



## 2009 Michigan Grass Variety Trials Report

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### Comments on the 2009 Growing Season

The spring of 2009 will be remembered for the thirteen inches of rain that fell upon snowmelt saturated ground (Fig 1.) All that precipitation resulted in only a few days suitable for field work in April and May, delaying harvest for many producers and resulting in lower quality first cutting forage. Low temperatures prevailed and only exceeded 90° F for a one week in June. In the south half of the state, there was no “summer slump” in forage growth, due to above-average rainfall and cooler conditions that extended into July. Rainfall total (Apr.-Oct.) for East Lansing was 9.2 in. over the 30-year average, while Chatham and Lake City totals were near-normal.

Grass variety trials are seeded with a Carter Nursery seeder in plot lengths of 15 ft. or more at a width of 3 or 6 ft into a conventionally prepared seedbed. Species evaluated include: smooth/hybrid brome, perennial/hybrid/Italian ryegrass, festulolium, orchardgrass, timothy, Kentucky bluegrass, Reed canary, and Tall fescue. Weeds are controlled with the appropriate herbicide when necessary and soil tests are taken with amendments applied annually. Hay trials, both annual and perennial (East Lansing) are harvested at leaf lengths of 12+ inches or just prior to boot stage, and grazing trials (Chatham and Lake City) are harvested at 8+inches using Angus steers. Grazing trials (plots are mowed following grazing events if grass residual heights are greater than 6 inches. Nitrogen is applied in the form of urea (early spring) or ammonium sulfate at a rate of 50 lbs of actual N/acre at green-up and following each harvest.

### 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 receives more snow. Winterhardiness and persistence are important characteristics in the Upper Peninsula. A flail harvester is used to obtain yield from one-half of the plot while the other half is left for intensive grazing. Visual ratings of plot consumption are made approximately 24 hrs after the cattle begin grazing. Yield, stand ratings, and preference results for this trial are available in Table 1.



### Lake City (44.35°N) in 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. Trials here are managed as intensively grazed pastures with nitrogen fertilizer applications at green-up and following grazing events. Trials at Lake City are usually grazed three to four times per year. Yield data for this trial is presented in table 2 and

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forage quality in table 3 for the 2006 seeding. An animal preference rating (based on a visual estimate of stand consumption) is included for the 2006 trial.

### **East Lansing (42.72°N) in Southern Lower Michigan**

Four grass hay variety trials (3 perennial & 1 annual) were harvested at East Lansing in southern lower-Michigan (location 2). East Lansing trials are located at the Crop and Soil Sciences Agronomy Farm in south-central Michigan. Four cuttings per year are normally harvested at this location. The grass variety trials are blocked by species and an entire block is harvested at the same time so maturity will vary; however, the goal is to harvest at the boot stage. Yield and data are reported in tables 4-6 for perennial trials. The 2009 annual ryegrass variety trial was harvested three times; yield and forage quality results are presented in table 7.

### **Statistics**

Data are analyzed using PROC GLM or MIXED in SAS v. 8.2 software (Cary, NC). Means and Fischer's Least Significant Difference (LSD) are reported at the bottom of each column. 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.

