



2017

# Washington State Hay Growers Association

## ALFALFA VARIETY

## YIELD TRIALS

# Conducted by Washington State University Extension

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# Washington State Hay Growers Association

## Alfalfa Variety Trials

### Conducted by Washington State University Extension

Nine alfalfa trials were harvested for yield in irrigated central Washington State in 2017. 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.

For 2014 and 2015 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. The Pasco site is located on Garfield Road at Lat: N46° 28'999 Lng: W119° 06'852, at an elevation of 870 feet. The fall 2016 planting was done 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 – 2018 Edition and previous editions". For a complete copy of the NAFA document visit [www.alfalfa.org/varietyLeaflet.php](http://www.alfalfa.org/varietyLeaflet.php).

Forage yields for each harvest, total season yield for 2017 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 dry matter basis using a constant dry matter fraction of 20%. Ratings for regrowth after 5<sup>th</sup> cutting were taken on October 23, 2017, 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.

The spring and early summer of 2017 allowed 5 cuttings. The weather turned to fall very quickly in mid-September.

The Washington State Hay Growers Association beyond just yield trials this year and funded first cutting quality samples to be taken and analyzed and 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/2017/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, Zac Whitmore, Steve Fransen, Josefina Guzman, and Bailey Young for their assistance with this year's trials and planting of next years 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.

Sincerely,

A handwritten signature in black ink that reads "Steve Norberg". The signature is written in a cursive, flowing style.

Regional Forage Specialist

**Table 1. 2016 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2012 - Othello, WA**

Entry	Seeded August 2012				Seeded August 2013				Seeded August 2014				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
	2013	2014	2015	3 Yr.	2014	2015	2016	3 Yr.	2015	2016	2017	3 Yr.	2012 & 2013 Trials	2013 & 2014 Trials	2013 & 2014 Trials
12005					105.1%	96.7%	86.9%	<b>97.5%</b>							
55Q27	106.5%	108.4%	110.7%	<b>108.4%</b>					101.9%	111.0%	113.3%	<b>108.1%</b>			<b>108.3%</b>
6585Q					105.6%	104.9%	113.1%	<b>107.4%</b>							
AmeriStand 427TQ					98.4%	101.6%	106.6%	<b>101.6%</b>	98.0%	107.1%	104.2%	<b>102.8%</b>		<b>102.2%</b>	
AmeriStand 445NT					98.5%	103.7%	104.5%	<b>101.8%</b>							
Camas	95.0%	108.2%	105.8%	<b>102.6%</b>	96.0%	94.2%	101.2%	<b>98.8%</b>	100.4%	112.3%	112.3%	<b>107.7%</b>	<b>100.7%</b>	<b>103.3%</b>	<b>105.2%</b>
CB001	96.7%	94.2%	97.9%	<b>96.2%</b>											
CB11001	100.4%	98.6%	98.3%	<b>99.2%</b>											
CB11007*									103.0%	94.1%	100.2%	<b>99.2%</b>			
CB11009*									101.9%	91.7%	80.7%	<b>92.7%</b>			
CB11011	98.2%	95.1%	86.5%	<b>93.6%</b>											
CW 104038	98.2%	96.1%	94.5%	<b>96.4%</b>											
DG4210	105.7%	110.7%	108.8%	<b>108.3%</b>	103.6%	100.7%	100.9%	<b>101.9%</b>					<b>105.1%</b>		
DKA 50-18	99.7%	105.2%	108.9%	<b>104.3%</b>											
DSD01-T					110.4%	111.2%	118.1%	<b>112.8%</b>							
DSD06-M					104.7%	103.0%	103.9%	<b>103.9%</b>							
FG 48W214*									100.8%	106.9%	106.9%	<b>104.6%</b>			
FSG 415BR									106.7%	103.4%	103.4%	<b>104.6%</b>			
FSG403LR					102.7%	106.8%	98.1%	<b>102.7%</b>							
FSG423ST					98.9%	97.7%	90.2%	<b>96.1%</b>							
FSG424					96.9%	97.5%	101.4%	<b>98.3%</b>							
GrandStand					96.7%	98.4%	98.5%	<b>97.7%</b>							
Hi-Gest 360*									99.2%	99.4%	103.2%	<b>100.3%</b>			
Magnitude									99.5%	105.2%	103.5%	<b>102.6%</b>			
Magnum 7	111.5%	103.4%	103.3%	<b>106.3%</b>											
MasterPiece II	104.7%	103.0%	103.6%	<b>103.8%</b>											
Nimbus					101.4%	103.3%	111.6%	<b>104.8%</b>							
Seneca	100.8%	102.6%	100.1%	<b>101.2%</b>											
SGS 47M									105.1%	111.0%	107.3%	<b>107.7%</b>			
SW 4328									102.3%	98.3%	99.1%	<b>100.0%</b>			
SW 4332*									101.5%	98.9%	103.1%	<b>101.0%</b>			
Vernal	81.9%	82.6%	83.1%	<b>82.5%</b>	82.0%	81.0%	71.8%	<b>78.9%</b>	82.9%	72.3%	71.9%	<b>76.3%</b>	<b>80.7%</b>	<b>77.6%</b>	<b>79.4%</b>
Vernema	97.7%	89.0%	90.6%	<b>92.7%</b>	99.1%	99.4%	93.2%	<b>97.6%</b>	94.3%	81.0%	83.4%	<b>86.8%</b>	<b>95.2%</b>	<b>92.2%</b>	<b>89.7%</b>
Whitney	101.4%	97.6%	102.3%	<b>100.4%</b>											
WL 354HQ									102.5%	107.5%	107.5%	<b>105.6%</b>			
<b>Total-Tons/Acre</b>	<b>11.60</b>	<b>10.26</b>	<b>9.70</b>	<b>31.55</b>	<b>12.03</b>	<b>9.42</b>	<b>8.07</b>	<b>29.52</b>	<b>10.77</b>	<b>9.68</b>	<b>7.50</b>	<b>28.0%</b>			
<b>LSD Years 11 (0.05) Years 12- 16 (0.10)</b>	<b>7.5%</b>	<b>5.7%</b>	<b>7.3%</b>	<b>5.6%</b>	<b>6.3%</b>	<b>8.2%</b>	<b>10.5%</b>	<b>8.3%</b>	<b>5.2%</b>	<b>5.6%</b>	<b>5.6%</b>	<b>4.50</b>			
<b>CV (%)</b>	<b>6.3%</b>	<b>4.7%</b>	<b>6.1%</b>	<b>4.7%</b>	<b>5.3%</b>	<b>6.9%</b>	<b>7.4%</b>	<b>5.8%</b>	<b>4.3%</b>	<b>4.7%</b>	<b>4.7%</b>	<b>3.8%</b>			

