

## IDAHO ALFALFA VARIETY TRIALS 2014

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### INTRODUCTION

Alfalfa is the most productive and widely adapted forage species. Idaho alfalfa acreage was 1.04 million acres in 2012 (NASS 2013) which was up 40,000 acres from 2011, and down from about 1.25 million acres in 2003. Production was 4.16 million tons with an estimated gross value of \$799 million in 2012, third in the US. Forage yield and quality vary widely across Idaho environments and operations. The Idaho Agricultural Experiment Station (IAES) conducts alfalfa variety performance trials at several sites in southern Idaho including the Kimberly Research and Extension Center. Over 300 alfalfa varieties are available to US producers, and these performance trials are designed to assist producers in choosing their varieties.

Alfalfa varieties are tested for forage yield for at least three production years on irrigated sites. All trials are planted as randomized complete block experiments, with four or six replications. Trials receive adequate fertilization, irrigation, and weed control for optimum production. A 2011 trial was planted in May 2011 at the Kimberly R&E Center, and in August at the Brigham Young University-Idaho farm in Rexburg, ID in cooperation with Greg Blaser, agronomist BYU-Idaho. A 2012 trial was planted in May 2012 at the Kimberly R&E Center, and two trials in Northern Idaho with Jim Church and Ken Hart. Seedling-year production results are limited in value for predicting future performance.

The seed industry contributes significantly to the variety trials. Besides donating the seed, they pay a significant fee to offset our costs of doing the work. The Plant, Soil, and Entomological Science Department of the University of Idaho also contributes significantly in salary and equipment—the 5-ft forage harvester purchased for our use costs as much as a big machine.

### OBSERVATIONS

1. Forage variety trials give **potential yields**. The yields are measured on fresh forage with a moisture percentage of about 75%. Yields are corrected to 100% dry matter but there is very little harvest loss in our trials. Harvest losses for raking, baling, and stacking dry hay can be as much as 20% of the total dry matter production. We also intensely manage the plots and we don't have traffic on the plots 5-9 days after cutting. Thus I would expect realistic hay yields about 80 to 90% of these, however, green chop or haylage yields would be closer.
2. Phosphate and potash fertilizer was applied pre-planting.
3. Varieties are listed in alphabetical order if there are no significant responses, or sorted by desirable number for significant responses.

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4. Don't put too much emphasis on 1-year's data from one location. I suggest looking at results from the Intermountain region of Northern California, Utah State University trials, and others similar in climate.
5. Kimberly Trial: This was the third production year for the 2011-planted trial. The summer was near normal average daily air temperatures in 2014. However, in August most southern Idaho sites received from 4 to 6 inches of precipitation, much more than normal. First cutting produced an average 4 tons/acre compared to 2.9 tons/acre in 2013 and to 3.68 ton/acre average in the years from 2003-2008. The 2<sup>nd</sup> was near normal but 3<sup>rd</sup> cutting was likely affected positively by near record precipitation. The stands are good.
6. Rexburg Trial: This was the third production year for the 2011-planted trial. First cutting produced an average 2.4 tons/acre and a 5<sup>th</sup> cutting was harvested, which is unusual. The stands are good.
7. Northern Idaho Trials: This was the second production year for the 2012-planted trials in Idaho and Lewis Counties. These are rain-fed sites which get 1 cutting, and precipitation was well below normal.
8. Check Varieties: Vernal and Oneida are public check varieties used in all trials. The mystery checks are several year old commercial varieties that we use to compare results in other locations.

Yield is the most important economic factor for alfalfa profitability. Average yield over a period of years and at several locations is a good measure of disease resistance and plant persistence. Generally, the top yielding 1/3 of the varieties are not significantly different for yield. University trials offer neutral testing of varieties but will not test blends--if the source is different every year, there is no point to test it. Industry data can be valuable because it usually is for a longer period of time, but you should ask for the complete data from the trial, not just a section of it. Avoid data with only one year or a single harvest.

Forage Quality--Plant more than one variety, especially if you have large acreage and are seeking dairy-quality hay. Varieties with different maturities will reach the cutting time up to about a week apart, allowing you to cut more hay at the pre-bud or bud stage. Harvesting at the correct maturity and agronomic practices (proper irrigation and weed control) has a larger effect on quality than does variety.

Variety selection is important but not the only factor affecting yield and quality. Soil fertility management, irrigation management, weed control, and harvest management may affect your profit more than variety. However, almost all newer varieties will yield more and be more resistant to pests and diseases than the old public varieties!

### **Sources of Variety Information**

University of Idaho Forage Extension: <http://www.extension.uidaho.edu/forage/>

Idaho Hay and Forage Association: <http://www.idahohay.com/>

National Alfalfa and Forage Alliance's: <http://www.alfalfa.org>

North American Alfalfa Improvement Conference: <http://www.naaic.org/>

University of California, Davis: <http://alfalfa.ucdavis.edu/>

University of Idaho: Alfalfa Variety Trials, 2014						
Location : Kimberly, Idaho			Planted : August 23, 2011			
Cuttings May 28, June 24, July 22, October 11, 2014						
2014 Forage dry matter yield						
Cultivar	3 Year	Total	1st	2nd	3rd	4th
	Avg.					
----- Tons/Acre -----						
R57W213	9.45	11.15	4.54	2.64	2.34	1.40
DG 4210	9.26	11.01	4.48	2.64	2.26	1.46
4R200	9.14	10.92	4.30	2.68	2.30	1.46
GrandStand	9.03	10.46	3.92	2.62	2.32	1.42
54VR03	8.95	10.07	4.14	2.46	2.00	1.30
Mystery check 2	8.92	10.80	4.60	2.56	2.16	1.30
Mystery check 1	8.80	10.10	4.04	2.44	2.18	1.24
54QR04	8.79	10.33	4.32	2.28	2.22	1.38
AmeriStand 407TQ	8.77	9.89	3.78	2.38	2.24	1.30
MasterPiece II	8.60	10.27	4.08	2.38	2.24	1.42
Oneida VR	8.45	9.57	3.88	2.14	2.06	1.30
Vernal	8.34	9.69	3.86	2.22	2.30	1.16
Mean	8.88	10.36	4.16	2.45	2.22	1.35
LSD (.05)	0.51	0.81	0.53	0.29	0.24	0.13
CV %	8.0	6.1	10.1	9.3	8.6	7.6
Pr>F	0.001	0.002	0.027	0.004	0.172	0.000

Sorted by 3-year Avg.

<b>University of Idaho: Alfalfa Variety Trials, 2014</b>						
<b>Location : Kimberly, Idaho Planted: May 21, 2012</b>						
<b>Cuttings May 23, June 24, July 22, October 2, 2014</b>						
<b>Forage dry matter yield</b>						
<b>Cultivar</b>	<b>2 Year Avg.</b>	<b>Total Yield</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>
	<b>----- Tons/Acre -----</b>					
PGI 557	9.41	9.91	3.87	2.68	1.89	1.47
FG R57W213	9.30	9.79	3.72	2.69	2.00	1.38
Magnitude	9.19	9.75	4.05	2.57	1.92	1.22
FG R48W203	9.16	9.90	3.81	2.68	2.07	1.26
55Q27	9.12	10.07	4.06	2.69	1.97	1.35
AGRMS-102	9.06	9.70	3.97	2.42	1.88	1.43
FSG423ST	8.98	9.63	3.96	2.44	1.87	1.36
Oneida VR	8.96	9.34	3.79	2.32	1.83	1.40
AGRMS-101	8.94	9.58	3.77	2.41	1.87	1.54
BB1011	8.81	9.63	3.87	2.31	2.04	1.41
Vernal	8.60	9.16	3.55	2.31	1.96	1.33
AGRMS-103	8.48	9.22	3.68	2.32	1.96	1.27
<b>Mean</b>	9.00	9.64	3.84	2.49	1.94	1.37
<b>LSD (.05)</b>	0.53	NS	NS	0.28	0.17	NS
<b>CV %</b>	6.6	6.3	11.1	8.8	6.9	10.4
<b>Pr&gt;F</b>	0.000	0.403	0.789	0.008	0.142	0.079

Sorted by 2-year Avg.

<b>BYU- Idaho Commercial Alfalfa Variety Test</b>							
<b>Harvest Dates: May 28, June 27, July 23, Aug 27, Sept 30 2014</b>							
<b>Location: Rexburg, Idaho</b>				<b>Planted: August 23, 2011</b>			
<b>2014 Forage dry matter yield</b>							
<b>3 Year</b>							
<b>Cultivar</b>	<b>Avg.</b>	<b>Total</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>
----- Tons/Acre -----							
GrandStand	10.33	9.20	2.58	2.37	1.70	1.68	0.88
DG 3210	10.13	9.54	2.57	2.50	1.81	1.80	0.85
AmeriStand 407TC	10.07	9.31	2.40	2.41	1.86	1.76	0.88
Oneida VR	10.01	9.36	2.50	2.41	1.80	1.83	0.83
Mystery Check 1	9.96	8.93	2.46	2.25	1.62	1.80	0.80
Mystery Check 3	9.95	8.90	2.46	2.21	1.75	1.75	0.73
Mystery Check 4	9.91	8.93	2.35	2.39	1.78	1.61	0.80
4R200	9.82	9.16	2.51	2.35	1.67	1.79	0.84
DG 4210	9.82	9.26	2.48	2.47	1.75	1.69	0.86
Mystery Check 2	9.80	9.22	2.56	2.33	1.68	1.76	0.89
Vernal	9.69	8.16	2.21	1.97	1.58	1.64	0.76
R57W213	9.54	8.53	2.26	2.16	1.66	1.63	0.82
<b>Mean</b>	9.92	9.04	2.44	2.32	1.72	1.73	0.83
<b>LSD (.05)</b>	0.55	0.69	NS	0.27	NS	NS	NS
<b>CV %</b>	7.7	6.0	8.1	9.0	9.4	9.9	9.7
<b>Pr&gt;F</b>	0.001	0.015	0.076	0.014	0.240	0.504	0.077

Sorted by 3-year Avg.

University of Idaho: Alfalfa Variety Trials, 2014 Location : Kimberly, Idaho                      Planted : August 23, 2011 Harvest Date: 1st Cutting May 28, 2014 Forage Yield and Quality												
Entry	Yield	DM	Protein	ADF	aNDF	IVTDMD		Ash	RFV	RFQ	Milk/Ton	Milk/Acre
						30H	NDFD48					
	Tons/Acre	(%)	(%)	(%)	(%)	(%)	(%)	(%)	Mcal/lb	(%)	lbs	lbs
4R200	4.42	93.3	22.0	28.5	32.9	82.1	50.0	7.62	189	203	3612	15985
Vernal	4.11	93.5	22.8	27.8	32.1	82.5	49.4	7.85	196	209	3608	14801
Mystery check 2	4.19	93.5	22.0	29.1	33.7	82.2	49.2	7.7	183	195	3553	14874
Mystery check 1	4.65	93.5	21.4	28.7	33.3	82.3	49.1	7.07	186	200	3623	16833
AmeriStand 407TQ	4.33	93.5	21.9	28.7	33.2	81.9	49.0	7.79	187	198	3561	15430
MasterPiece II	4.16	93.6	21.9	28.5	33.0	81.8	48.8	7.51	189	201	3589	14927
54QR04	4.23	93.5	21.7	29.4	34.0	82.1	48.7	7.13	181	195	3580	15129
54VR03	4.62	93.5	21.7	28.4	32.9	82.0	48.7	7.34	189	202	3609	16672
GrandStand	4.05	93.5	21.7	29.2	34.1	82.1	48.6	7.05	181	194	3582	14515
Oneida VR	4.05	93.5	21.2	30.1	35.0	81.9	48.3	7.05	174	187	3538	14317
R57W213	4.30	93.5	20.6	30.3	35.5	80.9	47.6	7.39	172	183	3474	14951
DG 4210	4.30	93.6	20.2	32.0	37.2	81.5	46.8	6.27	165	177	3477	14898
<b>Mean</b>	4.28	93.5	21.6	29.2	33.9	81.9	48.7	7.31	183	195	3567	15278
<b>LSD (.05)</b>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV %</b>	10.8	0.2	5.8	7.5	7.9	0.9	3.0	12.7	9.1	8.4	2.3	10.9
<b>Pr&gt;F</b>	0.81	0.92	0.30	0.39	0.35	0.26	0.26	0.56	0.35	0.29	0.15	0.69

