07**	**10.08**	**27.65**	**10.76**	**10.09**	**8.67**	**29.52**	**11.44**	**10.01**	**21.44**			
LSD Years (0.10)	**8.4%**	**6.9%**	**10.6%**	**6.8%**	**7.5%**	**8.0%**	**8.7%**	**6.6%**	**6.7%**	**7.6%**	**6.3%**			
CV(%)	**7.0**	**4.9**	**8.8**	**5.6**	**6.3**	**6.8**	**7.2**	**5.6**	**5.6**	**6.4**	**5.3**			

Table 3. 2018 Summary of Roundup Sprayed Alfalfa Yield Trials Planted Since 2012 - Near Pasco, WA

	Seeded August 2013				Seeded August 2014				Seeded August 2015			6 YR Avg.	5 YR Avg.	5 YR Avg.
Entry	**2014**	**2015**	**2016**	**3 Yr.**	**2015**	**2016**	**2017**	**3 Yr.**	**2016**	**2017**	**2Yr.**	**Seeded 13 & 14**	**Seeded 14 & 15**	**Seeded 13 & 15**
428RR	100.6%	101.4%	101.3%	**101.1%**										
4R200	101.7%	103.8%	102.7%	**102.8%**	103.2%	103.6%	103.7%	**103.5%**	102.7%	104.3%	**103.5%**	**103.1%**	**103.5%**	**103.2%**
AmeriStand 545NT RR									100.4%	106.3%	**103.2%**			
DKA 41-18 RR	99.1%	99.9%	99.4%	**99.5%**										
DKA 43-22 RR	102.1%	100.9%	102.2%	**101.7%**	103.2%	96.2%	97.9%	**99.0%**				**100.3%**		
DKA 44-16 RR	100.7%	98.0%	98.8%	**99.1%**										
DKA40-51RR					98.2%	96.4%	97.5%	**97.3%**						
DKA44-16RR					100.0%	103.7%	101.6%	**101.9%**	101.8%	100.5%	**101.2%**		**101.5%**	
FG R410W253									97.8%	96.0%	**97.0%**			
FG R49A132	95.8%	96.0%	95.7%	**95.8%**										
Integra R8401RR									95.9%	90.6%	**93.4%**			
RR501					98.5%	98.5%	103.0%	**100.0%**	101.3%	102.3%	**101.8%**		**100.9%**	
WL 356HQ.RR					97.0%	101.5%	96.3%	**98.4%**						
Total Tons/Acre	**9.28**	**10.38**	**10.25**	**29.90**	**9.71**	**11.15**	**9.96**	**30.82**	**11.40**	**10.12**	**21.52**			
LSD (0.10)	**NS**	**NS**	**NS**	**NS**	**NS**	**4.1%**	**2.8%**	**2.1%**	**NS**	**6.7%**	**4.8%**			
CV(%)	**3.3**	**4.9**	**5.1**	**3.8**	**3.9**	**3.3**	**2.3**	**2.1**	**4.3**	**5.5**	**3.9**			

Table 4. Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties in these Trials*

Variety	Marketing	FD	WS	BW	VW	FW	AN	PRR	APH1	SAA	PA	BAA	SN	SRKN	NRKN	Salt	Tech.
54Q29	Pioneer	4		HR	HR	R	HR	HR	HR	R	HR		HR				C
54VR10	Pioneer	4		HR	HR	MR	HR	HR	HR	R	HR		R				R
54VR70	Pioneer	4		HR	HR	MR	HR	HR	HR	R	HR		R				R
55Q27	Pioneer	5		HR	HR	HR	HR	HR	HR	R	R		HR				C
55VR05	Pioneer	5		HR	HR	HR	HR	HR	HR	R	R		HR		HR		R
6424R	NEXGROW	4	2	HR	HR	HR	HR	HR	HR	MR	R		R				R
6427R	NEXGROW	4	1	HR	HR	HR	HR	HR	HR	MR	R		HR				R
AFX 429*	Alforex	3		HR	HR	HR	HR	HR	HR			R	R				C
AFX 457*	Alforex	4		HR	HR	HR	HR	HR	HR	R	HR		R			G	C
AFX 469*	Alforex	4		HR	HR	HR	HR	HR	HR				HR			G	C
AFX 579*	Alforex	5		HR	HR	HR	HR	HR	HR			R	HR			G	C
AmeriStand 415NT RR	America's Alf.	4		HR	HR	HR	HR	HR	HR		HR		HR		HR	G	R
Ameristand 427TQ	America's Alf.	4	1	HR	HR	HR	HR	HR	HR		R		HR			G	C
AmeriStand 427TQ	America's Alf.	4	1	HR	HR	HR	HR	HR	HR		R		HR			G	C
AmeriStand 445NT	America's Alf.	4	2	HR	R	HR	HR	HR	R	HR	R		HR		HR		C
AmeriStand 545NT RR	America's Alf.	5		R	HR	R	HR	HR	HR	HR	HR		HR	HR			R
Camas	Eureka	4		HR	R	HR	HR	HR	HR	HR	R		HR		HR		C
DG 417RR	CPS	4	1	HR	HR	HR	HR	HR	HR		R		R				R
DG 5315	CPS	5		HR	HR	HR	HR	HR	HR		HR		HR				C
DKA40-51RR	DeKalb	4	1	HR	HR	HR	HR	HR	HR	R			R				R
DKA43-22RR	DeKalb	4	2	HR	HR	HR	HR	HR	HR				HR		R		R
DKA43-22RR	DeKalb	4	2	HR	HR	HR	HR	HR	HR				HR		R		R
DKA44-16RR	DeKalb	4	2	HR	HR	HR	HR	HR	HR	R	R		R			G	R
DKA50-17	DeKalb	5	1	HR	HR	HR	HR	HR	HR		HR		R				C
FSG 426	Farm Science	4	2	HR	HR	HR	HR	HR	HR	MR	HR						C
Grandstand II	Dyna-Gro	4	2	HR	HR	HR	HR	HR	HR		R		HR				C
Hi-Gest 360	Alforex	3		HR	HR	HR	HR	HR	HR			R				G	C
Hi-Gest 660	Alforex	6		R	MR	HR	HR	R				R				G	C
HybriForce-3400	Dairyland	4	2	HR	HR	HR	HR	HR	HR		R		HR	R	HR		H
Integra 8420	Wilbur-Ellis	4		HR	HR	HR	HR	HR	HR	HR	R		HR		HR		C
Integra 8420	Wilbur-Ellis	4		HR	HR	HR	HR	HR	HR	HR	R		HR		HR		C
Integra 8444R	Wilbur-Ellis	4		R	HR	HR	HR	HR	R	HR			HR		R	G/F	R
LG 4R300	LG Seeds	4		HR	HR	HR	HR	HR	HR	HR	HR		HR				R
LG 5R300	LG Seeds	5		HR	HR	HR	HR	HR	HR	HR	HR		HR				R
Magnitude	Allied	4	2	HR	HR	HR	HR	HR	HR	R	R		HR			G	C
PGI 529	Alforex	5	1	HR	R	HR	HR	HR	HR	MR	R	MR					C
PGI 557	Alforex	5	2	HR	HR	HR	HR	HR	HR		R	R	HR		HR		C
Quail	Blue River Hyb.	5		HR	HR	HR	HR	HR	HR		R	MR	HR		R		C
Rebound 6XT	Croplan	4	1	HR	HR	HR	HR	HR	HR	R	HR						C
RR AphaTron 2XT	Croplan	4	2	HR	HR	HR	HR	HR	HR		R		R				R
RR501	Monsanto	5	2	HR		HR	HR	HR	HR		HR		HR			G/F	R
RRALF 4R200	Eureka	4	2	HR	HR	HR	HR	HR	HR	MR			HR		R		R
SGS 47M	J.R. Simplot	4	2	HR	HR	HR	HR	HR	HR		R		R				C
Slingshot	BrettYoung	5	2	R	HR	HR	HR	HR	HR	HR	HR		HR		HR		C
SW 4107	S & W	4		HR	HR	HR	HR	HR	HR	MR	R		R				C
SW 4328	S & W	5		R	R	HR	HR	HR		R	HR		R	R			C
SW5213	S & W	5		HR	HR	HR	HR	HR	HR	R	HR		HR				C
Vernal	Public	2		R	S	MR	S	S	S				SN		MR		C
Vernema	Public	4		MR	MR		LR	LR		MR			HR				C
WL 356HQ.RR	W-L Research	4	1	HR	HR	HR	HR	HR	HR	MR	R		HR			G	R
WL 365HQ	W-L Research	5	1	HR	HR	HR	HR	HR	HR	HR	HR		R				C