**Table 2. 2016 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2012 - Franklin County, WA**

Entry	Seeded August 2012				Seeded August 2013				Seeded August 2014				Seeded 12 & 13	Seeded 13 & 14	Seeded 12 & 14
	2013	2014	2015	3 Yr.	2014	2015	2016	3 Yr.	2015	2016	2017	3 Yr.			
12005					100.5%	107.5%	101.0%	<b>103.3%</b>							
55Q27	99.4%	104.9%	99.7%	<b>101.3%</b>					106.1%	106.0%	107.5%	<b>106.5%</b>			<b>103.9%</b>
55VR05**									104.6%	105.4%	108.5%	<b>106.0%</b>			
6401N	100.3%	101.4%	101.8%	<b>101.1%</b>											
6585Q					102.5%	100.8%	103.7%	<b>102.2%</b>							
AmeriStand 427TQ					92.8%	94.9%	100.6%	<b>96.2%</b>	99.9%	100.6%	108.9%	<b>102.8%</b>		<b>99.5%</b>	
AmeriStand 445NT	100.8%	101.0%	103.2%	<b>101.7%</b>	105.9%	106.1%	115.5%	<b>109.2%</b>					<b>105.5%</b>		
Camas	103.7%	103.1%	101.1%	<b>102.7%</b>	103.7%	105.6%	109.5%	<b>106.4%</b>	103.4%	104.5%	113.2%	<b>106.7%</b>	<b>104.6%</b>	<b>106.5%</b>	<b>104.7%</b>
CB11001	106.1%	99.1%	104.1%	<b>103.1%</b>					98.1%	98.0%	99.0%	<b>98.3%</b>			<b>100.7%</b>
CB11007*									105.3%	104.9%	109.2%	<b>106.3%</b>			
CB11011	91.8%	98.5%	104.0%	<b>98.0%</b>											
CB9003	96.1%	100.4%	103.0%	<b>99.7%</b>											
CW 085028	99.5%	107.4%	97.7%	<b>101.5%</b>											
DG 4210	103.2%	99.2%	96.3%	<b>99.7%</b>	105.9%	96.7%	92.9%	<b>98.0%</b>					<b>98.9%</b>		
DKA 43-13	99.6%	99.5%	97.9%	<b>99.0%</b>											
DKA 50-18	101.5%	100.1%	96.9%	<b>99.6%</b>											
FG 48W214*									104.5%	105.3%	112.5%	<b>107.1%</b>			
FSG524					104.8%	107.8%	110.4%	<b>106.4%</b>							
GrandStand					100.6%	100.3%	98.6%	<b>99.8%</b>							
Gunner	96.5%	101.2%	94.7%	<b>97.4%</b>											
Hi-Gest 660									93.9%	95.9%	106.1%	<b>98.2%</b>			
HybriForce-2600	97.2%	91.0%	96.2%	<b>94.8%</b>											
Integra 8420	101.1%	98.6%	97.8%	<b>99.2%</b>											
L455HD					99.1%	100.6%	98.4%	<b>99.4%</b>							
MasterPiece II	101.2%	100.3%	104.7%	<b>102.1%</b>											
Nimbus					104.6%	103.1%	104.0%	<b>103.8%</b>							
Rebound 6.0	102.6%	100.2%	98.0%	<b>100.3%</b>											
SGS 47M									98.5%	100.2%	103.6%	<b>100.6%</b>			
SW4328									100.5%	99.6%	94.1%	<b>98.3%</b>			
SW4332*									102.6%	101.8%	104.3%	<b>102.8%</b>			
Vernal					84.9%	83.2%	75.0%	<b>80.9%</b>	82.8%	80.7%	55.8%	<b>74.2%</b>		<b>77.5%</b>	<b>74.2%</b>
Vernema					94.9%	93.3%	90.6%	<b>92.8%</b>	102.8%	100.4%	80.1%	<b>95.3%</b>		<b>94.1%</b>	<b>95.3%</b>
Whitney	101.5%	94.3%	100.8%	<b>98.9%</b>											
WL354HQ	97.9%	99.8%	102.1%	<b>99.9%</b>											
<b>Total Tons/Acre</b>	<b>11.40</b>	<b>10.66</b>	<b>10.70</b>	<b>32.75</b>	<b>7.47</b>	<b>10.07</b>	<b>10.08</b>	<b>27.65</b>	<b>10.76</b>	<b>10.09</b>	<b>8.67</b>	<b>29.52</b>			
<b>LSD Years 11 (0.05) Years 12- 16 (0.10)</b>	<b>5.1%</b>	<b>5.6%</b>	<b>NS</b>	<b>NS</b>	<b>8.4%</b>	<b>6.9%</b>	<b>10.6%</b>	<b>6.8%</b>	<b>7.5%</b>	<b>8.0%</b>	<b>8.7%</b>	<b>6.6%</b>			
<b>CV(%)</b>	<b>4.3</b>	<b>4.8</b>	<b>4.8</b>	<b>4.3</b>	<b>7.0</b>	<b>4.9</b>	<b>8.8</b>	<b>5.6</b>	<b>6.3</b>	<b>6.8</b>	<b>7.2</b>	<b>5.6</b>			

**Table 3. 2016 Summary of Roundup Sprayed Alfalfa Yield Trials Planted Since 2012 - Franklin County, WA**

Entry	Seeded August 2012				Seeded August 2013				Seeded August 2014				6 YR Avg.	6 YR Avg.	6 YR Avg.
	2013	2014	2015	3 Yr.	2014	2015	2016	3 Yr.	2015	2016	2017	3 Yr.	Seeded 12 & 13	Seeded 13 & 14	Seeded 12 & 14
428RR					100.6%	101.4%	101.3%	<b>101.1%</b>							
4R200	102.0%	102.1%	105.0%	<b>103.2%</b>	101.7%	103.8%	102.7%	<b>102.8%</b>	103.2%	103.6%	103.7%	<b>103.5%</b>	<b>103.0%</b>	<b>103.1%</b>	<b>103.3%</b>
55VR05	97.7%	97.8%	98.9%	<b>98.0%</b>											
6516R	99.9%	100.0%	104.0%	<b>101.6%</b>											
6547R	104.2%	104.3%	100.9%	<b>101.5%</b>											
AmeriStand 415NT RR	99.3%	99.3%	97.7%	<b>99.4%</b>											
AmeriStand 455TQ RR	101.8%	101.9%	100.5%	<b>100.8%</b>											
DKA 41-18 RR					99.1%	99.9%	99.4%	<b>99.5%</b>							
DKA 43-22 RR	98.2%	98.3%	99.2%	<b>98.1%</b>	102.1%	100.9%	102.2%	<b>101.7%</b>	103.2%	96.2%	97.9%	<b>99.0%</b>	<b>99.9%</b>	<b>100.3%</b>	<b>98.5%</b>
DKA 44-16 RR	98.7%	97.5%	99.2%	<b>99.0%</b>	100.7%	98.0%	98.8%	<b>99.1%</b>					<b>99.1%</b>		
DKA40-51RR									98.2%	96.4%	97.5%	<b>97.3%</b>			
DKA44-16RR									100.0%	103.7%	101.6%	<b>101.9%</b>			
FG R49A132					95.8%	96.0%	95.7%	<b>95.8%</b>							
Integra 8444RR	96.6%	96.7%	95.6%	<b>96.8%</b>											
Mutiny	99.0%	99.1%	103.0%	<b>101.6%</b>											
RR AlphaTron	99.7%	99.8%	97.6%	<b>99.4%</b>											
RR NemaStar	102.7%	102.8%	98.4%	<b>98.8%</b>											
RR Tonnica	100.6%	100.7%	99.1%	<b>100.2%</b>											
RR501									98.5%	98.5%	103.0%	<b>100.0%</b>			
WL 356HQ.RR	96.1%	96.1%	100.9%	<b>99.9%</b>											
WL 356HQ.RR									97.0%	101.5%	96.3%	<b>98.4%</b>			
WL 372HQ.RR	103.6%	103.7%	100.1%	<b>101.7%</b>											
<b>Total Tons/Acre</b>	<b>11.30</b>	<b>10.43</b>	<b>10.68</b>	<b>32.42</b>	<b>9.28</b>	<b>10.38</b>	<b>10.25</b>	<b>29.90</b>	<b>9.71</b>	<b>11.15</b>	<b>9.96</b>	<b>30.82</b>			
<b>LSD (0.10)</b>	<b>4.2%</b>	<b>3.7%</b>	<b>NS</b>	<b>3.1%</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>4.1%</b>	<b>2.8%</b>	<b>2.1%</b>			
<b>CV(%)</b>	<b>3.5</b>	<b>3.6</b>	<b>5.7</b>	<b>2.9</b>	<b>3.3</b>	<b>4.9</b>	<b>5.1</b>	<b>3.8</b>	<b>3.9</b>	<b>3.3</b>	<b>2.3</b>	<b>2.1</b>			

**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.
Integra 8420	Wilbur-Ellis	4		HR	HR	HR	HR	HR	HR	HR	R		HR		HR		C
Ameristand 427TQ	America's Alfalfa	4	1	HR	HR	HR	HR	HR	HR		R		HR			G	C
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
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 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 5315	Dyna-Gro	5	3	HR	HR	HR	HR	HR	HR		HR		HR				C
DKA 40-51RR	DeKalb	4	1	HR	HR	HR	HR	HR	HR	R			R				R
DKA 43-22RR	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
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 8401																	
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
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
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
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 354HQ	W-L Research	4	1	HR	HR	HR	HR	HR	HR	HR	HR		R				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 Anthracnose Race 1  
PRR Phytophthora Root Rot

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

APH<sup>1</sup> Aphanomyces Race 1  
SRKN Southern Root Knot Nematode  
NRKN Northern Root Knot Nematode

\* NAFAs "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties - 2015 Edition and previous editions". "For a complete copy of the NAFAs document visit [www.alfalfa.org/varietyLeaflet.php](http://www.alfalfa.org/varietyLeaflet.php)." Blanks mean adequate testing has not yet occurred. Only data from publications were used.

