

2009 OHIO FORAGE PERFORMANCE TRIALS

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Summary

This report is a summary of performance data collected from forage variety trials in Ohio during 2009, including commercial varieties of alfalfa, orchardgrass, tall fescue, teff, and annual ryegrass in tests planted in 2006 to 2009 across three sites in Ohio: South Charleston, Wooster, and North Baltimore. For more details on forage species and management, see the *Ohio Agronomy Guide*, Ohio State University Extension Bulletin 472, (available online at <http://ohioline.osu.edu/b472/0008.html>).

Interpreting Yield Data in this Report

Least significant differences (LSD) are listed at the bottom of the tables along with the trial average (mean). Differences between varieties are statistically significant if the difference is equal to or greater than the LSD value. For example, if a variety yields more than another variety by the LSD value, then we are 95% sure that the yield difference is real, with only a 5% probability that the difference is due to chance alone. Results reported here should be representative of what might occur throughout the state but would be most applicable under environmental and management conditions similar to those at the testing sites. The CV value or coefficient of variation, listed at the bottom of each table is used as a measure of the precision of the experiment. Lower CV values will generally relate to lower experimental error in the trial.

Summary of 2009 Growing Conditions

Rainfall was above normal across most of the state for April through October, except in parts of northwest Ohio where rainfall was lower than normal. For example, at North Baltimore rainfall was 3.2 inches below the long-term average. Temperatures were generally warmer than normal in April through June and much cooler than normal July through October, except at North Baltimore where August and September were 3° F above normal.

Alfalfa

The trials at Wooster had the highest yields, averaging over 8 tons/acre. The new spring seeding at North Baltimore yielded 2.8 tons/acre. First harvest yields are not reported in the South Charleston trials because of equipment malfunctions. Alfalfa weevil populations were low at all sites and no insecticide was required for their control. Insecticide applications were used at all locations for control of potato leafhopper (PLH) in the standard yield trials. No insecticide was applied to control PLH in the alfalfa yield trial used to assess potato leafhopper resistance at South Charleston, seeded in 2008. High leafhopper populations resulted in significant yield differences among varieties at the July and September harvests in 2009, and the total over two years. Leafhopper resistant varieties are not resistant to alfalfa weevil, and need to be treated with insecticides if weevil populations exceed action thresholds.

Orchardgrass

The reported yield in 2009 was lower because the first-harvest yields were not included due to equipment malfunction. Good production was observed the remainder of the year, and total yield including the first harvest was likely over 4 tons/acre.

Tall Fescue

The tall fescue trial of endophyte-free varieties established at South Charleston in 2008 yielded 4.0 tons/acre. There were no significant differences among varieties during this first full year of production. New varieties that are endophyte free or that contain a non-toxic endophyte (eg., Jessup Max Q) have potential to increase animal performance, especially during the summer grazing season, and to provide forage for beef cattle and sheep during autumn and early winter.

Teff

Teff, *Eragrostis tef* (Zucc.) is an annual grass native to Ethiopia that is new to Ohio. It grows well under warm conditions, so produces especially well during our summer months. It appears to be most suitable for hay production. It does not tolerate frost, and must be planted in late May or early June in a well-prepared seedbed, and at a very shallow depth due to the small seed size.. This year it yielded a total of 4.1 tons of dry matter per acre from three harvests at South Charleston. For more information on its management, see the Cornell University Fact Sheet 24, "Teff as Emergency Forage", at <http://nmsp.css.cornell.edu/publications/factsheets/factsheet24.pdf>.

Annual Ryegrass

Total forage yields in the annual ryegrass trial seeded September 2008 were very high in 2009, ranging from 4.5 to 7.0 tons/acre among varieties. The first harvest was later than usual, which increased yield (but lowered forage quality), and the cool and moist summer conditions promoted excellent growth. Annual ryegrass is a cool-season annual bunch grass that is highly palatable and digestible. It has high seedling vigor and is well adapted to either conventional or no-till establishment methods.

