

2005 Michigan Alfalfa Variety Trials Report

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Comments on the 2005 Growing Season

Alfalfa stands across the state suffered from winter injury/kill likely caused by: lack of snow cover, low temperatures, and intermittent thawing/freezing. In some cases, the practice of leaving a greater stubble height or leaving the last cutting helped by trapping snow as an insulating barrier. Ice sheeting in poorly drained area also occurred statewide resulting in stand loss. Dry conditions and above normal temperatures prevailed statewide in early spring and prompted many producers to establish seedings early. Some of these stands suffered due to slower germination from cool soils and a lack of rainfall. Microclimates (within the field), soil type, and tillage methods played a critical role in seeding success. Near-normal rainfall was received in the Lower-Peninsula beginning in June, while Chatham remained below average season-long (Table 1.). Timely rainfall season-long and warm temperatures in the early spring in East Lansing resulted in five cuttings and near **record yields for non-irrigated alfalfa totaling greater than 10 tons DM/acre in three cultivars**. Better genetics, including: greater disease resistance, multifoliolate characteristics, and cultivars with faster regrowth/recovery following harvest also played an important role in high yields. The two top varieties in the trial out yielded Vernal alfalfa by almost 4 tons per acre which shows that it pays to plant improved varieties. Hay supplies in much of the Lower-Peninsula reflect the optimal alfalfa growing conditions. However, lack of rainfall in Southwestern and Western Michigan resulted in much lower yields and hay supplies in that part of the state.

Alfalfa varieties are tested in four locations across the state, using cutting, fertility, and IPM management strategies that are optimal for each location. Alfalfa varieties are planted with 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 to insure good stands, but subsequent years are supported only by natural rainfall. A pre-incorporated application of EPTC herbicide is normally used for weed control with, if necessary, follow-up applications of Imazamox and/or Sethoxydim for escapes. Phosphorus, Potassium, and Boron fertilizer (0-14-42+0.5% B) is applied according to soil tests the seeding year and of the "rule of thumb" that one ton of dry alfalfa harvested removes 14 lbs of P and 40 lbs of K per acre the subsequent years. Plots are harvested with a three-ft. 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).

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Chatham in the Upper Peninsula

A trial was seeded in 2003 at Chatham (location 1) in the Upper Peninsula at the Michigan State University Upper Peninsula Experiment Station. Chatham is 300 miles north of East Lansing and has colder winters than Lake City, but with more snow. Winterhardiness and persistence are important at Chatham. 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 is not normally a problem, but populations are monitored and controlled if necessary. Below average rainfall was received in the 2005 growing season (Table 1). Dry-matter yields for the 2003 seeding are presented in Table 2.

Lake City 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. The 2005 trial was seeded May 27 and an application of Imazomox was made in July and this trial was harvested in September, but is not included in the report due to a high variability. Yield data for 2002, 2003, and 2004 seedings at Lake City are reported in Tables 3, 4, and 5, respectively.



Saginaw in East-Central Lower Michigan

A trial was established on the Saginaw Experiment Station in Saginaw County on Swan Creek Rd (location 3). Saginaw is located about 90 miles northeast of East Lansing. The soils of this area are lake/river bed soils which are prone to heaving as a result of freeze-thawing cycles. This trial is usually cut four times a year: Cut 1 - June 1; Cut 2 – July 1; Cut 3 – August 10-15; Cut 4 – October 15-20, but warm conditions in the spring 2005 resulted in earlier harvests. Four cuttings were obtained from this trial and yield data is reported in Table 6.