Fig.1

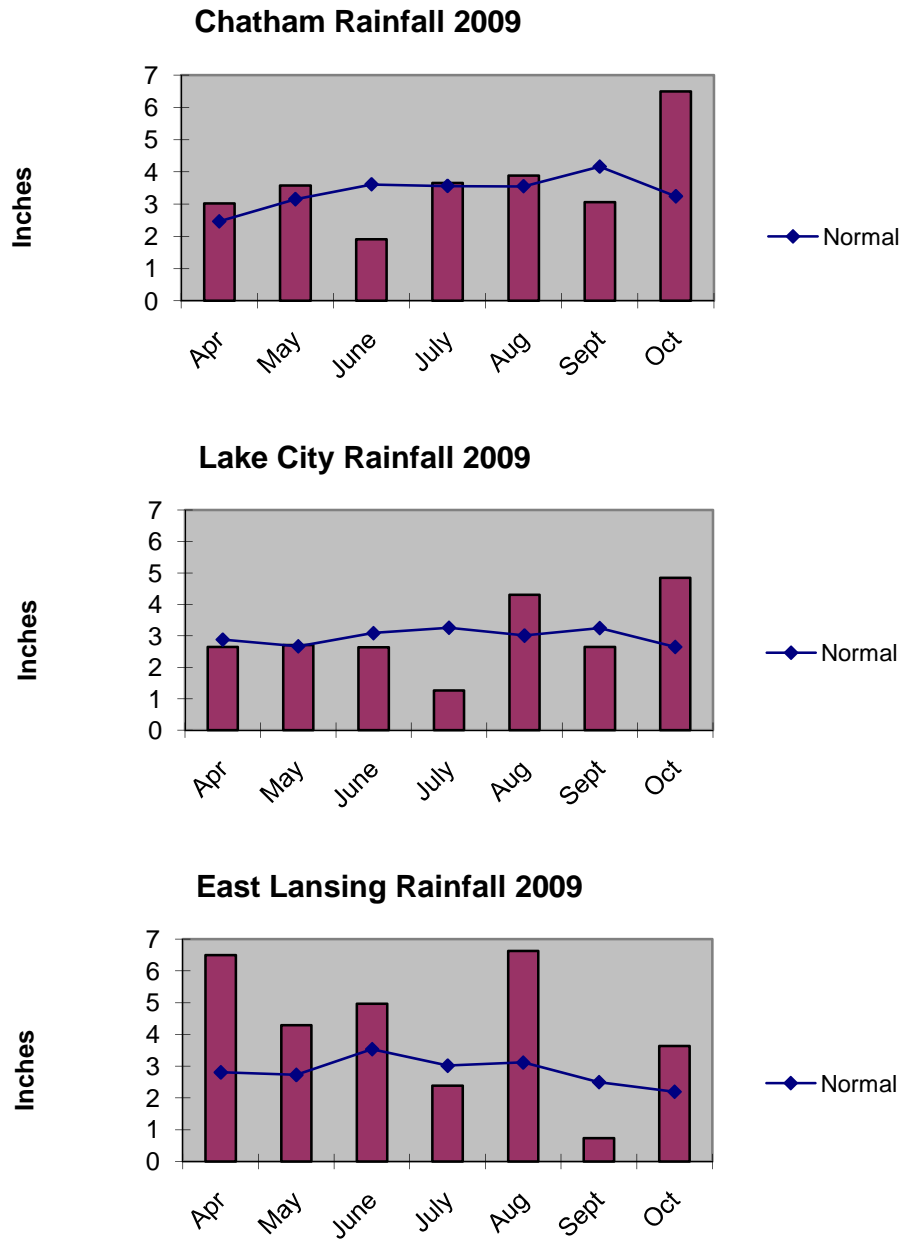


Table 1. Forage yields, animal preference, and stand ratings of perennial grass species seeded May 2008 in Chatham (UP Exp. Sta.) without irrigation.

Species/Marketer	Cultivar	1-Jun	26-Jun	27-Jul	30-Sep	2009	Preference 1 to 5*				Stand 1 to 10 <sup>†</sup>
							cut 1	cut 2	cut 3	cut 4	spring09
		dry matter yield tons/acre									
<i>Orchardgrass</i>											
DLF International	Endurance	0.56	0.53	0.57	0.38	2.04	3.9	3.9	2.6	3.9	8.5
FFR	OG0604WH	0.62	0.50	0.54	0.35	2.01	3.0	3.6	3.8	3.6	8.8
FFR	OG0606G	0.44	0.59	0.59	0.36	1.98	4.3	4.3	3.4	4.3	8.3
FFR	OG0505G	0.48	0.52	0.54	0.43	1.96	3.6	3.6	2.6	3.6	8.5
check	Elsie	0.57	0.46	0.58	0.33	1.94	4.1	4.0	2.9	4.0	8.3
FFR	OG0605G	0.53	0.42	0.53	0.26	1.74	3.8	3.9	3.1	3.9	9.0
<i>Perennial Ryegrass</i>											
Pickseed International	PSG06BLh**	0.41	0.51	0.62	0.40	1.93	4.4	3.9	3.4	3.9	6.5
Pickseed International	PSG47M01	0.50	0.63	0.45	0.26	1.84	3.5	3.6	3.8	3.6	7.3
Pickseed International	PSGAM108	0.47	0.67	0.39	0.15	1.67	3.4	2.5	2.5	2.5	7.5
check	BG34	0.41	0.58	0.45	0.21	1.65	2.4	2.4	2.1	2.4	6.3
Mean		0.50	0.54	0.52	0.31	1.88	3.6	3.6	3.0	3.6	7.9
CV%		28	21	18	33	13	10	13	34	13	7
LSD (0.05) <sup>‡</sup>		0.2	0.17	0.13	0.14	0.35	0.5	0.6	1.5	0.6	0.7

