2007 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 2007. This report includes performance of commercial varieties of alfalfa, red clover, orchardgrass, tall fescue, perennial and annual ryegrass in tests planted in 2005 to 2007 across four sites in Ohio: South Charleston, North Baltimore, Wooster, and Jackson. 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.

Summary of 2007 Growing Conditions
The growing season began with above normal temperatures in March followed by below normal temperatures in April, including several days when temperatures fell below 20 F, killing back early spring growth. Forages in the southern two-thirds of the state were most severely affected by the late spring freeze. Temperatures were above normal all months except April and July. Several months had below normal rainfall at all locations. Total rainfall for the season was above normal at N. Baltimore (+2.4 inches) and Wooster (+1.6 inches), but below normal for South Charleston (-2.0 inches) and Jackson (-9.0 inches). Yields were below the record highs of 2006.

Alfalfa
The trial established in 2006 at Wooster had the highest yields, averaging 7.4 tons/acre. 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 potato leafhopper in the Regional Alfalfa Yield Trial for Potato Leafhopper Resistance conducted at South Charleston, OH and Ames, IA. Leafhopper populations were above economic thresholds at both locations, resulting in significant yield differences among varieties in response to PLH injury. Leafhopper resistant varieties are not resistant to alfalfa weevil, and will need to be treated with insecticides if weevil populations exceed action thresholds.

Orchardgrass
Yield in 2007 was lower due to the reduced rainfall. Orchardgrass varieties differed greatly in yield over the season, and all varieties went dormant for part of the summer due to drought.

Tall Fescue
The tall fescue trial of endophyte-free varieties established at Jackson in 2004 had lower yields in 2007 than in 2006. New varieties that are endophyte free or that contain a non-toxic endophyte (eg., Jessup Max Q) have potential to increase animal performance during the summer grazing season and to provide forage for beef cattle and sheep during autumn and early winter.

Perennial Ryegrass
The perennial ryegrass trial at South Charleston also had lower yields in 2007. Only two harvests were made due to the reduced growth from below normal rainfall. Perennial ryegrass (diploid and tetraploid) is the most winter hardy of the ryegrass types. A couple of varieties in the ryegrass trial were **festuloliums,** which are crosses between annual ryegrass and fescue. They generally are more winter-hardy and slightly more drought tolerant than perennial ryegrass.

Annual Ryegrass
Total forage yields in the annual ryegrass trial seeded September 2006 ranged from 0.33 to 3.6 tons/acre among varieties, partially due to large differences in winter injury (note % stand density in April). A new trial was seeded September 2007, and one harvest was taken in early November. Winter survival and yield will be evaluated in that trial in 2008. 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.

Red Clover
Forage yields of red clover varieties were 5 tons/acre or higher in 2007, except for Red Gold (due to poor establishment) and common seed (due to stand loss from diseases). Newer varieties of red clover yield more and persist longer than common red clover.

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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	North Baltimore 2004-07	South Charleston 2005-07	Wooster 2006-07	Wooster 2007	total site-yrs	avg all site yrs
4A421	Mycogen Seeds		102	98		9	100
53Q30	Pioneer		103	96		5	100
54Q25	Pioneer	100				12	100
54V46	Pioneer	102	99	101	99	18	101
55V48	Pioneer				105	1	105
6400HT	Garst	98	103	100	101	20	101
6415	Garst				106	1	106
6420	Garst	97	103			27	101
A 5225	Producers Choice				97	1	97
Anchormate	Central Farm				100	1	100
Baralfa 53HR	Barenbrug USA		106			3	106
DKA 41-18 RR	Monsanto			100		2	100
DKA 42-15	Monsanto	104				12	101
FSG 408 DP	Allied Seed		101			3	101
Genoa	NK Brand Seed	107	104	101		11	103
HybriForce-420/wet	Dairyland	98				14	100
Integrity	PGI Alfalfa Inc.		98			3	98
L-411-HD	Legacy Seed	102				4	102
L-447-HD	Legacy Seed			103		2	103
LegenDairy 5.0	Croplan Genetics	103				4	103
Marvel	Allied Seed		98			3	98
Nova	Great Plains	97				4	97
Radiant-AM	Ampac Seed			101		2	101
Rebel	Burtch Seeds	98				4	98
Rebound 5.0	Croplan Genetics	106	106			7	106
Rugged	Burtch Seeds	97				4	97
SummerGold	Beck's Superior	103				6	101
VERNAL	Public	93	94	96	108	81	92
WL 335 HQ	Royster Clark	96	98			7	97
WL 335 RR	Royster Clark			100		2	100
WL 343 HQ	Royster Clark			98	92	3	96
WL 348 AP	Royster Clark		98			7	99
WL 357 HQ	Royster Clark	105				12	103
Trial Average Yield (annual tons/acre)		6.55	4.76	5.03	2.26	--	--
Number of site years		4	3	2	1	--	--

