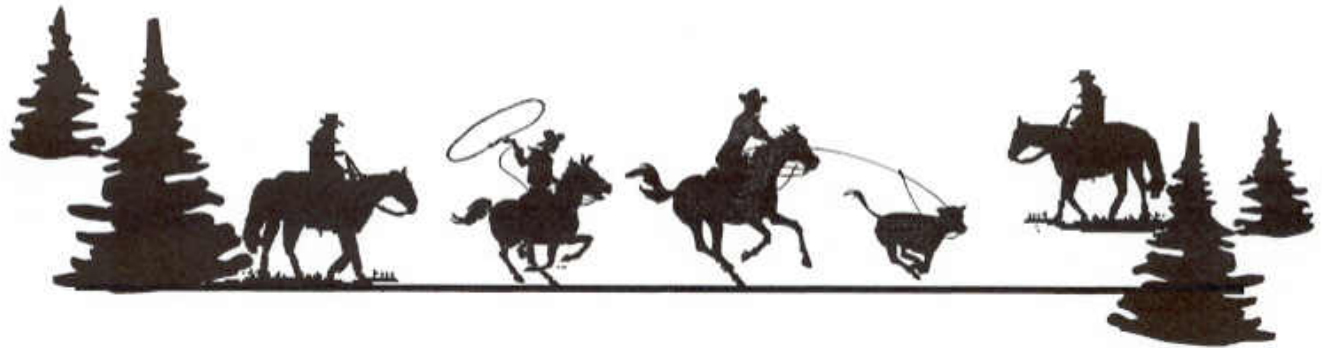




2005 ALFALFA VARIETIES



Montana Variety Performance Summaries in 2004

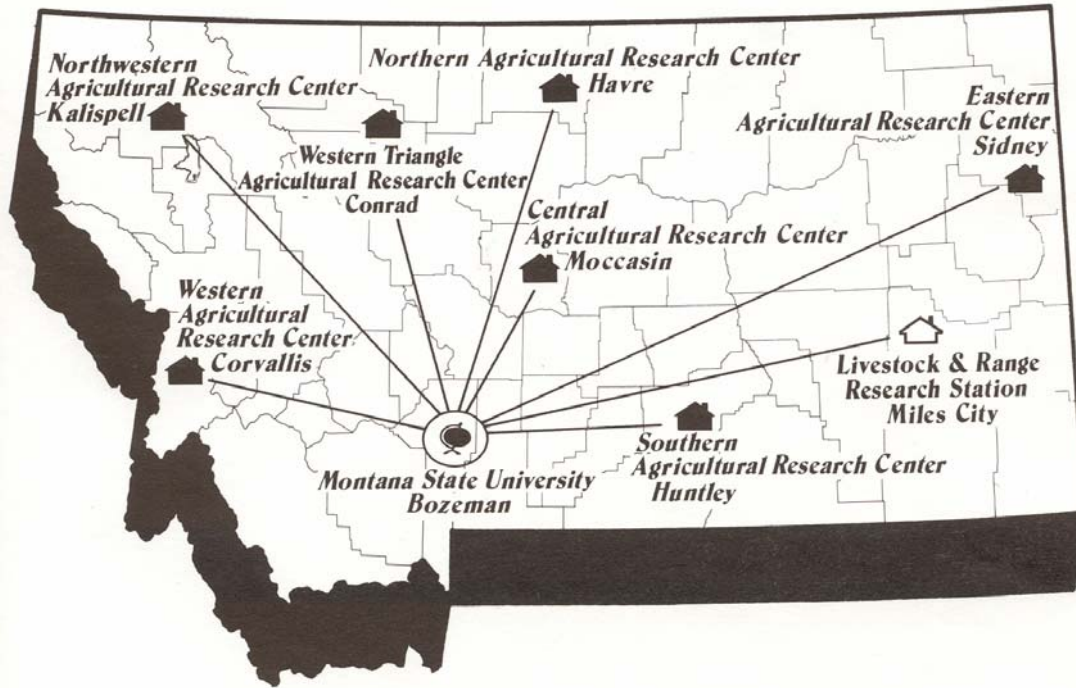


MONTANA STATE UNIVERSITY
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**2005 ALFALFA VARIETIES:
PERFORMANCE SUMMARIES OF THE 2004 MONTANA
UNIFORM INTRASTATE ALFALFA YIELD TRIALS**

Dennis Cash¹, Ray Ditterline², Duane Johnson³, Louise Strang³, Dave Wichman⁴,
Karnes Neill⁴, Ken Kephart⁵, and Joyce Eckhoff⁶.

Alfalfa is the most productive and widely adapted forage species. In Montana, current alfalfa acreage is 1.76 million acres, with a gross hay value of \$250 million. Alfalfa acreage is at its highest level in Montana and is equally split among irrigated and dryland hay harvested alfalfa acreage

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

New alfalfa varieties are tested for forage yield for three production years at both irrigated and dryland sites. All Montana trials are planted as 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 production. This publication provides yield performance at five Montana locations. Detailed summaries for the 2004 harvest year (trials seeded in 2001 and 2002) are shown in Tables 1 through 14.

