

UNIVERSITY OF IDAHO ALFALFA VARIETY TRIALS 2006

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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 \$490 million in 2002. 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 six replications. Trials receive adequate fertilization, irrigation, and weed control for optimum production. The 2005 Alfalfa variety trial was planted on May 27, 2005 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. There was **no** fertilizer nitrogen applied. Well-nodulated alfalfa can get all the nitrogen it needs from the *Rhizobia* fixing nitrogen from the air.
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 2nd cutting yield LSD value is 0.2 tons/acre. So yield from '54Q25' (2.00 tons/acre) is not statistically different than 'AA204W' (1.80 tons/acre) or any yield between 2.00 and 1.80. 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.

5. The forage quality data is preliminary and may change due to NIRS recalibration. However, relative differences will probably not change.
6. Kimberly Trial: The first cutting produced about 3.6 ton/acre hay but 3rd and 4th cuttings averaged 1.45 and 1.48 tons/acre, respectively. The stands are good.
7. BYU-Idaho Trial: Good stand, weed-free, and excellent yield for seedling year.
8. Check Varieties: Vernal is a public check variety used in all trials. Vernal should yield near the bottom of the list. 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

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

University of Wisconsin Extension: University of Wisconsin Extension:
<http://www.uwex.edu/ces/forage>

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

Proprietary Information--I rely on long-term industry representatives that have a great deal of experience and integrity

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, 2006									
Harvesting Dates: 5/24/06, 6/29/06, 7/31/06, 9/12/06									
Kimberly, Idaho, Trial Established May 27, 2005									
10/31/2006--Sorted by total year yield									
Cultivar	Forage dry matter yield					1st cutting forage quality			
	Year	5/24	6/29	7/31	9/12				
	total	1st	2nd	3rd	4th	CP	ADF	NDF	RFV
	----- Tons/Acre -----					(%)	(%)	(%)	Index
54Q25	8.85	3.63	2.00	1.55	1.67	20.7	30.2	37.5	162
Reward II	8.80	3.77	2.10	1.47	1.47	19.0	32.1	39.6	150
Boulder	8.73	3.73	1.97	1.47	1.57	19.5	31.3	38.8	155
Masterpiece	8.71	3.87	1.93	1.48	1.43	20.7	29.9	37.2	165
Escalade	8.70	3.90	1.90	1.43	1.47	20.2	30.2	37.6	162
Check1	8.63	3.82	1.93	1.45	1.43	20.4	30.7	38.1	159
FSG408DP	8.59	3.85	1.93	1.47	1.34	21.2	30.0	37.3	164
CW24022	8.58	3.73	2.03	1.31	1.50	19.8	30.0	37.2	164
AA205W	8.57	3.45	2.07	1.51	1.54	20.6	29.8	37.1	165
FSG406	8.57	3.87	1.92	1.45	1.33	21.1	29.9	37.1	165
FSG505	8.55	3.78	1.80	1.47	1.50	20.0	31.1	38.5	157
CW24025	8.52	3.48	1.95	1.58	1.52	20.9	30.2	37.6	162
Summergold	8.50	3.49	1.95	1.51	1.55	21.0	29.8	37.1	165
WL357HQ	8.48	3.47	1.93	1.55	1.53	19.1	31.2	38.6	156
Wildcard	8.47	3.47	2.01	1.48	1.51	20.4	30.3	37.6	162
O-Apex	8.46	3.49	1.93	1.42	1.62	20.8	30.0	37.3	164
Owyhee	8.45	3.46	2.11	1.43	1.44	19.7	31.3	38.8	155
PGI 427	8.43	3.72	2.00	1.40	1.31	20.6	31.3	37.8	161
9429	8.42	3.47	1.95	1.58	1.42	20.6	30.3	37.7	161
CW24033	8.41	3.52	2.00	1.38	1.51	20.6	29.3	36.5	169
O-Mezzo	8.40	3.72	1.92	1.37	1.40	19.7	31.3	38.8	155
Check2	8.40	3.67	1.87	1.42	1.45	19.8	30.8	38.3	158
CW25037	8.35	3.46	1.91	1.45	1.53	19.5	31.2	38.7	156
Lahontan	8.35	3.47	1.93	1.43	1.52	20.1	30.6	38.1	159
Whitney	8.33	3.57	1.72	1.48	1.57	19.9	31.3	37.7	161
O-Nadir	8.32	3.45	1.97	1.45	1.45	20.5	30.1	37.4	163
AA204W	8.26	3.62	1.80	1.32	1.53	21.2	29.9	37.2	164
AA206W	8.13	3.52	1.72	1.53	1.37	20.8	30.6	38.0	160
Genoa	8.10	3.45	1.93	1.23	1.48	20.8	30.5	37.9	160
Vernal	7.63	3.40	1.58	1.37	1.28	20.0	30.4	37.8	161
Mean	8.46	3.61	1.92	1.45	1.47	20.3	30.5	37.8	161
LSD (.05)	NS	NS	0.2	NS	NS	NS	1.2	1.4	8
CV %	7.7	10.5	8.3	10.6	15.2	5.6	2.8	2.6	3.6