Design: RCB, four replications, 3 x 25 ft plots

Seeded: 15-May-08

Soil Type: Eben very cobbly sandy loam

Fertilizer: 200 lbs N/a. (50 lbs/a. following green-up, 50 lbs/a. after cuts 1-3)

\*Visual Rating 1-5 with 5 = 80-100% of plot consumed, 4=60-80%, 3=40-60%, 2=20-40%, 1=0-

\*\*Hybrid ryegrass (*Lolium hybridum*)

<sup>†</sup> Visual Rating 1-10 with 10 =90-100% ground cover

<sup>‡</sup>95% certain that values which are separated by a number greater than the LSD are statistically different

Table 2. Forage yields and animal preference ratings for perennial grass species seeded in July 2006 in Lake City, MI without irrigation.

<i>Species/Marketer</i>	Cultivar	cut 1	cut 2	cut 3	2009*	2008	2007	3-yr	Preference
DM tons/acre									1 to 5**
<i>Orchardgrass</i>									
Standish Milling	Bounty	1.10	0.53	0.50	2.13	3.79	4.90	10.82	1.45
American Grass Seed Prod.	Ambrosia	0.88	0.40	0.30	1.57	3.66	4.85	10.08	2.00
Standish Milling	Extend	1.16	0.50	0.55	2.21	3.36	4.53	10.10	1.68
Columbia Seed	Harvestar	0.81	0.49	0.38	1.68	3.08	4.76	9.52	2.52
<i>Perennial Ryegrass</i>									
Columbia Seed	Verano	0.38	0.28	.	0.66	1.23	4.14	6.03	4.78
Michigan State Seed Sol.	Eurostar	0.56	0.22	.	0.78	1.25	4.11	6.14	4.78
<i>Reed canary</i>									
Standish Milling	Marathon	0.98	0.32	.	1.30	2.66	4.32	8.28	3.70
public	Chiefton	1.00	0.39	.	1.39	2.83	2.52	6.74	3.50
<i>Tall fescue</i>									
Standish Milling	Enhance	0.57	0.45	.	1.01	2.85	4.74	8.60	3.78
American Grass Seed Prod.	Verdant	0.54	0.44	.	0.97	2.57	3.78	7.32	3.60
<i>Timothy</i>									
Allied Seed	Summit	1.12	0.33	.	1.45	2.40	3.80	7.65	4.30
Allied Seed	Crest	0.95	0.30	.	1.25	2.46	3.61	7.32	4.45
public	Climax	0.74	0.24	.	0.98	2.38	3.07	6.43	4.70
	Mean	0.83	0.37	0.43	1.34	2.30	4.09	8.08	3.48
	CV%	16	11	34	13	17	9	8	18
	LSD (0.05)‡	0.18	0.16	0.23	0.4	0.6	0.57	1.3	0.91

Design: RCB, plot size 3 x 24'

Seeded: 24-Jul-06

Soil Type: Nester Sandy loam

Fertilizer: 150 lbs N/a. (50 lbs/a. following green-up, 50 lbs/a. after cuts 1-2)

\* Data from a grazing event in July was not obtained

\*\*Visual Rating (cut 1) from 1-5 with 5 = 80-100% of plot consumed, 4=60-80%, 3=40-60%, 2=20-40%, 1=0-

‡95% certain that values which are separated by a number greater than the LSD are statistically different

Table 3. Forage quality (crude protein, relative feed value) of perennial grass species seeded Jul 2006 in Lake City,MI without irrigation.