Producers should choose varieties in Montana based on winterhardiness, yield potential, pest resistance and availability. For irrigated production in short (3 to 5 years) rotations, there are many high-yielding varieties available. For long-term stands on dryland, several varieties have forage yields superior to Ladak 65. We are unable to maintain our research stands for 10+ years to evaluate long-term survival and production. Use the performance data for the research site most similar to your ranch or farm. Be sure to evaluate forage yields in the 3rd and 4th years – downward trends in yield may indicate winter injury. Additional variety descriptions for pest resistance and fall dormancy, as well as specific information about the Montana alfalfa trials 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 2004/2005

National Alfalfa Alliance Publication Available on-line at:

<http://www.alfalfa.org/falldormancy.html>

Historical Summaries of MAES Alfalfa Trials (1984 - 2000)

Available on-line at:

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

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Table 1. Statewide summary of uniform alfalfa variety trials in Montana planted in **2001** and harvested in **2002, 2003 and 2004**.
(Yield in tons of dry matter/acre per year).

<i>Location:</i>	Bozeman	Huntley	Kalispell	Moccasin	Sidney	<i>Statewide Average (%Mean)</i>	
<i>Irrigated/D ryland:</i>	I	D¹	I	D²	I	<i>Irrigated</i>	<i>Dryland</i>
Variety (Montana marketer)*							
DK A42-15 (Monsanto)	5.90	0.89	7.79	1.26	5.67	106	94
Alliant (Monsanto)	5.79	0.84	7.96	1.31	5.53	105	94
DAK 9901 (Great Plains)	5.77	1.21	7.50	1.40	5.74	104	116
Cooper (MSU exp.)	5.62	1.11	7.78	1.35	5.61	104	109
Ascend 552 (Kussmaul)	5.68	0.98	7.49	1.11	5.62	103	93
Shaw (MSU public)	5.68	1.17	7.45	1.33	5.63	103	111
Mariner II (Allied)	5.70	0.84	7.64	1.18	5.47	103	89
WBRR (WY exp.)	5.44	1.01	7.70	1.27	5.65	102	101
Goliath (Allied)	5.59	1.20	7.64	1.12	5.40	102	104
Reliance (Allied)	5.56	1.08	7.38	1.09	5.39	100	97
WL 327 (W-L Research)	5.54	0.95	7.36	1.27	5.29	99	98
Ameristand 403T (America's)	5.22	0.90	7.25	1.30	5.63	99	96
Plumas (Integra)	5.67	0.95	7.28	1.22	5.10	99	96
Abound (Monsanto)	5.54	0.96	7.21	1.33	5.15	98	101
Monument II (Geerstson)	5.16	1.00	7.43	1.03	5.35	98	91
A 30-06 (PGI Alfalfa)	5.03	0.92	7.26	1.26	5.43	97	96
Wrangler (public)	5.36	1.15	6.87	1.28	5.26	96	108
Riley (public)	5.09	1.17	7.53	1.24	4.75	94	107
Ladak 65 (Westland)	4.77	0.92	6.94	1.33	4.91	90	99
Location Mean	5.48	1.01	7.44	1.25	5.40	100	100

D¹ trial terminated: 2002-2003 data only; D² 2004 data not yet available.

*Marketing Contacts:

Allied Seed Co., LLC (208-466-6700), America's Alfalfa (800-873-2532), experimental variety (no current sales), Geertson Seed Farms (800-843-0390), Great Plains Research Co. Inc. (800-874-7495), Integra Seeds (800-515-7333), Kussmaul Seed Co. (406-668-7701), public variety (406-466-5553 and other sources), Monsanto (314-694-7539), PGI Alfalfa Inc. (866-744-5710), Westland Seeds, Inc. (800-547-3335), W-L Research (800-635-5701).

Table 2. Statewide summary of uniform alfalfa variety trials in Montana planted in **2002** and harvested in **2003 and 2004**.
(Yield in tons of dry matter/acre per year).

<i>Location:</i>	Bozeman	Huntley	Huntley	Kalispell	Kalispell	Moccasin	Sidney	<i>Statewide Average (%Mean)</i>	
<i>Irrigated/Dryland:</i>	I	I	D ¹	I	D	D ²	I	<i>Irrigated</i>	<i>Dryland</i>
Variety (Montana marketer)*									
XTRA-3 (Wilbur Ellis)	6.77	8.76	-	6.11	3.57	2.03	6.20	104	96
6420 (Garst)	6.61	8.44	-	6.14	4.04	2.05	6.48	104	97
WL 319HQ (W-L Research)	6.51	8.38	-	6.17	3.98	2.01	6.36	103	95
HybriForce-420/Wet (Dairyland)	6.24	8.42	-	6.26	3.99	2.00	6.44	103	95
Shaw (MSU public)	6.62	8.08	-	6.16	3.64	2.28	6.39	103	108
Cooper (MSU exp.)	6.35	8.32	-	6.28	3.59	2.06	6.18	102	98
Plumas (Integra)	6.26	8.16	-	6.27	3.87	2.45	6.32	102	116
Rebel (Target)	6.17	8.34	-	6.02	3.60	1.97	6.48	101	93
HybriForce-400 (Townsend)	6.44	8.13	-	5.85	4.43	2.07	6.43	101	98
Rugged (Target)	5.76	8.39	-	5.97	3.79	2.05	6.51	100	97
Ameristand 403T (America's)	5.92	8.18	-	5.96	2.89	2.17	6.44	99	103
Ladak DL (America's)	5.90	7.92	-	5.62	3.98	1.95	6.22	96	93
Wrangler (public)	5.77	7.73	-	5.69	4.02	2.15	6.32	96	102
Ladak 65 (Westland)	5.12	6.71	-	5.72	3.41	2.27	5.30	86	108
Location Mean	6.17	8.14	-	6.02	3.77	2.11	6.29	100	100

D¹ trial terminated: 2003 data only; D² 2004 data not yet available.