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Inclusion of entries in Ohio Alfalfa Performance Trials does not constitute an endorsement of a particular entry by The Ohio State University, Ohio Agricultural Research and Development Center, or Ohio State University Extension. Where trade names appear, no discrimination is intended, and no endorsement is implied by The Ohio State University, Ohio Agricultural Research and Development Center, or Ohio State University Extension. 11/2009

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Summary of Alfalfa Variety Performance in Ohio

Standard Trials - Insecticide Applied (values are yield as a percentage of the trial average)

Variety	Marketer	Wooster		South	North	total site-yrs	avg all site yrs
		2006-09	2007-09	Charleston 2008-09	Baltimore 2009		
4A421	Mycogen Seeds	100				12	101
4S417	Mycogen Seeds				107	1	107
53Q30	Pioneer Hi-Bred Int'l.	97				8	99
54Q32	Pioneer Hi-Bred Int'l.				101	1	101
54V46	Pioneer Hi-Bred Int'l.	99	100			23	101
55V12	Pioneer Hi-Bred Int'l.				102	1	102
55V48	Pioneer Hi-Bred Int'l.		104	111	101	6	106
6400HT	Garst Seed Co.	97	102			27	101
6415	Garst Seed Co.		100			3	100
6417	Garst Seed Co.			105		2	105
64Q22	Garst Seed Co.				90	1	90
6552	Garst Seed Co.			97		2	97
A 4330	Producer's Choice			101	102	3	102
A 5225	Producer's Choice		99			3	99
Ameristand 403T	America's Alfalfa				95	9	99
Ameristand 407TQ	America's Alfalfa			101	99	3	101
Anchormate	Central Farm & Garden		101			3	101
DKA 41-18 RR	Monsanto	97				4	97
Everlast II	Crop Protection Service				106	1	106
FSG 329	Farm Science Genetics				95	1	95
FSG 420 LH	Farm Science Genetics				93	1	93
Genoa	NK Brand Seeds	100		97		18	102
King Fisher 243	Byron Seeds				97	1	97
L-447-HD	Legacy Seeds	101				4	101
PGI 459	Producer's Choice			99		2	99
Radiant HD	Ampac Seed				109	1	109
Radiant-AM	Ampac Seed	100				4	100
VERNAL	Public	95	98	91	96	91	92
WL 335 RR	Crop Protection Service	98				4	98
WL 343 HQ	Crop Protection Service	98	97	97	95	10	97
WL 363 HQ	Crop Protection Service			101	102	3	101
Trial Average Yield (annual tons/acre)		6.4	6.5	3.22 ^a	2.8	--	--
Number of site years		4	3	2	1	--	--

^a Total yield represents three harvest dates in 2009 at South Charleston

Seed Marketers of Varieties Included in 2009 Forage Performance Trials

America's Alfalfa	800-873-2532	Gries Seed Farms	419-332-5571	Pioneer Hi-Bred Int'l	See local retailer
Ampac Seed	574-268-9549	Hankins Seed	541-545-6649	Producer's Choice	608-786-1554
Cal West Seeds	608-786-1554	Lewis Seed Co.	541-466-3704	ProSeeds Marketing	541-928-9999
Central Farm & Garden	330-237-6446	Mid Valley Ag Prod.		Saddle Butte Ag.	541-491-3501
Crop Protection Service	See local retailer	Monsanto	See local	Seed Rsch. of Oregon	541-757-2663
Dairyland Seeds	800-236-0163	Mycogen Seeds	800-mycogen	Smith Seed Service	614-890-2929
DLF -International	800-445-2251	NK Brand Seeds	See local	Wax Seed Company	800-647-1226
Farm Science Genetics	307-347-2616	Oregon Seeds Inc.	541-258-1001	Winfield Solutions	800-356-7333
Garst Seed Company	888-464-2778	PickSeed USA	541-926-8886		

Alfalfa Variety Trial Ohio, North Baltimore, Sown 4-27-2009				
Variety	7-Jul	21-Aug	Total 2009	Relative Yield
Released Cultivars:	----- Tons Dry Matter/Acre -----			% mean
Radiance HD	1.11	1.93	3.04	109
4S417	1.31	1.67	2.98	107
Everlast II	1.39	1.58	2.97	106
A 4330	1.29	1.57	2.86	102
WL 363 HQ	1.29	1.56	2.85	102
55V12	1.33	1.51	2.85	102
54Q32	1.35	1.48	2.83	101
55V48	1.27	1.55	2.82	101
AmeriStand 407TQ	1.22	1.55	2.77	99
KingFisher 243	1.12	1.60	2.72	97
Vernal	1.12	1.55	2.67	96
AmeriStand 403T	1.28	1.38	2.66	95
FSG 329	1.09	1.55	2.64	95
WL 343 HQ	1.14	1.50	2.64	95
FSG 420 LH	1.28	1.32	2.59	93
64Q22	1.04	1.49	2.52	90
Mean	1.24	1.56	2.79	-
LSD 0.05	ns	0.20	ns	-
CV %	14.84	9.21	9.73	-

ns = no significant difference among varieties
 2009 Fertilization: 300# of 0-0-60 in October 2009.
 2009 Pest control: Insecticide was applied on 25-June, 8-July,
 21-August for potato leafhopper control.
 Herbicide was applied on 6-25-09 for weed control.

