



2009 Michigan Alfalfa Variety Trials Report

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November 16, 2009

Comments on the 2009 Growing Season

Freezing and thawing in the late-winter and early spring resulted in frost heaving of alfalfa especially older stands and alfalfa grown on fine textured soils and poorly drained areas. A very wet spring hampered field activities in southern Michigan. There was nearly thirteen inches of precipitation in April and May (in East Lansing) (Fig. 1). This was in addition to heavy snowfall melt that had saturated soils months prior. While 750 growing degree days (GDD)(base 42F) were reached in East Lansing by May 27, four inches of rain that week prevented harvest until June 2. Lake City and Chatham were drier in early spring with lower temperatures, delaying first harvest until June 11 in Lake City and June 25 in Chatham. These locations and North Branch (thumb area) received near-normal precipitation between April and October. For the second year, seasonal total GDD's were below average.

Trial Descriptions

Alfalfa varieties were tested in four locations across the state, using cutting, fertility, and IPM management strategies that are optimal for each location. Alfalfa varieties are planted using a Carter Nursery Seeder in three-ft. wide (5 rows with 6" spacing) by twenty-five ft. long plots into conventionally tilled soil in a randomized complete block design with a minimum of four replications. Irrigation may be used in the seeding year for stand establishment, but subsequent years are supported only by natural rainfall. A preplant-incorporated application of EPTC herbicide is normally used for weed control with, if necessary, follow-up applications of imazamox and/or sethoxydim. Phosphorus, Potassium, and Boron fertilizer (0-13-39+0.5% B) is applied according to soil tests the seeding year, and fertilizer applications subsequent years are applied according to the replacement value of one ton of dry alfalfa harvested removing 14 lbs of P and 40 lbs of K per acre. Plots are harvested with a three-foot Carter Flail-type Forage Harvester with sub-samples collected for DM determination. Trials are normally maintained for a total of 4 years (seeding year plus three).

Chatham (46.34°N) in the Upper Peninsula

The Upper Peninsula Experiment Station (Chatham, Alger Co. [location 1]) trial was established fall 2008. This area has colder winters than Lake City, and more snow. Winterhardiness and persistence are important characteristics for alfalfa in the Upper Peninsula. Trials are normally seeded in the spring, and are usually cut three times per year: Cut 1- June 10-20; Cut 2 – July 15-25 and Cut 3 – end of September. Potato leafhopper (PLH)



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is not normally a problem, but populations are monitored and controlled if necessary. Dry-matter yields for Chatham are presented in Table 1.

Lake City (44.35°N) in Central Northern Lower Michigan

Lake City (location 2) is 130 miles north of East Lansing and has colder winters than East Lansing and less snow than Chatham. Both winterhardiness and persistence are important characteristics for alfalfa varieties grown at Lake City. Trials are managed for good yields (4-6 tons/acre) and long stand life. Trials at Lake City are typically cut three times per year: Cut 1 - June 10-20; Cut 2 - July 25 to August 5; Cut 3 - mid to late September. Yield data for 2006, 2007, 2008, and 2009 seedings at Lake City are reported in Tables 2-5.

North Branch (43.14° N) in the “Thumb” region

North Branch (location 3), in northern Lapeer County, is in the heart of a large concentration of dairy farms in this region of the state.. Evening temperatures here are cooler than central Michigan; making disease resistance an important characteristic. Also, because dairy producers in this region harvest alfalfa four or five times per year, varieties with rapid regrowth following harvest and greater traffic tolerance should perform well. The management protocol for East Lansing (see below) is used for this trial, and yield data for this trial can be found in Table 6.

East Lansing (42.72°N) in Southern Lower Michigan

Alfalfa variety trials are seeded annually at East Lansing in southern lower-Michigan (location 4). These trials are located on the Crop and Soil Sciences Agronomy Farm and are usually seeded in the spring. Trials are managed for high yields (8 tons/acre) using four cuttings per year. Typical cutting dates are: Cut 1 - late May to early June (late bud to early bloom [750 GDD's]); Cut 2 - July 5-15 (1/10 bloom); Cut 3 - August 5-15 (1/10 bloom); Cut 4 - mid to late October with little regrowth after cutting. High fertility with P and especially K is essential for obtaining high yields. Potato leafhopper (*Empoasca fabae*) are controlled with an application of Cygon (dimethoate) insecticide prior to cut 2 and 3, and Alfalfa weevil (*Hypera posticata*) populations are controlled as needed with Sevin (carbaryl) prior to the first cutting in the standard trials. The Potato leafhopper resistant variety trials are not treated with insecticides. Standard variety trial data is presented in Tables 7, 9, 11, and 13 while the Potato leafhopper resistant (PLHR) alfalfa data are in Tables 8, 10, 12, and 14.