University of Idaho: Alfalfa Variety Trials, 2014 Location : Kimberly, Idaho Planted: May 21, 2012 Harvest Date: 1st Cutting May 28, 2014 Forage Yield and Quality												
Entry	Yield	DM	Protein	ADF	aNDF	IVTDMD 30H	NDFD48	Ash	RFV	RFQ	Milk/Ton	Milk/Acre
	Tons/Acre	(%)	(%)	(%)	(%)	(%)	(%)	(%)	Mcal/lb	(%)	lbs	lbs
FSG423ST	3.91	93.3	22.7	28.2	32.2	82.5	49.5	8.0	194	207	3592	14034
Vernal	3.6	93.4	23.0	28.4	32.3	82.4	49.4	8.4	192	204	3550	12769
Oneida VR	3.95	93.4	22.7	28.7	32.7	82.7	49.4	8.2	190	202	3554	14052
PGI 557	3.74	93.3	23.1	27.9	31.8	82.7	49.4	8.2	197	209	3594	13454
AGRMS-102	3.84	93.2	22.2	29.6	33.8	82.6	49.3	8.0	182	195	3531	13551
AGRMS-103	3.67	93.4	22.4	29.3	33.7	82.5	49.3	8.0	182	194	3526	12921
FG R57W213	3.71	93.2	22.5	28.8	32.5	82.6	49.2	8.3	190	202	3556	13199
BB1011	3.69	93.3	22.7	28.7	32.7	82.5	49.2	8.2	192	203	3543	13082
Magnitude	4.07	93.4	21.9	29.4	33.8	82.2	48.7	7.9	182	194	3520	14315
AGRMS-101	3.77	93.3	21.7	30.2	34.5	81.8	48.4	8.0	176	188	3486	13126
FG R48W203	3.85	93.2	21.9	27.8	32.3	81.7	48.2	8.2	194	204	3556	13675
55Q27	4.03	93.3	22.4	28.1	32.6	81.8	47.4	8.3	192	201	3512	14142
<b>Mean</b>	3.82	93.3	22.4	28.7	32.9	82.3	49.0	8.136	189	200	3543	13527
<b>LSD (.05)</b>	NS	NS	NS	NS	NS	NS	1.4	NS	NS	NS	NS	NS
<b>CV %</b>	11.6	0.2	4.4	4.9	5.4	0.8	1.9	5.9	7.1	6.9	2.1	11.7
<b>Pr&gt;F</b>	0.96	0.63	0.45	0.46	0.61	0.07	0.02	0.90	0.63	0.66	0.70	0.97

**BYU- Idaho Commercial Alfalfa Variety Test**  
**Location: Rexburg, Idaho Planted: August 23, 2011**  
**Harvest Date: 1st Cutting May 28, 2014**  
**Forage Yield and Quality**

Entry	Yield Tons/Acre	DM (%)	Protein (%)	ADF (%)	aNDF (%)	IVTDMD		Ash (%)	RFV Mcal/lb	RFQ (%)	Milk/Ton lbs	Milk/Acre lbs
						30H (%)	NDFD48 (%)					
4R200	2.49	93.2	26.1	26.5	28.7	85.3	49.4	10.3	223	230	3517	8750
AmeriStand 407TC	2.42	93.2	26.3	25.6	27.7	84.6	49.9	10.5	232	240	3554	8594
DG 3210	2.47	93.2	26.4	25.6	27.9	84.7	49.7	10.6	230	236	3533	8729
DG 4210	2.38	93.2	25.8	26.5	29.0	84.3	49.0	10.6	219	225	3482	8287
GrandStand	2.48	93.2	26.4	26.3	28.4	85.4	50.3	10.5	225	233	3533	8742
Mystery Check 1	2.44	93.1	25.7	26.2	28.5	84.1	49.5	10.4	224	231	3528	8600
Mystery Check 2	2.5	93.3	26.4	25.1	26.9	84.9	50.2	10.5	240	248	3593	8966
Mystery Check 3	2.39	93.2	26.5	25.8	27.6	85.6	50.5	10.1	232	242	3598	8619
Mystery Check 4	2.18	93.2	27.0	25.1	27.0	84.9	49.7	10.9	239	245	3545	7735
Oneida VR	2.47	93.2	25.9	26.2	28.8	84.8	49.4	10.7	222	228	3490	8617
R57W213	2.23	93.2	26.9	25.3	27.2	85.1	49.9	10.7	237	244	3553	7925
Vernal	2.21	93.1	25.9	26.0	28.2	85.2	49.9	10.3	226	234	3553	7925
<b>Mean</b>	2.39	93.2	26.3	25.9	28.0	84.9	49.8	10.50	229	236	3540	8457
<b>LSD (.05)</b>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV %</b>	7.65	0.1	2.8	3.6	4.5	1.0	1.9	2.6	5.4	5.7	2.0	7.4
<b>Pr&gt;F</b>	0.1241	0.99	0.25	0.48	0.40	0.31	0.58	0.05	0.42	4.79	0.56	0.12

In alphabetical order



Entry information for Kimberly and Rexburg Trials Planted in 2011

Variety	Marketer	FD	WS	Bw	Vw	Fw	An	PRR	SAA	PA	BAA	SN	Aphanomyces Race 1	Aphanomyces Race 2	Southern Root Knot Nematode	Northern Root Knot Nematode	Roundup Ready
4R200	Eureka Seed	4	2.1	HR	HR	HR	HR	HR	R	R	MR	HR				R	Y
54QR04	Pioneer Hi-Bred Int'l, Inc.	4		HR	HR	HR	HR	HR	HR	R		R					Y
54VR03	Pioneer Hi-Bred Int'l, Inc.	4		HR	HR	HR	HR	HR		R							Y
AmeriStand 407TQ	Americas Alfalfa	4	2	HR	HR	HR	HR	HR	R	HR		MR	HR	R			N
DG 3210	Crop Production Services	3	1	HR	HR	HR	HR	HR		R		R				R	
DG 4210	Crop Production Services	4	1	HR	HR	HR	HR	HR		R		R	HR			HR	
GrandStand	Crop Production Services	4	2	HR	HR	HR	HR	HR		R		R					N
MasterPiece II	JR Simplot Co	5		HR	HR	HR	HR	HR		HR		HR				HR	N
Mystery check 1		4	2	HR	HR	HR	HR	HR	MR	R		MR	HR	R			N
Mystery check 2		4		HR		HR	HR	HR		R		HR	R			R	N
Mystery Check 3		4		HR	HR	HR	HR	HR		R							N
Mystery Check 4		4		HR	HR	HR	HR	HR	HR	R		R					N
Oneida VR	Public--std check	3		R	HR	HR	MR	MR									N
R57W213	Eureka Seed	5	2.5	HR	HR	HR	HR	HR				HR					Y
Vernal	Public--std check	2		R		MR										MR	N

Ratings for Alfalfa Varieties	
Code	Description
FD	Fall dormancy
WS	Winter survival
Bw	Bacterial wilt
Vw	Verticillium wilt
Fw	Fusarium wilt
An	Anthracnose race 1
PRR	Pytophthora root rot
SAA	Spotted alfalfa aphid
PA	Pea aphid
BAA	Blue alfalfa aphid
SN	Stem nematode
NRKN	Northern root knot nematode
MLE	Multi-foliolate expression
GT	Continuous grazing tolerance

Resistance Ratings		
% Resistant plants	Resistance class	Class abbreviation
0-5%	Susceptible	S
6-14%	Low resistance	LR
15-30%	Moderate resistance	MR
31-50%	Resistance	R
>50%	High resistance	HR

Winter Survival Ratings		
Category	Check variety	Score
Superior	ZG 9830	1
Very good	5262	2
Good	WL325HQ	3
Moderate	G-2852	4
Low	Archer	5
Non winter-hardy	Cuf 101	6

Fall Dormancy Ratings	
Check variety	Rating
Maverick	1
Vernal	2
5246	3
Legend	4
Archer	5
ABI 700	6
Dona Ana	7
Pierce	8
CUF 101	9
UC-1887	10
UC-1465	11

## Forage Quality Analysis Terms:

Forage quality analysis was determined by NIRS (Near Infrared Spectral) analysis.

CP = Crude protein. Higher protein levels indicate less need for more expensive supplements in the ration.

ADF = Acid detergent fiber. A measure of the less digestible components in the forage. Lower ADF is more desirable. Higher ADF is generally related to more mature plants.

NDF = Neutral detergent fiber. A measure of the total fiber content. Relates to feed intake level in livestock. Lower NDF is more desirable.

ADL = Acid detergent lignin. Indigestible plant component, giving the plant cell wall its strength and water impermeability. It increases as plant matures and reduces NDF digestibility. Higher temperatures during the growing season tend to increase lignin.

Ash. An estimate of the total mineral content. The residue remaining after burning a sample. Levels below 10% are desirable.

dNDF = Digestible neutral detergent fiber. *In vitro* NDF digestibility of forages are evaluated by incubating forage in buffers and live rumen fluid, at body temperature, under anaerobic (no air) conditions.

IVTD 24 hr = In vitro digestible dry matter. A measure of digestibility at 24 hours in the rumen. Higher digestibility is more desirable

RFV = Relative feed value. An index for ranking cool season grasses and legume forages based on intake of digestible energy. RFV is calculated from ADF and NDF. Feeder quality hay is <160 and dairy quality hay is >160. Hay with RFV >180 should be fed with a total mixed ration or blended with lower quality hay.

RFQ = Relative forage quality. An index for ranking all forages based on intake of TDN calculated by estimating digestible portions of protein, fatty acids, fiber (NDF), and non-fibrous carbohydrates. RFQ is based on a more comprehensive analysis than RFV and it should be more reflective of the feeding value of the forage, especially grasses. RFQ is based on the same scoring system as RFV. The higher the RFQ, the better the quality.