East Lansing 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); 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. Insects, namely, Potato leafhopper (*Empoasca fabae*) can greatly reduce yields and are controlled with an application of insecticide prior to cut 2 and 3. Alfalfa weevil (*Hypera postica*) populations are occasionally controlled with insecticide prior to first cutting; however this was not necessary in 2005. The 2005 growing season was warm and dry in April followed by ample rainfall in June and July. The 2005 trials were seeded April 19 and Sethoxydim and Imazomox were applied for weed control. July was the month that the rainfall deficit was ended with 3.4 inches above the norm. This rainfall supported the alfalfa for the remainder of the season. Normally, second, third, and fourth cutting yields are close to one ton, but this year they were nearly two tons per acre, and the early first cutting and timely subsequent cuttings allowed for five cuttings. The 2003 seeding resulted in higher yields in the earlier cuttings, possibly due to a more developed root system and an area with higher water holding capacity. Greater than ten tons of dry matter per acre were obtained with three varieties in this trial. Standard variety trial data is presented in Tables 7, 9, and 11, while the Potato leafhopper resistant (PLHR) alfalfa data are in Tables 8, 10 and 12.

Statistics

Data are analyzed using PROC GLM or MIXED in SAS v. 8.2 software (Cary, NC). A comparison of mean separation results (LSD v. pdiff ($\alpha=0.15$)) of PROC GLM and Nearest-Neighbor Analysis (NNA) using PROC MIXED was conducted on each trial. There was no benefit observed for NNA in these trials in this year; therefore, PROC GLM was used. 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 LSR% is the LSD divided by the range.

Table 1.

2005 Precipitation (inches)

	Chatham			Lake City			Saginaw			East Lansing		
	Normal*	2005	dev	Normal*	2005	dev	Normal*	2005	dev	Normal*	2005	dev
Apr	2.46	2.37	-0.09	2.88	1.04	-1.84	2.76	1.32	-1.44	2.81	1.19	-1.62
May	3.15	1.93	-1.22	2.67	2.58	-0.09	2.70	1.74	-0.96	2.73	1.88	-0.85
June	3.61	1.11	-2.50	3.09	2.05	-1.04	3.32	4.97	1.65	3.54	4.47	0.93
July	3.56	3.22	-0.34	3.26	3.69	0.43	2.72	3.20	0.48	3.02	6.42	3.40
Aug	3.55	1.92	-1.63	3.01	4.48	1.47	3.13	0.81	-2.32	3.12	1.09	-2.03
Sept	4.16	4.14	-0.02	3.25	4.06	0.81	2.82	0.72	-2.10	2.50	3.83	1.33
Oct	3.24	3.29	0.05	2.65	0.72	-1.93	2.39	1.30	-1.09	2.20	0.24	-1.96
Total	23.73	17.98	-5.75	20.81	18.62	-2.19	19.84	14.06	-5.78	19.92	19.12	-0.80

*30 yr ave.

Table 2.
Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
Upper Peninsula Exp. Sta., Chatham
 Sown June 2003
 Non-irrigated

Entry	17-Jun	21-Jul	12-Sep	2005	2004	2-yr.
				Total	Total	Total
WL 357 HQ	1.56	1.24	0.31	3.11	4.72	7.83
Radiant	1.74	0.89	0.26	2.88	4.46	7.34
Pioneer 54H91	1.57	0.88	0.26	2.70	4.60	7.30
Starbuck	1.60	0.96	0.27	2.82	4.42	7.24
Prolific	1.61	0.94	0.27	2.82	4.41	7.23
Pioneer 54V46	1.66	0.92	0.31	2.89	4.31	7.20
Ameristand 403T	1.74	0.82	0.21	2.77	4.33	7.10
Garst 620	1.50	0.89	0.27	2.66	4.39	7.05
Attention	1.61	0.82	0.22	2.64	4.41	7.05
WL 319 HQ	1.64	0.83	0.24	2.70	4.32	7.02
Baralfa 42	1.55	0.82	0.26	2.63	4.39	7.02
Baralfa 32IG	1.51	0.97	0.28	2.76	4.20	6.96
Dynamic	1.46	0.78	0.25	2.49	4.25	6.74
WRV 931	1.43	0.80	0.23	2.46	4.05	6.51
LHR100	1.30	0.69	0.22	2.21	4.21	6.42
Extend	1.41	0.67	0.20	2.28	4.10	6.38
Vernal	1.17	0.76	0.23	2.16	4.02	6.18
Skiveru	1.24	0.49	0.14	1.86	3.39	5.25
Mean	1.51	0.84	0.24	2.60	4.28	6.88
CV%	14	18	20	13	6	7
LSD 5%	0.31	0.22	0.07	0.49	0.33	0.69
MCV (%)				19	8	10
LSR (%)				39	24	26

Location: Upper Peninsula Exp. Sta., Alger Co.
 Design: RCB, plot size: 3 x 24 (3 x 21 harvested)
 Seeded: 6/2/2003, 20 lbs/A PLS.
 Soil Type: Eben Very Cobbly Sandy Loam
 Cuttings: Three in 2004
 Fertility: 0-63-189 Split application

Table 3.