**Table 5. Three-Year Forage Yield - 2014 Alfalfa Variety Trial, Othello, Adams County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 13, 2014		Fall	2015 Harvests		2016 Harvests		2017 Harvests						2015 & 2017		2017 Fall	
		Dorm.	Total		Total		25-May	23-Jun	19-Jul	23-Aug	23-Sep	Total	Total	3 Yr. Total		Oct. 6
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
Pioneer Hi-Bred	55Q27	5	10.97	101.9%	10.75	111.0%	2.70	1.57	1.42	1.84	0.96	8.49	113.3%	30.21	108.1%	77.6
Simplot Grower Solutions	SGS 47M	4	11.31	105.1%	10.75	111.0%	2.35	1.55	1.51	1.72	0.91	8.05	107.3%	30.11	107.7%	82.9
Eureka Seeds	Camas	4	10.81	100.4%	10.87	112.3%	2.39	1.64	1.51	1.87	1.00	8.42	112.3%	30.10	107.7%	70.5
W-L	WL354HQ	4	11.03	102.5%	10.41	107.5%	2.46	1.55	1.36	1.80	0.90	8.06	107.5%	29.50	105.6%	79.6
Allied	FSG 415BR	4	11.48	106.7%	10.01	103.4%	2.43	1.37	1.29	1.81	0.85	7.75	103.4%	29.24	104.6%	65.7
Crop Production Services	FG 48W214*	4	10.85	100.8%	10.35	106.9%	2.27	1.54	1.41	1.85	0.95	8.02	106.9%	29.22	104.6%	74.8
America's Alfalfa	AmeriStand 427TQ	4	10.55	98.0%	10.37	107.1%	2.13	1.55	1.42	1.74	0.98	7.81	104.2%	28.74	102.8%	78.5
Allied	Magnitude	4	10.71	99.5%	10.19	105.2%	2.24	1.46	1.35	1.81	0.89	7.76	103.5%	28.66	102.6%	71.4
S & W Seed Company	SW 4332*	4	10.93	101.5%	9.57	98.9%	2.37	1.38	1.25	1.86	0.86	7.73	103.1%	28.23	101.0%	76.4
Alforex	Hi-Gest 360*	3	10.68	99.2%	9.62	99.4%	2.30	1.32	1.35	1.86	0.90	7.74	103.2%	28.04	100.3%	67.9
S & W Seed Company	SW 4328	4	11.01	102.3%	9.52	98.3%	2.26	1.32	1.29	1.74	0.81	7.43	99.1%	27.96	100.0%	81.3
Precision Genetics	CB11007*	4	11.09	103.0%	9.12	94.1%	2.11	1.34	1.32	1.83	0.91	7.51	100.2%	27.72	99.2%	81.4
Precision Genetics	CB11009*	4	10.97	101.9%	8.88	91.7%	1.85	1.05	0.93	1.65	0.56	6.05	80.7%	25.90	92.7%	76.7
Vernema	Vernema	4	10.15	94.3%	7.84	81.0%	1.73	1.02	1.06	1.82	0.62	6.25	83.4%	24.24	86.8%	76.1
Vernal	Vernal	2	8.92	82.9%	7.00	72.3%	1.43	0.83	0.93	1.72	0.48	5.39	71.9%	21.31	76.3%	79.3
<b>Mean</b>			<b>10.77</b>	<b>100.0%</b>	<b>9.68</b>	<b>100.0%</b>	<b>2.20</b>	<b>1.37</b>	<b>1.29</b>	<b>1.80</b>	<b>0.84</b>	<b>7.50</b>	<b>100.0%</b>	<b>27.95</b>	<b>100.0%</b>	<b>76.0</b>
<b>CV %</b>			<b>4.3</b>	<b>4.3%</b>	<b>4.7</b>	<b>4.7</b>	<b>7.4</b>	<b>7.2</b>	<b>6.6</b>	<b>6.6</b>	<b>7.2</b>	<b>4.7</b>	<b>4.7</b>	<b>3.8</b>	<b>3.8</b>	<b>9.4</b>
<b>LSD 10%</b>			<b>0.56</b>	<b>5.2%</b>	<b>0.54</b>	<b>5.6%</b>	<b>0.19</b>	<b>0.12</b>	<b>0.10</b>	<b>NS</b>	<b>0.07</b>	<b>0.42</b>	<b>5.60</b>	<b>1.25</b>	<b>4.47</b>	<b>8.50</b>

\* Entered as Experimentals



**Table 6. Three-Year Forage Yield - Fall 2014 Planting, Pasco, Franklin County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 21, 2014		Fall	2015 Harvests		2016 Harvests		2017 Harvests						2015-2017		2017	
Company	Entry	Dorm.	Total		Total		17-May	20-Jun	18-Jul	17-Aug	19-Sep	Total		3 Year Total		% Stand
		Rating	Tons/a	%	Tons/a	%	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	%	Tons/a	%	9/19/2017
Crop Production Services	FG 48W214*	4	11.24	104.5%	10.63	105.3%	2.92	2.23	2.09	1.51	1.00	9.75	112.5%	31.61	107.1%	81.0
Eureka Seeds	Camas	4	11.12	103.4%	10.55	104.5%	2.90	2.12	2.13	1.66	1.00	9.81	113.2%	31.48	106.7%	81.7
Pioneer Hi-Bred	55Q27	5	11.41	106.1%	10.70	106.0%	2.72	2.24	1.89	1.49	0.97	9.32	107.5%	31.43	106.5%	84.9
Precision Genetics	CB11007*	4	11.33	105.3%	10.58	104.9%	2.93	2.23	1.89	1.47	0.95	9.46	109.2%	31.38	106.3%	80.7
Pioneer Hi-Bred	55VR05**	5	11.26	104.6%	10.64	105.4%	2.75	2.13	1.97	1.57	0.98	9.40	108.5%	31.30	106.0%	83.5
S & W Seed Company	SW4332*	4	11.03	102.6%	10.27	101.8%	2.65	2.15	1.84	1.41	0.99	9.04	104.3%	30.34	102.8%	79.3
America's Alfalfa	AmeriStand 427TQ	4	10.74	99.9%	10.16	100.6%	2.50	2.26	2.16	1.54	0.97	9.44	108.9%	30.34	102.8%	80.4
Simplot Grower Solutions	SGS 47M	4	10.60	98.5%	10.11	100.2%	2.46	2.15	1.97	1.45	0.94	8.98	103.6%	29.68	100.6%	83.8
Precision Genetics	CB11001*	4	10.55	98.1%	9.89	98.0%	2.49	1.94	1.78	1.43	0.94	8.58	99.0%	29.02	98.3%	79.3
S & W Seed Company	SW4328	4	10.81	100.5%	10.05	99.6%	2.44	1.88	1.69	1.27	0.87	8.15	94.1%	29.02	98.3%	82.0
Alforex	Hi-Gest 660	6	10.10	93.9%	9.68	95.9%	2.72	2.06	1.82	1.53	1.07	9.20	106.1%	28.97	98.2%	77.9
RR Check	Check	4	10.43	97.0%	9.77	96.8%	2.30	1.93	1.75	1.42	1.02	8.43	97.2%	28.63	97.0%	83.3
Vernema	Vernema	4	11.06	102.8%	10.13	100.4%	2.10	1.49	1.37	1.21	0.77	6.94	80.1%	28.13	95.3%	80.4
Vernal	Vernal	2	8.91	82.8%	8.14	80.7%	1.35	0.99	1.03	0.93	0.54	4.83	55.8%	21.89	74.2%	60.4
<b>Mean</b>			<b>10.76</b>	<b>100.0%</b>	<b>10.09</b>	<b>100.0%</b>	<b>2.52</b>	<b>1.99</b>	<b>1.81</b>	<b>1.42</b>	<b>0.93</b>	<b>8.67</b>	<b>100.0</b>	<b>29.52</b>	<b>100.0</b>	<b>79.9</b>
<b>CV %</b>			<b>6.3</b>	<b>6.3</b>	<b>6.8</b>	<b>6.8</b>	<b>9.9</b>	<b>8.7</b>	<b>7.2</b>	<b>8.5</b>	<b>11.6</b>	<b>7.2</b>	<b>7.2</b>	<b>5.6</b>	<b>5.6</b>	<b>6.7</b>
<b>LSD 10%</b>			<b>0.81</b>	<b>7.5%</b>	<b>0.81</b>	<b>8.0%</b>	<b>0.30</b>	<b>0.21</b>	<b>0.15</b>	<b>0.14</b>	<b>0.13</b>	<b>0.75</b>	<b>8.7%</b>	<b>1.96</b>	<b>6.6%</b>	<b>6.4</b>