Statistics

Data are analyzed using PROC GLM or MIXED in SAS v. 8.2 software (Cary, NC). Means, coefficient of variation (CV%), and Fischer's Least Significant Difference (LSD) are reported at the bottom of each column. The CV is a percentage that indicates the precision of measurement. Columns with low CV's had lower error between replications within a given treatment. The LSD is used to compare values *within* a column and is the minimum difference between two values for a “real” difference to exist. The alpha level for the LSD in these trials was 0.05 or 5%, which means, we are 95% certain that values differing by more than the LSD are not due to chance. The MCV% is the LSD divided by the mean and the quotient is multiplied by 100 ([LSD/mean]*100). The LSR% is the LSD divided by the range and the quotient is multiplied by 100 (LSD/[high-low]*100).

Figure 1.

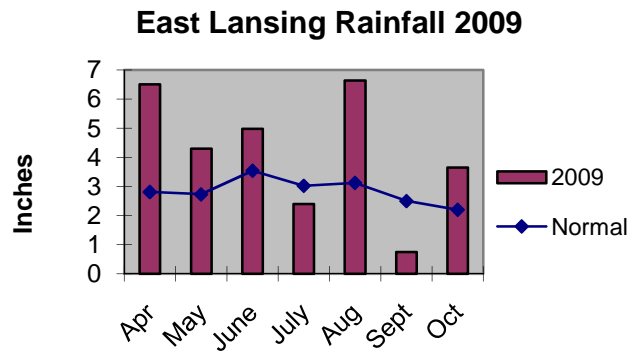
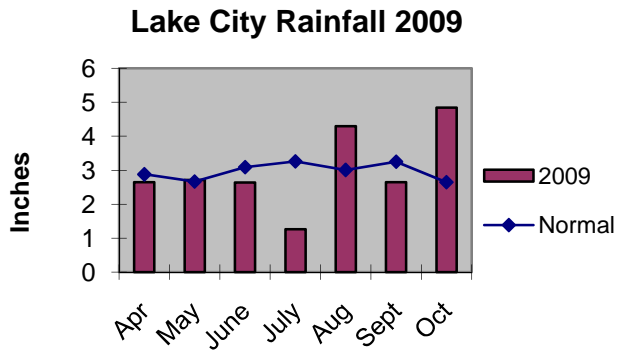
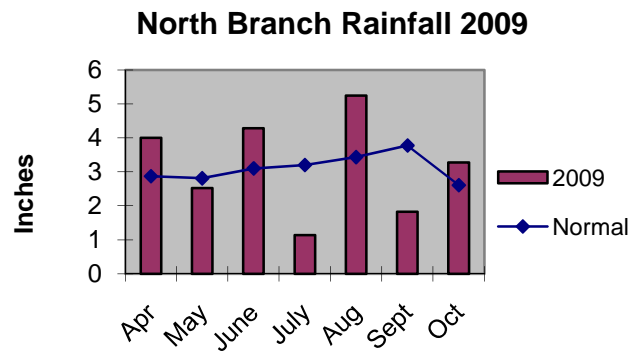
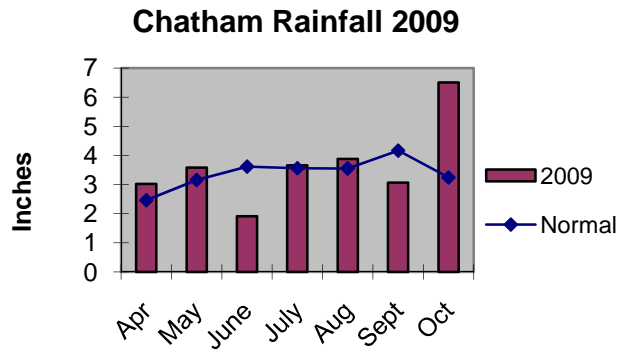


Table 1.

Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
Upper Peninsula Exp. Sta., Chatham
 Sown Aug 2008
 Non-irrigated

Entry	25-Jun	5-Aug	1-Oct	2009
Garst 6417	1.62	1.15	0.68	3.46
Garst 6431	1.57	1.13	0.75	3.44
Vernal	1.54	1.17	0.73	3.43
DKA33-16	1.45	1.16	0.77	3.38
Velocity	1.49	1.14	0.72	3.35
DK140	1.48	1.14	0.72	3.34
Pioneer 55V48	1.41	1.09	0.62	3.11
WL343HQ	1.34	1.00	0.75	3.09
Evergreen III	1.46	0.96	0.64	3.05
AmeriStand 407TQ	1.40	1.02	0.62	3.04
Mean	1.47	1.10	0.70	3.27
CV%	15	14	19	14
LSD 5%	NS	NS	NS	NS

Location: Upper Peninsula Exp. Sta., Alger Co.
 Design: RCB, plot size: 3 x 24 (3 x 21 harvested)
 Seeded: 8/1/08, 20 lbs. PLS/acre
 Soil Type: Eben Very Cobbly Sandy Loam
 Cuttings: None in the seeding year
 Fertility: 0-84-252 /acre

Table 2.

Michigan State Alfalfa Variety Trial Yields (DM tons/acre)
Lake City, Missaukee Co., Mich. State Univ.
 Sown May 2006
 Non-irrigated

Entry	11-Jun	14-Jul	12-Aug	12-Oct	2009	2008	2007	2006	4-yr
FSG505	3.45	1.97	0.80	0.77	6.99	5.06	4.62	2.17	18.84
FSG406	3.35	1.82	0.68	0.70	6.55	4.83	4.50	2.31	18.19
FSG351	3.17	1.62	0.62	0.79	6.20	4.81	4.39	2.18	17.58
DS616*	3.23	1.80	0.64	0.66	6.33	4.60	4.17	1.72	16.82
Magnum VI**	3.05	1.53	0.59	0.58	5.75	4.54	4.22	2.05	16.56
FSG408DP	3.02	1.56	0.56	0.61	5.75	4.65	4.26	1.84	16.50
Pioneer 54V46	3.05	1.63	0.66	0.66	6.00	4.53	4.33	1.63	16.49
IML04	2.98	1.52	0.56	0.57	5.63	4.64	3.71	2.06	16.04
DS615*	3.08	1.69	0.53	0.46	5.76	4.52	3.86	1.85	15.99
Pioneer 53Q30	3.07	1.54	0.53	0.57	5.71	4.68	3.80	1.45	15.64
RadiantAM	2.73	1.53	0.54	0.53	5.33	4.32	4.22	1.73	15.60
Vernal	2.67	1.34	0.46	0.38	4.85	4.29	4.25	1.72	15.11
Mean	3.07	1.63	0.60	0.61	5.90	4.62	4.19	1.89	16.61
CV%	14	19	22	41	17	9	15	25	11
LSD 5%	0.56	0.41	1.7	0.32	1.36	0.59	0.77	0.66	2.64
MCV (%)					23	13	18	34	16
LSR (%)					64	77	84	77	71

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 23'(3 x20' harvested)
 Seeded: 8-May-06
 Soil Type: Nester sandy loam
 Cuttings: two in 2006, three in 2007 & 8
 Fertility: 0-65-195 + 2.5 boron lbs./acre
 Insects: dimethoate applied prior to cut two

*Experimental Cultivar, **Newly released cultivar that was est. with experimental seed

Table 3.

Michigan State Alfalfa Variety Trial Yields (DM tons/acre)
Lake City, Missaukee Co., Mich. State Univ.

Sown May 2007

Non-irrigated

Entry	11-Jun	14-Jul	12-Aug	2009	2008	2007	3-yr
Garst6200HT	1.88	1.16	0.50	3.54	2.38	0.24	6.16
DK140	1.65	1.19	0.42	3.25	2.17	0.37	5.79
BOB06*	1.92	0.94	0.39	3.25	2.17	0.36	5.78
Ascend	1.78	1.10	0.52	3.41	2.01	0.31	5.73
Cdual*	1.69	0.98	0.50	3.17	2.10	0.45	5.72
CDAK06*	1.69	1.03	0.47	3.19	2.18	0.31	5.68
CimarronVL410*	1.69	1.00	0.49	3.18	2.02	0.38	5.58
CCim06*	1.50	1.16	0.45	3.12	2.08	0.30	5.50
Vernal	1.72	0.95	0.37	3.04	2.11	0.33	5.48
Ckey*	1.80	1.21	0.45	3.46	1.66	0.35	5.47
CDurango06*	1.62	1.05	0.44	3.10	1.91	0.38	5.39
Pioneer 55V48	1.56	0.86	0.49	2.92	1.94	0.42	5.28
Pioneer 5312	1.76	0.91	0.38	3.05	1.91	0.30	5.26
Velocity**	1.69	0.97	0.54	3.20	1.79	0.13	5.12
Mean	1.71	1.04	0.46	3.20	1.65	0.33	5.57
CV%	20	20	21	16	16	33	13
LSD 5%	NS	0.29	0.14	NS	0.48	0.15	1.00
MCV (%)					29	45	18
LSR (%)					67	47	96

