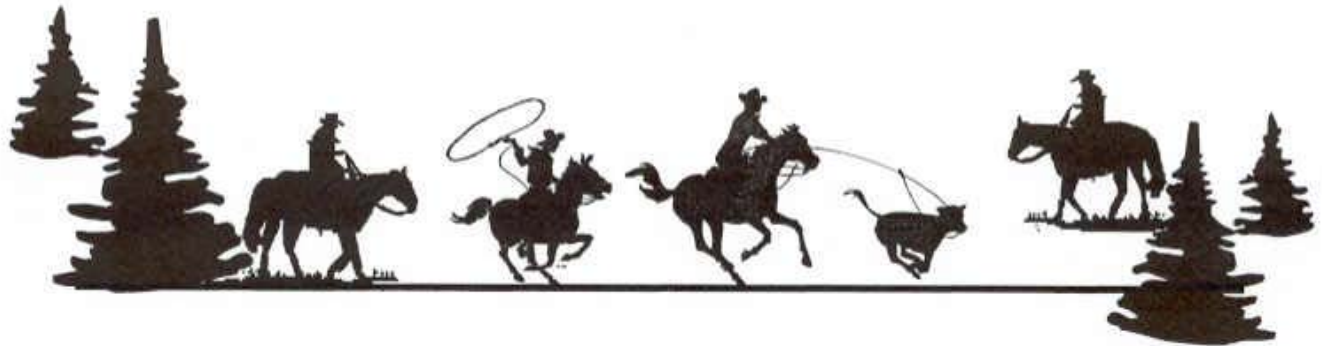




2011 ALFALFA VARIETIES



Montana Alfalfa Variety Performance Summaries in 2010

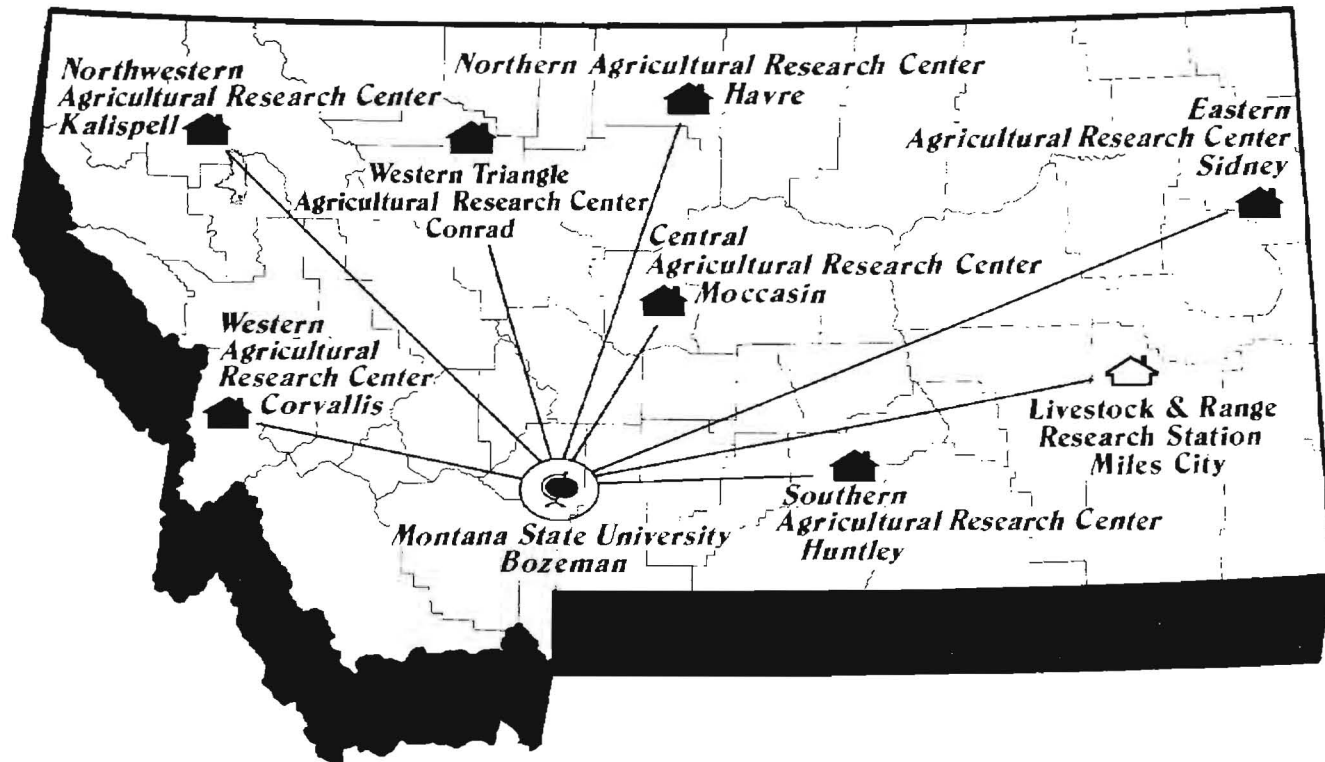


COLLEGE OF AGRICULTURE
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Available at:

<http://animalrangeextension.montana.edu/articles/forage/main-varieties.htm>

Montana Agricultural Experiment Station System



🏠 Agricultural Research Center 🏠 USDA Cooperating Station

**2011 ALFALFA VARIETIES:
PERFORMANCE SUMMARIES OF THE 2010 MONTANA
UNIFORM ALFALFA INTRASTATE FORAGE YIELD TRIALS**

Dennis Cash¹, Joyce Eckhoff², Ken Kephart³, Gigi Opena³, Heather Mason⁴ and Dave Wichman⁵

Alfalfa is the most productive and widely adapted forage species. In Montana, alfalfa was harvested on 1.65 million acres, with an average gross value of \$292 million per year since 2000. Montana alfalfa acreage continues to be near its peak historical levels, with over 4.5 million tons being produced on 1.9 million acres in 2010. Alfalfa's crop value of \$343 million in 2009 approached the record high in 2008

(http://www.nass.usda.gov/Statistics_by_State/Montana/Publications/crops/alfhayp.htm).

Currently, 47% of the acreage is irrigated and 53% is produced under rainfed dryland conditions.

Over 90% of all Montana hay is fed on-site. Since winter feed is the largest expense for ranch operations, efficient and optimum hay production is crucial to ranch profitability. Forage yield and quality vary widely across Montana environments and operations. The Montana Agricultural Experiment Station (MAES) conducts alfalfa variety performance trials at four research centers in major dryland and irrigated areas. Hundreds of alfalfa varieties are available to US producers, and these performance trials are designed to assist Montana producers in their choice of adapted varieties.