University of Idaho, 2014 N Idaho Alfalfa Variety Trials Planted May 2012; Harvested late June 2013 & 2014						
Variety	Idaho County			Lewis County		
	2013	2014	2-yr total	2013	2014	2-yr total
----- Tons DM/Acre -----						
WL 355RR	1.40	1.84	3.23	2.45	3.58	6.03
MsSunstra - 803	1.59	1.41	3.01	1.90	3.63	5.52
Rugged	1.74	1.59	3.33	1.94	3.57	5.51
PGI 215	1.48	1.59	3.07	1.96	3.37	5.33
PGI 424	1.70	1.37	3.07	1.94	3.28	5.22
TS 4010	1.56	1.18	2.74	1.90	3.31	5.21
TS 4013	1.71	1.49	3.20	1.74	3.31	5.05
Big Sky Ladak	1.48	1.92	3.40	1.54	3.25	4.79
Vernal	1.62	1.32	2.94	1.65	3.05	4.70
Hybri Force - 2400	1.71	1.38	3.09	1.28	2.98	4.26
AgRMS-103	1.83	1.78	3.61	1.49	2.76	4.25
Magnum - 7	2.00	1.78	3.78	1.51	2.73	4.24
FG 46M126	1.40	1.66	3.06	1.19	2.96	4.15
Sanfoin (Shoshone/Remont)	1.85	2.01	3.86	2.16	1.94	4.10
Dryland	1.69	1.46	3.15	1.44	2.37	3.82
Melton	1.81	1.87	3.68	1.39	2.32	3.72
AgRMS-101	1.58	1.44	3.02	1.32	2.38	3.70
WL 354HQ	1.66	1.44	3.10	0.91	2.67	3.58
Shaw	1.94	1.69	3.63	0.99	2.58	3.57
Cooper	2.09	1.45	3.54	1.10	2.46	3.56
DKA34-17RR	1.12	1.46	2.57	1.12	2.42	3.54
WL 319HQ	1.66	1.50	3.16	1.26	2.18	3.44
FG 27C102	1.35	1.54	2.90	0.77	2.59	3.37
Whitney	1.66	1.49	3.16	1.20	2.14	3.34
Spredor 5	1.59	1.39	2.98	0.98	2.35	3.33
Maxi-Graze	1.63	1.43	3.06	1.39	1.93	3.32
BB-10-11	1.54	1.53	3.07	1.05	2.24	3.29
FGR47M312	1.30	1.53	2.84	1.03	2.20	3.23
DKA43-22	1.48	1.28	2.76	1.02	2.18	3.20
Graze N Hay 3.10RR	1.36	1.26	2.62	0.79	2.25	3.04
FG 310M150	1.27	1.38	2.65	0.96	2.08	3.04
FGR48M137	1.52	1.37	2.90	0.93	2.03	2.96
4R200	1.48	1.39	2.87	0.78	2.13	2.91
AgRMS-102	1.84	1.60	3.43	1.24	1.56	2.80
<b>Mean</b>	1.61	1.52	3.13	1.36	2.61	3.97
<b>LSD (.05)</b>	0.38	0.41	0.59	0.56	0.73	1.06
<b>CV %</b>	16.8	19.4	13.5	29.2	19.9	19.1
<b>Pr&gt;F</b>	0.00	0.016	0.00	<.001	<.001	<.001

## IDAHO ALFALFA VARIETY TRIALS 2013

Glenn E. Shewmaker<sup>1</sup>, Greg Blaser, Ron Roemer, Jim Church, and Ken Hart

### INTRODUCTION

Alfalfa is the most productive and widely adapted forage species. Idaho alfalfa acreage was 1.04 million acres in 2012 (NASS 2013) which was up 40,000 acres from 2011, and down from about 1.25 million acres in 2003. Production was 4.16 million tons with an estimated gross value of \$799 million in 2012, third in the US. Forage yield and quality vary widely across Idaho environments and operations. The Idaho Agricultural Experiment Station (IAES) conducts alfalfa variety performance trials at several sites in southern Idaho including the Kimberly Research and Extension Center. Over 300 alfalfa varieties are available to US producers, and these performance trials are designed to assist producers in choosing their varieties.

Alfalfa varieties are tested for forage yield for at least three production years on irrigated sites. All trials are planted as randomized complete block experiments, with four or six replications. Trials receive adequate fertilization, irrigation, and weed control for optimum production. A 2011 trial was planted in May 2011 at the Kimberly R&E Center, and in August at the Brigham Young University-Idaho farm in Rexburg, ID in cooperation with Greg Blaser, agronomist BYU-Idaho. A 2012 trial was planted in May 2012 at the Kimberly R&E Center, and two trials in Northern Idaho with Jim Church and Ken Hart. Seedling-year production results are limited in value for predicting future performance.

The seed industry contributes significantly to the variety trials. Besides donating the seed, they pay a significant fee to offset our costs of doing the work. The Plant, Soil, and Entomological Science Department of the University of Idaho also contributes significantly in salary and equipment—the 5-ft forage harvester purchased for our use costs as much as a big machine.

### OBSERVATIONS

1. Forage variety trials give **potential yields**. The yields are measured on fresh forage with a moisture percentage of about 75%. Yields are corrected to 100% dry matter but there is very little harvest loss in our trials. Harvest losses for raking, baling, and stacking dry hay can be as much as 20% of the total dry matter production. We also intensely manage the plots and we don't have traffic on the plots 5-9 days after cutting. Thus I would expect realistic hay yields about 80 to 90% of these, however, green chop or haylage yields would be closer.
2. Phosphate and potash fertilizer was applied pre-planting.
3. Varieties are listed in alphabetical order.

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4. Don't put too much emphasis on 1-year's data from one location. I suggest looking at results from the Intermountain region of Northern California, Utah State University trials, and others similar in climate.
5. Kimberly Trial: This was the second production year for the 2011-planted trial. The summer was unusually warm with average daily air temperatures 3 to 5 degrees above normal in 2013. First cutting produced an average 3.4 tons/acre compared to 2.9 tons/acre in 2012 and to 3.68 ton/acre average in the years from 2003-2008. The 2<sup>nd</sup> was near normal but 3<sup>rd</sup> cutting was likely affected by near record heat and evapotranspiration rates that exceeded the plants ability to be most productive. The stands are good.
6. Rexburg Trial: This was the second production year for the 2011-planted trial. The summer was unusually warm with average daily air temperatures 3 to 5 degrees above normal in 2013. First cutting produced an average 2.5 tons/acre and a 4<sup>th</sup> cutting was harvested, which is not normal. The stands are good.
7. Northern Idaho Trials: This was the first production year for the 2012-planted trials in Idaho and Lewis Counties. These are rain-fed sites which get 1 cutting, and precipitation was well below normal.
8. Check Varieties: Vernal and Oneida are public check varieties used in all trials. The mystery checks are several year old commercial varieties that we use to compare results in other locations.

Yield is the most important economic factor for alfalfa profitability. Average yield over a period of years and at several locations is a good measure of disease resistance and plant persistence. Generally, the top yielding 1/3 of the varieties are not significantly different for yield. University trials offer neutral testing of varieties but will not test blends--if the source is different every year, there is no point to test it. Industry data can be valuable because it usually is for a longer period of time, but you should ask for the complete data from the trial, not just a section of it. Avoid data with only one year or a single harvest.

Forage Quality--Plant more than one variety, especially if you have large acreage and are seeking dairy-quality hay. Varieties with different maturities will reach the cutting time up to about a week apart, allowing you to cut more hay at the pre-bud or bud stage. Harvesting at the correct maturity and agronomic practices (proper irrigation and weed control) has a larger effect on quality than does variety.

Variety selection is important but not the only factor affecting yield and quality. Soil fertility management, irrigation management, weed control, and harvest management may affect your profit more than variety. However, almost all newer varieties will yield more and be more resistant to pests and diseases than the old public varieties!

### **Sources of Variety Information**

University of Idaho Forage Extension: <http://www.extension.uidaho.edu/forage/>

Idaho Hay and Forage Association: <http://www.idahohay.com/>

National Alfalfa and Forage Alliance's: <http://www.alfalfa.org>

North American Alfalfa Improvement Conference: <http://www.naaic.org/>

University of California, Davis: <http://alfalfa.ucdavis.edu/>

<b>University of Idaho: Alfalfa Variety Trials, 2013</b>						
<b>Harvest Dates: May 22, June 24, July 22, October 22, 2013</b>						
<b>Kimberly Variety Test</b>						
<b>Planted: August 23, 2011</b>						
<b>2013 Forage dry matter yield</b>						
	<b>2 Year Ave.</b>	<b>Total</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>
<b>Variety</b>	<b>----- Tons/Acre -----</b>					
4R200	8.25	8.51	3.65	2.06	1.62	1.18
54QR04	8.02	7.94	3.50	1.76	1.62	1.06
54VR03	8.39	8.72	3.65	1.93	1.83	1.32
AmeriStand 407TQ	8.21	8.35	3.45	2.09	1.59	1.22
DG 4210	8.38	8.48	3.52	2.00	1.77	1.18
GrandStand	8.32	8.37	3.79	1.87	1.57	1.14
MasterPiece II	7.77	7.84	3.56	1.61	1.52	1.14
Mystery check 1	8.16	8.04	3.59	1.79	1.37	1.28
Mystery check 2	7.98	8.11	3.61	1.78	1.60	1.12
Oneida VR	7.89	8.01	3.51	1.71	1.52	1.27
R57W213	8.60	9.05	3.62	2.24	1.83	1.36
Vernal	7.67	7.74	3.19	1.72	1.48	1.35
<b>Mean</b>	8.14	8.26	3.55	1.88	1.61	1.22
<b>LSD (.05)</b>	0.52	0.75	0.29	NS	NS	NS
<b>CV %</b>	7.2	7.2	6.3	16.3	17.3	20.5
<b>Pr&gt;F</b>	0.018	0.034	0.042	0.077	0.273	0.693

<b>University of Idaho: Alfalfa Variety Trials, 2013</b> <b>Harvest Dates: May 22, June 24, July 22, October 22, 2013</b> <b>Kimberly Variety Test</b> <b>Planted: MAY 21, 2012</b> <b>2013 Forage Dry Matter Yield</b>					
	<b>Total</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>
<b>Cultivar</b>	----- Tons/Acre -----				
55Q27	8.18	3.24	1.94	1.67	1.33
AGRMS-101	8.29	3.13	1.99	1.73	1.45
AGRMS-102	8.42	3.32	1.93	1.65	1.53
AGRMS-103	7.74	3.44	1.82	1.20	1.28
BB1011	7.99	3.41	1.66	1.40	1.52
FG R48W203	8.42	3.53	2.02	1.57	1.30
FG R57W213	8.80	3.34	2.14	1.81	1.51
FSG423ST	8.33	3.47	1.88	1.57	1.41
Magnitude	8.63	3.58	1.95	1.59	1.51
Oneida VR	8.59	3.54	1.95	1.70	1.40
PGI 557	8.90	3.56	2.04	1.82	1.49
Vernal	8.04	3.50	1.71	1.40	1.43
<b>Mean</b>	8.36	3.42	1.92	1.59	1.43
<b>LSD (.05)</b>	NS	NS	0.2	0.3	NS
<b>CV %</b>	7.0	12.1	10.0	15.5	10.6
<b>Pr&gt;F</b>	0.11	0.84	0.02	0.01	0.12



**University of Idaho and BYU- Idaho (Rexburg) Alfalfa Variety Test**  
**Harvest Dates: May 30, June 27, July 23, Aug 23, Sept 20 2013**  
**Planted: August 23, 2011**

Dry Matter Yield								1st Cutting Forage Quality				
Variety	2012-13	Year Total 2013	1st	2nd	3rd	4th	5th	CP	ADF	NDF	RFV	RFQ
	2 Yr Ave.	----- Tons/Acre -----						(%)	(%)	(%)	Index	Index
4R200	10.1	11.9	2.19	2.42	2.76	2.16	2.34	29.1	25.2	29.3	222	231
AmeriStand 407TC	10.4	12.2	2.37	2.45	2.76	2.35	2.28	29.0	24.2	28.7	228	238
DG 3210	10.4	12.1	2.60	2.32	2.66	2.31	2.16	28.8	25.2	29.9	216	225
DG 4210	10.1	12.1	2.32	2.27	2.71	2.43	2.35	28.3	25.2	30.4	213	223
GrandStand	10.9	12.6	2.61	2.51	2.81	2.38	2.28	28.4	25.9	30.9	207	217
Mystery Check 1	10.5	12.0	2.43	2.60	2.68	2.28	2.04	29.6	23.7	28.6	230	240
Mystery Check 2	10.0	11.8	2.17	2.39	2.77	2.34	2.18	28.8	25.4	30.0	215	225
Mystery Check 3	10.4	12.3	2.80	2.33	2.74	2.28	2.14	28.4	25.8	31.4	209	218
Mystery Check 4	10.3	12.0	2.48	2.52	2.73	2.23	2.06	28.9	25.2	29.7	218	228
Oneida VR	10.3	12.0	2.51	2.26	2.66	2.35	2.25	29.3	24.4	29.3	223	233
R57W213	10.0	12.0	2.57	2.19	2.78	2.40	2.06	28.2	24.7	30.1	212	221
Vernal	10.4	12.1	2.50	2.75	2.64	2.06	2.14	29.7	24.2	28.2	232	245
<b>Mean</b>	10.3	12.1	2.46	2.42	2.73	2.30	2.19	28.9	24.9	29.7	219	228
<b>LSD (.05)</b>	NS	NS	0.37	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV %</b>	19.6	5.8	11.7	13.9	7.9	8.2	10.4	2.9	4.9	4.9	5.9	5.9
<b>Pr&gt;F</b>	1.00	0.933	0.050	0.367	0.977	0.156	0.351	0.215	0.272	0.116	0.141	0.112