<i>Species/Marketer</i>	Cultivar	cut 1, 2008		cut 3, 2008	
		CP%	RFV	CP%	RFV
<i>Orchardgrass</i>					
Standish Milling	Bounty	16.0	110.6	19.5	99.4
American Grass Seed Producers	Ambrosia	16.8	114.7	19.7	97.1
Standish Milling	Extend	18.5	109.8	18.2	94.9
Columbia Seed	Harvestar	17.7	118.3	17.1	97.6
<i>Perennial Ryegrass</i>					
Columbia Seed	Verano	19.8	174.9	18.6	112.8
Michigan State Seed Solutions	Eurostar	18.7	155.5	19.1	117.8
<i>Reed canary</i>					
Standish Milling	Marathon	20.0	117.4	18.3	108.8
public	Chiefton	18.7	116.9	18.1	104.9
<i>Tall fescue</i>					
Standish Milling	Enhance	20.0	130.7	16.8	111.3
American Grass Seed Producers	Verdant	20.0	141.8	16.7	107.9
<i>Timothy</i>					
Allied Seed	Summit	17.2	117.2	16.0	102.6
Allied Seed	Crest	17.0	122.9	14.8	98.3
public	Climax	17.3	128.7	15.4	111.6
	Mean	18.3	127.7	17.6	105.0
	CV%	8	9	6	10
	LSD (0.05)‡	2.0	15.8	2.8	9.7

Design: RCB, plot size 3 x 24'  
 Seeded: 24-Jul-06  
 Soil Type: Nester Sandy loam  
 Fertilizer: 150 lbs N/a. (50 lbs/a. following green-up, 50 lbs/a. after cuts 1-2)

‡95% certain that values which are separated by a number greater than the LSD are statistically different

Table 4. Forage yield of perennial grass species seeded Apr 2006 in East Lansing, MI without irrigation.

<i>Species/Marketer</i>	Cultivar	cut 1	cut 2	cut 3	2009	2008	2007	2006	4-yr
		DM tons/acre							
<i>Orchardgrass</i>									
Standish Milling	Extend	0.79	1.14	1.31	3.24	3.60	6.53	1.89	15.26
Standish Milling	Bounty	0.97	0.90	1.04	2.91	3.55	6.21	2.11	14.78
DLF International Seed	IS-OG 39	1.04	1.01	0.83	2.87	3.71	6.12	1.94	14.64
Columbia Seed	Harvestar	0.64	1.10	1.44	3.18	3.10	6.37	1.88	14.53
American Grass Seed Prod.	Ambrosia	0.63	1.08	1.46	3.17	3.31	5.91	1.76	14.15
Ag Research, LTD	AGRDG 101	0.26	0.48	0.04	0.78	0.42	3.50	1.82	6.52
<i>Perennial Ryegrass</i>									
Lewis Seed	Quartermaster (4n)	0.56	1.35	0.31	2.22	2.26	4.68	2.66	11.82
Standish Milling	Boost (2n)	0.46	1.02	0.28	1.76	2.06	5.00	2.48	11.30
Michigan St. Seed Solutions	Eurostar (2n)	0.53	1.16	0.50	2.19	1.56	4.74	2.00	10.49
Columbia Seed	Verano (4n)	0.30	1.07	0.61	1.98	1.26	4.53	2.01	9.78
Cropmark	LP2005GA (4n)	0.50	1.16	0.27	1.93	0.32	4.21	2.53	8.99
<i>Reed Canary</i>									
Standish Milling	Marathon	0.61	1.33	0.92	2.85	3.23	5.58	3.28	14.94
Michigan St. Seed Solutions	Chiefton	0.61	1.36	0.95	2.92	3.53	4.37	3.40	14.22
<i>Tall fescue</i>									
Standish Milling	Enhance	1.00	1.12	0.72	2.84	3.54	6.55	3.37	16.30
Various sources	Fawn	1.09	0.98	0.66	2.74	3.71	5.78	3.05	15.28
American Grass Seed Prod.	Verdant	0.81	0.89	0.52	2.22	3.29	6.11	3.00	14.62
<i>Timothy</i>									
Allied Seed	Crest	2.42	0.15	0.44	3.00	5.05	6.76	1.82	16.63
Allied Seed	Summit	2.68	0.16	0.28	3.12	4.65	6.84	1.63	16.24
Michigan St. Seed Solutions	Climax	1.78	0.12	0.12	2.02	4.36	5.72	1.18	13.28
	Mean	0.93	0.92	0.67	2.52	2.97	5.55	2.31	13.35
	CV%	16	15	23	10	10	13	12	5
	LSD (0.05)†	0.20	0.19	0.22	0.36	0.46	1.01	0.46	1.26

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

Seeded: 21-Apr-06

Soil Type: Capac loam, tile drainage

Fertilizer: 200 lbs N/a. (50 lbs/A following emergence, 50 lbs/A after cuts 1-3)

† 95% certain that values which are separated by a number greater than the LSD are statistically different

Table 5. Forage yield of perennial grass species seeded May 2007 in East Lansing, MI without irrigation.