*Marketing Contacts:

America's Alfalfa (800-873-2532), experimental variety (no current sales), Garst Seed Co. (515-685-5000), Integra Seeds (800-515-7333), public variety (406-466-5553 and other sources), Target Seed Co. (208-455-1346), Townsend Seed Co. (800-272-6939), Westland Seeds, Inc. (800-547-3335), W-L Research (800-635-5701),

Table 3. **2004** Summary of the **2001** Montana uniform intrastate alfalfa yield trial at **Bozeman-Irrigated**.

	2002 Total tons DM/A	2003 Total tons DM/A	c1, 6/16/04 tons DM/A	c2, 7/27/04 tons DM/A	c3, 9/25/04 tons DM/A	2004 Total tons DM/A	2002-2004 Mean tons DM/A	%Mean
DK A42-15	5.14	5.81	3.03	2.10	1.63	6.75	5.90	108
Alliant	5.42	5.62	2.77	2.00	1.54	6.32	5.79	106
DAK 9901	5.22	5.79	2.68	1.97	1.66	6.31	5.77	105
Mariner II	5.11	5.51	2.91	1.98	1.60	6.49	5.70	104
Shaw	5.26	5.41	2.89	1.92	1.58	6.38	5.68	104
Ascend 552	5.02	5.68	2.72	2.02	1.59	6.33	5.68	104
Plumas	5.36	5.31	2.87	1.85	1.62	6.35	5.67	104
Cooper	5.22	5.17	2.99	1.88	1.62	6.49	5.62	103
Goliath	5.29	5.29	2.76	1.87	1.57	6.20	5.59	102
Reliance	4.91	5.55	2.71	1.94	1.57	6.22	5.56	101
Abound	4.95	5.30	2.84	2.04	1.49	6.38	5.54	101
WL 327	5.01	5.44	2.73	1.92	1.50	6.16	5.54	101
WBRR	4.90	5.42	2.68	1.88	1.45	6.01	5.44	99
Wrangler	5.00	5.03	2.80	1.81	1.45	6.05	5.36	98
Ameristand 403T	4.53	5.15	2.65	1.80	1.53	5.97	5.22	95
Monument II	4.54	5.20	2.45	1.85	1.44	5.73	5.16	94
Riley	4.92	4.68	2.75	1.63	1.29	5.66	5.09	93
A 30-06	4.43	4.97	2.47	1.74	1.46	5.67	5.03	92
Ladak 65	4.72	4.45	2.51	1.48	1.13	5.12	4.77	87
Mean	5.00	5.30	2.75	1.88	1.51	6.14	5.48	100
LSD (0.05)	0.35	0.34	0.27	0.14	0.17	0.45	0.30	
CV%	4.2	3.8	5.9	4.6	6.8	4.5	3.3	

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

Seeded 4/25/2001, 200 lb/A P_2O_5 preplant.

Table 4. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Bozeman-Irrigated**.

	2003 Total tons DM/A	c1, 6/17/04 tons DM/A	c2, 7/24/04 tons DM/A	c3, 10/14/04 tons DM/A	2004 Total tons DM/A	2003-2004 Mean tons DM/A	%Mean
XTRA-3	6.38	2.98	2.05	2.12	7.16	6.77	110
Shaw	6.11	3.17	1.85	2.12	7.14	6.62	107
6420	5.97	3.22	1.99	2.05	7.25	6.61	107
WL 319HQ	6.10	2.93	2.16	1.82	6.92	6.51	106
HybriForce-400	6.07	2.89	1.90	2.01	6.80	6.44	104
Cooper	5.81	3.11	1.77	2.01	6.89	6.35	103
Plumas	5.67	3.05	1.76	2.05	6.85	6.26	101
HybriForce-420/Wet	6.02	2.56	1.96	1.94	6.46	6.24	101
Rebel	5.75	2.75	1.91	1.93	6.58	6.17	100
Ameristand 403T	5.42	2.75	1.81	1.86	6.42	5.92	96
Ladak DL	5.40	2.75	1.83	1.81	6.39	5.90	96
Wrangler	5.29	2.92	1.60	1.74	6.25	5.77	94
Rugged	5.20	2.78	1.76	1.79	6.32	5.76	93
Ladak 65	4.56	2.75	1.44	1.50	5.69	5.12	83
Mean	5.70	2.90	1.84	1.91	6.65	6.17	100
LSD (0.05)	0.66	0.26	0.16	0.15	0.48	0.54	
CV%	6.9	5.4	5.2	4.6	4.3	5.2	

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

Seeded 4/30/2002, 200 lb/A P₂O₅ preplant.

Table 5. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Huntley-Irrigated**.