Seed Marketers of Varieties Included in 2007 Forage Performance Trials

AGSP	541-926-4611	Doebler PA Hybrid Inc.	570-753-5503	Pioneer Hi-Bred Int'l	See local retailer
Allied Seed	660-385-6690	Fraser Seeds Ltd.	604-929-7371	Power Seeds	705-944-5600
Ampac Seed	574-268-9549	Garst Seed Company	260-693-1100	Producers Seeds	608-786-1554
Ag Research USA	828-645-3872	Golden Harvest	800-944-7333	ProSeeds Marketing	541-928-9999
Barenbrug USA	541-926-5801	Great Plains Research	800-874-7945	Radix Research, Inc.	503-749-2888
Becks Superior	800-yes-beck	Legacy Seeds Inc.	866-866-3888	Royster Clark	See local retailer
Blue River Hybrids	800-370-7979	Lewis Seed Co.	541-466-3704	Saddle Butte Ag.	541-491-3501
Burtch Seed Co.	419-363-3713	Monsanto	See local retailer	Seed Rsch. of Oregon	541-757-2663
Byron Seeds	765-435-7243	Mountain View Seeds	503-588-7333	Seed Solutions	800-562-2459
Cebeco Int'l. Seeds Inc.	541-369-2251	Mycogen Seeds	800-mycogen	Smith Seed Service	614-890-2929
Columbia Seeds	541-757-1468	Northrup King	See local retailer	Snow Brand Seed	503-443-3717
Croplan Genetics	See local retailer	Oregon Seeds Inc.	541-258-1001	Steyer Seeds	419-992-4570
Dairyland Seeds	800-236-0163	Pennington Seed Inc.	541-451-5261	Turf-Seed, Inc.	503-651-2130
Derry Warehouse Co.	503-623-6969	PGI Alfalfa Inc.	866-744-5710	W-L Research	608-240-0630
DLF -International Seeds	800-445-2251	Pickseed West Inc.	503-926-8886	Wax Seed Company	800-647-1226

Regional Alfalfa Yield Trial for Potato Leafhopper Resistant Varieties
Conducted at S. Charleston, OH and Ames, IA, Seeded Spring 2006

Variety	Marketer	Yield[1]	PLH Yield Index[2]
Resistant		Tons/acre	%
53H92	Pioneer	1.20*	45
4P424	Mycogen Seeds	1.15*	38
6426PLH	Garst	1.14*	37
EVERGREEN3	NK Brand Seed	1.09*	30
54H91	Pioneer	1.06*	28
GH773LH	Goldern Harvest Seeds	1.04*	25
Susceptible Checks[3]		0.83	
LSD (0.05)		0.10	

* Yield significantly greater than yield of susceptible check varieties.
[1] Average yield at 10 harvests across both locations in 2006 and 2007 when potato leafhoppers caused significant injury to alfalfa.
[2] The % yield improvement over yield of susceptible check varieties.
[3] Average yield of two susceptible varieties (5454, DK140).