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

Sown May 2002

Non-irrigated

Entry	7-Jun	14-Jul	15-Aug	2005	2004	2003	3-yr
				Total	Total	Total	Total
HybriForce 400	1.91	0.96	0.48	3.35	3.20	2.80	9.35
Pioneer 54V54	1.84	1.02	0.39	3.26	3.19	2.41	8.86
WL 342	2.00	1.03	0.47	3.50	2.95	2.40	8.85
Pioneer 54H91	1.59	0.75	0.43	2.77	3.24	2.74	8.75
Vernal	1.76	0.89	0.46	3.11	3.10	2.45	8.66
Garst 620	1.42	0.73	0.40	2.54	3.22	2.75	8.51
DS 9809 Hybrid**	1.64	0.69	0.44	2.77	2.91	2.50	8.18
Mean	1.76	0.88	0.44	3.04	3.12	2.57	8.74
CV%	15	15	21	14	17	15	8
LSD 5%	0.41	0.19	NS	0.63	NS	NS	1.13
MCV(%)							13
LSR(%)							96

Location: Lake City Exp. Station, Lake City

Design: RCB, plot size: 3 x 23' (3 x20' harvested)

Seeded: 5/20/2002, 20 lbs/A.

Soil Type: Kent Silt loam

Cuttings: Clipped for weed control in seeding yr, three in 2003 & 2004

Fertility: 0-65-195 + 2.5 boron lbs./acre

**Experimental cultivar

Table 4.

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

Sown June 2003

Non-irrigated

Entry	7-Jun	14-Jul	15-Aug	2005	2004	2-yr.
				Total	Total	Total
Somerset	2.29	1.25	0.68	4.21	4.34	8.55
Pioneer 54Q25	2.21	1.20	0.63	4.03	4.46	8.49
HybriForce 420/Wet	2.26	1.27	0.80	4.33	4.09	8.42
Pioneer 54V46	2.25	1.27	0.57	4.09	4.30	8.39
WL 319 HQ	2.20	1.23	0.69	4.11	4.13	8.24
Vernal	2.14	1.19	0.67	4.00	4.15	8.15
Skriveru	2.24	1.21	0.65	4.10	3.92	8.02
Pioneer 54H91	2.05	1.17	0.68	3.90	3.75	7.65
Mean	2.20	1.22	0.67	4.10	4.14	8.24
CV%	17	22	26	18	7	9
LSD 5%				NS	0.41	NS
MCV (%)					10	
LSR (%)					58	

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 23' (3 x20' harvested)
 Seeded: 6/5/2003, 20 lbs/A.
 Soil Type: Kent Silt loam
 Cuttings: two in 2003, three in 2004
 Fertility: 0-65-195 + 2.5 boron lbs./acre

Table 5.

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

Sown May 2004

Non-irrigated

Entry	7-Jun	14-Jul	15-Aug	2005
				Total
Rugged	2.23	1.71	1.09	5.03
Garst 6200HT	2.18	1.65	1.07	4.91
HybriForce 420/wet	2.37	1.60	0.91	4.89
LegenDairy 5.0	2.29	1.59	0.95	4.84
Rebel	2.20	1.70	0.88	4.78
DKA42-15	2.22	1.57	0.94	4.72
Rebound 5.0	2.14	1.60	0.83	4.57
Vernal	2.13	1.48	0.91	4.51
Mean	2.22	1.61	0.95	4.78
CV%	8	11	17	9
LSD 5%	NS	NS	0.23	NS

MCV (%)

LSR (%)

Location: Lake City Exp. Station, Lake City
 Design: RCB, plot size: 3 x 23'(3 x20' harvested)
 Seeded: 29-May-04
 Soil Type: Kent Silt loam
 Cuttings: clipped for weed control in seeding year
 Fertility: 0-65-195 + 2.5 boron lbs./acre

Table 6.