	2003 Total tons DM/A	c1, 6/1/04 tons DM/A	c2, 7/8/04 tons DM/A	c3, 8/19/04 tons DM/A	c4, 10/12/04 tons DM/A	2004 Total tons DM/A	2003-2004 Mean tons DM/A	%Mean
XTRA-3	8.25	2.74	2.24	2.39	1.89	9.26	8.76	108
6420	7.70	3.04	2.12	2.27	1.74	9.18	8.44	104
HybriForce-420/Wet	7.84	2.84	2.11	2.20	1.85	9.00	8.42	103
Rugged	7.46	3.11	2.13	2.29	1.79	9.32	8.39	103
WL 319HQ	7.77	2.77	2.25	2.21	1.76	8.99	8.38	103
Rebel	7.53	3.03	2.08	2.25	1.79	9.15	8.34	102
Cooper	7.49	2.99	1.98	2.31	1.86	9.14	8.32	102
Ameristand 403T	7.49	2.94	2.04	2.16	1.74	8.88	8.18	101
Plumas	7.67	2.53	2.11	2.19	1.82	8.65	8.16	100
HybriForce-400	7.54	2.86	1.92	2.10	1.83	8.71	8.13	100
Shaw	7.44	2.74	2.00	2.20	1.77	8.72	8.08	99
Ladak DL	7.11	2.95	2.00	2.06	1.70	8.72	7.92	97
Wrangler	7.03	2.88	1.83	2.05	1.66	8.42	7.73	95
Ladak 65	5.97	2.69	1.85	1.69	1.21	7.45	6.71	82
Mean	7.45	2.87	2.05	2.17	1.74	8.83	8.14	100
LSD (0.05)	0.48	0.28	0.21	0.18	0.13	0.56	0.45	
CV%	4.5	6.8	7.2	5.8	5.2	4.4	3.8	

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

Table 6. **2004** Summary of the **2001** Montana uniform intrastate alfalfa yield trial at **Moccasin-Dryland**.
(2004 data unavailable)

	2002 Total tons DM/A	c1 6/28/03 tons DM/A	2003 Total tons DM/A	2002-2003 Mean tons DM/A	%Mean
DAK 9901	0.97	1.82	1.82	1.40	112
Cooper	0.88	1.83	1.83	1.35	108
Ladak 65	0.81	1.85	1.85	1.33	106
Abound	0.85	1.80	1.80	1.33	106
Shaw	0.92	1.73	1.73	1.33	106
Alliant	0.86	1.75	1.75	1.31	105
Ameristand 403T	0.84	1.75	1.75	1.30	104
Wrangler	0.90	1.67	1.67	1.28	103
WBRR	0.84	1.70	1.70	1.27	101
WL 327	0.90	1.64	1.64	1.27	101
A 30-06	0.89	1.64	1.64	1.26	101
DK A42-15	0.84	1.67	1.67	1.26	101
Riley	0.77	1.70	1.70	1.24	99
Plumas	0.85	1.59	1.59	1.22	97
Mariner II	0.81	1.55	1.55	1.18	94
Goliath	0.78	1.47	1.47	1.12	90
Ascend 552	0.73	1.49	1.49	1.11	89
Reliance	0.79	1.38	1.38	1.09	87
Monument II	0.68	1.38	1.38	1.03	83
Mean	0.84	1.65	1.65	1.25	100
LSD (0.05)	0.16	0.40	0.40		
CV%	13.7	8.5	8.5		

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

Table 7. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Moccasin-Dryland**.
(2004 data unavailable)

	c1 6/5/03 tons DM/A	2003 Total tons DM/A	%Mean
Plumas	2.45	2.45	116
Shaw	2.28	2.28	108
Ladak 65	2.27	2.27	108
Ameristand 403T	2.17	2.17	103
Wrangler	2.15	2.15	102
HybriForce 400	2.07	2.07	98
Cooper	2.06	2.06	98
Rugged	2.05	2.05	97
6420	2.05	2.05	97
XTRA-3	2.03	2.03	96
WL 319HQ	2.01	2.01	95
HybriForce-420/Wet	2.00	2.00	95
Rebel	1.97	1.97	93
Ladak DL	1.95	1.95	93
Mean	2.11	2.11	100
LSD (0.05)	0.27	0.27	
CV%	8.9	8.9	

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

Table 8. **2004** Summary of the **2001** Montana uniform intrastate alfalfa yield trial at **Kalispell-Irrigated**.

	2002 Total tons DM/A	2003 Total tons DM/A	c1 6/04 tons DM/A	c2 7/04 tons DM/A	c3 9/04 tons DM/A	2004 Total tons DM/A	2002-2004 Mean tons DM/A	%Mean
Alliant	9.30	7.69	2.95	2.67	1.29	6.90	7.96	107
DK A42-15	10.27	6.85	2.94	2.25	1.06	6.25	7.79	105
Cooper	9.33	7.27	3.21	2.26	1.25	6.72	7.78	105
WBRR	9.13	7.16	3.08	2.33	1.40	6.80	7.70	103
Mariner II	9.46	7.02	2.92	2.30	1.23	6.45	7.64	103
Goliath	9.03	7.23	3.00	2.33	1.32	6.66	7.64	103
Riley	7.92	7.47	3.47	2.33	1.39	7.20	7.53	101
DAK 9901	8.68	7.09	3.15	2.34	1.22	6.71	7.50	101
Ascend 552	8.63	7.34	2.86	2.40	1.24	6.51	7.49	101
Shaw	9.61	6.30	3.16	2.21	1.05	6.42	7.45	100
Monument II	8.82	7.22	2.79	2.23	1.23	6.25	7.43	100
Reliance	9.11	6.94	2.71	2.34	1.05	6.09	7.38	99
WL 327	9.28	6.88	2.75	2.15	1.01	5.92	7.36	99
Plumas	9.00	6.70	2.97	2.16	1.01	6.13	7.28	98
A 30-06	8.63	6.68	2.99	2.27	1.21	6.47	7.26	98
Amerstand 403T	8.97	6.65	2.64	2.24	1.26	6.14	7.25	98
Abound	8.75	6.85	2.52	2.34	1.16	6.02	7.21	97
Ladak 65	8.39	6.13	3.10	2.11	1.07	6.28	6.94	93
Wrangler	8.11	6.40	2.76	2.13	1.22	6.11	6.87	92
Mean	8.97	6.94	2.95	2.28	1.19	6.42	7.44	100
LSD (0.05)	0.90	0.72	NS	0.30	0.24	0.83	0.52	
CV%	7.1	NA	NA	NA	NA	NA	NA	

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

Table 9. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Kalispell-Irrigated**.