**Entry information for Kimberly and Rexburg Trials Planted in 2011**

<b>Variety</b>	<b>Marketer</b>	<b>FD</b>	<b>WS</b>	<b>Bw</b>	<b>Vw</b>	<b>FW</b>	<b>An</b>	<b>PRR</b>	<b>SAA</b>	<b>PA</b>	<b>BAA</b>	<b>SN</b>	<b>Aphanomyces Race 1</b>	<b>Aphanomyces Race 2</b>	<b>Southern Root Knot Nematode</b>	<b>Northern Root Knot Nematode</b>	<b>Roundup Ready</b>
4R200	Eureka Seed	4	2.1	HR	HR	HR	HR	HR	R	R	MR	HR				R	Y
54QR04	Pioneer Hi-Bred Int'l, Inc.	4		HR	HR	HR	HR	HR	HR	R		R					Y
54VR03	Pioneer Hi-Bred Int'l, Inc.	4		HR	HR	HR	HR	HR		R							Y
AmeriStand 407TQ	Americas Alfalfa	4	2	HR	HR	HR	HR	HR	R	HR		MR	HR	R			N
DG 3210	Crop Production Services	3	1	HR	HR	HR	HR	HR		R		R				R	
DG 4210	Crop Production Services	4	1	HR	HR	HR	HR	HR		R		R	HR			HR	
GrandStand	Crop Production Services	4	2	HR	HR	HR	HR	HR		R		R					N
MasterPiece II	JR Simplot Co	5		HR	HR	HR	HR	HR		HR		HR				HR	N
Mystery check 1		4	2	HR	HR	HR	HR	HR	MR	R		MR	HR	R			N
Mystery check 2		4		HR		HR	HR	HR		R		HR	R			R	N
Mystery Check 3		4		HR	HR	HR	HR	HR		R							N
Mystery Check 4		4		HR	HR	HR	HR	HR	HR	R		R					N
Oneida VR	Public--std check	3		R	HR	HR	MR	MR									N
R57W213	Eureka Seed	5	2.5	HR	HR	HR	HR	HR				HR					Y
Vernal	Public--std check	2		R		MR										MR	N

<b>Ratings for Alfalfa Varieties</b>	
<b>Code</b>	<b>Description</b>
FD	Fall dormancy
WS	Winter survival
Bw	Bacterial wilt
Vw	Verticillium wilt
Fw	Fusarium wilt
An	Anthracnose race 1
PRR	Pytophthora root rot
SAA	Spotted alfalfa aphid
PA	Pea aphid
BAA	Blue alfalfa aphid
SN	Stem nematode
NRKN	Northern root knot nematode
MLE	Multi-foliolate expression
GT	Continuous grazing tolerance

<b>Resistance Ratings</b>		
<b>% Resistant plants</b>	<b>Resistance class</b>	<b>Class abbreviation</b>
0-5%	Susceptible	S
6-14%	Low resistance	LR
15-30%	Moderate resistance	MR
31-50%	Resistance	R
>50%	High resistance	HR

<b>Winter Survival Ratings</b>		
<b>Category</b>	<b>Check variety</b>	<b>Score</b>
Superior	ZG 9830	1
Very good	5262	2
Good	WL325HQ	3
Moderate	G-2852	4
Low	Archer	5
Non winter-hardy	Cuf 101	6

<b>Fall Dormancy Ratings</b>	
<b>Check variety</b>	<b>Rating</b>
Maverick	1
Vernal	2
5246	3
Legend	4
Archer	5
ABI 700	6
Dona Ana	7
Pierce	8
CUF 101	9
UC-1887	10
UC-1465	11

## Forage Quality Analysis Terms:

Forage quality analysis was determined by NIRS (Near Infrared Spectral) analysis.

CP = Crude protein. Higher protein levels indicate less need for more expensive supplements in the ration.

ADF = Acid detergent fiber. A measure of the less digestible components in the forage. Lower ADF is more desirable. Higher ADF is generally related to more mature plants.

NDF = Neutral detergent fiber. A measure of the total fiber content. Relates to feed intake level in livestock. Lower NDF is more desirable.

ADL = Acid detergent lignin. Indigestible plant component, giving the plant cell wall its strength and water impermeability. It increases as plant matures and reduces NDF digestibility. Higher temperatures during the growing season tend to increase lignin.

Ash. An estimate of the total mineral content. The residue remaining after burning a sample. Levels below 10% are desirable.

dNDF = Digestible neutral detergent fiber. *In vitro* NDF digestibility of forages are evaluated by incubating forage in buffers and live rumen fluid, at body temperature, under anaerobic (no air) conditions.

IVTD 24 hr = In vitro digestible dry matter. A measure of digestibility at 24 hours in the rumen. Higher digestibility is more desirable

RFV = Relative feed value. An index for ranking cool season grasses and legume forages based on intake of digestible energy. RFV is calculated from ADF and NDF. Feeder quality hay is <160 and dairy quality hay is >160. Hay with RFV >180 should be fed with a total mixed ration or blended with lower quality hay.

RFQ = Relative forage quality. An index for ranking all forages based on intake of TDN calculated by estimating digestible portions of protein, fatty acids, fiber (NDF), and non-fibrous carbohydrates. RFQ is based on a more comprehensive analysis than RFV and it should be more reflective of the feeding value of the forage, especially grasses. RFQ is based on the same scoring system as RFV. The higher the RFQ, the better the quality.

University of Idaho, North Idaho Variety Trials			
Planted: May 29-30, 2012; Harvested: 6/21 and 6/28 2013			
Variety	Average	Idaho Co.	Lewis Co.
	-----Ton DM/Acre-----		
4R200	1.13	1.48	0.78
AgRMS-101	1.45	1.58	1.32
AgRMS-102	1.54	1.84	1.24
AgRMS-103	1.66	1.83	1.49
BB-10-11	1.30	1.54	1.05
Big Sky Ladak	1.51	1.48	1.54
Cooper	1.60	2.09	1.10
DKA34-17RR	1.12	1.12	1.12
DKA43-22	1.25	1.48	1.02
Dryland	1.57	1.69	1.44
FG 27C102	1.06	1.35	0.77
FG 310M150	1.12	1.27	0.96
FG 46M126	1.29	1.40	1.19
FGR47M312	1.17	1.30	1.03
FGR48M137	1.23	1.52	0.93
Graze N Hay 3.10RR	1.08	1.36	0.79
Hybri Force - 2400	1.50	1.71	1.28
Magnum - 7	1.76	2.00	1.51
Maxi-Graze	1.51	1.63	1.39
Melton	1.60	1.81	1.39
MsSunstra - 803	1.75	1.59	1.90
PGI 215	1.72	1.48	1.96
PGI 424	1.82	1.70	1.94
Rugged	1.84	1.74	1.94
Sanfoin (Shoshone/Remont)	2.00	1.85	2.16
Shaw	1.46	1.94	0.99
Spredor 5	1.28	1.59	0.98
TS 4010	1.73	1.56	1.90
TS 4013	1.73	1.71	1.74
Vernal	1.63	1.62	1.65
Whitney	1.43	1.66	1.20
WL 319HQ	1.46	1.66	1.26
WL 354HQ	1.28	1.66	0.91
WL 355RR	1.92	1.40	2.45
<b>Mean</b>	1.48	1.6	1.36
<b>LSD (.05)</b>	0.43	0.38	0.56
<b>CV %</b>	29.5	16.8	29.2

**University of Idaho, North Idaho Variety Trials**  
**Idaho County Planted: May 29, 2012; Harvested: 6/21 2013**

Variety	CP	ADF	NDF	ADL	Ash	dNDF	IVTD	RFV	RFQ
	% of Dry Matter								
4R200	13.8	36.2	44.1	7.2	3.1	19.9	74.0	126	154
AgRMS-101	14.5	35.3	47.2	6.8	3.5	18.7	72.4	120	120
AgRMS-102	9.9	42.1	56.1	7.6	2.8	20.9	64.6	92	80
AgRMS-103	15.7	29.4	37.4	5.3	4.4	18.3	82.5	163	199
BB-10-11	4.2	40.7	58.3	6.1	1.6	22.3	68.2	90	81
Big Sky Ladak	10.9	37.7	49.7	7.2	4.0	20.8	70.7	110	113
Cooper	11.6	38.3	52.7	6.3	1.6	20.7	72.7	103	113
DKA34-17RR	13.3	30.5	38.8	6.2	5.1	17.9	79.1	155	175
DKA43-22	18.0	27.6	35.6	5.1	5.6	16.1	79.7	174	197
Dryland	12.6	28.7	36.3	5.5	5.0	18.4	79.2	169	188
FG 27C102	12.5	33.0	41.8	6.4	4.4	18.5	75.2	139	147
FG 310M150	16.1	34.1	43.1	6.6	4.5	17.2	72.6	133	138
FG 46M126	7.9	30.9	39.8	2.8	4.2	17.7	79.7	150	168
FGR47M312	15.3	35.1	46.2	6.1	3.7	19.8	77.0	123	150
FGR48M137	8.8	40.6	55.7	8.4	1.9	20.0	66.3	94	88
Graze N Hay 3.10RR	13.6	32.3	42.6	6.0	4.5	18.0	75.6	138	143
Hybri Force - 2400	12.1	38.2	54.2	5.4	2.3	21.5	68.2	100	102
Magnum - 7	15.8	28.8	37.7	5.3	6.2	16.2	78.2	163	174
Maxi-Graze	11.5	33.8	44.2	5.9	4.3	20.5	77.7	130	142
Melton	14.2	40.7	55.3	6.7	3.0	20.2	72.8	95	98
MsSunstra - 803	12.4	30.2	38.3	5.9	4.9	18.1	80.8	157	172
PGI 215	10.9	39.9	51.8	7.5	3.1	20.2	69.3	102	109
PGI 424	12.3	39.0	51.6	7.1	3.9	18.3	68.5	104	101
Rugged	15.3	31.0	39.6	5.8	4.9	17.2	77.3	151	165
Sanfoin(Shoshone/Remont)	16.8	30.6	39.2	5.6	5.1	17.9	78.6	153	178
Shaw	13.9	32.0	41.2	6.5	4.6	18.5	78.1	143	154
Spredor 5	15.0	31.3	40.5	6.3	4.4	17.6	77.7	147	169
TS 4010	15.8	31.2	39.4	5.7	4.9	17.5	78.5	151	166
TS 4013	12.5	37.3	49.0	6.8	4.2	19.3	71.2	112	110
Vernal	15.2	33.5	42.5	6.2	4.3	18.8	76.6	136	159
Whitney	14.5	37.6	49.2	7.3	3.4	18.8	70.0	111	115
WL 319HQ	14.4	43.2	56.4	8.2	2.9	19.9	62.9	90	83
WL 354HQ	14.1	40.2	55.5	6.1	3.0	21.5	67.7	95	101
WL 355RR	10.9	32.6	42.3	5.8	4.2	20.0	76.8	138	153