Alfalfa Variety Trial
Ohio, Wooster, Sown 4-23-2007

Variety	2007 6-Jul	28-Aug	Total	% mean
	Tons Dry Matter/Acre			
Vernal	1.04	1.39	2.43	107
6415	0.98	1.41	2.39	105
55V48	1.03	1.34	2.37	105
6400 HT	0.91	1.38	2.29	101
Anchormate	0.93	1.33	2.26	100
54V46	0.95	1.28	2.23	99
A 5225	0.90	1.30	2.20	97
WL 343 HQ	0.82	1.27	2.08	92
Mean	0.93	1.33	2.26	--
LSD (0.05)	ns	ns	ns	--

Insecticide applied 13-June & 3-Aug for potato leafhoppers.
Herbicide was applied on 18-June.
2007 Fertilizer: 277 lb/a of 0-18-36 and 500 lb/a of 0-0-60.

Alfalfa Variety Trial
Ohio, Wooster, Sown 4-12-2006

Variety	2007 30-May	3-Jul	7-Aug	13-Sep	Total	2006	2007
	Tons Dry Matter/Acre						% mean
54V46	2.75	1.79	1.52	1.48	7.51	2.63	102
Genoa	2.75	1.92	1.57	1.27	7.51	2.63	102
L 447 HD	2.70	1.76	1.58	1.44	7.47	2.87	101
Radiant-AM	2.77	1.68	1.59	1.39	7.46	2.71	101
WL 335 RR	2.68	1.79	1.58	1.36	7.44	2.58	101
DKA 41-18RR	2.65	1.85	1.52	1.38	7.41	2.61	101
WL 343 HQ	2.65	1.76	1.52	1.43	7.38	2.47	100
6400 HT	2.75	1.74	1.56	1.29	7.32	2.72	99
4A421	2.72	1.71	1.50	1.22	7.13	2.75	97
Vernal	2.80	1.55	1.43	1.27	7.03	2.58	95
53Q30	2.75	1.66	1.42	1.20	7.00	2.64	95
Mean	2.76	1.75	1.53	1.33	7.36	2.69	--
LSD (0.05)	0.11	0.14	0.12	0.20	0.42	0.18	--

Insecticide was applied 13-June & 18-July for potato leafhoppers.
2007 Fertilizer: Spring appied 500lb/a of 0-0-60.

Alfalfa Variety Trial
Ohio, South Charleston, Sown 4-14-05

Variety	2007	2006	2005	2006-07	2006-07
	Tons Dry Matter/Acre				% mean
Baralfa 53HR	5.69	7.63	1.83	13.32	108
Rebound 5.0	5.82	7.39	1.90	13.21	107
Genoa	5.63	7.35	1.87	12.98	105
53Q30	5.47	7.30	1.86	12.78	103
4A21	5.70	6.98	1.88	12.67	102
FSG 408DP	5.41	7.24	1.84	12.65	102
CW 15030	5.46	7.17	2.07	12.63	102
6400HT	5.40	7.20	2.09	12.60	102
6420	5.59	6.97	2.14	12.56	101
54V46	5.51	7.00	1.63	12.50	101
Integrity	5.07	7.14	1.79	12.21	99
WL 335 HQ	5.59	6.61	1.79	12.20	98
WL 348 AP	5.35	6.85	1.75	12.19	98
Marvel	5.30	6.50	2.15	11.80	95
Vernal	4.72	6.90	1.86	11.62	94
Mean	5.37	7.02	1.89	12.39	--
LSD (0.05)	0.59	ns	ns	1.03	--

2007 Fertilizer: 70 lb/a of 0-46-0 and 500 lb/a of 0-0-60 applied March
Insecticide on 14-June, 11-July, 14-Aug for potato leafhopper control.