FD Fall Dormancy
WS Winter Survival
BW Bacterial Wilt
VW Verticillium Wilt

FW Fusarium Wilt
AN Anthrocnose Race 1
PRR Phytophthora Root Rot

SAA Spotted Alfalfa Aphid
PA Pea Aphid
BAA Blue Alfalfa Aphid
SN Stem Nematode

APH[1] Aphanomyces Race 1
SRKN Southern Root Knot Nematode
NRKN Northern Root Knot Nematode

* NAFA's "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties - 2015 Edition and previous editions". "For a more complete copy of the NAFA document visit www.alfalfa.org/varietyLeaflet.php." Blanks mean adequate testing has not yet occcured. Only data from publications were used.

Table 5. Three-Year Forage Yield - 2015 Alfalfa Variety Trial, Othello, Adams County, WA
Forage Yield (Ton DM/A)

Planted September 4, 2015		Fall	2016		2017		2018 Harvests							2016, 2017 & 2018		2018 Fall
		Dorm.	Total		Total	Total	18-May	15-Jun	26-Jul	28-Aug	10-Oct	Total	Total	Total		9/10/2018
Company	Entry	Rating	Tons/a	% Mean	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	% Mean	% Stand
Allied Seed	FSG 426	4	9.23	109.2%	9.23	110.1%	2.81	1.91	2.39	1.77	1.01	9.89	114.8%	28.35	111.4%	85.5
S&W Seed Co.	SW4107	4	9.18	108.6%	9.18	109.5%	2.53	1.55	2.15	2.07	0.86	9.16	106.3%	27.52	108.1%	86.5
Forage Genetics	Grandstand II *	4	8.27	97.9%	8.27	98.7%	3.08	1.75	2.63	2.04	1.18	10.69	124.0%	27.24	107.0%	80.4
America's Alfalfa	AmeriStand 427TQ	4	8.84	104.5%	8.60	102.6%	2.98	1.64	1.96	2.01	1.03	9.62	111.7%	27.06	106.3%	82.3
S&W Seed Co.	SW5213	5	9.08	107.4%	9.08	108.3%	2.68	1.25	1.73	1.95	1.15	8.75	101.6%	26.90	105.7%	82.9
RR Check	RR Check	4	8.82	104.3%	8.66	103.3%	2.95	1.46	2.10	1.89	0.94	9.34	108.5%	26.82	105.4%	83.8
Simplot Grower Solns	SGS 47M	4	8.96	105.9%	8.96	106.8%	2.68	1.55	1.97	1.83	0.61	8.65	100.4%	26.56	104.4%	80.5
America's Alfalfa	AmeriStand 455NT	4	8.29	98.1%	8.22	98.0%	2.71	1.29	2.01	1.83	0.84	8.68	100.7%	25.19	99.0%	79.4
S&W Seed Co.	SW5512Y	5	8.16	96.6%	8.16	97.4%	2.78	1.21	2.02	1.80	0.63	8.43	97.9%	24.76	97.3%	77.5
Precision Genetics	CB1109*	4	8.16	96.5%	8.16	97.3%	2.13	0.94	1.63	1.27	0.71	6.68	77.5%	22.99	90.3%	57.7
Conv. Check	Vernema	4	7.94	94.0%	7.59	90.5%	1.99	0.88	1.92	1.61	0.48	6.89	80.0%	22.42	88.1%	77.9
Conv. Check	Vernal	2	6.51	77.0%	6.51	77.6%	2.00	0.79	2.02	1.24	0.54	6.61	76.7%	19.62	77.1%	64.2
	Mean		**8.45**	**100.0%**	**8.38**	**100.0%**	**2.61**	**1.35**	**2.04**	**1.78**	**0.83**	**8.62**	**100.0%**	**25.45**	**100.0%**	**78.2**
	CV %		**5.4**	**5.4**	**6.4**	**6.4**	**14.1**	**24.6**	**20.8**	**11.9**	**37.0**	**12.7**	**12.7**	**6.8**	**6.8**	**9.8**
	LSD 10%		**0.55**	**6.5%**	**0.64**	**7.6%**	**0.44**	**0.40**	**NS**	**0.25**	**0.37**	**1.31**	**15.2**	**2.06**	**8.1**	**9.1**