University of Idaho Alfalfa Variety Trials, 2006							
Harvesting Date:7/19/06,9/1/06							
Rexburg, BYU-Idaho Trial, Seedling Year, Planted May 17, 2006							
10/20/2006 - Sorted by total year yield							
Variety	Forage dry matter yield			1st cutting forage quality			
	Year	7/19	9/1	CP	ADF	NDF	RFV
	Total	1st	2nd				
----- Tons/Acre -----	(%)	(%)	(%)	Index			
Oneida VR	4.70	1.93	2.78	25.3	27.0	33.9	187
FSG351	4.70	2.03	2.68	26.2	26.9	33.8	188
Shaw	4.63	1.95	2.68	25.3	27.8	34.7	181
Check2	4.58	1.80	2.78	26.0	26.1	32.9	195
Arapaho	4.51	1.83	2.68	25.8	27.0	34.0	187
Lariat	4.50	1.85	2.65	25.0	27.7	34.7	183
Check1	4.50	1.68	2.83	24.8	28.2	35.3	177
Whitney	4.49	1.71	2.78	25.6	26.7	33.5	190
54Q25	4.47	1.82	2.65	26.3	26.4	33.2	193
54V09	4.46	1.83	2.63	26.9	26.3	33.1	193
30-30Q	4.40	1.80	2.60	26.3	26.9	33.8	187
FSG406	4.35	1.98	2.38	25.9	26.6	33.5	190
9429	4.30	1.75	2.55	25.0	29.1	36.3	170
DS417	4.28	1.83	2.45	25.8	27.0	34.0	181
FSG408DP	4.25	1.78	2.48	25.8	27.0	34.0	186
Legendairy 5.0	4.23	1.75	2.48	27.5	25.1	31.8	203
WL343HQ	4.23	1.85	2.38	27.2	25.0	31.7	205
4R200	4.20	1.75	2.45	26.4	26.1	32.9	195
DKA41-18RR	4.20	1.78	2.43	24.4	28.6	35.7	177
Mariner III	4.18	1.80	2.38	24.5	28.7	35.9	173
Marvel	4.16	1.61	2.55	25.2	27.4	34.4	184
Melton	4.10	1.73	2.38	24.1	28.8	36.0	172
MasterPiece	4.08	1.73	2.35	25.8	26.4	33.2	192
TS-5010	4.04	1.84	2.20	26.0	26.9	33.9	188
Vernal	3.98	1.93	2.05	23.3	29.5	36.7	169
DKA34-17RR	3.88	1.63	2.25	25.7	26.9	33.8	189
Mean	4.32	1.80	2.52	25.6	27.2	34.1	186
LSD (.05)	NS	NS	NS	NS	NS	NS	NS
CV %	10.0	13.2	13.6	7.7	7.9	7.1	9.4