Perennial Ryegrass Variety Trial
Ohio, South Charleston, Sown 4-14-2005

Variety	Marketer	2007	2006	2005	2005-07	2005-07	Maturity* 7/12/07
		Tons Dry Matter/Acre				% mean	
Perun[a]	Byron Seeds	2.83	8.67	1.84	13.24	139	6.8
Aubisque	Seed Solutions	2.32	6.26	1.01	9.37	98	7.0
Mathilde	DLF International	1.87	6.06	1.22	9.18	96	7.5
Respect	Doeblers PA Hybrid	1.94	5.47	0.87	8.28	87	7.8
Portia	DLF International	1.75	4.87	1.00	7.59	80	7.0
CSBF 124	Saddle Butte Ag	0.00	3.70	1.26	4.88	51	1.0
Mean		2.00	6.30	1.23	9.53	--	5.4
LSD (0.05)		0.72	0.85	0.36	1.41	--	0.74

[a] Varieties are festuloliums -- variety CSBF 124 did not survive the 2006-07 winter.
2007 Fertilizer: 34-0-0 at 200 lb/a on 29-March,150 lb/a on 24-May & 12-July.
*Maturity: 1 =vegetative, 2 =early boot, 3 =initial emergence from boot, 4=complete emergence, 5 = elongated peduncle, 6 = preanthesis, 7 = anthesis, 8 = post anthesis.

Alfalfa Variety Trial
Ohio, Jackson, Sown 8-12-2004

Variety	2007*	2006	2005	2005-07	2005-07
	Tons Dry Matter/Acre				% mean
6400 HT	1.11	5.55	3.07	9.77	103
Vernal	1.14	5.46	3.12	9.65	102
HybriForce 420/wet	1.14	5.28	3.15	9.59	101
Reward II	1.08	5.15	3.08	9.31	99
SummerGold	1.05	5.22	2.92	9.20	97
Genoa	1.01	5.12	3.06	9.18	97
Mean	1.09	5.30	3.07	9.45	--
LSD (0.05)	ns	0.29	ns	ns	--

***Note:** Only one harvest was taken in 2007 due to the drought.
2007 Fertilization: 50 lb/a of 0-46-0 & 100 lb/a of 0-0-60 in March

Alfalfa Variety Trial
Ohio, North Baltimore, Sown 4-19-2004

Variety	2007	2006	2005	2004	2005-07	2005-07
	Tons Dry Matter/Acre					% mean
Genoa	7.02	9.86	8.27	2.02	25.31	106
Rebound 5.0	6.72	10.09	8.18	2.02	25.05	105
DKA 42-15	6.63	9.84	8.26	1.90	24.72	104
WL 357 HQ	6.83	9.80	8.08	2.14	24.71	104
54V46	6.34	9.64	8.43	1.65	24.47	103
LegenDairy 5.0	6.64	9.87	7.99	1.85	24.43	103
SummerGold	6.35	9.88	8.17	2.04	24.41	103
L-411-HD	6.02	10.00	8.34	1.93	24.39	103
54Q25	5.88	9.87	8.06	1.95	23.68	100
HybriForce 420/wet	6.05	9.61	7.81	1.61	23.55	99
6400 HT	5.70	9.83	7.65	1.96	23.26	98
Nova	5.56	9.75	7.91	1.69	23.25	98
Rebel	5.69	9.72	7.89	1.95	23.21	98
Rugged	5.75	9.57	7.71	1.93	23.09	97
WL 335 HQ	5.87	9.59	7.67	1.62	23.08	97
6420	5.76	9.41	7.64	1.96	22.82	96
Vernal	5.46	9.22	7.50	1.59	22.24	93
Mean	6.10	9.72	7.97	1.86	23.79	--
LSD (0.05)	0.67	ns	ns	ns	1.49	--

2007 Fertilizer: 300 lb/a of 0-0-60 applied late fall 2006.
Insecticide applied on 21- May for weevils, and 20-June, 18-July, and 27-Aug for potato leafhoppers.