**University of Idaho, North Idaho Variety Trials**  
**Lewis County Planted: May 30, 2012; Harvested: 6/28 2013**

Variety	CP	ADF	NDF	ADL	Ash	dNDF	IVTD	RFV	RFQ
	% of Dry Matter								
4R200	13.6	31.8	40.7	6.2	4.6	18.2	75.6	145	158
AgRMS-101	13.7	30.6	39.6	6.1	4.8	18.6	78.3	151	163
AgRMS-102	12.5	30.7	39.6	6.0	4.9	18.8	74.9	151	163
AgRMS-103	12.9	31.3	41.0	5.9	4.8	18.5	77.6	145	155
BB-10-11	16.6	30.9	39.3	5.9	5.4	18.0	78.3	152	170
Big Sky Ladak	11.0	32.3	42.1	6.0	4.8	19.4	77.0	140	146
Cooper	13.6	32.2	41.3	6.4	4.8	18.3	77.5	142	155
DKA34-17RR	10.9	31.6	41.7	5.9	4.3	19.8	78.9	142	157
DKA43-22	11.7	34.8	47.1	6.3	2.7	19.5	72.5	121	128
Dryland	18.5	31.4	42.7	5.0	5.0	17.8	74.6	139	151
FG 27C102	11.1	38.0	49.2	7.1	3.2	19.9	67.6	111	112
FG 310M150	12.0	43.1	57.2	7.1	4.0	20.7	64.9	89	81
FG 46M126	17.0	30.8	39.9	5.3	5.3	18.4	80.2	150	179
FGR47M312	13.1	29.4	38.3	5.7	4.5	17.6	81.0	159	175
FGR48M137	13.9	29.2	40.1	4.9	4.7	18.2	83.9	152	169
Graze N Hay 3.10RR	15.4	31.4	39.6	6.0	4.2	17.3	77.5	150	172
Hybri Force - 2400	13.3	28.6	38.3	5.1	4.8	19.3	82.2	160	181
Magnum - 7	16.6	30.5	38.4	5.8	5.2	17.6	77.7	156	175
Maxi-Graze	13.3	33.6	44.7	6.0	4.3	19.2	75.5	129	139
Melton	14.5	28.4	37.1	4.9	5.3	18.5	80.8	166	179
MsSunstra - 803	16.4	29.9	38.4	5.7	5.5	17.7	79.2	158	183
PGI 215	13.8	28.3	37.2	5.4	4.9	17.3	80.1	166	181
PGI 424	11.1	27.8	37.2	5.0	6.0	19.2	82.0	167	178
Rugged	11.7	30.9	40.3	6.1	4.7	19.0	80.2	148	162
Sanfoin(Shoshone/Remont)	11.8	37.6	48.5	7.3	4.5	20.1	71.4	113	118
Shaw	13.4	32.4	45.5	5.7	4.4	18.4	73.6	129	127
Spredor 5	16.2	31.3	39.7	6.1	5.6	18.7	77.3	150	170
TS 4010	17.1	32.2	39.8	6.3	4.5	18.8	77.6	148	185
TS 4013	14.2	32.6	41.7	6.2	4.7	17.5	74.8	140	148
Vernal	16.7	28.5	36.8	5.7	5.8	17.5	80.0	167	188
Whitney	20.0	25.6	33.4	4.5	6.5	16.4	83.2	190	215
WL 319HQ	14.4	29.3	38.2	5.6	5.1	18.3	77.9	160	178
WL 354HQ	15.1	35.0	45.0	6.5	4.8	19.0	72.8	126	135
WL 355RR	13.6	36.9	51.5	5.5	2.2	22.6	74.2	107	138

# IDAHO ALFALFA VARIETY TRIALS 2011

Glenn Shewmaker<sup>1</sup>, Greg Blaser, and Ron Roemer

## INTRODUCTION

Alfalfa is the most productive and widely adapted forage species. Idaho alfalfa acreage was 1 million acres in 2011 (NASS 2012) which was down 130,000 acres from 2010, and down from about 1.25 million acres in 2003. Production was 4.3 million tons with an estimated gross value of \$958 million in 2011, second in the US. Forage yield and quality vary widely across Idaho environments and operations. The Idaho Agricultural Experiment Station (IAES) conducts alfalfa variety performance trials at several sites in southern Idaho including the Kimberly Research and Extension Center. Over 300 alfalfa varieties are available to US producers, and these performance trials are designed to assist producers in choosing their varieties.

Alfalfa varieties are tested for forage yield for at least three production years on irrigated sites. All trials are planted as randomized complete block experiments, with four or six replications. Trials receive adequate fertilization, irrigation, and weed control for optimum production. The 2008 Kimberly Alfalfa variety trial was planted on September 2, 2008 at the University of Idaho's Kimberly Research and Extension Center. A 2011 trial was planted in May 2011 at the Kimberly R&E Center, and in August at the Brigham Young University-Idaho farm in Rexburg, ID in cooperation with Greg Blaser, agronomist BYU-Idaho. Seedling-year production results are limited in value for predicting future performance.

The seed industry contributes significantly to the variety trials. Besides donating the seed, they pay a significant fee to offset our costs of doing the work. The Plant, Soil, and Entomological Science Department of the University of Idaho also contributes significantly in salary and equipment—the 5-ft forage harvester purchased for our use costs as much as a big machine.

## OBSERVATIONS

1. Forage variety trials give **potential yields**. The yields are measured on fresh forage with a moisture percentage of about 75%. Yields are corrected to 100% dry matter but there is very little harvest loss in our trials. Harvest losses for raking, baling, and stacking dry hay can be as much as 20% of the total dry matter production. We also intensely manage the plots and we don't have traffic on the plots 5-9 days after cutting. Thus I would expect realistic hay yields about 80 to 90% of these, however, green chop or haylage yields would be closer.
2. Phosphate and potash fertilizer was applied pre-planting.
3. Varieties are listed in rank of highest average yearly yield. This year yields were not statistically different, so LSD values are not given. There is a page full of good varieties!
4. Don't put too much emphasis on 1-year's data from one location. I suggest looking at results from the Intermountain region of Northern California, Utah State University trials, and others similar in climate.

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5. The forage quality data is ranked from highest to lowest neutral detergent fiber digestibility (NDFD). Digestibility is inversely related to yield, so 'Vernal' had the highest NDFD at 57.0%. The "LSD" statistic given at the bottom of the table tells us that varieties with differences less than that value in that column are not significantly different. The LSD for NDFD was 2.3 so Vernal was not different for all varieties in order through 54.7% NDFD, or 'WL363HQ'.
6. Kimberly Trial: This was the third production year. The spring and summer was unusually cool with average daily air temperatures 3 to 5 degrees below normal for May 2011. First cutting produced an average of 3.0 tons/acre in 2011 compared to 3.24 ton/acre in 2010 and to 3.68 ton/acre average in the years from 2003-2008. The 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> cuttings were near normal yields. The stands are good.
7. Check Varieties: Vernal is a public check variety used in all trials. Vernal should yield near the bottom of the list, however this year at Kimberly it yielded near the middle, probably a result of the lower fall dormancy and adaptation to cool weather. Check 1 and check 2 are several year old commercial varieties.

Yield is the most important economic factor for alfalfa profitability. Average yield over a period of years and at several locations is a good measure of disease resistance and plant persistence. Generally, the top yielding 1/3 of the varieties are not significantly different for yield. University trials offer neutral testing of varieties but will not test blends--if the source is different every year, there is no point to test it. Industry data can be valuable because it usually is for a longer period of time, but you should ask for the complete data from the trial, not just a section of it. Avoid data with only one year or a single harvest.

Forage Quality--Plant more than one variety, especially if you have large acreage and are seeking dairy-quality hay. Varieties with different maturities will reach the cutting time up to about a week apart, allowing you to cut more hay at the pre-bud or bud stage. Harvesting at the correct maturity and agronomic practices (proper irrigation and weed control) has a larger effect on quality than does variety.

Variety selection is important but not the only factor affecting yield and quality. Soil fertility management, irrigation management, weed control, and harvest management may affect your profit more than variety. However, almost all newer varieties will yield more and be more resistant to pests and diseases than the old public varieties!

### **Sources of Variety Information**

University of Idaho Forage Extension: <http://www.extension.uidaho.edu/forage/>

Idaho Hay and Forage Association: <http://www.idahohay.com/>

National Alfalfa Alliance's: <http://www.alfalfa.org>

North American Alfalfa Improvement Conference: <http://www.naaic.org/>

Montana State University Extension: <http://www.animalrangeextension.montana.edu/Forage/forage.htm>

University of California, Davis: <http://alfalfa.ucdavis.edu/>

University of Idaho: Alfalfa Variety Trials, 2011						
Harvesting Date: May 25, July 12, August 12, October 15, 2011						
Kimberly Variety Test						
Planted: September 2, 2008						
2011 Forage Dry Matter Yield						
	2009-2011	2011 Forage dry matter yield				
	3 Year	Year				
	Average	total	1st	2nd	3rd	4th
Cultivar	Tons/Acre	----- Tons/Acre -----				
Rebound 5.0	8.41	8.48	3.07	2.46	1.57	1.38
54V09	8.28	8.82	3.33	2.52	1.64	1.33
DKA43-13	8.26	8.58	2.99	2.55	1.76	1.28
SunDance II	8.24	8.62	3.09	2.44	1.71	1.38
TS 4028	8.23	8.17	3.04	2.33	1.58	1.23
06KH17B	8.21	8.51	3.16	2.49	1.59	1.28
Vernal	8.20	8.37	3.02	2.45	1.67	1.23
FSG528SF	8.14	8.24	2.99	2.36	1.52	1.37
eXalt	8.14	8.19	2.93	2.44	1.54	1.28
eXceed	8.14	8.42	3.12	2.35	1.62	1.33
Phoenix	8.12	8.37	3.12	2.39	1.47	1.40
FSG639ST	8.02	8.29	3.04	2.23	1.69	1.34
Withstand	8.01	8.32	3.01	2.27	1.52	1.52
243	7.99	8.06	2.90	2.38	1.54	1.25
WL343HQ	7.99	8.11	2.99	2.27	1.50	1.36
WL363HQ	7.99	8.23	2.87	2.32	1.76	1.28
Oneida	7.96	7.88	2.93	2.17	1.61	1.17
DKA450-18	7.91	8.17	2.86	2.46	1.58	1.28
TS5026	7.90	8.08	2.99	2.28	1.62	1.19
LightningIV	7.89	8.07	2.93	2.30	1.55	1.29
Check 1	7.88	8.12	2.99	2.31	1.56	1.26
FSG429SN	7.83	8.02	2.92	2.30	1.47	1.33
PGI459	7.81	8.06	2.86	2.32	1.54	1.35
Mountaineer 2.0	7.81	7.95	2.94	2.29	1.57	1.15
Mean	8.06	8.25	3.0	2.4	1.6	1.3
LSD (.05)	NS	NS	NS	NS	NS	NS
CV %	13.6	6.6	10.1	8.5	11.9	11.9

