



WASHINGTON STATE UNIVERSITY
EXTENSION

2021

Washington State Hay Growers Association

ALFALFA VARIETY TRIALS

QUALITY RESULTS

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 2021. 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 2018, 2019, and 2020 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 2019 and 2020 trials are located on land leased from the City of Pasco and called "City of Pasco" at Lat: 46°17'31.11"N and 119°1'54.97"W with an elevation of 502 ft and near the City of Pasco Water Treatment Plant. The 2018 planting (called "Pasco" site) was established at 3128 Ivy Road, Pasco, WA at Lat: 46°17'51.01"N and 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 Quincy loamy fine sand (Xeric Torripsamments) at the Pasco and City of Pasco locations. 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.

The trials follow fertility recommendations found in the "Nutrient Management Guide for Dryland and Irrigated Alfalfa in the Inland Northwest" (PNW0611). Conventional trials are sprayed after 3 tri-foliate leaves appear after planting with imazamox with 2,4-DB and 0.25% NIS. Roundup Ready® trials are sprayed with glyphosate when the plants reach 3 trifoliate leaves.

Each trial is arranged in a randomized complete block (RCB) design with 4 replications. All trials are seeded at 22 lbs./ac in rows spaced 6 inches apart with a 1-foot inter-plot separation, total 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 every planting.

The 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. Analysis of Variance (ANOVA) is calculated and if variety is significant least significant difference (LSD) is calculated. The LSD is used to determine if the varieties are statistically different from each other. If the difference between the 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 the annual total of yields for alfalfa varieties since the fall planting in 2018 to 2020 at the Pasco and Othello locations. Yields are presented in percent of the mean of the test for ease of comparison. Table 4 is from National Alfalfa and Forage Alliance's (NAFA) "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties – 2022 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 2021 and the totals for all years of the trials from those planted in the fall of 2017 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 the last cutting was taken on October 14th for both the Pasco and Othello locations and represent visual ratings from 1-5.

The 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 seeded row compared to the number of 6-inch blocks in a plot and calculating the percentage from the total number of 6-inch blocks in the plot.

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 and still yield well. This annual publication aims to provide growers and industry with the best, most reliable quality results possible.

First cutting quality samples were funded by seed companies on the conventional trials for both Othello and Pasco locations and results can be seen in Tables 14 through 25. Only in experiments where enough entries occurred can we do hay quality testing. The method of determining nutrient and fiber value was used according to Dr. William Wiess, Nutritionist from The Ohio State University, who spoke on “Innovations in Forage Digestibility Analyses/Changing Concepts of Forage Quality” at the 2017 and 2019 Western Alfalfa and Forage Symposium and can be viewed at <https://alfalfa.ucdavis.edu/+symposium/2017/workshop.aspx> for 2017 and select the talk at 1:15 pm which uses aNDF for a price adjustment, whereas 2019 talk uses NDFD as for the value of adjustment <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d>. This method allows a total dollar value of hay to be calculated on each variety. The numbers are given are 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 fiber-fill adjustment 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. I would be happy to try to answer any questions on how the numbers were calculated.

I want to especially thank Obadiah Sheriff, Jordan Kirchhoff, Sarah Dreger, Steve Fransen, and Josefina Guzman, 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 do not hesitate to contact me if you have any questions about the trials.

Sincerely,

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

Dr. Steve Norberg
Regional Forage Specialist
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Table 1. 2021 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2016 at WSU Othello Research Farm, WA

	Seeded August 2016				Seeded August 2017				Seeded August 2018				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
Entry	2017	2018	2019	3 Yr.	2018	2019	2020	3 Yr.	2019	2020	2021		2016 & 2017 Trials	2016 & 2018 Trials	2017 & 2018 Trials
8420	98.3%	95.4%	92.5%	95.4%											
4H400* (CW 054004)	105.1%	109.9%	101.5%	105.6%											
54Q29	104.7%	106.2%	106.5%	105.8%											
AFX 429*	103.8%	99.8%	105.7%	103.0%											
AFX 457*	96.2%	98.4%	90.3%	95.0%											
AFX 460* (CW A113005)					99.5%	109.1%	108.5%	105.7%							
AFX 469*	104.8%	103.4%	119.6%	109.1%											
AFX 579*	99.0%	108.2%	116.2%	107.8%											
Ace*									100.6%	105.1%	97.3%	100.7%			
QuickGold*									109.3%	110.3%	100.3%	106.4%			
AmeriStand 318TQ					104.6%	105.3%	106.9%	105.6%							
AmeriStand 427TQ	96.9%	99.2%	106.5%	100.8%					98.8%	103.9%	106.9%	103.2%		102.0%	
AmeriStand 445NT	96.9%	96.5%	95.8%	96.4%	97.7%	88.3%	98.3%	94.7%	95.4%	98.4%	97.1%	96.9%	95.6%	96.7%	95.8%
Sureshot*									105.3%	105.5%	103.2%	104.6%			
CB11007*	96.3%	97.5%	96.7%	96.8%											
CW 104014					99.8%	115.6%	98.8%	104.7%							
CW 093009*	95.3%	99.6%	96.5%	97.2%											
CW 105021*	94.8%	102.8%	99.3%	99.1%											
Trifecta III*									108.0%	110.2%	111.1%	109.7%			
DG5315	105.8%	103.4%	107.2%	105.4%					108.2%	107.1%	107.5%	107.6%		106.5%	
AFX 647*	99.8%	98.8%	106.3%	101.6%											
DynaGro Exp. #1									99.2%	99.7%	97.6%	98.8%			
HG 4001*	100.2%	110.2%	106.5%	105.7%											
HibriForce-3400*	101.2%	98.7%	99.3%	99.7%											
Hi-Gest 360*	99.7%	102.7%	95.6%	99.4%											
HybriForce-3420/Wet*	104.9%	104.4%	100.0%	103.1%											
HybriForce-3430*	104.6%	97.6%	93.5%	98.5%											
HybriForce-4400*	103.6%	105.3%	101.7%	103.6%											
Magnum 8									96.3%	97.7%	100.4%	98.2%			
Mallard*	102.5%	98.5%	91.6%	97.6%											
msSunstra-143146*	98.3%	99.2%	93.3%	96.9%											
PGI 529*	108.2%	112.0%	112.6%	110.9%											
PGI 557*	99.0%	106.5%	103.7%	103.1%											
Quail 5					103.1%	117.3%	116.8%	112.4%							
Rebound 6XT	100.3%	100.5%	112.9%	104.5%											
Skylark									99.1%	95.7%	97.1%	97.4%			

Entry	Seeded August 2016				Seeded August 2017				Seeded August 2018				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
	2017	2018	2019	3 Yr.	2018	2019	2020	3 Yr.	2019	2020	2021		2016 & 2017 Trials	2016 & 2018 Trials	2017 & 2018 Trials
Slingshot					106.0%	112.4%	112.2%	110.2%							
SW 4107					109.6%	109.1%	100.8%	106.5%							
SW 5207									108.1%	104.6%	98.7%	103.7%			
SW 5210	102.5%	98.2%	102.1%	100.9%											
SW 5213	103.3%	101.5%	101.1%	102.0%	103.8%	107.3%	109.4%	106.8%	103.4%	99.9%	103.3%	102.3%	104.4%	102.1%	104.6%
Swift									97.1%	95.0%	97.5%	96.6%			
Vernal	84.2%	76.3%	67.3%	75.9%	80.1%	72.6%	77.6%	76.8%	78.0%	79.2%	90.7%	82.9%	76.4%	79.4%	79.8%
Vernema	83.9%	69.1%	73.3%	75.3%	88.4%	74.4%	77.8%	80.2%					77.8%		
WL 365HQ	106.2%	104.3%	115.6%	108.6%											
Avg. Total-Tons/Acre	8.45	8.38	8.62	25.45	10.83	10.56	9.12	30.50	9.40	7.80	9.60	26.8			
LSD (0.10) **	6.5%	7.6%	15.2%	8.1%	4.6%	4.7%	7.1%	4.0%	4.7%	6.4%	6.2%	4.6%			
CV (%)	5.4%	6.4%	12.7%	6.8%	5.5%	5.7%	9.0%	4.8%	3.9%	5.4%	5.2%	5.90%			