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 25'(3 x 22' harvested)
 Seeded: 27-May-07
 Soil Type: Nester sandy loam
 Cuttings: One in 2007, three in 2008
 Insects: dimethoate applied prior to cut two
 Fertility: 0-65-195 + 2.5 boron lbs./acre

*Experimental Cultivar

**Newly released cultivar that was established with experimental seed

Table 4.

Michigan State Alfalfa Variety Trial Yields (DM tons/acre)
Lake City, Missaukee Co., Mich. State Univ.

Sown August 2008

Non-irrigated

Entry	11-Jun	14-Jul	12-Aug	2009
Garst 6431	0.91	0.70	0.48	2.09
Pioneer 55V48	0.70	0.58	0.49	1.77
Velocity	0.68	0.57	0.56	1.81
Pioneer 53H92	0.65	0.54	0.45	1.64
Vernal	0.57	0.55	0.29	1.41
Mean	0.7	0.59	0.45	1.74
CV%	11	16	16	11
LSD 5%	0.12	0.14	0.10	0.31
MCV (%)				18
LSR (%)				45

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 25'(3 x22' harvested)
 Seeded: 6-Aug-08
 Cuttings: none in seeding year
 Soil Type: Nester sandy loam
 Fertility: 0-65-195 + 2.5 boron lbs./acre
 Insects: dimethoate applied prior to cut two

Table 5.

Michigan State Alfalfa Variety Trial Yields (DM tons/acre)
Lake City, Missaukee Co., Mich. State Univ.

Sown April 2009

Non-irrigated

Entry	14-Jul	12-Aug	2009
PLHR Check	0.37	0.49	0.86
Chesapeake	0.27	0.51	0.79
Syngenta 6422Q**	0.18	0.58	0.76
FSG329	0.23	0.49	0.72
AmeriStand 403T plus	0.26	0.45	0.71
Pioneer 54Q32	0.27	0.43	0.70
Velocity	0.25	0.43	0.68
LegenDairy 5.0	0.20	0.47	0.67
AmeriStand 407TQ	0.24	0.43	0.66
DKA4313	0.20	0.43	0.63
DK140	0.19	0.44	0.63
4S417	0.18	0.45	0.63
Pioneer 55V12	0.18	0.43	0.61
Vernal	0.24	0.37	0.61
Pioneer 55V48	0.22	0.33	0.54
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Mean	0.23	0.45	0.68
CV%	32	40	33
LSD 5%	0.1	NS	NS
<hr/>			
MCV (%)			
LSR (%)			

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 25'(3 x22' harvested)
 Seeded: 24-Apr-09
 Soil Type: Nester sandy loam
 Insects: dimethoate applied prior to cut one and two
 **Seeded as an experimental cultivar with breeder selected seed

Table 6.

Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
North Branch, Lapeer Co.