Michigan State Alfalfa Variety Trial Yield (DM tons/acre)
Saginaw, Saginaw Co.
 Sown April 2004
 Non-irrigated

Entry	26-May	23-Jun	27-Jul	22-Aug	2005	2004	2-yr.
					Total	Total	Total
Genoa	2.66	1.72	1.77	1.19	7.34	3.62	10.96
HybriForce 420/WET	2.50	1.66	1.63	1.11	6.91	3.91	10.82
SummerGold	2.58	1.68	1.70	1.10	7.06	3.55	10.61
WL 357 HQ	2.54	1.71	1.61	1.16	7.01	3.54	10.55
Pioneer 54Q25	2.48	1.61	1.56	1.09	6.74	3.64	10.38
Garst 6200 HT	2.44	1.67	1.51	0.98	6.60	3.63	10.23
DKA 42-15	2.57	1.64	1.56	1.04	6.81	3.41	10.22
Garst 6420	2.53	1.53	1.48	0.98	6.51	3.70	10.21
Pioneer 54V46	2.42	1.64	1.65	1.04	6.75	3.35	10.10
Rebel	2.50	1.55	1.49	1.03	6.56	3.48	10.04
Vernal	2.53	1.57	1.43	0.98	6.51	3.49	10.00
Rebound 5.0	2.39	1.68	1.59	1.06	6.71	3.25	9.96
LegenDairy 5.0	2.38	1.62	1.55	1.11	6.67	3.16	9.83
Saranac	2.39	1.45	1.40	0.92	6.15	3.46	9.61
Rugged	2.44	1.52	1.42	0.88	6.25	3.34	9.59
Mean	2.49	1.62	1.56	1.04	6.70	3.50	10.21
CV%	7	6	7	9	6	7	5
LSD 5%	0.20	0.12	0.14	0.11	0.47	0.31	0.72
MCV (%)					7	9	7
LSR (%)					39	41	52

Location: Saginaw Research Farm, Saginaw
 Design: RCB, plot size 3 x 24' (3 x 21' harvested)
 Seeded: April 7, 2004 (20 lbs. PLS/A.)
 Soil Type: Misteguay silty clay
 Insects: Baythroid applied prior to cut 2 and cut 3
 Cuttings: Three in 2004
 Fertility: Soil test showed optimal levels of P and K

Table 7.

**Michigan State Alfalfa Variety Trial
East Lansing, Ingham Co.**

Sown May 2002

Non-irrigated

Entry	Dry matter tons/acre				2005				Plants 1ft ^{2†}
	25- May	22- Jun	22- Jul	23- Aug	Total	Total	Total	3-yr Total	
FG 40M155**	2.23	2.57	1.85	1.30	7.95	7.46	5.87	21.28	7.5
4A421**	2.13	2.50	1.80	1.26	7.69	7.58	5.92	21.19	7.5
Genoa*	2.21	2.50	1.82	1.22	7.75	7.55	5.82	21.12	7.5
LegenDairy YPQ	2.12	2.44	1.80	1.18	7.54	7.46	5.71	20.71	8.0
Pioneer 54V46	1.97	2.38	1.61	1.13	7.09	7.36	5.71	20.16	7.3
Dakota	1.93	2.17	1.58	1.12	6.80	7.09	5.78	19.67	7.3
WL 319 HQ	1.97	2.23	1.56	1.19	6.95	6.82	5.71	19.48	7.5
Garst 6420	1.86	1.95	1.45	1.11	6.37	7.13	5.80	19.30	7.0
HybriForce 400	1.93	2.02	1.49	1.17	6.61	6.88	5.63	19.12	9.3
DS 211 hyb**	1.82	2.00	1.48	1.07	6.37	6.99	5.68	19.04	6.3
Pioneer 54V54	1.71	2.04	1.41	1.12	6.28	7.18	5.34	18.80	9.0
DS 9809 hyb**	1.78	2.00	1.39	0.99	6.16	7.09	5.54	18.79	8.8
GH 744	1.86	2.08	1.45	0.99	6.38	6.92	5.32	18.62	6.5
Garst 631	1.78	2.00	1.41	0.96	6.15	6.65	5.30	18.10	7.5
Vernal	1.35	1.56	1.07	0.75	4.73	5.87	4.71	15.31	4.3
Mean	1.91	2.16	1.54	1.10	6.72	7.07	5.59	19.38	7.4
CV%	6	6	8	17	7	5	9	6	30
LSD 5%	0.15	0.17	0.16	0.23	0.61	0.45	0.66	1.40	3.3
MCV (%)							12	7	
LSR (%)							54	23	