* Was originally submitted as an experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 2. 2021 Summary of Conventionally Sprayed Alfalfa Yield Trials Planted Since Fall of 2016 - Near Pasco, WA

	Seeded August 2016				Seeded August 2017				Seeded August 2018				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
Entry	2017	2018	2019	3 Yr.	2018	2019	2020	3 Yr.	2019	2020	2021	3 Yr.	2016 & 2017 Trials	2016 & 2018 Trials	2017 & 2018 Trials
54Q29	108.4%	107.6%	108.2%	108.0%	105.2%	105.5%	109.2%	106.6%	96.2%	98.4%	97.2%	97.3%	107.3%	102.7%	101.9%
AmeriStand 427TQ	98.7%	97.6%	109.5%	101.3%											
Ameristand 445NT	100.7%	101.8%	102.6%	102.0%											
Camas					96.9%	101.7%	100.2%	99.3%							
CB11007*	98.1%	93.5%	94.4%	95.4%											
CB1109*	94.9%	90.1%	94.3%	93.0%					105.6%	106.6%	108.4%	106.7%		99.9%	
DG 5315	100.9%	103.2%	104.9%	102.8%											
DKA 40-16									100.1%	99.2%	100.0%	99.8%			
DKA 44-18					102.9%	96.2%	95.1%	98.5%	99.9%	99.0%	94.6%	97.7%			98.1%
DKA 50-17					106.6%	105.0%	101.7%	104.5%	103.5%	104.3%	102.4%	103.4%			104.0%
Dyna-Gro Exp. #1									102.8%	98.6%	104.0%	101.9%			
Finch									99.4%	104.7%	105.1%	103.1%			
Integra 8420	99.8%	107.3%	102.6%	103.3%											
L-504 HD	97.6%	90.9%	95.0%	94.4%											
Quail									99.2%	96.5%	96.0%	97.2%			
Rebound 6XT	101.4%	105.4%	109.5%	105.1%											
Robin	97.4%	96.4%	91.7%	95.5%					99.3%	99.1%	96.0%	98.1%		96.8%	
Slingshot					99.6%	105.5%	108.7%	104.2%							
Sureshot									102.0%	104.3%	102.7%	103.0%			
SW 4107					100.3%	99.5%	101.3%	100.4%							
SW 5210*	107.2%	111.1%	105.5%	108.2%											
SW 5207									100.2%	100.9%	101.2%	100.8%			
SW 5213	110.6%	109.1%	113.5%	110.8%	104.3%	106.8%	107.9%	106.2%	102.9%	107.6%	110.8%	107.2%	108.5%	109.0%	106.7%
Vernal	82.5%	80.7%	75.0%	79.8%	84.2%	79.8%	75.9%	80.3%	82.2%	73.9%	78.4%	78.2%	80.0%	79.0%	79.2%
Vernema	93.0%	91.2%	85.4%	90.2%											
WL 349HQ									106.7%	106.8%	103.2%	105.5%			
Avg. Total Tons/Acre	10.20	10.20	7.30	27.70	12.52	9.36	10.30	32.18	10.10	10.20	11.06	31.37			
LSD Years (0.10) **	7.6%	7.9%	8.8%	5.8%	4.0%	6.9%	7.8%	6.7%	4.9%	5.9%	6.6%	4.8%			
CV (%)	6.3%	6.6%	7.4%	4.8%	3.3%	5.7%	6.4%	5.5%	4.0%	4.9%	5.6%	4.1%			

* Was originally submitted as an experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 3. 2021 Summary of Roundup Sprayed Alfalfa Yield Trials Planted Since 2016 - Near Pasco, WA

	Seeded August 2016				Seeded August 2017				Seeded August 2018				6 YR Avg. of	6 YR Avg. of	6 YR Avg. of
Entry	2019	2020	2021	3Yr.	2019	2020	2021	3Yr.	2019	2020	2021	3Yr.	2016 & 2017 Trials	2016 & 2018 Trials	2017 & 2018 Trials
4R200	98.2%	95.5%	91.9%	95.7%											
54VR10	105.6%	111.3%	107.0%	107.3%											
54VR70	105.4%	104.5%	102.9%	103.4%	103.2%	94.6%	99.3%	99.4%					101.4%		
6424R	100.1%	98.9%	99.9%	97.7%											
6427R					103.8%	100.7%	100.7%	101.9%							
Allied Seed 438RR									100.9%	103.3%	106.9%	103.8%			
AmeriStand 415NT RR	98.4%	100.9%	96.4%	98.9%											
DG 417RR					97.5%	94.9%	101.9%	98.2%	101.4%	101.0%	97.9%	100.0%			99.1%
DKA 40-21HVXRR									98.7%	98.3%	94.9%	97.2%			
DKA43-18RR					101.0%	103.8%	103.8%	102.7%	99.9%	102.7%	101.9%	101.5%			102.1%
DKA44-16RR	99.4%	99.0%	97.4%	100.6%	97.4%	98.0%	95.5%	97.0%	102.0%	98.6%	99.2%	99.9%	98.8%	100.2%	98.4%
DKA50-20RR					98.9%	98.8%	99.3%	99.0%							
FG R410A136*	101.4%	98.8%	105.9%	99.9%											
LG 4R200	98.2%	95.5%	91.9%	95.7%											
LG 4R300					99.2%	102.7%	98.5%	100.0%							
LG 5R300*					99.1%	106.5%	100.9%	101.9%							
Integra 8444R	95.5%	89.6%	92.7%	95.1%											
RR AphaTron 2XT	101.7%	103.0%	105.9%	102.7%											
RR501	94.2%	98.5%	100.0%	98.8%											
RR Check									97.1%	96.1%	99.2%	97.6%			
Total Tons/Acre	10.20	10.20	7.30	28.10	12.59	9.76	10.79	33.15	10.20	10.00	11.37	31.50			
LSD (0.10) **	4.9%	7.8%	4.9%	4.6%	4.0%	3.6%	NS	3.0%	NS	3.7%	NS	2.9%			
CV (%)	4.1%	6.5%	4.1%	4.0%	3.3%	2.9%	3.9%	2.5%	3.0%	3.0%	7.2%	2.3%			

* Was originally submitted as a experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