New varieties are tested for forage yield for three production years after establishment, under both dryland and irrigated conditions. All trials are planted in randomized complete block experiments, with four replications. The trials are "uniform" – all varieties are tested at all locations. Trials receive adequate fertilization and weed control for optimum expression of genetic differences among the varieties. This publication summarizes yield performance at four locations for trials planted in 2008. Table 1 is a statewide summary, and Tables 2 - 6 are location summaries.

Montana producers should select a variety based on its winterhardiness, yield potential, pest resistance and availability. Use the performance data for the research site or conditions most similar to your ranch or farm. For irrigated production in short (3 to 5 years) rotations, there are many high-yielding varieties available. For long-term stands on dryland, few varieties have forage yields superior to Ladak 65. We are unable to maintain research plots for 10+ years to evaluate long-term survival and production. Be sure to evaluate performance in the 3rd and 4th years – downward trends in yield may indicate winter injury or persistence problems. Additional variety descriptions for pest resistance, fall dormancy, winterhardiness and other information specific to alfalfa production in Montana are available at:

<http://animalrangeextension.montana.edu/Articles/Forage/Main-varieties.htm>

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Winter Survival, Fall Dormancy and Pest Resistance Ratings for Alfalfa Varieties 2011

National Alfalfa Alliance Publication Available on-line at:

http://www.alfalfa.org/pdf/2011NAFAVarietyLeaflet_small.pdf

Historical Summaries of MAES Alfalfa Trials (Planted 1984 - 2006)

Available on-line at:

<http://animalrangeextension.montana.edu/Articles/Forage/Varieties02/TOC.htm>

Climatic Summaries of MAES Testing Locations

Statewide Summaries of Current MAES Alfalfa Trials

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Table 1. Statewide summary of uniform alfalfa variety trials in Montana planted in **2008** and harvested in **2009 and 2010**.
(Yield in tons of dry matter/acre per year).

