



2010 Michigan Grass Variety Trials Report

Richard Leep, Timothy Dietz, Doo-Hong Min, and Christian Kapp
November 16, 2010

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. 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. The grazing trials 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. The precipitation Apr.-Oct. 2010 for each location is presented in Figure 1.

Chatham (46.34°N) in the Upper Peninsula

The Upper Peninsula Experiment Station (Chatham, Alger Co.) 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 cattle begin grazing. Yield and preference ratings from four harvests for this trial are available in Table 1.

East Lansing (42.72°N) in Southern Lower MI

Two grass perennial hay variety trials were harvested at East Lansing in southern lower-Michigan. East Lansing trials are located at the Crop and Soil Sciences Agronomy Farm in south-central Michigan. The grass variety trials are blocked by species and an entire block is harvested at the same time so maturity will vary by cultivar; however, the goal is to harvest at the boot stage. A final stand rating and yield data for the 2007 trial is reported in table 2 and yield data for the 2009 trial is reported table 3.

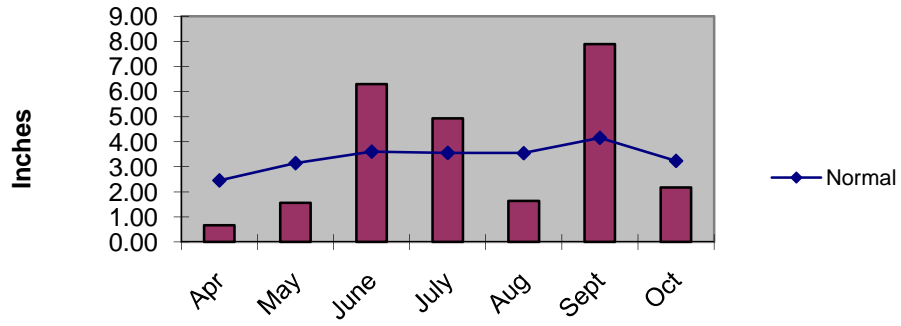
Kellogg Biological Station (42.41°N) in Southwestern MI

A trial for pasture grass and grass-legume mixtures was established March 2010 at the Kellogg Biological Station near Hickory Corners. This trial is in a paddock intensively grazed by Holstein heifers. The soil is a sandy loam and plant growth is typically slowed in July and August. Dry matter yield and heifer preference ratings are presented in table 4.

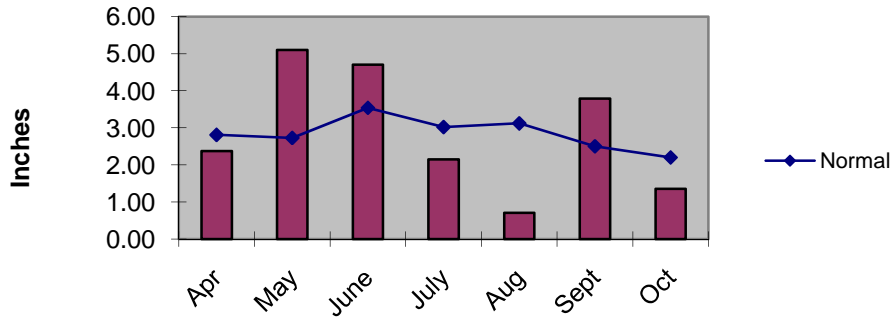
Statistics

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.

Chatham Rainfall 2010



East Lansing Rainfall 2010



KBS Rainfall 2010

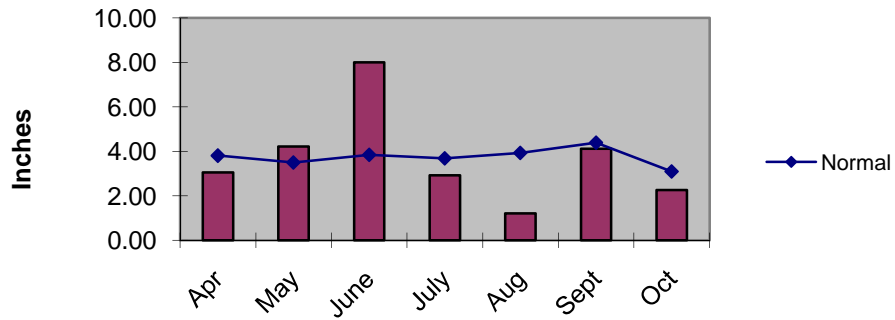


Table 1. Forage yields and animal preference of perennial grass species seeded May 2008 in Chatham (UP Exp. Sta.) without irrigation.