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

Variety	Marketing	FD	WS	BW	VW	FW	AN	PRR	APH ¹	APH ²	SAA	PA	BAA	SN	SRKN	NRKN	Salt	Tech.
54Q29	Pioneer	4		HR	HR	R	HR	HR	HR		R	HR		HR				C
54VR70	Pioneer	4		R	R	R	R	HR	HR	R		MR		HR				R
HG4001	LG Seeds	4		HR	HR	HR	HR	HR	HR	R	R	MR	R	R				C
6453Q	NEXGROW	4	2	HR	HR	HR	HR	HR	HR	HR	R	R		R				C
6585Q	NEXGROW	5	2	HR	HR	HR	HR	HR	HR			R		HR			G	C
Ace	BrettYoung	4		HR	HR	HR	HR	HR	HR		R	MR	R	HR				C
AFX 429*	Alforex Seeds	4	2	HR	HR	HR	HR	HR	HR	R			R	R				C
AFX 457*	Alforex Seeds	4		HR	HR	HR	HR	HR	HR		R	HR		R			G	C
AFX 460*	Alforex Seeds	4	1	HR	HR	HR	HR	HR	HR	R								
AFX 469*	Alforex Seeds	4	1	HR	HR	HR	HR	HR	HR	MR				HR			G	C
AFX 579*	Alforex Seeds	5	2	HR	HR	HR	HR	HR	HR	R			R	HR			G	C
AmeriStand 416NT RR	America's Alf.	4		HR	HR	HR	HR	HR	HR		R	R		HR			G	R
AmeriStand 427TQ	America's Alf.	4	1	HR	HR	HR	HR	HR	HR	HR		R		HR			G	C
AmeriStand 428TQ	America's Alf.	4	1	HR	HR	HR	HR	HR	HR	HR	R	R		HR				C
AmeriStand 445NT	America's Alf.	4		HR	R	HR	HR	HR	R		HR	R		HR		HR		C
AmeriStand 481 HVXRR	America's Alfalfa	4	2	HR	HR	HR	HR	HR	HR	HR	R	R		R				RX
AmeriStand 455TQ RR	America's Alfalfa	4	2	HR	HR	HR	HR	HR	HR	R		R		R		HR	G	R
AmeriStand 518NT	America's Alfalfa	5		HR	HR	HR	HR	HR	HR			HR		HR		HR	G	C
AmeriStand 545NT RR	America's Alf.	5		R	HR	R	HR	HR	HR		HR	HR		HR	HR		G	R
Camas	LG Seeds	4		HR	R	HR	HR	HR	HR		HR	R		HR		HR		C
DG 4120	Nutrien Ag Solutions	4	1	HR	HR	HR	HR	HR	HR	HR	R	R		R				C
DG 5315	Nutrien Ag Solutions	5		HR	HR	HR	HR	HR	HR			HR		HR				C
DKA40-16	DeKalb	4	1	HR	HR	HR	HR	HR	HR	R	R	R		HR			G	C
DKA40-21HVXRR	Dekalb	4	2	HR	HR	HR	HR	HR	HR	R	R	R		R				RX
DKA40-51RR	Dekalb	4	1	HR	HR	HR	HR	HR	HR	HR	R			R				R
DKA43-13	DeKalb	4	1	HR	HR	HR	HR	HR	HR			R		R		R		C
DKA43-18RR	DeKalb	4	2	HR	HR	HR	HR	HR	HR	HR				HR		R		R
DKA44-16RR	DeKalb	4	2	HR	HR	HR	HR	HR	HR	R	R	R		R			G	R
DKA50-17	DeKalb	5	1	HR	HR	HR	HR	HR	HR	R		HR		R				C
Hi-Gest 360	Alforex Seeds	3		HR	HR	HR	HR	HR	HR	HR			R				G	C
HybriForce-3400	Dairyland Seeds	4	2	HR	HR	HR	HR	HR	HR	MR		R		HR	R	HR		H
HybriForce-3420/Wet	Dairyland Seeds	4	2	HR	HR	HR	HR	HR	HR	HR	HR	MR	R	R		R		H
HybriForce-3430	Dairyland Seeds	4	2	HR	HR	HR	HR	HR	HR	R	HR	R	R	HR		R		H
HybriForce-4400	Dairyland Seeds	4	2	HR	HR	HR	HR	HR	HR	R	R	R	HR	HR		MR		H
Integra 8420	Wilbur-Ellis	4		HR	HR	HR	HR	HR	HR		HR	R		HR		HR		C
Integra 8460	Wilbur-Ellis	4		HR	HR	HR	HR	HR	HR		HR	R		HR		HR		C
Magnum 8	Dairyland Seeds	4		HR	HR	HR	HR	HR	HR	R	R	MR	R	R				C
MPIII Max Q	Simplot Seeds	5	2	HR	HR	HR	HR	HR	HR	R	R	HR		HR			G	C
PGI 529	Alforex Seeds	5	1	HR	R	HR	HR	HR	HR		MR	R	MR	R				C
PGI 557	Alforex Seeds	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

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Variety	Marketing	FD	WS	BW	VW	FW	AN	PRR	APH ¹	APH ²	SAA	PA	BAA	SN	SRKN	NRKN	Salt	Tech.
Rebound 6XT	Croplan	4	1	HR	HR	HR	HR	HR	HR	HR	R	HR						C
SGS 47M	Simplot Seeds	4	2	HR	HR	HR	HR	HR	HR	R		R		R				C
Slingshot	BrettYoung	5	2	R	HR	HR	HR	HR	HR		HR	HR		HR		HR		C
SW 4107	Alfalfa Partners	4		HR	HR	HR	HR	HR	HR	HR	MR	R		R				C
SW 4412Y	Alfalfa Partners	4	2	HR	HR	HR	HR	HR	HR	HR	R	MR		HR				C
SW 5210	Alfalfa Partners	5		HR	HR	HR	HR	HR	HR	HR	R	HR		HR			G	C
SW 5213	Alfalfa Partners	5		HR	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 349HQ	W-L Research	4	2	HR	HR	HR	HR	HR	HR	HR		HR		R				C
WL 365HQ	W-L Research	5	1	HR	HR	HR	HR	HR	HR	R	HR	HR		R			G	C
WL375HVX.RR	W-L Alfalfas	5	2	HR	HR	HR	HR	HR	HR	HR		R		HR			G	RX
WL 377HQ	W-L Research	5		HR	HR	HR	HR	HR	HR		HR	HR		HR		HR	G	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
APH¹ Aphanomyces Race 1
APH² Aphanomyces Race 2

SRKN Southern Root Knot Nematode
NRKN Northern Root Knot Nematode
Salt Tol.- G=germination F=forage prod.
Tech. C= Conv., R= RR, RX= RR & HarvXtra

* NAFA's "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties - 2021 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 occurred. Only data from publications were used.

Table 5. Three-Year Forage Yield - 2018 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 8, 2018		Fall	2019		2020		2021 Harvests						Total 2019-2021		2021 Fall
		Dorm.	Total	Total	Total	Total	20-May	21-Jun	21-Jul	8-Sep	Total	Total	Total	Total	4-Oct
Company	Entry	Rating	Tons/a	% Mean	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Tons/a	% Mean	Tons/a	% Mean	Stand
Seed Logic LLC	Trifecta III*	4	10.19	108.0	8.55	110.2	3.48	2.85	2.50	1.81	10.64	111.1	29.38	109.7	98
Nutrien Ag Solutions	DG5315	5	10.22	108.2	8.31	107.1	3.71	2.62	2.33	1.63	10.29	107.5	28.82	107.6	98
Renk Seed	QuickGold*	5	10.32	109.3	8.56	110.3	3.55	2.22	2.19	1.65	9.61	100.3	28.48	106.4	99
Brett Young	Sureshot*	5	9.94	105.3	8.18	105.5	3.68	2.59	2.19	1.42	9.89	103.2	28.01	104.6	99
S&W Seed Company	SW5207	5	10.21	108.1	8.11	104.6	3.52	2.19	2.10	1.64	9.45	98.7	27.77	103.7	98
America's Alfalfa	Ameristand 427TQ	4	9.33	98.8	8.06	103.9	3.74	2.51	2.24	1.75	10.24	106.9	27.63	103.2	98
S&W Seed Company	SW5213	5	9.76	103.4	7.74	99.9	3.72	2.43	2.03	1.70	9.89	103.3	27.40	102.3	100
Brett Young	Ace*	4	9.50	100.6	8.15	105.1	3.40	2.22	2.14	1.56	9.32	97.3	26.96	100.7	98
Nutrien Ag Solutions	Dyna-Gro Exp. #1	4	9.37	99.2	7.73	99.7	3.38	2.14	2.09	1.74	9.35	97.6	26.45	98.8	99
Alforex Seeds	Magnum 8	4	9.09	96.3	7.58	97.7	3.60	2.27	2.06	1.69	9.62	100.4	26.29	98.2	97
Blue River Hybrids	Skylark	4	9.35	99.1	7.43	95.7	3.40	2.29	2.01	1.60	9.30	97.1	26.08	97.4	97
America's Alfalfa	Ameristand 445NT	4	9.01	95.4	7.63	98.4	3.46	2.24	2.05	1.55	9.30	97.1	25.94	96.9	99
Blue River Hybrids	Swift	4	9.17	97.1	7.37	95.0	3.46	2.34	1.93	1.61	9.34	97.5	25.88	96.6	96
Conv. Industry	Check	4	8.82	93.4	6.80	87.6	3.36	2.09	1.84	1.45	8.74	91.2	24.35	91.0	99
Conv. Check	Vernal	2	7.36	78.0	6.14	79.2	3.44	1.99	1.88	1.38	8.69	90.7	22.19	82.9	95
Mean		4.2	9.4	100.0	7.8	100.0	3.53	2.33	2.11	1.61	9.58	100.0	26.78	100.0	98
CV %			3.9	3.9	5.4	5.4	8.8	10.5	6.8	9.0	5.2	5.2	5.9	5.9	1
LSD 10%**			0.44	4.7	0.5	6.4	NS	0.29	0.17	0.17	0.59	6.2	1.23	4.6	1

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $PR > F 0.10$, if not then it was not significant (NS).

