

# 2019 OHIO FORAGE PERFORMANCE TRIALS

John S. McCormick, R. Mark Sulc, and David J. Barker,

## Summary

This report is a summary of performance data collected from forage variety trials in Ohio during 2019, including commercial varieties of alfalfa, annual ryegrass and cover crops in tests planted in 2017 and 2018 at South Charleston, OH. For more details on forage species and management, see the *Ohio Agronomy Guide*, Ohio State University Extension Bulletin 472, which can be purchased from Ohio State University Extension's eStores at <http://estore.osu-extension.org/>. Find additional information at <https://forages.osu.edu/>.

## 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 two varieties are considered statistically significant if the difference is equal to or greater than the LSD value. If a variety yields more than another variety by the LSD value, then we are 95% sure that the yield difference is not due to chance.

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. However, higher CV values can also occur simply as a result of the mean yield being low (eg. due to weather conditions), because the CV is a function of the mean yield. So a higher CV will often occur where yields are low despite there being no increase in experimental error.

Results reported here would be most applicable under environmental and management conditions similar to those of the tests, on similar soils. The relative yields of all forage varieties are affected by crop management and by environmental factors including soil type, winter conditions, soil moisture conditions, diseases, and insects.

## Summary of 2019 Growing Conditions

Rainfall was quite variable across the season at South Charleston. April rainfall was very regular but below the normal for the month, May and June were above normal rainfall, and the remainder of the growing season was drier than normal. Total rainfall for April through September was 4.17 below average. Average monthly temperatures were above normal for most of the year except in June and August.

## Alfalfa

The 2017 seeding at South Charleston had the highest yields in 2019, averaging 6.81 tons/acre followed by the 2018 seeding at South Charleston, at 5.44 tons/acre. Weather and weeds slowed growth of the 2018 trial therefore data was not collected in 2018. Insecticide applications were used for control of potato leafhopper (PLH) and to control alfalfa weevil at South Charleston.

## Annual Ryegrass

An annual ryegrass trial was planted in September 2018. There was winter injury that varied among varieties. Forage yields in 2018-19 were near the long-term average at this location. Annual ryegrass is a cool-season annual bunchgrass that is highly palatable and digestible. It has high seedling vigor.

## Cover Crop Varieties

A cover crop variety trial was planted on September 20, 2018 at the South Charleston location to evaluate different cover crop species and varieties for stand and ground cover development throughout the fall and for stand, ground cover, and final biomass production the following spring.

The conditions for this trial are not meant to be representative of cover crop planting following soybeans or corn in Ohio, because it was planted in a well-prepared seedbed (conventionally tilled) in early September, well before soybean or corn harvest timing in Ohio.

This trial more closely represents what would be possible with cover crops planted on land that was in winter wheat and laid fallow after the July grain harvest, although even in that situation no-till planting of the cover crops in September would be preferable for conservation purposes. Therefore, the results from this trial should be interpreted and applied with caution to the situation intended for a cover crop on farm. The results do demonstrate the relative speed of fall ground cover establishment of different varieties planted in early September, and which ones survive the winter and grow in the spring (thus needing to be terminated before grain crop planting).

**Contributors:** Joe Davlin,



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Summary of Alfalfa Variety Performance in Ohio  
Standard Trials - Insecticide applied (values are in yield as a percent of the trial average)

Variety	Marketer	South Charleston 2017-19	South Charleston 2019	total site-yrs	avg all site yrs
54QR04	Pioneer	104		3	104
Finch	Blue River Organic Seed		100	1	100
FSG 415 BR	Farm Science Genetics	107		3	107
HybriForce-4400	Dairyland Seed Company	101		3	101
Kingbird	Blue River Organic Seed	95		3	95
Quail	Blue River Organic Seed	95		3	95
Robin	Blue River Organic Seed	100		3	100
Skylark	Blue River Organic Seed		92	1	92
SW 1509	S & W Seed Company		110	1	110
SW 1517	S & W Seed Company		117	1	117
Swift	Blue River Organic Seed		101	1	101
VERNAL	Public		100	11	94
WL356 HQ.RR	W-L Research	102		3	102
Trial Mean		6.81	5.44	--	--
No. site years		3	1	--	--

ATTENTION: Ohio Country Journal Subscribers

This will be the last Ohio State University Forage Performance Trials Report published in Ohio Country Journal. For future forage data and information please visit our website at <http://forages.osu.edu>. After many years of providing valuable information to farmers about performance of forage varieties, the number of entries submitted for testing has dropped to levels that we can no longer justify testing on a regular basis. We will likely conduct a trial from time to time as the opportunity arises, and such results will be posted at <http://forages.osu.edu>.