Species/Marketer	Cultivar	28-May	24-Jun	9-Aug	20-Sep	2010	2009	total	Preference			
									cut 1	cut 2	cut 3	cut 4
		dry matter yield tons/acre							1 to 5*			
<i>Orchardgrass</i>												
DLF International	Endurance	0.46	0.26	0.39	0.34	1.45	2.04	3.49	3	3.75	2.75	3.75
FFR	OG0604WH	0.53	0.21	0.37	0.33	1.43	2.01	3.44	3	3.75	2.75	3.25
FFR	OG0606G	0.42	0.22	0.37	0.33	1.35	1.98	3.32	3.75	4	3.5	3.75
FFR	OG0505G	0.43	0.22	0.39	0.32	1.35	1.96	3.31	3.25	3.5	2.75	3.5
check	Elsie	0.38	0.23	0.37	0.38	1.35	1.94	3.28	3.5	3.75	3	3.5
FFR	OG0605G	0.42	0.21	0.46	0.37	1.47	1.74	3.21	3.5	3.5	2.75	4
<i>Perennial Ryegrass</i>												
Pickseed International	PSGAM108	0.14	0.23	0.34	0.32	1.03	1.67	2.70	2.5	2.5	4	3.75
check	BG34	0.08	0.16	0.34	0.32	0.90	1.65	2.55	2.75	2	4	3.5
Pickseed International	PSG06BLh**	0.00	0.00	0.00	0.00	0.00	1.93	1.93
Pickseed International	PSG47M01	0.00	0.00	0.00	0.00	0.00	1.84	1.84
Mean		0.36	0.22	0.38	0.34	1.03	1.88	2.91	3.2	3.3	3.2	3.6
CV%		22	20	25	23	13	13	10	18	18	18	9
LSD (0.05)‡		0.11	0.06	NS	NS	0.24	0.35	0.49	0.8	0.8	0.9	0.5

Design: RCBD, four replications, 3 x 25 ft plots, w/o irrigation

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)

Cuttings: four in 2009

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

**Hybrid ryegrass (*Lolium hybridum*)

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

Winterkilled: PSG06BLh PSG47M01

Table 2. Forage yield and density rating of perennial grass species seeded May 2007 in East Lansing. stand