Table 6. Three-Year Forage Yield - 2018 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2018		Fall	2019		2020		2021 Harvests						2019 - 2021		2020 Fall	
		Dorm.	Total	Total	Total	Total	11-May	11-Jun	12-Jul	18-Aug	15-Sep	Total	Total	Total	Total	4-Oct
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
S&W Seed Company	SW5213	5	10.4	102.9	11.0	107.6	3.59	2.98	2.32	2.01	1.35	12.25	110.8	33.63	107.2	96.3
Nutrien Ag Solutions	DG5315	5	10.6	105.6	10.9	106.6	3.36	2.87	2.41	2.07	1.27	11.99	108.4	33.54	106.9	92.1
W-L Research	WL349HQ	4	10.7	106.7	10.9	106.8	3.37	2.74	2.37	1.70	1.23	11.42	103.2	33.10	105.5	91.7
DeKalb	DKA50-17	5	10.4	103.5	10.7	104.3	3.36	2.54	2.22	2.06	1.14	11.32	102.4	32.42	103.4	88.8
Blue River Hybrids	Finch	5	10.0	99.4	10.7	104.7	3.73	2.66	2.19	1.83	1.20	11.62	105.1	32.35	103.1	91.3
Brett Young	Sureshot	5	10.3	102.0	10.7	104.3	3.30	2.68	2.09	2.05	1.23	11.36	102.7	32.31	103.0	91.0
Nutrien Ag Solutions	Dyna-Gro Exp.#1*	4	10.4	102.8	10.1	98.6	3.55	2.59	2.11	2.05	1.21	11.51	104.0	31.95	101.9	92.3
S&W Seed Company	SW5207	5	10.1	100.2	10.3	100.9	3.07	2.51	2.27	2.08	1.27	11.19	101.2	31.62	100.8	94.5
DeKalb	DKA40-16	4	10.1	100.1	10.2	99.2	3.02	2.65	2.20	1.94	1.24	11.06	100.0	31.30	99.8	93.1
Blue River Hybrids	Robin	5	10.0	99.3	10.1	99.1	3.13	2.49	1.97	1.92	1.12	10.62	96.0	30.76	98.1	90.0
DeKalb	DKA44-18	4	10.1	99.9	10.1	99.0	2.99	2.44	2.01	1.87	1.16	10.47	94.6	30.66	97.7	89.0
DuPont Pioneer	54Q29	4	9.7	96.2	10.1	98.4	2.85	2.59	2.10	1.94	1.26	10.75	97.2	30.51	97.3	93.2
Blue River Hybrids	Quail	5	10.0	99.2	9.9	96.5	3.07	2.40	1.92	2.17	1.06	10.62	96.0	30.49	97.2	86.4
Conv. Check	Vernal	2	8.3	82.2	7.6	73.9	3.16	1.31	1.73	1.92	0.55	8.67	78.4	24.52	78.2	79.4
	Mean	4.4	10.1	100.0	10.2	100.0	3.25	2.53	2.14	1.97	1.16	11.06	100.0	31.37	100.0	90.7
	CV %		4.0	4.0	4.9	4.9	8.7	6.5	8.1	12.9	8.9	5.6	5.6	4.1	4.1	3.0
	LSD 10%**		0.49	4.86	0.60	5.86	0.34	0.20	0.20	NS	0.12	0.73	6.6	1.52	4.8	3.2

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $PR > F 0.10$, if not then it was not significant (NS).

Table 7. Three-Year Forage Yield - 2018 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 9, 2018		Fall	2019		2020		2021 Harvests							2019 - 2021		2021 Fall
		Dorm.	Total	Total	Total	Total	11-May	11-Jun	12-Jul	18-Aug	15-Sep	Total	Total	Total	Total	4-Oct
Company	Entry	Ratin g	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	438RR	4	10.3	100.9	10.3	103.3	3.55	2.72	2.52	2.18	1.17	12.15	106.9	32.70	103.8	92.1
DeKalb	DKA43-18RR	4	10.2	99.9	10.2	102.7	3.45	2.65	2.33	2.00	1.17	11.59	101.9	31.97	101.5	91.7
Nutrien Ag Solutions	DG417RR	4	10.3	101.4	10.1	101.0	3.23	2.59	2.37	1.83	1.11	11.13	97.9	31.50	100.0	90.6
DeKalb	DKA44-16 RR	4	10.4	102.0	9.8	98.6	3.14	2.57	2.34	2.12	1.10	11.27	99.2	31.47	99.9	92.7
RR Check	RR Check	4	9.9	97.1	9.6	96.1	3.23	2.48	2.29	2.16	1.12	11.28	99.2	30.73	97.6	89.6
DeKalb	DKA40-21HVXRR	4	10.0	98.7	9.8	98.3	3.18	2.52	2.28	1.73	1.07	10.79	94.9	30.61	97.2	89.5
	Mean	4.0	10.2	100.0	10.0	100.0	3.30	2.59	2.36	2.00	1.12	11.37	100.0	31.5	100.0	91.1
	CV %		3.0	3.0	3.0	3.0	4.1	6.1	5.7	12.1	8.2	7.2	7.2	2.3	2.3	2.5
	LSD 10%**		NS	NS	0.37	3.71	0.17	NS	NS	0.30	NS	NS	NS	0.9	2.9	NS

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $P > 0.10$, if not then it was not significant (NS).

Table 8. Two-Year Forage Yield - 2019 Alfalfa Variety Trial, Othello, Adams County, WA
Forage Yield (Ton DM/A)