We appreciate the partnership with Ohio Country Journal in publishing the Forage Performance Trials Report for these many years. The corn, soybean, and wheat performance trials will continue to be published in Ohio Country Journal.

### Seed Marketers of Varieties Included in 2019 Forage Performance Trials

Blue Moon Farms	541-936-1210		Pioneer Hi-Bred Int'l	See local retailer	<a href="http://www.pioneer.com">www.pioneer.com</a>
Blue River Organic Seed	800-370-7979	<a href="http://www.blueriverorgseedws.com">www.blueriverorgseedws.com</a>	PROGENE Plant Research	509-488-3977	<a href="http://www.progenellc.com">www.progenellc.com</a>
Dairyland Seed	See local retailer	<a href="http://www.dairylandseed.com">www.dairylandseed.com</a>	Smith Seed Service	888-550-2930	<a href="http://www.smithseed.com">www.smithseed.com</a>
Farm Science Genetics	307-347-2616	<a href="http://www.farmsciencegenetics.com">www.farmsciencegenetics.com</a>	S & W Seed Company	559-884-2535	<a href="http://www.swseedco.com">www.swseedco.com</a>
Lewis Seed Company	541-491-3700	<a href="http://www.lewisseed.com">www.lewisseed.com</a>	Turf Merchants	541-926-8649	<a href="http://www.turfmerchants.com">www.turfmerchants.com</a>
Oregon Seeds Inc.	541-258-1001	<a href="http://www.oregroseeds.com">www.oregroseeds.com</a>	W-L Research	417-616-1013	<a href="http://www.wlalfalfas.com">www.wlalfalfas.com</a>

Alfalfa Variety Trial  
Ohio, South Charleston, Sown 4-25-2017

Variety	28-May	26-Jun	29-Jul	5-Sep	Total				9/12/2019
					2019	2018	2017	2017-19	
	----- Tons Dry Matter/Acre -----								% Stand
54QR04	2.88	1.43	1.99	1.17	7.47	8.16	3.15	18.29	88
FSG 415 BR	2.87	1.35	1.79	1.16	7.16	8.09	3.20	18.78	83
HO415	2.78	1.33	1.78	1.04	6.93	7.10	3.12	16.50	86
Kingbird	2.47	1.20	1.62	0.86	6.15	7.56	3.00	16.61	83
msSunstra 143146	2.36	1.21	1.78	1.03	6.38	7.30	2.70	17.47	79
msSunstra 144110	2.43	1.27	1.80	0.99	6.48	7.85	2.99	17.72	80
Quail	2.54	1.35	1.87	0.98	6.74	7.70	2.57	16.58	75
Robin	2.83	1.32	1.84	1.13	7.12	7.80	2.78	17.59	84
RRL414	2.50	1.46	1.98	1.16	7.09	7.68	2.80	17.38	88
WL356HQ.RR	2.55	1.26	1.72	0.99	6.52	7.32	3.53	17.88	84
Mean	2.61	1.32	1.83	1.05	6.81	7.68	2.98	17.53	83
LSD P=.05	0.45	0.35	0.46	0.38	1.29	0.91	0.66	1.50	13.67
Prob(F)	0.1868	0.8695	0.8314	0.8478	0.6368	0.3890	0.2430	0.0674	0.7513
CV %	11.9	18.2	17.3	25.2	13.1	8.2	15.3	5.9	11.4

**Note:** After seeding in great soil conditions, the weather turned bad with three weeks of well below normal temperatures and above average rainfall that affected stands.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.  
 Plot size: 4' x 20' , 15'alleys and borders, RCBD with four reps.  
 Soil type / analysis: Crosby silt loam, pH=7.0, P=110 lbs/a, K= 344 lbs/a, CEC=13, O.M.=1.4, (04/17).  
 2019 Pest control: Insecticide was applied on 11-June, 10-July, 12-August for potato leafhopper control.