Tall Fescue Variety Trial
Ohio, Jackson, Sown 8-12-2004

Variety	Marketer	2007	2006	2005	2005-07	2005-07
		Tons Dry Matter/Acre				% mean
Hykor[a]	DLF Intl' Seed	2.58	6.24	5.97	14.78	109
Fuego	Seed Rsch Oregon	2.79	6.16	5.55	14.50	107
Ky 31	Public	2.58	6.30	5.24	14.12	104
HYMARK	Fraser Seeds	2.26	6.13	5.54	13.93	103
Stockman	Seed Rsch Oregon	2.29	6.04	5.38	13.71	101
IS-FTF-12*	DLF Intl' Seed	2.34	5.79	5.39	13.52	100
Montendre	Seed Rsch Oregon	2.49	6.20	4.68	13.37	99
Seine	Seed Rsch Oregon	2.35	6.02	4.97	13.34	98
CSN 26*	Fraser Seeds	2.40	5.81	4.98	13.19	97
Jessup Max Q	Pennington Seed	2.05	5.67	5.43	13.16	97
Ridgeway	Columbia Seeds	2.50	5.39	4.85	12.74	94
Potomac	Public	2.26	5.01	4.91	12.18	90
Mean		2.41	5.90	5.24	13.55	--
LSD (0.05)		0.38	ns	ns	ns	--

* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.
[a] Variety is a festulolium
Note: Stand was 95 % for all varieties on 31-Oct-2007.
Note: Due to the extreme drought in 2007 there were only two harvests.
2007 Fertilizer: 34-0-0 applied 16-March at 200 lb/a & 13-June at 150 lb/a.

Annual Ryegrass Variety Trial
Ohio, South Charleston, Sown 9-6-2007

Variety	Marketer	1-Nov-07
		Tons DM/Acre
Gulf	Public	0.31
Striker	Seed Research Oregon	0.27
Flying A	Oregon Seeds Inc.	0.27
MO-1*	DLF International	0.26
Max	Seed Research Oregon	0.25
Dino	Saddle Butte Ag Inc.	0.25
Graze N Gro	Seed Research Oregon	0.24
Tachimasari	Snow Brand Seed	0.23
Ace	Snow Brand Seed	0.22
Jackson	Wax	0.22
Billiken	Snow Brand Seed	0.22
Tam TBO	Oregon Seeds Inc.	0.22
Tachimusha	Snow Brand Seed	0.21
Bounty	Saddle Butte Ag Inc.	0.21
Dryann	Snow Brand Seed	0.21
AM4N	The Seed Center	0.21
Hanamiwase	Snow Brand Seed	0.20
Bulldog	Derry Warehouse Co.	0.19
Hercules	Barenbrug	0.18
Yushun	Snow Brand Seed	0.17
Marshal	Wax	0.17
Barextra	Barenbrug	0.17
RAD-CP5212*	Mountain View Seeds	0.15
50561 TA*	AGSP	0.11
OCALA	AGSP	0.10
FL/NE	Oregon Seeds Inc.	0.01
Mean		0.20
LSD (0.05)		0.09

** Variety tested using experimental seed, may not give performance identical tocommercially available seed.
2007 Fertilizer: Applied 150 lb/a of 34-0-0 on 3-October.

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Annual Ryegrass Variety Trial
Ohio, South Charleston, Sown 9-11-2006

Variety	Marketer	2006 9-Nov	2007 9-May	2007 24-May	2007 18-Jun	Total 2006-07	% Stand 4/12/07	Maturity 5/24/07
		---------- Tons Dry Matter/Acre ----------						
ME-4*	Wax Seed Co.	0.23	1.61	0.25	1.49	3.59	71	1.3
Marshall	Wax Seed Co.	0.33	1.47	0.32	1.41	3.52	71	1.8
Wmn-97*	Wax Seed Co.	0.47	1.37	0.31	1.32	3.46	59	1.5
ME-94*	Wax Seed Co.	0.39	1.21	0.24	1.41	3.24	53	1.8
Florlina	Saddle Butte Ag.	0.40	0.63	0.26	0.99	2.28	9	2.3*
Max	Seed Rsch Oregon	0.40	0.32	0.26	0.85	1.82	8	1.2
Graze N Grow	Seed Rsch Oregon	0.59	0.20	0.11	0.44	1.33	4	3.2*
Gulf	Public	0.70	0	0	0	0.73	0	--
Bounty	Saddle Butte Ag.	0.53	0	0	0	0.56	0	--
Jackson	Wax Seed Co.	0.33	0.02	0.04	0.09	0.47	5	3.3*
T-Rex	Saddle Butte Ag.	0.42	0	0	0	0.42	0	--
Verdure	Smith Seed Srvs.	0.33	0	0	0	0.33	0	--
Striker	Seed Rsch Oregon	0.33	0	0	0	0.33	0	--
LSD (0.05)		0.21	0.28	0.10	0.35	0.67	17	--