**University of Idaho: 2011 Alfalfa Variety Trials**

**Kimberly Research & Extension Center**

**Forage Quality Harvested: May 25, 2011--Trial Planted Sept. 2, 2008**

Entry	1st Cut	CP	ADF	NDF	dNDF <sub>48</sub>	Lignin	Ash	Fat	NE <sub>L</sub>	NE <sub>m</sub>	NE <sub>g</sub>	RFV	NDFD	NFC	TDN1	RFQ	Milk/ Ton	Milk/ Acre
	Tons/A	(%)	(%)	(%)	(%)	(%)	(%)	(%)	Mcal/lb	Mcal/lb	Mcal/lb	Index	(%)	(%)	(%)	Index	lb/T	lb/A
Vernal	3.0	22.9	25.5	29.6	16.9	6.5	11.16	1.83	0.74	0.76	0.49	218	57.0	36.6	67.6	242	2695	8668
LightningIV	2.9	23.0	25.0	29.3	16.6	6.3	10.78	1.78	0.75	0.77	0.49	220	56.7	37.2	68.0	244	2729	8368
TS5026	3.0	22.5	26.3	30.4	17.0	6.6	10.67	1.80	0.73	0.75	0.48	210	56.0	36.7	67.5	234	2699	8334
DKA450-18	2.9	22.9	25.4	29.4	16.4	6.2	10.77	1.84	0.74	0.77	0.49	219	55.8	37.1	67.7	241	2726	8191
Check1	3.0	22.0	26.2	30.6	17.1	6.3	10.26	1.79	0.73	0.75	0.48	209	55.8	37.3	67.7	233	2723	8161
Rebound 5.0	3.1	22.3	26.5	31.0	17.2	6.6	10.52	1.72	0.73	0.75	0.47	205	55.5	36.5	67.2	228	2677	8975
WL343HQ	3.0	22.6	27.1	31.2	17.2	6.7	10.44	1.77	0.72	0.74	0.46	202	55.4	36.1	67.1	226	2679	8088
DKA43-13	3.0	22.5	26.3	30.7	17.0	6.5	10.46	1.81	0.73	0.75	0.47	208	55.4	36.6	67.4	231	2701	8448
Oneida	2.9	21.9	26.8	31.1	17.2	6.3	10.76	1.76	0.73	0.75	0.47	204	55.3	36.5	66.9	225	2654	7843
FSG639ST	3.0	22.9	26.3	30.2	16.6	6.5	10.51	1.83	0.73	0.75	0.47	211	55.0	36.6	67.4	233	2712	8349
Mountaineer 2.0	2.9	22.5	26.6	30.4	16.7	6.5	10.45	1.92	0.73	0.75	0.47	209	55.0	36.8	67.5	232	2720	8139
243	2.9	22.3	26.0	29.9	16.4	6.8	10.48	1.86	0.74	0.76	0.48	214	54.8	37.6	67.6	236	2732	8423
Withstand	3.0	21.7	28.7	33.1	18.1	6.8	10.45	1.73	0.70	0.71	0.44	188	54.8	35.2	66.3	211	2613	7789
WL363HQ	2.9	22.0	26.4	30.8	16.8	6.6	10.13	1.74	0.73	0.75	0.47	207	54.7	37.4	67.4	229	2716	7370
FSG528SF	3.0	21.9	26.8	31.1	17.0	6.7	10.35	1.77	0.72	0.74	0.47	204	54.6	36.9	67.1	225	2686	8419
PGI459	2.9	22.8	25.8	29.8	16.3	6.5	10.64	1.69	0.74	0.76	0.48	216	54.6	37.1	67.2	236	2698	7892
Sundance II	3.1	22.7	25.2	29.8	16.2	6.4	10.93	1.81	0.74	0.76	0.48	216	54.4	36.9	67.1	235	2689	8126
06KH17B	3.2	22.8	25.7	29.9	16.3	6.3	10.72	1.85	0.74	0.76	0.48	215	54.4	36.8	67.2	234	2703	8966
eXalt	2.9	22.4	26.6	30.1	16.4	6.5	11.73	1.80	0.73	0.75	0.47	211	54.4	35.9	66.1	229	2604	7948
TS 4028	3.0	22.3	26.4	30.9	16.8	6.6	10.83	1.79	0.73	0.75	0.47	207	54.4	36.3	66.7	225	2654	8105
FSG429SN	2.9	23.0	26.5	30.8	16.7	6.5	10.78	1.78	0.73	0.75	0.47	207	54.3	35.8	66.7	226	2657	8200
Phoenix	3.1	22.4	26.7	32.0	17.0	6.4	10.31	1.68	0.73	0.74	0.47	201	53.9	36.1	66.6	220	2656	8313
eXceed Brand	3.1	22.2	26.8	31.1	16.7	6.8	9.84	1.90	0.73	0.74	0.47	204	53.7	37.0	67.5	225	2734	8914
54V09	3.3	22.3	27.7	32.0	17.1	6.8	10.36	1.73	0.71	0.73	0.45	196	53.6	35.7	66.3	216	2640	9031
<b>Mean</b>	3.0	22.4	26.4	30.6	16.8	6.5	10.6	1.79	0.73	0.75	0.5	208	55.0	36.6	67.2	230	2687	8294
<b>LSD (.05)</b>	NS	0.85	1.09	1.37	0.75	0.28	0.83	0.10	0.01	0.02	0.02	11.60	2.30	1.14	1.31	14.70	NS	NS
<b>CV %</b>	10.1	2.7	2.9	3.2	3.2	3.1	5.6	3.8	1.3	1.6	2.4	4.0	3.0	2.2	1.4	4.6	2.3	9.9
<b>Pr&gt;F</b>	0.77	0.12	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.35	0.01	0.30	0.00	0.12	0.50

CP = Crude Protein: AOAC Official Method (CP= Nitrogen X 6.25). Other N conversions are more appropriate for specific protein sources.

ADF = Acid Detergent Fiber: Residue remaining after boiling a forage sample in acid detergent solution. ADF contains cellulose, lignin and silica, but not hemicellulose. AOAC Official method.

aNDF = Amylase-treated Neutral Detergent Fiber: Residue left after boiling sample in neutral detergent solution with amylase. The NDF in forages represents the indigestible and slowly digestible components in plant cell walls (cellulose, hemicellulose, lignin, and ash). AOAC Official Method using both amylase and sodium sulfite.

dNDF = Digestible Neutral Detergent Fiber expressed as %DM: The portion of the neutral detergent fiber digested by animals at a specified level of feed intake, expressed as a percent of the dry matter:

dNDF = NDF X NDF Digestibility: The dNDF of feeds may be determined by in vivo feeding trials or estimated by lignin analysis, in vitro or in situ digestibility, or by near infrared reflectance analysis. Indicate the time (hours) of digestion, e.g. dNDF, 48h.

Lignin: Undigestible plant component, giving the plant cell wall its strength and water impermeability.

Ash: An estimate of the total mineral content; the residue remaining after burning a sample at 550°C.

Fat : NIR prediction of fatty acids ( FA) determined by gas chromatography not including the glycerol of the triglycerides.

NE<sub>L</sub> = Net Energy, Lactation (Mcal/Lb): An estimate of the energy value of a feed used for maintenance plus milk production during lactation and for maintenance plus the last two months of gestation for dry, pregnant cows.

NE<sub>m</sub> = Net Energy, Maintenance (Mcal/Lb): An estimate of the energy value of a feed used to keep an animal in energy equilibrium, i.e., neither gaining nor losing weight.

NE<sub>g</sub> = Net Energy, Gain (Mcal/Lb): An estimate of the energy value of a feed used for body weight gain above that required for maintenance.

RFV = Relative Feed Value: An index for ranking cool season grass and legume forages based on intake of digestible energy. RFV is calculated from ADF and NDF as follows:

$$RFV = [(120/NDF) * (0.889 - (0.779 * ADF))] / 1.29$$

NDFD = NDF Digestibility (%NDF): In vitro NDF digestibility of forages are evaluated by incubating forage in buffers and live rumen fluid, at body temperature, under anaerobic (no air) conditions.

$$NDFD = dNDF/NDF*100$$

See Digestible Neutral Detergent Fiber (dNDF) above.

NFC = Nonfibrous Carbohydrate (%DM): An estimate of the rapidly available carbohydrates (primarily starch and sugars) in a forage. This value is calculated from one of the following equations:

$$NFC = 100\% - (CP\% + NDF\% + EE\% + Ash\%)$$

or, if corrected for NDFCP,

$$\text{NFC}\% = 100\% - [\text{CP}\% + (\text{NDF}\% - \text{NDFCP}\%) + \text{EE}\% + \text{Ash}\%]$$

dTDN= TDN1XSum = Total Digestible Nutrients, 1X maintenance level of intake, NRC 2001 refers to the Dairy NRC 2001 summative equation:

The sum of digestible crude protein, fat (multiplied by 2.25), non-fibrous carbohydrates, and digestible NDF.

$$\text{TDN} = [(\text{NFC} \cdot .98) + (\text{CP} \cdot .93) + (\text{FA} \cdot .97 \cdot 2.25) + (\text{NDF} \cdot \text{NDFD})] - 7$$

RFQ = Relative Forage Quality: An index for ranking all forages based on intake of TDN calculated by estimating digestible portions of protein, fatty acids, fiber (NDF), and non-fibrous carbohydrate.

$$\text{RFQ} = \text{dIntake potential} \cdot \text{dTDN} / 1.23$$

Where:

dTDN = TDN (defined above) with NDFD.

$$\text{dIntake potential for legumes} = (120/\text{NDF}) + (\text{NDFD} - 45) \cdot 0.374 \cdot 1350 / 100$$

$$\text{dIntake potential for grasses} = -2.318 + 0.442 \cdot \text{CP} - 0.0100 \cdot \text{CP}^2 - 0.0638 \cdot \text{TDN} + 0.000922 \cdot \text{TDN}^2 + 0.180 \cdot \text{ADF} - 0.00196 \cdot \text{ADF}^2 - 0.00529 \cdot \text{CP} \cdot \text{ADF}$$

Digestible fiber should be based on a 48-hr in vitro estimate. The higher the RFQ, the better the quality. It is used to compare varieties, match hay/silage inventories to animals, and to market hay.

Milk/Ton = Milk per Ton, milk 2006 (lb milk/ton DM): An index for comparing forage quality based on milk produced per ton using National Research Council and UW equations.

Milk/Acre = The product of Milk/Ton and the dry matter yield (Tons/Acre) which gives lbs milk/Acre.

Entry information for Kimberly Trials

Marketer	Variety	FD	WS	Bw	Vw	Fw	An	PRR	SAA	PA	BAA	SN	NRKN
Allied Seed, LLC	Withstand	4	2	HR	HR	HR	HR	HR		HR			
Allied Seed, LLC	Phoenix	5	4	HR	HR	HR	HR	HR		HR		HR	MR
AgSeeds	eXalt	4	2	HR	HR	HR	HR	HR	R	R		R	HR
Tri-West Seed	SunDance II	4		HR	HR	HR	HR	HR		R	MR	R	HR
Calwest Seeds	CW044031	5		HR	R	HR	HR	HR		R	MR		
AgSeeds	eXceed	4	2	HR	HR	HR	HR	HR		R		HR	HR
Producer's Choice Seed	PGI459	4	2	HR	HR	HR	HR	HR		R		HR	HR
Monsanto	DKA43-13	4	2	HR	HR	HR	HR	HR		R		R	R
Cropland Genetics	Rebound 5.0	4	2	HR	HR	HR	HR	HR		R			
Cropland Genetics	Mountaineer 2.0	5		HR	R	HR	HR	HR	R			HR	
Monsanto	DKA50-18	5	2	HR	HR	HR	HR	HR					
W-L Research	WL343HQ	4	1	HR	HR	HR	HR	HR	R	HR	MR	R	MR
W-L Research	WL363HQ	5	2	HR	HR	HR	HR	HR	R	R	MR	HR	R
Farm Science Genetics	FSG528SF	5	2	HR	HR	R	HR	R		R			
Farm Science Genetics	FSG639ST	6	3	HR	R	HR	R	HR		R		HR	HR
Farm Science Genetics	FSG429SN	4	2	HR	HR	R	HR	HR	R	HR		HR	R
FFRL, Logan UT	06KH17B												
Target	TS 4028	4	2	HR	HR	HR	HR	HR					
Target	TS-5026	5	3	HR	HR	HR	HR	HR					
Eureka Seed	LightningIV	4.3	1.5	HR	HR	HR	HR	HR		R			HR
Public--std check	Vernal	2											
Public--std check	Oneida												
Pioneer	54V09	4		HR	HR	R	HR	HR		HR		HR	HR
Mystery check	Check1	4	2	HR	R	HR	R	HR	R	R		HR	MR

Ratings for Alfalfa Varieties	
Code	Description
FD	Fall dormancy
WS	Winter survival
Bw	Bacterial wilt
Vw	Verticillium wilt
Fw	Fusarium wilt
An	Anthrachnose race 1
PRR	Pytophthora root rot
SAA	Spotted alfalfa aphid
PA	Pea aphid
BAA	Blue alfalfa aphid
SN	Stem nematode
NRKN	Northern root knot nematode
MLE	Multi-foliolate expression
GT	Continuous grazing tolerance

Resistance Ratings		
% Resistant plants	Resistance class	Class abbreviation
0-5%	Susceptible	S
6-14%	Low resistance	LR
15-30%	Moderate resistance	MR
31-50%	Resistance	R
>50%	High resistance	HR

Winter Survival Ratings		
Category	Check variety	Score
Superior	ZG 9830	1
Very good	5262	2
Good	WL325HQ	3
Moderate	G-2852	4
Low	Archer	5
Non winter-hardy	Cuf 101	6

Fall Dormancy Ratings	
Check variety	Rating
Maverick	1
Vernal	2
5246	3
Legend	4
Archer	5
ABI 700	6
Dona Ana	7
Pierce	8
CUF 101	9
UC-1887	10
UC-1465	11

## IDAHO ALFALFA VARIETY TRIALS 2010

Glenn Shewmaker<sup>1</sup>, Greg Blaser, and Ron Roemer

### INTRODUCTION

Alfalfa is the most productive and widely adapted forage species. Idaho alfalfa acreage is about 1.25 million acres, and produced 5 million ton—third in the US—with an estimated gross value of \$1 billion in 2008. Forage yield and quality vary widely across Idaho environments and operations. The Idaho Agricultural Experiment Station (IAES) conducts alfalfa variety performance trials at several sites in southern Idaho including the Kimberly Research and Extension Center. Over 300 alfalfa varieties are available to US producers, and these performance trials are designed to assist producers in choosing their varieties.