Alfalfa Variety Trial  
Ohio, South Charleston, Sown 5-01-2018

Variety	28-May	26-Jun	29-Jul	5-Sep	Total		
					2019	9/12/2019	
	----- Tons Dry Matter/Acre -----						% Stand
Finch	1.98	1.25	1.49	0.70	5.42	87	
Skylark	2.01	1.12	1.30	0.55	4.99	88	
SW 1509	2.62	1.29	1.42	0.64	5.97	90	
SW 1517	2.73	1.36	1.53	0.71	6.34	90	
Swift	2.26	1.16	1.37	0.73	5.51	87	
Vernal	2.47	1.10	1.29	0.59	5.44	60	
Mean	2.23	1.19	1.40	0.63	5.44	84	
LSD P=.05	0.55	0.21	0.28	0.13	0.84	16.70	
Prob(F)	0.042	0.0441	0.3553	0.0454	0.0276	0.0201	
CV %	14.5	10.1	11.7	11.7	9.0	11.6	

**Notes:**

No harvests were taken in 2018 due to infestation of Venice Mallow that could not be controlled with herbicide.  
 After seeding in good soil conditions, the weather turned dry for two weeks. Resulting in reduced stand due to seed germination prior to the dry period.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.  
 Plot size: 4' x 20' , 15'alleys and borders, RCBD with four reps.  
 2019 Pest control: Insecticide was applied on 11-June, 10-July, 12-August for potato leafhopper control.

Weather 2019

Month	Wooster		S. Charleston		N. Baltimore	
	Total	DFA*	Total	DFA*	Total	DFA*
-----Precipitation (inches of rainfall)-----						
	total	DFA	total	DFA	total	DFA
Apr	2.99	-0.31	3.61	-0.39	5.52	2.22
May	3.76	-0.14	5.37	0.77	4.13	.073
June	6.87	2.97	5.04	0.84	3.46	-0.14
July	7.92	3.82	2.55	-1.55	6.78	2.98
Aug	4.80	-1.20	1.16	-1.90	5.45	2.45
Sept	2.33	-0.77	1.06	-1.94	4.08	1.58
Total	28.67	4.37	18.79	-4.17	29.42	9.09
-----Average Daily Temperature (°F)-----						
	Total	DFA	Total	DFA	Total	DFA
Apr	52.0	1.9	52.8	1.8	49.7	0.8
May	61.6	3.1	63.7	2.4	60.7	0.9
June	67.2	-0.4	69.6	-0.7	69.0	-0.5
July	74.0	3.5	75.8	2.0	76.8	4.0
Aug	69.4	-2.8	71.7	-2.7	71.5	0.9
Sept	67.5	4.1	71.1	3.6	69.2	3.0