<i>Location:</i>	Huntley	Kalispell	Kalispell	Moccasin	Sidney	<i>Statewide Average (%Mean)</i>	
<i>Irrigated/Dryland:</i>	Irrigated	Irrigated	Dryland	Dryland	Irrigated	<i>Irrigated</i>	<i>Dryland</i>
Variety (Montana marketer)*							
Shaw (MSU public)	5.70	6.31	5.52	1.99	6.10	104	106
FSG 408DP (Simplot)	5.83	6.10	5.66	1.75	6.05	103	100
FSG 429SN (Simplot)	5.91	6.13	5.55	1.72	5.93	103	98
54V09 (Pioneer)	5.36	6.29	5.41	1.80	6.05	101	99
Rebound 5.0 (CROPLAN GENETICS)	5.79	5.91	6.11	1.69	5.94	101	102
FSG 229CR (Simplot)	5.36	6.22	6.20	1.71	5.97	100	104
DKA43-13 (DEKALB)	6.25	5.58	6.20	1.38	5.52	99	94
Melton (MSU public)	5.59	5.90	6.09	1.82	5.84	99	106
Ladak 65 (Westland Seed)	5.04	5.73	5.02	1.62	5.62	94	91
Location Mean	5.65	5.94	5.75	1.72	5.89		

***Marketing Contacts:**

CROPLAN GENETICS (800-851-8810), DEKALB (314-694-6152), MSU public (406-466-5553 and others), Pioneer Hi-Bred International, Inc. (406-326-2404, 800-247-6803), J.R. Simplot (800-635-9444), Westland Seeds, Inc. (800-547-3335).

Table 2. **2010** Summary of the **2008** Montana uniform intrastate alfalfa yield trial at **Huntley-Irrigated**.

	2009 Total tons DM/A	c1, 6/8/2010 tons DM/A	c2, 7/15/2010 tons DM/A	c3, 9/14/2010 tons DM/A	2010 Total tons DM/A	2009-2010 Mean tons DM/A	%Mean
DKA43-13	6.31	2.34	1.85	2.01	6.19	6.25	111
FSG 429SN	6.35	2.16	1.72	1.58	5.46	5.91	105
FSG 408DP	6.14	2.05	1.60	1.85	5.51	5.83	103
Rebound 5.0	6.11	2.11	1.53	1.81	5.45	5.79	102
Shaw	6.03	2.14	1.31	1.92	5.37	5.70	101
Melton	5.79	2.18	1.46	1.75	5.39	5.59	99
54V09	5.38	2.08	1.57	1.69	5.34	5.36	95
FSG 229CR	5.60	2.04	1.44	1.64	5.12	5.36	95
Ladak 65	5.45	1.76	1.30	1.57	4.63	5.04	89
Mean	5.91	2.10	1.53	1.76	5.38	5.65	100
LSD (0.05)	0.52	NS	0.28	NS	NS	0.51	
CV%	6.1	10.3	12.5	14.8	10.0	6.2	

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest yield.

Table 3*. **2010** Summary of the **2008** Montana uniform intrastate alfalfa yield trial at **Kalispell-Irrigated**.

	2009 Total tons DM/A	c1, 6/29/2010 tons DM/A	c2, 8/17/2010 tons DM/A	c3, 10/5/2010 tons DM/A	2010 Total tons DM/A	2009-2010 Mean tons DM/A	%Mean
Shaw	6.02	2.87	2.98	0.76	6.60	6.31	106
54V09	5.95	2.82	2.95	0.72	6.70	6.29	106
FSG 229CR	5.51	2.83	3.05	0.82	6.89	6.22	105
FSG 429SN	5.55	2.86	3.00	0.73	6.69	6.13	103
FSG 408DP	5.35	2.71	2.89	0.76	6.78	6.10	103
Rebound 5.0	5.39	2.70	3.00	0.63	6.27	5.91	99
Melton	5.68	2.71	2.80	0.62	6.12	5.90	99
Ladak 65	5.00	3.10	2.71	0.66	6.46	5.73	96
DKA43-13	5.40	2.69	2.47	0.63	5.79	5.58	94
Mean	5.54	2.81	2.84	0.70	6.37	5.94	
LSD (0.05)	NS	NS	NS	NS	NS	NS	
CV%	8.8	14.9	9.3	20.7	10.3	6.9	

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest yield.

*Note: The 2009 report for this trial had mis-labeled the varieties. This table provides corrected data. We regret the error.

Table 4. **2010** Summary of the **2008** Montana uniform intrastate alfalfa yield trial at **Kalispell-Dryland**.