* Entered as Experimentals

Table 6. Two-Year Forage Yield** - 2015 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 13, 2015		Fall	2016		2017 Harvests							2016-2017		Regrowth
		Dorm.	Total		18-May	20-Jun	18-Jul	17-Aug	25-Sep	Total		Two Year Total		Rating
Company	**Entry**	**Rating**	**Tons/a**	**% Mean**	**Cut 1**	**Cut 2**	**Cut 3**	**Cut 4**	**Cut 5**	**Tons/a**	**% Mean**	**Tons/a**	**% Mean**	**23-Oct-17**
Wilbur Ellis	Integra 8420	4	12.37	108.2	3.20	9.60	2.19	1.81	1.38	10.97	109.64	23.34	108.9	5.00
Forage Genetics	WL 377HQ*	5	12.38	108.2	3.19	10.03	2.22	1.71	1.32	10.95	109.38	23.32	108.8	4.50
Forage Genetics	DG 5315	5	11.91	104.1	3.26	10.06	2.26	1.75	1.39	11.17	111.65	23.08	107.6	4.50
Forage Genetics	Grandstand II	4	12.23	107.0	3.15	9.84	2.14	1.77	1.28	10.80	107.95	23.04	107.4	4.00
W-L Alflafa	WL 365HQ	5	11.43	99.9	3.08	9.92	2.31	1.76	1.34	10.97	109.60	22.40	104.4	4.50
S&W Seed Co.	SW4107	4	11.79	103.1	3.06	9.97	2.07	1.67	1.22	10.53	105.18	22.32	104.1	3.25
Precision Genetics	CB1109	4	11.69	102.2	3.08	9.20	1.73	1.45	1.07	9.63	96.19	21.31	99.4	3.50
Eureka Seed	Camas	4	11.24	98.3	2.95	8.55	1.99	1.61	1.31	9.99	99.83	21.23	99.0	5.00
S&W Seed Co.	SW5213	5	11.18	97.8	2.94	9.00	1.86	1.28	1.06	9.39	93.82	20.57	95.9	3.25
S&W Seed Co.	SW5512Y*	5	11.10	97.0	2.92	9.14	1.76	1.42	1.03	9.43	94.18	20.52	95.7	2.75
Conv. Check	Vernema	4	10.76	94.1	2.81	7.83	1.68	1.29	1.02	8.76	87.49	19.51	91.0	2.50
Conv. Check	Vernal	2	9.17	80.2	2.35	6.71	1.39	1.19	0.90	7.52	75.10	16.68	77.8	2.00
	Mean	**4.3**	**11.44**	**100.0**	**3.00**	**9.15**	**1.97**	**1.56**	**1.19**	**10.01**	**100.00**	**21.44**	**100.0**	**3.73**
	CV %		**5.6**	**5.6**	**8.5**	**6.7**	**8.2**	**8.8**	**8.7**	**6.4**	**6.40**	**5.30**	**5.30**	**12.7**
	LSD 10%		**0.77**	**6.7**	**0.31**	**0.18**	**0.19**	**0.16**	**0.12**	**0.76**	**7.59**	**1.35**	**6.30**	**0.56**

* Entered as Experimentals

**2018 The third year of this experiment had irrigation and gopher issues so two year data is presented.

Table 7. Two-Year Forage Yield** - 2015 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 13, 2015		Fall	2016		2017 Harvests							2016-2017		Regrowth
		Dorm.	Total		18-May	20-Jun	18-Jul	17-Aug	25-Sep	Total		Total		Rating
Company	**Entry**	**Rating**	**Tons/a**	**% Mean**	**Cut 1**	**Cut 2**	**Cut 3**	**Cut 4**	**Cut 5**	**Tons/a**	**% Mean**	**Tons/a**	**% Mean**	**23-Oct-17**
Eureka Seed	4R200	4	11.6765	102.7	2.97	2.43	2.11	1.74	1.30	10.56	104.3	22.23	103.5	5.00
America's Alfalfa	AmerisStand 545NT RR	5	11.4187095	100.4	3.07	2.32	2.19	1.81	1.37	10.76	106.3	22.18	103.2	4.75
Monsanto	RR501	5	11.519805	101.3	2.73	2.39	2.13	1.77	1.33	10.35	102.3	21.87	101.8	4.00
Monsanto	DKA44-16RR	4	11.570625	101.8	3.04	2.21	2.01	1.64	1.27	10.17	100.5	21.74	101.2	4.00
Forage Genetics	FG R410W253*	5	11.11869	97.8	2.62	2.17	1.99	1.62	1.32	9.72	96.0	20.84	97.0	3.75
Wilbur Ellis	Integra 8401RR	4	10.906335	95.9	2.71	2.13	1.83	1.45	1.05	9.17	90.6	20.08	93.4	3.00
	Mean	**4.5**	**11.4**	**100.0**	**2.86**	**5.14**	**2.04**	**1.67**	**1.27**	**10.12**	**100.0**	**21.49**	**100.0**	**4.08**
	CV %		**4.3**	**4.3**	**6.9**	**5.2**	**6.0**	**6.4**	**8.9**	**5.5**	**5.5**	**3.9**	**3.9**	**10.3**
	LSD 10%		**NS**	**NS**	**0.24**	**0.15**	**0.15**	**0.13**	**0.14**	**0.68**	**6.7**	**1.0**	**4.8**	**0.52**