Sown Apr 2008

Non-irrigated

Entry	30-May	7-Jul	13-Aug	11-Sep	2009
Ameristand 407TQ	2.39	1.61	2.40	2.05	8.45
Pioneer 55V48	2.36	1.57	2.47	2.05	8.44
FSG505	2.03	1.59	2.44	2.09	8.16
Ascend	2.11	1.58	2.25	2.03	7.97
WL363HQ	2.19	1.45	2.34	1.99	7.96
Garst 6552	2.01	1.56	2.38	2.01	7.95
DK140	2.17	1.51	2.30	1.97	7.95
FSG406	2.18	1.50	2.31	1.95	7.93
FSG351	2.24	1.50	2.28	1.91	7.93
WL343HQ	1.90	1.60	2.45	1.97	7.92
FSG528SF	2.00	1.43	2.40	2.03	7.86
PGI 459	1.87	1.50	2.40	2.04	7.80
Garst 6417	2.08	1.47	2.30	1.91	7.76
Velocity	1.96	1.51	2.30	1.97	7.73
DKA43-13	2.13	1.40	2.23	1.87	7.61
Genoa	1.92	1.50	2.22	1.94	7.57
PLH-resistant check	2.13	1.44	2.18	1.79	7.53
Pionner 5312	2.19	1.36	2.19	1.79	7.53
FSG408DP	1.91	1.47	2.19	1.80	7.36
Vernal	2.10	1.29	1.93	1.59	6.90
Mean	2.09	1.49	2.30	1.94	7.81
CV%	8	11	9	9	8
LSD 5%	0.22	0.22	0.29	0.24	0.84
MCV (%)					11
LSR (%)					54

Location: Chris Howland Farm
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 4/24/2008
 Cuttings: cuts for weed control in seeding year
 Soil Type: Brookston Loam
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: Warrior (Lambda-Cyhalothrin) applied prior to cuts two and three

Table 7. Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
East Lansing, Ingham Co., Sown Apr 2006, Non-irrigated

Entry	1-Jun	8-Jul	6-Aug	9-Sep	2009	2008	2007	2006	4-yr
DS304 HYB*	2.59	1.90	1.22	0.96	6.67	6.93	6.59	4.57	24.76
FSG 505	2.33	2.00	1.24	1.07	6.64	7.22	6.79	3.98	24.62
FSG 351	2.79	1.83	1.18	0.96	6.76	6.64	6.75	4.43	24.58
GH727	2.78	2.01	1.39	1.10	7.28	6.55	6.43	4.25	24.51
msSunstra-602*	2.44	1.93	1.20	0.92	6.49	6.68	6.93	4.31	24.41
FG 43M127*	2.62	1.89	1.22	0.94	6.67	6.83	6.58	4.06	24.14
Ameristand 407TQ	2.37	1.77	1.26	1.01	6.42	6.91	6.86	3.72	23.91
FG 44M123*	2.59	2.06	1.31	0.96	6.92	6.56	6.43	3.95	23.86
WL 355 RR	2.49	1.80	1.24	0.95	6.48	6.73	6.60	3.95	23.76
Garst 6415	2.70	1.88	1.23	0.94	6.75	6.66	6.40	3.77	23.58
Ascend	2.16	1.71	1.24	0.92	6.03	6.87	6.50	4.13	23.53
DKA34-17RR	2.33	1.88	1.30	0.95	6.46	6.60	6.40	3.82	23.28
DKA41-18RR	2.30	1.83	1.22	1.00	6.35	6.28	6.49	4.07	23.20
WL 343HQ	2.59	1.98	1.31	0.91	6.79	6.84	6.28	3.21	23.13
msSunstra-603*	2.74	1.78	1.19	0.99	6.69	6.26	6.29	3.76	23.00
FG 44M336*	2.55	2.01	1.25	1.00	6.81	6.16	6.16	3.85	22.99
FSG 406	2.34	1.84	1.24	0.90	6.31	6.26	6.51	3.90	22.98
msSunstra-604*	2.44	1.76	1.21	0.96	6.37	6.23	6.45	3.92	22.96
Garst 6420	2.19	1.75	1.12	0.91	5.97	6.47	6.21	4.16	22.80
Magnum VI**	2.27	1.73	1.03	0.88	5.91	6.37	6.24	4.16	22.67
msSunstra-601*	2.26	1.74	1.15	0.88	6.02	6.06	6.18	3.91	22.18
CW 25006*	2.27	1.76	1.22	0.93	6.18	6.43	5.89	3.66	22.16
ZG9830	2.24	1.80	1.05	0.82	5.91	6.24	6.16	3.70	22.01
CW 25037*	2.06	1.67	1.19	0.94	5.85	6.26	5.91	3.80	21.82
IML04*	2.09	1.64	0.98	0.90	5.61	5.92	6.11	4.03	21.67
Mountaineer 2.0	2.21	1.80	1.10	0.91	6.02	6.26	5.76	3.61	21.66
CW 24025*	2.25	1.69	1.21	1.03	6.17	6.28	5.86	3.13	21.44
Pioneer 54V46	2.07	1.58	1.08	0.94	5.67	5.95	6.08	3.52	21.22
Radiant-AM	2.18	1.64	1.12	0.90	5.85	5.90	6.07	3.23	21.04
Pioneer 53Q30	2.13	1.51	1.11	0.91	5.66	5.98	5.90	3.23	20.77
FSG 408DP	2.19	1.64	1.07	0.88	5.78	5.67	5.62	3.39	20.47
4G418RR	1.87	1.58	1.09	1.01	5.55	6.02	5.77	3.05	20.39
Yellowhead(05)	1.86	1.19	0.63	0.58	4.26	5.15	5.53	3.15	18.08
Yellowhead(06)	1.65	1.10	0.74	0.71	4.20	4.91	5.65	3.20	17.95
Vernal	1.84	1.13	0.73	0.69	4.39	4.61	5.45	3.16	17.62
Anik	0.00	0.00	0.00	0.00	0.00	0.40	3.18	0.85	4.43
Mean	2.24	1.70	1.11	0.90	5.94	6.11	6.14	3.68	21.88
CV%	14	13	11	11	10	10	9	18	9
LSD 5%	0.42	0.30	0.17	0.14	0.86	0.87	0.75	0.90	2.74
MCV (%)					14	14	12	24	13
LSR (%)					12	13	20	24	13