Planted August 10, 2019		Fall	2020		2021 Harvests						2020-2021		2021 Fall
		Dorm.	Total	Total	22-May	21-Jun	22-Jul	9-Sep	Total	Total	Total	Total	4-Oct
Company	Entry	Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Tons/a	% Mean	Tons/a	% Mean	Regrowth
S & W Seed Company	SW5210	5	9.99	108.5	4.12	2.95	2.34	1.92	11.33	106.4	21.3	107.4	4.3
Alforex Seeds	AFX 439*	4	9.67	105.0	4.01	2.98	2.58	1.87	11.44	107.4	21.1	106.3	3.8
S & W Seed Company	SW5213	5	9.44	102.5	4.09	2.89	2.36	1.87	11.20	105.2	20.6	104.0	4.5
Pioneer Brand	54Q29	4	9.68	105.2	4.14	2.80	2.27	1.74	10.95	102.9	20.6	103.9	4.0
Simplot Growers Solution	SGS 47M	4	9.62	104.5	3.99	2.90	2.34	1.73	10.96	102.9	20.6	103.7	3.8
W-L Research	WL 349HQ	4	9.49	103.1	3.85	3.04	2.33	1.78	11.00	103.3	20.5	103.2	5.0
Alforex Seeds	AFX164048	4	9.59	104.1	3.90	2.87	2.40	1.73	10.90	102.3	20.5	103.2	3.5
Nutrien Ag. Solutions	DG 4120*	4	9.23	100.3	3.75	2.92	2.54	1.89	11.10	104.3	20.3	102.4	4.5
Alforex Seeds	HybriForce-3600	6	9.50	103.2	4.04	2.72	2.32	1.75	10.82	101.6	20.3	102.4	4.5
Farmers Business Network	F2F6C-418	4	9.51	103.3	4.22	2.71	2.20	1.67	10.80	101.4	20.3	102.3	3.3
Brett Young	Ace*	4	9.92	107.7	3.80	2.72	2.30	1.55	10.38	97.5	20.3	102.2	3.5
DeKalb	DKA44-18	4	9.24	100.4	3.83	2.94	2.31	1.84	10.92	102.5	20.2	101.6	4.8
Conv. Check	Check 1	4	9.14	99.3	4.09	2.75	2.26	1.62	10.72	100.7	19.9	100.1	3.8
W-L Research	WL 377HQ	5	9.14	99.2	3.72	2.70	2.22	1.80	10.44	98.1	19.6	98.6	4.3
Simplot Growers Solution	MPIII Max Q	5	9.13	99.1	3.97	2.45	2.12	1.71	10.25	96.2	19.4	97.6	3.8
Farmers Business Network	F2F6C-628	6	8.69	94.4	3.77	2.72	2.28	1.89	10.65	100.0	19.3	97.4	5.0
Brett Young	Revolver*	6	8.86	96.2	3.74	2.52	2.13	1.67	10.07	94.6	18.9	95.3	4.3
Conv. Check 2	Conv. Check 2	4	9.00	97.7	3.98	2.41	1.97	1.54	9.89	92.9	18.9	95.1	3.0
America's Alfalfa	AmeriStand 518NT	5	8.66	94.1	3.63	2.69	2.23	1.66	10.21	95.9	18.9	95.1	3.8
Forage Genetics	FG C0415SN223*	NA	8.62	93.6	3.42	2.65	2.40	1.70	10.16	95.4	18.8	94.6	4.3
Public	Vernal	2	7.21	78.3	3.80	2.04	2.08	1.50	9.42	88.4	16.6	83.8	2.3
Mean		4.5	9.21	100.0	3.90	2.73	2.28	1.74	10.65	100.0	19.9	100.0	4.0
CV %			5.1	5.1	4.9	7.2	6.3	9.4	4.6	4.6	4.4	4.4	13.3
LSD 10%**			0.56	6.1	0.23	0.23	0.17	0.19	0.59	5.5	1.0	5.0	0.6

* Was originally submitted as an experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 9. Two-Year Forage Yield - 2019 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 7, 2019		Fall	2020		2021 Harvests							2 Yr.	2021 Fall
		Dorm.	Total	Total	12-May	11-Jun	13-Jul	19-Aug	16-Sep	Total	Total	Total	14-Oct
Company	Entry	Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	Regrowth
Simplot Grower Solutions	SGS47M	4	11.82	106.7	4.38	3.34	2.75	2.14	1.58	14.19	106.8	26.0	4.0
Alforex Seeds	AFX164048	4	11.86	107.1	4.35	3.30	2.92	2.00	1.47	14.04	105.7	25.9	4.5
Farmers Business Network	F2F6C-418	4	12.07	109.0	4.34	3.02	2.70	2.11	1.48	13.64	102.7	25.7	3.8
DeKalb	DKA44-18	4	11.48	103.7	4.35	3.20	2.82	1.95	1.52	13.84	104.2	25.3	4.8
S&W Seed Company	SW5210	5	11.58	104.6	4.44	3.04	2.25	2.05	1.61	13.40	100.9	25.0	4.0
RR check1	RR check1	4	11.84	107.0	4.03	2.90	2.70	2.11	1.32	13.06	98.3	24.9	4.3
Conv. Check 2	Conv. Check 2	4	11.41	103.0	4.45	2.94	2.43	2.07	1.44	13.33	100.4	24.7	4.0
DeKalb	DKA40-51RR	4	11.04	99.8	4.21	3.11	2.67	2.22	1.45	13.66	102.8	24.7	4.5
Legacy Seeds	457HD+*	4.3	11.25	101.6	4.30	3.18	2.56	2.05	1.36	13.44	101.2	24.7	4.8
Legacy Seeds	470HD+*	4.7	11.26	101.7	4.27	3.07	2.64	1.96	1.38	13.31	100.2	24.6	4.8
W-L Research	WL 349HQ	4	10.67	96.4	4.21	3.34	2.69	2.07	1.57	13.88	104.5	24.6	5.0
Farmers Business Network	F2F6C-628	6	10.99	99.2	4.17	3.21	2.53	2.01	1.54	13.45	101.3	24.4	5.0
S&W Seed Company	SW5213	5	11.06	99.9	4.24	3.03	2.33	2.24	1.44	13.28	100.0	24.3	4.8
Pioneer Brand	54Q29	4	10.97	99.1	4.19	2.97	2.36	2.31	1.49	13.31	100.2	24.3	4.0
Simplot Grower Solutions	MP111 Max Q	5	10.90	98.5	4.02	2.94	2.43	2.13	1.40	12.92	97.3	23.8	4.0
NEXGROW	6585Q	5	10.73	96.9	3.90	3.06	2.62	1.88	1.46	12.92	97.3	23.7	5.0
Conv. Check 3	Conv. Check 3	4	11.04	99.7	3.93	2.60	2.32	2.04	1.45	12.35	93.0	23.4	4.0
Conv. Check 1	Vernal	2	9.19	83.0	3.77	2.50	1.86	2.16	1.13	11.43	86.1	20.6	2.0
Mean		4.5	11.1	100.0	4.19	3.03	2.55	2.07	1.44	13.28	100.0	24.4	4.4
CV %			4.8	4.8	4.9	4.8	9.0	10.0	8.5	3.7	3.7	3.5	8.6
LSD 10%			0.64	5.8	0.24	0.17	0.27	NS	0.14	0.58	4.4	1.0	0.4

* Was originally submitted as an experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 10. Two-Year Forage Yield - 2019 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 7, 2019		Fall	2020		2021 Harvests							2 Yr.	2021 Fall
		Dorm.	Total	Total	12-May	11-Jun	13-Jul	19-Aug	16-Sep	Total	Total	Total	14-Oct
Company	Entry	Rating	Tons/a	% Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Tons/a	Regrowth
DeKalb	DKA43-18RR	4.3	12.07	107.4	4.68	3.39	3.00	2.01	1.59	14.68	108.4	26.9	3.8
Simplot Grower Solutions	NG6547R	5	11.82	105.2	4.21	3.09	2.85	1.98	1.54	13.68	101.1	25.5	4.8
DeKalb	DKA44-16RR	4.4	10.99	97.8	4.27	3.15	2.99	1.75	1.52	13.68	101.1	25.5	3.8
DeKalb	DKA50-20RR	4.9	10.67	95.0	4.30	3.24	2.57	1.99	1.59	13.67	101.1	25.4	4.3
Pioneer Brand	54VR70	4	11.06	98.4	4.18	2.88	2.59	2.20	1.56	13.42	99.1	25.0	4.0
Simplot Grower Solutions	NG6424R	5	10.90	97.0	4.14	3.11	2.58	1.97	1.42	13.22	97.7	24.6	3.8
America's Alfalfa	AmeriStand 545NT RR	5	10.97	97.7	4.08	3.22	2.77	2.12	1.65	13.84	102.2	24.6	5.0
RR check1	RR check1	4	11.86	105.6	4.49	2.96	2.52	1.91	1.44	13.32	98.5	24.6	3.8
America's Alfalfa	AmeriStand 455TQ RR	4	11.48	102.2	4.20	3.18	2.90	1.88	1.59	13.75	101.6	24.5	4.3
NEXGROW	6527R.ST	5	11.58	103.0	4.09	3.16	2.89	2.11	1.55	13.81	102.0	23.9	5.0
DeKalb	DKA40-21HVXRR	4	10.97	97.7	3.83	2.97	2.65	1.86	1.45	12.76	94.3	23.9	4.0
America's Alfalfa	AmeriStand 481 HVXRR	4	10.46	93.1	3.63	2.92	2.82	1.87	1.32	12.57	92.9	22.8	3.5
Mean		4.5	11.24	100.0	4.18	3.11	2.76	1.97	1.52	13.53	100.0	24.8	4.1
CV %			5.1	5.1	6.9	8.0	7.2	8.6	4.9	4.2	4.2	4.1	10.3
LSD 10%**			0.69	6.1	0.35	NS	0.24	0.20	0.09	0.67	5.0	1.2	0.5

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $PR > F 0.10$, if not then it was not significant (NS).