\* Entered as Experimentals

\*\* RR variety mistakenly planted in conventional trial

**Table 7. Three-Year Roundup Ready Forage Yield - 2014 Alfalfa Variety Trial, Pasco, Franklin County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 20, 2014		Fall	2015		2016		2017 Harvests						2015-2017		2017	
Company	Entry	Dorm.	Total		Total		18-May	20-Jun	18-Jul	17-Aug	25-Sep	Total		3 Year Total		Stand (%)
		Rating	Tons/a	%	Tons/a	%	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	%	5-Oct-17
Eureka Seeds	4R200	4	10.02	103.2%	11.54	103.6%	3.25	2.32	2.03	1.52	1.28	10.33	103.7%	31.89	103.5%	88.2
Monsanto	DKA44-16RR	4	9.71	100.0%	11.56	103.7%	3.01	2.26	2.06	1.55	1.27	10.12	101.6%	31.39	101.9%	84.5
Monsanto	RR501	5	9.56	98.5%	10.98	98.5%	2.96	2.24	2.09	1.63	1.22	10.26	103.0%	30.81	100.0%	84.3
Monsanto	DKA 43-22RR	4	10.02	103.2%	10.73	96.2%	3.40	2.17	1.87	1.45	1.19	9.76	97.9%	30.50	99.0%	88.2
W-L	WL 356HQ.RR	4	9.41	97.0%	11.32	101.5%	3.02	2.09	1.88	1.44	1.16	9.59	96.3%	30.32	98.4%	82.0
Monsanto	DKA40-51RR	4	9.53	98.2%	10.74	96.4%	3.19	2.12	1.82	1.38	1.14	9.71	97.5%	29.99	97.3%	86.3
	<b>Mean</b>		<b>9.71</b>	<b>100.0%</b>	<b>11.15</b>	<b>100.0%</b>	<b>3.14</b>	<b>2.20</b>	<b>1.96</b>	<b>1.50</b>	<b>1.21</b>	<b>9.96</b>	<b>100.0%</b>	<b>30.82</b>	<b>100.0</b>	<b>85.6</b>
	<b>CV %</b>		<b>3.9</b>	<b>3.9</b>	<b>3.3</b>	<b>3.3</b>	<b>5.8</b>	<b>3.6</b>	<b>5.2</b>	<b>7.5</b>	<b>4.5</b>	<b>2.3</b>	<b>2.3</b>	<b>2.1</b>	<b>2.1</b>	<b>4.3</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>NS</b>	<b>0.46</b>	<b>4.1%</b>	<b>NS</b>	<b>0.10</b>	<b>0.13</b>	<b>0.14</b>	<b>0.07</b>	<b>0.28</b>	<b>2.8%</b>	<b>0.80</b>	<b>2.6%</b>	<b>4.6</b>

**Table 8. Two-Year Forage Yield - 2015 Alfalfa Variety Trial, Othello, Adams County, WA**  
**Forage Yield (Ton DM/A)**

Planted September 4, 2015		Fall	2016		2017 Harvests							2016 & 2017		2016 Fall
Company	Entry	Dorm.	Total		26-May	23-Jun	19-Jul	23-Aug	23-Sep	Total	Total	Total		10/11/2016
		Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	% Mean	Regrowth
Allied Seed	FSG 426	4	9.23	109.2%	2.51	1.83	1.49	1.99	1.03	9.23	110.1%	18.46	109.7%	5.0
S&W Seed Co.	SW4107	4	9.18	108.6%	2.26	1.79	1.43	1.91	1.10	9.18	109.5%	18.36	109.0%	4.0
S&W Seed Co.	SW5213	5	9.08	107.4%	2.26	1.64	1.30	1.90	0.95	9.08	108.3%	18.15	107.8%	4.3
Simplot Grower Solns	SGS 47M	4	8.96	105.9%	2.19	1.75	1.44	1.82	0.99	8.96	106.8%	17.91	106.4%	4.0
RR Check	RR Check	4	8.82	104.3%	2.28	1.70	1.36	1.83	1.05	8.66	103.3%	17.48	103.8%	4.3
America's Alfalfa	AmeriStand 427TQ	4	8.84	104.5%	2.18	1.85	1.51	1.99	1.05	8.60	102.6%	17.44	103.6%	4.8
Forage Genetics	Grandstand II *	4	8.27	97.9%	2.42	1.83	1.36	1.99	1.21	8.27	98.7%	16.55	98.3%	5.0
America's Alfalfa	AmeriStand 455NT	4	8.29	98.1%	1.92	1.47	1.25	1.87	0.86	8.22	98.0%	16.51	98.1%	3.3
S&W Seed Co.	SW5512Y	5	8.16	96.6%	2.28	1.51	1.14	1.82	0.78	8.16	97.4%	16.33	97.0%	3.0
Precision Genetics	CB1109*	4	8.16	96.5%	2.16	1.31	1.08	1.78	0.68	8.16	97.3%	16.31	96.9%	2.8
Conv. Check	Vernema	4	7.94	94.0%	1.86	1.15	1.03	1.80	0.72	7.59	90.5%	15.53	92.2%	2.8
Conv. Check	Vernal	2	6.51	77.0%	1.92	1.07	0.98	1.83	0.58	6.51	77.6%	13.02	77.3%	2.3
	<b>Mean</b>		<b>8.45</b>	<b>100.0%</b>	<b>2.19</b>	<b>1.58</b>	<b>1.28</b>	<b>1.88</b>	<b>0.92</b>	<b>8.38</b>	<b>100.0%</b>	<b>16.84</b>	<b>100.0%</b>	<b>3.8</b>
	<b>CV %</b>		<b>5.4</b>	<b>5.4</b>	<b>10.0</b>	<b>9.2</b>	<b>15.5</b>	<b>6.5</b>	<b>14.8</b>	<b>6.4</b>	<b>6.4</b>	<b>5.8</b>	<b>5.8</b>	<b>10.2</b>
	<b>LSD 10%</b>		<b>0.55</b>	<b>6.5%</b>	<b>0.26</b>	<b>0.17</b>	<b>0.24</b>	<b>NS</b>	<b>0.16</b>	<b>0.64</b>	<b>7.6%</b>	<b>1.16</b>	<b>6.9%</b>	<b>0.5</b>

\* Entered as Experimentals

**Table 9. 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
Company	Entry	Dorm.	Total		18-May	20-Jun	18-Jul	17-Aug	25-Sep	Total		Two Year Total		Rating
		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 Alfalfa	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
	<b>Mean</b>	<b>4.3</b>	<b>11.44</b>	<b>100.0</b>	<b>3.00</b>	<b>9.15</b>	<b>1.97</b>	<b>1.56</b>	<b>1.19</b>	<b>10.01</b>	<b>100.00</b>	<b>21.44</b>	<b>100.0</b>	<b>3.73</b>
	<b>CV %</b>		<b>5.6</b>	<b>5.6</b>	<b>8.5</b>	<b>6.7</b>	<b>8.2</b>	<b>8.8</b>	<b>8.7</b>	<b>6.4</b>	<b>6.40</b>	<b>5.30</b>	<b>5.30</b>	<b>12.7</b>
	<b>LSD 10%</b>		<b>0.77</b>	<b>6.7</b>	<b>0.31</b>	<b>0.18</b>	<b>0.19</b>	<b>0.16</b>	<b>0.12</b>	<b>0.76</b>	<b>7.59</b>	<b>1.35</b>	<b>6.30</b>	<b>0.56</b>

\* Entered as Experimentals

**Table 10. 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
Company	Entry	Dorm.	Total		18-May	20-Jun	18-Jul	17-Aug	25-Sep	Total		Total		Rating
		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
	<b>Mean</b>	<b>4.5</b>	<b>11.4</b>	<b>100.0</b>	<b>2.86</b>	<b>5.14</b>	<b>2.04</b>	<b>1.67</b>	<b>1.27</b>	<b>10.12</b>	<b>100.0</b>	<b>21.49</b>	<b>100.0</b>	<b>4.08</b>
	<b>CV %</b>		<b>4.3</b>	<b>4.3</b>	<b>6.9</b>	<b>5.2</b>	<b>6.0</b>	<b>6.4</b>	<b>8.9</b>	<b>5.5</b>	<b>5.5</b>	<b>3.9</b>	<b>3.9</b>	<b>10.3</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>NS</b>	<b>0.24</b>	<b>0.15</b>	<b>0.15</b>	<b>0.13</b>	<b>0.14</b>	<b>0.68</b>	<b>6.7</b>	<b>1.0</b>	<b>4.8</b>	<b>0.52</b>

\* Entered as Experimentals

**Table 11. One-Year Forage Yield - 2016 Alfalfa Variety Trial, Othello, Adams County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 9, 2016