Alfalfa Variety Trial Ohio, Wooster, Sown 4-23-2007					
Variety	Total				Relative
	2009	2008	2007	2007-09	Yield
Released Cultivars:	----- Tons Dry Matter/Acre -----				% mean
55V48	9.46	8.53	2.37	20.27	104
6400 HT	9.16	8.60	2.29	19.78	102
Anchormate	8.74	8.48	2.26	19.60	101
54V46	8.70	8.15	2.23	19.35	100
6415	8.84	8.28	2.39	19.32	100
A 5225	8.75	8.26	2.20	19.18	99
Vernal	8.82	7.95	2.43	19.00	98
WL 343 HQ	8.52	8.04	2.08	18.85	97
Mean	8.86	8.28	2.26	19.41	-
LSD 0.05	ns	0.39	ns	ns	-
CV %	4.24	3.22	10.60	3.25	-

ns = no significant difference among varieties
 2009 Pest control: Insecticide was applied 10-June, 13-July &
 14-August for potato leafhopper control.

Alfalfa Variety Trial Ohio, South Charleston, Sown 4-23-08							
Variety	30-Jun	3-Aug	15-Sep	Total			Relative
				2009 ^a	2008	2008-09 ^a	Yield
Released Cultivars:	----- Tons Dry Matter/Acre -----						% mean
55V48	1.90	1.79	1.49	5.20	1.95	7.15	111
Garst 6417	1.83	1.69	1.37	4.89	1.88	6.77	105
AmeriStand 407TQ	1.85	1.78	1.33	4.96	1.57	6.53	101
A4330	1.82	1.71	1.35	4.85	1.66	6.51	101
WL 363 HQ	1.91	1.72	1.40	5.02	1.48	6.49	101
PGI 459	1.82	1.64	1.36	4.81	1.57	6.37	99
Garst 6552	1.82	1.74	1.33	4.84	1.42	6.26	97
WL 343 HQ	1.77	1.57	1.30	4.65	1.59	6.25	97
Genoa	1.70	1.57	1.32	4.66	1.57	6.23	97
Vernal	1.59	1.79	1.19	4.55	1.28	5.83	91
Mean	1.80	1.70	1.35	4.84	1.60	6.44	-
LSD 0.05	0.17	ns	0.10	0.25	0.34	0.43	-
CV %	6.51	7.36	5.16	3.61	14.50	4.61	-

ns = no significant difference among varieties
^a Total yield represents three harvest dates in 2009
 2009 Fertilization: 3 ton of lime was applied in March 2008. 300 lb/a of 0-46-0 and 500 lb/a of 0-0-60 was applied after first harvest.
 2009 Pest control: Insecticide was applied on 15-June, 15-July, 16-August for potato leafhopper control.

Alfalfa Variety Trial Ohio, Wooster, Sown 4-12-2006						
Variety	Total					Relative
	2009	2008	2007	2006	2006-09	Yield
Released Cultivars:	----- Tons Dry Matter/Acre -----					% mean
L 447 HD	7.90	7.78	7.47	2.87	26.03	101
4A421	8.34	7.55	7.13	2.75	25.78	100
Genoa	8.08	7.56	7.51	2.63	25.78	100
Radiant-AM	8.05	7.44	7.46	2.71	25.66	100
54V46	7.76	7.50	7.51	2.63	25.41	99
WL 343 HQ	8.04	7.33	7.38	2.47	25.21	98
WL 335 RR	8.00	7.12	7.44	2.58	25.14	98
DKA 41-18RR	7.77	7.29	7.41	2.61	25.07	97
6400 HT	7.93	6.98	7.32	2.72	24.95	97
53Q30	7.81	7.49	7.00	2.64	24.94	97
Vernal	7.51	7.25	7.03	2.58	24.36	95
Mean	8.07	7.61	7.36	2.69	25.73	-
LSD 0.05	0.41	0.45	ns	0.18	1.01	-
CV %	3.53	4.14	3.98	4.77	2.75	-

ns = no significant difference among varieties
 2009 Pest control: Insecticide was applied 10-June, 13-July &
 14-August for potato leafhopper control.