	2003 Total tons DM/A	c1 6/04 tons DM/A	c2 7/04 tons DM/A	c3 9/04 tons DM/A	2004 Total tons DM/A	2003-2004 Mean tons DM/A	%Mean
Cooper	5.82	3.61	2.04	1.10	6.75	6.28	104
Plumas	5.99	3.48	2.05	1.03	6.55	6.27	104
HybriForce-420/Wet	5.96	3.58	2.00	0.99	6.57	6.26	104
WL 319HQ	5.69	3.63	2.08	0.93	6.64	6.17	102
Shaw	5.82	3.47	2.00	1.02	6.50	6.16	102
6420	5.91	3.58	1.90	0.89	6.37	6.14	102
XTRA-3	5.79	3.31	2.13	0.99	6.43	6.11	102
Rebel	5.73	3.40	1.95	0.95	6.31	6.02	100
Rugged	5.58	3.54	1.87	0.95	6.37	5.97	99
Ameristand 403T	5.61	3.41	1.92	0.98	6.31	5.96	99
HybriForce 400	5.59	3.44	1.76	0.91	6.11	5.85	97
Ladak 65	5.32	3.41	1.82	0.89	6.13	5.72	95
Wrangler	5.28	3.38	1.86	0.86	6.09	5.69	94
Ladak DL	5.39	3.23	1.78	0.84	5.86	5.62	93
Mean	5.68	3.46	1.94	0.95	6.36	6.02	100
LSD (0.05)	NS	0.02	NS	NS	NS	NS	
CV%	NA	NA	NA	NA	NA	NA	

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

Table 10. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Kalispell-Dryland**.

	2003 Total tons DM/A	c1 6/04 tons DM/A	c2 7/04 tons DM/A	c3 7/04 tons DM/A	2004 Total tons DM/A	2003-2004 Mean tons DM/A	%Mean
HybriForce 400	3.52	2.78	1.76	0.81	5.34	4.43	118
6420	3.00	2.69	1.66	0.72	5.07	4.04	107
Wrangler	3.25	2.67	1.51	0.61	4.79	4.02	107
HybriForce-420/Wet	3.07	2.56	1.67	0.69	4.91	3.99	106
Ladak DL	3.08	2.60	1.65	0.63	4.89	3.98	106
WL 319HQ	3.12	2.65	1.59	0.59	4.84	3.98	105
Plumas	3.14	2.54	1.48	0.59	4.61	3.87	103
Rugged	3.07	2.48	1.43	0.61	4.52	3.79	101
Shaw	3.03	2.43	1.27	0.54	4.25	3.64	97
Rebel	2.93	2.40	1.32	0.55	4.28	3.60	96
Cooper	2.94	2.40	1.32	0.51	4.23	3.59	95
XTRA-3	2.85	2.36	1.43	0.50	4.29	3.57	95
Ladak 65	2.65	2.47	1.24	0.46	4.18	3.41	90
Ameristand 403T	2.38	2.08	1.00	0.31	3.39	2.89	77
Mean	3.00	2.51	1.45	0.58	4.54	3.77	100
LSD (0.05)	NS	NS	0.57	0.28	1.38	0.93	
CV%	NA	NA	NA	NA	NA	NA	

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

Table 11. **2004** Summary of the **2001** Montana uniform intrastate alfalfa yield trial at **Sidney-Irrigated**.

	2002 Total tons DM/A	2003 Total tons DM/A	c1, 6/7/04 tons DM/A	c2, 7/15/04 tons DM/A	c3, 8/23/04 tons DM/A	2004 Total tons DM/A	2002-2004 Mean tons DM/A	%Mean
DAK 9901	5.55	6.95	1.81	1.53	1.38	4.72	5.74	106
DK A42-15	5.33	6.90	1.71	1.54	1.54	4.78	5.67	105
WBRR	5.38	6.95	1.78	1.42	1.41	4.61	5.65	105
Ameristand 403T	5.40	7.14	1.54	1.41	1.41	4.36	5.63	104
Shaw	5.39	7.16	1.64	1.34	1.36	4.34	5.63	104
Ascend 552	5.19	6.83	1.69	1.56	1.60	4.85	5.62	104
Cooper	5.58	6.99	1.60	1.35	1.29	4.24	5.61	104
Alliant	5.30	6.92	1.56	1.42	1.39	4.37	5.53	102
Mariner II	5.05	6.75	1.72	1.44	1.43	4.59	5.47	101
A 30-06	5.10	6.71	1.75	1.40	1.33	4.48	5.43	101
Goliath	5.48	6.49	1.57	1.33	1.34	4.24	5.40	100
Reliance	5.19	6.39	1.72	1.44	1.41	4.58	5.39	100
Monument II	5.14	6.45	1.71	1.45	1.30	4.46	5.35	99
WL 327	5.21	6.39	1.55	1.36	1.34	4.26	5.29	98
Wrangler	5.02	6.48	1.67	1.31	1.30	4.27	5.26	97
Abound	5.01	6.24	1.57	1.34	1.29	4.19	5.15	95
Plumas	4.99	6.45	1.29	1.27	1.29	3.85	5.10	94
Ladak 65	5.08	5.91	1.67	1.05	1.03	3.74	4.91	91
Riley	4.97	5.77	1.39	1.02	1.10	3.51	4.75	88
Mean	5.23	6.63	1.63	1.37	1.34	4.34	5.40	100
LSD (0.05)	0.41	0.68	NS	0.16	0.18	0.44	0.40	
CV%	5.6	7.2	13.6	8.1	9.3	7.1	5.3	