Company	Entry	Fall	2017 Harvests							2017 Fall
		Dorm.	26-May	23-Jun	19-Jul	23-Aug	23-Sep	Total	Total	23-Oct
		Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Regrowth
Alforex	PGI 529*	5	2.90	2.40	1.88	2.28	1.42	10.88	108.3	4.8
WL	WL 365HQ	5	3.07	2.17	1.77	2.21	1.46	10.68	106.3	5.0
Dyna-Gro	DG5315	5	2.86	2.21	1.82	2.35	1.40	10.64	105.9	5.0
Alforex	4H400*	4	3.36	2.00	1.66	2.19	1.35	10.57	105.2	4.3
Alforex	HybriForce-3420/Wet*	4	2.93	2.15	1.77	2.31	1.39	10.55	105.0	3.0
Alforex	AFX 469*	4	3.00	2.18	1.74	2.14	1.49	10.54	105.0	4.3
Pioneer	54Q29	4	3.10	2.21	1.77	2.15	1.30	10.53	104.9	3.5
Alforex	HybriForce-3430*	4	3.23	2.19	1.64	2.09	1.36	10.52	104.8	3.8
Alforex	AFX 429*	4	2.95	2.15	1.74	2.19	1.42	10.44	104.0	4.0
Alforex	msSunstra-144110*	4	2.90	2.12	1.70	2.40	1.31	10.42	103.8	3.3
S&W Seed Co	SW5213	5	3.21	2.13	1.61	2.11	1.34	10.39	103.5	3.8
Blue River Hybrids	Mallard*	5	3.18	2.02	1.59	2.23	1.30	10.31	102.7	3.5
S&W Seed Co	SW5210	5	3.23	2.00	1.63	2.21	1.24	10.31	102.6	3.3
Alforex	Check 2*	3	2.97	2.13	1.74	2.14	1.23	10.20	101.5	3.3
Alforex	HibriForce-3400*	4	3.15	1.91	1.63	2.25	1.23	10.18	101.4	2.8
Croplan	Rebound 6XT	4	2.94	2.09	1.68	2.06	1.33	10.09	100.5	4.8
Alforex	HG 4001*	4	2.87	2.04	1.63	2.18	1.36	10.08	100.4	3.8
Alforex	DS1168*	6	3.15	1.96	1.62	2.00	1.30	10.04	100.0	3.3
Alforex	Hi-Gest 360*	3	3.00	2.00	1.65	2.11	1.26	10.02	99.8	3.0
Alforex	AFX 579*	5	2.70	2.13	1.75	1.96	1.42	9.96	99.2	5.0
Alforex	PGI 557*	5	2.88	1.91	1.70	2.15	1.32	9.95	99.1	4.5
Wilbur Ellis	8420	4	2.83	1.97	1.67	2.15	1.26	9.89	98.5	5.0
Alforex	Check 1*	5	2.97	1.93	1.55	2.30	1.14	9.88	98.4	3.0
Alforex	msSunstra-143146*	3	2.88	1.97	1.64	2.18	1.21	9.88	98.4	3.5
America's Alfalfa	Ameristand 445NT	4	2.98	1.93	1.59	2.04	1.20	9.75	97.1	3.0
America's Alfalfa	427TQ	4	2.71	2.07	1.68	2.05	1.23	9.74	97.0	3.5
Precision Genetics	CB11007	4	2.94	1.87	1.56	2.11	1.20	9.68	96.4	3.8
Alforex	AFX 457*	4	2.87	1.88	1.53	2.17	1.21	9.67	96.3	4.3
Alforex	CW 093009*	3	2.68	1.95	1.61	2.08	1.27	9.59	95.5	3.3
Alforex	CW 105021*	4	2.62	2.03	1.63	2.02	1.24	9.54	94.8	3.0
Vernal	Vernal	2	2.85	1.21	1.28	2.28	0.86	8.47	84.3	2.0
Vernema	Vernema	4	2.84	1.53	1.24	1.90	0.93	8.44	84.0	2.3
	<b>Mean</b>	<b>4.2</b>	<b>2.95</b>	<b>2.01</b>	<b>1.65</b>	<b>2.16</b>	<b>1.28</b>	<b>10.04</b>	<b>100.0</b>	<b>3.7</b>
	<b>CV %</b>		<b>11.5</b>	<b>7.7</b>	<b>5.7</b>	<b>7.9</b>	<b>6.4</b>	<b>5.3</b>	<b>5.3</b>	<b>13.7</b>
	<b>LSD 10%</b>		<b>0.40</b>	<b>0.18</b>	<b>0.11</b>	<b>0.20</b>	<b>0.10</b>	<b>0.62</b>	<b>6.2</b>	<b>0.6</b>

\* Entered as Experimentals

**Table 12. One-Year Forage Yield - 2016 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 10, 2016		Fall	2017 Harvests							2017 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 Co	SW5213	5	2.85	2.55	2.18	2.12	1.58	11.27	110.6	4.5
DuPont Pioneer	54Q29	4	2.75	2.48	2.27	2.16	1.46	11.12	109.0	4.3
DuPont Pioneer	54Q29	4	2.65	2.59	2.36	2.03	1.42	11.05	108.4	4.5
S&W Seed Co	SW5210*	5	2.90	2.46	2.15	2.03	1.40	10.93	107.2	4.0
Croplan	Rebound 6XT	4	2.67	2.33	2.18	1.86	1.30	10.34	101.4	4.8
CPS	DG5315	5	2.44	2.31	2.18	1.98	1.37	10.29	100.9	5.0
America's Alfalfa	Ameristand 445NT	4	2.42	2.29	2.11	1.99	1.45	10.26	100.7	4.5
Wilbur Ellis	Integra 8420	4	2.40	2.38	2.05	2.01	1.34	10.17	99.8	5.0
America's Alfalfa	AmeriStand 427 TQ	4	2.32	2.32	2.18	1.93	1.31	10.06	98.7	5.0
Precision Genetics	CB11007	4	2.41	2.28	2.08	1.87	1.36	10.00	98.1	5.0
Legacy Seeds	L-504 HD	5	2.19	2.26	2.14	2.02	1.34	9.95	97.6	3.8
Blue River Hybrids	Robin	5	2.39	2.21	2.06	1.92	1.34	9.93	97.4	4.5
Precision Genetics	CB11009	4	2.62	2.34	1.91	1.73	1.08	9.67	94.9	3.8
Vernema	Vernema	4	2.37	2.10	1.90	1.82	1.29	9.48	93.0	3.5
Vernal	Vernal	2	2.20	1.89	1.70	1.53	1.09	8.41	82.5	3.0
<b>Mean</b>		<b>4.2</b>	<b>2.50</b>	<b>2.32</b>	<b>2.10</b>	<b>1.93</b>	<b>1.34</b>	<b>10.19</b>	<b>100.0</b>	<b>4.3</b>
<b>CV %</b>			<b>10.5</b>	<b>7.2</b>	<b>6.8</b>	<b>8.7</b>	<b>8.6</b>	<b>6.3</b>	<b>6.3</b>	<b>9.3</b>
<b>LSD 10%</b>			<b>0.31</b>	<b>0.20</b>	<b>0.17</b>	<b>0.20</b>	<b>0.14</b>	<b>0.77</b>	<b>7.6</b>	<b>0.5</b>

\* Entered as Experimentals

**Table 13. One-Year Forage Yield - 2016 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA**  
**Forage Yield (Ton DM/A)**

Planted August 10, 2016		Fall	2017 Harvests							2017 Fall
Company	Entry	Dorm.	26-May	23-Jun	19-Jul	23-Aug	23-Sep	Total	Total	23-Oct
		Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% of Mean	Regrowth
DuPont Pioneer	54VR10	4	2.54	2.27	2.09	1.87	1.33	10.10	105.6	4.3
DuPont Pioneer	54VR70	4	2.47	2.35	2.15	1.90	1.22	10.08	105.4	4.3
Croplan	RR AphaTron 2XT	4	2.60	2.18	1.96	1.83	1.17	9.73	101.7	4.3
Forage Genetics	FG R410A136*	4	2.28	2.14	2.19	1.84	1.24	9.70	101.4	5.0
Nexgrow	6424R	4	2.26	2.29	2.10	1.80	1.13	9.57	100.1	4.5
Monsanto	DKA44-16RR	4	2.37	2.20	1.99	1.72	1.23	9.51	99.4	4.5
America's Alfalfa	AmeriStand 415NT RR	4	2.32	2.14	2.04	1.77	1.15	9.41	98.4	4.5
Eureka Seed	4R200	4	2.36	2.19	1.93	1.74	1.17	9.39	98.2	5.0
Wilbur Ellis	Integra 8444R	4	2.19	2.13	2.01	1.71	1.09	9.13	95.5	5.0
Monsanto	RR501	5	2.16	2.09	1.95	1.64	1.17	9.01	94.2	4.0
	<b>Mean</b>	<b>4.1</b>	<b>2.36</b>	<b>2.20</b>	<b>2.04</b>	<b>1.78</b>	<b>1.19</b>	<b>9.56</b>	<b>100.0</b>	<b>4.5</b>
	<b>CV %</b>		<b>9.2</b>	<b>4.9</b>	<b>6.4</b>	<b>5.9</b>	<b>9.3</b>	<b>4.1</b>	<b>4.1</b>	<b>4.5</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>0.13</b>	<b>0.16</b>	<b>0.13</b>	<b>NS</b>	<b>0.47</b>	<b>4.9</b>	<b>0.5</b>