Alfalfa varieties are tested for forage yield for at least three production years on irrigated sites. All trials are planted as randomized complete block experiments, with four or six replications. Trials receive adequate fertilization, irrigation, and weed control for optimum production. The 2008 Kimberly Alfalfa variety trial was planted on September 2, 2008 at the University of Idaho's Kimberly Research and Extension Center. A 2006 trial was planted May 17, 2006 at the Brigham Young University-Idaho farm in Rexburg, ID in cooperation with Greg Blaser, agronomist BYU-Idaho. Seedling-year production results are limited in value for predicting future performance.

The seed industry contributes significantly to the variety trials. Besides donating the seed, they pay a significant fee to offset our costs of doing the work. The Plant, Soil, and Entomological Science Department of the University of Idaho also contributes significantly in salary and equipment—the 5-ft forage harvester purchased for our use costs as much as a big machine.

### OBSERVATIONS

1. Forage variety trials give **potential yields**. The yields are measured on fresh forage with a moisture percentage of about 75%. Yields are corrected to 100% dry matter but there is very little harvest loss in our trials. Harvest losses for raking, baling, and stacking dry hay can be as much as 20% of the total dry matter production! We also intensely manage the plots and we don't have traffic on the plots 5-9 days after cutting. Thus I would expect realistic hay yields about 80 to 90% of these, however, green chop or haylage yields would be closer.
2. Phosphate and potash fertilizer was applied pre-planting.
3. Varieties are listed in rank of highest average yearly yield. The "LSD" statistic given at the bottom of the table tells us that varieties with yield-differences less than that value in that column are not significantly different. For example, the Kimberly 2010 two-year average yield LSD value is 0.43 tons/acre. So yield from 'Rebound 5.0' (8.43 tons/acre) is not statistically different than 'WL343HQ' (8.00 tons/acre) or any yield between 8.43 and 8.00. There is a page full of good varieties!
4. Don't put too much emphasis on 1-year's data from one location. I suggest looking at results from the Intermountain region of Northern California, Oregon's Malheur Station trials, and others similar in climate.

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5. The forage quality data is preliminary and may change due to NIRS recalibration. However, relative differences will probably not change.
6. Kimberly Trial: This was the second production year. The spring and summer was unusually cool with average daily air temperatures 3 to 5 degrees below normal for June through August 2010. First cutting produced an average of 3.24 ton/acre hay compared to 2003-2008 average yield of 3.68 ton/acre. The 2<sup>nd</sup> and 3<sup>rd</sup> cuttings were near normal yields but 4<sup>th</sup> cutting averaged 1.21 ton/acre. The stands are good.
7. BYU-Idaho Trial: Good stand, cool spring weather and rain limited 1<sup>st</sup> cutting average yield to 2 ton/acre compared to the 2009 average of 2.87 ton/acre, but an excellent yield for the elevation.
8. Check Varieties: Vernal is a public check variety used in all trials. Vernal should yield near the bottom of the list, however this year at Kimberly it yielded among the top, probably a result of the lower fall dormancy and adaptation to cool weather. Check 1 and check 2 are several year old commercial varieties.

Yield is the most important economic factor for alfalfa profitability. Average yield over a period of years and at several locations is a good measure of disease resistance and plant persistence. Generally, the top yielding 1/3 of the varieties are not significantly different for yield. University trials offer neutral testing of varieties but will not test blends--if the source is different every year, there is no point to test it. Industry data can be valuable because it usually is for a longer period of time, but you should ask for the complete data from the trial, not just a section of it. Avoid data with only one year or a single harvest!

Forage Quality--Plant more than one variety, especially if you have large acreage and are seeking dairy-quality hay. Varieties with different maturities will reach the cutting time up to about a week apart, allowing you to cut more hay at the pre-bud or bud stage. Harvesting at the correct maturity and agronomic practices (proper irrigation and weed control) has a larger effect on quality than does variety.

Variety selection is important but not the only factor affecting yield and quality! Soil fertility management, irrigation management, weed control, and harvest management may affect your profit more than variety. However, almost all newer varieties will yield more and be more resistant to pests and diseases than the old public varieties!

#### Sources of Variety Information

University of Idaho Forage Extension: <http://www.extension.uidaho.edu/forage/>

Idaho Hay and Forage Association: <http://www.idahohay.com/>

National Alfalfa Alliance's: <http://www.alfalfa.org>

North American Alfalfa Improvement Conference: <http://www.naaic.org/>

Montana State University Extension: <http://www.animalrangeextension.montana.edu/Forage/forage.htm>

University of California, Davis: <http://alfalfa.ucdavis.edu/>

**University of Idaho Alfalfa Variety Trials, 2010  
In Cooperation with BYU- Idaho, Rexburg, Idaho**

Harvesting Date: June 3, July 12, August 13, September 14, 2010  
4th Year, Planted May 2006

Cultivar	2007-2010	2010 Forage dry matter yield				
	4-Year	Year	1st	2nd	3rd	4th
	Average	total				
	Tons/Acre	----- Tons/Acre -----				
4R200	8.54	7.32	1.88	2.20	1.94	1.31
WL343HQ	8.37	7.46	2.12	2.23	1.97	1.14
Marvel	8.34	7.45	2.03	2.20	2.02	1.21
MasterPiece	8.33	7.60	2.31	2.02	1.91	1.37
FSG408DP	8.29	7.41	2.00	2.15	1.93	1.33
Whitney	8.26	7.65	2.24	2.29	1.87	1.26
Lariat	8.23	7.25	2.01	2.14	1.96	1.14
DKA41-18RR	8.23	7.19	2.06	1.97	1.93	1.23
Magnum VI	8.22	6.93	1.84	1.94	1.86	1.30
FSG406	8.21	7.22	2.18	2.10	1.86	1.09
Legendairy 5.0	8.19	7.14	1.95	2.08	2.00	1.12
TS-5010	8.15	7.09	1.98	2.04	1.83	1.24
Mystery check1	8.14	7.05	1.59	2.23	2.05	1.18
Arapaho	8.12	7.35	1.96	2.12	1.92	1.36
54V09	8.11	7.00	1.89	2.03	1.93	1.14
Ameristand 403T	8.09	7.78	2.15	2.29	1.94	1.40
30-30Q	8.07	7.31	2.30	1.97	1.86	1.18
Oneida VR	8.04	7.24	2.09	2.06	1.88	1.22
54Q25	8.01	7.06	1.98	2.01	1.82	1.25
DKA34-17RR	8.01	6.96	1.76	2.07	2.02	1.13
Vernal	8.01	6.82	1.93	2.04	1.80	1.06
Shaw	8.00	7.58	2.28	2.23	1.96	1.12
9429	8.00	6.75	1.90	1.91	1.81	1.14
Melton	7.89	6.88	2.12	1.89	1.67	1.21
FSG351	7.89	7.20	2.04	2.04	1.95	1.18
Mariner III	7.83	7.07	1.98	1.91	1.86	1.33
Mean	8.14	7.22	2.02	2.08	1.90	1.21
LSD (.05)	0.80	NS	NS	NS	NS	0.18
CV %	6.8	7.8	14.3	12.5	8.8	10.3

**University of Idaho: Alfalfa Variety Trials, 2010**

**Kimberly Research & Extension Center**

Harvesting Date: May 25, June 30, July 28, September 28, 2010

Planted: September 2, 2008

2010 Forage Dry Matter Yield

Cultivar	2009-2010	2010 Forage dry matter yield				
	2-Year	Year				
	Average	total	1st	2nd	3rd	4th
	Tons/Acre	----- Tons/Acre -----				
Rebound 5.0	8.43	9.73	3.64	2.25	1.84	2.00
TS 4028	8.31	9.41	3.23	2.30	1.81	2.07
Vernal	8.20	9.48	3.32	2.36	1.80	2.01
eXalt	8.17	9.31	3.35	2.24	1.79	1.94
DKA43-13	8.17	9.50	3.29	2.28	1.82	2.11
FSG528SF	8.15	9.33	3.29	2.35	1.85	1.84
06KH17B	8.13	9.87	3.48	2.31	1.78	2.30
SunDance II	8.12	9.07	3.18	2.20	1.80	1.90
54V09	8.08	9.45	3.46	2.43	1.83	1.73
eXceed	8.07	9.01	3.21	2.20	1.78	1.83
Oneida	8.07	9.09	3.17	2.31	1.76	1.85
Phoenix	8.05	9.14	3.32	2.18	1.76	1.87
243	8.01	9.18	3.35	2.22	1.84	1.76
WL343HQ	8.00	9.23	3.17	2.23	1.80	2.04
FSG639ST	7.96	8.96	3.06	2.31	1.80	1.79
WL363HQ	7.93	9.19	3.25	2.23	1.75	1.97
Withstand	7.91	9.15	3.30	2.32	1.69	1.84
TS5026	7.88	9.21	3.34	2.24	1.72	1.92
LightningIV	7.86	8.71	2.87	2.07	1.76	2.01
DKA50-18	7.84	8.83	3.21	2.02	1.68	1.92
Check1	7.83	8.63	3.10	2.08	1.67	1.78
Mountaineer 2.0	7.82	9.09	3.25	2.25	1.74	1.86
FSG429SN	7.81	8.91	3.10	2.19	1.76	1.87
PGI459	7.77	8.71	2.94	2.21	1.74	1.82
Mean	8.02	9.17	3.24	2.24	1.77	1.92
LSD (.05)	0.43	NS	NS	NS	NS	NS
CV %	6.6	6.9	10.3	10.7	8.5	14.3

**University of Idaho: Alfalfa Variety Trials, 2010**  
**Kimberly Research & Extension Center**  
**Forage Quality Harvested: May 25, 2010**