\*DFA = departure from long-term average

**Forage Website**

**<http://forages.osu.edu>**

Cover Crop Variety Trial  
Ohio, South Charleston, Sown 9/20/18

Variety	Marketer	Species	5/7/2019 yield	10/10/2018 stand	10/10/2018 cover	10/16/2018 cover	10/29/2018 cover	4/9/2019 stand	4/29/2019 stand	4/29/2019 cover	4/2/2019 winter inj
B-18.1793	Blue Moon Farms	ARG	2.16	100	20	40	77.5	87.5	90	93.8	2.3
FrostProof	Smith Seed Service	ARG	2.12	100	22.5	35	75	91.3	92.5	95	2.0
LowBoy	Smith Seed Service	ARG	1.20	100	17.5	35	55	100	100	100	1.5
Rapido	Smith Seed Service	ARG	1.55	100	22.5	40	90	60	75	85	3.8
winterhawk	Oregon Seed	ARG	2.42	100	20	35	73.8	96.3	96.3	97.5	2.0
KOKI-WEAR	Oregon Seed	ARG	2.71	100	20	37.5	80	97.5	98.8	100	2.0
KO14-WM	Oregon Seed	ARG	2.82	100	23.8	37.5	65	98.8	98.8	100	2.0
KO14-WEMA	Oregon Seed	ARG	2.05	100	20	32.5	75	96.3	100	100	1.8
KO14-WLS	Oregon Seed	ARG	2.10	100	22.5	35	62.5	98.8	100	100	1.8
LSC-Bllal	Lewis Seed Co	ARG	2.38	100	25	40	85	88.8	87.5	91.3	2.5
Taipan	Smith Seed Service	Clover	0.72	100	12.5	22.5	50	58.8	55	61.3	2.5
Viper	Smith Seed Service	Clover	1.30	100	11.3	18.8	35	95	92.5	97.5	1.8
SECCB18	Smith Seed Service	Clover	0.86	100	32.5	42.5	61.3	88.8	72.5	82.5	3.0
SECCM18	Smith Seed Service	Clover	0.74	100	26.3	42.5	65	58.8	55	62.5	2.8
White Cloud	Oregon Seed	Clover - Crimson	0.30	98.8	23.8	31.3	55	31.8	28	36.8	2.8
DX II	Lewis Seed Co	Clover - Crimson	1.27	100	27.5	47.5	68.8	87.5	76.3	81.3	1.8
WyoWinter	Smith Seed Service	Pea	0.06	75	18.8	45	47.5	3.5	3	4.3	5.0
Double O	Oregon Seed	Pea - winter	0.00	73.8	22.5	50	57.5	2.3	1.5	1.5	5.0
Icicle	Oregon Seed	Pea - winter	0.15	87.5	32.5	52.5	56.3	4.3	3.5	6.8	5.0
Pro 158-7204	ProGene	Pea	0.00	71.3	18	40	41.3	1.8	0.5	0.5	4.0
Pro 168-6206	ProGene	Pea	0.00	81.3	22.5	55	57.5	4	1.5	1.5	5.0
Daikon	Turf Merchants, Inc	Radish	0.00	97.5	88.8	98.8	100	0	0	0	5.0
AU Merit	Smith Seed Service	Hairy Vetch	0.64	98.8	35	68.8	75	85	65	81.3	1.8
WinterKing	Smith Seed Service	Hairy Vetch	0.24	53.8	7.5	27.5	31.3	48	37.5	46.3	3.5
Villana	Oregon Seed	Hairy Vetch	0.56	93.8	23.8	65	70	85	72.5	83.8	2.3
Mean			1.13	93.3	25.0	43.0	64.4	62.8	60.1	64.4	2.9
LSD P=.05			0.68	12.22	7.55	12.60	12.52	22.15	24.07	23.15	1.13
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
CV %			42.3	9.3	21.5	20.8	13.8	25.0	28.4	25.5	27.6

Stand is reported as % stand within the planted rows and cover is % ground cover over entire plot area.  
Winter Injury is reported on a 1 - 5 scale. 1 = little to no injury 5 = severe injury - death of plants.

Annual Ryegrass Trial, Ohio Seeded 9-12-2018

Variety	Marketer	5/7/2019	5/28/2019	6/25/2019	Total 2019	10/29/2018	4/9/2019	4/22/2019
		----- Tons Dry Matter / Acre -----				% Cover*	% Stand	Winter Injury
07-WW	Oregon Seed	1.66	1.09	0.78	3.82	75	81	2.5
B-18.1298	Blue Moon Farms	2.25	1.16	0.94	4.02	70	90	1.8
B-18.1793	Blue Moon Farms	1.70	0.86	0.72	3.33	58	89	2.0
FrostProof	Smith Seed Service	1.89	0.87	0.73	3.58	73	81	2.3
KO14-WEAR	Oregon Seed	1.99	1.15	0.83	3.71	70	79	2.3
KO14-WEMA	Oregon Seed	1.99	1.07	0.82	3.79	70	85	2.3
KO14-WLS	Oregon Seed	2.04	1.11	0.81	3.80	68	78	2.0
KO14-WM	Oregon Seed	2.23	0.75	0.63	2.54	78	49	3.8
LowBoy	Smith Seed Service	1.50	1.10	0.78	3.75	78	74	3.0
LSC-Bllal	Lewis Seed Co	1.69	1.01	0.67	3.55	53	98	1.3
Rapido	Smith Seed Service	0.75	1.09	0.70	3.31	75	60	3.5
Winterhawk	Oregon Seed	2.01	1.06	0.85	4.09	68	95	1.8
Mean		1.81	1.03	0.77	3.61	69	80	2.4
LSD P=.05		0.28	0.30	0.25	1.05	15.54	31.27	1.55
Prob(F)		0.0001	0.16	0.48	0.28	0.0625	0.1269	0.0851
CV %		10.92	20.14	22.37	20.15	15.57	27.24	45.89

Stand is reported as % stand within the planted rows and cover is % ground cover over entire plot area.

Winter Injury (1 = no injury to 5 = severe injury / complete death of plant)

\*NOTE: Stand and cover percentage reached 100% in all entries by mid-November in 2018.

Inclusion of entries in Ohio Forage 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.

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