\* Entered as Experimentals



**Table 14. Forage Quality Constituents and Hay Value per Ton - First Cutting 2016 Alfalfa Variety, Trial, Othello, Adams County, WA**

Planted August 9, 2016			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 <sup>1</sup>
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
Alforex	CW 093009*	3	20.4	45.4	10.59	1.69	6.79	23.9	0.540	47.6	167
America's Alfalfa	Ameristand 445NT	4	20.2	45.9	10.1	1.7	7.2	24.1	0.536	46.7	164
Alforex	PGI 557*	5	19.9	45.9	10.05	1.64	7.28	24.5	0.534	46.4	162
Alforex	AFX 429*	4	20.0	47.2	9.81	1.65	7.32	23.4	0.532	47.0	157
Dyna-Gro	DG5315	5	19.5	46.8	10.0	1.6	7.3	24.1	0.529	46.0	156
Croplan	Rebound 6XT	4	19.6	47.2	10.0	1.5	7.3	23.7	0.526	44.4	154
Alforex	HG 4001*	4	19.7	47.4	10.01	1.67	7.44	23.2	0.526	47.6	154
Alforex	PGI 529*	5	18.8	46.6	9.94	1.64	7.43	24.8	0.526	44.5	154
Alforex	AFX 579*	5	19.8	48.3	10.21	1.59	7.50	22.1	0.518	46.4	150
S&W Seed Co	SW5210	5	18.9	47.7	10.11	1.67	7.32	23.5	0.523	45.1	149
Alforex	HybriForce-3430*	4	19.3	48.3	9.66	1.54	7.76	23.1	0.518	45.0	148
Precision Genetics	CB11007	4	19.2	48.6	9.68	1.57	7.72	22.9	0.517	45.2	146
Alforex	CW 105021*	4	18.8	48.9	9.93	1.61	7.64	22.7	0.513	46.6	142
WL	WL 365HQ	5	18.8	48.9	9.87	1.53	7.65	22.8	0.512	45.2	142
Alforex	Hi-Gest 360*	3	18.1	48.4	9.62	1.51	7.56	24.2	0.516	46.0	142
Alforex	HibriForce-3400*	4	18.9	49.8	9.75	1.53	7.81	22.0	0.508	45.4	138
America's Alfalfa	427TQ	4	19.0	50.1	10.30	1.59	7.80	20.9	0.502	45.1	137
Alforex	AFX 469*	4	18.2	49.9	9.40	1.57	7.95	22.7	0.508	45.7	135
Alforex	HybriForce-3420/Wet*	4	18.4	50.3	9.76	1.48	8.01	21.9	0.500	46.1	133
Alforex	4H400*	4	18.5	50.5	9.61	1.42	8.14	21.8	0.498	45.1	132
Alforex	Check 2*	3	18.3	50.9	9.74	1.61	7.97	21.3	0.500	46.0	129
Blue River Hybrids	Mallard*	5	18.0	50.7	9.07	1.39	8.21	22.6	0.500	43.0	129
S&W Seed Co	SW5213	5	17.8	50.7	9.21	1.59	8.13	22.5	0.503	45.2	129
Vernema	Vernema	4	18.0	51.0	9.66	1.50	8.21	21.6	0.494	43.8	127
Pioneer	54Q29	4	17.8	51.0	9.41	1.42	8.25	22.1	0.494	44.5	126
Alforex	DS1168*	6	17.8	51.2	9.28	1.36	8.21	22.2	0.494	44.2	126
Alforex	msSunstra-144110*	4	18.1	52.2	9.84	1.52	8.21	20.1	0.487	46.3	122
Vernal	Vernal	2	18.3	52.5	9.70	1.46	8.25	19.8	0.487	46.7	121
Alforex	msSunstra-143146*	3	17.8	52.4	9.58	1.61	8.40	20.4	0.488	45.7	120
Wilbur Ellis	8420	4	17.8	52.3	9.82	1.45	8.36	20.4	0.483	45.2	119
Alforex	Check 1*	5	17.4	52.2	9.60	1.52	8.34	21.0	0.486	45.1	118
Alforex	AFX 457*	4	17.6	52.5	9.78	1.44	8.32	20.4	0.482	44.0	117
	<b>Mean</b>	<b>4.2</b>	<b>18.7</b>	<b>49.4</b>	<b>9.78</b>	<b>1.55</b>	<b>7.80</b>	<b>22.4</b>	<b>0.509</b>	<b>45.5</b>	<b>139</b>
	<b>CV %</b>		<b>5.6</b>	<b>6.0</b>	<b>5.3</b>	<b>9.0</b>	<b>6.4</b>	<b>10.3</b>	<b>4.4</b>	<b>3.3</b>	<b>13.8</b>
	<b>LSD 10%</b>		<b>1.2</b>	<b>3.5</b>	<b>0.60</b>	<b>0.16</b>	<b>0.59</b>	<b>2.7</b>	<b>0.026</b>	<b>1.8</b>	<b>23</b>

\* Entered as Experimentals

<sup>1</sup> 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 2016 Alfalfa Variety Trial, Othello, Adams County, WA**

Planted August 9, 2016			Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton <sup>1</sup>	Value of Energy (MegaCalories) per Ton <sup>1</sup>	Value of NDF Fiber per Ton <sup>1</sup>	Adj. For Feed Intake (-\$5/ton for NDF>44%) per Ton <sup>2</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
Alforex	CW 093009*	3	122	128	86	63	26	-7	167
America's Alfalfa	Ameristand 445NT	4	120	125	85	62	26	-10	164
Alforex	PGI 557*	5	120	124	84	62	26	-10	162
Alforex	AFX 429*	4	117	122	85	62	27	-16	157
Dyna-Gro	DG5315	5	117	120	82	61	26	-14	156
Croplan	Rebound 6XT	4	115	115	83	61	27	-16	154
Alforex	HG 4001*	4	114	121	83	61	27	-17	154
Alforex	PGI 529*	5	116	117	80	61	26	-13	154
Alforex	AFX 579*	5	111	115	84	60	27	-21	150
S&W Seed Co	SW5210	5	113	114	80	61	27	-18	149
Alforex	HybriForce-3430*	4	110	113	82	60	27	-21	148
Precision Genetics	CB11007	4	110	112	81	60	27	-23	146
Alforex	CW 105021*	4	109	114	80	60	28	-24	142
WL	WL 365HQ	5	109	111	79	60	28	-24	142
Alforex	Hi-Gest 360*	3	112	115	76	60	27	-22	142
Alforex	HibriForce-3400*	4	106	108	80	59	28	-29	138
America's Alfalfa	427TQ	4	105	106	81	58	28	-30	137
Alforex	AFX 469*	4	106	109	77	59	28	-30	135
Alforex	HybriForce-3420/Wet*	4	104	108	78	58	28	-31	133
Alforex	4H400*	4	105	107	78	58	28	-32	132
Alforex	Check 2*	3	102	106	77	58	29	-35	129
Blue River Hybrids	Mallard*	5	102	101	76	58	29	-34	129
S&W Seed Co	SW5213	5	103	106	75	58	29	-33	129
Vernema	Vernema	4	101	101	76	57	29	-35	127
Pioneer	54Q29	4	101	103	75	57	29	-35	126
Alforex	DS1168*	6	101	102	75	57	29	-36	126
Alforex	msSunstra-144110*	4	98	103	77	57	29	-41	122
Vernal	Vernal	2	98	103	78	57	30	-43	121
Alforex	msSunstra-143146*	3	98	101	75	57	29	-42	120
Wilbur Ellis	8420	4	97	100	75	56	29	-42	119
Alforex	Check 1*	5	98	100	73	56	29	-41	118
Alforex	AFX 457*	4	97	97	75	56	30	-43	117
	<b>Mean</b>	<b>4.2</b>	<b>107</b>	<b>110</b>	<b>79</b>	<b>59</b>	<b>28</b>	<b>-27</b>	<b>139</b>
	<b>CV %</b>		<b>9.3</b>	<b>10.4</b>	<b>5.6</b>	<b>4.4</b>	<b>6.0</b>	<b>30.6</b>	<b>13.8</b>
	<b>LSD 10%</b>		<b>12</b>	<b>13</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>17</b>	<b>23</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> 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 2016 Alfalfa Variety Trial, Othello, Adams County, WA**