Species/Marketer	Cultivar	cut 1	cut 2	cut 3	cut 4	2010	2009	2008	2007	4-yr	rating*		
<i>Festulolium</i>		DM tons/acre											
Rose Agri-Seed, Inc.	Spring Green, organic	0.76	1.16	0.38	.	2.30	2.68	3.07	1.91	9.96	4.8		
Allied Seed	Gain	0.74	1.17	0.41	.	2.31	2.56	2.14	2.31	9.32	2.5		
<i>Kentucky bluegrass</i>													
Allied Seed	Lato	0.87	0.88	.	.	1.75	2.21	2.61	0.00	6.57	5		
ProSeeds Marketing	Rad5	0.35	0.82	.	.	1.17	1.89	3.05	0.00	6.11	5		
ProSeeds Marketing	Thorough Blue	0.65	0.65	.	.	1.30	1.99	2.30	0.00	5.59	5		
<i>Orchardgrass</i>													
Rose Agri-Seed, Inc.	Megabite	1.85	0.87	0.74	0.38	3.84	3.06	5.37	2.18	14.45	4		
public	Potomac	1.70	1.04	0.72	0.59	4.05	2.91	5.48	2.02	14.46	4.3		
Seed Res. of OR	OG0204G	1.59	0.94	0.91	0.41	3.85	2.96	5.39	1.99	14.19	4.5		
Allied Seed	OG0203G	1.56	1.05	0.56	0.52	3.69	3.11	5.09	2.01	13.90	4.5		
ProSeeds Marketing	Warrior II	1.54	0.99	0.67	0.66	3.86	2.98	5.01	2.16	14.01	4		
AMPAC Seed	AMOG4**	1.72	0.97	0.70	0.72	4.10	2.93	4.49	2.28	13.80	4.3		
Rose Agri-Seed, Inc.	Elsie	1.61	1.03	0.67	0.56	3.86	3.10	4.29	2.12	13.37	4.1		
<i>Meadow/hybrid brome</i>													
Seed Res. of OR	Montana	1.84	0.99	0.56	.	3.38	3.61	5.59	1.52	14.10	4.1		
DLF International	AC Knowles	0.80	0.90	0.31	.	2.01	2.28	4.20	1.63	10.12	2.4		
<i>Perennial Ryegrass</i>													
Barenbrug	Remington (4n)	0.59	1.66	.	.	2.25	2.96	3.14	1.96	10.31	4.9		
AMPAC Seed	AMPOW4n (4n)	0.85	1.26	.	.	2.11	2.56	1.94	2.17	8.78	3.9		
Barenbrug	Barsprinter (2n)	0.38	1.03	.	.	1.41	2.08	2.74	2.27	8.50	4.8		
Czech Republic	Korok (4n)	0.36	1.41	.	.	1.77	2.65	1.93	2.02	8.37	4.1		
AgResearch, LTD	KLp401 (4n)	0.44	1.37	.	.	1.81	3.54	0.99	1.97	8.31	3.9		
Barenbrug	BG34 (blend)	0.37	0.97	.	.	1.34	2.15	2.12	2.01	7.62	4.3		
AgResearch, LTD	KLp507 (4n)	0.35	1.13	.	.	1.48	2.70	0.61	1.90	6.69	2.8		
Cropmark Seeds	LP2006DA (4n)	0.00	0.00	.	.	0.00	0.00	0.00	2.51	2.51	1.6		
Cropmark Seeds	LP2005GA (4n)	0.00	0.00	.	.	0.00	0.00	0.00	1.78	1.78	1.6		
<i>Tall fescue</i>													
Rose Agri-Seed, Inc.	Cowgirl	1.80	1.33	0.87	0.77	4.77	4.54	5.22	2.56	17.09	5		
ProSeeds Marketing	Noria	1.44	1.42	0.92	0.91	4.68	4.47	5.10	2.78	17.03	5		
Seed Res. of OR	TFO203G	1.62	1.10	0.78	0.55	4.05	3.59	5.63	2.29	15.56	5		
Barenbrug	BarElite	1.34	1.19	0.69	0.64	3.87	3.39	5.18	2.35	14.79	5		
<i>Timothy</i>													
Barenbrug	Barpenta	3.39	0.50	.	.	3.90	3.62	4.30	2.11	13.93	3.6		
public	Climax	3.09	0.28	.	.	3.37	3.38	4.77	2.26	13.78	3.6		
Barenbrug	Barfleo	1.75	0.57	.	.	2.32	0.48	0.52	0.87	4.19	1.4		
Mean		1.18	0.96	0.66	0.61	2.69	2.68	3.49	2.07	10.64	4		
CV%								14	13	11	12	7	12
LSD (0.05)†								0.9	0.49	0.79	0.38	1.4	0.7

Design: RCB, plot size 3 x 25 (3 x 22 harvested), w/o irrigation

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

* final stand visual rating, Oct 20, 2010- 5= 81-100 % , 4= 61-80 % , 3= 41-60% , 2= 21-40% , 1= 0-20%

**experimental cultivar

Table 3. Forage yield of perennial grass species seeded May 2009 in East Lansing, MI without irrigation.