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

Design: RCB, 4 reps, plot size 3 x 24' (3 x 21' harvested)

Seeded: May 2002 (20 lbs PLS/A)

Soil Type: Capac loam, tile drainage

Insects: Baythroid applied prior to cut 2 & 3

Cuttings: Two in 2002 (data not included due to high CV), four in 2003 & 2004

Fertility: 0-104-312 + 4 boron lbs/acre

*Cultivar was seeded from experimental seed

** Experimental cultivar

†Plant digs from 3 replications

Table 8.

Michigan State Alfalfa Variety Trial
East Lansing Potato Leafhopper-resistant Variety Trial
 Sown May 2002

Entry	DM tons/acre									Hopperburn rating*	
	25-May	22-Jun	22-Jul	23-Aug	2005 Total	2004 Total	2003 Total	2002 Total	4-yr Total	cut 3	cut 4
DKA37-20	1.67	1.24	1.31	0.82	5.04	6.81	4.83	1.83	18.51	1.0	1.0
Pioneer 54H91	1.86	1.27	1.22	0.70	5.05	6.57	4.86	1.75	18.23	1.0	1.0
ZH9932H**	1.62	1.19	1.23	0.73	4.78	6.51	4.63	1.59	17.51	1.6	1.0
Pioneer 5312	1.86	1.42	1.31	0.81	5.4	6.27	4.14	0.90	16.71	1.4	1.0
Vernal	1.37	1.06	1.08	0.59	4.11	5.32	3.99	0.77	14.19	5.4	3.0
Mean	1.68	1.24	1.23	0.73	4.87	6.30	4.49	1.37	17.03	2.1	1.4
CV (%)	6	8	7.7	10	4	5	6	13	5	19	2
LSD(5%)	0.13	0.12	0.12	0.10	0.29	0.42	0.34	0.24	1.03	0.5	0.1
MCV (%)						6	7	17	6		
LSR (%)						28	39	24	24		

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

Design: RCB, plot size 3 x 24' (3 x 21' harvested)

Seeded: 5/22/2002, (20 lbs PLS/A)

Soil Type: Capac loam, tile drainage

Insects: No insecticide applied, below average PLH pressure in 2005

Cuttings: Two in 2002, four in 2003&2004

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

Comments: Plant counts taken September 2005 revealed no difference in cultivars

* Hopperburn rating 1 to 9 (1=no burn)

** Experimental cultivar

Table 9.