* Entered as Experimentals

**2018 The third year of this experiment had irrigation and gopher issues so two year data is presented.

Table 8. Two-Year Forage Yield - 2016 Alfalfa Variety Trial, Othello, Adams County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2016		Fall	2017		2018 Harvests							2017-2018		2018 Fall
		Dorm.	Total	Total	18-May	15-Jun	26-Jul	28-Aug	11-Oct	Total	Total	Total	Total	10-Sep
Company	Entry	Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	% Mean	Regrowth
Alforex	PGI 529* (CW 085028)	5	10.88	108.2	3.57	2.31	2.51	2.39	1.20	11.98	112.0	22.9	110.1	5.0
Alforex	4H400* (CW 054004)	4	10.57	105.1	3.53	2.32	2.66	2.32	0.93	11.76	109.9	22.3	107.6	4.3
Pioneer	54Q29	4	10.53	104.7	3.54	1.99	2.39	2.27	1.17	11.35	106.2	21.9	105.5	4.0
Alforex	HG 4001* (CW 104015)	4	10.08	100.2	3.48	2.02	2.66	2.35	1.27	11.78	110.2	21.9	105.3	5.0
WL	WL 365HQ	5	10.68	106.2	3.18	2.09	2.51	2.35	1.03	11.16	104.3	21.8	105.2	5.0
Alforex	HybriForce-3420/Wet* (msSunstra-144109)	4	10.55	104.9	3.45	1.98	2.47	2.25	1.01	11.16	104.4	21.7	104.6	4.0
Dyna-Gro	DG5315	5	10.64	105.8	3.16	1.89	2.69	2.21	1.11	11.06	103.4	21.7	104.6	4.8
Alforex	msSunstra-144110*	4	10.42	103.6	3.59	1.76	2.56	2.31	1.04	11.27	105.3	21.7	104.5	4.0
Alforex	AFX 469* (CW 105006)	4	10.54	104.8	3.27	2.04	2.31	2.19	1.25	11.06	103.4	21.6	104.1	5.0
Alforex	AFX 579* (CW 105023)	5	9.96	99.0	3.18	2.24	2.52	2.26	1.38	11.57	108.2	21.5	103.7	5.0
Alforex	PGI 557* (CW 055023)	5	9.95	99.0	3.29	2.10	2.52	2.18	1.31	11.39	106.5	21.3	102.9	5.0
Alforex	Check 2*	3	10.20	101.4	3.36	2.03	2.56	2.21	0.99	11.15	104.3	21.3	102.9	4.0
S&W Seed Co	SW5213	5	10.39	103.3	3.35	2.02	2.21	2.23	1.04	10.85	101.5	21.2	102.4	4.5
Alforex	AFX 429* (CW 103012)	4	10.44	103.8	3.21	1.89	2.37	2.15	1.04	10.67	99.8	21.1	101.7	4.8
Alforex	Hi-Gest 360* (CW 103009)	3	10.02	99.7	3.44	1.84	2.43	2.24	1.04	10.98	102.7	21.0	101.2	4.0
Alforex	HybriForce-3430* (msSunstra-143147)	4	10.52	104.6	3.21	1.85	2.44	2.20	0.73	10.44	97.6	21.0	101.0	3.8
Blue River Hybrids	Mallard*	5	10.31	102.5	3.15	1.81	2.49	2.08	1.00	10.54	98.5	20.9	100.5	3.8
Croplan	Rebound 6XT	4	10.09	100.3	3.28	1.94	2.34	2.13	1.06	10.75	100.5	20.8	100.4	5.0
S&W Seed Co	SW5210	5	10.31	102.5	3.43	1.75	2.25	2.23	0.86	10.50	98.2	20.8	100.3	4.0
Alforex	HibriForce-3400* (msSunstra-803)	4	10.18	101.2	3.46	1.54	2.34	2.22	0.99	10.56	98.7	20.7	99.9	3.0
Alforex	DS1168*	6	10.04	99.8	3.19	1.78	2.30	2.18	1.12	10.56	98.8	20.6	99.3	4.0
Alforex	CW 105021*	4	9.54	94.8	3.32	2.04	2.40	2.14	1.09	11.00	102.8	20.5	98.9	4.5
Alforex	msSunstra-143146*	3	9.88	98.3	3.34	1.72	2.41	2.20	0.94	10.60	99.2	20.5	98.7	3.8
America's Alfalfa	427TQ	4	9.74	96.9	3.04	1.95	2.38	2.14	1.10	10.61	99.2	20.4	98.1	4.8
Alforex	CW 093009*	3	9.59	95.3	3.10	2.12	2.22	2.16	1.06	10.65	99.6	20.2	97.5	3.8
Alforex	AFX 457* (CW A114030)	4	9.67	96.2	3.08	1.70	2.49	2.09	1.16	10.52	98.4	20.2	97.3	3.8
Precision Genetics	CB11007	4	9.68	96.3	3.01	1.69	2.45	2.11	1.18	10.43	97.5	20.1	96.9	4.0
Wilbur Ellis	8420	4	9.89	98.3	2.94	1.76	2.35	2.04	1.11	10.20	95.4	20.1	96.8	4.8
America's Alfalfa	Ameristand 445NT	4	9.75	96.9	2.93	1.68	2.64	2.10	0.97	10.32	96.5	20.1	96.7	4.0
Alforex	Check 1*	5	9.88	98.3	3.25	1.38	2.18	2.06	0.95	9.81	91.8	19.7	94.9	3.5
Public	Vernal	2	8.47	84.2	2.74	1.25	2.13	1.64	0.39	8.16	76.3	16.6	80.1	2.0
Public	Vernema	4	8.44	83.9	2.22	0.87	2.03	1.72	0.55	7.40	69.1	15.8	76.3	2.3
	Mean	**4.2**	**10.06**	**100.0**	**3.23**	**1.86**	**2.41**	**2.17**	**1.03**	**10.70**	**100.0**	**20.8**	**100.0**	**4.1**
	CV %		**5.3**	**5.3**	**8.4**	**13.4**	**9.2**	**8.6**	**15.9**	**6.7**	**6.7**	**4.9**	**4.9**	**8.8**
	LSD 10%		**0.62**	**6.2**	**0.32**	**0.29**	**0.26**	**0.22**	**0.19**	**0.84**	**7.9**	**1.2**	**5.7**	**0.4**