Location: Mich. State Univ. Exp. Station, East Lansing
Design: RCB, plot size 3 x 25' (3 x 22' harvested)
Seeded, Soil Type: 4/19/2006, Capac loam, tile drainage
Cuttings: three in 2006, four in 2007 & 8
Fertility: 0-78-234 + 3 boron lbs/acre
Insects: dimethoate applied prior to cuts two and three

*Experimental cv., **Newly released cv. that was established with experimental seed

Table 8.

Michigan State Alfalfa Variety Trial Yield
East Lansing Potato Leafhopper-Resistant Alfalfa Trial
 Sown Apr 2006
 Non-irrigated

Entry	DM tons / acre									% of check
	1-Jun	8-Jul	6-Aug	9-Sep	2009	2008	2007	2006		
Pioneer 53H92	2.05	1.43	1.21	0.82	5.51	5.52	4.78	2.50	18.31	151
4P424	1.70	1.22	0.85	0.67	4.44	5.17	4.62	2.39	16.62	137
Garst 6426	1.94	1.22	1.05	0.63	4.84	4.81	4.54	2.42	16.61	137
FSG400LH	1.94	1.15	0.80	0.57	4.46	5.05	4.39	2.41	16.31	134
Vernal	1.62	0.84	0.43	0.42	3.31	4.09	3.35	1.41	12.16	100
Mean	1.85	1.17	0.87	0.62	4.51	4.93	4.34	2.23	16.00	
CV%	13	14	15	11	9	9	11	16	8	
LSD 5%	0.35	0.24	0.19	0.10	0.65	0.68	0.69	0.49	2.00	
MCV (%)					14	14	16	24	12	
LSR (%)					46	47	48	41	33	

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 4/19/2006
 Cuttings: three in 2006, four in 2007 & 8
 Fertility: 0-78-234 + 3 boron lbs/acre
 Soil Type: Capac loam, tile drainage
 Insects: high pressure in 2009

Table 9.

Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
East Lansing, Ingham Co.
 Sown Apr 2007
 Non-irrigated

Entry	2-Jun	8-Jul	7-Aug	9-Sep	2009	2008	2007	3-yr
FG 44M125*	2.35	1.75	1.80	1.09	7.00	6.30	1.25	14.54
Velocity**	2.45	1.72	1.62	1.03	6.82	6.28	1.21	14.31
FG 44M318*	2.45	1.72	1.84	0.98	6.99	6.09	1.04	14.11
Pioneer 55V48	2.29	1.66	1.56	1.03	6.54	6.09	1.30	13.92
WL343 HQ	2.28	1.62	1.70	1.02	6.62	6.03	1.17	13.82
SpringGold	2.14	1.54	1.54	0.96	6.19	5.99	1.41	13.59
Falcon**	2.27	1.41	1.52	0.94	6.14	5.88	1.33	13.35
FG 44M317*	2.23	1.63	1.62	1.01	6.49	5.77	0.99	13.25
DS705-M*	1.98	1.40	1.34	0.93	5.65	5.89	1.60	13.14
DS 711-BR*	2.00	1.52	1.46	0.92	5.90	5.98	1.24	13.12
DS 712-M*	2.27	1.47	1.42	0.90	6.06	5.89	1.12	13.07
Pioneer 5312	2.10	1.38	1.37	0.94	5.79	5.79	1.30	12.88
DK140	2.06	1.40	1.38	0.83	5.67	5.88	1.27	12.82
Garst 6415	2.14	1.52	1.60	0.90	6.16	5.56	1.05	12.76
Vernal	1.90	1.03	0.89	0.71	4.54	5.05	0.99	10.58
Mean	2.19	1.52	1.51	0.95	6.17	5.90	1.22	13.28
CV%	13	11	10	8	9	8	23	8
LSD 5%	0.42	0.23	0.21	0.10	0.80	0.66	0.40	1.57
MCV (%)					13	11	31	12
LSR (%)					33	53	61	40