Planted August 9, 2016			Yield @12% Moist	Value of Metabol. Protein (@ 55% of C. Protein) per Acre <sup>1</sup>	Value of Energy (MegaCalories) per Acre <sup>1</sup>	Value of NDF Fiber per Acre <sup>1</sup>	Adjust. For feed intake per Acre <sup>2</sup>	Nutrient Value of Hay (@ 12% Moisture) per Acre <sup>3</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Tons/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/ton
America's Alfalfa	Ameristand 445NT	4	3.39	290	211	87	-30	559	164
S&W Seed Co	SW5210	5	3.67	294	223	98	-68	547	149
Alforex	HybriForce-3430*	4	3.67	300	221	100	-78	543	148
Alforex	PGI 557*	5	3.28	276	203	85	-31	532	162
Alforex	AFX 429*	4	3.36	284	207	89	-53	528	157
Croplan	Rebound 6XT	4	3.34	276	204	89	-56	512	154
Dyna-Gro	DG5315	5	3.25	268	200	86	-45	508	156
Alforex	CW 093009*	3	3.04	263	191	78	-23	508	167
Alforex	PGI 529*	5	3.29	262	201	87	-44	506	154
Alforex	HG 4001*	4	3.26	272	199	87	-55	504	154
Alforex	HibriForce-3400*	4	3.58	287	212	100	-99	499	138
WL	WL 365HQ	5	3.49	277	208	96	-83	498	142
Alforex	4H400*	4	3.82	297	220	109	-131	494	132
Precision Genetics	CB11007	4	3.34	271	201	91	-76	487	146
Alforex	Hi-Gest 360*	3	3.41	259	204	93	-79	477	142
S&W Seed Co	SW5213	5	3.65	275	214	104	-119	475	129
Blue River Hybrids	Mallard*	5	3.61	275	210	103	-121	466	129
Alforex	AFX 579*	5	3.07	257	184	84	-67	458	150
Alforex	AFX 469*	4	3.40	262	201	96	-101	457	135
Alforex	DS1168*	6	3.58	270	206	103	-127	452	126
Pioneer	54Q29	4	3.53	266	202	101	-123	447	126
Alforex	HybriForce-3420/Wet*	4	3.33	259	194	94	-102	445	133
Alforex	CW 105021*	4	3.09	246	184	85	-75	441	142
Alforex	Check 2*	3	3.37	260	196	97	-116	436	129
America's Alfalfa	427TQ	4	3.08	247	179	87	-96	418	137
Vernema	Vernema	4	3.22	245	185	93	-112	410	127
Alforex	msSunstra-144110*	4	3.29	254	187	97	-135	402	122
Alforex	Check 1*	5	3.37	247	190	99	-138	399	118
Alforex	msSunstra-143146*	3	3.27	247	186	96	-136	393	120
Wilbur Ellis	8420	4	3.21	243	181	94	-131	387	119
Vernal	Vernal	2	3.23	249	182	96	-141	386	121
Alforex	AFX 457*	4	3.26	242	182	96	-140	381	117
<b>Mean</b>		<b>4.2</b>	<b>3.4</b>	<b>266</b>	<b>199</b>	<b>94</b>	<b>-92</b>	<b>467</b>	<b>139</b>
<b>CV %</b>			<b>8.6</b>	<b>9.4</b>	<b>10.2</b>	<b>9.9</b>	<b>31.0</b>	<b>16.7</b>	<b>13.8</b>
<b>LSD 10%</b>			<b>0.3</b>	<b>29</b>	<b>24</b>	<b>11</b>	<b>58</b>	<b>92</b>	<b>23</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

**Table 17. Forage Quality Constituents and Hay Value per Ton - First Cutting 2016 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA**

Planted August 10, 2016			Protein Content	Ash Free Neutral Deterg. Fiber (aNDF)	Ash Content	Fat Content	Lignin Content	Non-fibrous Carbohydrates (NFC)	Net Energy Lactation NEL (Method NRC 2001)	Neutral Deterg. Fiber Digestab. (NDFD 48.)	Total Value of Hay per Ton @ 12% Moisture <sup>1</sup>
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
CPS	DG5315	5	20.0	44.8	10.59	1.88	6.52	24.8	0.549	48.0	169
Vernema	Vernema	4	20.2	45.6	10.8	2.1	6.7	23.4	0.546	49.3	167
DuPont Pioneer	54Q29	4	19.7	45.2	10.57	2.02	6.75	24.5	0.546	48.5	167
Croplan	Rebound 6XT	4	19.5	45.5	10.43	1.98	6.66	24.5	0.546	47.9	164
Precision Genetics	CB11007	4	19.9	45.9	10.7	2.1	6.7	23.5	0.544	48.3	164
Blue River Hybrids	Robin	5	19.8	45.8	10.9	2.1	6.7	23.4	0.541	48.3	164
Wilbur Ellis	8420	4	19.6	45.7	10.39	1.97	6.96	24.2	0.541	50.1	163
America's Alfalfa	427 TQ	4	20.0	47.6	10.83	2.12	6.83	21.4	0.535	49.2	156
America's Alfalfa	Ameristand 445NT	4	18.5	46.9	10.72	1.97	6.78	23.8	0.532	45.7	152
Legacy Seeds	L-504 HD	5	19.8	48.1	10.82	2.14	6.97	21.1	0.530	50.4	152
Vernal	Vernal	2	19.5	48.0	10.67	1.94	6.92	21.9	0.528	47.2	151
S&W Seed Co	SW5213	5	18.5	48.4	10.36	2.00	6.89	22.7	0.529	46.1	145
DuPont Pioneer	54Q29	4	18.6	48.6	10.46	1.93	7.30	22.3	0.519	47.8	143
S&W Seed Co	SW5210	5	17.9	48.6	10.13	1.87	7.30	23.2	0.519	45.8	141
Precision Genetics	CB11009	4	17.9	50.2	10.18	1.99	7.83	21.6	0.506	46.8	132
<b>Mean</b>		<b>4.2</b>	<b>19.3</b>	<b>47.0</b>	<b>10.57</b>	<b>2.00</b>	<b>6.92</b>	<b>23.1</b>	<b>0.534</b>	<b>48.0</b>	<b>155</b>
<b>CV %</b>			<b>6.1</b>	<b>7.0</b>	<b>2.8</b>	<b>6.7</b>	<b>7.6</b>	<b>11.0</b>	<b>4.6</b>	<b>5.5</b>	<b>13.8</b>
<b>LSD 10%</b>			<b>1.4</b>	<b>NS</b>	<b>0.35</b>	<b>0.16</b>	<b>0.62</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> 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 2016 Conv. Alfalfa Variety Trial, Pasco, Franklin Co., WA**

Planted August 10, 2016		Fall Dorm.	Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton <sup>1</sup>	Value of Energy (MegaCalories) per Ton <sup>1</sup>	Value of NDF Fiber per Ton <sup>1</sup>	Adj. For Feed Intake (-\$5/ton for NDF>44%) per Ton <sup>2</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
CPS	DG5315	5	124	132	84	64	25	-4	169
Vernema	Vernema	4	120	131	85	63	26	-8	167
DuPont Pioneer	54Q29	5	122	131	84	63	25	-6	167
Croplan	Rebound 6XT	4	121	129	83	63	26	-8	164
Precision Genetics	CB11007	5	120	128	84	63	26	-9	164
Blue River Hybrids	Robin	4	122	130	84	63	26	-9	164
Wilbur Ellis	8420	5	120	133	83	63	26	-9	163
America's Alfalfa	427 TQ	5	114	124	85	62	27	-18	156
America's Alfalfa	Ameristand 445NT	4	117	119	78	62	26	-14	152
Legacy Seeds	L-504 HD	4	112	125	84	62	27	-21	152
Vernal	Vernal	4	112	118	82	61	27	-20	151
S&W Seed Co	SW5213	2	110	115	78	61	27	-22	145
DuPont Pioneer	54Q29	4	111	119	79	60	27	-23	143
S&W Seed Co	SW5210	4	109	113	76	60	27	-23	141
Precision Genetics	CB11009	4	105	111	76	59	28	-31	132
	<b>Mean</b>	<b>4.2</b>	<b>116</b>	<b>124</b>	<b>82</b>	<b>62</b>	<b>26</b>	<b>-15</b>	<b>155</b>
	<b>CV %</b>		<b>10.7</b>	<b>12.2</b>	<b>6.1</b>	<b>4.6</b>	<b>7.0</b>	<b>45.5</b>	<b>13.8</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>NS</b>	<b>6</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> 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 2016 Alfalfa Variety Trial, Pasco, Franklin Co., WA**