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

Sown June 2003

Non-irrigated

Entry	25-May	21-Jun	25-Jul	29-Aug	19-Oct	2005	2004	2-yr.
						Total	Total	Total
Garst 6415	2.88	2.13	2.00	1.93	1.24	10.18	8.41	18.59
WL 357 HQ	2.99	2.14	2.02	1.82	1.19	10.16	8.17	18.33
DKA50-18	2.77	1.98	2.02	1.89	1.20	9.85	8.33	18.18
DKA33-16	2.88	2.09	2.05	1.86	1.14	10.02	8.07	18.09
Pioneer 54V46	2.73	2.02	1.92	1.74	1.15	9.57	8.07	17.64
Power 4.2	2.67	1.90	1.77	1.76	1.05	9.15	8.20	17.35
Alfastar II	2.74	1.99	1.85	1.60	1.13	9.31	7.98	17.29
Phabulous II	2.68	1.95	1.87	1.73	1.04	9.27	7.85	17.12
DS322**	2.49	1.84	1.72	1.60	1.16	8.81	8.18	16.99
Extreme	2.53	1.85	1.77	1.70	1.13	8.99	7.95	16.94
Pioneer 54Q25	2.43	1.75	1.66	1.54	1.13	8.50	8.01	16.51
Dakota	2.45	1.64	1.73	1.59	1.25	8.65	7.84	16.49
DS320**	2.58	1.88	1.80	1.68	1.04	8.98	7.30	16.28
HybriForce 420/Wet	2.41	1.67	1.71	1.65	1.03	8.48	7.73	16.21
Dak 9900**	2.43	1.54	1.67	1.53	1.17	8.34	7.70	16.04
Everlast	2.33	1.71	1.69	1.57	1.10	8.41	7.62	16.03
DS321**	2.45	1.73	1.69	1.62	1.10	8.60	7.38	15.98
Cimarron VL400*	2.47	1.55	1.51	1.44	1.20	8.16	7.67	15.83
Nova*	2.27	1.50	1.55	1.47	1.07	7.87	7.78	15.65
DS323**	2.30	1.66	1.62	1.53	1.09	8.19	7.39	15.58
Phirst	2.31	1.60	1.56	1.50	1.09	8.06	7.51	15.57
Vernal	1.81	1.32	1.30	1.14	0.77	6.34	6.58	12.92
Skriveru	1.56	1.28	1.08	0.89	0.52	5.34	5.70	11.04
Mean	2.49	1.77	1.72	1.60	1.09	8.66	7.71	16.38
CV%	7	8	7	8	11	7	5	5
LSD 5%	0.24	0.20	0.18	0.17	0.17	0.80	0.58	1.10
MCV (%)						9	8	6
LSR (%)						17	21	15

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

Design: RCB, plot size 3 x 24' (3 x 21' harvested)

Seeded: June 2003 (20 lbs PLS/A)

Soil Type: Capac loam, tile drainage

Insects: Baythroid applied prior to cut 2 & 3

Cuttings: clipped for weed control in 2003, four in 2004

Fertility: 0-104-312 + 4 boron lbs/acre

*Cultivar was seeded from experimental seed

**Experimental cultivar

Table 10.

Michigan State Alfalfa Variety Trial
East Lansing Potato Leafhopper-resistant Variety Trial
 Sown June 2003

Entry	DM tons/acre					2005	2004	2-yr.	Hopperburn*	
	25-May	22-Jun	25-Jul	29-Aug	19-Oct	Total	Total	Total	cut 2	cut 3
WL 346 LH	2.05	1.72	1.65	1.57	1.04	8.02	8.00	16.02	1.0	1.0
EverGreen2	1.82	1.67	1.61	1.54	1.05	7.68	7.99	15.67	1.0	1.0
Pioneer 54H91	1.82	1.49	1.50	1.48	1.05	7.34	7.37	14.71	1.0	1.0
4375LH	2.02	1.58	1.52	1.41	0.80	7.17	7.29	14.46	1.0	1.0
Garst 6325	2.03	1.43	1.39	1.38	0.85	7.09	6.93	14.02	1.0	1.0
Vernal	1.87	1.28	1.26	1.16	0.80	6.37	5.50	11.87	1.0	3.0
Mean	1.94	1.53	1.49	1.42	0.93	7.28	7.18	14.46	1.0	1.3
CV (%)	14	5	6.7	6	11	5	5	4		0
LSD(5%)	0.40	0.12	0.15	0.13	0.14	0.58	0.54	0.87		0
MCV (%)							8	6		
LSR (%)							21	21		

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 24' (3 x 21' harvested)
 Seeded: 6/1/2003 (20 lbs PLS/A)
 Cuttings: clipped for weed control in 2003, four in 2004
 Insects: No insecticide applied, below average PLH pressure in 2005
 Fertility: 0-78-234 + 3 boron lbs/acre
 * Hopperburn rating 1 to 9 (1=no burn)

Table 11.