<i>Species/Marketer</i>	<i>Cultivar</i>	cut 1	cut 2	cut 3	2009	2008	2007	3-yr
<i>Festulolium</i>		DM tons/acre						
Rose Agri-Seed, Inc.	Spring Green, organic	0.87	1.34	0.47	2.68	3.07	1.91	7.66
Allied Seed	Gain	0.79	1.27	0.50	2.56	2.14	2.31	7.01
<i>Kentucky bluegrass</i>								
ProSeeds Marketing	Rad5	0.73	0.85	0.31	1.89	3.05	0.00	4.94
Allied Seed	Lato	0.99	0.92	0.30	2.21	2.61	0.00	4.82
ProSeeds Marketing	Thorough Blue	0.85	0.89	0.25	1.99	2.30	0.00	4.29
<i>Orchardgrass</i>								
Rose Agri-Seed, Inc.	Megabite	1.48	0.90	0.68	3.06	5.37	2.18	10.61
public	Potomac	1.31	0.93	0.67	2.91	5.48	2.02	10.41
Seed Res. of OR	OG0204G	1.20	1.01	0.75	2.96	5.39	1.99	10.34
Allied Seed	OG0203G	1.33	1.14	0.64	3.11	5.09	2.01	10.21
ProSeeds Marketing	Warrior II	1.16	1.01	0.81	2.98	5.01	2.16	10.15
AMPAC Seed	AMOG4**	1.16	0.92	0.85	2.93	4.49	2.28	9.70
Rose Agri-Seed, Inc.	Elsie	1.32	0.99	0.79	3.10	4.29	2.12	9.51
<i>Meadow/hybrid brome</i>								
Seed Res. of OR	Montana	1.52	1.33	0.76	3.61	5.59	1.52	10.72
DLF International	AC Knowles	0.79	1.11	0.38	2.28	4.20	1.63	8.11
<i>Perennial Ryegrass</i>								
Barenbrug	Remington (4n)	0.49	2.05	0.42	2.96	3.14	1.96	8.06
Barenbrug	Barsprinter (2n)	0.35	1.39	0.34	2.08	2.74	2.27	7.09
AMPAC Seed	AMPOW4n (4n)	0.55	1.72	0.29	2.56	1.94	2.17	6.67
Czech Republic	Korok (4n)	0.35	1.90	0.40	2.65	1.93	2.02	6.60
AgResearch, LTD	KLp401 (4n)	0.52	1.88	1.14	3.54	0.99	1.97	6.50
Barenbrug	BG34 (blend)	0.33	1.26	0.56	2.15	2.12	2.01	6.28
AgResearch, LTD	KLp507 (4n)	0.33	2.03	0.34	2.70	0.61	1.90	5.21
Cropmark Seeds	LP2006DA (4n)	0.00	0.00	0.00	0.00	0.00	2.51	2.51
Cropmark Seeds	LP2005GA (4n)	0.00	0.00	0.00	0.00	0.00	1.78	1.78
<i>Tall fescue</i>								
ProSeeds Marketing	Noria	1.38	2.04	1.05	4.47	5.10	2.78	12.35
Rose Agri-Seed, Inc.	Cowgirl	1.52	1.88	1.14	4.54	5.22	2.56	12.32
Seed Res. of OR	TFO203G	1.38	1.61	0.60	3.59	5.63	2.29	11.51
Barenbrug	BarElite	0.93	1.78	0.68	3.39	5.18	2.35	10.92
<i>Timothy</i>								
public	Climax	1.19	1.81	0.38	3.38	4.77	2.26	10.41
Barenbrug	Barpenta	0.99	2.18	0.45	3.62	4.30	2.11	10.03
Barenbrug	Barfleo	0.00	0.48	0.00	0.48	0.52	0.87	1.87
	Mean	0.86	1.29	0.53	2.68	3.49	2.07	7.95
	CV%	20	16	28	13	11	12	9
	LSD (0.05)†	0.24	0.29	0.19	0.49	0.79	0.38	1.03