Ohio Forage Network

<http://forages.osu.edu>

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<http://ohioforages.blogspot.com>

Potato Leafhopper Resistant Alfalfa Variety Trial Ohio, South Charleston, Sown 4-23-08								
Variety	Marketer	2-Jul	11-Aug	8-Sep	Total			% of Checks
					2009 ^a	2008	2008-09 ^b	
Released cultivars								
Tons Dry Matter/Acre								
53H92	Pioneer Hi-Bred	1.02	1.83	1.11	3.97	1.21	5.18	120
Garst 6426	Garst	1.04	1.66	1.13	3.89	0.97	4.86	112
EverGreen 3	NK Brand Seeds	1.03	1.64	1.16	3.84	0.98	4.82	111
AmeriStand 404LH	America's Alfalfa	1.06	1.63	0.99	3.63	0.87	4.50	104
Experimental Strains:								
FG45H353*	Forage Genetics	1.13	1.70	1.22	4.09	1.20	5.29	87
Susceptible checks**		0.82	1.71	0.92	3.43	0.90	4.33	
Mean		0.97	1.70	1.05	3.71	0.99	4.70	--
LSD 0.05		0.19	ns	0.20	0.30	0.25	0.42	--
CV %		13.5	9.2	13.1	5.6	17.4	6.1	--
* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.								
** Susceptible check varieties were Vernal, DK 140 and 5454.								
^a Total yield represents three harvest dates in 2009, first harvest was not included due to technical difficulties								
ns = no significant difference among varieties.								

Tall Fescue Variety Trial Ohio, South Charleston, Sown 4-23-2008							
Variety	Marketer	27-May	15-Jul	2-Sep	27-Oct	Total	Relative
						2009	Yield
Tons Dry Matter/Acre							
Brutus	Saddle Butte Ag.	1.84	0.79	1.36	0.65	4.75	120
KY31 E-	Public	1.70	0.76	1.46	0.60	4.54	115
TF 0201*	Winfield Solutions	1.74	0.65	1.43	0.62	4.39	111
IS-FTF-31*	DLF International	1.87	0.52	1.42	0.57	4.24	107
IS-79/9901	DLF International	1.78	0.52	1.30	0.55	4.17	106
KY31 E+	Public	1.53	0.70	1.27	0.58	4.12	104
Bronson	Ampac Seed	1.55	0.60	1.35	0.63	3.44	87
Mean		1.61	0.57	1.22	0.54	3.95	--
LSD 0.05		ns	0.19	ns	0.12	ns	--
CV %		17.2	23.2	8.7	15.4	8.9	--
* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.							
ns = no significant difference among varieties							
Fertilization: 200 lb/a of 34-0-0 18-March, 150 lb/a on 28-May, 17-July and 4-September.							

Orchardgrass Variety Trial Ohio, South Charleston, Sown 4-13-2006							
Variety	Marketer	Total					Relative Yield
		2009	2008	2007	2006	2006-09	
Tons Dry Matter/Acre							
OG 0204G*	Seed Rsch Oregon	2.60	5.11	6.16	3.64	17.60	106
Command	Seed Rsch Oregon	3.31	4.57	5.00	4.08	17.41	105
OG 001*	Seed Rsch Oregon	2.94	4.69	5.26	3.96	17.05	103
Endurance	DLF Intl.	3.52	4.27	4.89	4.32	17.02	103
Persist	Smith Seed Srvs.	3.59	4.75	5.11	3.40	16.70	101
RAD-LCF-21*	Lewis Seed Co.	3.16	4.37	4.36	4.29	15.99	96
Shiloh II	ProSeeds Mkt.	3.17	4.31	4.17	4.47	15.71	95
Potomac	Public	2.40	4.37	5.33	3.31	15.38	93
Mean		3.08	4.55	5.03	3.94	16.61	--
LSD 0.05		0.50	ns	0.88	0.77	1.47	--
CV %		11.0	9.3	11.9	13.3	6.0	--
* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.							
ns = no significant difference among varieties							
** NOTE ** variety AGRDG 101 did not survive the 2006 winter.							
** NOTE** there were only 3 harvest in 2008 due to the drought.							
2009							
Fertilization: 200 lb/a of 34-0-0 18-March, 150 lb/a on 28-May, 17-July and 4-September.							