Entry	1st Cut	CP	ADF	NDF	dNDF <sub>48</sub>	Lignin	Ash	Fat	NE <sub>L</sub>	NE <sub>m</sub>	NE <sub>g</sub>	RFV	NDFD	NFC	TDN1	RFQ	Milk/ Ton	Milk/ Acre
	Tons/A	(%)	(%)	(%)	(%)	(%)	(%)	(%)	Mcal/lb	Mcal/lb	Mcal/lb	Index	(%)	(%)	(%)	Index	lb/T	lb/A
06KH17B	3.5	22.5	25.0	27.5	15.8	6.8	10.8	2.13	0.75	0.77	0.49	236	57.7	39.1	69.4	267	2799	10274
243	3.4	22.3	25.7	28.4	16.0	7.0	10.7	1.94	0.74	0.76	0.49	226	56.3	38.6	68.5	253	2741	10115
Rebound 5.0	3.6	22.2	26.7	29.9	16.6	7.1	10.8	1.93	0.73	0.74	0.47	212	55.4	37.2	67.8	237	2663	9931
eXalt	3.3	22.5	25.7	28.3	16.1	6.8	10.9	2.06	0.74	0.76	0.48	228	57.0	38.4	68.7	256	2746	9781
54V09	3.5	22.3	26.8	29.8	16.5	7.2	10.8	1.91	0.73	0.74	0.47	213	55.5	37.2	67.6	238	2664	9453
Vernal	3.3	22.5	26.0	28.5	16.0	7.0	10.9	1.93	0.74	0.76	0.48	226	56.3	38.3	68.3	253	2721	9410
eXceed	3.2	22.6	25.4	28.2	16.0	6.8	10.5	2.01	0.74	0.76	0.49	229	56.7	38.7	68.9	258	2772	9187
DKA43-13	3.3	22.8	26.8	29.6	16.2	7.2	11.0	1.91	0.73	0.75	0.47	215	54.8	36.8	67.3	238	2653	9182
WL343HQ	3.2	22.3	26.7	28.5	15.9	6.9	10.6	2.02	0.74	0.76	0.49	225	56.0	38.6	68.6	252	2754	9098
DKA50-18	3.2	22.6	26.0	28.5	16.4	6.9	11.1	1.97	0.74	0.76	0.48	224	57.3	37.8	68.4	253	2710	9089
Mountaineer 2.0	3.3	22.7	26.3	29.2	16.3	7.0	10.8	1.93	0.73	0.75	0.48	219	55.7	37.4	67.9	244	2691	9078
FSG528SF	3.3	22.3	26.5	29.3	16.0	7.3	11.4	1.91	0.73	0.75	0.47	218	54.6	37.2	67.0	238	2630	8983
Phoenix	3.3	22.4	26.6	29.4	16.4	7.2	11.2	1.99	0.73	0.75	0.47	217	55.8	37.1	67.5	242	2660	8982
TS5026	3.3	21.8	26.0	29.3	15.9	7.2	10.8	2.02	0.74	0.76	0.48	219	54.4	38.0	67.6	241	2689	8955
FSG639ST	3.1	22.6	26.1	28.7	16.4	6.9	11.0	1.94	0.73	0.75	0.48	224	57.2	37.8	68.3	252	2709	8954
WL363HQ	3.2	22.5	26.0	28.9	15.8	7.1	10.8	1.96	0.74	0.76	0.48	222	54.6	37.9	67.8	245	2701	8917
TS 4028	3.2	22.5	26.2	28.9	16.1	7.1	11.2	2.02	0.73	0.75	0.48	221	55.5	37.4	67.7	245	2677	8875
SunDance II	3.2	22.1	25.7	28.6	16.4	6.8	10.2	2.03	0.74	0.76	0.48	225	57.5	39.2	69.4	258	2794	8848
Withstand	3.3	21.9	27.1	30.1	16.9	7.2	10.7	1.98	0.72	0.74	0.46	210	56.4	37.3	67.8	238	2670	8810
FSG429SN	3.1	22.9	25.1	27.8	16.0	6.7	11.0	2.01	0.75	0.77	0.49	233	57.6	38.3	68.9	262	2753	8637
Oneida	3.2	22.5	24.7	27.4	15.2	6.8	11.2	2.06	0.75	0.78	0.50	236	55.6	38.9	68.4	260	2751	8633
Check1	3.1	22.2	26.3	29.3	16.2	7.1	11.1	1.92	0.74	0.75	0.48	218	55.2	37.5	67.5	241	2663	8248
PGI459	2.9	22.6	25.7	28.3	16.0	7.0	11.2	1.97	0.74	0.76	0.48	226	56.5	37.9	68.1	253	2702	8177
LightningIV	2.9	22.2	26.4	29.5	16.3	7.2	11.0	1.94	0.73	0.75	0.47	216	55.2	37.4	67.5	238	2665	7929
<b>Mean</b>	3.24	22.4	26.0	28.8	16.1	7.0	10.9	1.98	0.73	0.75	0.48	222	56.0	37.9	68.1	248	2707	9064
<b>LSD (.05)</b>	NS	NS	NS	NS	NS	NS	NS	0.12	NS	NS	NS	NS	NS	1.5	NS	NS	NS	1236
<b>CV %</b>	10.3	3.6	4.6	5.1	3.8	4.6	3.7	4.4	2.0	2.4	3.4	6.5	3.5	2.7	1.6	7.2	2.8	9.7
<b>Pr&gt;F</b>		0.98	0.46	0.52	0.34	0.50	0.06	0.05	0.51	0.50	0.50	0.53	0.43	0.03	0.11	0.45	0.08	0.05

### Entry information for BYU-Idaho Trials

Marketer	Variety	FD	WS	Bw	Vw	Fw	An	PRR	APH	SAA	PA	BAA	SN	NRKN
Northwest Seed	9429	4	3	HR	R	HR	HR	HR	-	R	HR	HR	R	R
Tri-West Seed	30-30Q	3	2	HR	HR	HR	HR	HR	HR	R	R	-	-	-
Northwest Seed	4R200	4	2	HR	HR	HR	HR	HR	-	R	R	-	HR	R
Pioneer	54Q25	4	-	HR	HR	HR	HR	HR	-	R	R	-	HR	HR
Pioneer	54V09	4	-	HR	HR	R	HR	HR	-	R	HR	-	HR	HR
Tri-West Seed	Arapaho	3	2	HR	R	HR	R	HR	-	-	MR	-	R	HR
Mystery check	Check1	3	2	-	-	-	-	-	-	-	-	-	-	-
Mystery check	Check2	4	2	-	-	-	-	-	-	-	-	-	-	-
Dekalb	DKA34-17RR	3	2	HR	HR	HR	HR	HR	HR	-	HR	-	R	-
Dekalb	DKA41-18RR	4	2	HR	HR	HR	HR	HR	HR	R	HR	-	R	-
Dairyland/Tri-West Seed	Magnum VI	4	2	HR	HR	HR	HR	HR	HR	-	MR	-	R	HR
Farm Science Genetics	FSG351	3	2	HR	R	HR	R	HR	-	R	HR	R	R	HR
Farm Science Genetics	FSG406	4	1	HR	HR	HR	HR	HR	-	-	R	-	R	R
Farm Science Genetics	FSG408DP	4	2	HR	R	HR	HR	HR	-	-	R	-	R	HR
Simplot Grower Solutions	Lariat	3	1	HR	HR	HR	HR	HR	HR	-	HR	-	R	R
Cropland Genetics	Legendairy 5.0	3	2	HR	HR	HR	HR	HR	R	R	R	-	MR	LR
Allied Seed, LLC	Mariner III	4	2	HR	HR	HR	HR	HR	-	-	R	-	R	-
Allied Seed, LLC	Marvel	4	2	HR	HR	HR	HR	HR	-	R	R	-	-	-
Simplot Grower Solutions	MasterPiece	4	-	HR	R	HR	HR	HR	R	R	-	R	HR	R
Montana State Univ.	Melton	3	-	R	R	R	-	HR	-	MR	R	-	R	HR
Public--std check	Oneida VR	3	-	R	HR	HR	MR	MR	-	-	-	-	-	-
Montana State Univ.	Shaw	3	-	HR	MR	-	MR	R	-	R	R	-	MR	HR
Target Seed	TS-5010	4+	-	R	R	R	R	HR	-	R	R	R	HR	R
Public--std check	Vernal	2	-	R	-	MR	-	-	-	-	-	-	-	-
Northwest Seed	Whitney	4	3	HR	HR	HR	HR	HR	-	R	HR	-	HR	R
W-L Research	WL343HQ	4	2	HR	HR	HR	HR	HR	-	MR	R	MR	MR	-

### Entry information for Kimberly Trials

Marketer	Variety	FD	WS	Bw	Vw	Fw	An	PRR	SAA	PA	BAA	SN	NRKN
Allied Seed, LLC	Withstand	4	2	HR	HR	HR	HR	HR		HR			
Allied Seed, LLC	Phoenix	5	4	HR	HR	HR	HR	HR		HR		HR	MR
AgSeeds	eXalt	4	2	HR	HR	HR	HR	HR	R	R		R	HR
Tri-West Seed	SunDance II	4		HR	HR	HR	HR	HR		R	MR	R	HR
Calwest Seeds	CW044031	5		HR	R	HR	HR	HR		R	MR		
AgSeeds	eXceed	4	2	HR	HR	HR	HR	HR		R		HR	HR
Producer's Choice Seed	PGI459	4	2	HR	HR	HR	HR	HR		R		HR	HR
Monsanto	DKA43-13	4	2	HR	HR	HR	HR	HR		R		R	R
Cropland Genetics	Rebound 5.0	4	2	HR	HR	HR	HR	HR		R			
Cropland Genetics	Mountaineer 2.0	5		HR	R	HR	HR	HR	R			HR	
Monsanto	DKA50-18	5	2	HR	HR	HR	HR	HR					
W-L Research	WL343HQ	4	1	HR	HR	HR	HR	HR	R	HR	MR	R	MR
W-L Research	WL363HQ	5	2	HR	HR	HR	HR	HR	R	R	MR	HR	R
Farm Science Genetics	FSG528SF	5	2	HR	HR	R	HR	R		R			
Farm Science Genetics	FSG639ST	6	3	HR	R	HR	R	HR		R		HR	HR
Farm Science Genetics	FSG429SN	4	2	HR	HR	R	HR	HR	R	HR		HR	R
FFRL, Logan UT	06KH17B												
Target	TS 4028	4	2	HR	HR	HR	HR	HR					
Target	TS-5026	5	3	HR	HR	HR	HR	HR					
Eureka Seed	LightningIV	4.3	1.5	HR	HR	HR	HR	HR		R			HR
Public--std check	Vernal	2											
Public--std check	Oneida												
Pioneer	54V09	4		HR	HR	R	HR	HR		HR		HR	HR
Mystery check	Check1	4	2	HR	R	HR	R	HR	R	R		HR	MR

<b>Ratings for Alfalfa Varieties</b>	
<b>Code</b>	<b>Description</b>
FD	Fall dormancy
WS	Winter survival
Bw	Bacterial wilt
Vw	Verticillium wilt
Fw	Fusarium wilt
An	Anthracnose race 1
PRR	Pytophthora root rot
SAA	Spotted alfalfa aphid
PA	Pea aphid
BAA	Blue alfalfa aphid
SN	Stem nematode
NRKN	Northern root knot nematode
MLE	Multi-foliolate expression
GT	Continuous grazing tolerance

<b>Resistance Ratings</b>		
<b>% Resistant plants</b>	<b>Resistance class</b>	<b>Class abbreviation</b>
0-5%	Susceptible	S
6-14%	Low resistance	LR
15-30%	Moderate resistance	MR
31-50%	Resistance	R
>50%	High resistance	HR

<b>Winter Survival Ratings</b>		
<b>Category</b>	<b>Check variety</b>	<b>Score</b>
Superior	ZG 9830	1
Very good	5262	2
Good	WL325HQ	3
Moderate	G-2852	4
Low	Archer	5
Non winter-hardy	Cuf 101	6

<b>Fall Dormancy Ratings</b>	
<b>Check variety</b>	<b>Rating</b>
Maverick	1
Vernal	2
5246	3
Legend	4
Archer	5
ABI 700	6
Dona Ana	7
Pierce	8
CUF 101	9
UC-1887	10
UC-1465	11