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

Table 12. **2004** Summary of the **2002** Montana uniform intrastate alfalfa yield trial at **Sidney-Irrigated**.

	2003 Total tons DM/A	c1, 6/7/04 tons DM/A	c2, 7/15/04 tons DM/A	c3, 8/23/04 tons DM/A	2004 Total tons DM/A	2003 - 2004 Mean tons DM/A	%Mean
Rugged	7.92	1.87	1.54	1.69	5.10	6.51	103
Rebel	8.03	1.82	1.47	1.63	4.92	6.48	103
6420	8.04	1.71	1.46	1.74	4.91	6.48	103
HybriForce-420/Wet	7.80	1.70	1.64	1.74	5.08	6.44	102
Ameristand 403T	7.79	1.85	1.52	1.72	5.09	6.44	102
HybriForce-400	7.83	1.80	1.59	1.65	5.04	6.43	102
Shaw	8.08	1.77	1.43	1.51	4.71	6.39	102
WL 319HQ	7.76	1.87	1.46	1.62	4.96	6.36	101
Wrangler	7.91	1.72	1.41	1.61	4.74	6.32	101
Plumas	7.78	1.69	1.52	1.65	4.86	6.32	100
Ladak DL	7.74	1.67	1.35	1.68	4.70	6.22	99
XTRA-3	7.63	1.52	1.43	1.81	4.76	6.20	99
Cooper	7.67	1.72	1.44	1.54	4.69	6.18	98
Ladak 65	6.51	1.47	1.08	1.55	4.09	5.30	84
Mean	7.75	1.73	1.45	1.65	4.83	6.29	100
LSD (0.05)	0.72	NS	0.19	NS	NS	0.56	
CV%	6.5	11.6	9.0	15.0	8.7	6.2	

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

Table 13a. 2004 Forage quality summary of the 2001 Montana uniform alfalfa yield trial at Sidney-Irrigated.

	Mean Stage by Count*			%DM at Harvest			%Crude Protein (CP)				%Acid Detergent Fiber (ADF)				%Neutral Detergent Fiber (NDF)			
	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean
Ladak 65	3.0	NA	4.0	25.4	22.9	24.2	22.2	24.6	25.4	24.0	29.1	23.5	23.1	25.2	42.4	36.1	33.5	37.3
Wrangler	3.0	NA	4.0	24.8	23.9	24.0	22.3	24.7	25.4	24.2	28.3	21.8	22.9	24.3	40.8	35.6	33.7	36.7
Shaw	3.3	NA	4.3	25.9	23.8	25.0	22.1	23.6	24.1	23.3	26.9	23.8	26.4	25.7	40.8	38.3	35.8	38.3
Riley	3.0	NA	4.0	26.5	24.0	24.3	22.2	23.6	25.5	23.8	27.5	27.5	25.4	26.8	41.4	38.8	33.6	37.9
Cooper	3.0	NA	4.0	26.2	25.3	24.3	22.7	22.3	24.9	23.3	26.0	26.0	23.7	25.2	39.8	41.4	33.8	38.4
WBRR	2.8	NA	4.3	25.3	23.8	25.3	20.2	22.0	23.2	21.8	32.1	27.6	26.5	28.7	45.2	41.7	36.5	41.1
Plumas	3.5	NA	5.0	25.9	23.5	24.7	21.7	22.6	25.0	23.1	28.5	27.9	22.7	26.4	42.4	41.0	33.1	38.8
Ameristand 403T	3.5	NA	5.0	25.7	24.0	25.8	21.5	23.2	23.5	22.7	27.0	25.5	25.9	26.2	43.5	39.0	37.1	39.8
Goliath	3.0	NA	4.8	25.6	24.2	24.9	22.0	24.1	24.5	23.5	28.1	23.2	24.4	25.3	41.5	37.5	35.1	38.0
Mariner II	3.3	NA	4.5	25.9	23.9	25.2	20.8	23.0	24.0	22.6	29.2	27.1	24.9	27.1	43.9	38.5	35.7	39.4
Reliance	3.8	NA	4.8	25.8	24.1	25.1	22.2	22.6	24.3	23.0	26.9	26.8	23.5	25.7	40.8	40.6	34.6	38.7
Monument II	3.0	NA	4.8	26.7	23.0	25.2	20.3	22.2	23.5	22.0	31.4	28.4	25.8	28.5	44.6	40.2	36.6	40.5
DAK 9901	3.0	NA	5.0	27.0	24.8	24.9	20.4	21.7	24.6	22.2	29.9	27.9	24.8	27.5	44.9	41.5	33.5	40.0
Ascend 552	3.3	NA	5.0	25.9	24.5	25.6	20.9	22.6	23.8	22.4	30.4	26.2	25.9	27.5	44.4	40.4	35.5	40.1
Abound	3.0	NA	4.5	26.0	22.9	25.1	21.9	23.9	24.1	23.3	27.4	23.0	23.9	24.8	42.2	37.1	35.3	38.2
Alliant	3.3	NA	5.0	25.7	24.1	25.2	21.7	22.7	23.7	22.7	24.6	25.8	25.2	25.2	42.6	40.3	35.7	39.5
DK A42-15	3.0	NA	4.8	25.4	23.7	25.3	21.3	22.2	23.0	22.2	27.9	27.4	26.2	27.1	43.3	41.4	37.6	40.7
A 30-06	3.3	NA	4.8	26.0	24.4	24.7	21.2	23.4	24.4	23.0	29.7	24.9	24.2	26.3	42.6	38.6	35.3	38.8
WL 327	3.0	NA	4.5	26.3	24.1	24.5	21.7	23.5	24.6	23.3	28.1	24.9	22.0	25.0	42.0	38.3	33.7	38.0
Mean	3.1	NA	4.6	25.9	23.9	24.9	21.5	23.1	24.3	23.0	28.4	25.7	24.6	26.2	42.6	39.3	35.0	39.0
LSD (0.05)	NS	NA	0.6	NS	NS	NS	NS	1.4	NS	1.2	NS	NS	NS	NS	NS	3.4	NS	NS
CV%	14.2	NA	8.5	3.5	4.7	3.0	6.3	4.2	5.7	3.5	10.7	11.9	14.7	7.7	7.9	6.2	9.5	5.2