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 4/20/2007
 Cuttings: Two in 2007, four in 2008
 Soil Type: Capac loam, tile drainage
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: dimethoate applied prior to cuts two and three

*Experimental Cultivar

**Seeded as an experimental cultivar with breeder selected seed

Table 10.

Michigan State Alfalfa Variety Trial Yield
East Lansing Potato Leafhopper-Resistant Alfalfa Trial
 Sown Apr 2007
 Non-irrigated

Entry	DM tons/acre								% of Check
	2-Jun	8-Jul	7-Aug	9-Sep	2009	2008	2007	3-yr	
Pioneer 53H92	2.48	2.21	1.33	0.99	7.01	6.85	1.83	15.69	138
4P24	2.40	2.03	1.32	0.88	6.63	6.36	1.54	14.53	127
Garst 6426	2.47	1.70	1.35	0.88	6.40	6.48	1.24	14.12	124
Pioneer 5312	2.48	1.28	0.96	0.84	5.56	5.75	0.87	12.18	107
Vernal	2.40	1.15	0.72	0.77	5.04	5.61	0.76	11.41	100
Mean	2.45	1.67	1.14	0.87	6.13	6.21	1.25	13.59	
CV%	9	8	22	11	10	9	22	10	
LSD 5%	0.30	0.29	0.39	0.15	0.96	0.89	0.42	2.00	
MCV (%)					16	14	34	15	
LSR (%)					49	72	39	47	

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 4/20/2007
 Soil Type: Capac loam, tile drainage
 Cuttings: Two in 2007
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: high PLH pressure in 2009

Table 11.

**Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
East Lansing, Ingham Co.**

Sown Aug 2008

Non-irrigated

Entry	1-Jun	7-Jul	7-Aug	8-Sep	2009
HybriForce 2400**	2.65	1.84	2.05	1.98	8.52
4S417**	2.64	1.73	1.97	1.82	8.17
FG45M116	2.48	1.76	2.02	1.89	8.15
msSunstra 807	2.50	1.73	1.97	1.75	7.96
L447HD	2.47	1.72	1.97	1.81	7.96
Garst 6431	2.42	1.65	1.89	1.75	7.70
Pioneer 55V48	2.45	1.57	2.00	1.76	7.79
L333HD	2.42	1.53	1.75	1.58	7.28
Garst 6417	2.23	1.63	1.83	1.78	7.47
WL363HQ	2.17	1.67	1.89	1.74	7.46
Velocity	2.19	1.61	1.85	1.80	7.45
FG45M322	2.07	1.65	2.18	1.91	7.81
DKA4313	2.11	1.61	1.84	1.78	7.34
PGI 459	2.14	1.56	1.64	1.58	6.93
GH727	2.20	1.50	1.82	1.68	7.20
Genoa	2.15	1.53	1.76	1.71	7.15
Pioneer 5312	2.19	1.41	1.54	1.51	6.64
Garst 6415	2.04	1.47	1.73	1.56	6.81
Garst 6552	1.91	1.44	1.68	1.61	6.64
Vernal	2.02	1.16	1.35	1.38	5.92
Mean	2.27	1.59	1.84	1.72	7.42
CV%	8	9	8	8	7
LSD 5%	0.25	0.20	0.20	0.19	0.68
MCV (%)					9
LSR (%)					26

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 8/5/2008
 Soil Type: Capac loam, tile drainage
 Cuttings: one for weed control in 2008
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: dimethoate applied prior to cuts two and three

*Experimental Cultivar

**Seeded as an experimental cultivar with breeder selected

Table 12.