* Entered as Experimentals

Table 9. Two-Year Forage Yield - 2016 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2016		Fall	2017 Harvests		2018 Harvests							2017 & 2018		2017 Fall**
		Dorm.	Total	Total	14-May	13-Jun	25-Jul	24-Aug	3-Oct	Total	Total	Total	Total	23-Oct
Company	Entry	Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	% Mean	Regrowth
Blue River Hybrids	Robin	5	9.93	97.4	2.48	2.22	1.99	2.09	1.05	9.82	96.4	19.7	96.9	4.5
DuPont Pioneer	54Q29	4	11.12	109.0	3.32	2.59	2.27	2.11	1.24	11.53	113.1	22.6	111.1	4.3
Legacy Seeds	L-504 HD	5	9.95	97.6	2.74	1.75	2.11	1.57	1.08	9.26	90.9	19.2	94.2	3.8
America's Alfalfa	Ameristand 445NT	4	10.26	100.7	2.36	2.30	2.25	2.29	1.30	10.49	103.0	20.8	101.8	4.5
CPS	DG5315	5	10.29	100.9	2.56	2.17	2.27	2.15	1.38	10.52	103.2	20.8	102.1	5.0
Croplan	Rebound 6XT	4	10.34	101.4	2.91	2.39	2.26	2.02	1.15	10.74	105.4	21.1	103.4	4.8
S&W Seed Co	SW5210*	5	10.93	107.2	3.15	2.36	2.31	2.33	1.17	11.32	111.1	22.3	109.2	4.0
S&W Seed Co	SW5213	5	11.27	110.6	2.86	2.38	2.36	2.12	1.38	11.11	109.1	22.4	109.8	4.5
S&W Seed Co	54Q29	4	11.05	108.4	2.66	2.34	2.24	2.44	1.29	10.96	107.6	22.0	108.0	4.5
Wilbur Ellis	Integra 8420	4	10.17	99.8	2.69	2.11	2.61	2.04	1.48	10.93	107.3	21.1	103.5	5.0
Vernema	Vernema	4	9.48	93.0	2.70	1.83	1.94	1.82	0.99	9.29	91.2	18.8	92.1	3.5
Vernal	Vernal	2	8.41	82.5	2.55	1.81	1.72	1.43	0.71	8.22	80.7	16.6	81.6	3.0
America's Alfalfa	AmeriStand 427 TQ	4	10.06	98.7	2.39	2.09	2.01	2.27	1.20	9.95	97.6	20.0	98.1	5.0
Precision Genetics	CB11007	4	10.00	98.1	2.26	1.91	2.10	2.16	1.10	9.52	93.5	19.5	95.8	5.0
Precision Genetics	CB11009	4	9.67	94.9	2.70	1.92	1.98	1.71	0.87	9.18	90.1	18.9	92.5	3.8
	Mean	**4.2**	**10.19**	**100.0**	**2.69**	**2.14**	**2.16**	**2.04**	**1.16**	**10.19**	**100.0**	**20.4**	**100.0**	**4.3**
	CV %		**6.3**	**6.3**	**14.1**	**10.3**	**9.3**	**13.2**	**18.4**	**6.6**	**6.6**	**5.3**	**5.3**	**9.3**
	LSD 10%		**0.77**	**7.6**	**0.45**	**0.26**	**0.24**	**0.32**	**0.26**	**0.80**	**7.9**	**1.3**	**6.3**	**0.5**

* Entered as Experimentals

** Data from 2017 as no regrowth was taken in 2018.

Table 10. Two-Year Forage Yield - 2016 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2016		Fall	2017 Harvests		2018 Harvests							2017 & 2018		2017 Fall**
		Dorm.	Total	Total	14-May	13-Jun	25-Jul	24-Aug	3-Oct	Total	Total	Total	Total	23-Oct
Company	Entry	Rating	Tons/a	% of Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% of Mean	Tons/a	% Mean	Regrowth
America's Alfalfa	AmeriStand 415NT RR	4	9.41	98.4	3.05	2.22	2.33	1.94	1.37	10.91	100.9	19.7	93.2	4.5
Croplan	RR AphaTron 2XT	4	9.73	101.7	2.88	2.46	2.47	2.07	1.25	11.13	103.0	22.6	106.8	4.3
DuPont Pioneer	54VR70	4	10.08	105.4	3.10	2.47	2.46	1.98	1.29	11.30	104.5	19.2	90.6	4.3
Eureka Seed	4R200	4	9.39	98.2	2.77	2.30	2.04	1.84	1.37	10.32	95.5	20.8	97.9	5.0
FG	FG R410A136*	4	9.70	101.4	2.53	2.48	2.39	1.98	1.30	10.68	98.8	20.8	98.1	5.0
Monsanto	DKA44-16RR	4	9.51	99.4	3.07	2.27	2.23	1.84	1.29	10.70	99.0	21.1	99.4	4.5
Monsanto	RR501	5	9.01	94.2	2.38	2.33	2.56	1.97	1.40	10.65	98.5	22.3	105.0	4.0
Nexgrow	6424R	4	9.57	100.1	2.92	2.35	2.35	1.90	1.17	10.68	98.9	22.4	105.6	4.5
S&W Seed Co	54VR10	4	10.10	105.6	3.21	2.62	2.60	2.13	1.47	12.03	111.3	22.0	103.8	4.3
Wilbur Ellis	Integra 8444R	4	9.13	95.5	2.36	2.09	2.30	1.78	1.15	9.68	89.6	21.1	99.6	5.0
	Mean	**4.1**	**9.56**	**100.0**	**2.83**	**2.36**	**2.37**	**1.94**	**1.31**	**10.81**	**100.0**	**21.2**	**100.0**	**4.5**
	CV %		**4.1**	**4.1**	**12.2**	**7.8**	**8.2**	**14.4**	**12.6**	**6.5**	**6.5**	**4.7**	**4.7**	**4.5**
	LSD 10%		**0.47**	**4.9**	**0.41**	**0.22**	**0.23**	**NS**	**NS**	**0.84**	**7.8**	**1.2**	**5.4**	**0.5**

* Entered as Experimentals

** Data from 2017 as no regrowth was taken in 2018.

Table 11. One-Year Forage Yield - 2017 Alfalfa Variety Trial, Othello, Adams County, WA
Forage Yield (Ton DM/A)