*Mean stage by count (Kalu and Fick, 1983) is a measure of plant maturity: 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 "best" value.

Table 13b. 2002 - 2004 Nutrient yield summary of the 2001 Montana uniform alfalfa yield trial at **Sidney-Irrigated**.

	Pounds Crude Protein/Acre*							Pounds Digestible Dry Matter (DDM)/Acre						
	2002 Total	2003 Total	C1, 6/7/04	C2, 7/15/04	C3, 8/23/04	2004 Total	2002-2004 Total	2002 Total	2003 Total	C1, 6/7/04	C2, 7/15/04	C3, 8/23/04	2004 Total	2002-2004 Total
DK A42-15	2356	3024	721	683	705	2110	7490	7201	9446	2282	2078	2104	6464	23,111
Cooper	2508	3002	724	603	643	1971	7481	7545	9549	2199	1852	1820	5871	22,965
DAK 9901	2323	2840	736	664	679	2080	7243	7265	9263	2371	2056	1922	6349	22,878
Ameristand 403T	2469	2991	657	657	664	1978	7438	7330	9544	2079	1955	1938	5973	22,848
Shaw	2299	2993	725	633	657	2015	7307	7116	9648	2225	1883	1864	5972	22,736
Ascend 552	2250	2818	700	702	756	2159	7227	6973	9132	2192	2132	2187	6511	22,615
Alliant	2389	2909	668	646	659	1972	7270	7204	9363	2166	1954	1927	6046	22,613
WBRR	2320	2858	720	626	656	2001	7179	7136	9255	2281	1915	1927	6123	22,515
Reliance	2374	2862	763	651	688	2102	7338	7130	8879	2338	1964	1993	6295	22,305
Mariner II	2214	2863	715	664	689	2068	7144	6822	9159	2270	1959	1995	6224	22,205
Goliath	2451	2834	689	642	654	1985	7270	7357	8889	2108	1889	1868	5865	22,111
A 30-06	2205	2818	741	655	649	2044	7067	6769	8975	2299	1947	1865	6112	21,856
WL 327	2300	2697	675	641	661	1977	6974	7052	8585	2086	1897	1928	5910	21,547
Monument II	2242	2713	692	643	611	1946	6900	6913	8694	2203	1941	1791	5936	21,543
Wrangler	2222	2801	746	647	658	2051	7074	6749	8721	2237	1880	1840	5957	21,427
Abound	2299	2761	684	640	621	1946	7005	6816	8568	2109	1903	1807	5819	21,203
Plumas	2288	2938	558	571	646	1775	7001	6819	8937	1717	1700	1843	5260	21,016
Ladak 65	2282	2534	737	516	517	1770	6586	6809	7921	2203	1483	1452	5137	19,868
Riley	2265	2571	618	480	560	1659	6494	6720	7894	1879	1374	1516	4769	19,383

Mean	2319	2833	698	630	651	1979	7131	7038	8970	2171	1882	1873	5926	21,934
LSD (0.05)	NS	NS	NS	81	95	195	541	NS	941	NS	237	250	577	1653
CV%	6.9	7.7	13.1	9.0	10.2	6.9	5.3	6.0	7.4	13.1	8.8	9.4	6.8	5.3

* Calculated by product of dry matter yield and %CP or %DDM on a 100% dry matter basis. %DDM estimated by: 88.9 - (0.779 x %ADF).

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

Table 14a. 2004 Forage quality summary of the 2002 Montana uniform alfalfa yield trial at Sidney-Irrigated.