<i>Species/Marketer</i>	Cultivar	19-May	15-Jun	12-Jul	20-Oct	2010	2009	total
		cut 1	cut 2	cut 3	cut 4			
<i>Kentucky bluegrass</i>		DM tons/acre						
check	Ginger	1.90	1.01	0.81	0.57	4.29	0.29	4.57
Rose Agri-Seed, Inc.	Big Blue	0.88	0.91	0.67	0.53	2.99	0.06	3.05
<i>Meadow / Tall fescue</i>								
CISCO Seeds	Goliath (TF)	2.19	1.27	0.97	1.62	6.05	1.89	7.94
check	KY31E+ (TF)	2.25	1.29	0.98	1.60	6.11	1.21	7.33
check	Pradel (MF)	2.09	0.82	0.79	1.33	5.03	1.51	6.54
AMPAC Seed	Preval (MF)	2.08	0.69	0.70	1.25	4.72	1.26	5.97
<i>Meadow/hybrid brome</i>								
CISCO Seeds	MacBeth	2.38	0.88	0.82	0.98	5.06	1.33	6.39
check	Montana	1.94	0.84	0.85	0.90	4.52	1.49	6.01
<i>Orchardgrass</i>								
check	Potomac	2.42	1.12	0.80	1.23	5.57	1.34	6.91
Smith Seed	Persist	2.47	0.96	0.81	1.24	5.48	1.38	6.86
Radix Research	RAD LCF25	1.98	1.28	0.75	1.41	5.42	1.38	6.79
<i>Perennial Ryegrass</i>								
Columbia Seed	RAD CPS211	0.91	0.68	0.29	0.41	2.28	1.11	3.39
check	Calibra	0.83	0.63	0.35	0.41	2.21	0.81	3.02
check	Linn	0.85	0.26	0.24	0.37	1.71	0.76	2.47
Mean		1.80	0.90	0.70	0.99	4.39	1.13	5.52
CV%		14	16	16	17	10	25	8
LSD (0.05)†		0.36	0.21	0.16	0.24	0.6	0.4	0.65

Design: RCB, plot size 3 x 25 (3 x 22 harvested), w/o irrigation
 Seeded/Soil Type: 5/13/09 Capac loam, tile drainage
 Fertilizer: 200 lbs N/a. (50 lbs/A at green-up, 50 lbs/A after cuts 1, 2, and 3)
 Cuttings: three in 2009

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

Table 4. Forage yield and Preference of pasture species seeded March 2010 in Hickory Corners, MI.

Cultivar(s)	species	Vigor rating*					Preference**	
			10-Jun	9-Jul	15-Sep	2010	cut 1	cut 2
Zorro	Ital. Ryegrass	5.0	1.50	0.84	0.18	2.52	3.5	1.3
Midwestern Grazer mix	OR,Fest,PR, MRC,WC	4.1	0.62	0.82	0.46	1.90	2.8	1.4
Feast II	Ital. Ryegrass	5.0	0.99	0.53	0.10	1.61	4.4	4.8
Potomac	OR	4.2	0.44	0.42	0.70	1.56	5.0	3.6
Jump Start mix	PR,Fest, Ital.Ryegrass	4.7	0.66	0.47	0.36	1.48	4.8	3.5
RADLCF25	OR	4.2	0.41	0.45	0.57	1.44	4.8	3.8
Grass Master mix	TF, OR,PR,Fest	4.8	0.48	0.42	0.54	1.43	4.0	2.4
Maxigraze_Haymate	Alfalfa, OR	3.5	0.57	0.43	0.40	1.40	3.4	2.8
Preval	Meadow Fescue	4.6	0.45	0.43	0.26	1.14	5.0	4.6
Pradel	Meadow Fescue	4.4	0.30	0.55	0.23	1.08	5.0	4.3
Power	PR,Fest, Ital.Ryegrass	4.9	0.49	0.34	0.09	0.91	5.0	5.0
Persist_ladino	OR, Ladino White Clover	2.7	0.39	0.35	0.16	0.90	3.5	3.9
Persist	OR	3.2	0.17	0.26	0.33	0.76	5.0	4.0
AC Knowles	Hybrid Brome	1.6	0.10	0.35	0.31	0.75	5.0	3.3
MacBeth	Meadow Brome	3.3	0.24	0.28	0.13	0.65	5.0	4.1
Mean		3.8	0.52	0.46	0.37	1.29	4.4	3.5
CV%		9	27	23	58	19	9	17
LSD (0.05)†		0.5	0.19	0.15	0.35	0.38	0.6	0.8

Design: legume/grass mixtures in separate block, plot size 3 x 25ft
 Seeded/Soil Type: 3/31/2010, Kalamazoo loam
 Fertilizer: 150 lbs N/a. (50 lbs/A at emergence, 50 lbs/A after cuts 1 and 2)
 Cuttings: three in 2010

*Visual rating (6/8/2010) based on percentage of ground cover of planted species (5=best)

**Visual rating after 24 hrs of grazing (5=best)

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

OR:orchardgrass, PR:perennial ryegrass, Fest:festulolium, TF:tall fescue,

MRC:medium red clover,WC:white clover