Michigan State Alfalfa Variety Trial Yield
East Lansing Potato Leafhopper-Resistant Alfalfa Trial
 Sown Apr 2008
 Non-irrigated

Entry	DM tons/acre					% of Check
	1-Jun	7-Jul	7-Aug	8-Sep	2009	
Pioneer 53H92	2.07	1.39	0.80	1.33	5.59	163
Garst 6426	1.93	1.34	0.65	1.48	5.40	157
Evergreen 3	1.88	1.23	0.78	1.46	5.35	156
Commercial Check†	1.77	0.87	0.66	1.28	4.58	134
Vernal	1.33	0.70	0.37	1.03	3.43	100
Mean	1.80	1.11	0.65	1.32	4.87	
CV%	8	23	19	11	10	
LSD 5%	0.27	0.39	0.19	0.23	0.77	
MCV (%)					16	
LSR (%)					36	

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 4/28/2008
 Soil Type: Capac loam, tile drainage
 Cuttings: two in 2008 for weed control
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: high PLH pressure in 2009
 † High yielding, non-PLH resistant

Table 13.

Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
East Lansing, Ingham Co.
 Sown May 2009
 Non-irrigated

Entry	20-Jul	19-Aug	13-Oct	2009
HybriForce 2400	1.14	1.59	1.03	3.76
Pioneer 53H92	0.97	1.77	0.98	3.72
Pioneer 55V12	0.90	1.65	0.96	3.52
DK140	0.95	1.53	0.88	3.36
HybriForce 807exp*	0.86	1.55	0.95	3.36
Chesapeake	0.86	1.56	0.92	3.34
msSunstra-901*	0.86	1.48	0.97	3.31
4S417	1.01	1.34	0.93	3.28
5454	0.87	1.45	0.96	3.28
Radiance HD**	0.83	1.45	0.98	3.26
Syngenta 6422Q**	0.88	1.49	0.87	3.24
WL363HQ	0.77	1.51	0.93	3.21
Pioneer 55V48	0.74	1.45	0.99	3.18
AmeriStand 407TQ	0.80	1.47	0.89	3.15
AmeriStand 403T Plus	0.82	1.40	0.83	3.05
LegenDairy 5.0	0.75	1.37	0.85	2.97
Pioneer 54Q32	0.71	1.38	0.87	2.97
FG 46M446*	0.67	1.35	0.88	2.90
Velocity	0.77	1.30	0.75	2.81
Everlast II	0.68	1.30	0.83	2.81
5312	0.63	1.35	0.77	2.75
CW044026*	0.53	1.29	0.82	2.64
OneidaVR	0.56	1.27	0.72	2.55
KingFisher 243	0.52	1.19	0.77	2.47
Vernal	0.44	1.04	0.50	1.98
Mean	0.78	1.42	0.87	3.07
CV%	30	15	18	17
LSD 5%	0.33	0.30	0.23	0.75
MCV (%)				24
LSR (%)				42

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 25' (3 x 22' harvested)
 Seeded: 5/12/2009
 Soil Type: Capac loam, tile drainage
 Fertility: 0-78-234 + 3 boron lbs/acre
 Insects: dimethoate applied prior to and after cut 1

*Experimental Cultivar

**Seeded as an experimental cultivar with breeder selected seed

Table 14.

Michigan State Alfalfa Variety Trial Yield
East Lansing Potato Leafhopper-Resistant Alfalfa Trial
 Sown May 2009
 Non-irrigated

Entry	DM tons/acre			% of Check*
	19-Aug	13-Oct	2009	
53H92	0.86	0.49	1.35	325
FG44H375	0.83	0.33	1.16	279
FSG420LH	0.73	0.34	1.07	258
non-PLHR check†	0.60	0.46	1.06	256
WL353LH	0.61	0.35	0.96	232
5454	0.36	0.26	0.62	149
Vernal	0.33	0.09	0.42	100
Mean	0.62	0.33	0.95	
CV%	34	35	32	
LSD 5%	0.31	0.17	0.45	
MCV (%)			47	
LSR (%)			48	

Location: Mich. State Univ. Exp. Sta., East Lansing

Design: RCB, plot size 3 x 25' (3 x 22' harvested)

Seeded: 5/12/2009

Soil Type: Capac loam, tile drainage

Fertility: 0-78-234 + 3 boron lbs/acre

Insects: high PLH pressure in 2009

*percent yield of Vernal

† High yielding, non-Potato leafhopper