Table 11. One-Year Forage Yield - 2020 Conventional Alfalfa Variety Trial, Othello, Adams County, WA
Forage Yield (Ton DM/A)

Planted August 6, 2020		Fall	2021 Harvests						2020 Fall
		Dorm.	19-May	18-Jun	18-Jul	25-Aug	Total	Total	14-Oct
Company	Entry	Rating	Cut 1	Cut 2	Cut 3	Cut 4	Tons/a	% Mean	Regrowth
High Quality Check	High Quality Check	3	4.80	3.04	2.49	2.14	12.48	110.9	3.5
S&W Seed Co.	SW4306	4	4.03	3.15	2.47	2.26	11.92	105.9	4.5
America's Alfalfa	AmeriStand 428TQ	4	3.97	3.20	2.51	2.21	11.89	105.7	3.3
Legacy Seeds, LLC	LS - 04SJ	4	4.43	2.89	2.35	2.11	11.79	104.8	4.0
S&W Seed Co.	SW5520Y	5	4.08	3.03	2.47	2.20	11.78	104.7	4.0
W-L Research	WL 377HQ	5	4.33	2.90	2.36	2.13	11.71	104.1	4.0
S&W Seed Co.	SW4412Y	4	4.33	2.73	2.33	2.15	11.53	102.5	3.3
Legacy Seeds, LLC	LS - 06DR	4	4.29	2.86	2.31	2.03	11.49	102.1	4.0
Legacy Seeds, LLC	L-602	6	4.23	2.89	2.25	2.09	11.45	101.8	4.5
Nutrien Ag Solutions	DG4120	4	3.92	3.09	2.30	2.06	11.36	101.0	4.5
NEXGROW	6453Q	4	4.01	2.98	2.31	2.05	11.35	100.9	3.8
Bayer US Crop Science	DKA50-17	5	3.77	2.98	2.41	2.17	11.33	100.7	3.5
RR check	RR check	4	4.23	2.83	2.17	2.08	11.31	100.6	4.0
Pioneer Brand	54Q29	4	3.93	2.90	2.31	2.17	11.31	100.5	4.3
Forage Genetics	FG C0415SN223*	NA	3.67	2.96	2.45	1.99	11.07	98.4	4.5
Brett Young	Silverland GT 5	5	3.78	2.57	2.04	2.10	10.49	93.2	5.0
Public	Vernal	2	4.00	2.24	1.80	1.67	9.71	86.4	2.0
GO Seed/Jerry Hall	GO-FU Falcata Alfalfa	NA	4.55	1.10	1.50	1.36	8.51	75.7	1.0
Mean		4.2	4.13	4.13	2.27	2.05	11.25	100.0	3.8
CV %			8.5	6.2	8.7	10.9	5.7	5.7	15.4
LSD 10%**			0.42	0.21	0.23	0.27	0.76	6.8	0.7

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $PR > F 0.10$, if not then it was not significant (NS).

Table 12. One-Year Forage Yield - 2020 Conventional Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 7, 2020		Fall	2021 Harvests							2020 Fall
		Dorm.	19-May	18-Jun	18-Jul	25-Aug	20-Sep	Total	Total	14-Oct
Company	Entry	Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Regrowth
Alforex Seeds	AFX174083	4	3.97	2.93	2.75	2.44	1.53	13.63	110.6	3.8
Pioneer Brand	54Q29	4	3.51	3.02	2.98	2.56	1.55	13.61	110.4	3.8
Bayer US Crop Science	DKA50-17	5	3.71	2.80	2.97	2.34	1.53	13.36	108.4	4.5
Mountain View Seeds	MVS 4220Q	4	3.51	2.90	2.80	2.49	1.66	13.35	108.4	4.0
High Quality check	High Quality check	3	3.35	2.78	3.00	2.44	1.38	12.95	105.1	3.5
Legacy Seeds, LLC	L-602*	6	3.46	2.83	2.96	2.18	1.47	12.89	104.6	3.5
Allied Seed	FSG 415BR	4	3.79	2.73	2.64	2.28	1.37	12.82	104.0	3.5
Alforex Seeds	HybriForce-3600	4	3.80	2.77	2.54	2.29	1.41	12.81	104.0	5.0
S&W Seed Co.	SW5520Y	5	3.62	2.64	2.63	2.23	1.48	12.61	102.3	4.5
Allied Seed	FSG 527	5	3.25	2.85	2.71	2.16	1.64	12.61	102.3	5.0
Bayer US Crop Science	DKA44-18	4.4	3.22	2.84	2.75	2.21	1.45	12.46	101.1	4.0
Alforex Seeds	AFX439*	4	3.27	2.84	2.87	2.10	1.38	12.45	101.0	3.5
Legacy Seeds, LLC	LS - 04SJ	4	3.40	2.59	2.80	2.23	1.37	12.40	100.6	3.8
RR Check	RR Check	4	4.03	2.33	2.64	2.01	1.31	12.32	100.0	4.0
Wilbur Ellis	Integra 8520	5	3.51	2.67	2.42	2.25	1.44	12.31	99.8	3.5
Alforex Seeds	HybriForce-4400	4	3.43	2.64	2.71	2.24	1.29	12.30	99.8	2.0
S&W Seed Co.	SW4412Y	4	3.15	2.64	2.60	2.25	1.54	12.19	98.9	3.8
Nutrien Ag Solutions	DG4120	4	3.09	2.75	2.65	2.10	1.52	12.12	98.3	4.8
Wilbur Ellis	Integra 8460	4	3.04	2.78	2.42	2.30	1.57	12.11	98.2	4.3
Forage Genetics	FG C0415SN223*	NA	3.03	2.85	2.63	2.09	1.46	12.07	97.9	4.8
Legacy Seeds, LLC	LS - 06DR	4	3.18	2.56	2.88	2.12	1.32	12.06	97.8	4.0
Brett Young	Silverland GT 5	5	3.09	2.48	2.72	2.21	1.48	11.99	97.3	5.0
America's Alfalfa	AmeriStand 428TQ	4	3.14	2.75	2.52	2.07	1.50	11.98	97.2	4.5
Bayer US Crop Science	DKA40-16	4	2.93	2.62	2.61	2.20	1.53	11.90	96.5	4.0
Public	Vernal	2	3.01	2.30	2.53	2.18	1.25	11.27	91.4	2.0
Alforex Seeds	AFX175021	5	2.67	2.42	2.47	2.01	1.46	11.03	89.5	4.5
GO Seed/Jerry Hall	GO-FU Falcata Alfalfa	NA	2.97	1.90	2.14	1.73	0.45	9.18	74.4	1.0
Mean		4.2	3.34	2.67	2.68	2.21	1.42	12.32	100.0	3.9
CV %			14.6	13.6	8.4	6.7	7.0	5.8	5.8	11.9
LSD 10%			0.57	0.45	0.26	0.18	0.12	0.84	6.8	0.5

NA = Not Available

* Was originally submitted as an experimental

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 13. One-Year Forage Yield - 2020 Roundup Ready Alfalfa Variety Trial, Pasco, Franklin County, WA
Forage Yield (Ton DM/A)