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

Seeded/Soil Type: 5/7/2007 Capac loam, tile drainage

Fertilizer: 200 lbs N/a. (50 lbs/A following emergence, 50 lbs/A after cuts 1-3)

† 95% certain that values which are separated by a number greater than the LSD are statistically different

\*\*experimental cultivar



Table 6. Forage yield of perennial grass species seeded May 2009 in East Lansing, MI without irrigation.

<i>Species/Marketer</i>	Cultivar	cut 1	cut 2	2009
<i>Kentucky bluegrass</i>				
check	Ginger	0.29	.	0.29
Michigan State Seed	Big Blue	0.06	.	0.06
<i>Meadow / Tall fescue</i>				
CISCO Seeds	Goliath (TF)	1.12	0.77	1.89
check	Pradel (MF)	0.81	0.70	1.51
AMPAC Seed	Preval (MF)	0.60	0.66	1.26
check	KY31E+ (TF)	0.35	0.86	1.21
<i>Meadow/hybrid brome</i>				
check	Montana	0.70	0.79	1.49
CISCO Seeds	MacBeth	0.55	0.79	1.33
<i>Orchardgrass</i>				
Smith Seed	Persist	0.73	0.65	1.38
Radix Research	RAD LCF25	0.72	0.66	1.38
check	Potomac	0.67	0.67	1.34
<i>Perennial Ryegrass</i>				
Columbia Seed	RAD CPS211	0.41	0.70	1.11
check	Calibra	0.28	0.53	0.81
check	Linn	0.38	0.38	0.76
	Mean	0.55	0.68	1.13
	CV%	50	16	25
	LSD (0.05)†	0.39	0.13	0.4

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

Seeded/Soil Type: 5/13/09 Capac loam, tile drainage

Fertilizer: 150 lbs N/a. (50 lbs/A following emergence, 50 lbs/A after cuts 1 and 2)

† 95% certain that values which are separated by a number greater than the LSD are statistically different

Table 7. Forage yield and quality (crude protein, relative feed value) of annual ryegrass species seeded May 2009 in East Lansing without irrigation.

Breeder/Marketer	Entry	8-Jun	28-Jul	1-Sep	Total	cut 1		cut 2		cut 3	
						CP%	RFV	CP%	RFV	CP%	RFV
		DM tons/acre									
Blue Moon Farm	B-9.0075 (2n)	1.18	0.39	1.42	2.99	13.8	125.5	20.4	119.0	11.3	108.0
Smith Seed	Big Boss (4n)	0.90	0.46	1.58	2.94	12.8	115.8	19.7	108.8	9.6	99.7
public	Gulf (2n)	1.19	0.37	1.32	2.89	12.1	107.1	20.7	114.7	11.2	99.1
Smith Seed	Ed (2n)	1.10	0.30	1.29	2.69	11.4	110.4	19.2	106.5	9.8	98.9
Blue Moon Farm	B-8.1441 (2n)	0.91	0.37	1.30	2.58	13.7	122.7	20.2	110.8	9.4	98.6
AMPAC Seed	Feast II (4n)	0.95	0.37	0.93	2.25	14.7	122.9	22.2	119.1	12.5	105.2
AMPAC Seed	Nabucco (4n)	0.79	0.45	0.94	2.18	15.0	124.7	23.5	119.6	12.7	115.0
	Mean	0.97	0.39	1.25	2.64	13.4	118.4	20.9	114.1	10.9	103.5
	CV%	12	23	16	11	7	3	7	4	10	3
	LSD (0.05)†	0.18	0.13	0.29	0.42	1.3	5.4	2	6.9	1.6	4.4

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

Seeded: 12-May-09

Soil Type: Colwood-Brookston, tile drainage

Fertility: 150 lbs N/a. (50 lbs/A following emergence, 50 lbs/A after cuts 1-2)

† 95% certain that values which are separated by a number greater than the LSD are statistically different