Teff Variety Trial Ohio, South Charleston, Sown 6-16-2009					
Variety	Marketer	3-Aug	2-Sep	5-Oct	Total
		Tons Dry Matter/Acre			
CW 0604*	Cal West Seeds	1.60	1.41	1.39	4.41
CW 0801*	Cal West Seeds	1.29	1.33	1.46	4.10
Tiffany	Gries Seed Farm	1.41	1.27	1.39	4.06
VA-T1-Brown	Harkins Seed	1.48	1.26	1.28	4.01
Mean		1.45	1.32	1.38	4.14
LSD 0.05		0.29	ns	ns	0.31
CV %		12.21	11.12	9.62	4.63
* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.					
ns = no significant difference among varieties					
2009 Fertility: 200 lb/a of 46-0-0 was incorporated prior to planting.					
100 lb/a was applied after the first harvest.					
2009 Pest					
Control: Herbicide was applied on 7/17/09 for broadleaf weed control.					

Annual Ryegrass Variety Trial Ohio, South Charleston, Sown 9-12-2008							
Variety	Marketer	27-May	23-Jun	3-Aug	Total	Relative	
					2009	Yield	
Tons Dry Matter/Acre							
Tetrelite II	DLF International	2.42	1.51	1.45	6.98	130	
PSG 29BF06*	Pickseed	2.05	1.53	1.09	6.24	116	
Bison	DLF International	2.48	1.30	1.23	6.23	116	
Max	Pickseed	1.97	1.48	1.00	5.71	106	
Feast II	Ampac Seed	1.43	1.36	1.36	5.68	106	
Floreon	Mid Valley Ag. Prod	2.25	1.27	0.58	5.37	100	
FL/NE 2006*	Oregon Seeds Inc.	1.95	1.34	0.57	5.22	97	
AMP WHARG	Ampac Seed	1.88	1.16	0.66	4.87	91	
MO 1	DLF International	1.37	1.38	0.57	4.82	90	
Marshall	Wax	1.56	1.25	0.58	4.78	89	
AM-4NLS*	Ampac Seed	1.59	0.89	0.77	4.69	88	
Gulf	public	1.58	1.05	0.67	4.64	86	
Flying A	Oregon Seeds Inc.	1.54	1.09	0.54	4.49	84	
Mean		1.85	1.28	0.85	5.36	--	
LSD 0.05		0.52	0.20	0.14	0.67	--	
CV %		19.77	11.11	11.25	8.68	--	
* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.							
Fertilization: Applied 200 lb/a of 34-0-0 18-March, 150 lb/a on 29-May, 25-June.							

Weather 2009								
Month	Wooster		S. Charleston		N. Baltimore		Jackson	
	Total	DFA*	Total	DFA*	Total	DFA*	Total	DFA*
Precipitation (inches of rainfall)								
	total	DFA	total	DFA	total	DFA	total	DFA
Apr	3.36	0.06	2.24	-1.76	3.55	0.25	3.98	0.18
May	3.19	-0.71	2.10	-2.50	1.50	-1.90	4.99	0.79
June	3.74	-0.16	4.74	0.54	3.38	-0.22	2.30	-1.40
July	2.90	-1.20	5.50	1.40	2.37	-1.43	6.32	1.92
Aug	5.87	2.27	2.38	-1.12	1.58	-1.22	2.18	-1.42
Sept	2.61	-0.49	3.60	0.60	2.05	-0.65	2.34	-0.76
Oct	3.36	1.06	5.07	2.77	4.23	1.93	3.43	1.03
Total	25.03	0.83	23.39	1.69	18.66	-3.24	25.54	0.34
Average Daily Temperature (°F)								
Apr	50.4	-2.3	51.9	0.9	51.4	2.5	53.4	1.0
May	60.3	1.8	62.9	1.5	62.8	3.0	62.5	0.8
June	67.2	-0.4	70.5	0.2	71.3	1.8	40.1	0.2
July	67.5	-4.0	68.7	-5.1	70.9	-1.9	68.9	-4.6
Aug	69.6	-0.3	69.7	-2.3	73.6	3.0	71.0	-1.2
Sept	62.6	-0.8	64.4	-0.8	66.9	2.9	64.8	-0.4
Oct	49.1	-3.0	50.4	-3.5	52.5	0.0	50.4	-3.2
*DFA = departure from long-term average								