Planted August 10, 2017		Fall	2018 Harvests							2018 Fall
		Dorm.	26-May	23-Jun	19-Jul	23-Aug	23-Sep	Total	Total	23-Oct
Company	Entry	Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Regrowth
S & W Seed Company	SW4107	4	3.88	2.36	2.50	2.05	1.33	12.13	112.2	5.0
Conventional Check	Conventional Check	5	3.78	2.48	2.27	1.83	1.09	11.44	105.8	3.5
S & W Seed Company	SW5213	5	3.49	2.31	2.35	1.86	1.37	11.38	105.3	5.0
Brett Young	59W205	5	3.24	2.40	2.16	2.10	1.43	11.34	104.9	5.0
RR Check	RR Check	4	3.57	2.32	2.06	1.98	1.41	11.34	104.8	5.0
America's Alfalfa	AmeriStand 318TQ	3	3.50	2.37	1.96	1.97	1.36	11.17	103.3	4.8
Blue River Hybrids	Quail 5	5	3.20	2.25	2.23	1.97	1.42	11.07	102.4	5.0
Alforex Seeds	CW 104014	4	2.89	2.30	2.33	1.91	1.31	10.74	99.4	4.8
Alforex Seeds	CW A113005	4	2.90	2.29	2.33	1.89	1.24	10.65	98.5	4.8
America's Alfalfa	AmeriStand 445NT	4	3.17	2.07	2.18	1.81	1.21	10.44	96.6	4.5
Public	Vernema	4	2.28	2.12	2.27	1.62	1.18	9.47	87.6	4.0
Public	Vernal	2	2.32	1.82	1.90	1.56	0.97	8.57	79.3	2.0
	Mean	**4.1**	**3.19**	**2.26**	**2.21**	**1.88**	**1.28**	**10.81**	**100.0**	**4.4**
	CV %		**9.4**	**7.8**	**11.4**	**9.3**	**8.0**	**4.6**	**4.6**	**7.0**
	LSD 10%		**0.36**	**0.21**	**0.30**	**0.21**	**0.12**	**0.60**	**5.5**	**0.4**

* Entered as Experimentals

Table 12. One-Year Forage Yield - 2017 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2017

		Fall	2018 Harvests							2017 Fall
		Dorm.	8-May	7-Jun	24-Jul	24-Aug	3-Oct	Total	Total	23-Oct
Company	**Entry**	**Rating**	**Cut 1**	**Cut 2**	**Cut 3**	**Cut 4**	**Cut 5**	**Tons/a**	**% Mean**	**Regrowth**
Monsanto	DKA50-17	5	2.92	2.79	2.92	2.72	1.99	13.34	106.8	4.5
DuPont Pioneer	54Q29	4	2.92	3.01	2.77	2.58	1.89	13.17	105.3	4.3
S & W Seed Company	SW5213	5	2.65	3.14	2.80	2.62	1.84	13.05	104.4	4.5
Monsanto	DKA44-18	4	2.71	3.00	2.92	2.46	1.78	12.88	103.0	4.0
S & W Seed Company	SW4107	4	2.67	2.82	3.04	2.38	1.64	12.56	100.5	4.8
Brett Young	Slingshot (59W205)	5	2.46	2.88	3.01	2.44	1.68	12.47	99.8	5.0
LG Seeds	Camas	5	2.42	2.77	2.69	2.31	1.92	12.12	96.9	4.5
Vernal	Vernal	2	2.43	2.53	2.48	1.88	1.22	10.54	84.3	5.0
	Mean	**4.3**	**2.65**	**2.87**	**2.88**	**2.35**	**1.67**	**12.59**	**100.0**	5.0
	CV %		**8.4**	**11.4**	**7.8**	**10.0**	**19.7**	**3.3**	**3.3**	5.0
	LSD 10%		**0.27**	**NS**	**0.27**	**0.30**	**NS**	**0.50**	**4.0**	3.8

Table 13. One-Year Forage Yield - 2017 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2017		Fall	2018 Harvests						
		Dorm.	8-May	7-Jun	24-Jul	24-Aug	3-Oct	Total	Total
Company	Entry	Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% of Mean
NEXGROW	6427R	4	2.97	3.07	2.69	2.51	1.82	13.06	103.8
Pioneer	54VR70	4	2.74	3.00	3.09	2.55	1.61	12.99	103.2
Monsanto	DKA43-18RR	4	2.85	3.11	3.00	2.29	1.46	12.71	101.0
LG Seeds	4R300	4	2.68	2.88	2.76	2.30	1.87	12.49	99.2
LG Seeds	5R300	5	2.46	2.85	3.10	2.36	1.72	12.48	99.1
Monsanto	DKA50-20RR	5	2.45	3.08	2.90	2.42	1.59	12.45	98.9
CPS	DG 417RR	4	2.82	3.03	2.69	2.16	1.57	12.27	97.5
Monsanto	DKA44-16RR	4	2.63	2.90	2.80	2.21	1.72	12.27	97.4
	Mean	**4.25**	**2.70**	**2.99**	**2.88**	**2.42**	**1.73**	**12.50**	**100.0**
	CV %		**6.7**	**5.0**	**10.0**	**8.7**	**10.5**	**3.3**	**3.3**
	LSD 10%		**0.22**	**NS**	**NS**	**NS**	**0.21**	**0.50**	**4.0**