* Value did not differ from the highest value in the column. Many varieties did not survive the 2006 winter.

** Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Fertilization: 34-0-0 applied at 150 lb/a 2-Oct-2006, 200 lb/a 29-Mar-2007 and 150 lb/a 24-May-2007.

*Maturity: 1 =vegetative, 2 =early boot, 3 =initial emergence from boot, 4=complete emergence from boot.

Orchardgrass Variety Trial
Ohio, South Charleston, Sown 4-13-2006

Variety	Marketer	Total 2007	Total 2006	Total 2006-07	2006-07	Maturity
		---------- Tons Dry Matter/Acre ----------			% mean	26-May
OG 0204G*	Seed Rsch Oregon	6.48	3.72	10.19	122	4.05
Command	Seed Rsch Oregon	5.26	4.11	9.37	112	2.90
Endurance	DLF Intl.	4.81	4.42	9.23	110	4.93
OG 001*	Seed Rsch Oregon	5.29	3.92	9.21	110	4.24
Persist	Smith Seed Srvs.	5.13	3.49	8.62	103	3.53
Shiloh II	Pro Seed Mkt.	3.88	4.69	8.57	103	2.47
RAD-LCF-21*	Lewis Seed Co.	4.24	4.17	8.42	101	2.67
Potomac	Public	5.21	3.19	8.40	100	3.98
AGRDG 101*	Ag Rsch. USA	0.00	3.24	3.24	39	3.98
Mean		4.48	3.88	8.36	--	3.64
LSD (0.05)		0.81	0.71	0.87	--	ns

** Variety tested using experimental seed,may not give performance identical to commercially available seed.

** **NOTE** Variety AGRDG 101 did not survive the 2006 winter.

2007 Fertilizer: 34-0-0 applied at 200 lb/a 29-March, and 150 lb/a on 24-May and 12-July.

*Maturity: 1 =vegetative, 2 =early boot, 3 =initial emergence from boot, 4=complete emergence, 5 = elongated peduncle.

Red Clover Variety Trial
Ohio, South Charleston, Sown 4-13-2006

Variety	Marketer	2007	2006	2006-07	2006-07
		---------- Tons Dry Matter/Acre ----------			% mean
StarFire II*	Cal/West Seeds	5.55	1.58	7.16	125
Dominion	Seed Rsch of Oregon	5.52	1.53	6.94	121
FSG 9601	Allied Seed	5.31	1.66	6.86	120
Duration Extra*	Cal/West Seeds	5.18	1.63	6.81	119
NARN	DLF Int'l Seeds	5.10	1.39	6.63	116
Cardinal	Seed Rsch of Oregon	5.10	1.57	6.62	115
PGI 33*	Cal/West Seeds	4.99	1.55	6.61	115
Common	Public	1.73	1.08	2.78	48
Red Gold	Pro Seeds Marketing	0.93	0.24	1.23	21
Mean		4.38	1.36	5.74	--
LSD (0.05)		0.31	0.32	0.57	--

* Variety tested using experimental seed, may not give performance identical to commercially available seed.

2007 Fertilizer: Applied 500 lb/a of 0-0-60, 2 ton of lime in fall 2006.