	Mean Stage by Count*			%DM at Harvest			%Crude Protein (CP)				%Acid Detergent Fiber (ADF)				%Neutral Detergent Fiber (NDF)			
	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Mean
Ladak 65	2.5	NA	4.0	24.6	24.6	29.1	22.3	24.3	25.4	24.0	32.1	24.1	22.2	26.1	39.7	34.8	33.0	35.8
Wrangler	2.8	NA	4.0	25.0	23.8	24.1	22.5	23.4	25.2	23.7	30.8	24.4	21.6	25.6	38.0	37.4	34.0	36.5
Shaw	2.8	NA	4.0	25.4	24.9	25.1	21.8	22.1	24.7	22.9	31.9	28.1	21.1	27.0	39.2	39.1	34.5	37.6
Cooper	2.5	NA	4.3	25.5	24.5	24.3	21.9	23.2	24.4	23.2	30.6	24.1	22.8	25.8	39.6	36.9	34.8	37.1
Plumas	2.8	NA	4.0	25.1	25.7	25.1	23.3	23.7	24.5	23.8	28.8	22.4	21.7	24.3	36.1	35.6	35.2	35.7
Ameristand 403T	3.0	NA	4.3	25.5	23.3	24.4	23.0	21.7	24.7	23.1	29.9	28.5	22.1	26.8	37.2	41.2	34.1	37.5
Ladak DL	3.0	NA	4.0	25.6	23.1	24.5	22.3	22.3	24.5	23.1	30.7	27.2	22.6	26.8	38.2	39.3	34.6	37.4
HybriForce-400	3.3	NA	4.0	25.0	25.2	25.1	21.6	21.3	24.1	22.3	32.5	28.5	23.2	28.1	40.0	40.4	35.4	38.6
HybriForce-420/Wet	2.8	NA	4.0	25.1	24.6	26.0	21.6	22.3	24.2	22.7	31.8	26.2	23.0	27.0	39.4	38.4	35.2	37.7
XTRA-3	3.3	NA	4.8	24.6	24.2	25.9	22.6	23.3	24.0	23.3	31.6	23.5	22.5	25.9	38.4	37.0	35.7	37.0
6420	3.0	NA	4.0	25.2	23.8	24.8	22.6	21.1	24.6	22.7	30.7	28.8	21.4	27.0	37.3	40.8	33.8	37.3
Rebel	3.0	NA	4.0	25.0	23.5	24.3	23.3	22.5	25.1	23.6	28.0	27.7	19.7	25.2	35.5	38.3	32.6	35.5
Rugged	2.8	NA	4.0	25.6	23.9	24.9	22.4	23.0	24.7	23.4	31.3	24.9	21.7	26.0	38.4	37.4	34.5	36.8
WL 319HQ	3.0	NA	4.0	24.5	23.4	25.2	22.6	22.5	24.0	23.0	29.9	25.7	21.8	25.8	38.4	38.3	35.4	37.3
Mean	2.9	NA	4.1	25.1	24.2	25.2	22.4	22.6	24.6	23.2	30.8	26.0	22.0	26.2	38.2	38.2	34.5	37.0
LSD (0.05)	NS	NA	0.3	NS	NS	NS	NS	1.7	NS	0.9	NS	4.4	NS	NS	NS	NS	NS	NS
CV%	20.0	NA	5.6	4.4	5.6	12.3	6.0	5.4	3.9	2.8	11.2	11.7	11.7	6.6	8.0	7.4	6.7	4.3

*Mean stage by count (Kalu and Fick, 1983) is a measure of plant maturity: 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 "best" value.

Table 14b. 2003 - 2004 Nutrient yield summary of the 2002 Montana uniform alfalfa yield trial at **Sidney-Irrigated**.

	Pounds Crude Protein/Acre*						Pounds Digestible Dry Matter/Acre					
	2003 Total	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Total	2003-2004 Total	2003 Total	c1, 6/7/04	c2, 7/15/04	c3, 8/23/04	2004 Total	2003-2004 Total
Rugged	3326	838	708	832	3687	7013	10,490	2418	2141	2422	5390	15880
Rebel	3239	848	662	814	3490	6729	10,577	2440	1979	2389	5234	15811
WL 319HQ	3292	845	657	781	3517	6809	10,368	2456	2015	2336	5252	15619
6420	3236	771	617	857	3338	6575	10,462	2223	1949	2513	5029	15491
HybriForce-420/Wet	3122	737	730	840	3713	6835	10,206	2186	2245	2467	5272	15478
Ameristand 403T	3170	850	658	847	3533	6703	10,174	2431	2025	2459	5303	15477
Shaw	3113	771	634	740	3329	6442	10,438	2269	1924	2176	4932	15370
HybriForce-400	3074	781	674	793	3566	6640	10,109	2300	2111	2331	5205	15314
Plumas	3094	788	720	807	3681	6775	10,063	2245	2173	2374	5225	15288
Wrangler	3143	771	659	811	3398	6542	10,278	2222	1968	2324	5002	15280
Ladak DL	3134	746	605	822	3186	6320	10,179	2173	1836	2389	4830	15009
Cooper	3038	754	664	748	3425	6463	10,005	2235	2007	2184	4991	14996
XTRA-3	3092	686	664	870	3371	6463	10,025	1952	2021	2584	4843	14868
Ladak 65	2544	654	523	787	2681	5225	8,424	1866	1505	2223	4158	12581
Mean	3115	774	655	811	3423	6538	10,129	2244	1993	2369	5047	15176
lsd(P=0.05)	298	NS	87	NS	397	566	912	NS	258	NS	588	1290
CV%	6.7	12.8	9.3	16.1	8.1	6.1	6.3	12.0	9.1	15.2	8.2	6.0

* Calculated by product of dry matter yield and %CP or %DDM on a 100% dry matter basis.
 %DDM estimated by: 88.9 - (0.779 x %ADF).

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