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

Sown Apr 2004

Non-irrigated

Entry	25-May	22-Jun	25-Jul	24-Aug	19-Oct	2005 Total
Genoa	2.86	1.81	1.61	1.49	1.02	8.80
HybriForce 420/wet	2.78	1.74	1.55	1.58	0.98	8.63
41M120**	2.66	1.77	1.52	1.40	1.00	8.35
Rebound 5.0	2.76	1.74	1.48	1.38	0.91	8.27
41M130**	2.57	1.68	1.49	1.53	0.92	8.19
Pioneer 54V46	2.54	1.66	1.51	1.49	0.92	8.12
Pioneer 54Q25	2.71	1.61	1.43	1.38	0.94	8.07
SummerGold	2.66	1.57	1.41	1.35	0.91	7.89
WL 348 AP	2.73	1.66	1.38	1.31	0.80	7.87
WL 335 HQ	2.61	1.62	1.35	1.29	0.84	7.71
Brown Seed 377 Hybrid**	2.66	1.51	1.32	1.27	0.83	7.58
DKA42-15	2.56	1.53	1.37	1.24	0.84	7.54
Garst 6420	2.55	1.45	1.34	1.27	0.82	7.44
Rebel	2.50	1.36	1.23	1.22	0.79	7.10
Rugged	2.35	1.37	1.23	1.08	0.73	6.75
Saranac	2.18	1.31	1.10	0.99	0.59	6.17
Vernal	2.10	1.24	1.12	1.03	0.61	6.10
Mean	2.55	1.55	1.37	1.31	0.84	7.62
CV%	6	8	7	14	12	6
LSD 5%	0.22	0.16	0.13	0.26	0.14	0.63
MCV (%)						8
LSR (%)						23

Location: Mich. State Univ. Exp. Station, East Lansing
 Design: RCB, plot size 3 x 24' (3 x 21' harvested)
 Seeded: 4/9/2004 (20 lbs PLS/A)
 Soil Type: Capac loam, tile drainage
 Cuttings: Three in 2004 (yield not included due to high CV%)
 Insects: Baythroid applied prior to and after to cut one

**Experimental Cultivar

Table 12.

Michigan State Alfalfa Variety Trial
East Lansing Potato Leafhopper-Resistant Alfalfa Trial

Sown Apr 2004

Non-irrigated

DM tons/acre

Entry	25-May	22-Jun	25-Jul	24-Aug	19-Oct	2005	2004	2-yr.	Hopperburn*	
						Total	Total	Total	cut 2	cut 3
42H169**	1.75	1.64	1.51	1.18	0.98	7.06	2.73	9.79	1.0	1.0
42H153**	1.98	1.48	1.41	1.15	0.83	6.85	2.31	9.16	1.0	1.0
Pioneer 54H91	1.85	1.40	1.34	0.99	0.80	6.38	2.77	9.15	1.0	1.0
Garst 6325	1.44	1.49	1.33	1.09	0.81	6.17	2.77	8.94	2.3	2.0
Vernal	1.92	1.18	1.20	0.86	0.73	5.90	2.24	8.14	3.8	2.0
Saranac	1.92	1.24	1.15	0.79	0.57	5.67	2.13	7.80	4.8	2.3
Mean	1.81	1.41	1.32	1.01	0.79	6.34	2.49	8.83	2.3	1.6
CV%	14	8	7	9	12	5	8	3	48	25
LSD 5%	0.39	0.16	0.13	0.13	0.14	0.40	0.30	0.49	1.6	0.5
MCV%						6	12	6		
LSR%						28	47	25		

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

Design: RCB, plot size 3 x 24' (3 x 21' harvested)

Seeded: 4/9/2004 (20 lbs PLS/A)

Soil Type: Capac loam, tile drainage

Insects: below average PLH pressure in 2005

Cuttings: three in the seeding year

* Hopperburn rating 1 to 9 (1=no burn)

** Experimental Cultivar