Planted August 7, 2020		Fall	2021 Harvests							2021 Fall
		Dorm.	19-May	18-Jun	18-Jul	25-Aug	20-Sep	Total	Total	14-Oct
Company	Entry	Rating	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Tons/a	% Mean	Regrowth
Bayer US Crop Science	DKA43-18	4.3	4.30	2.82	3.05	2.24	1.50	13.92	105.6	4.3
America's Alfalfa	Ameristand 416NT RR*	NA	3.97	2.89	2.91	2.16	1.58	13.52	102.6	5.0
Bayer US Crop Science	DKA44-16	4.4	4.00	2.56	3.14	2.17	1.47	13.34	101.2	4.8
Wilbur Ellis	Integra 8471R	5	4.04	2.77	2.73	2.23	1.52	13.29	100.9	5.0
NEXGROW	6527R.ST	5	4.11	2.76	2.73	2.20	1.44	13.25	100.5	5.0
Bayer US Crop Science	DKA40-51	3.7	4.05	2.76	2.80	2.20	1.44	13.24	100.5	4.3
RR Check 1	RR Check 1	4	4.45	2.69	2.69	2.06	1.32	13.21	100.2	4.3
RR Check 2	RR Check 2	4	3.87	2.60	2.67	2.19	1.32	12.65	96.0	4.3
W-L Research	WL375HVX.RR	5	3.94	2.16	2.66	2.08	1.33	12.17	92.4	5.0
Mean		4.4	4.08	2.67	2.82	2.17	1.44	13.17	100.0	4.6
CV %			5.9	10.0	7.2	4.5	7.3	3.3	3.3	8.4
LSD 10%**			0.29	0.32	0.25	NS	0.13	0.53	4.0	0.4

NA = Not available

* Was originally submitted as an experimental

** If LSD number is given then it was significant at $PR > F 0.10$, if not then it was not significant (NS).

Table 14. Forage Quality Constituents and Hay Value per Ton - Second Cutting 2019 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 10, 2019			Protein Content	Amylase 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% Moist. ^{1,2,3}
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
Simplot Growers Solution	MP111 Max Q	5	20.8	38.7	9.37	1.84	6.74	32.0	0.588	50.8	369
Farmers Business Network	F2F6C-418	4	20.1	39.0	9.73	1.86	6.83	32.0	0.579	51.3	367
DeKalb	DKA44-18	4	20.6	36.9	10.28	1.94	6.56	32.8	0.588	50.6	362
Public	Vernal	2	19.1	42.4	9.10	1.66	7.25	30.7	0.558	49.1	357
Simplot Growers Solution	SGS 47M	4	19.8	38.3	10.16	1.89	6.83	32.6	0.576	50.1	356
Farmers Business Network	F2F6C-628	6	19.4	39.2	10.26	1.83	6.91	32.0	0.567	50.0	355
Mean			20.0	39.1	9.82	1.84	6.85	32.0	0.576	50.3	361
CV %			3.6	4.9	4.3	4.6	4.9	2.8	2.4	4.0	2.8
LSD 10%**			0.9	2.4	0.52	0.10	NS	1.1	0.017	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

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 the First Cutting of 2019 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 per Ton ²	Total Value of Hay per Ton @ 12% Moisture ³
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
Simplot Growers Solution	MP111 Max Q	5	147	175	108	120	123	19	369
Farmers Business Network	F2F6C-418	4	146	174	104	118	124	21	367
DeKalb	DKA44-18	4	158	183	107	120	117	18	362
Public	Vernal	2	131	154	99	114	134	11	357
Simplot Growers Solution	SGS 47M	4	151	174	102	118	121	15	356
Farmers Business Network	F2F6C-628	6	146	169	100	116	124	15	355
Mean		4.2	146	171	103	118	124	17	361
CV %			6.2	7.3	3.6	2.4	4.9	60.2	2.8
LSD 10%**			11	15	5	4	8	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

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 the First Cut of 2019 Trial in 2021 and combined with 2020 - Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 10, 2019			First Cut Yield (12% Moisture)	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	2020-2021 Total Value of Hay per Ton @ 12% Moisture ^{3,4}	2020-2021 Total Nutrient Value of Hay (@ 12% Moisture) per Acre ^{3,4}
Company	Entry	Rating	Tons/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/ton	\$/acre	\$/acre
Farmers Business Network	F2F6C-418	4	4.79	498	566	592	102	1,758	367	309	2,994
Simplot Growers Solution	MPIII Max Q	5	4.51	485	541	553	85	1,665	369	309	2,841
Simplot Growers Solution	SGS 47M	4	4.53	463	533	550	70	1,616	356	304	2,750
DeKalb	DKA44-18	4	4.35	464	523	509	78	1,574	362	305	2,662
Public	Vernal	2	4.31	426	492	578	47	1,543	357	315	2,579
Farmers Business Network	F2F6C-628	6	4.28	430	496	531	65	1,521	355	302	2,533
Mean			4.2	4.46	525	552	74	1613	361	307	2727
CV %				4.1	6.5	3.9	59.4	5.7	2.8	2.3	6.0
LSD 10%				0.23	37	27	55	114	NS	NS	203

¹ Calculated at \$0.33/ lb of Metabolizable Protein; \$0.12/lb of Mcal of energy, \$0.08 lb of effective NDF and \$-0.08 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 digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

⁴ Sum of first cutting in 2020 and 2021. In 2018 valued nutrients 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. In 2019 valued nutrients at \$0.35/ lb of Metabolizable Protein; \$0.11/lb of Mcal of energy, \$0.07 lb of effective NDF and \$-0.08 lb for ineffective fiber.

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 17. Forage Quality Constituents and Hay Value per Ton - First Cutting 2019 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 7, 2019			Protein Content	Amylase 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% Moist. <small>1,2,3</small>
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
Simplot Grower Solutions	MP111 Max Q	5	23.1	31.2	10.63	2.08	5.48	35.1	0.636	57.0	398
Farmers Business Network	F2F6C-628	6	22.2	33.0	11.25	1.82	5.74	34.0	0.609	57.4	396
Farmers Business Network	F2F6C-418	4	21.9	33.5	10.69	1.87	5.94	34.4	0.610	55.3	385
Conv. Check 1	Vernal	2	21.4	35.1	10.05	1.81	6.14	34.1	0.606	54.7	384
DeKalb	DKA44-18	4	21.8	32.8	10.92	1.90	5.80	34.9	0.613	55.4	384
DeKalb	DKA40-51RR	4	21.3	33.4	10.55	1.90	6.01	35.2	0.610	55.3	382
Simplot Grower Solutions	SGS 47M	4	21.4	34.1	11.13	1.81	5.95	33.9	0.599	54.6	380
	Mean	4.1	21.9	33.3	10.75	1.88	5.87	34.5	0.612	55.7	387
	CV %		5.0	6.7	4.0	5.9	5.9	3.0	3.0	4.9	4.1
	LSD 10%**		NS	NS	0.52	0.14	NS	1.3	NS	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

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 the First Cutting of 2019 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 7, 2019			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 per Ton ²	Total Value of Hay per Ton @ 12% Moisture ³
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
Simplot Grower Solutions	MPH Max Q	5	200	239	119	130	99	50	398
Farmers Business Network	F2F6C-628	6	186	223	115	124	105	52	396
Farmers Business Network	F2F6C-418	4	182	216	113	125	106	41	385
Conv. Check 1	Vernal	2	174	208	111	124	111	38	384
DeKalb	DKA44-18	4	188	221	113	125	104	42	384
DeKalb	DKA40-51RR	4	183	217	110	125	106	41	382
Simplot Grower Solutions	SGS 47M	4	178	208	111	122	108	38	380
Mean		4.1	184	219	113	125	105	43	387
CV %			8.9	9.6	5.0	3.0	6.7	31.2	4.1
LSD 10%**			NS	NS	NS	NS	NS	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 19. Alfalfa Yield, Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and First Cut per Acre as Fed From the 2019 Trial in 2021 and combined with 2020 - Alfalfa Variety Trial, Pasco, Franklin, WA

Planted August 7, 2019			1st Cut Yield (12% Moisture)	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	First Cut Nutrient Value of Hay (@ 12% Moisture) per Acre ³	Total Value of Hay per Ton @ 12% Moisture ³	2020-2021 Total Value of Hay per Ton @ 12% Moisture ^{3,4}	2020-2021 Avg. Nutrient Value of Hay (@ 12% Moisture) per Acre ^{3,4}
Company	Entry	Rating	Tons/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/ton	\$/ton	\$/acre
Farmers Business Network	F2F6C-418	4	4.93	557	614	523	204	1899	385	326	2,980
DeKalb	DKA44-18	4	4.95	557	618	516	208	1899	384	331	2,952
Simplot Grower Solutions	SGS 47M	4	4.98	552	609	538	190	1889	380	325	2,887
Farmers Business Network	F2F6C-628	6	4.73	544	589	495	246	1874	396	335	2,867
Simplot Grower Solutions	MPIII Max Q	5	4.57	546	594	452	228	1820	398	335	2,836
DeKalb	DKA40-51RR	4	4.79	528	597	506	195	1825	382	328	2,788
Conv. Check 1	Vernal	2	4.29	476	530	476	169	1651	384	327	2,477
Mean			4.1	4.75	593	501	206	1837	387	330	2827
CV %				5.7	6.1	9.4	29.6	6.8	4.1	2.8	6.1
LSD 10%**				0.33	45	NS	NS	NS	NS	NS	212

¹ Calculated at \$0.33/ lb of Metabolizable Protein; \$0.12/lb of Mcal of energy, \$0.08 lb of effective NDF and \$-0.08 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 digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

⁴ Sum of first cutting in 2020 valued nutrients at \$0.330/ lb of Metabolizable Protein; \$0.117/lb of Mcal of energy, and \$0.083lb for effective NDF.