Entry information for Kimberly Trials

Marketer	Variety	FD	WS	Bw	Vw	Fw	An	PRR	SAA	PA	BAA	SN	NRKN
ABI Alfalfa	AA204W	5	--	R	R	R	R	HR	R	R	R	HR	HR
ABI Alfalfa	AA205W	4	--	HR	HR	HR	HR	HR	R	R	R	HR	HR
ABI Alfalfa	AA206W	5	--	HR	--	--	--	HR	HR	--	--	R	HR
Allied Seed, LLC	FSG408DP	4	2	HR	R	HR	HR	HR	--	R	--	R	HR
Allied Seed, LLC	FSG505	4	3	HR	HR	HR	HR	HR	R	R	--	R	R
Allied Seed, LLC	FSG406	4	1	HR	HR	HR	HR	HR	R	R	--	R	R
Allied Seed, LLC	Escalade	5	2	HR	R	HR	R	HR	--	R	--	MR	R
Tri-West Seed	Summergold	4	2.1	HR	--	HR	HR	HR	LR	R	--	HR	R
Calwest Seeds	CW24022	4	2	--	--	--	--	--	--	--	--	--	--
Calwest Seeds	CW24025	4	2	--	--	--	--	--	--	--	--	--	--
Calwest Seeds	CW24033	4	2	--	--	--	--	--	--	--	--	--	--
Calwest Seeds	CW25037	5	2	--	--	--	--	--	--	--	--	--	--
Tri-West Seed/Producer's Choice	PGI 427	4	2	--	--	--	--	--	--	--	--	--	--
Simplot Grower Solutions	Masterpiece	4	3	HR	R	HR	HR	HR	R	--	R	HR	R
Commercial	Check1	4	2	--	--	--	--	--	--	--	--	--	--
Tri-West Seed/Producers Choice	RewardII	4	2.1	HR	R	HR	R	HR	R	R	R	R	HR
W-L Research	WL357HQ	5	2	HR	HR	HR	HR	HR	R	R	MR	MR	--
Public--std check	Lahontan	6	--	MR	--	LR	--	LR	MR	LR	--	R	--
Bob Romanko	O-Nadir	6	--	--	--	--	--	--	--	--	--	--	--
Bob Romanko	Wildcard	--	--	--	--	--	--	--	--	--	--	--	--
Bob Romanko	O-Apex	6	--	--	--	--	--	--	--	--	--	--	--
Bob Romanko	Owyhee	6	--	--	--	--	--	--	--	--	--	--	--
Bob Romanko	O-Mezzo	6	--	--	--	--	--	--	--	--	--	--	--
Eureka/Northwest Seed	Whitney	4	3.2	HR	HR	HR	HR	HR	R	HR	--	HR	R
Eureka/Northwest Seed	9429	4	2.2	HR	R	HR	HR	HR	R	HR	--	R	--
Commercial	Check2	4	2	--	--	--	--	--	--	--	--	--	--
Public--std check	Vernal	2	--	R	--	MR	--	--	--	--	--	--	MR
NK/Syngenta Seeds, Inc.	Genoa	4	1	HR	HR	HR	HR	HR	HR	HR	--	R	R
NK/Syngenta Seeds, Inc.	Boulder	4	2	HR	HR	HR	HR	HR	HR	R	--	HR	--
Pioneer	54Q25	4	--	HR	HR	HR	HR	HR	R	R	--	HR	HR

FD fall dormancy scale: 1 = least fall growth to 9 = greatest fall growth

WS winter survival index: 1.5=superior winter survival, 2.0=very good, 2.5=good to very good, 3=good, 3.5=adequate to good, 4=adequate, 5=low, 6=no winter survival

Bw bacterial wilt

Vw verticillium wilt

Fw fusarium wilt

An anthracnose

PRR phytophthora root rot

SAA spotted alfalfa aphid

PA pea aphid

BAA blue alfalfa aphid

SN stem nematode

NRKN northern root knot nematode

Resistance Ratings

Class abbreviation	Resistance class	% Resistant plants
S	Susceptible	0-15
LR	Low resistance	6-14
MR	Moderate resistance	5-30
R	Resistance	11-50
HR	High resistance	>50

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	2.8	HR	R	HR	HR	HR	-	R	HR	HR	R	R
Northwest Seed	4R200	-	-	-	-	-	-	-	-	-	-	-	-	-
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
Dekalb	DKA34-17RR	-	-	-	-	-	-	-	-	-	-	-	-	-
Dekalb	DKA41-18RR	-	-	-	-	-	-	-	-	-	-	-	-	-
Dairyland Seed Co.	DS417	4	2	HR	HR	HR	HR	HR	-	-	-	-	-	-
Allied Seed, LLC	FSG351	3	2	HR	R	HR	R	HR	-	R	HR	R	R	HR
Allied Seed, LLC	FSG406	4	1	HR	HR	HR	HR	HR	-	-	R	-	R	R
Allied Seed, LLC	FSG408DP	4	2	HR	R	HR	HR	HR	-	-	R	-	R	HR
Tri-West Seed	30-30Q	3	2	HR	HR	HR	HR	HR	-	R	R	-	-	-
Simplot Grower Solutions	Lariat	3	1	HR	HR	HR	HR	HR	HR	-	HR	-	R	R
Cropland Genetics	Legendary 5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Allied Seed, LLC	Mariner III	4	2	HR	HR	HR	HR	HR	-	-	R	-	R	-
Allied Seed, LLC	Marvel	Y	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
Mystery check	Check1	-	-	-	-	-	-	-	-	-	-	-	-	-
Public--std check	Oneida VR	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-
Mystery check	Check2	-	-	-	-	-	-	-	-	-	-	-	-	-