Table 14. Forage Quality Constituants and Hay Value per Ton - First Cutting 2017 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 10, 2017			Protein Content	Ash Free Neutral Deterg. Fiber (aNDF)	Ash Content	Fat Content	Lignin Content	Non-fibrous Charbohydrates (NFC)	Net Energy Lactation NEL (Method NRC 2001)	Neutral Deterg. Fiber Digestab. (NDFD 48.)	Total Value of Hay per Ton @ 12% Moist. [1,2,3]
Company	**Entry**	**Rating**	**%**	**%**	**%**	**%**	**%**	**%**	**Mcal/lb**	**%**	**$/ton**
Alforex Seeds	CW A113005*	4	23.3	38.4	10.20	1.92	6.23	28.5	0.597	54.1	262
Brett Young	Slingshot (59W205*)	5	22.7	39.6	10.07	1.81	6.43	28.0	0.586	51.9	252
Blue River Hybrids	Quail 5	5	21.9	39.6	9.30	1.9	6.4	29.6	0.595	51.5	251
America's Alfalfa	AmeriStand 445NT	4	22.4	40.7	9.84	1.8	6.6	27.5	0.580	51.8	245
America's Alfalfa	AmeriStand 318TQ	3	22.4	41.6	9.79	1.73	6.86	26.7	0.572	51.5	240
Alforex Seeds	CW 104014*	4	21.9	41.5	9.92	1.74	6.77	27.1	0.571	52.2	239
Vernal	Vernal	2	21.9	43.0	9.67	1.7	7.1	26.0	0.561	51.0	230
Vernema	Vernema	4	21.9	44.1	9.70	1.61	7.27	24.9	0.552	50.3	224
	Mean	**3.9**	**22.3**	**41.0**	**9.81**	**1.77**	**6.70**	**27.3**	**0.577**	**51.8**	**243**
	CV %		**3.7**	**3.7**	**4.7**	**6.9**	**4.1**	**5.6**	**2.7**	**3.5**	**4.5**
	LSD 10%		**1.0**	**1.8**	**0.56**	**0.15**	**0.34**	**1.9**	**0.019**	**1.8**	**13**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 15. Forage Quality Estimates RFV, RFQ,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake and Total Value per Ton As Fed From First Cutting of 2017 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 10, 2017			Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton[1]	Value of Energy (MegaCalories) per Ton[1]	Value of NDF Fiber per Ton[1]	Adj. For Feed Intake (-$5/ton for NDF>44%) per Ton[2]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Units**	**%**	**$/ton**	**$/ton**	**$/ton**	**$/ton**	**$/ton**
Alforex Seeds	CW A113005*	4	152	177	99	104	31	28	262
Brett Young	Slingshot (59W205*)	5	145	165	96	102	32	22	252
Blue River Hybrids	Quail 5	5	146	166	93	103	32	22	251
America's Alfalfa	AmeriStand 445NT	4	140	160	95	101	33	17	245
America's Alfalfa	AmeriStand 318TQ	3	135	155	95	99	34	12	240
Alforex Seeds	CW 104014*	4	137	157	93	99	34	13	239
Public	Vernal	2	129	147	93	97	35	5	230
Vernema	Vernema	4	125	141	93	96	36	0	224
	Mean	**3.9**	**139**	**159**	**95**	**100**	**33**	**15**	**243**
	CV %		**5.3**	**6.0**	**3.5**	**2.7**	**3.7**	**50.0**	**4.5**
	LSD 10%		**9**	**12**	**4**	**3**	**2**	**9**	**13**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 16. Alfalfa Yield,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and per Acre As Fed From First Cutting of 2017 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 10, 2017			First Cut Dry Matter Yield	Value of Metabol. Protein (@ 55% of C. Protein) per Acre[1]	Value of Energy (MegaCalories) per Acre[1]	Value of NDF Fiber per Acre[1]	Adjust. For feed intake per Acre[2]	Nutrient Value of Hay (@ 12% Moisture) per Acre[3]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Tons/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/ton**
America's Alfalfa	AmeriStand 318TQ	3	3.50	377	395	136	46	955	240
Brett Young	Slingshot (59W205*)	5	3.24	354	375	119	82	931	252
Blue River Hybrids	Quail 5	5	3.20	336	376	118	82	912	251
America's Alfalfa	AmeriStand 445NT	4	3.17	342	362	120	58	882	245
Alforex Seeds	CW A113005*	4	2.90	325	342	104	92	863	262
Alforex Seeds	CW 104014*	4	2.89	301	321	110	41	773	239
Vernal	Vernal	2	2.32	244	257	93	13	607	230
Vernema	Vernema	4	2.28	239	248	93	-1	580	224
	Mean	**3.9**	**2.94**	**315**	**335**	**112**	**52**	**813**	**243**
	CV %		**9.4**	**11.1**	**12.1**	**12.0**	**50.5**	**12.3**	**4.5**
	LSD 10%		**0.36**	**42**	**49**	**16**	**32**	**121**	**13**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 17. Forage Quality Constituants and Hay Value per Ton - First Cutting 2017 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017			Protein Content	Ash Free Neutral Deterg. Fiber (aNDF)	Ash Content	Fat Content	Lignin Content	Non-fibrous Charbohydrates (NFC)	Net Energy Lactation NEL (Method NRC 2001)	Neutral Deterg. Fiber Digestab. (NDFD 48.)	Total Value of Hay per Ton @ 12% Moisture[1]
Company	**Entry**	**Rating**	**%**	**%**	**%**	**%**	**%**	**%**	**Mcal/lb**	**%**	**$/ton**
LG Seeds	Camas	4	25.6	35.1	10.68	1.74	5.79	29.5	0.617	53.4	289
Monsanto	DKA44-18	4	25.3	35.7	10.76	1.86	5.83	28.9	0.614	53.4	284
Brett Young	Slingshot (59W205)	5	25.4	36.0	10.90	1.72	5.83	28.5	0.608	52.9	283
Monsanto	DKA50-17	5	24.3	37.3	10.56	1.81	6.13	28.5	0.600	52.0	271
Public	Vernal	2	24.4	37.7	10.64	1.67	6.25	28.0	0.594	52.5	269
	Mean	**4.0**	**25.0**	**36.4**	**10.71**	**1.76**	**5.97**	**28.7**	**0.606**	**52.8**	**279**
	CV %		**3.4**	**8.6**	**3.4**	**3.8**	**3.9**	**3.1**	**1.5**	**3.2**	**3.4**
	LSD 10%		**NS**	**NS**	**NS**	**0.08**	**0.29**	**NS**	**0.012**	**NS**	**12**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 18. Forage Quality Estimates RFV, RFQ,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake and Total Value per Ton As Fed From First Cutting of 2017 Conv. Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017		Fall Dorm.	Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton[1]	Value of Energy (MegaCalories) per Ton[1]	Value of NDF Fiber per Ton[1]	Adj. For Feed Intake (- $5/ton for NDF>44%) per Ton[2]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Units**	**%**	**$/ton**	**$/ton**	**$/ton**	**$/ton**	**$/ton**
LG Seeds	Camas	4	173	193	108	107	29	45	289
Monsanto	DKA44-18	4	169	189	107	107	29	42	284
Brett Young	Slingshot (59W205)	5	167	185	108	106	30	40	283
Monsanto	DKA50-17	5	159	176	103	104	31	33	271
Public	Vernal	2	157	175	104	103	31	32	269
	Mean	**4.0**	**165**	**184**	**106**	**105**	**30**	**38**	**279**
	CV %		**4.4**	**5.3**	**3.4**	**1.5**	**3.2**	**15.3**	**3.4**
	LSD 10%		**9**	**12**	**5**	**2**	**1**	**7**	**12**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 19. Alfalfa Yield,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and per Acre As Fed From First Cutting of Conventional 2017 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017			First Cut Dry Matter Yield	Value of Metabol. Protein (@ 55% of C. Protein) per Acre[1]	Value of Energy (MegaCalories) per Acre[1]	Value of NDF Fiber per Acre[1]	Adjust. For feed intake per Acre[2]	Nutrient Value of Hay (@ 12% Moisture) per Acre[3]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Tons/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/ton**
Monsanto	DKA50-17	5	2.92	342	346	102	110	900	271
Monsanto	DKA44-18	4	2.71	330	328	90	128	876	284
LG Seeds	Camas	4	2.42	300	295	79	124	798	289
Brett Young	Slingshot (59W205)	5	2.46	301	296	82	112	792	283
Public	Vernal	2	2.43	286	285	85	87	743	269
	Mean	**4.0**	**2.59**	**312**	**310**	**88**	**112**	**822**	**279**
	CV %		**8.4**	**10.2**	**9.4**	**9.6**	**19.2**	**10.2**	**3.4**
	LSD 10%		**0.27**	**NS**	**35**	**9**	**NS**	**106**	**12**