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 20. Forage Quality Constituents and Hay Value per Ton - First Cutting 2020 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 6, 2020			Protein Content	Amylase 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% Moist. ^{1,2,3}
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
High Qual. Check	High Qual. Check	3	21.7	37.4	10.24	1.83	6.61	31.4	0.588	54.3	387
GO Seed	GO-FU Falcata	NA	19.7	41.4	9.75	1.77	7.27	30.3	0.558	53.4	379
Public	Vernal	2	18.3	44.3	9.52	1.59	7.60	29.4	0.536	51.2	365
Bayer US Crop Sci.	DKA50-17	5	19.3	40.3	9.76	1.73	7.14	31.7	0.563	50.9	362
Pioneer Brand	54Q29	4	19.3	41.8	9.89	1.64	7.36	30.3	0.550	49.9	359
Mean			19.7	41.0	9.83	1.71	7.20	30.6	0.559	51.9	370
CV %			4.6	5.7	4.0	8.1	5.8	4.1	3.6	3.5	2.8
LSD 10%**			1.1	2.9	NS	NS	0.53	NS	0.226	2.3	13

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

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 the First Cutting of 2020 Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 6, 2020			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 per Ton ²	Total Value of Hay per Ton @ 12% Moisture ³
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
High Qual. Check	High Qual. Check	3	154	189	112	120	118	36	387
GO Seed	GO-FU Falcata	NA	134	167	102	114	131	32	379
Public	Vernal	2	122	149	95	109	140	21	365
Bayer US Crop Sci.	DKA50-17	5	139	166	100	115	128	20	362
Pioneer Brand	54Q29	4	133	156	100	112	133	14	359
Mean		3.5	136	165	102	114	130	25	370
CV %			8.1	7.5	4.6	3.6	5.7	36.0	2.8
LSD 10%**			14	16	6	5	9	11	13

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 22. Alfalfa Yield, Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and First Cut per Acre as Fed from the 2020 Trial in 2021 - Alfalfa Variety Trial, Othello, Adams County, WA

Planted August 6, 2020			1st Cut Yield (12% Moisture)	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	First Cut 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
High Qual. Check	High Qual. Check	3	5.46	613	655	646	200	2114	387
GO Seed	GO-FU Falcata	NA	5.17	527	590	677	167	1961	379
Public	Vernal	2	4.54	431	497	637	95	1660	365
Pioneer Brand	54Q29	4	4.47	444	501	595	58	1597	359
Bayer US Crop Sci.	DKA50-17	5	4.28	427	492	547	85	1550	362
Mean		3.5	4.78	488	547	620	121	1777	370
CV %			10.0	11.5	10.8	12.1	37.5	10.5	2.8
LSD 10%**			0.60	71	75	NS	57	235	13

¹ Calculated at \$0.33/ lb of Metabolizable Protein; \$0.12/lb of Mcal of energy, \$0.08 lb of effective NDF and \$-0.08 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 digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 23. Forage Quality Constituents and Hay Value per Ton - First Cutting 2020 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 7, 2020			Protein Content	Amylase 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% Moist. ^{1,2,3}
Company	Entry	Rating	%	%	%	%	%	%	Mcal/lb	%	\$/ton
Alforex 360	High Qual. Check	3	23.2	31.5	10.25	2.02	5.61	35.2	0.636	55.0	390
GO Seed	GO-FU Falcata	NA	22.0	35.4	9.55	1.86	6.40	33.7	0.609	52.7	379
Public	Vernal	2	21.8	35.3	9.81	1.77	6.12	33.8	0.609	52.5	376
Bayer US Crop Sci.	DKA50-17	5	21.2	35.1	10.08	1.85	6.27	34.2	0.603	52.2	370
Pioneer Brand	54Q29	4	22.0	33.9	10.41	1.84	6.15	34.2	0.609	50.9	365
Mean			22.0	34.2	10.02	1.87	6.11	34.2	0.613	52.7	376
CV %			8.3	8.0	3.1	6.3	7.9	2.4	4.2	4.5	4.5
LSD 10%**			NS	NS	0.40	NS	NS	NS	NS	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 24. Forage Quality Estimates RFV, RFQ, Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake and Total Value per Ton as Fed from the First Cutting of 2021 Alfalfa Variety Trial, Pasco, Franklin County, WA

Planted August 7, 2019			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 per Ton ²	Total Value of Hay per Ton @ 12% Moisture ³
Company	Entry	Rating	Units	%	\$/ton	\$/ton	\$/ton	\$/ton	\$/ton
Alforex 360	High Qual. Check	3	200	233	120	130	100	40	390
GO Seed	GO-FU Falcata	NA	168	199	114	124	112	29	379
Public	Vernal	2	173	202	113	124	112	28	376
Bayer US Crop Sci.	DKA50-17	5	172	199	110	123	111	26	370
Pioneer Brand	54Q29	4	180	203	114	124	107	19	365
Mean		3.5	179	207	114	125	108	28	376
CV %			10.7	11.7	8.3	4.2	8.0	42.0	4.5
LSD 10%**			NS	NS	NS	NS	NS	NS	NS

¹ Calculated at \$0.534/ lb of Metabolizable Protein; \$0.116/lb of Mcal of energy, and \$0.18 lb of effective NDF (assuming aNDF is 100% effective).

² Adjustment for fiber impact of milk production due to cows eating more or less ration due to fiber digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).

Table 25. Alfalfa Yield, Value per Ton of Protein, Energy, Fiber, Adjustment for Cow Intake, Total Value per Ton and First Cut per Acre as Fed from the 2020 Trial in 2021 - Alfalfa Variety Trial, Pasco, Franklin, WA

Planted August 7, 2019			1st Cut Yield (12% Moisture)	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	First Cut 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
Bayer US Crop Sci.	DKA50-17	5	4.22	467	523	465	116	1571	370
High Qual. Check	High Qual. Check	3	3.81	458	496	379	155	1488	390
Pioneer Brand	54Q29	4	3.99	456	497	428	77	1457	365
Public	Vernal	2	3.42	394	430	374	106	1304	376
GO Seed	GO-FU Falcata	NA	3.37	386	421	377	104	1288	379
Mean		3.5	3.76	432	473	405	112	1421	376
CV %			14.6	25.3	22.3	63.6	61.4	23.3	4.5
LSD 10%**			0.57	NS	NS	NS	NS	NS	NS

¹ Calculated at \$0.33/ lb of Metabolizable Protein; \$0.12/lb of Mcal of energy, \$0.08 lb of effective NDF and \$-0.08 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 digestibility, \$5.00 increase or decrease of value of hay for every point below or above and NDFD 47%, respectively. See <http://lecture.ucanr.edu/Mediasite/Play/62cdb31981f745dba980dc695cf48ffa1d> for a better description.

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

** If LSD number is given then it was significant at PR>F 0.10, if not then it was not significant (NS).