Planted August 10, 2016			Yield @12% Moist	Value of Metabol. Protein (@ 55% of C. Protein) per Acre <sup>1</sup>	Value of Energy (MegaCalories) per Acre <sup>1</sup>	Value of NDF Fiber per Acre <sup>1</sup>	Adjust. For feed intake per Acre <sup>2</sup>	Nutrient Value of Hay (@ 12% Moisture) per Acre <sup>3</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Tons/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/ton
DuPont Pioneer	54Q29	4	3.12	260	198	79	-19	518	167
Croplan	Rebound 6XT	4	3.03	250	192	78	-25	495	164
CPS	DG5315	5	2.77	235	177	70	-8	473	169
S&W Seed Co	SW5213	5	3.24	253	199	88	-70	469	145
S&W Seed Co	SW5210	5	3.29	249	199	90	-75	462	141
Precision Genetics	CB11007	4	2.74	231	173	71	-25	450	164
Blue River Hybrids	Robin	5	2.72	229	171	70	-22	448	164
Vernema	Vernema	4	2.69	230	170	69	-21	448	167
Wilbur Ellis	8420	4	2.72	227	172	70	-21	447	163
DuPont Pioneer	54Q29	4	3.01	236	181	82	-70	430	143
America's Alfalfa	Ameristand 445NT	4	2.76	216	170	73	-41	418	152
America's Alfalfa	427 TQ	4	2.63	223	164	71	-47	410	156
Precision Genetics	CB11009	4	2.98	224	174	85	-98	384	132
Vernal	Vernal	2	2.50	205	153	68	-52	374	151
Legacy Seeds	L-504 HD	5	2.49	207	152	68	-55	372	152
	<b>Mean</b>	<b>4.2</b>	<b>2.85</b>	<b>232</b>	<b>176</b>	<b>75</b>	<b>-43</b>	<b>440</b>	<b>155</b>
	<b>CV %</b>		<b>10.5</b>	<b>11.1</b>	<b>11.2</b>	<b>12.9</b>	<b>41.9</b>	<b>17.0</b>	<b>13.8</b>
	<b>LSD 10%</b>		<b>0.35</b>	<b>NS</b>	<b>24</b>	<b>12</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)

**Table 20. Forage Quality Constituents and Hay Value per Ton - First Cutting 2016 Roundup-Ready Alfalfa Variety Trial, Pasco, Franklin County, WA**

Planted August 10, 2016

Company	Entry	Rating	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 <sup>1</sup> \$/ton
America's Alfalfa	AmeriStand 415NT RR	4	20.2	43.6	10.4	2.01	6.51	25.908	0.560	47.7	177
Nexgrow	6424R	4	20.5	45.0	10.6	2.11	6.66	23.703	0.552	48.8	171
Monsanto	RR501	5	19.6	45.1	10.2	2.03	6.71	24.973	0.551	48.7	167
FG	FG R410A136*	4	19.4	45.5	10.2	1.99	6.98	24.879	0.544	49.1	163
Eureka Seed	4R200	4	19.5	45.9	10.2	2.05	6.91	24.271	0.545	48.5	162
Monsanto	DKA44-16RR	4	19.4	46.4	10.6	1.91	6.73	23.664	0.538	46.3	158
DuPont Pioneer	54VR10	4	19.2	46.6	10.1	2.02	7.08	23.969	0.539	48.5	157
DuPont Pioneer	54VR70	4	19.5	47.8	10.4	2.05	7.06	22.200	0.532	47.2	152
Croplan	RR AphaTron 2XT	4	19.2	48.4	10.6	1.97	6.78	21.803	0.529	45.2	148
Wilbur Ellis	Integra 8444R	4	18.8	48.2	10.6	1.99	7.02	22.286	0.526	46.2	147
	<b>Mean</b>	<b>4.1</b>	<b>19.5</b>	<b>46.2</b>	<b>10.4</b>	<b>2.01</b>	<b>6.85</b>	<b>23.766</b>	<b>0.541</b>	<b>47.6</b>	<b>160</b>
	<b>CV %</b>		<b>4.2</b>	<b>6.1</b>	<b>2.4</b>	<b>5.1</b>	<b>6.2</b>	<b>9.6</b>	<b>3.8</b>	<b>4.9</b>	<b>11.1</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>NS</b>	<b>0.3</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> 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 2016 Conv. Alfalfa Variety Trial, Pasco, Franklin County, WA**

Planted August 10, 2016			Relative Feed Value (RFV)	Relative Feed Quality (RFQ)	Value of Metabolizable Protein (@ 55% of C. Protein) per Ton <sup>1</sup>	Value of Energy (MegaCalories) per Ton <sup>1</sup>	Value of NDF Fiber per Ton <sup>1</sup>	Adj. For Feed Intake (-\$5/ton for NDF>44%) per Ton <sup>2</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
America's Alfalfa	AmeriStand 415NT RR	4	129	137	85	65	25	2	177
Nexgrow	6424R	4	123	133	87	64	25	-5	171
Monsanto	RR501	5	122	133	83	64	25	-5	167
FG	FG R410A136*	4	121	132	82	63	26	-7	163
Eureka Seed	4R200	4	120	130	82	63	26	-10	162
Monsanto	DKA44-16RR	4	117	122	82	62	26	-12	158
DuPont Pioneer	54VR10	4	117	127	81	63	26	-13	157
DuPont Pioneer	54VR70	4	112	119	82	62	27	-19	152
Croplan	RR AphaTron 2XT	4	111	113	81	61	27	-22	148
Wilbur Ellis	Integra 8444R	4	111	115	80	61	27	-21	147
<b>Mean</b>		<b>4.1</b>	<b>118</b>	<b>126</b>	<b>83</b>	<b>63</b>	<b>26</b>	<b>-11</b>	<b>160</b>
<b>CV %</b>			<b>9.2</b>	<b>11.2</b>	<b>4.2</b>	<b>3.8</b>	<b>6.1</b>	<b>38.1</b>	<b>11.1</b>
<b>LSD 10%</b>			<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> 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 2016 Alfalfa Variety Trial, Pasco, Franklin County, WA**

Planted August 10, 2016			Yield @12% Moist	Value of Metabol. Protein (@ 55% of C. Protein) per Acre <sup>1</sup>	Value of Energy (MegaCalories) per Acre <sup>1</sup>	Value of NDF Fiber per Acre <sup>1</sup>	Adjust. For feed intake per Acre <sup>2</sup>	Nutrient Value of Hay (@ 12% Moisture) per Acre <sup>3</sup>	Total Value of Hay per Ton @ 12% Moisture <sup>3</sup>
Company	Entry	Rating	Tons/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/ton
America's Alfalfa	AmeriStand 415NT RR	4	2.63	224	171	65	3	463	177
DuPont Pioneer	54VR10	4	2.89	235	181	76	-36	456	157
Nexgrow	6424R	4	2.57	224	165	65	-12	441	171
Eureka Seed	4R200	4	2.68	221	170	69	-26	435	162
Croplan	RR AphaTron 2XT	4	2.95	239	181	81	-69	431	148
Monsanto	DKA44-16RR	4	2.69	221	169	70	-30	430	158
DuPont Pioneer	54VR70	4	2.81	231	173	76	-54	426	152
FG	FG R410A136*	4	2.60	213	164	67	-21	422	163
Monsanto	RR501	5	2.45	203	157	62	-14	408	167
Wilbur Ellis	Integra 8444R	4	2.49	199	152	67	-51	368	147
	<b>Mean</b>	<b>4.1</b>	<b>2.68</b>	<b>221</b>	<b>168</b>	<b>70</b>	<b>-31</b>	<b>428</b>	<b>160</b>
	<b>CV %</b>		<b>9.2</b>	<b>9.3</b>	<b>9.2</b>	<b>11.8</b>	<b>37.7</b>	<b>12.9</b>	<b>11.1</b>
	<b>LSD 10%</b>		<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>10</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

\* Entered as Experimentals

<sup>1</sup> Calculated at \$0.437/ lb of Metabolizable Protein; \$0.066/lb of Mcal of energy, and \$0.032 of effective NDF (assuming aNDF is 100% effective).

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

<sup>3</sup> Total Value of Hay @ 12% Moisture (sum of protein, energy, fiber, & fiber adjustment)