* Entered as Experimentals

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 20. Forage Quality Constituants and Hay Value per Ton - First Cutting 2017 Roundup-Ready Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017			Protein Content	Ash Free Neutral Deterg. Fiber (aNDF)	Ash Content	Fat Content	Lignin Content	Non-fibrous Charbohydrates (NFC)	Net Energy Lactation NEL (Method NRC 2001)	Neutral Deterg. Fiber Digestab. (NDFD 48.)	Total Value of Hay per Ton @ 12% Moisture[1]
Company	**Entry**	**Rating**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**$/ton**
LG Seeds	5R300	5	26.3	34.8	10.7	1.75	5.69	29.081	0.696	54.1	307
LG Seeds	4R300	4	25.9	34.8	10.6	1.79	5.79	29.574	0.696	53.6	305
Monsanto	DKA44-16RR	4	25.3	35.8	11.0	1.79	5.84	28.674	0.686	52.5	297
Monsanto	DKA50-20RR	5	24.9	36.1	10.3	1.83	5.93	29.382	0.691	52.9	295
Monsanto	DKA43-18RR	4	24.5	37.4	10.3	1.81	6.13	28.478	0.686	52.6	287
	Mean	**4.4**	**25.4**	**35.8**	**10.6**	**1.79**	**5.88**	**29.038**	**0.691**	**53.1**	**298**
	CV %		**2.2**	**3.2**	**2.7**	**4.8**	**2.8**	**3.6**	**0.9**	**2.4**	**2.4**
	LSD 10%		**0.7**	**1.4**	**0.4**	**0.110**	**0.21**	**NS**	**0.008**	**NS**	**9**

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 21. Forage Quality Estimates RFV, RFQ,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake and Total Value per Ton As Fed From First Cutting of 2017 Conv. Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017			Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton[1]	Value of Energy (MegaCalories) per Ton[1]	Value of NDF Fiber per Ton[1]	Adj. For Feed Intake (-$5/ton for NDF>44%) per Ton[2]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Units**	**%**	**$/ton**	**$/ton**	**$/ton**	**$/ton**	**$/ton**
LG Seeds	5R300	5	176	197	111	121	29	46	307
LG Seeds	4R300	4	175	196	110	121	28	46	305
Monsanto	DKA44-16RR	4	169	186	107	119	29	41	297
Monsanto	DKA50-20RR	5	167	187	106	120	30	39	295
Monsanto	DKA43-18RR	4	159	178	104	119	31	33	287
	Mean	**4.4**	**169**	**189**	**108**	**120**	**29**	**41**	**298**
	CV %		**4.1**	**5.0**	**2.2**	**0.9**	**3.2**	**13.7**	**2.4**
	LSD 10%		**9**	**12**	**3**	**1**	**1**	**7**	**9**

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

2 Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

3 Total Value of Hay per Ton @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

Table 22. Alfalfa Yield,Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and per Acre As Fed From First Cutting of Conventional 2017 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 9, 2017			First Cut Dry Matter Yield	Value of Metabol. Protein (@ 55% of C. Protein) per Acre[1]	Value of Energy (MegaCalories) per Acre[1]	Value of NDF Fiber per Acre[1]	Adjust. For feed intake per Acre[2]	Nutrient Value of Hay (@ 12% Moisture) per Acre[3]	Total Value of Hay per Ton @ 12% Moisture[3]
Company	**Entry**	**Rating**	**Tons/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/acre**	**$/ton**
Monsanto	DKA43-18RR	4	2.85	337	386	99	108	931	287
LG Seeds	4R300	4	2.68	335	368	87	141	930	305
Monsanto	DKA44-16RR	4	2.63	321	355	87	123	887	297
LG Seeds	5R300	5	2.46	312	338	80	128	858	307
Monsanto	DKA50-20RR	5	2.45	294	335	82	110	821	295
	Mean	**4.4**	**2.61**	**320**	**357**	**87**	**122**	**885**	**298**
	CV %		**6.7**	**11.2**	**10.9**	**10.9**	**18.5**	**11.4**	**2.4**
	LSD 10%		**0.22**	**NS**	**NS**	**9**	**22**	**75**	**9**

[1] Calculated at $0.438/ lb of Metabolizable Protein; $0.099/lb of Mcal of energy, $0.06 lb of effective NDF and $-0.077 lb for ineffective fiber (assuming aNDF is 90% effective and 10% ineffective fiber).

[2] Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber, $5.00 increase or decrease of value of hay for every point below or above and aNDF 44%, respectively.

[3] Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)