	2009 Total tons DM/A	c1, 6/29/2010 tons DM/A	c2, 8/17/2010 tons DM/A	c3, 10/5/2010 tons DM/A	2010 Total tons DM/A	2009-2010 Mean tons DM/A	%Mean
DKA43-13	5.98	3.15	2.32	0.95	6.42	6.20	108
FSG 229CR	6.20	3.34	2.09	0.77	6.20	6.20	108
Rebound 5.0	5.99	2.96	2.24	1.05	6.23	6.11	106
Melton	6.18	2.95	2.28	0.76	5.99	6.09	106
FSG 408DP	5.92	2.75	1.94	0.72	5.41	5.66	98
FSG 429SN	5.72	2.66	2.00	0.72	5.38	5.55	97
Shaw	5.54	2.66	2.07	0.76	5.49	5.52	96
54V09	5.61	2.63	1.87	0.69	5.19	5.41	94
Ladak 65	5.16	2.53	1.88	0.44	4.88	5.02	87
Mean	5.81	2.85	2.07	0.76	5.69	5.75	
LSD (0.05)	NS	NS	NS	NS	NS	NS	
CV%	16.8	19.4	16.6	29.7	18.7	15.5	

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest yield.

Table 5. **2010** Summary of the **2008** Montana uniform intrastate alfalfa yield trial at **Moccasin-Dryland**.

	2009 Total tons DM/A	c1, 7/7/2010 tons DM/A	2009-2010 Mean tons DM/A	%Mean
Shaw	1.49	3.98	1.99	116
Melton	1.65	3.65	1.82	106
54V09	1.44	3.61	1.80	105
FSG 408DP	1.59	3.50	1.75	102
FSG 429SN	1.90	3.43	1.72	100
FSG 229CR	1.80	3.42	1.71	99
Rebound 5.0	1.47	3.38	1.69	98
Ladak 65	1.49	3.24	1.62	94
DKA43-13	1.24	2.76	1.38	80
Mean	1.56	3.44	1.72	
LSD (0.05)	NS	0.48	0.24	
CV%	25.1	9.5	9.0	

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest yield.

Table 6. **2010** Summary of the **2008** Montana uniform intrastate alfalfa yield trial at **Sidney-Irrigated**.

	2009 Total tons DM/A	c1, 6/15/2010 tons DM/A	c2,8/5/2010 tons DM/A	c3,10/14/2020 tons DM/A	2010 Total tons DM/A	2009-2010 Total tons DM/A	%Mean
Shaw	5.82	2.33	2.60	1.46	6.38	6.10	104
FSG 408DP	6.00	2.16	2.58	1.37	6.11	6.05	103
54V09	5.82	2.32	2.53	1.42	6.27	6.05	103
FSG 229CR	5.78	2.20	2.56	1.40	6.16	5.97	101
Rebound 5.0	5.63	2.39	2.51	1.34	6.24	5.94	101
FSG 429SN	5.82	2.24	2.44	1.36	6.04	5.93	101
Melton	5.55	2.21	2.55	1.37	6.13	5.84	99
Ladak 65	5.39	2.18	2.55	1.20	5.92	5.62	95
DKA43-13	5.35	2.05	2.49	1.15	5.69	5.52	94
Mean	5.68	2.23	2.53	1.34	6.11	5.89	
LSD (0.05)	NS	NS	NS	0.15	NS	0.39	
CV%	8.8	7.6	8.1	7.8	5.5	4.5	

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest yield.

Table 6A. 2010 Forage quality summary of the 2008 Montana uniform alfalfa yield trial at Sidney-Irrigated.

	Maturity Stage at Harvest*			%DM at Harvest			%Crude Protein (CP)				%Acid Detergent Fiber (ADF)				%Neutral Detergent Fiber (NDF)			
	c1, 6/15/2010	c2,8/5/2010	c3, 10/14/2010	c1, 6/15/2010	c2,8/5/2010	c3, 10/14/2010	c1, 6/15/2010	c2,8/5/2010	c3, 10/14/2010	2010 Mean	c1, 6/15/2010	c2,8/5/2010	c3, 10/14/2010	2010 Mean	c1, 6/15/2010	c2,8/5/2010	c3, 10/14/2010	2010 Mean
Rebound 5.0	3.0	6.0	- (no data)	21.1	27.4	27.1	21.5	19.9	22.2	21.2	36.4	36.9	30.2	34.5	43.7	43.5	32.7	40.0
DKA43-13	2.8	6.0	-	21.1	28.3	27.5	20.6	18.9	21.1	20.2	38.8	40.9	32.1	37.3	45.3	47.4	36.4	43.0
54V09	3.8	6.0	-	21.8	27.0	26.4	21.9	19.8	22.6	21.4	35.5	38.0	31.5	35.0	42.5	44.2	32.2	39.7
FSG 229CR	3.3	6.3	-	21.3	27.5	26.3	22.2	18.6	20.9	20.5	34.0	41.0	33.7	36.2	42.1	47.0	36.5	41.9
FSG 429SN	3.3	6.3	-	21.9	27.4	26.5	21.4	19.3	22.5	21.1	37.8	38.8	30.7	35.8	44.6	45.4	32.7	40.9
FSG 408DP	2.8	6.0	-	20.8	27.6	26.3	21.3	19.6	22.4	21.1	36.0	36.4	30.7	34.4	43.9	43.1	33.5	40.2
Ladak 65	2.8	6.0	-	20.7	27.5	26.7	21.6	19.3	21.9	20.9	37.9	39.7	32.3	36.7	44.8	44.9	34.5	41.4
Melton	3.5	6.3	-	20.5	25.8	26.0	20.9	19.1	21.7	20.6	38.6	38.3	34.1	37.0	46.0	46.1	35.5	42.5
Shaw	3.0	6.3	-	21.0	27.1	26.3	22.2	19.0	20.6	20.6	34.0	39.4	33.8	35.7	42.6	46.4	38.3	42.4
Mean	3.1	6.1	-	21.1	27.3	26.6	21.5	19.3	21.8	20.9	36.6	38.8	32.1	35.8	44.0	45.3	34.7	41.3
LSD (0.05)	0.6	NS	-	NS	NS	0.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV%	13.7	5.1	-	3.8	3.9	1.6	4.8	7.3	7.1	3.7	7.7	10.6	10.2	5.3	5.6	8.3	12.0	4.7

* Mean stage by count (Kalu and Fick, 1983): 3 = early bud, 4 = late bud, 5 = early flower, 6 = late flower.

Forage quality of standing alfalfa at harvest at 100% dry matter basis by NIRS, conducted by Charles Flynn, Eastern Agricultural Research Center.

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest value.

Table 6B. **2010** Nutrient yield summary of the **2008** Montana uniform alfalfa yield trial at **Sidney-Irrigated**.

	Pounds Crude Protein/Acre						Pounds Digestible Nutrients/Acre					
	2009 Total	c1, 6/15/2010	c2, 8/5/2010	c3, 10/14/2010	2010 Total	2009-2010 Total	2009 Total	c1, 6/15/2010	c2, 8/5/2010	c3, 10/14/2010	2010 Total	2009-2010 Total
54V09	2566	1,020	1,001	639	2,660	5,227	5,705	2,847	3,003	1,824	7,673	15,016
FSG 408DP	2559	918	1,010	613	2,540	5,099	5,481	2,630	3,113	1,779	7,522	14,865
Shaw	2463	1,032	983	603	2,618	5,081	6,652	2,901	3,010	1,828	7,739	14,809
FSG 229CR	2508	979	950	586	2,515	5,023	5,646	2,759	2,917	1,759	7,435	14,661
Rebound 5.0	2418	1,030	1,001	593	2,624	5,042	5,971	2,905	3,023	1,745	7,673	14,550
FSG 429SN	2553	962	935	616	2,513	5,066	5,749	2,667	2,842	1,775	7,285	14,485
Melton	2438	925	969	593	2,487	4,925	7,391	2,605	2,997	1,704	7,306	14,245
Ladak 65	2350	936	982	524	2,442	4,791	5,773	2,573	2,956	1,530	7,060	13,735
DKA43-13	2337	849	940	486	2,275	4,613	5,723	2,414	2,840	1,471	6,724	13,413
Mean	2466	961	974	584	2,519	4,985	6,010	2,700	2,967	1,713	7,380	14,420
LSD (0.05)	NS	NS	NS	NS	198	323	NS	NS	NS	NS	NS	866
CV%	8.0	8.6	8.7	10.4	5.4	4.4	20.1	8.2	8.3	9.0	5.4	4.1

* Calculated by product of dry matter yield (Table 12) and %CP or %DDM (Table 12A) on a 100% dry matter basis.

%DDM estimated by: $88.9 - (0.779 \times \%ADF)$.

Values in **bold** within a column are not significantly different ($P=0.05$) from the highest value.